



# TOWN OF NATICK MASSACHUSETTS

**TO:** Natick Select Board  
James Errickson, Town Administrator  
Jon Marshall, Deputy Town Administrator - Operations  
William Spratt, Director, Natick Facilities Department  
Jillian Wilson-Martin, Director of Sustainability  
Miki Wolfe, Director, Morse Institute Library

**FROM:** Bryan R. Le Blanc, Procurement Officer

**DATE:** April 27, 2022

**SUBJECT: CONTRACT AWARD**  
**Morse Institute Library – HVAC and Controls Upgrades**

On April 14, 2022, sealed bids were received in accordance with M.G.L. c. 149, secs. 44A *et seq.* for the procurement of services for the HVAC and Controls upgrades project at the Morse Institute Library in the Town of Natick. Bids were received from one (1) bidder. (See attached.)

The lowest (and only) bidder, Enterprise Equipment Co., Inc., is the lowest responsible and eligible bidder. We recommend that the Natick Select Board award the contract to Enterprise Equipment Co., Inc., for the complete main bid work, plus the work described in Add/Alts.1-5, as provided for in the Town's Invitation for Bids. The amount of the award will be for \$1,532,250.00 (\$1,417,450.00 for base work, plus \$114,800.00 for work described in Add/Alts. 1-5), as provided for in Enterprise Equipment Co., Inc.'s bid. We have reviewed the bids received and have checked the references and qualifications of Enterprise Equipment Co., Inc. and have determined it to be a responsible and eligible bidder.

Annese Electric is the selected electrical Sub-Bidder, per Enterprise Equipment Co, Inc.'s Bid.

Please advise if you have any questions or require additional information.

Bids Received:	04/14/2022
Newspaper Advertisement ( <u>Metrowest Daily News</u> ):	03/11/2022
Website Posting:	03/07/2022
Town Hall Postings:	03/07/2022
Central Register:	03/16/2022
COMMBUYS Posting:	03/07/2022

Funding:

FATM 2021 Article 12 Motion C- \$682,000.00

Green Communities Grant (Block 1 &2) - \$525,000.00

ARPA Funding - \$325,250.00

Total: \$1,532,250.00

---

Bids Received: See attached.

# IFB Opening Form

## Date &amp; Time: April 14, 2022, 9:00 A.M. EDT

Company Name	Envelope Sealed & Marked	Bid Security 5%and DCAMM (HVAC)	Certificate of Non-Collusion	Tax Compliance Certification	Cert. of Corporate Bidder	Conflict of Interest Certificate	Signature of Bidder & Addenda	Certificate of Insurability	Compliance with MGI 151B	Certificate of Non-Debarment	Price
Enterprise Equipment Cp., Inc., Weym	x	x	x	x	x	x	x	x	x	x	\$1,417,450.00
											Add Alt. 1 +\$19,700.00
											Add Alt. 2 +\$16,000.00
											Add Alt. 3 +\$45,600.00
											Add Alt. 4 +\$27,500.00
											Add Alt. 5 +\$6,000.00

ent. - mch Jan 18 0 30 PM EST

**Witness Signature:**

NATICK, MASSACHUSETTS  
SELECT BOARD

AGREEMENT

THIS AGREEMENT made this fourth day of May, in the year 2022, by and between the Town of Natick, Massachusetts, Natick Town Hall, 13 East Central Street, Natick, MA 01760 (hereinafter called OWNER), by the Natick Select Board, and Enterprise Equipment Co., Inc., 276 Libbey Parkway, Weymouth, MA 02189, doing business as a corporation, hereinafter called "CONTRACTOR."

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, OWNER and CONTRACTOR hereby agree as follows:

ARTICLE 1. WORK

1.1. CONTRACTOR shall commence the Work, as described in the Main Work plus the Work in Add/Alts. 1-5, as specified or indicated in the Contract Documents as defined in Article 8 herein.

1.2. The Project under this Contract consists of furnishing all necessary labor, materials and equipment required for Morse Institute Library HVAC and Controls Upgrade.

1.3. CONTRACTOR shall furnish all materials, supplies, tools, equipment, labor, and other services necessary for the construction and completion of the Project described herein.

ARTICLE 2. ENGINEER

2.1. The Project has been designed by Banks II Quan and Associates, Inc. (dba B2Q Associates), who is hereinafter called ENGINEER and who shall act as OWNER'S representative, who shall assume all duties and responsibilities, and who and shall have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

5.2. Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Applications for Payment as recommended by ENGINEER and as provided in Article 14 of the General Conditions, as modified, if applicable, by the Supplementary Conditions.

5.3. Final Payment. Upon final completion and acceptance of the Work in accordance with paragraph 14.13 of the General Conditions, as modified, if applicable, by the Supplementary Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.13.

## ARTICLE 6. TERMS

6.1. Terms used in this Agreement, which are defined in Article 1 of the General Conditions, as modified, if applicable, by the Supplementary Conditions, will have the meanings indicated in the General Conditions, as modified, if applicable, by the Supplementary Conditions

## ARTICLE 7. CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

7.1. CONTRACTOR has familiarized itself with the nature and extent of the Contract Documents, work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

7.2. CONTRACTOR has studied carefully all reports of explorations and tests of subsurface conditions and drawings of physical conditions which are identified in the Supplementary Conditions as provided in paragraph 4.2 of the General Conditions, and accepts the determination set forth in paragraph SC-4.2 of the Supplementary Conditions of the extent of the technical data contained in such reports and drawings upon which CONTRACTOR is entitled to rely.

7.3. CONTRACTOR has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports and studies (in addition to or to supplement those referred to in paragraph 7.2 above) which pertain to the subsurface or physical conditions at or contiguous to the site or otherwise may affect the cost, progress, performance or furnishing of the Work as CONTRACTOR considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.2 of the General Conditions, as modified, if applicable, by the Supplementary Conditions; and no additional examinations, investigations, explorations, tests, reports, studies or similar information or data are or will be required by CONTRACTOR for such purposes.

7.4. CONTRACTOR has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, explorations, tests, reports, studies or similar information or data in respect of said Underground Facilities are or will be required by CONTRACTOR in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.03 of the General Conditions, as modified, if applicable, by the Supplementary Conditions.

7.5. CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

7.6. CONTRACTOR has given ENGINEER written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

## ARTICLE 8. CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

- 8.1 Invitation for Bids
- 8.2 Instructions to Bidders
- 8.3 Contractor's Bid
- 8.4 This Agreement ("Agreement")
- 8.5 Exhibits to this Agreement
- 8.6 General Conditions
- 8.7 Supplementary Conditions
- 8.8 Contractor's Performance and Payment Bonds, and insurance certificates
- 8.9 Notice of Award
- 8.10 Notice to Proceed
- 8.11 Specifications contained in Divisions 01 -26, as listed in table of contents
- 8.12 Construction Drawings.
- 8.13 Addenda numbers 1 to 2, inclusive.
- 8.14 Change Order

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.04 and 3.05 of the General Conditions.

## ARTICLE 9. INDEMNIFICATION

To the fullest extent permitted by law, the CONTRACTOR shall indemnify, defend, and hold harmless the Town of Natick and all of its officers, employees, boards, commissions, committees, agents and representatives from and against all claims, causes of action, suits, costs, damages, and liability of any kind which arise out of the breach by the CONTRACTOR of its obligations under this Contract, or the act or omission of the CONTRACTOR, its Subcontractors, or their officers, employees, agents and representatives or anyone directly or indirectly employed by them, or anyone for whose acts or omissions they may be liable, regarding the work to be performed by the CONTRACTOR under the Contract, or which arise out of the violation of any Federal, Massachusetts or Town of Natick statute, by-law, rule, regulation, order or directive, or which relate to personal injury or property damage suffered by the CONTRACTOR or any of its officers or employees regarding the subject matter of the Contract.

## ARTICLE 10: INSURANCE

10.1. The CONTRACTOR shall provide insurance that satisfies the categories and amounts specified in Article 5 of the General Conditions, as modified by Article 5 of the Supplementary Conditions.

10.2. Each certificate and policy of insurance required by this Agreement shall contain a cancellation provision as indicated below with no variations.

“Should any of the above described policies be canceled or materially amended before the expiration date thereof, the issuing insurer will mail within thirty (30) days written notice to the certificate holder named to the left”.

10.3. The Town of Natick and ENGINEER shall be named as an additional insured on each policy of insurance required by this agreement other than worker’s compensation.

## ARTICLE 11: MISCELLANEOUS PROVISIONS

11.1. No assignment by CONTRACTOR of any rights under or interests in the Contract Documents will be binding on OWNER without the written consent of OWNER; and specifically but without limitation moneys that may become due and moneys that are due may not be assigned without such consent, and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the CONTRACTOR from any duty or responsibility under the Contract Documents.



11.2. This Agreement shall be binding upon the OWNER and CONTRACTOR, their respective heirs, executors, administrators, successors, or assigns and legal representative to the other party hereto, its partners, heirs, executors, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

11.3. If any provision of this Agreement shall be determined to be invalid or unenforceable by final judgment of a court of competent jurisdiction, the remaining provisions shall continue in effect to the extent permitted by law.

11.4. This Agreement may be amended only by a written instrument signed by the parties.

11.5. This Agreement shall be governed by and construed in accordance with the Massachusetts law, without respect to choice of law principles.

11.6. The CONTRACTOR shall provide to the satisfaction of the OWNER, adequate supervision of all work performed under this Agreement.

11.7. This Agreement shall be subject to the Natick Non-Discrimination in the Workforce provision included in Part I Supplementary Conditions.

11.8. The CONTRACTOR shall comply with all provisions of law applicable to his work including without limitation statutes, by-laws rules, regulations, orders and directives. This Contract shall be considered to include in their entirety all terms respecting workers' compensation insurance and other terms required to be included in it by Chapter 152 of the Massachusetts General Laws, as amended, and any other laws, as though such terms were set forth in their entirety herein. The CONTRACTOR shall comply with all applicable provisions of law and regulation as specified by the Williams-Steiger Occupational Safety and Health Act of 1970, as amended.

11.9. The CONTRACTOR has made this Contract in reliance on his own examinations and estimates as to the amount and character of his work, and conditions which may be encountered in the performance thereof, and shall assume all risks and bear all losses pertaining thereto.

11.10. The CONTRACTOR shall compensate the Town of Natick for all damages to the Town property of any nature arising out of the CONTRACTOR'S work.

11.11. The Town of Natick may defer payment to the CONTRACTOR of such sums otherwise due him under this Contract for such period of time as the Director of Public Works may deem required by law or expedient for protection of the Town or others against his noncompliance with the provisions thereof; and the Town may reimburse itself, by deduction from the money so retained, for all expense and loss resulting to it from his noncompliance.

11.12. No payment by the Town of Natick to the CONTRACTOR shall be deemed to be a waiver of any right of the Town of Natick under this Contract or ratification by the Town of Natick any breach hereof by him.

11.13. The CONTRACTOR shall provide services under this Agreement as an independent CONTRACTOR with the town of Natick and the CONTRACTOR and its employees shall not be entitled

to receive any benefits of employment with the Town of Natick, including without limitation salary, overtime, vacation pay, holiday pay, health insurance, life insurance, pension or deferred compensation.

11.14. If any assignment shall be made by the CONTRACTOR or by any guarantor of the CONTRACTOR for the benefit of creditors, or if a petition is filed by the CONTRACTOR or by any guarantor of the CONTRACTOR for adjudication as a bankrupt, or for reorganization or an arrangement under any provision of the Bankruptcy Act as then in force and effect, or if an involuntary petition under any of the provisions of the Bankruptcy Act is filed against the CONTRACTOR and such involuntary petition is not discharged within ninety (90) days thereafter, in any event the Town may terminate this Contract upon written notice to the CONTRACTOR.

11.15. The award of this Contract and the continued operation of this Contract are subject to appropriation by Natick Town Meeting of sufficient money to fund the Contract.

11.16. The Owner may terminate this Contract upon written notice to the CONTRACTOR if a source of money to fund the Contract is lost during any year of the Contract term. In the alternative, the parties may agree in writing to amend the Contract to provide for a Contract price which represents the reduced appropriation for a contract year.

11.17. In the event of termination, the CONTRACTOR shall be entitled to be paid for services rendered in accordance with this Contract prior to termination.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have executed or caused to be executed by their duly authorized officials this Agreement in five (5) copies, each of which shall be deemed as an original on the date first above written. One Counterpart each has been delivered to OWNER, CONTRACTOR, ENGINEER, Town Counsel and the Comptroller.

OWNER:  
Town of Natick, Massachusetts  
  
The Natick Select Board

CONTRACTOR:  
Enterprise Equipment Co., Inc.

\_\_\_\_\_  
Paul R. Joseph, Chair

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Michael J. Hickey, Jr., Vice Chair

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

\_\_\_\_\_  
Bruce T. Evans, Clerk

\_\_\_\_\_  
Printed Title

Dated: \_\_\_\_\_

\_\_\_\_\_  
Kathryn M. Coughlin

Dated: \_\_\_\_\_

\_\_\_\_\_  
CORPORATE SEAL

\_\_\_\_\_  
Attest

Owner Address for giving notices:

Select Board

Natick Town Hall

13 East Central Street

Natick, MA 01760

Contractor Address for giving notices:

Enterprise Equipment Co., Inc.

276 Libbey Parkway

Weymouth, MA 02189

ATTN. PRESIDENT

CERTIFICATE OF APPROPRIATION

In accordance with the requirements of M.G.L. Chapter 44, Section 31C, this is to certify that an appropriation in the amount of this Agreement is available therefore, and that the Natick Select Board is authorized to execute this Agreement and to approve all requisitions and execute change orders.

---

Michelle Laramee  
Comptroller, Town of Natick

Date

APPROVED AS TO FORM ONLY (AND NOT AS TO SUBSTANCE):

---

Karis L. North, Esq.  
Office of the Town Counsel

Date

**CERTIFICATE OF CORPORATE AUTHORIZATION**

I, \_\_\_\_\_, Clerk of \_\_\_\_\_, a \_\_\_\_\_  
corporation organized pursuant to \_\_\_\_\_ state law, which maintains its principal office at  
\_\_\_\_\_ hereby certify that at a meeting of the Board of Directors of  
\_\_\_\_\_ (the "Corporation") duly held on \_\_\_\_\_, \_\_\_\_\_, at which

**(Date must be earlier than Agreement)**

A quorum was present and voting throughout, the following vote was duly passed and is now in full force and effect:

"VOTED: That \_\_\_\_\_ be and hereby is

**(Name of Officer authorized to sign for Corporation)**

authorized, directed and empowered for, in the name and on behalf of this Corporation to sign seal with the corporate seal, execute, acknowledge and deliver all contracts, bonds and other obligations of the Corporation, with the Town of Natick, acting by and through the Town of Natick, Massachusetts, 13 East Central Street, Natick, MA 01760; the execution of any such contract, lease, bond or obligation by such  
\_\_\_\_\_ to be valid and binding

**(Name of Officer)**

upon this Corporation for all purposes, and that a certificate of the Clerk of this Corporation setting forth this vote shall be delivered to the Town of Natick.

I further certify that

\_\_\_\_\_  
**(Name of Officer)**

is duly elected \_\_\_\_\_ of said Corporation.

**(Title)**

Signed: \_\_\_\_\_

**Printed Name:**

**Printed Title:**       **(Clerk- Secretary)**

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

Place of Business: \_\_\_\_\_

AFFIX CORPORATE SEAL

COUNTERSIGNATURE: \_\_\_\_\_

*(Name and Title of Officer)*

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

*In the event that the clerk or Secretary is the same person as the Officer authorized to sign that contract or other instrument for the Corporation, this certificate must be countersigned by another officer of the Corporation.*

NATICK, MASSACHUSETTS  
SELECT BOARD  
Contractor's Certification

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

A contractor will not be eligible for award of a contract unless such contractor has submitted the following certification, which is deemed a part of the resulting contract:

CONTRACTOR'S CERTIFICATION

\_\_\_\_\_certifies that

1. it intends to use the following listed construction trades in the work under the contract  
\_\_\_\_\_; and
2. will comply with the minority manpower ratio and specific affirmative action steps contained herein; and
3. will obtain from each of its Subcontractors and submit to the contracting or administering agency prior to the award of any subcontract under this contract the Subcontractor certification required by these bid conditions.

\_\_\_\_\_  
(Signature of authorized representative of Contractor)

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

\_\_\_\_\_  
Printed Title

\_\_\_\_\_  
Date

NATICK, MASSACHUSETTS  
SELECT BOARD

Subcontractor's Certification

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

Prior to the award of any subcontract, regardless of tier, the prospective Subcontractor must execute and submit to the contractor the following certification, which is deemed a part of the resulting contract:

\_\_\_\_\_certifies that

1. it intends to use the following listed construction trades in the work under the contract  
\_\_\_\_\_; and
2. will comply with the minority manpower ratio and specific affirmative action steps contained herein; and
3. will obtain from each of its Subcontractors and submit to the contracting or administering agency prior to the award of any subcontract under this contract the Subcontractor certification required by these bid conditions.

\_\_\_\_\_  
(Signature of authorized representative of Subcontractor)

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

\_\_\_\_\_  
Printed Title

\_\_\_\_\_  
Date

In order to ensure that the said Subcontractor's certification becomes a part of all subcontracts under the contract, no subcontract shall be executed until an authorized representative of the Town agency (or agencies) administering this project has determined, in writing, that the said certification has been incorporated in such subcontract, regardless of tier. Any subcontract executed without such written approval shall be void.

BID FORM FOR GENERAL BID

To the Awarding Authority: Town of Natick, Massachusetts  
Select Board  
Natick Town Hall  
13 East Central Street  
Natick, MA 01760

A. The undersigned Bidder proposes to furnish all labor and materials required for Morse Institute Library HVAC and Controls Upgrade in the Town of Natick, Massachusetts, in accordance with the accompanying plans and specifications for the Contract price specified below, subject to additions and deductions according to the terms of the specifications.

B. This bid includes addenda numbered 1, 2.

C. The proposed lump sum contract price is one million four hundred seventeen thousand four hundred  
1,417,450 fifty dollars 00/100  
dollars (\$          ).

For alternate No. 1	Test, adjust, and balance airflows for AHU-3, 4, and 5	Add: \$	Subtract \$
		<u>19,700.00</u>	<u>0.00</u>
For alternate No. 2	Test, adjust, and balance airflows for (40) fan-powered VAV boxes	Add: \$	Subtract \$
		<u>16,000.00</u>	<u>0.00</u>
For alternate No. 3	Furnish and install (32) new primary air dampers for fan-powered VAV boxes and demolish existing dampers. Note that (8) such dampers are included in the base scope	Add: \$	Subtract \$
		<u>45,600.00</u>	<u>0.00</u>
For alternate No. 4	Furnish and install (40) new hot water reheat coil valves and actuators for fan-powered VAV boxes and demolish existing valves and actuators.	Add: \$	Subtract \$
		<u>27,500.00</u>	<u>0.00</u>
For alternate No. 5	Furnish and install (40) new discharge air temperature probe sensors for fan-powered VAV boxes.	Add: \$	Subtract \$
		<u>6,000.00</u>	<u>0.00</u>



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.  
\$ 1,365,450

Item 2. Sub-bids as follows:

<u>Sub-Trade</u>	<u>Name of Sub-Bidder</u>	<u>Amount of Sub-Bid</u>	<u>Bonds Required (Indicated by "Yes" or "No")</u>
<u>Electrical</u>	<u>Annese Electrical Services</u>	<u>\$52,000.00</u>	<u>No</u>

Sub-bids as follows:

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

The undersigned agrees that if he is selected as general contractor, he will promptly confer with the 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 he is selected as general contractor, he will within five (5) days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the awarding authority, execute a contract in accordance with the terms of this bid and furnish a performance bond and also a labor and materials or payment bond, each of a surety company qualified to do business under the laws of the commonwealth 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; provided, however, that if there is more than 1 surety company, the surety companies shall be jointly and severally liable.

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

THIS BID SUBMITTED ON April 14 2022

Name of Bidder: Enterprise Equipment Co., Inc.

By 

Signature

Kevin N. Lynch

Printed Name

President

Printed Title

(Corporate Seal)

Attest 

(Secretary) Ryan J. Lynch

Business Address: 276 Libbey Parkway

Weymouth, MA 02189

Phone Number: (781) 331-0900

E-mail Address: klynch@eecma.com

Fax: (781) 337-2940

## CERTIFICATE OF NON-COLLUSION

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

Enterprise Equipment Co., Inc.  
Name of Bidder

276 Libbey Parkway  
Address of Bidder

Weymouth, MA 02189

(781) 331-0900  
Telephone Number

By:   
(Signature)

Kevin N. Lynch  
Printed Name

President  
Printed Title

April 14, 2022  
Date

## CERTIFICATE OF TAX COMPLIANCE

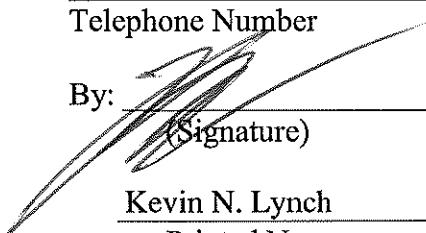
Pursuant to Massachusetts General Laws (M.G.L.) c. 62C, §49A, I certify under the penalties of perjury that the Bidder named below has complied with all laws of the Commonwealth of Massachusetts pertaining to the payment of taxes, to the reporting of employees and contractors, and to the withholding and remitting of child support.

Enterprise Equipment Co., Inc.  
Name of Bidder

276 Libbey Parkway  
Address of Bidder

Weymouth, MA 02189

(781) 331-0900  
Telephone Number

By:   
(Signature)

Kevin N. Lynch  
Printed Name

President  
Printed Title

April 14, 2022  
Date

## CONFLICT OF INTEREST CERTIFICATION

The Bidder hereby certifies that:

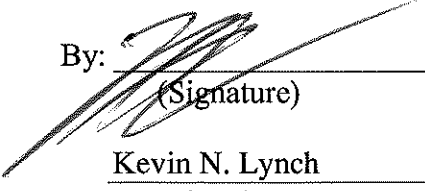
1. The Bidder has not given, offered, or agreed to give any gift, contribution, or offer of employment as an inducement for, or in connection with, the award of a Contract pursuant to this Invitation for Bids.
2. No consultant to, or subcontractor for, the Bidder has given, offered, or agreed to give any gift, contribution, or offer of employment to the Bidder, or to any other person, corporation, or entity as an inducement for, or in connection with, the award to the consultant or subcontractor of a Contract by the Bidder.
3. No person, corporation, or other entity, other than a bona fide full time employee of the Bidder has been retained or hired to solicit for or in any way assist the Bidder in obtaining the Contract (pursuant to this IFB) upon an agreement or understanding that such person, corporation or entity be paid a fee or other compensation contingent upon the award of a Contract to the Bidder.
4. The Bidder understands that the Massachusetts Conflict of Interest Law, Chapter 268A of the Massachusetts General Laws, applies to the Bidder with respect to the transaction outlined in the IFB.
5. The Bidder understands that the Bidder, his/her/its officers, employees, agents, subcontractors, and affiliated entities, shall not participate in any activity which constitutes a violation of the Massachusetts Conflict of Interest Law or which creates an appearance of a violation of the Massachusetts Conflict of Interest Law.

Enterprise Equipment Co., Inc.  
Name of Bidder

276 Libbey Parkway  
Address of Bidder

Weymouth, MA 02189

(781) 331-0900  
Telephone Number

By:   
(Signature)

Kevin N. Lynch  
Printed Name

President  
Printed Title

April 14, 2022  
Date

### CERTIFICATE OF CORPORATE BIDDER

I, Ryan J. Lynch, certify that I am the Secretary of the Corporation named as Bidder in the attached Bid; that Kevin N. Lynch, who signed said Bid on behalf of the Bidder was then President of said Corporation; that I know his/her signature hereto is genuine and that said Bid was duly signed, sealed and executed for and on behalf of its governing body.

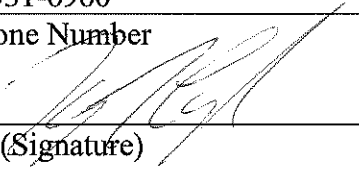
(Corporate Seal)

Enterprise Equipment Co., Inc.  
Name of Bidder

276 Libbey Parkway  
Address of Bidder

Weymouth, MA 02189

(781) 331-0900  
Telephone Number

By:   
(Signature)

Ryan J. Lynch  
Printed Name

Secretary  
Printed Title

April 14, 2022  
Date

This Certificate shall be completed where Bidder is a Corporation and shall be so completed by its Clerk. In the event that the Clerk is the person signing the Bid on behalf of the Corporation, this certificate shall be completed by another officer of the Corporation.

## CERTIFICATE OF COMPLIANCE WITH M.G.L. c. 151B

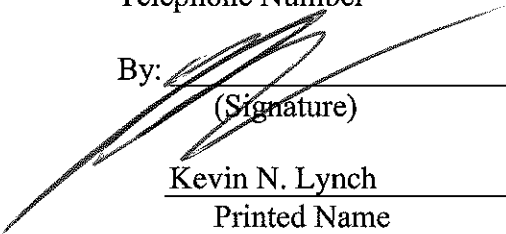
The Bidder hereby certifies that it is in compliance with and shall remain in compliance with Massachusetts General Laws (M.G.L.) Chapter 151B and shall not discriminate on any prohibited basis outlined therein. The Bidder also hereby certifies that it shall comply with any and all applicable Supplier Diversity Office (SDO) thresholds that have been established in conjunction with this Invitation for Bids.

Enterprise Equipment Co., Inc.  
Name of Bidder

276 Libbey Parkway  
Address of Bidder

Weymouth, MA 02189

(781) 331-0900  
Telephone Number

By:   
(Signature)

Kevin N. Lynch  
Printed Name

President  
Printed Title

April 14, 2022  
Date



## CERTIFICATE OF NON-DEBARMENT

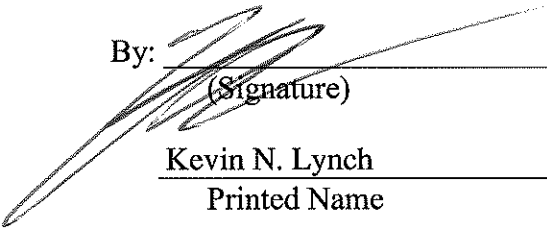
The Bidder hereby certifies that it is presently not debarred, suspended, or otherwise prohibited from practice by any federal, state, or local agency, and that, should any proceeding arise in which it is debarred, suspended, or otherwise prohibited from practice by any federal, state, or local agency, the Bidder shall inform the Town of Natick within one (1) business day of such debarment, suspension, or prohibition from practice.

Enterprise Equipment Co., Inc.  
Name of Bidder

276 Libbey Parkway  
Address of Bidder

Weymouth, MA 02189

(781) 331-0900  
Telephone Number

By:   
(Signature)

Kevin N. Lynch  
Printed Name

President  
Printed Title

April 14, 2022  
Date

If the Bidder is a foreign corporation, the Bidder certifies that the corporation is qualified under provision of M.G.L. Chapter 181, Section 4 to do business in the Commonwealth of Massachusetts.

Name of Bidder

N/A

Address of Bidder

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

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

Printed Title

Date \_\_\_\_\_

(Company Name)

(Signature/Title)

If awarded the Contract, the Contractor shall provide with his agreement package, a certificate from the Secretary of the Commonwealth of Massachusetts that the corporation is qualified under provisions of M.G.L. Chapter 181, Section 4, to do business in the Commonwealth.

**OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION  
CERTIFICATION**

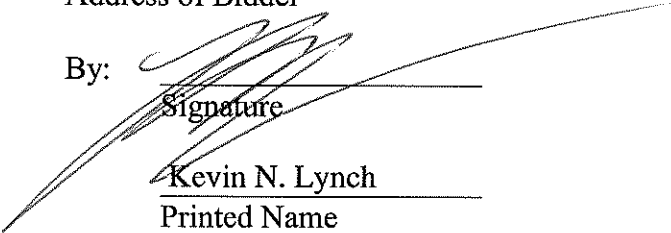
The Bidder named below agrees that if it is selected as the Contractor, it shall comply with the provisions of M.G.L. Chapter 30, Section 39S.

The Bidder named below certifies, under penalties of perjury, that it is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in 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 ten (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 all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least ten (10) hours in duration.

Name of Bidder

Enterprise Equipment Co., Inc.  
276 Libbey Parkway  
Weymouth, MA 02189  
Address of Bidder

By:

  
Signature

Kevin N. Lynch  
Printed Name

President  
Printed Title

April 14, 2022  
Date



*The Commonwealth of Massachusetts*  
*Executive Office for Administration and Finance*  
*Division of Capital Asset Management and Maintenance*  
*One Ashburton Place*  
*Boston, Massachusetts 02108*

*Tel: (857) 204-1305*

*Fax: (617) 727-8284*

CHARLES D. BAKER  
GOVERNOR

*Email: Certification.DCAMM@mass.gov*

MICHAEL J. HEFFERNAN  
SECRETARY  
ADMINISTRATION & FINANCE  
CAROL W. GLADSTONE  
COMMISSIONER

KARYN E. POLITO  
LIEUTENANT GOVERNOR

**Prime**  
**Certificate of Contractor Eligibility**  
**CONTRACTOR IDENTIFICATION NUMBER: 0150**

This Certificate Shall be Used for Submitting Prime Bids Only.

1. **CERTIFICATION PERIOD:** This Certificate is valid from January 9, 2022 to January 8, 2023\*
2. **CONTRACTOR'S NAME:** Enterprise Equipment Co., Inc.
3. **CONTRACTOR'S ADDRESS:** 276 Libbey Industrial Parkway  
Weymouth, MA 02189
4. **WORK CATEGORIES:** This Contractor is certified to file bids under Massachusetts General Laws Chapter 149, Chapter 149A and Chapter 25A in the following Categories of Work:

Energy Management System, General Building Construction, HVAC, Mechanical Systems, Plumbing

5. **EVALUATIONS:**
- |                                    |    |
|------------------------------------|----|
| Number of Projects Evaluated:      | 39 |
| Average Project Evaluation Rating: | 98 |
| Number of Projects Below Passing:  | 0  |
6. **PROJECT LIMITS:**
- |                                      |              |
|--------------------------------------|--------------|
| Single Project Limit (SPL):          | \$21,319,000 |
| Aggregate Work Limit (AWL):          | \$44,191,000 |
| General Building Construction Limit: | \$21,319,000 |

7. **SUPPLIER DIVERSITY OFFICE CERTIFICATION:** N/A

Carol W. Gladstone, Commissioner

12/10/2021

Approval Date

**\* NOTICE TO CONTRACTORS:** *If this contractor becomes uncertified for any reason this Certificate will immediately become void. Complete Applications for Renewal of Contractor Eligibility are due no later than three months PRIOR to the Expiration Date of the Certification Period shown above.*

Reviewer's Initials: MR

TOWN OF NATICK, MASSACHUSETTS  
SELECT BOARD

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned,

Enterprise Equipment Co., Inc.

(Name of Contractor)

13 East Central Street, Natick, MA 01760

(Address of Contractor)

a Corporation, hereinafter called PRINCIPAL and (Corporation, Partnership, or Individual)

North American Specialty Insurance Company

(Name of Surety)

1450 American Lane, Suite 1100, Schaumburg, IL 60173

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

the Town of Natick, Massachusetts

(Name of Owner)

Natick Town Hall, 13 East Central Street, Natick, MA 01760

(Address of Owner)

as OWNER in the total aggregate penal sum of

Five Percent of Bid Amount

Dollars (\$ 5% of Bid Amount )

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

The Condition of the above obligation is such that, whereas the Principal has submitted to the Board of Selectmen, Town of Natick, Massachusetts a certain Bid, attached hereto and hereby made a part hereof and hereby incorporated by reference herein, to enter into a Contract in writing, for the

Morse Institute Library HVAC and Controls  
Upgrade - General Contractor

Project in Natick, Massachusetts.

NOW, THEREFORE,

(a) If said Bid shall be rejected, or

- (b) If said Bid shall be accepted and the Principal shall execute and deliver a Contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a Bond for his faithful performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid,

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

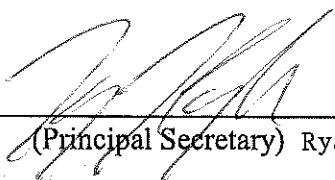
The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its Bond shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hand and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth Signed and Sealed 14th day of April, 2022.

ATTEST:

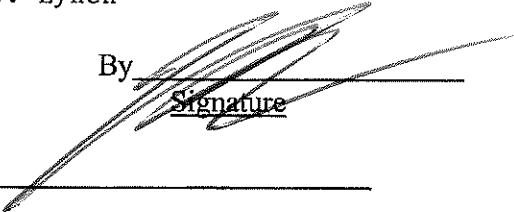
Enterprise Equipment Co., Inc.

Principal

  
\_\_\_\_\_  
(Principal Secretary) Ryan J. Lynch

(SEAL)(s)

By

  
\_\_\_\_\_  
Signature

Kevin N. Lynch

Printed Name

President

Printed Title

276 Libbey Parkway, Weymouth, MA 02189

(Address)

276 Libbey Parkway, Weymouth, MA 02189

(Address)

North American Specialty Insurance Company

(Surety)

ATTEST:

By



(Witness as to Surety)

\_\_\_\_\_

141 Longwater Drive, Suite 203  
Norwell, MA 02061

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

Attorney-in-Fact Signature

Claire A. Cavanaugh

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

Attorney-in-Fact

\_\_\_\_\_  
Printed Title

141 Longwater Drive, Suite 203  
Norwell, MA 02061

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

If Contractor is partnership, all partners should execute Bond.

IMPORTANT - Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state of Massachusetts.

SWISS RE CORPORATE SOLUTIONS

NORTH AMERICAN SPECIALTY INSURANCE COMPANY  
WASHINGTON INTERNATIONAL INSURANCE COMPANY

GENERAL POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, THAT North American Specialty Insurance Company, a corporation duly organized and existing under laws of the State of New Hampshire, and having its principal office in the City of Kansas City, Missouri, and Washington International Insurance Company, a corporation organized and existing under the laws of the State of New Hampshire and having its principal office in the City of Kansas City, Missouri, each does hereby make, constitute and appoint:

JOHN C. DRISCOLL, TIMOTHY P. LYONS, CLAIRE A. CAVANAUGH, DENNIS DRISCOLL,

MARTIN L. DONOVAN and TYLER MARTIN

JOINTLY OR SEVERALLY

Its true and lawful Attorney(s)-in-Fact, to make, execute, seal and deliver, for and on its behalf and as its act and deed, bonds or other writings obligatory in the nature of a bond on behalf of each of said Companies, as surety, on contracts of suretyship as are or may be required or permitted by law, regulation, contract or otherwise, provided that no bond or undertaking or contract or suretyship executed under this authority shall exceed the amount of:


FIFTY MILLION (\$50,000,000.00) DOLLARS

This Power of Attorney is granted and is signed by facsimile under and by the authority of the following Resolutions adopted by the Boards of Directors of both North American Specialty Insurance Company and Washington International Insurance Company at meetings duly called and held on the 9<sup>th</sup> of May, 2012:

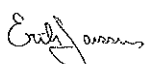
"RESOLVED, that any two of the Presidents, any Managing Director, any Senior Vice President, any Vice President, any Assistant Vice President, the Secretary or any Assistant Secretary be, and each or any of them hereby is authorized to execute a Power of Attorney qualifying the attorney named in the given Power of Attorney to execute on behalf of the Company bonds, undertakings and all contracts of surety, and that each or any of them hereby is authorized to attest to the execution of any such Power of Attorney and to attach therein the seal of the Company; and it is

FURTHER RESOLVED, that the signature of such officers and the seal of the Company may be affixed to any such Power of Attorney or to any certificate relating thereto by facsimile, and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be binding upon the Company when so affixed and in the future with regard to any bond, undertaking or contract of surety to which it is attached."



By   
Steven P. Anderson, Senior Vice President of Washington International Insurance Company  
& Senior Vice President of North American Specialty Insurance Company



By   
Erik Janssens, Senior Vice President of Washington International Insurance Company  
& Senior Vice President of North American Specialty Insurance Company

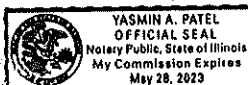
IN WITNESS WHEREOF, North American Specialty Insurance Company and Washington International Insurance Company have caused their official seals to be hereunto affixed, and these presents to be signed by their authorized officers this 2ND day of DECEMBER, 2021.

North American Specialty Insurance Company  
Washington International Insurance Company

State of Illinois  
County of Cook

ss:

On this 2ND day of DECEMBER, 2021, before me, a Notary Public personally appeared Steven P. Anderson, Senior Vice President of Washington International Insurance Company and Senior Vice President of North American Specialty Insurance Company and Erik Janssens, Senior Vice President of Washington International Insurance Company and Senior Vice President of North American Specialty Insurance Company, personally known to me, who being by me duly sworn, acknowledged that they signed the above Power of Attorney as officers of and acknowledged said instrument to be the voluntary act and deed of their respective companies.



  
Yasmin A. Patel, Notary

I, Jeffrey Goldberg, the duly elected Senior Vice President and Assistant Secretary of North American Specialty Insurance Company and Washington International Insurance Company, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney given by said North American Specialty Insurance Company and Washington International Insurance Company, which is still in full force and effect.

IN WITNESS WHEREOF, I have set my hand and affixed the seals of the Companies this 14<sup>th</sup> day of April, 2022.

  
Jeffrey Goldberg, Senior Vice President & Assistant Secretary of  
Washington International Insurance Company & North American Specialty Insurance Company





# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

04/14/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> DiVirgilio Insurance Agency, Inc. 932 Lynnfield Street  Lynnfield MA 01940	<b>CONTACT NAME:</b> Dan Richard <b>PHONE (A/C, No, Ext):</b> (781) 592-5220 <b>E-MAIL ADDRESS:</b> dan@divirgilioinsurance.com <b>FAX (A/C, No):</b> (781) 598-5957
<b>INSURED</b> Almar Llc PO Box 662  Medfield MA 02052	<b>INSURER(S) AFFORDING COVERAGE</b> <b>INSURER A:</b> Admiral Insurance <b>INSURER B:</b> Quincy Mutual Fire Ins Co <b>INSURER C:</b> <b>INSURER D:</b> <b>INSURER E:</b> <b>INSURER F:</b>

**COVERAGES****CERTIFICATE NUMBER:** Master22-23**REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> <b>COMMERCIAL GENERAL LIABILITY</b> <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:	Y	Y	CA000045003-01	04/19/2022	04/19/2023	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 300,000 MED EXP (Any one person) \$ 5,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000
B	<b>AUTOMOBILE LIABILITY</b> <input type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input checked="" type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY	Y	Y	AFV208095	12/16/2021	12/16/2022	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$
A	<input checked="" type="checkbox"/> <b>UMBRELLA LIAB</b> <input type="checkbox"/> EXCESS LIAB DED RETENTION \$	Y	Y	GX000005358-01	04/19/2022	04/19/2023	EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000
	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A				PER STATUTE OTH-ER E.L. EACH ACCIDENT \$ E.L. DISEASE - EA EMPLOYEE \$ E.L. DISEASE - POLICY LIMIT \$

**DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)**

Town of Natick and Russo Bar are additional insured in regards to general liability, auto liability, and umbrella liability when required by contract.  
Re: Roof Replacement and Repair Project Natick Town Hall  
RBA Project No. 2021040

**CERTIFICATE HOLDER****CANCELLATION**

Town of Natick 13 E Central Street  Natick MA 01760	<b>SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.</b>  <b>AUTHORIZED REPRESENTATIVE</b> 
--	---

© 1988-2015 ACORD CORPORATION. All rights reserved.

**Town of Natick, Massachusetts**

**IFB/MORSE INSTITUTE LIBRARY HVAC & CONTROLS UPGRADES**

**ADDENDUM NO. 2**

*TO:* Prospective Bidders

*PROJECT:* IFB: Morse Institute Library HVAC & Controls Upgrades

*FROM:* Bryan R. Le Blanc  
Procurement Officer/Town of Natick  
Natick Public Works  
75 West Street  
Natick, MA  
01760

*DATE:* April 4, 2022

---

Please also acknowledge via return correspondence upon receipt.

This addendum (Addendum No. 2), as well as previously issued Addendum No. 1, shall be acknowledged as indicated on the Bid Form, which is included with the IFB, and which shall be submitted to the Town.

This addendum consists of two (2) pages (including this one).

**The Town hereby releases the results of the Filed Sub-Bids for the following Sub-trades as follows:**

**Electrical: DCAMM Certification (Electrical). See attached Bid Tabulation Sheet.**

All other terms of the procurement remain unaltered.

END OF ADDENDUM NO. 2

# I/FB Opening Form

## Date &amp; Time: April 1, 2022, 9:00 A.M. EDST

**CPO Signature:**

**Witness Signature:**

**Town of Natick, Massachusetts**

**Form of Sub-Bid**

**FORM FOR SUB-BID**

To all General Bidders Except those Excluded:

A. The undersigned proposes to furnish all labor and materials required for completing, in accordance with the hereinafter described plans, specifications and addenda, all the work specified in Section No. 26 of the specifications and in any plans specified in such section, prepared by

B2Q Associates for Morse Institute Library HVAC and Controls Upgrade in

(name of architect or engineer)(project)

Natick, Massachusetts, for the contract

(city or town)

sum of Fifty-Two Thousand dollars (\$ 52,000 ).

For Alternate No. \_\_\_\_\_; Add \$ \_\_\_\_\_ Subtract \$ \_\_\_\_\_

*[Repeat preceding line for each alternate]*

B. This sub-bid includes addenda numbered 1

C. This sub-bid

- may be used by any general bidder except:

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

- may only be used by the following general bidders: ~~X~~

Enterprise Equipment Co., Inc.

[To exclude general bidders, insert "X" in one box only and fill in blank following that box. Do not answer C if no general bidders are excluded.]

D. The undersigned agrees that, if he is selected as a sub-bidder, he will, within 5 days, Saturdays, Sundays and legal holidays excluded, after presentation of a subcontract by the general bidder selected as the general contractor, execute with such general bidder a subcontract in accordance with the terms of this sub-bid, and contingent upon the execution of the general contract, and, if requested so to do in the general bid by the general bidder, who shall pay the premiums therefor, or if prequalification is required pursuant to section 44D3/4, furnish a performance and payment bond of a surety company qualified to do business under the laws of the commonwealth and satisfactory to the awarding authority, in the full sum of the subcontract price.

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

Name	Class of Work	Bid price
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

[Do not give bid price for any class or part thereof furnished by undersigned.]

F. The undersigned agrees that the above list of bids to the undersigned represents bona fide bids based on the hereinbefore described plans, specifications and addenda and that, if the undersigned is awarded the contract, they will be used for the work indicated at the amounts stated, if satisfactory to the awarding authority.

G. The undersigned further agrees to be bound to the general contractor by the terms of the hereinbefore described plans, specifications, including all general conditions stated therein, and addenda, and to assume toward him all the obligations and responsibilities that he, by those documents, assumes toward the owner.

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

1. Have been in business under present business

name 34  
years.

2. Ever failed to complete any work

awarded? No

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

	Building	Architect	General Contractor	Amount of Contract
(a)	<u>Cambridge Library</u>	<u>Colin Turner</u>	<u>HMFH</u>	<u>Enterprise Equipment</u>
(b)	<u></u>	<u></u>	<u></u>	<u>\$60,710.00</u>
(c)	<u></u>	<u></u>	<u></u>	<u></u>

4. Bank reference Coastal Heritage Bank Weymouth, MA

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

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

Date 4/1/2022

Annese Electrical Services, Inc.

(Name of Sub-bidder)

By

Melanie Legge - President

(Title and Name of Person Signing Bid)

280 Libbey Industrial Blvd

(Business Address)

Weymouth, MA 02189

(City and State)



*The Commonwealth of Massachusetts*  
*Executive Office for Administration and Finance*  
*Division of Capital Asset Management and Maintenance*  
*One Ashburton Place*  
*Boston, Massachusetts 02108*

*Tel: (857) 204-1305*

*Fax: (617) 727-8284*

*Email: Certification.DCMM@mass.gov*

CHARLES D. BAKER  
GOVERNOR

KARYN E. POLITO  
LIEUTENANT GOVERNOR

MICHAEL J. HEFFERNAN  
SECRETARY  
ADMINISTRATION & FINANCE  
CAROL W. GLADSTONE  
COMMISSIONER

**Filed Sub-Bid**  
**Certificate of Contractor Eligibility**  
**CONTRACTOR IDENTIFICATION NUMBER: 1279**

This Certificate Shall be Used for Filed Sub-Bids Only.

1. CERTIFICATION PERIOD: This Certificate is valid from October 8, 2021 to October 7, 2022\*

2. CONTRACTOR'S NAME: Annese Electrical Services, Inc.

3. CONTRACTOR'S ADDRESS: 280 Libbey Industrial Parkway  
Weymouth, MA 02189

4. WORK CATEGORIES: This Contractor is certified to file bids under Massachusetts General Laws Chapter 149, Chapter 149A and Chapter 25A in the following Categories of Work:

Electrical

5. EVALUATIONS:

Number of Projects Evaluated:

Average Project Evaluation Rating:

Number of Projects Below Passing:

13

94

0

6. SUPPLIER DIVERSITY OFFICE CERTIFICATION: WBE

Carol W. Gladstone, Commissioner

7/29/2021

Approval Date

**\* NOTICE TO CONTRACTORS:** If this contractor becomes uncertified for any reason this Certificate will immediately become void. Complete Applications for Renewal of Contractor Eligibility are due no later than three months PRIOR to the Expiration Date of the Certification Period shown above.

Reviewer's Initials: KT



**BOND**

Conforms with The American Institute of  
Architects, A.I.A. Document No. A-310

KNOW ALL BY THESE PRESENTS, That we, Annese Electrical Services, Inc.

280 Libbey Industrial Parkway, Weymouth, MA 02189

\_\_\_\_\_ as Principal, hereinafter called the Principal,  
and the North American Specialty Insurance Company

of 1450 American Lane, Suite 1100, Schaumburg, IL 60173, a corporation duly organized under  
the laws of the State of New Hampshire, as Surety, hereinafter called the Surety, are held and firmly bound unto

The Town of Natick  
13 East Central Street, Natick, MA 01760

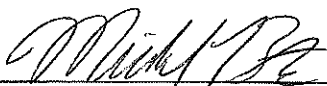
\_\_\_\_\_ as Obligee, hereinafter called the Obligee,  
in the sum of Five Percent of Bid Amount

Dollars (\$ 5% of Bid Amount ), for the payment of which sum well and truly to be made, the said Principal and the said  
Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for Morse Institute Library HVAC and Controls Upgrade; Section 26 - Electrical

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee  
in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with  
good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in  
the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the  
Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such  
larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this  
obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this 1st day of April, 2022.

  
Witness

Annese Electrical Services, Inc. (Seal)  
Principal  
Melaine Legge - President Title

  
Witness

North American Specialty Insurance Company  
By Claire A. Cavanaugh  
Claire A. Cavanaugh, Attorney-in-Fact

SWISS RE CORPORATE SOLUTIONS

NORTH AMERICAN SPECIALTY INSURANCE COMPANY  
WASHINGTON INTERNATIONAL INSURANCE COMPANY

GENERAL POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, THAT North American Specialty Insurance Company, a corporation duly organized and existing under laws of the State of New Hampshire, and having its principal office in the City of Kansas City, Missouri, and Washington International Insurance Company, a corporation organized and existing under the laws of the State of New Hampshire and having its principal office in the City of Kansas City, Missouri, each does hereby make, constitute and appoint:

JOHN C. DRISCOLL, TIMOTHY P. LYONS, CLAIRE A. CAVANAUGH, DENNIS DRISCOLL,

MARTIN L. DONOVAN and TYLER MARTIN

JOINTLY OR SEVERALLY

Its true and lawful Attorney(s)-in-Fact, to make, execute, seal and deliver, for and on its behalf and as its act and deed, bonds or other writings obligatory in the nature of a bond on behalf of each of said Companies, as surety, on contracts of suretyship as are or may be required or permitted by law, regulation, contract or otherwise, provided that no bond or undertaking or contract or suretyship executed under this authority shall exceed the amount of:

FIFTY MILLION (\$50,000,000.00) DOLLARS

This Power of Attorney is granted and is signed by facsimile under and by the authority of the following Resolutions adopted by the Boards of Directors of both North American Specialty Insurance Company and Washington International Insurance Company at meetings duly called and held on the 9<sup>th</sup> of May, 2012:

"RESOLVED, that any two of the Presidents, any Managing Director, any Senior Vice President, any Vice President, any Assistant Vice President, the Secretary or any Assistant Secretary be, and each or any of them hereby is authorized to execute a Power of Attorney qualifying the attorney named in the given Power of Attorney to execute on behalf of the Company bonds, undertakings and all contracts of surety, and that each or any of them hereby is authorized to attest to the execution of any such Power of Attorney and to attach therein the seal of the Company; and it is

FURTHER RESOLVED, that the signature of such officers and the seal of the Company may be affixed to any such Power of Attorney or to any certificate relating thereto by facsimile, and any such Power of Attorney or certificate bearing such facsimile signatures or facsimile seal shall be binding upon the Company when so affixed and in the future with regard to any bond, undertaking or contract of surety to which it is attached."



By

Steven P. Anderson, Senior Vice President of Washington International Insurance Company  
& Senior Vice President of North American Specialty Insurance Company

By

Erik Janssens, Senior Vice President of Washington International Insurance Company  
& Senior Vice President of North American Specialty Insurance Company



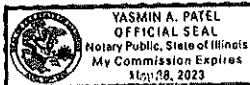
IN WITNESS WHEREOF, North American Specialty Insurance Company and Washington International Insurance Company have caused their official seals to be hereunto affixed, and these presents to be signed by their authorized officers this 2ND day of DECEMBER, 2021.

North American Specialty Insurance Company  
Washington International Insurance Company

State of Illinois  
County of Cook

ss:

On this 2ND day of DECEMBER, 2021, before me, a Notary Public personally appeared Steven P. Anderson, Senior Vice President of Washington International Insurance Company and Senior Vice President of North American Specialty Insurance Company and Erik Janssens, Senior Vice President of Washington International Insurance Company and Senior Vice President of North American Specialty Insurance Company, personally known to me, who being by me duly sworn, acknowledged that they signed the above Power of Attorney as officers of and acknowledged said instrument to be the voluntary act and deed of their respective companies.



Yasmin A. Patel, Notary

I, Jeffrey Goldberg, the duly elected Senior Vice President and Assistant Secretary of North American Specialty Insurance Company and Washington International Insurance Company, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney given by said North American Specialty Insurance Company and Washington International Insurance Company, which is still in full force and effect.

IN WITNESS WHEREOF, I have set my hand and affixed the seals of the Companies this 15th day of April, 2022

Jeffrey Goldberg, Senior Vice President & Assistant Secretary of  
Washington International Insurance Company & North American Specialty Insurance Company

**Town of Natick, Massachusetts**

**IFB/MORSE INSTITUTE LIBRARY HVAC & CONTROLS UPGRADES**

**ADDENDUM NO. 1**

*TO:* Prospective Bidders

*PROJECT:* IFB: Morse Institute Library HVAC & Controls Upgrades

*FROM:* Bryan R. Le Blanc  
Procurement Officer/Town of Natick  
Natick Public Works  
75 West Street  
Natick, MA  
01760

---

*DATE:* March 22, 2022

Please also acknowledge via return correspondence upon receipt.

This addendum (Addendum No. 1) shall be acknowledged as indicated on the Bid Form, which is included with the IFB, and which shall be submitted to the Town.

This addendum consists of two (2) pages (including this one).

**The Town hereby amends the Project Manual as follows:**

- 1. Sheet MH401 and the associated specification sections refer to providing a new variable frequency drive (VFD) for AHU-1's exhaust fan; however, this VFD was recently installed by the Town as part of separate project. Therefore, the scope of work related to AHU-1's exhaust fan for the current project is revised as follows:**
  - a. Reconnect or rewire existing control points on the existing VFD to the new AHU-1 controller.**
  - b. Wire new BACnet MS/TP connection from new controller to existing VFD and discover, via the new controller, BACnet read only monitoring points from the VFD per the design points list.**
  - c. Verify that the existing exhaust fan inlet guide vanes have been locked fully open and make adjustments as needed if necessary.**

2. **Sheet MH402 and the associated specification sections refer to providing a new variable frequency drive (VFD) for AHU-2's exhaust fan; however, this VFD was recently installed by the Town as part of separate project. Therefore, the scope of work related to AHU-2's exhaust fan for the current project is revised as follows:**
  - a. **Reconnect or rewire existing control points on the existing VFD to the new AHU-2 controller.**
  - b. **Wire new BACnet MS/TP connection from new controller to existing VFD and discover, via the new controller, BACnet read only monitoring points from the VFD per the design points list.**
  - c. **Verify that the existing exhaust fan inlet guide vanes have been locked fully open and make adjustments as needed if necessary.**

All other terms of the procurement remain unaltered.

END OF ADDENDUM NO. 1

# I/FB Opening Form

**Date & Time:** April 1, 2022, 9:00 A.M. EDST

**Witness Signature:**

**TOWN OF NATICK, MASSACHUSETTS**

**MORSE INSTITUTE LIBRARY**

**HVAC AND CONTROLS UPGRADE**

**MARCH 2022**

**PROJECT MANUAL**

TOWN OF NATICK, MASSACHUSETTS  
SELECT BOARD

INVITATION FOR BIDS

Pursuant to the provisions of the General Laws of the Commonwealth of Massachusetts, the Town of Natick, the Awarding Authority, (hereinafter referred to as "Owner"), by the Natick Select Board of the Town of Natick, Massachusetts, invites sealed Bids for the General Contract from responsible and eligible General and Filed Sub-Bidders for MORSE INSTITUTE LIBRARY HVAC AND CONTROLS UPGRADE. DCAMM Certification is required for General Bidders for the project in the following category: HVAC.

Sealed Bids shall be received for the General Contract until April 14, 2022, at 9:00 A.M. local time, at the Natick DPW Building, 75 West Street, Natick, MA 01760, at which time and place they will be opened in the presence of a witness, read and registered. Viewing of the general bid opening may be had at the following ZOOM site:

Join Zoom Meeting

<https://us06web.zoom.us/j/84552357743?pwd=ZzBYOHMzbG1tTnA3ZU01VmRVWmxwUT09>

Filed sub-bids in the following categories will be accepted until April 1, 2022, at 9:00 A.M. local time, at the Natick DPW Building, 75 West Street, Natick, MA 01760, at which time and place they will be opened in the presence of a witness, read and registered:

Section 26 - Electrical. DCAMM Certification is required for the project in the following category: Electrical.

Viewing of the sub-bid opening may be had at the following ZOOM site:

Join Zoom Meeting

<https://us06web.zoom.us/j/87849324926?pwd=WEIHbnE0S2ZEZUN3NzIQVWdzZWsyUT09> Meeting ID: 878 4932 4926 Passcode: 272269.

No faxed or email, or conditional bids shall be accepted. If the Procurement Office within the DPW Building is closed due to weather or other emergency on either date, the deadline for receipt of bids or filed sub-bids shall be extended until 9:00 A.M. local time on the next business day upon which the Procurement Office is open for business.

Each and every General Bid shall be submitted on the Bid Form furnished with the Bidding Documents and shall be addressed to the Select Board. Each and every Bid shall be sealed in an envelope which is clearly marked in the lower left hand corner "BID FOR MORSE INSTITUTE LIBRARY HVAC AND CONTROLS UPGRADE."

Each and every Filed Sub-Bid shall be submitted on the Sub-Bid Form furnished with the Bidding Documents and shall be addressed to the Select Board. Each and every Sub-Bid shall be sealed in an envelope which is clearly marked in the lower left hand corner "FILED SUB-BID FOR MORSE INSTITUTE LIBRARY HVAC AND CONTROLS UPGRADE: ELECTRICAL"

This Invitation for Bids contemplates the following Work to be performed:

Replace the existing air-cooled chiller on the roof with a new air-to-water heat pump. Install new plate and frame heat exchanger in the basement mechanical room so that the new heat pump can interface with the existing hot water loop. Replace the existing building automation system, including controllers and network wiring, with a new system. Replace failed control end devices, such as valve and damper actuators. Refer to Section 01 1000 in the technical specifications for additional summary information.

The Contractor shall supply all labor, materials and equipment necessary to complete the work shown on the Contract Drawings and hereinafter contained in the Specifications.

The Invitation for Bids ("IFB") may be obtained from the Procurement Office, Natick Public Works, 75 West Street, Natick, MA 01760, between 8:00 A.M. and 4:00 P.M. local time, Monday through Thursday, and between 8:00 A.M. and 12:00 P.M. (noon) local time, Friday, by emailing [bleblanc@natickma.org](mailto:bleblanc@natickma.org), beginning on March 16, 2022.

A voluntary, non-mandatory Pre-Bid Conference, Site Walk-Through will be held at the Morse Institute Library (the Project Site), 14 East Central Street, Natick, MA 01760, at 10:00 A.M. local time, on Monday, March 21, 2022.

Complete instructions for filing Bids are included in the Instructions to Bidders. Every Bid shall be submitted in full accordance with those Instructions to Bidders. Bids shall be valid only when accompanied by all of the following:

- 1) a fully completed and properly executed "Bid Form for General Bid", in the case of a Bid for the General Contract, or "Bid Form for Filed Sub-Bid -Electrical", in the case of a Bid for a Filed Sub-Contract;
- 2) Bid security in the amount of five percent (5%) of the amount bid, in a form as described in the Instructions to Bidders and made payable to the "Town of Natick";
- 3) a copy of a "Certificate of Eligibility" issued by the Division of Capital Asset Management and Maintenance (DCAMM) showing that the Bidder has the classification and capacity rating to perform the work required; and
- 4) an update statement in such form as DCAMM prescribes.

Attention of General and Filed Sub-Bidders is called to the requirements for minimum prevailing wage rates to be paid under this Contract and the reporting associated thereto. Minimum prevailing wage rates are required as per M.G.L, c, 149, §§ 26 to 27D, inclusive. Minimum prevailing wage rates determined by the Commissioner are as contained in the Supplementary Conditions section of the Contract Documents.

The successful General Bidder shall furnish a Performance Bond and a Payment Bond, each in the amount of one hundred percent (100%) of Contract the amount with a surety company that is acceptable to Owner. The successful Sub-Bidders will be required to furnish Performance and Payment Bonds to the General Contractor, each in the amount of 100% of the Subcontract Amount.

Contract payment will be by the unit price and lump sum price method as indicated on the Bid Form. No Bidder may withdraw his Bid for a period of thirty (30) days after the date designated above for the opening. The Owner reserves the right to reject any or all Bids or to accept any Bid deemed by it to be in the best interest of the Town of Natick, and, to the extent permitted by law, to limit the extent of the work



to keep within the limits of available funds. The award of any Contract pursuant to this Invitation for Bids is subject to appropriation by Natick Town Meeting.

Attention is directed to the Non-Discrimination in Employment and Affirmative Action Program requirements of this Contract. The requirements of these programs are explained in the Instructions to Bidders and in Part I of the Supplementary Conditions of the Contract.

TOWN OF NATICK  
Select Board  
Karen Adelman-Foster, Chair  
Richard P. Jennett, Jr. Vice Chair  
Michael J. Hickey, Jr., Clerk  
Paul R. Joseph  
Susan G. Salamoff

Town Administrator  
James Errickson  
Director of Facilities  
William Spratt.

NATICK, MASSACHUSETTS  
SELECT BOARD

INSTRUCTIONS TO BIDDERS

**1. RECEIPT OF BIDS AND COPIES OF BID DOCUMENTS:**

1.1 Pursuant to the provisions of the General Laws of the Commonwealth of Massachusetts, the Town of Natick, the Awarding Authority, (hereinafter referred to as "Owner"), by the Natick Select Board of the Town of Natick, Massachusetts, invites sealed Bids for the General Contract from responsible and eligible General Bidders for MORSE INSTITUTE LIBRARY HVAC AND CONTROLS UPGRADE. DCAMM Certification is required for General Bidders for the project in the following category: HVAC.

Sealed Bids shall be received for the General Contract until April 14, 2022, at 9:00 A.M. local time, at the Natick DPW Building, 75 West Street, Natick, MA 01760, at which time and place they will be opened in the presence of a witness, read and registered. Viewing of the bid opening may be had at the following ZOOM site:

Join Zoom Meeting

<https://us06web.zoom.us/j/84552357743?pwd=ZzBYOHMzbG1tTnA3ZU01VmRVWmxwUT09>

Filed sub-bids in the following categories will be accepted until April 1, 2022, at 9:00 A.M. local time, at the Natick DPW Building, 75 West Street, Natick, MA 01760, at which time and place they will be opened in the presence of a witness, read and registered:

Section 26 - Electrical. DCAMM Certification is required for the project in the following category: Electrical.

Viewing of the sub-bid opening may be had at the following ZOOM site:

Join Zoom Meeting

<https://us06web.zoom.us/j/87849324926?pwd=WEIHbnE0S2ZlQVWdzZWsyUT09> Meeting ID: 878 4932 4926 Passcode: 272269.

1.2 Each General Bid and Filed Sub-Bid shall be submitted in an opaque sealed envelope, addressed to the Select Board, and shall be delivered to the Procurement Office, DPW Building, 75 West Street, Natick, MA 01760. If forwarded by mail, the sealed envelope containing the General or Filed Sub-Bid shall be enclosed in another envelope addressed to the Procurement Office, DPW Building, 75 West Street, Natick, MA 01760. The Bid Security shall be attached to the signature page of the Bid. Each General and Filed Sub-Bid shall be marked as noted in the Invitation for Bids.

1.3 Submission of a Bid (General or Filed-Sub-Bid) shall be conclusive evidence that the Bidder has examined the Premises and the Bid Documents and is familiar with all the conditions of the proposed Contract. Upon finding any omissions or discrepancy in this Invitation for Bids, the Bidder shall notify the Procurement Officer immediately so that any necessary addenda may be issued. Failure of the Bidder to investigate completely the Premises and/or to be thoroughly familiar with the Bid Documents shall in no way relieve any such Bidder from any obligation with respect to the Bid.

1.4 DELETED.

1.5 Complete sets of the Bid Documents may be obtained from may be obtained from the Procurement Office, Natick Public Works, 75 West Street, Natick, MA 01760, between 8:00 A.M. and 4:00 P.M. local time, Monday through Thursday, and between 8:00 A.M. and 12:00 P.M. (noon) local time, Friday, by emailing bleblanc@natickma.org, beginning on March 16, 2022.

1.6 Complete sets of Bid Documents shall be used in preparing Bids; neither OWNER nor ENGINEER assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bid Documents.

1.7 OWNER and ENGINEER, in making copies of Bid Documents available on the above terms, do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

## **2. SCOPE OF WORK/LOCATION OF WORK:**

2.1 The Work for this project consists of the following scope items:

---

Replace the existing air-cooled chiller on the roof with a new air-to-water heat pump. Install new plate and frame heat exchanger in the basement mechanical room so that the new heat pump can interface with the existing hot water loop. Replace the existing building automation system, including controllers and network wiring, with a new system. Replace failed control end devices, such as valve and damper actuators. Refer to Section 01 1000 in the technical specifications for additional summary information.

2.2 The Contractor shall supply all labor, materials and equipment necessary to complete the work shown on the Contract Drawings and hereinafter contained in the Specifications.

2.3 To the extent permitted by law, the OWNER reserves the right to eliminate certain sections of the Work as may be determined by it as a basis of award, to keep within the limits of available funds, or to add sections of the work previously eliminated.

## **3. SCHEDULING:**

3.1 The Contract time will start on the date indicated on the Notice to Proceed and the Successful Bidder shall proceed on a continuous basis following Contract start date until all work is complete, unless directed differently by the OWNER.

#### **4. FORM OF BID:**

4.1 All General Bids and Filed Sub-Bids shall be made on the blank forms included as labeled in this Project Manual; and, except as noted therein, each Bid, General or Sub-Bid, shall state a price for each lump sum item. The total of the item prices when correctly calculated, shall be used in the comparison of Bids received. In the event there is a discrepancy in the Bid between the prices written in words and figures, the prices written in words shall govern.

4.2 The form of Bid shall not be changed, and it shall be signed by the Bidder with his business address and place of residence.

4.3 A conditional or qualified Bid shall not be accepted.

#### **5. BID SECURITY:**

5.1 Each General and Filed Sub-Bid Bid shall be accompanied by a Bid Bond written by a surety company qualified to do business in Massachusetts, or by Cash, or a Certified Check, or Treasurer's or Cashier's Check issued by a responsible bank or trust company, as Bid Security, in the amount of five (5%) percent of the total Bid, made payable to the Town of Natick.

5.2 The Bid Security of Bidders, except those of the three lowest responsible and eligible Bidders, shall be returned within five (5) days, Saturdays, Sundays and holidays excluded, after opening of Bids. The Bid Security of said three lowest Bidders shall be returned upon execution of the Contract.

5.3 In case the Successful Bidder shall fail or neglect to execute the Contract and furnish the satisfactory bonds within the time specified, the OWNER may determine that the Bidder has abandoned the Contract and thereupon the Bid Security accompanying the Bid shall be forfeited to the OWNER as liquidated damages for such failure or neglect, and to indemnify said OWNER for any loss which may be sustained by failure of the Bidder to execute the Contract and furnish the bonds as aforesaid, provided that, in case of death, disability, or other unforeseen circumstances affecting the Bidder, such Bid Security may be returned to him. After execution of the Contract and acceptance of the bonds by the OWNER, the Bid Security accompanying the Bid of the Successful Bidder will be returned.

#### **6. WITHDRAWAL OF BIDS:**

6.1 Once General or Filed Sub-Bid is submitted and received by the OWNER for consideration and comparison with other Bids similarly submitted, the Bidder agrees that he may not and shall not withdraw said Bid within a period of thirty (30) days (Saturdays, Sundays and legal holidays excluded).

6.2 Upon proper request and identification, Bids may be withdrawn only as follows:

1. At any time prior to the designated time for the opening of Bids.
2. Provided the Bid has not theretofore been accepted by the OWNER, at any time subsequent to the expiration of the period during which the Bidder has agreed not to withdraw his Bid.

6.3 Unless a Bid is withdrawn as provided above, each Bidder shall agree that it shall be deemed open for acceptance until the Contract has been executed by both parties thereto, or until the OWNER notifies a Bidder in writing that his Bid is rejected, or that the OWNER does not intend to accept it, or returns his Bid deposit. Notice of acceptance of a Bid shall not constitute rejection of any other Bid.

## **7. EXPERIENCE OF BIDDER:**

DELETED.

## **8. QUESTIONS REGARDING DRAWINGS AND DOCUMENTS:**

8.1 In general, no answer will be given to prospective Bidders in reply to an oral question if the question involves an interpretation of the intent or meaning of the Drawings or other Contract Documents, or the equality or use of products or methods other than those designated or described on the Drawings or in the Specifications. Any information given to Bidders other than by means of the Drawings and other Contract Documents, including Addenda, as described below, is given informally, for information and the convenience of the Bidder only and is not guaranteed. Each Bidder agrees that such information shall not be used as the basis of, nor shall the giving of any such information entitle the Bidder to assert, any claim or demand against the OWNER or the ENGINEER or account thereof.

8.2 To receive consideration, such questions shall be submitted in writing to the OWNER, with a copy to the ENGINEER, by 4:00 P.M. local time on March 23, 2022. If the question involves the equality of use of products or methods, it shall be accompanied by Drawings, Specifications, or other data in sufficient detail to enable the ENGINEER to determine the equality or suitability of the product or method. In general, the ENGINEER will neither approve nor disapprove particular products prior to the opening of Bids. Such products will be considered when offered by the CONTRACTOR for incorporation into the work.

8.3 The OWNER will set forth as Addenda, which shall become part of the Contract Documents, such questions received as above provided as in his sole judgment are appropriate or necessary and his decision regarding each. At least two (2) days prior to the receipt of Bids, he will send a copy of these Addenda to those prospective Bidders known to have taken out sets of the Drawings and other Contract Documents.

8.4 Addenda notification will be distributed by email to all parties recorded as having received bidding documents and are on the planholder list. Each Bidder shall be responsible for determining that it has received all Addenda, which have been issued.

8.5 Each Bidder agrees to use the products and methods designated or described in the Specifications as amended by the Addenda.

8.6 It shall each Bidder's responsibility to confirm the existence of Addenda prior to submittal of Bid.

## **9. INFORMATION NOT GUARANTEED:**

9.1 It is agreed and understood that no Bidder or CONTRACTOR shall use or be entitled to use, any of the information made available to him or obtained in any examination made by him in any manner as a basis of or ground for any claim or demand against the OWNER or the ENGINEER, arising from or by reason of any variance which may exist between the information made available and the actual subsurface or other conditions, natural phenomena, existing pipes, or other structures actually encountered during the construction work, except as may otherwise be expressly provided for in the Contract Documents.

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

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

## **10. BIDDER RESPONSIBILITY:**

10.1 If a Bidder, after examining the site and Contract Documents, determines the presence of a discrepancy between the Contract Drawings and Contract Specifications, it is each Bidder's responsibility to notify the ENGINEER prior to the Bid opening. ENGINEER shall review and issue an Addendum if necessary. If a Bidder fails to notify ENGINEER of such discrepancy and is awarded the Contract, the CONTRACTOR shall not be entitled to a Contract price adjustment if OWNER or ENGINEER determines CONTRACTOR was aware of the discrepancy during the Bid period.

10.2 Each Bidder is responsible for inspecting the site and for reading and being thoroughly familiar with the Contract Documents. The failure or omission of any Bidder to do any of the foregoing shall in no way relieve any Bidder from any obligation in respect to his Bid.

10.3 The Contract Documents contain the provisions required for the construction of the project. Information obtained from an officer, agent, or employee of the OWNER or any other person shall not affect the risks or obligations assumed by each Bidder or relieve him from fulfilling any of the conditions of the Contract.

10.4 It is the CONTRACTOR'S responsibility to visit each known site in order to identify any limitations in access to each site. The OWNER will not be responsible for any claims for additional cost during construction that are related to access to each known site.

10.5 Each Bidder assumes all responsibility for the Bid arriving on time and at the designated location. The time of receipt of a Bid shall determine the acceptability of mailed Bids, regardless of postmark. It shall be the sole responsibility of the Bidder to assure that a Bid has arrived before the time for opening of Bids as specified in the Invitation for Bids and Instructions to Bidders. Bids received at the specified location and after the time specified will not be accepted.

## **11. COMPARISON OF BIDS:**

11.1 All Bids will be compared on the basis of the estimate of quantities of work to be done, per unit price and/or lump sum items, as tabulated in the Bid. Estimated quantities are approximate only, being given for the uniform comparison of Bids. The OWNER does not expressly agree, or by implication agree, that the actual amount of work will correspond therewith, and the right is expressly reserved, to increase or diminish the amount of any class or portion of the work, or to omit construction in certain locations, as may be deemed necessary by the OWNER to keep within the limits of available funds, as permitted by applicable law.

## **12. RIGHTS RESERVED BY OWNER:**

12.1 The OWNER reserves the right to reject any or all Bids, or to waive any informalities or minor defects, if deemed by it to be in the best interest of the Town of Natick.

12.2 The OWNER may make such investigations as it deems necessary to determine the ability of each Bidder to perform the work, and the Bidder shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject any Bid if the evidence submitted by, or investigation of such Bidder fails to satisfy the OWNER that such Bidder is properly qualified to carry out the obligations of the Agreement and to complete the work contemplated therein.

12.3 The low Bidder shall supply the names and addresses of suppliers and subcontractors when requested to do so by the OWNER.

12.4 The Town may terminate the Contract upon written notice to the CONTRACTOR if a source of money to fund the Contract is not available during any year of the Contract term. In the alternative, the parties may agree in writing to amend the Contract to provide for a Contract price which represents the reduced appropriation for a contract year.



### **13. AWARD OF CONTRACT:**

13.1 Award of the General Contract will be made to the lowest responsible and eligible Bidder. The term "lowest responsible and eligible bidder" shall mean the bidder: (1) whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work; (2) who shall certify, that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (3) who shall certify 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 ten (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; (4) who, where the provisions of section 8B of chapter 29 apply, shall have been determined to be qualified thereunder, and (5) who obtains within ten (10) days of the notification of contract award the security by bond required under section 29 of chapter 149; provided that for the purposes of this section the term "security by bond" shall mean the bond of a surety company qualified to do business under the laws of the commonwealth and satisfactory to the awarding authority; provided further that if there is more than one (1) surety company, the surety companies shall be jointly and severally liable. The party to whom the CONTRACT is awarded will be required to execute the Contract, obtain Payment and Performance Bonds, Insurance Certificates and Certification Form, and a Certificate of Vote of authorization of signature on Documents, within ten (10) calendar days from receipt of Notice of Award. The Notice of Award shall be accompanied by the necessary Agreement and Bid Forms. In case of failure of a Bidder to execute the Contract and provide the above mentioned Bonds, Certificates, etc., the OWNER may at its option, consider the Bidder in default, in which case the Bid security accompanying the Bid shall become property of the OWNER.

### **14. PAYMENT AND PERFORMANCE BONDS:**

14.1 A Performance Bond and a Payment Bond, each in the amount of one hundred percent (100%) of the Contract price, with a corporate surety approved by the OWNER will be required for the faithful performance of the Contract.

14.2 Attorneys-in-fact who sign Bid Bonds or Payment Bond and Performance Bond, shall file with each Bond, a certified and effective dated copy of their Power of Attorney.

### **15. CONTRACT INSURANCE:**

15.1 The Successful Bidder shall provide Commercial General Liability Insurance, Automotive Liability Insurance, Worker's Compensation and Employer's Liability Insurance, including other coverages such as indicated in the General Conditions and as amended in the Supplementary Conditions.

15.2 Each certificate and policy of insurance required by the Contract shall contain a cancellation provision as indicated below with no variations.

“Should any of the above described policies be cancelled or materially amended before the expiration date thereof, the issuing insurer will mail within thirty (30) days prior written notice to the certificate holder named to the left”.

15.3 The Successful Bidder shall provide an endorsement or endorsements which indicate that the Town of Natick is named as an additional insured on the required policies of Commercial General Liability Insurance, Automobile Liability Insurance, and Excess Liability Insurance, Umbrella Form and maintain throughout the term of the Contract and any extension or renewal thereof.

15.4 The Successful Bidder shall provide separate Owner’s Protective Liability Insurance, with the OWNER and ENGINEER only as insured. A rider clause to the Contractor’s Liability Insurance shall not be acceptable.

**16. INDEMNIFICATION:**

16.1 The Successful Bidder shall assume the indemnification responsibilities set forth in the Contract which is included in the Bid Documents and is incorporated herein by reference.

**17. CONTRACT SIGNING AND NOTICE TO PROCEED:**

17.1 The Notice to Proceed shall be issued within thirty (30) days of the effective date of the Contract by the OWNER. Should there be reasons why the Notice to Proceed cannot be issued within such period, the time may be extended by mutual agreement between the OWNER and the Successful Bidder. If the Notice to Proceed has not been issued within the thirty (30) day period, or within the period mutually agreed upon, the Successful Bidder may terminate the Contract without further liability on the part of either party.

**18. TIME OF STARTING:**

18.1 The work shall start on the date to be placed on the Notice to Proceed, and proceed on a continuous basis until complete, except for winter shutdown or unless directed differently by OWNER.

18.3 If the Contractor chooses to complete the work over two construction seasons, the West Central water main must be completed in the first construction season.

**19. TIME OF COMPLETION AND LIQUIDATED DAMAGES:**

19.1 The date for commencing Contract time will be the day to be indicated on the Notice to Proceed.

19.2 It is the intention of this Contract to achieve final completion of the work, in operating condition, as soon as practicable, but not later April 1, 2023.

19.3 The Successful Bidder agrees to pay as liquidated damages, the sum of four hundred (\$400.00) per day for each calendar day beyond April 1, 2023 (substantial completion) for which work is not substantially completed and eight hundred (\$800.00) per day for each calendar day beyond May 1, 2023, for which all work included in the Contract Documents is not substantially completed and agrees that this sum is not contingent upon any financial losses incurred by the OWNER due to the delay and is not to be considered as a penalty, but an agreed upon sum to be deducted from CONTRACTOR'S payment.

19.4 It is the intention of the Contract to require the CONTRACTOR to commence work and to continue working on a continuous basis until complete.

## **20. LAWS AND REGULATIONS:**

20.1 Each Bidder's attention is directed to the fact that all applicable Local, State and Federal laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and they will be deemed to be included in the Contract, the same as though herein written in full.

20.2 Notwithstanding the foregoing, the Contract is subject to the applicable provisions of, but not limited to, M.G.L.c. 149, secs. 44A, which is incorporated herein by reference.

20.3 Notwithstanding the foregoing, the Contract is also subject to the dig-safe requirements of M.G.L. c. 82, § 40 and the applicable portions of 527 CMR 13, relating to Blasting.

## **21. CONTRACT DRAWINGS:**

21.1 The construction project is as shown on the Contract Drawings.

## **22. UNBALANCED BIDS:**

22.1 A Bidder shall not submit unbalanced prices for any of the Bid items on the Bid. All prices shall be reasonable for the Work entailed. The OWNER reserves the right to reject any Bid which contains unbalanced prices, considering such a Bid as non-responsive to the Instructions to Bidders, and to consider same as reason for rejecting a Bid.

22.2 Certain Bid items may have set minimum and/or maximum prices to provide uniformity in the comparison of Bids established by OWNER and indicated on the Bid form. Bids submitted not in compliance with these established amounts, may be rejected for non-compliance with the Instructions to Bidders.

## **23. SAFETY AND HEALTH REGULATIONS:**

23.1 This project is subject to the Safety and Health Regulations of the U.S. Department of Labor set forth in Title 29 CFR Part 1926 and to all subsequent amendments, and to the Massachusetts Department of Labor and Workforce Development, Division of Industrial Safety "Rules and Regulations for the Prevention of Accidents in Construction Operations" (Chapter 454 CMR 10.00 et seq.). CONTRACTORS shall be familiar with the requirements of these regulations.

23.2 Each Bidder shall certify that it 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 shall have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least ten (10) hours in duration 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 shall comply fully with all laws and regulations applicable to awards made subject to section 44A.

#### **24. SALES TAX EXEMPTION:**

24.1 The OWNER will provide a Massachusetts Sales Tax Blanket Exemption Certificate No. applicable to all materials to be furnished under this Contract.

24.2 Except as noted above, the Successful Bidder and Subcontractors shall pay all taxes levied by law on materials, labor or services furnished by them. Payments of such levies and sales taxes will be held to be included in Contract amounts.

#### **25. PERMITS AND LICENSES:**

25.1 All permits for work within the project limits shall be obtained. Town will waive the permit fees.

#### **26. MINIMUM PREVAILING WAGE RATES:**

26.1 Minimum Prevailing Wage Rates (Heavy Construction) as determined by the Commissioner of the Department of Labor and Workforce Development under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27D, as amended, (the Prevailing Wage Act) apply to this project. It is the responsibility of the CONTRACTOR, before Bid opening, to request if necessary, any additional information on Minimum Prevailing Wage Rates for those tradespeople who are not covered by the following schedule of prevailing wage rates, but who may be employed for the proposed work under this Contract.

26.2 Minimum prevailing wage rates to be used for this Contract are contained in Part I of the Supplementary Conditions.

26.3 Regulations for the Prevailing Wage Act state that payment of compensation to workmen for work performed on public work on a lump sum basis, piece work system, or a price certain for the completion of a certain amount of work, or the production of a certain result shall be deemed a violation of the Act regardless of the average hourly earning resulting therefrom. This shall result in the disqualification of any Contractor employing these methods.

26.4 The CONTRACTOR shall submit weekly payrolls to the OWNER during the progress of this Contract for each day work is performed.

## **27. WARRANTIES:**

27.1 The Successful Bidder, if selected as the CONTRACTOR, shall furnish all supplies, equipment, and labor necessary for the performance of the services and/or delivery of equipment required by this Contract and warrants that it has in its employ, and throughout the term of this Contract or any extension or renewal thereof, shall continue to have a sufficient number of persons experienced in performing services required by this Contract, such that the CONTRACTOR'S obligations under this Contract shall be carried out in a prompt, safe and professional manner.

27.2 The Successful Bidder, if selected as the CONTRACTOR, shall further warrant that it shall perform services under this Contract with the highest degree of professionalism and care. Any equipment delivered, unless otherwise agreed by the parties, shall be of generally merchantable quality and shall be fit for the purpose sought by the OWNER.

27.3 The Successful Bidder, if selected as the CONTRACTOR, shall warrant to the OWNER that the work to be performed under the Contract shall be free from defects in material and workmanship for twelve (12) months after acceptance of the work by the OWNER. If any defects in material or workmanship regarding the work occur within said twelve (12) month period, the CONTRACTOR shall have the option of repairing or replacing the defective component(s) involved in the work. If part of the work is accepted in accordance with that subsection of the Contract titled Partial Acceptance, the warranty for that part of the work shall be for a period of one (1) year from the date fixed for such acceptance.

## **28. NONDISCRIMINATION IN EMPLOYMENT:**

28.1 Contracts for work under this Bid shall obligate the CONTRACTOR and subcontractors not to discriminate in employment practices.

28.2 Contracts for work under this project shall obligate the CONTRACTOR and Subcontractors not to discriminate in employment practices, and shall maintain not less than five percent (5%) ratio of minority employees man hours to total man hours.

28.3 In connection with the performance of work under this Contract, the CONTRACTOR shall not discriminate against any employees or applicant for employment because of race, color, religious creed, national origin, age, sex, gender identity, sexual orientation (which shall not include persons whose sexual orientation involves minor children as the sex object), genetic information, ancestry, children, marital status, veteran status or membership in the armed services, the receiving of public assistance, and handicap. The aforesaid provision shall include, but not be limited to the following: advertising; recruitment; hiring; rates of pay or other forms of compensation; terms, conditions or privileges of employment; employment upgrading; transfer; demotion; layoff; and termination. The CONTRACTOR shall post hereafter in conspicuous places, available for employees and applicants for employment notices to be provided by the applicable agent of the Commonwealth of Massachusetts setting forth the provisions of the Fair Employment Practices Law of the Commonwealth. The CONTRACTOR shall also undertake in good faith, affirmative action measures designed to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, age, sex, gender identity, sexual orientation (which shall not include persons whose sexual orientation involves minor children as the sex object), genetic information, ancestry, children, marital status, veteran status or membership in the armed services, the receiving of public assistance, and handicap and to eliminate and remedy any effects of such discrimination in the past.

28.4 The Successful Bidder shall submit a Contractor's Certification Form and a Subcontractor's Certification Form concerning their employment practices and policies in order to maintain their eligibility to receive the Award of the Contract. These forms shall be submitted with the signed Contract Documents.

## **29. SUBSTITUTE OR "OR-EQUAL" ITEMS**

29.1 The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or equal" item of material or equipment may be furnished or used by CONTRACTOR if acceptable to ENGINEER, application for such acceptance will not be considered by ENGINEER until after the Effective Date of the Agreement; all consideration shall comply with M.G.L. c. 30, §39M(b).

## **30. PRICE ADJUSTMENTS FOR SPECIFIC MATERIALS – NOT APPLICABLE**

30.1 DELETED.

END OF SECTION

BID FORM FOR GENERAL BID

To the Awarding Authority : Town of Natick, Massachusetts  
Select Board  
Natick Town Hall  
13 East Central Street  
Natick, MA 01760

A. The undersigned Bidder proposes to furnish all labor and materials required for Morse Institute Library HVAC and Controls Upgrade in the Town of Natick, Massachusetts, in accordance with the accompanying plans and specifications for the Contract price specified below, subject to additions and deductions according to the terms of the specifications.

B. This bid includes addenda numbered \_\_\_\_\_.

C. The proposed lump sum contract price is \_\_\_\_\_  
dollars (\$\_\_\_\_\_).

For alternate No.	1	Test, adjust, and balance airflows for AHU-3, 4, and 5	Add: \$		Subtract	\$	
For alternate No.	2	Test, adjust, and balance airflows for (40) fan-powered VAV boxes	Add: \$	_____	Subtract	\$	_____
For alternate No.	3	Furnish and install (32) new primary air dampers for fan-powered VAV boxes and demolish existing dampers. Note that (8) such dampers are included in the base scope	Add: \$	_____	Subtract	\$	_____
For alternate No.	4	Furnish and install (40) new hot water reheat coil valves and actuators for fan-powered VAV boxes and demolish existing valves and actuators.	Add: \$	_____	Subtract	\$	_____
For alternate No.	5	Furnish and install (40) new discharge air temperature probe sensors for fan-powered VAV boxes.	Add: \$	_____	Subtract	\$	_____

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

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

Item 2. Sub-bids as follows:

<u>Sub-Trade</u>	<u>Name of Sub-Bidder</u>	<u>Amount of Sub-Bid</u>	<u>Bonds Required (Indicated by "Yes" or "No")</u>
<u>Electrical</u>	_____	\$ _____	_____

Sub-bids as follows:

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

The undersigned agrees that if he is selected as general contractor, he will promptly confer with the 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 he is selected as general contractor, he will within five (5) days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the awarding authority, execute a contract in accordance with the terms of this bid and furnish a performance bond and also a labor and materials or payment bond, each of a surety company qualified to do business under the laws of the commonwealth 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; provided, however, that if there is more than 1 surety company, the surety companies shall be jointly and severally liable.

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

THIS BID SUBMITTED ON \_\_\_\_\_ 20\_\_

Name of Bidder:\_\_\_\_\_

By \_\_\_\_\_  
Signature

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

\_\_\_\_\_  
Printed Title

(Corporate Seal)

Attest \_\_\_\_\_  
(Secretary)

Business Address: \_\_\_\_\_  
\_\_\_\_\_

Phone Number: (    ) \_\_\_\_\_

E-mail Address: \_\_\_\_\_

Fax: \_\_\_\_\_

## **CERTIFICATE OF NON-COLLUSION**

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

---

Name of Bidder

---

Address of Bidder

---

Telephone Number

By: \_\_\_\_\_  
(Signature)

---

Printed Name

---

Printed Title

---

Date

## CERTIFICATE OF TAX COMPLIANCE

Pursuant to Massachusetts General Laws (M.G.L.) c. 62C, §49A, I certify under the penalties of perjury that the Bidder named below has complied with all laws of the Commonwealth of Massachusetts pertaining to the payment of taxes, to the reporting of employees and contractors, and to the withholding and remitting of child support.

\_\_\_\_\_  
Name of Bidder

\_\_\_\_\_  
Address of Bidder

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

By: \_\_\_\_\_  
(Signature)

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

\_\_\_\_\_  
Printed Title

\_\_\_\_\_  
Date

## CONFLICT OF INTEREST CERTIFICATION

The Bidder hereby certifies that:

1. The Bidder has not given, offered, or agreed to give any gift, contribution, or offer of employment as an inducement for, or in connection with, the award of a Contract pursuant to this Invitation for Bids.
2. No consultant to, or subcontractor for, the Bidder has given, offered, or agreed to give any gift, contribution, or offer of employment to the Bidder, or to any other person, corporation, or entity as an inducement for, or in connection with, the award to the consultant or subcontractor of a Contract by the Bidder.
3. No person, corporation, or other entity, other than a bona fide full time employee of the Bidder has been retained or hired to solicit for or in any way assist the Bidder in obtaining the Contract (pursuant to this IFB) upon an agreement or understanding that such person, corporation or entity be paid a fee or other compensation contingent upon the award of a Contract to the Bidder.
4. The Bidder understands that the Massachusetts Conflict of Interest Law, Chapter 268A of the Massachusetts General Laws, applies to the Bidder with respect to the transaction outlined in the IFB.
5. The Bidder understands that the Bidder, his/her/its officers, employees, agents, subcontractors, and affiliated entities, shall not participate in any activity which constitutes a violation of the Massachusetts Conflict of Interest Law or which creates an appearance of a violation of the Massachusetts Conflict of Interest Law.

\_\_\_\_\_  
Name of Bidder

\_\_\_\_\_  
Address of Bidder

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

By: \_\_\_\_\_  
(Signature)

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

\_\_\_\_\_  
Printed Title

\_\_\_\_\_  
Date

### **CERTIFICATE OF CORPORATE BIDDER**

I, \_\_\_\_\_, certify that I am the \_\_\_\_\_ of the Corporation named as Bidder in the attached Bid; that \_\_\_\_\_, who signed said Bid on behalf of the Bidder was then \_\_\_\_\_ of said Corporation; that I know his/her signature hereto is genuine and that said Bid was duly signed, sealed and executed for and on behalf of its governing body.

(Corporate Seal)

\_\_\_\_\_  
Name of Bidder

\_\_\_\_\_  
Address of Bidder

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

By: \_\_\_\_\_  
(Signature)

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

\_\_\_\_\_  
Printed Title

\_\_\_\_\_  
Date

This Certificate shall be completed where Bidder is a Corporation and shall be so completed by its Clerk. In the event that the Clerk is the person signing the Bid on behalf of the Corporation, this certificate shall be completed by another officer of the Corporation.

## **CERTIFICATE OF COMPLIANCE WITH M.G.L. c. 151B**

The Bidder hereby certifies that it is in compliance with and shall remain in compliance with Massachusetts General Laws (M.G.L.) Chapter 151B and shall not discriminate on any prohibited basis outlined therein. The Bidder also hereby certifies that it shall comply with any and all applicable Supplier Diversity Office (SDO) thresholds that have been established in conjunction with this Invitation for Bids.

---

Name of Bidder

---

Address of Bidder

---

Telephone Number

By: \_\_\_\_\_  
(Signature)

---

Printed Name

---

Printed Title

---

Date

**CERTIFICATE OF NON-DEBARMENT**

The Bidder hereby certifies that it is presently not debarred, suspended, or otherwise prohibited from practice by any federal, state, or local agency, and that, should any proceeding arise in which it is debarred, suspended, or otherwise prohibited from practice by any federal, state, or local agency, the Bidder shall inform the Town of Natick within one (1) business day of such debarment, suspension, or prohibition from practice.

\_\_\_\_\_  
Name of Bidder

\_\_\_\_\_  
Address of Bidder

\_\_\_\_\_

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

By: \_\_\_\_\_  
(Signature)

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

\_\_\_\_\_  
Printed Title

\_\_\_\_\_  
Date



## CERTIFICATE OF FOREIGN CORPORATION

If the Bidder is a foreign corporation, the Bidder certifies that the corporation is qualified under provision of M.G.L. Chapter 181, Section 4 to do business in the Commonwealth of Massachusetts.

Name of Bidder

\_\_\_\_\_

\_\_\_\_\_  
Address of Bidder

By:

\_\_\_\_\_  
Signature

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

\_\_\_\_\_  
Printed Title

\_\_\_\_\_  
Date

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

\_\_\_\_\_  
(Signature/Title)

If awarded the Contract, the Contractor shall provide with his agreement package, a certificate from the Secretary of the Commonwealth of Massachusetts that the corporation is qualified under provisions of M.G.L. Chapter 181, Section 4, to do business in the Commonwealth.

**OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION  
CERTIFICATION**

The Bidder named below agrees that if it is selected as the Contractor, it shall comply with the provisions of M.G.L. Chapter 30, Section 39S.

The Bidder named below certifies, under penalties of perjury, that it is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in 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 ten (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 all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least ten (10) hours in duration.

Name of Bidder

\_\_\_\_\_

\_\_\_\_\_  
Address of Bidder

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

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

\_\_\_\_\_  
Printed Title

\_\_\_\_\_  
Date

TOWN OF NATICK, MASSACHUSETTS  
SELECT BOARD

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned,

\_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

a \_\_\_\_\_, hereinafter called PRINCIPAL and (Corporation, Partnership, or Individual)

\_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

the Town of Natick, Massachusetts

\_\_\_\_\_  
(Name of Owner)

Natick Town Hall, 13 East Central Street, Natick, MA 01760

\_\_\_\_\_  
(Address of Owner)

as OWNER in the total aggregate penal sum of

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)

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

The Condition of the above obligation is such that, whereas the Principal has submitted to the Board of Selectmen, Town of Natick, Massachusetts a certain Bid, attached hereto and hereby made a part hereof and hereby incorporated by reference herein, to enter into a Contract in writing, for the \_\_\_\_\_ Project in Natick, Massachusetts.

NOW, THEREFORE,

(a) If said Bid shall be rejected, or

- (b) If said Bid shall be accepted and the Principal shall execute and deliver a Contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a Bond for his faithful performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid,

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its Bond shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such Bid; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hand and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

ATTEST:

\_\_\_\_\_  
Principal

\_\_\_\_\_  
(Principal Secretary)

(SEAL)(s)

By \_\_\_\_\_  
Signature

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

\_\_\_\_\_  
Printed Title

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

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

\_\_\_\_\_  
(Surety)

ATTEST:

\_\_\_\_\_  
By \_\_\_\_\_

(Witness as to Surety)

Attorney-in-Fact Signature

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

\_\_\_\_\_  
Printed Title

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

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

If Contractor is partnership, all partners should execute Bond.

IMPORTANT - Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state of Massachusetts.

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

**TO ALL BIDDERS AND AWARDING AUTHORITIES**

A COMPLETED AND SIGNED PRIME/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](http://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 and Maintenance at the time of certification.
- The bidder's performance on the projects listed in Parts 1 and 2 must be part of your review. Contact the project references.
- AWARDING AUTHORITIES ARE STRONGLY ENCOURAGED TO REVIEW THE LOW BIDDER'S

ENTIRE CERTIFICATION FILE AT THE DIVISION OF CAPITAL ASSET MANAGEMENT AND MAINTENANCE. Telephone (617) 727-9320 for an appointment.

#### ***Bidding Limits***

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

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

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

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

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

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

Step 3      Add the annualized value of all of the bidder's incomplete contract work (the

total of column 9 on page 5) to the annual dollar value of the work to be performed on your project. **The total may not exceed the bidder's Aggregate Work Limit.**

***Correction of Errors and Omissions in Update Statements***

Matters of Form: An awarding authority shall not reject a contractor's bid because there are mistakes or omissions of form in the Update Statement submitted with the bid, provided the contractor promptly

corrects those mistakes or omissions upon request of the awarding authority. [810 CMR 8.05(1)].

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



**PART 1 - COMPLETED PROJECTS**

LIST ALL PUBLIC AND PRIVATE *BUILDING* PROJECTS YOUR FIRM HAS COMPLETED SINCE THE DATE OF APPLICATION FOR YOUR MOST RECENTLY ISSUED (NOT EXTENDED OR AMENDED) 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: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone

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: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone
	OWNER: Owner	Contact Person	Telephone
	DESIGNER: Designer	Contact Person	Telephone
	GC: GC	Contact Person	Telephone

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 <a href="http://www.osha.gov">www.osha.gov</a>	<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 AND MAINTENANCE.**

**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 and Maintenance.**



**Town of Natick, Massachusetts**

**Form of Sub-Bid**

FORM FOR SUB-BID

To all General Bidders Except those Excluded:

A. The undersigned proposes to furnish all labor and materials required for completing, in accordance with the hereinafter described plans, specifications and addenda, all the work specified in Section No. 26 of the specifications and in any plans specified in such section, prepared by

B2Q Associates for Morse Institute Library HVAC and Controls Upgrade in

(name of architect or engineer)(project)

Natick , Massachusetts, for the contract

(city or town)

sum of \_\_\_\_\_ dollars (\$\_\_\_\_\_).

For Alternate No. \_\_\_\_\_; Add \$\_\_\_\_\_ Subtract \$\_\_\_\_\_

*[Repeat preceding line for each alternate]*

B. This sub-bid includes addenda numbered \_\_\_\_\_

C. This sub-bid

- may be used by any general bidder except:

---

---

- may only be used by the following general bidders:

---

---

[To exclude general bidders, insert "X" in one box only and fill in blank following that box. Do not answer C if no general bidders are excluded.]

D. The undersigned agrees that, if he is selected as a sub-bidder, he will, within 5 days, Saturdays, Sundays and legal holidays excluded, after presentation of a subcontract by the general bidder selected as the general contractor, execute with such general bidder a subcontract in accordance with the terms of this sub-bid, and contingent upon the execution of the general contract, and, if requested so to do in the general bid by the general bidder, who shall pay the premiums therefor, or if prequalification is required pursuant to section 44D3/4, furnish a performance and payment bond of a surety company qualified to do business under the laws of the commonwealth and satisfactory to the awarding authority, in the full sum of the subcontract price.

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

Name	Class of Work	Bid price
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

[Do not give bid price for any class or part thereof furnished by undersigned.]

F. The undersigned agrees that the above list of bids to the undersigned represents bona fide bids based on the hereinbefore described plans, specifications and addenda and that, if the undersigned is awarded the contract, they will be used for the work indicated at the amounts stated, if satisfactory to the awarding authority.

G. The undersigned further agrees to be bound to the general contractor by the terms of the hereinbefore described plans, specifications, including all general conditions stated therein, and addenda, and to assume toward him all the obligations and responsibilities that he, by those documents, assumes toward the owner.

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

1. Have been in business under present business

name\_\_\_\_\_

years.

2. Ever failed to complete any work

awarded?\_\_\_\_\_

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

	Building	Architect	General Contractor	Amount of Contract
(a)	_____	_____	_____	_____
(b)	_____	_____	_____	_____
(c)	_____	_____	_____	_____

4. Bank reference \_\_\_\_\_

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

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

Date \_\_\_\_\_

\_\_\_\_\_

(Name of Sub-bidder)

By \_\_\_\_\_

(Title and Name of Person Signing Bid)

\_\_\_\_\_

(Business Address)

\_\_\_\_\_

(City and State)



**SUB-BIDDERS' UPDATE STATEMENTS ARE NOT PUBLIC RECORDS AND  
ARE NOT OPEN TO PUBLIC INSPECTION (M.G.L. C.149, §44D)**

## **Sub-Bidder Update Statement**

### **TO ALL SUB-BIDDERS, TRADE CONTRACTORS AND AWARDING AUTHORITIES**

A COMPLETED AND SIGNED SUB-BIDDER UPDATE STATEMENT MUST BE SUBMITTED WITH EVERY FILED SUB-BID PURSUANT TO M.G.L. c.149, §44F AND EVERY TRADE SUB-BID PURSUANT TO M.G.L. c. 149A. ANY FILED SUB-BID OR TRADE SUB-BID SUBMITTED WITHOUT AN APPROPRIATE SUB-BIDDER UPDATE STATEMENT IS INVALID AND MUST BE REJECTED.

***Caution: This form is to be used for submitting Filed Sub-Bids and Trade Sub-Bids Only***

### **AWARDING AUTHORITIES**

**If the Awarding Authority determines that the Sub-Bidder is not competent to perform the work as specified on the project, it should reject the bid.**

---

### **SUB-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 Sub-Bidder Update Statement on behalf of the bidder named below, that I have read this Sub-Bidder Update Statement, and that all of the information provided by the bidder in this Sub-Bidder Update Statement is true, accurate, and complete as of the bid date.

---

Bid Date

---

Print Name of Sub-Bidder or Trade Contractor

---

Project Number  
(or name if no number)

---

Business Address

---

Awarding Authority

---

Telephone Number

**SIGNATURE⇒**

---

**Bidder's Authorized Representative**

## **INSTRUCTIONS**

### **INSTRUCTIONS TO SUB-BIDDERS**

- This form must be completed and submitted by all Filed Sub-Bidders bidding on projects and Trade Contractors bidding on projects.
- You must give complete and accurate answers to all questions and provide all of the information requested. MAKING A MATERIALLY FALSE STATEMENT IN THIS SUB-BIDDER UPDATE STATEMENT IS GROUNDS FOR REJECTING YOUR BID AND FOR DEBARRING YOU FROM ALL PUBLIC CONTRACTING.
- This Sub-Bidder Update Statement must include all requested information that was not previously reported on the application used for your company's most recently issued (not extended or amended) Sub-Bidder Certificate of Eligibility. **The Sub-Bidder Update Statement must cover the entire period since the date of that application, NOT since the date of your Certification.**
- You must use this official form of Sub-Bidder Update Statement. Copies of this form may be obtained from the awarding authority or from the DCAMM Web Site:  
[www.mass.gov/DCAMM/certification](http://www.mass.gov/DCAMM/certification).
- If additional space is needed, please copy the appropriate page of this Sub-Bidder Update Statement and attach it as an additional sheet.
- It is acceptable to attach your projects in progress and completed projects spreadsheet for Part 7.

### **INSTRUCTIONS TO AWARDING AUTHORITIES**

#### ***Determination of Sub-Bidder Qualifications***

- It is the awarding authority's responsibility to determine each responsible bidder. You must consider all of the information in the bidder's Sub-Bidder Update Statement in making this determination. **Remember: this information was not available to the Division of Capital Asset Management and Maintenance at the time of certification.**
- The Sub-Bidder's performance on the projects listed in Parts 1 and 2 must be part of your review.
- Contact the project references.
- AWARDING AUTHORITIES ARE STRONGLY ENCOURAGED TO REVIEW THE LOW BIDDERS CERTIFICATION FILE. WITH THE IMPLEMENTATION OF ELECTRONIC DOCUMENT MANAGEMENT FILE REVIEWS CAN BE PROVIDED ELECTRONICALLY. To discuss your request/options contact DCAMM's Contractor Certification (857) 204-1305.

#### ***Correction of Errors and Omissions in Sub-Bidder Update Statements***

Matters of Form: An awarding authority shall not reject a Sub-Bidder's bid because there are mistakes or omissions of form in the Sub-Bidder Update Statement submitted with the bid provided the Sub-Bidder promptly corrects those mistakes or omissions upon request of the awarding authority.

Correction of Other Defects: An awarding authority may, in its discretion, give a Sub-Bidder notice of minor defects and omissions as to form in the Sub-Bidder's Update Statement and provide an opportunity to correct its Sub-Bidder Update Statement. However, the Sub-Bidder shall not be allowed to make corrections to a Sub-Bidder Update Statement if material information about the Sub-Bidder was omitted from the Sub-Bidder Update Statement filed with the Sub-Bidder's bid. The Awarding Authority shall advise DCAMM of any material omissions in a Sub-Bidder's Update Statement.

### **PART 1 - COMPLETED PROJECTS**

List All Public And Private Projects Of \$20,000 or more your company has completed since the date of application for your most recently issued (not extended or amended) Sub-Bidder Certificate Of Eligibility\*.

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

Attach additional sheets if necessary

\* If your company 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 Sub-Bidder Update Statement.

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

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

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

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



If you have answered YES to either question, explain. \_\_\_\_\_

**PART 2 – PROJECTS IN PROGRESS CONTRACTS**

List all public and private projects of \$20,000 or more your company has under contract on this date regardless of when or whether the work commenced.

1	2	3	4	5	6	7
PROJECT TITLE & LOCATION	WORK CATEGORY	START AND END DATES (MM/YYYY)	ON SCHEDULE (yes / no)	CONTRACT PRICE	% NOT COMPLETE	\$ VALUE OF WORK NOT COMPLETE (col. 5 X col. 6)

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

PROJECT TITLE		COMPANY NAME	CONTACT PERSON	TELEPHONE	EMAIL ADDRESS
	OWNER:				
	DESIGNER				
	GC:				
	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 - GENERAL PERFORMANCE (in the prime update it's called Project Performance – can we change it?)**

**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) DCAMM Sub-Bidder Certificate of Eligibility. You must report all requested information not previously reported on that application. Include all details [project name(s) and location(s), names of all parties involved, relevant dates, etc.].**

	YES	NO
1. Has your company been terminated on any contract prior to completing a project or has any officer, partner or principal of your company been an officer, partner or principal of another company that was terminated or failed to complete a project?	<input type="checkbox"/>	<input type="checkbox"/>
2. Has your company 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 company failed or refused to complete any punch list work under any contract?	<input type="checkbox"/>	<input type="checkbox"/>
4. Has your company filed for bankruptcy, or has any officer, principal or individual with a financial interest in your current company been an officer, principal or individual with a financial interest in another company 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 company, or has any officer, principal or individual with a financial interest in your current company been an officer, principal or individual with a financial interest in another company 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 company, which were instituted or concluded (adversely or otherwise) since your company's Application for your most recently issued (not extended or amended) Sub-Bidder Certificate of Eligibility. You must report all requested information not previously reported on that DCAMM Application.

The term "administrative proceeding" as used in this Sub-Bidder 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 company" as used in this Section "I", shall mean any person and/or entity with a 5% or greater ownership interest in the applicant's company.

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 company or a principal or officer or anyone with a financial interest in your company 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 company or a principal or officer or anyone with a financial interest in your company 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 company or a principal or officer or anyone with a financial interest in your company 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 company or a principal or officer or anyone with a financial interest in your company 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 company or a principal or officer or anyone with a financial interest in your company been brought, concluded, or settled relating to a violation of any state or federal law regulating hours of labor, unemployment compensation, minimum wages, prevailing wages, overtime pay, equal pay, child labor or worker's compensation?	<input type="checkbox"/>	<input type="checkbox"/>
6. Have any judicial or administrative proceedings involving your company or a principal or officer or anyone with a financial interest in your company been brought, concluded, or settled relating to a violation of any state or federal law prohibiting discrimination in employment?	<input type="checkbox"/>	<input type="checkbox"/>
7. Have any judicial or administrative proceedings involving your company or a principal or officer or anyone with a financial interest in your company 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 company or any principal or officer or anyone with a financial interest in your company from public contracting?	<input type="checkbox"/>	<input type="checkbox"/>
9. Have any judicial or administrative proceedings involving your company or a principal or officer or anyone with a financial interest in your company 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 company 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 <a href="http://www.osha.gov">www.osha.gov</a>	<input type="checkbox"/>	<input type="checkbox"/>
11. Has your company 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 company or a principal or officer or anyone with a financial interest in your company been brought, concluded, or settled by any local, state or federal agency relating to the procurement or performance of any construction contract?	<input type="checkbox"/>	<input type="checkbox"/>
13. Are there any other issues that you are aware which may affect your company's responsibility and integrity as a building contractor?	<input type="checkbox"/>	<input type="checkbox"/>

**PART 5 - SUPERVISORY PERSONNEL**

List all supervisory personnel who will be assigned to the project if your company is awarded the contract.

**Attach the resume of each person listed below.**

NAME	TITLE OR FUNCTION

**PART 6 - CHANGES IN BUSINESS ORGANIZATION OR FINANCIAL CONDITION**

Have there been any changes in your company's business organization, financial condition or bonding capacity since the date your current Contractor Certificate of Eligibility was issued? ☐ Yes ☐ No

**If YES, attach a separate page providing complete details.**

**PART 7 – LIST OF COMPLETED CONSTRUCTION PROJECTS SUBMITTED TO THE DIVISION OF CAPITAL ASSET MANAGEMENT AND MAINTENANCE ALONG WITH CERTIFICATION SIGNATURE PAGE.**

Attach here a copy of the list of completed construction projects which was submitted with your company's application for your most recently issued (not extended or amended) Sub-Bidder Certificate of Eligibility. The Attachment must include a complete copy of the entire Completed Projects spreadsheet and the final page Certification Page of the online application, containing the signature and date the completed projects list was submitted to the Division of Capital Asset Management and Maintenance.

TOWN OF NATICK, MASSACHUSETTS  
SELECT BOARD

NOTICE OF AWARD

DATED \_\_\_\_\_

To: BIDDER: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

\_\_\_\_\_

OWNER has considered the Bid submitted by you for the above described Work in response to the Invitation for Bids dated \_\_\_\_\_ and Instructions to Bidders.

You are hereby notified that your Bid has been accepted in the amount of \$\_\_\_\_\_.

You shall comply with the following conditions precedent within ten (10) calendar days of the date of this Notice of Award, that is by \_\_\_\_\_.

1. You shall deliver to OWNER five (5) fully executed counterparts of the Agreement including all the Contract Documents. Each of the Contract Documents shall bear your signature on the cover page.
2. You shall deliver with the executed Agreement, the Contract Security (Bonds - including both a fully-executed Performance Bond and a fully-executed Payment Bond - and Certificates of Insurance) as specified in the Instructions to Bidders, General Conditions and Supplementary Conditions.

Failure to comply with these conditions within the time specified will entitle OWNER to consider your bid abandoned, to annul this Notice of Award and to declare your Bid Security forfeited.

Five (5) copies of each of the proposed Contract Documents accompany this Notice of Award.

Within ten (10) days after you comply with those conditions, OWNER will return to you one (1) fully signed counterpart of the Agreement with the Contract Documents attached.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

By: \_\_\_\_\_

\_\_\_\_\_  
Signature of Owner's Representative

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

\_\_\_\_\_  
Printed Title

#### ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged

By \_\_\_\_\_  
(Contractor)

this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

By \_\_\_\_\_  
Authorized Signature

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

\_\_\_\_\_  
Printed Title

COPY TO ENGINEER



NATICK, MASSACHUSETTS  
SELECT BOARD

AGREEMENT

THIS AGREEMENT made this \_\_\_\_\_ day of \_\_\_\_\_ in the year 2022, by and between the Town of Natick, Massachusetts, Natick Town Hall, 13 East Central Street, Natick, MA 01760 (hereinafter called OWNER), by the Natick Select Board, and

\_\_\_\_\_, having an address of \_\_\_\_\_, doing business as a (Corporation, Partnership or Individual) hereinafter called "CONTRACTOR."

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, OWNER and CONTRACTOR hereby agree as follows:

ARTICLE 1. WORK

1.1. CONTRACTOR shall commence the Work as specified or indicated in the Contract Documents as defined in Article 8 herein.

1.2. The Project under this Contract consists of furnishing all necessary labor, materials and equipment required for Morse Institute Library HVAC and Controls Upgrade.

1.3. CONTRACTOR shall furnish all materials, supplies, tools, equipment, labor, and other services necessary for the construction and completion of the Project described herein.

ARTICLE 2. ENGINEER

2.1. The Project has been designed by Banks II Quan and Associates, Inc. (dba B2Q Associates), who is hereinafter called ENGINEER and who shall act as OWNER'S representative, who shall assume all duties and responsibilities, and who and shall have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

### ARTICLE 3. CONTRACT TIME

3.1. CONTRACTOR shall commence work when authorization by the OWNER or ENGINEER with the provisions of the Notice to Proceed and Contract Documents. The work will be substantially complete by April 1, 2023, and all work to be completed by May 1, 2023.

3.2. Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement. They also recognize the delays, expense and difficulties involved in proving in a legal proceeding the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER **Four Hundred** dollars (**\$400.00**) for each day that expires after Substantial Completion date and **Eight Hundred** dollars (**\$800.00**) after Final Completion date specified in paragraph 3.1 of this section for completion and readiness for final payment.

## ARTICLE 4. CONTRACT PRICE

4.1. In consideration for performance of the work as required by the Contract Documents, the OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents in current funds as follows:

Contractor's Bid is attached to this Agreement as an exhibit.

TOTAL CONTRACT AMOUNT \$\_\_\_\_\_

As permitted by law, specific items of this Contract may be eliminated, or reduced in quantity to keep within the limits of available funding, at the OWNER'S option.

## ARTICLE 5. PAYMENT PROCEDURES

5.1. CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions, as modified, if applicable, by the Supplementary Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

5.2. Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Applications for Payment as recommended by ENGINEER and as provided in Article 14 of the General Conditions, as modified, if applicable, by the Supplementary Conditions.

5.3. Final Payment. Upon final completion and acceptance of the Work in accordance with paragraph 14.13 of the General Conditions, as modified, if applicable, by the Supplementary Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.13.

## ARTICLE 6. TERMS

6.1. Terms used in this Agreement, which are defined in Article 1 of the General Conditions, as modified, if applicable, by the Supplementary Conditions, will have the meanings indicated in the General Conditions, as modified, if applicable, by the Supplementary Conditions

## ARTICLE 7. CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

7.1. CONTRACTOR has familiarized itself with the nature and extent of the Contract Documents, work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

7.2. CONTRACTOR has studied carefully all reports of explorations and tests of subsurface conditions and drawings of physical conditions which are identified in the Supplementary Conditions as provided in paragraph 4.2 of the General Conditions, and accepts the determination set forth in paragraph SC-4.2 of the Supplementary Conditions of the extent of the technical data contained in such reports and drawings upon which CONTRACTOR is entitled to rely.

7.3. CONTRACTOR has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports and studies (in addition to or to supplement those referred to in paragraph 7.2 above) which pertain to the subsurface or physical conditions at or contiguous to the site or otherwise may affect the cost, progress, performance or furnishing of the Work as CONTRACTOR considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.2 of the General Conditions, as modified, if applicable, by the Supplementary Conditions; and no additional examinations, investigations, explorations, tests, reports, studies or similar information or data are or will be required by CONTRACTOR for such purposes.

7.4. CONTRACTOR has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities. No additional examinations, investigations, explorations, tests, reports, studies or similar information or data in respect of said Underground Facilities are or will be required by CONTRACTOR in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of paragraph 4.03 of the General Conditions, as modified, if applicable, by the Supplementary Conditions.

7.5. CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

7.6. CONTRACTOR has given ENGINEER written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

## ARTICLE 8. CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

- 8.1 Invitation for Bids
- 8.2 Instructions to Bidders
- 8.3 Contractor's Bid
- 8.4 This Agreement ("Agreement")
- 8.5 Exhibits to this Agreement
- 8.6 General Conditions
- 8.7 Supplementary Conditions
- 8.8 Contractor's Performance and Payment Bonds, and insurance certificates
- 8.9 Notice of Award
- 8.10 Notice to Proceed
- 8.11 Specifications contained in Divisions 01 -26, as listed in table of contents
- 8.12 Construction Drawings.
- 8.13 Addenda numbers \_\_\_ to \_\_\_, inclusive.
- 8.14 Change Order

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.04 and 3.05 of the General Conditions.

## ARTICLE 9. INDEMNIFICATION

To the fullest extent permitted by law, the CONTRACTOR shall indemnify, defend, and hold harmless the Town of Natick and all of its officers, employees, boards, commissions, committees, agents and representatives from and against all claims, causes of action, suits, costs, damages, and liability of any kind which arise out of the breach by the CONTRACTOR of its obligations under this Contract, or the act or omission of the CONTRACTOR, its Subcontractors, or their officers, employees, agents and representatives or anyone directly or indirectly employed by them, or anyone for whose acts or omissions they may be liable, regarding the work to be performed by the CONTRACTOR under the Contract, or which arise out of the violation of any Federal, Massachusetts or Town of Natick statute, by-law, rule, regulation, order or directive, or which relate to personal injury or property damage suffered by the CONTRACTOR or any of its officers or employees regarding the subject matter of the Contract.

## ARTICLE 10: INSURANCE

10.1. The CONTRACTOR shall provide insurance that satisfies the categories and amounts specified in Article 5 of the General Conditions, as modified by Article 5 of the Supplementary Conditions.

10.2. Each certificate and policy of insurance required by this Agreement shall contain a cancellation provision as indicated below with no variations.

“Should any of the above described policies be canceled or materially amended before the expiration date thereof, the issuing insurer will mail within thirty (30) days written notice to the certificate holder named to the left”.

10.3. The Town of Natick and ENGINEER shall be named as an additional insured on each policy of insurance required by this agreement other than worker’s compensation.

## ARTICLE 11: MISCELLANEOUS PROVISIONS

11.1. No assignment by CONTRACTOR of any rights under or interests in the Contract Documents will be binding on OWNER without the written consent of OWNER; and specifically but without limitation moneys that may become due and moneys that are due may not be assigned without such consent, and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the CONTRACTOR from any duty or responsibility under the Contract Documents.

11.2. This Agreement shall be binding upon the OWNER and CONTRACTOR, their respective heirs, executors, administrators, successors, or assigns and legal representative to the other party hereto, its partners, heirs, executors, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

11.3. If any provision of this Agreement shall be determined to be invalid or unenforceable by final judgment of a court of competent jurisdiction, the remaining provisions shall continue in effect to the extent permitted by law.

11.4. This Agreement may be amended only by a written instrument signed by the parties.

11.5. This Agreement shall be governed by and construed in accordance with the Massachusetts law, without respect to choice of law principles.

11.6. The CONTRACTOR shall provide to the satisfaction of the OWNER, adequate supervision of all work performed under this Agreement.

11.7. This Agreement shall be subject to the Natick Non-Discrimination in the Workforce provision included in Part I Supplementary Conditions.

11.8. The CONTRACTOR shall comply with all provisions of law applicable to his work including without limitation statutes, by-laws rules, regulations, orders and directives. This Contract shall be considered to include in their entirety all terms respecting workers' compensation insurance and other terms required to be included in it by Chapter 152 of the Massachusetts General Laws, as amended, and any other laws, as though such terms were set forth in their entirety herein. The CONTRACTOR shall comply with all applicable provisions of law and regulation as specified by the Williams-Steiger Occupational Safety and Health Act of 1970, as amended.

11.9. The CONTRACTOR has made this Contract in reliance on his own examinations and estimates as to the amount and character of his work, and conditions which may be encountered in the performance thereof, and shall assume all risks and bear all losses pertaining thereto.

11.10. The CONTRACTOR shall compensate the Town of Natick for all damages to the Town property of any nature arising out of the CONTRACTOR'S work.

11.11. The Town of Natick may defer payment to the CONTRACTOR of such sums otherwise due him under this Contract for such period of time as the Director of Public Works may deem required by law or expedient for protection of the Town or others against his noncompliance with the provisions thereof; and the Town may reimburse itself, by deduction from the money so retained, for all expense and loss resulting to it from his noncompliance.

11.12. No payment by the Town of Natick to the CONTRACTOR shall be deemed to be a waiver of any right of the Town of Natick under this Contract or ratification by the Town of Natick any breach hereof by him.

11.13. The CONTRACTOR shall provide services under this Agreement as an independent CONTRACTOR with the town of Natick and the CONTRACTOR and its employees shall not be entitled to receive any benefits of employment with the Town of Natick, including without limitation salary, overtime, vacation pay, holiday pay, health insurance, life insurance, pension or deferred compensation.

11.14. If any assignment shall be made by the CONTRACTOR or by any guarantor of the CONTRACTOR for the benefit of creditors, or if a petition is filed by the CONTRACTOR or by any

guarantor of the CONTRACTOR for adjudication as a bankrupt, or for reorganization or an arrangement under any provision of the Bankruptcy Act as then in force and effect, or if an involuntary petition under any of the provisions of the Bankruptcy Act is filed against the CONTRACTOR and such involuntary petition is not discharged within ninety (90) days thereafter, in any event the Town may terminate this Contract upon written notice to the CONTRACTOR.

11.15. The award of this Contract and the continued operation of this Contract are subject to appropriation by Natick Town Meeting of sufficient money to fund the Contract.

11.16. The Owner may terminate this Contract upon written notice to the CONTRACTOR if a source of money to fund the Contract is lost during any year of the Contract term. In the alternative, the parties may agree in writing to amend the Contract to provide for a Contract price which represents the reduced appropriation for a contract year.

11.17. In the event of termination, the CONTRACTOR shall be entitled to be paid for services rendered in accordance with this Contract prior to termination.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have executed or caused to be executed by their duly authorized officials this Agreement in five (5) copies, each of which shall be deemed as an original on the date first above written. One Counterpart each has been delivered to OWNER, CONTRACTOR, ENGINEER, Town Counsel and the Comptroller.

OWNER:  
Town of Natick, Massachusetts

The Natick Select Board

\_\_\_\_\_  
Karen Adelman-Foster., Chair

\_\_\_\_\_  
Richard P. Jennett, Jr., Vice Chair

\_\_\_\_\_  
Michael J. Hickey, Jr., Clerk

\_\_\_\_\_  
Paul R. Joseph

\_\_\_\_\_  
Susan G. Salamoff

Dated: \_\_\_\_\_

CONTRACTOR:

\_\_\_\_\_  
Printed Name of CONTRACTOR

\_\_\_\_\_  
Signature

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

\_\_\_\_\_  
Printed Title

Dated: \_\_\_\_\_

\_\_\_\_\_  
CORPORATE SEAL

\_\_\_\_\_  
Attest

Owner Address for giving notices:

Select Board

Natick Town Hall

13 East Central Street

Natick, MA 01760

Contractor Address for giving notices:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



CERTIFICATE OF APPROPRIATION

In accordance with the requirements of M.G.L. Chapter 44, Section 31C, this is to certify that an appropriation in the amount of this Agreement is available therefore, and that the Natick Select Board is authorized to execute this Agreement and to approve all requisitions and execute change orders.

---

Michelle Laramée  
Comptroller, Town of Natick

Date

APPROVED AS TO FORM ONLY (AND NOT AS TO SUBSTANCE):

---

Karis L. North, Esq.  
Office of the Town Counsel

Date

**CERTIFICATE OF CORPORATE AUTHORIZATION**

I, \_\_\_\_\_, Clerk of \_\_\_\_\_, a \_\_\_\_\_  
corporation organized pursuant to \_\_\_\_\_ state law, which maintains its principal office at  
\_\_\_\_\_ hereby certify that at a meeting of the Board of Directors of  
\_\_\_\_\_ (the "Corporation") duly held on \_\_\_\_\_, \_\_\_\_\_, at which

**(Date must be earlier than Agreement)**

A quorum was present and voting throughout, the following vote was duly passed and is now in full force and effect:

"VOTED: That \_\_\_\_\_ be and hereby is

**(Name of Officer authorized to sign for Corporation)**

authorized, directed and empowered for, in the name and on behalf of this Corporation to sign seal with the corporate seal, execute, acknowledge and deliver all contracts, bonds and other obligations of the Corporation, with the Town of Natick, acting by and through the Town of Natick, Massachusetts, 13 East Central Street, Natick, MA 01760; the execution of any such contract, lease, bond or obligation by such  
\_\_\_\_\_ to be valid and binding

**(Name of Officer)**

upon this Corporation for all purposes, and that a certificate of the Clerk of this Corporation setting forth this vote shall be delivered to the Town of Natick.

I further certify that

\_\_\_\_\_  
**(Name of Officer)**

is duly elected \_\_\_\_\_ of said Corporation.

**(Title)**

Signed: \_\_\_\_\_

**Printed Name:**

**Printed Title:**       **(Clerk- Secretary)**

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

Place of Business: \_\_\_\_\_

AFFIX CORPORATE SEAL

COUNTERSIGNATURE: \_\_\_\_\_

*(Name and Title of Officer)*

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

*In the event that the clerk or Secretary is the same person as the Officer authorized to sign that contract or other instrument for the Corporation, this certificate must be countersigned by another officer of the Corporation.*

NATICK, MASSACHUSETTS  
SELECT BOARD  
Contractor's Certification

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

A contractor will not be eligible for award of a contract unless such contractor has submitted the following certification, which is deemed a part of the resulting contract:

CONTRACTOR'S CERTIFICATION

\_\_\_\_\_certifies that

1. it intends to use the following listed construction trades in the work under the contract  
\_\_\_\_\_; and
2. will comply with the minority manpower ratio and specific affirmative action steps contained herein; and
3. will obtain from each of its Subcontractors and submit to the contracting or administering agency prior to the award of any subcontract under this contract the Subcontractor certification required by these bid conditions.

\_\_\_\_\_  
(Signature of authorized representative of Contractor)

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

\_\_\_\_\_  
Printed Title

\_\_\_\_\_  
Date

NATICK, MASSACHUSETTS  
SELECT BOARD

Subcontractor's Certification

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

Prior to the award of any subcontract, regardless of tier, the prospective Subcontractor must execute and submit to the contractor the following certification, which is deemed a part of the resulting contract:

\_\_\_\_\_certifies that

1. it intends to use the following listed construction trades in the work under the contract  
\_\_\_\_\_; and
2. will comply with the minority manpower ratio and specific affirmative action steps contained herein; and
3. will obtain from each of its Subcontractors and submit to the contracting or administering agency prior to the award of any subcontract under this contract the Subcontractor certification required by these bid conditions.

\_\_\_\_\_  
(Signature of authorized representative of Subcontractor)

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

\_\_\_\_\_  
Printed Title

\_\_\_\_\_  
Date

In order to ensure that the said Subcontractor's certification becomes a part of all subcontracts under the contract, no subcontract shall be executed until an authorized representative of the Town agency (or agencies) administering this project has determined, in writing, that the said certification has been incorporated in such subcontract, regardless of tier. Any subcontract executed without such written approval shall be void.

TOWN OF NATICK, MASSACHUSETTS  
SELECT BOARD

NOTICE TO PROCEED

Dated \_\_\_\_\_, 20\_\_\_\_.

To: \_\_\_\_\_  
(Contractor)

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

You are hereby notified to commence Work in accordance with the Agreement dated \_\_\_\_\_, 2022, on or before May 1, 2022. You are to substantially complete the Work by April 1, 2023, and complete all work by May 1, 2023.

OWNER: Town of Natick,  
Massachusetts Select Board

By \_\_\_\_\_  
(Authorized Signature)

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

\_\_\_\_\_  
Printed Title

ACCEPTANCE OF NOTICE

Receipt of the above Notice to Proceed is hereby acknowledged by

\_\_\_\_\_

this the \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_.

By \_\_\_\_\_  
(Authorized Signature)

\_\_\_\_\_

Printed Name

\_\_\_\_\_

Printed Title

TOWN OF NATICK, MASSACHUSETTS  
SELECT BOARD

PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

\_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

a \_\_\_\_\_ hereinafter called PRINCIPAL and (Corporation, Partnership, or Individual)

\_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

the Town of Natick, Massachusetts

\_\_\_\_\_  
(Name of Owner)

Natick Town Hall, 13 East Central Street, Natick, MA 01760

\_\_\_\_\_  
(Address of Owner)

hereinafter called Owner, in the total aggregate penal sum of \_\_\_\_\_

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)

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

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, a copy of which is hereto attached and made a part hereof for Contract regarding Morse Institute Library HVAC and Control Upgrade. Now, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to the Surety and during the one year guarantee period, and if the Principal shall satisfy all claims and demands incurred under such Contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any default, then this obligation shall be void, otherwise to remain in full force and effect.

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

PROVIDED, FURTHER, that it is expressly agreed that the Bond shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the Contract Price more than twenty percent (20%), so as to bind the Principal and the Surety to the full and faithful performance of the Contract as so amended. The term "Amendment", wherever used in this Bond, and whether referring to this Bond, the Contract or the Loan Documents shall include any alteration, addition, extension, or modification of any character whatsoever.

PROVIDED, FURTHER, that no final settlement between the Owner and the Principal shall abridge the right of the other beneficiary hereunder, whose claim may be unsatisfied. The Owner is the only beneficiary hereunder.

WITNESS WHEREOF, this instrument is executed in five (5) counterparts, each of which shall be deemed an original, this \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_.



ATTEST:

\_\_\_\_\_  
Principal

\_\_\_\_\_  
(Principal Secretary)

(SEAL)(s)

By \_\_\_\_\_

Signature

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

\_\_\_\_\_  
Printed Title

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

\_\_\_\_\_  
(Surety)

ATTEST:

By \_\_\_\_\_

(Witness as to Surety)

\_\_\_\_\_  
Attorney-in-Fact Signature

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

\_\_\_\_\_  
Printed Title

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

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is partnership, all partners should execute Bond. IMPORTANT: Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the Project is located.

TOWN OF NATICK, MASSACHUSETTS  
SELECT BOARD

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

\_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

a \_\_\_\_\_, hereinafter called PRINCIPAL and (Corporation, Partnership, or Individual)

\_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

the Town of Natick, Massachusetts

\_\_\_\_\_  
(Name of Owner)

Natick Town Hall, 13 East Central Street, Natick, MA 01760

\_\_\_\_\_  
(Address of Owner)

hereinafter called Owner, and unto all persons, firms, and corporations who or which may furnish labor, or who furnish materials to perform as described under the contract and to their successors and assigns in the total aggregate penal sum of \_\_\_\_\_

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)

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

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the Owner, dated the \_\_\_\_ day of \_\_\_\_\_ 20\_\_, a copy of which is hereto attached and made a part hereof for Contract regarding Morse Institute Library HVAC and Controls Upgrade.

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, and corporations furnishing materials for or performing labor in prosecution of the Work provided for in such Contract, and any authorized extensions or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such Work, and for all labor cost incurred in such Work including that by a Subcontractor, and to any mechanic or materialman lienholder whether it acquires its lien by operation of State or Federal law; then this obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, that beneficiaries or claimants hereunder shall be limited to the Subcontractors, and persons, firms, and corporations having a direct contract with the Principal or its Subcontractors.

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

PROVIDED, FURTHER, that no suit or action shall be commenced hereunder by any claimant: (a) unless claimant, other than one having a direct Contract with the Principal, shall have given written notice to any two of the following: The Principal, the Owner, or the Surety above named within sixty-five (65) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal, Owner, or Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need not be made by a public officer. (b) After the expiration date of one (1) year following the date of which Principal ceased work on said Contract, it being understood, however, that if any limitation embodied in the Bond is prohibited by any law controlling the construction hereof, such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

PROVIDED, FURTHER, that it is expressly agreed that this Bond shall be deemed amended automatically and immediately, without formal and separate amendments hereto, upon amendment to the Contract not increasing the Contract Price more than twenty percent (20%), so as to bind the Principal and the Surety to the full and faithful performance of the Contract as so amended.

The term "Amendment", wherever used in this Bond and whether referring to this Bond, the Contract or the Loan Documents shall include any alteration, addition, extension or modification of any character whatsoever.

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

WITNESS WHEREOF, this instrument is executed in five (5) counterparts, each of which shall be deemed an original, this

\_\_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_.

ATTEST:

\_\_\_\_\_  
Principal

\_\_\_\_\_  
(Principal Secretary)

(SEAL)(s)

By \_\_\_\_\_  
Signature

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

\_\_\_\_\_  
Printed Title

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

\_\_\_\_\_  
(Surety)

ATTEST:

By \_\_\_\_\_  
(Witness as to Surety) Attorney-in-Fact Signature

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

\_\_\_\_\_  
Printed Title

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

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is partnership, all partners should execute Bond. IMPORTANT: Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the Project is located.

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the Controlling Law.

# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

**ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE**

and

Issued and Published Jointly By



PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE  
*a practice division of the*  
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

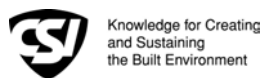
AMERICAN COUNCIL OF ENGINEERING COMPANIES

AMERICAN SOCIETY OF CIVIL ENGINEERS

This document has been approved and endorsed by



The Associated General Contractors of America



Construction Specifications Institute

Copyright ©2002

National Society of Professional Engineers  
1420 King Street, Alexandria, VA 22314

American Council of Engineering Companies  
1015 15th Street, N.W., Washington, DC 20005

American Society of Civil Engineers  
1801 Alexander Bell Drive, Reston, VA 20191-4400

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor Nos. C-520 or C-525 (2002 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the EJCDC Construction Documents, General and Instructions (No. C-001) (2002 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. C-800) (2002 Edition).

**NOTE:**

**Highlighted text** (*Substantial Completion*) indicates the paragraph has been amended.

**Stricken text** indicates the paragraph has been deleted or superseded.

**→** Indicates a paragraph(s) has/have been inserted.

**TABLE OF CONTENTS**

If there is a contradiction between the General Conditions amendments or superseded notation and the Supplementary Conditions, the requirement in the Supplementary Conditions supersedes the General Conditions.

Page

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY .....	6
1.01 <i>Defined Terms</i> .....	6
1.02 <i>Terminology</i> .....	8
ARTICLE 2 - PRELIMINARY MATTERS .....	9
2.01 <i>Delivery of Bonds and Evidence of Insurance</i> .....	9
2.02 <i>Copies of Documents</i> .....	9
2.03 <i>Commencement of Contract Times; Notice to Proceed</i> .....	9
2.04 <i>Starting the Work</i> .....	9
2.05 <i>Before Starting Construction</i> .....	9
2.06 <i>Preconstruction Conference</i> .....	9
2.07 <i>Initial Acceptance of Schedules</i> .....	9
ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE .....	10
3.01 <i>Intent</i> .....	10
3.02 <i>Reference Standards</i> .....	10
3.03 <i>Reporting and Resolving Discrepancies</i> .....	10
3.04 <i>Amending and Supplementing Contract Documents</i> .....	11
3.05 <i>Reuse of Documents</i> .....	11
3.06 <i>Electronic Data</i> .....	11
ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS .....	11
4.01 <i>Availability of Lands</i> .....	11
4.02 <i>Subsurface and Physical Conditions</i> .....	12
4.03 <i>Differing Subsurface or Physical Conditions</i> .....	12
4.04 <i>Underground Facilities</i> .....	13
4.05 <i>Reference Points</i> .....	13
4.06 <i>Hazardous Environmental Condition at Site</i> .....	13
ARTICLE 5 - BONDS AND INSURANCE .....	14
5.01 <i>Performance, Payment, and Other Bonds</i> .....	14
5.02 <i>Licensed Sureties and Insurers</i> .....	15
5.03 <i>Certificates of Insurance</i> .....	15
5.04 <i>Contractor's Liability Insurance</i> .....	15
5.05 <i>Owner's Liability Insurance</i> .....	16
5.06 <i>Property Insurance</i> .....	16
5.07 <i>Waiver of Rights</i> .....	17
5.08 <i>Receipt and Application of Insurance Proceeds</i> .....	17
5.09 <i>Acceptance of Bonds and Insurance; Option to Replace</i> .....	17
5.10 <i>Partial Utilization, Acknowledgment of Property Insurer</i> .....	18
ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES .....	18
6.01 <i>Supervision and Superintendence</i> .....	18
6.02 <i>Labor; Working Hours</i> .....	18
6.03 <i>Services, Materials, and Equipment</i> .....	18
6.04 <i>Progress Schedule</i> .....	18
6.05 <i>Substitutes and "Or-Equals"</i> .....	19
6.06 <i>Concerning Subcontractors, Suppliers, and Others</i> .....	20
6.07 <i>Patent Fees and Royalties</i> .....	21
6.08 <i>Permits</i> .....	21
6.09 <i>Laws and Regulations</i> .....	21
6.10 <i>Taxes</i> .....	22
6.11 <i>Use of Site and Other Areas</i> .....	22
6.12 <i>Record Documents</i> .....	22

6.13	<i>Safety and Protection</i> .....	22
6.14	<i>Safety Representative</i> .....	23
6.15	<i>Hazard Communication Programs</i> .....	23
6.16	<i>Emergencies</i> .....	23
6.17	<i>Shop Drawings and Samples</i> .....	23
6.18	<i>Continuing the Work</i> .....	24
6.19	<i>Contractor's General Warranty and Guarantee</i> .....	24
6.20	<i>Indemnification</i> .....	24
6.21	<i>Delegation of Professional Design Services</i> .....	25
ARTICLE 7 - OTHER WORK AT THE SITE .....		25
7.01	<i>Related Work at Site</i> .....	25
7.02	<i>Coordination</i> .....	26
7.03	<i>Legal Relationships</i> .....	26
ARTICLE 8 - OWNER'S RESPONSIBILITIES .....		26
8.01	<i>Communications to Contractor</i> .....	26
8.02	<i>Replacement of Engineer</i> .....	26
8.03	<i>Furnish Data</i> .....	26
8.04	<i>Pay When Due</i> .....	26
8.05	<i>Lands and Easements; Reports and Tests</i> .....	26
8.06	<i>Insurance</i> .....	26
8.07	<i>Change Orders</i> .....	26
8.08	<i>Inspections, Tests, and Approvals</i> .....	26
8.09	<i>Limitations on Owner's Responsibilities</i> .....	27
8.10	<i>Undisclosed Hazardous Environmental Condition</i> .....	27
8.11	<i>Evidence of Financial Arrangements</i> .....	27
ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION .....		27
9.01	<i>Owner's Representative</i> .....	27
9.02	<i>Visits to Site</i> .....	27
9.03	<i>Project Representative</i> .....	27
9.04	<i>Authorized Variations in Work</i> .....	27
9.05	<i>Rejecting Defective Work</i> .....	27
9.06	<i>Shop Drawings, Change Orders and Payments</i> .....	28
9.07	<i>Determinations for Unit Price Work</i> .....	28
9.08	<i>Decisions on Requirements of Contract Documents and Acceptability of Work</i> .....	28
9.09	<i>Limitations on Engineer's Authority and Responsibilities</i> .....	28
ARTICLE 10 - CHANGES IN THE WORK; CLAIMS .....		28
10.01	<i>Authorized Changes in the Work</i> .....	28
10.02	<i>Unauthorized Changes in the Work</i> .....	29
10.03	<i>Execution of Change Orders</i> .....	29
10.04	<i>Notification to Surety</i> .....	29
10.05	<i>Claims</i> .....	29
ARTICLE 11 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK .....		30
11.01	<i>Cost of the Work</i> .....	30
11.02	<i>Allowances</i> .....	31
11.03	<i>Unit Price Work</i> .....	31
ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES .....		32
12.01	<i>Change of Contract Price</i> .....	32
12.02	<i>Change of Contract Times</i> .....	33
12.03	<i>Delays</i> .....	33
ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK .....		33
13.01	<i>Notice of Defects</i> .....	33
13.02	<i>Access to Work</i> .....	33
13.03	<i>Tests and Inspections</i> .....	33
13.04	<i>Uncovering Work</i> .....	34
13.05	<i>Owner May Stop the Work</i> .....	34
13.06	<i>Correction or Removal of Defective Work</i> .....	34
13.07	<i>Correction Period</i> .....	34
13.08	<i>Acceptance of Defective Work</i> .....	35
13.09	<i>Owner May Correct Defective Work</i> .....	35
ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION .....		36
14.01	<i>Schedule of Values</i> .....	36



14.02	<i>Progress Payments</i> .....	36
14.03	<i>Contractor's Warranty of Title</i> .....	37
14.04	<i>Substantial Completion</i> .....	37
14.05	<i>Partial Utilization</i> .....	38
14.06	<i>Final Inspection</i> .....	38
14.07	<i>Final Payment</i> .....	38
14.08	<i>Final Completion Delayed</i> .....	39
14.09	<i>Waiver of Claims</i> .....	39
ARTICLE 15	- SUSPENSION OF WORK AND TERMINATION .....	39
15.01	<i>Owner May Suspend Work</i> .....	39
15.02	<i>Owner May Terminate for Cause</i> .....	39
15.03	<i>Owner May Terminate For Convenience</i> .....	40
15.04	<i>Contractor May Stop Work or Terminate</i> .....	40
ARTICLE 16	- DISPUTE RESOLUTION .....	41
16.01	<i>Methods and Procedures</i> .....	41
ARTICLE 17	- MISCELLANEOUS .....	41
17.01	<i>Giving Notice</i> .....	41
17.02	<i>Computation of Times</i> .....	41
17.03	<i>Cumulative Remedies</i> .....	41
17.04	<i>Survival of Obligations</i> .....	41
17.05	<i>Controlling Law</i> .....	41
17.06	<i>Headings</i> .....	41

## GENERAL CONDITIONS

### ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

---

#### 1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*--The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

3. *Application for Payment*--The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

~~5. *Bid* The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.~~

~~6. *Bidder* The individual or entity who submits a Bid directly to Owner.~~

~~7. *Bidding Documents* The Bidding Requirements and the proposed Contract Documents (including all Addenda).~~

~~8. *Bidding Requirements* The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.~~

~~9. *Change Order* A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.~~

10. *Claim*--A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*--The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

~~12. *Contract Documents* Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.~~

13. *Contract Price*--The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*--The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*--See Paragraph 11.01.A for definition.

17. *Drawings*--That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *Engineer*--The individual or entity named as such in the Agreement.

20. *Field Order*--A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. *General Requirements*--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

~~22. *Hazardous Environmental Condition*--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.~~

23. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

~~24. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.~~

25. *Liens*--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*--The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*--A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

~~29. *Owner*--The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.~~

30. *PCBs*--Polychlorinated biphenyls.

31. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

32. *Progress Schedule*--A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

33. *Project*--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. *Radioactive Material*--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Related Entity* -- An officer, director, partner, employee, agent, consultant, or subcontractor.

37. *Resident Project Representative*--The authorized representative of Engineer who may be assigned to the Site or any part thereof.

38. *Samples*--Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

39. *Schedule of Submittals*--A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

40. *Schedule of Values*--A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

41. *Shop Drawings*--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

42. *Site*--Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

43. *Specifications*--That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain

administrative requirements and procedural matters applicable thereto.

44. *Subcontractor*--An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

~~45. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.~~

~~46. *Successful Bidder*--The Bidder submitting a responsive Bid to whom Owner makes an award.~~

47. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

48. *Supplier*--A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.

49. *Underground Facilities*--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

50. *Unit Price Work*--Work to be paid for on the basis of unit prices.

51. *Work*--The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

~~52. *Work Change Directive*--A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times~~

~~but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.~~

## 1.02 Terminology

A. The following words or terms are not defined but, when used in the Bidding Requirements or Contract Documents, have the following meaning.

### B. *Intent of Certain Terms or Adjectives*

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered", "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

### C. *Day*

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

### D. *Defective*

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

- a. does not conform to the Contract Documents, or
- b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or
- c. has been damaged prior to Engineer's - recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

### *E. Furnish, Install, Perform, Provide*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

F. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

## ARTICLE 2 - PRELIMINARY MATTERS

---

### 2.01 *Delivery of Bonds and Evidence of Insurance*

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

~~B. Evidence of Insurance: Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.~~

### 2.02 *Copies of Documents*

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

### 2.03 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement

or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. ~~In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.~~

### 2.04 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

### 2.05 *Before Starting Construction*

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule; indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

### 2.06 *Preconstruction Conference*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

### 2.07 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.



1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

#### ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

---

##### 3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

##### 3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or

responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or Engineer, or any of, their Related Entities, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

##### 3.03 *Reporting and Resolving Discrepancies*

###### A. Reporting Discrepancies

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

###### B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work

(unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

### 3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;

2. Engineer's approval of a Shop Drawing or Sample; (Subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

### 3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing all of the Work under a direct or indirect contract with Contractor, shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or

2. reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaption by Engineer.

B. The prohibition of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

### 3.06 *Electronic Data*

A. Copies of data furnished by Owner or Engineer to Contractor or Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's

sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party..

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

## ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

### 4.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

~~B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.~~

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

#### 4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents; and

2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

#### 4.03 *Differing Subsurface or Physical Conditions*

~~A. Notice: If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:~~

~~1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or~~

~~2. is of such a nature as to require a change in the Contract Documents; or~~

~~3. differs materially from that shown or indicated in the Contract Documents; or~~

~~4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;~~

~~then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.~~

~~B. Engineer's Review: After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.~~

#### ~~C. Possible Price and Times Adjustments~~

~~1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:~~

~~a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and~~

~~b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.~~

~~2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:~~

~~a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or~~

~~b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or~~



~~e. Contractor failed to give the written notice as required by Paragraph 4.03.A.~~

~~3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, Owner and Engineer, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.~~

#### 4.04 *Underground Facilities*

**A. Shown or Indicated:** The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

- a. reviewing and checking all such information and data,
- b. locating all Underground Facilities shown or indicated in the Contract Documents,
- c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and
- d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

#### *B. Not Shown or Indicated*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will

promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. ~~If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.~~

#### 4.05 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

#### 4.06 *Hazardous Environmental Condition at Site*

**A. Reports and Drawings:** Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the Engineer in the preparation of the Contract Documents.

**B. Limited Reliance by Contractor on Technical Data Authorized:** Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to

entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

~~G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.~~

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

## ARTICLE 5 - BONDS AND INSURANCE

### 5.01 Performance, Payment, and Other Bonds

~~A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified~~

~~in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.~~

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

#### 5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

#### 5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

#### 5.04 *Contractor's Liability Insurance*

A. Contractor shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection

from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

b. by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insured (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment.

a. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

#### 5.05 Owner's Liability Insurance

~~A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.~~

#### 5.06 Property Insurance

~~A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:~~

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, (other than caused by flood) and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

~~B. Owner shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.~~

~~C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.~~

~~D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any~~



~~deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.~~

~~E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.~~

#### 5.07 *Waiver of Rights*

~~A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.~~

~~B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for:~~

~~1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and~~

~~2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.~~

~~C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them.~~

#### 5.08 *Receipt and Application of Insurance Proceeds*

~~A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.~~

~~B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.~~

#### 5.09 *Acceptance of Bonds and Insurance; Option to Replace*

~~A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract~~

~~Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.~~

#### 5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

### ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

#### 6.01 *Supervision and Superintendence*

~~A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.~~

~~B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or~~

~~received from the superintendent shall be binding on Contractor.~~

#### 6.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

#### 6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

#### 6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

#### 6.05 *Substitutes and "Or-Equals"*

~~A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below:~~

~~1. "Or-Equal" Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:~~

~~a. in the exercise of reasonable judgment Engineer determines that:~~

~~1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;~~

~~2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;~~

~~3) it has a proven record of performance and availability of responsive service; and~~

~~b. Contractor certifies that, if approved and incorporated into the Work:~~

~~1) there will be no increase in cost to the Owner or increase in Contract Times; and~~

~~2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.~~

#### 2. Substitute Items

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented in the General Requirements and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1) shall certify that the proposed substitute item will:

a) perform adequately the functions and achieve the results called for by the general design,

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;

b) whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

c) whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

**3) will identify:**

a) all variations of the proposed substitute item from that specified, and

b) available engineering, sales, maintenance, repair, and replacement services;

4) and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change,

**B. Substitute Construction Methods or Procedures:** If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

**C. Engineer's Evaluation:** Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

**D. Special Guarantee:** Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

**E. Engineer's Cost Reimbursement:** Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of Engineer for making changes in the Contract

Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

**F. Contractor's Expense:** Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

**6.06 Concerning Subcontractors, Suppliers, and Others**

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity, nor

2. shall anything in the Contract Documents create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual



or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

#### 6.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

~~B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.~~

#### 6.08 *Permits*

~~A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.~~

#### 6.09 *Laws and Regulations*

~~A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.~~

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

## 6.10 Taxes

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

## 6.11 Use of Site and Other Areas

### ~~A. Limitation on Use of Site and Other Areas~~

~~1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.~~

~~2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.~~

~~3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.~~

B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

## 6.12 Record Documents

~~A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.~~

## 6.13 Safety and Protection

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

~~C. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Draw~~

~~ings or Specifications or to the acts or omissions of Owner or Engineer or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).~~

D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

#### 6.14 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

#### 6.15 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

#### 6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

#### 6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the acceptable Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

##### 1. Shop Drawings

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:* Contractor shall also submit Samples to Engineer for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals.

a. Submit number of Samples specified in the Specifications.

b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals , any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

##### C. Submittal Procedures

1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and

d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents

with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

#### *D. Engineer's Review*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

#### *E. Resubmittal Procedures*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

#### *6.18 Continuing the Work*

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or

disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

#### *6.19 Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

#### *6.20 Indemnification*

~~A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or~~



~~arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.~~

~~B. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.~~

~~C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, partners, employees, agents, consultants and subcontractors arising out of:~~

~~1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or~~

~~2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.~~

#### 6.21 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal

shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

## ARTICLE 7 - OTHER WORK AT THE SITE

### 7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or via other direct contracts therefor, or have other work performed by utility owners. ~~If such other work is not noted in the Contract Documents, then:~~

~~1. written notice thereof will be given to Contractor prior to starting any such other work; and~~

~~2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.~~

~~B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and~~

~~properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.~~

~~C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.~~

#### ~~7.02 Coordination~~

~~A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:~~

~~1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;~~

~~2. the specific matters to be covered by such authority and responsibility will be itemized; and~~

~~3. the extent of such authority and responsibilities will be provided.~~

~~B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.~~

#### ~~7.03 Legal Relationships~~

~~A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.~~

~~B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.~~

~~C. Contractor shall be liable to Owner and any other contractor for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.~~

## ARTICLE 8 - OWNER'S RESPONSIBILITIES

---

### 8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

### 8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

### 8.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

### 8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

### 8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by Engineer in preparing the Contract Documents.

### 8.06 *Insurance*

~~A. Owner's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.~~

### 8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

### 8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility in respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

## 8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

## 8.10 ~~*Undisclosed Hazardous Environmental Condition*~~

~~A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.~~

## 8.11 ~~*Evidence of Financial Arrangements*~~

~~A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in the Supplementary Conditions.~~

# ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

---

## 9.01 *Owner's Representative*

~~A. Engineer will be Owner's representative during the construction period.~~ The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

## 9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep

Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

## 9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

## 9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

## 9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

#### 9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

#### 9.07 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

#### 9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

~~A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question~~

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show

partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

#### 9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to, the Resident Project Representative, if any, and assistants, if any.

### ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

#### ~~10.01 *Authorized Changes in the Work*~~

~~A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall~~



~~promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).~~

~~B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.~~

#### ~~10.02 Unauthorized Changes in the Work~~

~~A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.B.~~

#### ~~10.03 Execution of Change Orders~~

~~A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:~~

~~1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;~~

~~2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and~~

~~3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.~~

#### ~~10.04 Notification to Surety~~

~~A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any bond to be given to a surety, the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.~~

#### ~~10.05 Claims~~

~~A. Engineer's Decision Required: All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.~~

~~B. Notice: Written notice stating the general nature of each Claim, shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).~~

~~C. Engineer's Action: Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:~~

~~1. deny the Claim in whole or in part,~~

~~2. approve the Claim, or~~

~~3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.~~

~~D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.~~

~~E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.~~

~~F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.~~

## ARTICLE 11 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

### 11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

→ 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and

Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to Engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

~~c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.~~

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by ☐ insurance ☐ or ☐ otherwise, ☐ sustained ☐ by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established ☐ in ☐ accordance ☐ with ☐ Paragraph 5.06.D), provided such losses and damages have

resulted from causes other than the negligence of Contractor, ☐ any ☐ Subcontractor, ☐ or ☐ anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

~~h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expresses, and similar petty cash items in connection with the Work.~~

i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

**B. Costs Excluded:** The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A and 11.01.B.

**C. Contractor's Fee:** When all the Work is performed on the basis of cost-plus, Contractor's fee shall

be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

**D. Documentation:** Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

## 11.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

### B. Cash Allowances

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

### C. Contingency Allowance

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

## 11.03 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

## ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

### 12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an

allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

~~a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;~~

~~b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;~~

~~c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;~~

d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

### 12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted



by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

~~B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.~~

#### 12.03 Delays

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

D. Owner, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

## ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

---

### 13.01 Notice of Defects

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

### 13.02 Access to Work

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

### 13.03 Tests and Inspections

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

~~B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:~~

~~1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;~~

~~2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and~~

~~3. as otherwise specifically provided in the Contract Documents.~~

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to

be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

#### 13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

#### 13.05 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

#### 13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

#### 13.07 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or
2. correct such defective Work; or
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications .

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

#### 13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

#### 13.09 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.



### ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

#### 14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress

payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

#### 14.02 *Progress Payments*

##### *A. Applications for Payments*

1. ~~At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.~~

2. ~~Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.~~

3. ~~The amount of retainage with respect to progress payments will be as stipulated in the Agreement.~~

##### *B. Review of Applications*

1. ~~Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.~~

2. ~~Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:~~

a. ~~the Work has progressed to the point indicated;~~

b. ~~the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and~~

c. ~~the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.~~

3. ~~By recommending any such payment Engineer will not thereby be deemed to have represented that:~~

a. ~~inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or~~

b. ~~that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.~~

4. ~~Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:~~

a. ~~to supervise, direct, or control the Work, or~~

b. ~~for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or~~

c. ~~for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or~~

d. ~~to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or~~

e. ~~to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.~~

5. ~~Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent~~



~~inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:~~

~~a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;~~

~~b. the Contract Price has been reduced by Change Orders;~~

~~c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or~~

~~d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.~~

#### ~~C. Payment Becomes Due~~

~~1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.~~

#### ~~D. Reduction in Payment~~

~~1. Owner may refuse to make payment of the full amount recommended by Engineer because:~~

~~a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;~~

~~b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;~~

~~c. there are other items entitling Owner to a set-off against the amount recommended; or~~

~~d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.~~

~~2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.~~

~~3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1.~~

#### 14.03 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

#### 14.04 Substantial Completion

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, , Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial

~~Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.~~

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

#### 14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

#### 14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals

that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

#### ~~14.07 *Final Payment*~~

##### ~~A. Application for Payment~~

~~1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.~~

~~2. The final Application for Payment shall be accompanied (except as previously delivered) by:~~

~~a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;~~

~~b. consent of the surety, if any, to final payment;~~

~~c. a list of all Claims against Owner that Contractor believes are unsettled; and~~

~~d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.~~

~~3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.~~

##### ~~B. Engineer's Review of Application and Acceptance~~

~~1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations~~

~~under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.~~

#### C. Payment Becomes Due

~~1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and, will be paid by Owner to Contractor.~~

#### 14.08 *Final Completion Delayed*

~~A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.~~

#### 14.09 *Waiver of Claims*

~~A. The making and acceptance of final payment will constitute:~~

~~1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and~~

~~2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance~~

~~with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.~~

## ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

---

### 15.01 *Owner May Suspend Work*

~~A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.~~

### 15.02 *Owner May Terminate for Cause*

~~A. The occurrence of any one or more of the following events will justify termination for cause:~~

~~1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);~~

~~2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;~~

~~3. Contractor's disregard of the authority of Engineer; or~~

~~4. Contractor's violation in any substantial way of any provisions of the Contract Documents.~~

~~B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:~~

~~1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);~~

~~2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and~~

~~3. complete the Work as Owner may deem expedient.~~

~~C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.~~

~~D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.~~

~~E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.~~

~~F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.~~

#### ~~15.03 Owner May Terminate For Convenience~~

~~A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):~~

~~1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;~~

~~2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;~~

~~3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and~~

~~4. reasonable expenses directly attributable to termination.~~

~~B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.~~

#### ~~15.04 Contractor May Stop Work or Terminate~~

~~A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.~~

~~B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.~~

## ARTICLE 16 - DISPUTE RESOLUTION

### ~~16.01 Methods and Procedures~~

~~A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be~~



~~governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.~~

~~B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.~~

~~C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:~~

~~1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or~~

~~2. agrees with the other party to submit the Claim to another dispute resolution process, or~~

~~3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.~~

## ARTICLE 17 - MISCELLANEOUS

### 17.01 Giving Notice

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

### 17.02 Computation of Times

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

### 17.03 Cumulative Remedies

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

### 17.04 Survival of Obligations

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

### 17.05 Controlling Law

~~A. This Contract is to be governed by the law of the state in which the Project is located.~~

### 17.06 Headings

~~A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.~~

SUPPLEMENTARY CONDITIONS  
TABLE OF CONTENTS  
Part I

<u>DESCRIPTION</u>	<u>PAGE NUMBER</u>
1. Definitions and Terminology	00800-1
2. Preliminary Matters	00800-5
3. Contract Documents: Intent, Amending, Reuse	00800-5
4. Availability of Lands; Subsurface and Physical Conditions; Hazardous Environmental Conditions; Reference Points	00800-7
5. Bonds and Insurance	00800-9
6. Contractor's Responsibilities	00800-14
7. Other Work at the Site	00800-26
8. Owner's Responsibilities	00800-26
9. Engineer Status During Construction	00800-26
10. Changes in the Work; Claims	00800-27
11. Cost of the Work; Allowances; Unit Price Work	00800-31
12. Change of Contract Price: Change of Contract Times	00800-33
13. Tests and Inspections; Correction, Removal or Acceptance of Defective Work	00800-40
14. Payments to Contractor and Completion	00800-40
15. Suspension of Work and Termination	00800-44
16. Dispute Resolution	00800-46

17.	Contractor's Accounting Method Requirements	00800-47
18.	Nondiscrimination in Employment	00800-51
19.	Miscellaneous	00800-52
20.	Additional Provisions	00800-56
21.	Minimum Prevailing Wage Rates	

## SECTION 00800

### SUPPLEMENTARY CONDITIONS

#### Part I AMENDMENTS TO GENERAL CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC No. C-700, 2002 Edition)(the General Conditions) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

Paragraphs or subparagraphs as noted below are required by or are intended to be consistent with the requirements of Massachusetts statutes governing public construction contracts in the Commonwealth of Massachusetts (the "Commonwealth"). Any other provisions required by statute to be included herein shall be deemed to be so included. In addition, the Owner and Contractor recognize that other rights, duties and obligations with respect to public construction contracts are provided for by statute, notwithstanding the fact that they are not provided for in the Contract Documents. In case of conflict between the asterisked provisions and other provisions of the Contract Documents, the asterisked provisions shall govern. In case of conflict between the provisions of the Contract Documents and the provisions of any applicable statute, the statutory provisions shall govern. Where the term "Awarding Authority" appears in any asterisked provision, it shall mean the Owner.

#### ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

##### SC-1.01 Defined Terms

Delete the definition of 5. Bid in its entirety and insert in its place the following:

“Bid shall mean the price submission by the individual, partnership, corporation, or other entity setting forth the monetary amount of the total contract, together with any unit prices requested, on a form prescribed by the Owner, pursuant to M.G.L. c. 149, §§44A et seq..”

Delete the definition of 6. Bidder in its entirety and insert in its place the following:

“Bidder shall mean the individual, partnership, corporation, or other entity who submits a Bid pursuant to an Invitation for Bids by the Owner.”

Delete the definition of 7. Bidding Documents in its entirety and insert in its place the following:

“Bidding documents shall mean any and all documents issued by the Owner in requesting Bids pursuant to M.G.L. c.149, §§44A et seq., which shall include, but shall not be limited to, the Invitation for Bids, the Information for Bidders, Bid Bond (if any), Performance Bond, Payment Bond, Contract, General Conditions of the Contract, Supplementary General Conditions of the Contract, Supplier Diversity Office (SDO) Forms (if applicable), Minimum Prevailing Wage Rates (as applicable), and other additional information provided to potential Bidders by the Owner.”



Delete the definition of 8. Bidding Requirements in its entirety and insert in its place the following:

“Bidding requirements shall mean any and all requirements contained in any portion of the Bidding Documents issued by the Owner.”

Delete the definition of 9. Change Order in its entirety and insert in its place the following:

“Change Order shall mean a written order to the Contract signed to show the recommendation of the Project Manager, if any, the approval of the Engineer and the authorization of the Owner, executed with the same formality as the Contract, issued after the execution of the Contract, authorizing a change in the Work or an adjustment in the Contract Sum or the Contract Time. The Contract Sum and Contract Time may be changed only by Change Order. A Change Order signed by the Contractor indicates the Contractor’s Contract therewith, including the adjustment in the Contract Sum or the Contract Time.

A Change Order request may originate with the Owner, the Engineer, if any, or the Contractor and shall be submitted to the Owner. The Change Order request shall be made in writing and in accordance with the provisions of the Contract and applicable procedures of the Owner. The term equitable adjustment, as used in this paragraph, shall include all adjustments to the Contract Price or to the Time to which the Contractor is entitled, pursuant to M.G.L. c.30, Sections 39N and 39O. Such equitable adjustment shall be made in accordance with the provisions of this Article.

A Change Order may be submitted for changes in the Contract work, including but not limited to, changes in:

- a. the plans and specifications
- b. in the method or manner or performance of the work; and/or
- c. in the schedule for performance of the work.”

In the definition of 11. Contract, insert the following sentence at the end:

“The word “Agreement” in the Bidding Requirements or Contract Documents shall mean the same as the word Contract.”

Delete the definition of 12. Contract Documents and insert in its place the following:

“Contract documents are those documents enumerated in the written Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, the General Conditions of the Contract, the Supplementary General Conditions of the Contract, other Conditions of the Contract, Drawings, Specifications, Addenda issued prior to the execution of the contract, other documents listed in the Agreement, and modifications issued after the execution of the Contract. A modification is a written amendment signed by both parties to the Agreement, a Change Order, a Work Change Directive, or a minor written change in the Work Ordered by the Engineer (Field Order).”

Delete the definition of 22. Hazardous Environmental Condition and insert in its place the following:

“Hazardous Environmental Condition is the presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, Radioactive Material or other material in such quantities or circumstances that may present a substantial or notable danger or harm to persons or property exposed thereto in connection with the Work.”

Delete the definition of 24. Laws and Regulations; Laws or Regulations and insert in its place the following:

“Laws and Regulations shall mean all Federal, Massachusetts and Town of Natick law applicable to his work including, without limitation, statutes, by-laws, rules, regulations, orders and directives, as amended, and including, without limitation, the Williams-Steiger Occupational Safety and Health Act, as amended, and related regulations, as amended, in effect throughout the term of the Contract and any extension or renewal thereof, with which the Contractor shall be required to comply. Without limitation, the Contractor shall comply with the provisions of Chapter 149, Section 26 to 27D of the Massachusetts General Laws, as amended, and the applicable minimum prevailing wage rates as determined by the Massachusetts Commissioner of Labor and Industries. The Contract shall be considered to include in their entirety all terms respecting workers’ compensation insurance and other terms required to be included in it by Chapter 152 of the Massachusetts General Laws, as amended, and any other laws, as though such terms were set forth in their entirety herein.”

Delete the definition of 29. Owner and insert in its place the following:

“Owner, sometimes referred to as Town or Awarding Authority, is the Town of Natick, a body corporate and politic located in Natick, Middlesex County, Massachusetts. The Owner and its authorized representatives, as well as Engineer and Owner’s Project Manager, if any, 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 for materials, and generally all records relating to the Work. No member, officer, agent, employee, representative or official of the Owner shall in any way, directly or indirectly, be personally liable, under any provisions of the Contract.”

In the definition of 36. Related Entity, insert “board, commission, committee or member thereof” between “employee” and “agent”.

Delete the definition of 45. Substantial Completion in its entirety and insert in its place the following definition:

"45. Substantial Completion shall mean either that the Work required by the Contract has been completed except for Work having a Contract Price of less than one (1) percent of the then adjusted total Contract Price, or substantially all of the work has been completed and opened to public use except for minor incomplete or unsatisfactory work items that do not materially impair the usefulness of the Work required by the Contract."

Delete the definition of 46. Successful Bidder in its entirety and insert in its place the following:

“Successful bidder shall mean the lowest responsible and eligible bidder, as defined in M.G.L. c. 149, §§44A et seq., on the basis of competitive bids publicly opened and read by the Awarding Authority

forthwith upon expiration of the time for the filing thereof; provided, however, that the Awarding Authority may reject any and all bids, if it is in the public interest to do so.”

Add the following to the definition of 51. Work:

“All Work mentioned or indicated in the Contract Documents shall be performed by the Contractor as part of the Contract unless it is specifically indicated in the Contract Documents that such Work is to be done by others. Should the Drawings or the Specifications disagree in themselves or with each other, the Contractor shall provide the better quality or greater quantity of Work unless otherwise directed by written addendum to the Contract. All indications or notations which apply to one of a number of similar situations, materials or processes shall be deemed to apply to all such situations, materials or processes wherever they appear in the Work, except where a contrary result is clearly indicated by the Contract Documents. Where codes, regulations, standards, requirements, and publications of public and private bodies are referred to in the Specifications, references shall be understood to be to the latest revision prior to the date of receiving bids, except where otherwise indicated. Where no explicit quality or standards for workmanship are established for Work, such Work is to be of good quality and consistent with the quality required by the Contract Documents. The Drawings are diagrammatic only, and are not intended to show the alignment, physical locations or configurations of such Work. The Owner and Engineer assume no liability arising out of jurisdictional issues raised or claims advanced by trade organizations or other interested parties based on the arrangement or manner of subdivision of the content of the Drawings and Specifications. The Contractor shall make all necessary arrangements to reconcile any such jurisdictional conflicts without delay, damage or cost to the Owner, unless otherwise agreed by the parties hereto.”

Delete the definition of 52. Work Change Directive in its entirety and insert in its place the following:

“Work Change Directive shall mean a written order prepared by the Engineer and signed off on by the Owner and Engineer, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Price or Contract Times, or both. The Owner may, by Work Change Directive, 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 Price and Contract Times being adjusted accordingly.”

Add the definition of "Complete and/or Completion" after paragraph 52, which is to read as follows:

"53. Complete and/or Completion - Whenever the word “Complete and/or Completion” is utilized in the Contract in reference to work completed when referring to the completion date of the contract and the assessment of liquidated damages, it shall be understood to mean that all work on the project is completed, the facilities are fully operational, the data required to closeout the project has been submitted and approved, and incidental items included in the closeout punch list have been completed to the Owner’s satisfaction”.

## ARTICLE 2 PRELIMINARY MATTERS

SC-2.01-B Delete paragraph 2.01-B of the General Conditions in its entirety.

SC-2.03-A Delete the last sentence of paragraph 2.03-A.

### ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

SC-3.01 The last clause in paragraph 3.01-B of the General Conditions shall read:

“shall be provided by the Contractor, at no additional cost to the Owner, whether or not specifically called for”.

SC-3.01-D Add a new section 3.01-D to the General Conditions as follows:

“In the event of any conflict among the Contract Documents, the Documents shall be construed according to the following priorities:

Highest Priority:	Amendments
Second Priority:	Contract
Third Priority:	Addenda--later date to take precedence
Fourth Priority:	Supplementary General Conditions
Fifth Priority:	General Conditions
Sixth Priority:	Division 1, General Requirements
Seventh Priority:	Technical Specifications
Eighth Priority:	Drawings, with larger scale to take precedence
Ninth Priority:	Invitation to Bid, Instruction to Bidders, The Contractor’s General Bid.

Notwithstanding the order of priority of documents set forth in Subparagraph 3.01-D, any matters contained in the Specifications which have been omitted from the Drawings or vice versa shall be construed as though contained in both. In the event of any duplication, conflict, or discrepancy between the Drawings and the Specifications or between other contract clauses, so far as the same pertains to the Drawings, the Specifications or any modifications to the Drawings or the Specifications, the matter shall be promptly brought to the attention of the Engineer, without whose instructions the Contractor shall not adjust the matter except at his own risk. Any instructions of the Engineer shall be given in writing.”

SC-3.02 Insert a new paragraph SC-3.02-A.3 in the General Conditions as follows:

“Paragraphs or subparagraphs herein are intended to be consistent with the requirements of Massachusetts statutes governing public building construction contracts in the Commonwealth. Any other provisions required by statute to be included herein shall be deemed to be so included. In

addition, the Owner and Contractor recognize that other rights, duties and obligations with respect to public construction contracts are provided for by statute, notwithstanding the fact that they are not provided for in the Contract Documents.”

SC-3.03        Insert the following language at the beginning of the second sentence in paragraph 3.03-A.2 of the General Conditions:

“In the event that such a conflict, error, ambiguity or discrepancy actually exists which requires an amendment or supplement to the Contract Documents,”.

SC-3.04        Insert a new paragraph 3.04-C in the General Conditions as follows:

No officer, official, agent or employee of the Town of Natick shall have the power to amend, modify or alter the Contract or waive any of its provisions or to bind the Town of Natick by making any promise or representation not contained herein except by an amendment, in writing, executed by the Owner in the same manner as the Contract is executed. Neither party may rely on any conduct, statement, action, inaction or course of conduct of the employees, agents or officers of the other party as having changed, modified or amended the Contract. Neither party shall be construed as waiving any provision of the Contract unless the waiver is executed in writing as an amendment to the Contract. No waiver by either party of any default or breach shall constitute a waiver of any subsequent default or breach. Forbearance or indulgence in any form or manner by either party shall not be construed as waiver of any term or condition hereto nor shall it limit the legal or equitable remedies available to that party.

Information or services required of the Owner hereunder shall be furnished by the Owner with reasonable promptness and in accordance with M.G.L. c.30, §39P, as applicable, after receipt from the Contractor of a reasonably detailed written request for such information or services. Reference is made to General Laws Chapter 30, Section 39P, the provisions of which are incorporated herein.”

SC-3.05        In paragraph 3.05-A.2 of the General Conditions, in the third line, insert “prior” between “without” and “written” and in the fourth line, insert “prior” between “specific” and “written”.

#### ARTICLE 4 AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS, REFERENCE POINTS

SC 4.01        Insert the following language at the end of the third sentence of paragraph 4.01-A of the General Conditions “, which easements are required under the circumstances”.

SC-4.01-C     Add the following language to the last sentence in paragraph 4.01-C of the General Conditions:

“, at his own expense and without liability to the Owner”

SC-4.01-B     Delete paragraph 4.01-B of the General Conditions in its entirety.

SC-4.03        Delete paragraph 4.03 A, B and C of the General Conditions in their entirety and insert in its place the following language:

“(Statutory reference: M.G.L. c.30 §39N)

If, during the progress of the work, the Contractor or the Awarding Authority discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the Contract Documents, either the Contractor or the Awarding Authority may request an equitable adjustment in the contract price of the Contract applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a Contractor, or upon its own initiative, the Awarding Authority shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the Contract Documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and Contract Documents and are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the methods required for the performance of the work which results in an increase or decrease in the cost of the work, the Awarding Authority shall make an equitable adjustment in the Contract price and the Contract shall be modified in writing accordingly.

If the Contractor claims that any acts or omissions of the Owner or the Engineer, including any instructions or orders, whether oral, written, by Drawings, or otherwise, involve extra cost or time, and the Contractor has not received a written acknowledgment by the Owner or Engineer that extra payment will be made or time extended on account thereof, the Contractor shall promptly so notify the Engineer in writing of such Claim and shall not proceed with the Work relating to such Claim until the Contractor has received a further written order to proceed in accordance with this Agreement. No Claim by the Contractor on account of such acts, omissions, instructions or orders shall be valid unless the Contractor has so notified the Engineer in writing, before proceeding, and has received the further written order to proceed.

The Contractor shall have the burden of demonstrating the effect of the claimed delay on the Contract Time, and shall furnish the Engineer with such documentation relating thereto as the Engineer may reasonably require. Estimates of the extension of time shall be accompanied by a schedule showing how the Critical Path has been affected.”

SC 4.04        Insert the following sentence just prior to the last sentence of paragraph 4.04-A of the General Conditions:

“The locations of existing underground facilities shown on the Contract Drawings are approximate only, and are included to indicate that the underground facilities are present, and it shall be the Contractor’s responsibility to make arrangements with all utility companies for field locations. The Contractor shall also contact "Dig Safe" and other appropriate departments, agencies and companies to insure that all underground facilities are located prior to excavation, regardless of the fact that they may or may not be shown on the Contract Drawings”.

SC-4.04-B.2   Delete the final sentence of paragraph 4.04-B.2 of the General Conditions.

SC-4.06        Insert the following sentence after paragraph 4.06-A of the General Conditions:

“The following reports and drawings relating to a Hazardous Environmental Condition identified at the site have been utilized by the Engineer in the preparation of the Contract Documents.

- None”

SC-4.06-C Insert the following sentence at the end of paragraph 4.06-C of the General Conditions:

“Nothing in the Contract Documents shall limit the responsibility of the Contractor for any Hazardous Environmental Condition which is caused by the Contractor or by any of its officers, employees, boards, commissions, committees, agents or representatives.”

SC-4.06-D Insert the following sentences at the end of paragraph 4.06-D of the General Conditions:

“In that event Contractor and its officers, employees, agents and representatives shall have no authority to handle, transport, remove or dispose of any materials the presence of which at the site constitutes a Hazardous Environmental Condition. In any event Contractor shall be liable for its negligence or willful misconduct.”

SC-4.06-G Delete paragraph 4.06-G of the General Conditions.

## ARTICLE 5 BONDS AND INSURANCE

SC-5.01 Delete paragraph 5.01-A of the General Conditions in its entirety and insert in its place the following:

“As required by M.G.L. c. 149, §44E, or by these Supplementary Conditions, the Contractor shall furnish a Performance Bond, acceptable to the Town of Natick, as security for the faithful performance of its obligations under the Contract. Said Performance Bond shall be in the amount of one hundred percent (100%) of the Contract Price and shall be issued by a surety company qualified to do business under the laws of the Commonwealth of Massachusetts and approved by the Owner. Said Performance Bond shall obligate the Contractor, its surety, and their successors and assigns for all of the work required to be performed by the Contractor under the Contract. Said Performance Bond shall remain in effect no less than one (1) year after the expiration of the term of the Contract, or any extension or renewal thereof.

As also required by M.G.L. c. 149, §44E, or by these Supplementary Conditions, the Contractor shall furnish a Payment Bond, acceptable to the Town of Natick, as security for the faithful payment of its obligations under the Contract. Said Payment Bond shall be in the amount of one hundred percent (100%) of the Contract Price and shall be issued by a surety company qualified to do business under the laws of the Commonwealth of Massachusetts and approved by the Owner. Said Payment Bond shall obligate the Contractor, its surety, and their successors and assigns to pay for labor, materials and equipment furnished for use regarding the work to be performed by the Contractor under the Contract. Said Payment Bond shall remain in effect no less than one (1) year after the expiration of the term of

the Contract, or any extension or renewal thereof.”

SC-5.04        Insert the following language at the end of paragraph 5.04-B.1 of the General Conditions:

“Notwithstanding any other provision of the Contract Documents, the Contractor shall provide to the Owner, with its proof of insurance coverage, endorsements or riders to the policies of Commercial General Liability Insurance, Automobile Liability Insurance, and Excess Liability Insurance, Umbrella Form, which indicate that the Town of Natick and Environmental Partners are named as an additional insured on each such policy.”

SC-5.04        Add the following language after paragraph 5.04.B-5 of the General Conditions:

“Each certificate and policy of insurance required by this Agreement shall contain a cancellation provision as indicated below with no variations.

The above policies will not be cancelled or materially amended before the expiration date thereof, until at least thirty (30) calendar days prior written notice has been given to the certificate holders and the named insured and the Owner.”

SC-5.04        Add the following paragraphs at the end of paragraph 5.04-B.2 of the General Conditions:

"5.04-B-2.a    “The Contractor shall provide and maintain throughout the term of the Contract and any extension or renewal thereof the following insurance with companies that are authorized and licensed in the Commonwealth of Massachusetts to issue policies for the coverages and limits so required. The Contractor shall also ensure that any and all Subcontractors and sub-subcontractors provide insurance in the following limits and that the Town of Natick is named as an additional insured and meet the following requirements.

A 1        Commercial General Liability including but not limited to:

1.        Premises/Operations
2.        Products/Completed Operations
3.        Contractual
4.        Independent Contractors
5.        Broad Form Property Damage
6.        Personal Injury
7.        Medical Expense
8.        Underground Explosion and Collapse Hazard (XCU)

A 2        Limits for Commercial General Liability at a minimum shall be:



1. General Liability
 

General Aggregate	\$2,000,000.
Each Occurrence	\$1,000,000.
2. Products/Completed Operations \$2,000,000.
3. Personal Injury \$1,000,000.
4. Medical Expense \$ 5,000.

- B 1 Automotive Liability including but not limited to:
1. Scheduled Autos
  2. Hired Autos
  3. Non Owned Autos

- B 2 Limit for Automotive Liability at a minimum shall be:

1. Combined Single Limit \$1,000,000.

- C 1 Worker's Compensation and Employer's Liability

- C 2 Limits for Worker's Compensation and Employer's Liability at a minimum shall be:

1. Worker's Compensation
 

Statutory Amount	
------------------	--
2. Employer's Liability
 

Each Accident	\$1,000,000.
Disease Policy Limit	\$1,000,000.
Disease Each Employee	\$1,000,000.

- D-1 Provide Excess Umbrella for Liability Coverage. Use of Umbrella to meet other insurance limits will not be accepted. Limits for liability at a minimum shall be:

1. Each Occurrence \$5,000,000
2. General Aggregate \$5,000,000

Excess Liability Insurance, Umbrella Form shall be following form, providing coverage over commercial general liability insurance, automobile liability insurance, and employer's liability under workers' compensation insurance.

- E-1 Failure to provide and continue in force such insurance as aforesaid shall be deemed a material breach of the Contract and shall operate as an immediate termination thereof.

- F-1 Certificates evidencing such insurance in five (5) copies shall be furnished to the Town of Natick at the execution of the Contract. Such certificates shall not merely name the types of policies provided, but shall specifically refer to the Contract and shall state that such insurance is as required by the Contract. With the certificates, the Contractor shall submit an insurance certification form from insurer/insurers, indicating that the coverages provided do in fact satisfy all the insurance requirements listed under ARTICLE 5 of the General Conditions, and the amendments thereto under the Supplementary Conditions. The insurance certification form is included in Part II of the Supplementary

Conditions.

The Contractor shall also be required to provide to the Owner with its proof of insurance coverage endorsements or riders to the policies of commercial general liability insurance, automobile liability insurance, and excess umbrella liability insurance, umbrella form, which indicate that the Town of Natick is named as an additional insured on each such policy.

No insurance shall be obtained from an insurer which:

- a. is not licensed to sell insurance in the Commonwealth of Massachusetts; or
- b. is not authorized to provide insurance as an excess or surplus lines insurer, and does not have a current Best's rating of A or better."

G-1 The Contractor shall make no claims against the Town of Natick or its officers for any injury to any officers or employees or for damage to its equipment arising out of work contemplated by the Contract."

SC 5.05 Delete paragraph 5.05 of the General Conditions in its entirety, and insert the following paragraphs in its place:

"5.05-A Contractor shall purchase and maintain a separate Owner's Protective Liability policy, issued to Owner at the expense of Contractor, with the Owner and Engineer only as named insured. This insurance shall provide coverage for not less than the following amounts:

1. General Aggregate \$3,000,000.
2. Each Occurrence \$1,000,000.

5.05-A.1. A rider on the Contractor's Liability Insurance will not be acceptable."

5.05.-A.2 The provisions of paragraph 5.04-B.2.aE-1 and 5.04B-2.aF-1 of the General Conditions are incorporated herein by reference.

SC 5.06 Delete paragraph 5.06-A of the General Conditions in its entirety and insert the following paragraph in its place:

"5.06-A. For projects that includes work within existing structures or buildings, the Contractor shall be required to provide Installation Floater coverage in the full amount of the work being performed, and for projects that include construction of a new structure or building, the Contractor shall provide Builder's All Risk coverage in the full value of the structure and contents. This insurance shall:"

SC-5.06-A.1 Add the following sentence to the end of paragraph 5.06-A.1 of the General Conditions, as follows:

"The additional insured for this project shall be the Owner and Engineer."

SC-5.06 Delete paragraphs 5.06-B, C, D, E of the General Conditions in their entirety.

SC 5.07 Delete paragraphs 5.07-A and 5.07-B and 5.07-C of the General Conditions in their entirety, and insert the following paragraphs in their place:

"5.07 The Contractor shall waive all rights against the Owner for all losses and damages caused by any perils covered by the policies of insurance provided in response to paragraph SC 5.06 of the Supplementary Conditions and any other property insurance applicable to the Work, and also waive such rights against the Subcontractors, Engineer, Engineer's consultant and all other parties named as insured in such policies for loss and damages so caused.

5.07.1 As required by paragraph 6.06-G of the General Conditions each subcontract between Contractor and a Subcontractor will contain similar waiver provisions by the Subcontractor in favor of Owner, Contractor, Engineer, Engineer's consultants and all other parties named as insureds.

5.07.2 All such policies provided in response to paragraph 5.06 of the General Conditions, as amended in SC 5.06 of the Supplementary Conditions shall contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights or recovery against the Owner, Engineer or Engineer's consultant."

SC 5.08 Delete paragraph 5.08-A and 5.08-B of the General Conditions in their entirety.

SC 5.09 Delete paragraph 5.09 of the General Conditions in its entirety and insert the following paragraph in its place:

"5.09 If Owner has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by Contractor in accordance with paragraph 5.02 thru 5.06 of the General Conditions, as amended by SC 5.04 thru SC 5.06 of the Supplementary Conditions, on the basis of its not complying with the Contract Documents. Owner will notify Contractor in writing thereof within fourteen (14) calendar days of the date of delivery of such certificates to Owner in accordance with paragraph 2.01-B. Contractor will provide such additional information in respect of insurance provided by him as Owner may reasonably request."

## ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

SC-6.01-A and 6.01-B Delete paragraphs 6.01A and 6.01B of the General Conditions and insert in their place the following:

"The Contractor shall employ a competent superintendent, reasonably acceptable to the Owner, and necessary assistants who shall be in attendance at the Project site full time and at all times during the progress of the Work until the date of Substantial Completion, and for such additional time thereafter as the Engineer may determine to be necessary for the expeditious completion of the Work. The Contractor shall remove the superintendent if requested to do so in writing by the Owner or by the Engineer on behalf of the Owner, and shall promptly replace him with a competent person reasonably acceptable to the Owner, at no increase in the Contract Sum or Contract Time.

The Contractor shall not replace such superintendent without the prior written approval of the Engineer.

The Contractor shall retain a competent engineer or surveyor who shall establish sufficient lines and grades for the Work.

The Contractor shall coordinate and supervise the Work performed by Subcontractors to the end that the Work is carried out without conflict between trades and so that no trade, at any time, causes delay to the general progress of the Work. The Contractor and all Subcontractors shall at all times afford each trade, any separate contractor, or the Owner, every reasonable opportunity for the storage of materials.

The Contractor shall arrange for and attend job meetings with the Engineer and such other persons as the Engineer and the Owner may from time to time wish to have present. The Contractor shall be represented by a principal, or project manager, as well as by the Contractor's own superintendent. An authorized representative of any Subcontractor or Sub-subcontractor shall attend such meetings if the representative's presence is requested by the Engineer. Such representatives shall be empowered to make binding commitments on all matters to be discussed at such meetings, including costs, payments, Change Orders, time schedules and manpower. Any notices required under the Contract may be served on such representatives.

The Contractor warrants that its financial condition is sound and that the Contractor shall be capable of obtaining any bonds required by the Contract Documents. The Contractor shall promptly advise the Owner of any occurrence, event, fact, or other matter that has had or will have a materially adverse effect upon the financial condition of the Contractor.

The Contractor hereby represents and warrants to the Owner that the Contractor is a business entity which is experienced and skilled in the construction of projects of the type described in the Contract Documents, is licensed to engage in the general construction business in the Commonwealth of Massachusetts, and is in compliance with all applicable governmental laws and regulations and all case law relative thereto.

Before starting the Work, and at frequent intervals during the progress thereof, the Contractor shall carefully study and compare the Contract Documents with each other and with the information furnished by the Owner, the Engineer and the Contractor and shall at once report to the Engineer any error, inconsistency or omission the Contractor may discover. Any necessary change shall be ordered as provided in the Contract Documents. If the Contractor proceeds with the Work without such notice to the Engineer, having discovered such errors, inconsistencies or omissions, or if by reasonable study of the Contract Documents the Contractor could have discovered such errors, inconsistencies or omissions the Contractor shall bear all costs arising therefrom.”

SC-6.02-B In paragraph 6.02-B of the General Conditions, in the seventh line, insert “prior” between “Owner’s” and “written”.

SC-6.05-A Delete paragraph 6.05-A of the General Conditions, in its entirety and insert in its place the following:

“Specifications for such contracts, and specifications for contracts awarded pursuant to the provisions of said sections forty-four A to forty-four L of said chapter one hundred and forty-nine, shall be written

to provide for full competition for each item of material to be furnished under the contract; except, however, that said specifications may be otherwise written for sound reasons in the public interest stated in writing in the public records of the awarding authority or promptly given in writing by the awarding authority to anyone making a written request therefor, in either instance such writing to be prepared after reasonable investigation. Every such contract shall provide that an item equal to that named or described in the said specifications may be furnished; and an item shall be considered equal to the item so named or described if, in the opinion of the awarding authority: (1) it is at least equal in quality, durability, appearance, strength and design, (2) it will perform at least equally the function imposed by the general design for the public work being contracted for or the material being purchased, and (3) it conforms substantially, even with deviations, to the detailed requirements for the item in the said specifications. For each item of material the specifications shall provide for either a minimum of three named brands of material or a description of material which can be met by a minimum of three manufacturers or producers, and for the equal of any one of said named or described materials.” Statutory reference M.G.L. c. 30, §39M(b)

SC-6.05-A.2.d.2) and 3) In paragraphs 6.05-A.2.d.2) and 3) of the General Conditions, delete the first word “will” and insert in its place the word “shall”.

SC-6.05-B In paragraph 6.05-B of the General Conditions, in the sixth line, insert “in advance, in writing,” between “approved” and “by”.

SC 6.05-F Add the following language to the end of paragraph 6.05-F of the General Conditions.

"Contractor shall submit to the Engineer for review, drawings to scale, showing the effect this substitute will have upon the adjoining materials, piping, equipment, etc., at no additional cost to the Owner."

SC-6.06-B Add the following to the end of paragraph 6.06-B of the General Conditions:

“The Contractor shall be required to submit to the Owner a list of Subcontractors it intends to use at a certain date to be specified by the Owner. The Contractor shall not use any Subcontractor to which the Owner objects and to which the Owner provides written notice of such objection to the Contractor.”

SC-6.06-C.2 In paragraph 6.06-C.2 of the General Conditions, in the first line, delete the words “anything in the Contract Documents”.

SC 6.07-B Delete paragraph 6.07-B of the General Conditions in its entirety and insert in its place the following:

“To the fullest extent permitted by law, the Contractor shall indemnify, defend, and hold harmless the Town of Natick and the Engineer and all of their officers, employees, boards, commissions, committees, agents and representatives from and against all claims, causes of action, suits, costs, damages, and liability of any kind which arise out of the Contractor’s or subcontractors’ infringement of patent rights or copyrights incident to the use in the performance of the Work of, or resulting from the Contractor’s or subcontractors’ incorporation of, any invention, design, product or device not specified in the Contract Documents.

Neither the Town of Natick, nor the Engineer, nor any of their officers, employees, boards, committees, commissions, agents and representatives shall be under any personal obligation or shall incur any personal liability by reason of this Contract, the execution thereof or anything relating thereto which arises out of the Contractor's or a subcontractor's infringement of patent rights or copyrights incident to the use in the performance of the Work of, or resulting from the Contractor's or a subcontractor's incorporation of, any invention, design, product or device not specified in the Contract Documents.

Nothing herein shall modify the Contractor's general indemnification obligations, as set forth in this Agreement."

SC 6.08        Delete paragraph 6.08 of the General Conditions in its entirety and insert in its place the following:

"It is the specific responsibility of the Contractor to make, in proper and timely fashion, all necessary notifications to relevant federal, state, and local governing bodies and to obtain and comply with the provisions of all permits, inspections or applications required by the work specified, as well as to make all required submittals required under those auspices. The Contractor shall indemnify the Owner from, and pay for all claims resulting from, failure to adhere to these requirements. The Contractor shall promptly provide the Engineer and the Owner with reproductions of all permits, licenses and permissions.

The Owner has waived the building permit fee only for this Project. All other pertinent permit and inspectional service fees shall apply.

The Contractor shall pay the then current inspection fee to the Town of Natick for all inspections required by state and local codes, and required by the Town of Natick.

The Contractor shall pay all charges of utility companies for connections to the Work. The Contractor shall be aware of, observe and comply with all laws, ordinances, regulations, orders, permits, licenses, etc., and shall conduct his operations in compliance thereto, and shall indemnify the Owner and Engineer from any claim or liability arising from, or based upon a violation of same."

SC-6.09-A     Delete paragraph 6.09-A of the General Conditions in its entirety and insert in its place the following:

"The Contractor shall comply with all provisions of Federal, Massachusetts and Town of Natick law applicable to his work including, without limitation, statutes, by-laws, rules, regulations, orders and directives, as amended, and including, without limitation, the Williams-Steiger Occupational Safety and Health Act, as amended, and related regulations, as amended, in effect throughout the term of this Contract and any extension or renewal thereof. Without limitation, the Contractor shall comply with the provisions of Chapter 149, Section 26 to 27D of the Massachusetts General Laws, as amended, and the applicable minimum prevailing wage rates as determined by the Massachusetts Commissioner of Labor and Industries. This Contract shall be considered to include in their entirety all terms respecting workers' compensation insurance and other terms required to be included in it by Chapter 152 of the Massachusetts General Laws, as amended, and any other laws, as though such terms were set forth in

their entirety herein.”

SC-6.10-A In the third and fourth lines of paragraph 6.10-A of the General Conditions delete the words “Place of the Project” and insert in their place the words “Commonwealth of Massachusetts”.

SC 6.10 Add the following language at the end of paragraph 6.10-A of the General Conditions: The Town is exempt from Commonwealth of Massachusetts sales tax. M.G.L. c.64, §6(h) exempts “sales of building materials and supplies to be used in the construction, reconstruction, alteration, remodeling or repair of (1) any building structure, public highway, bridge or other public works owned by or held in trust for the benefit of any governmental body or agency mentioned in paragraph (d) and used exclusively for public purposes; (2) any building or structure owned by or held in trust for the benefit of any corporation, foundation, organization or institution described in paragraph (e) and used exclusively in the conduct of its religious, scientific, charitable or educational purposes; and (3) any building, structure, residence, school or other facility included under any written contract dated on or after January 1, 1985 arising out of or related to the Massachusetts Port Authority residential and school soundproofing programs, notwithstanding whether such building, structure, residence, school or other facility is owned by or held in trust for the benefit of the Massachusetts Port Authority or is used exclusively for public purposes; provided, however, that such governmental body or agency or such corporation, foundation, organization or institution shall have first obtained a certificate from the Commissioner stating that it is entitled to such exemption and the vendor keeps a record of the sales price of each such separate sale, the name of the purchaser, the date of each such separate sale and the number of such certificate. In this paragraph the words “building materials and supplies” shall include all materials and supplies consumed, employed or expended in the construction, reconstruction, alteration, remodeling or repair of any building, structure, public highway, bridge or other such public work, as well as such materials and supplies physically incorporated therein. Said terms shall also include rental charges for construction vehicles, equipment and machinery rented specifically for use on the site of any such tax exempt project or while being used exclusively for the transportation of materials for any such tax exempt project.” M.G.L. c.64I, §7 exempts from use tax “Sales exempt from the taxes imposed under chapter sixty-four H; provided, however, that in the case of the purchase of any motor vehicle or trailer, as defined in section one of chapter ninety, or any boat or airplane, other than from a vendor who is regularly engaged in the business of making sales at retail of such motor vehicles, trailers, boats or airplanes, the receipts from which are exempt from the tax imposed under said chapter sixty-four H, the purchaser thereof, except when said purchaser is the spouse, mother, father, brother, sister or child of the seller, shall pay the tax imposed by this chapter”. The Contractor shall not pay, and the Town shall not reimburse or pay the Contractor or any other party, either directly or indirectly, for this or any other tax for which an exemption is provided under law. The Town will provide a state sales tax exemption number to the Contractor for use with response to this Project.”

SC-6.11 Delete paragraph 6.11-A of the General Conditions in its entirety and insert in its place the following:

“The right of possession of the premises shall remain at all times in the Owner.

The Contractor's right to entry and use thereof arises solely from the permission granted by the Owner under the Contract Documents. The Contractor shall confine the Contractor's apparatus, the storage of materials and the operations of the Contractor's workmen to limits indicated by Laws and Regulations,

the Contract Documents, permits, and/or directions of the Engineer and shall not unreasonably encumber the premises with the Contractor's materials. The Owner shall not be liable to the Contractor, the Subcontractors, their employees or anyone else with respect to the conditions of the premises, except only for a condition caused directly and solely by the negligence of the Owner.

The Contractor shall at all times maintain a safe workplace, in full compliance with all federal, state, and local health and safety Laws and Regulations and shall indemnify and hold the Owner, the Engineer and the Construction Manager harmless from and against any and all liability, loss, damage or expense arising from Contractor's failure to do so.

The Contractor shall use only areas specifically assigned by the Owner for parking, storage of materials and construction operations and shall comply with all local municipal regulations regarding use of and parking on public ways.

The Contractor shall repair any and all streets, drives, curbs, sidewalks, and landscaping which are disturbed by construction operations and shall leave them in as good condition after completion of the Work as they were in before commencement of the Work.

The Contractor shall not place or maintain, or allow to be placed or maintained, on or about the Project site any advertising matter, sign, bill, poster, or billboard of any kind, except those required by law or the Contract Documents, without the prior written consent of the Owner.”

SC-6.12 Delete paragraph 6-12 of the General Conditions in its entirety and insert in its place the following:

“The Contractor shall maintain a record set of Contract Documents which shall record all deviations from the Drawings and Specifications and shall be updated in detail to reflect the actual progress of the Work. The Owner and the Engineer shall have free and complete access to such Contract Documents during the Work. Upon Substantial Completion, the Contractor shall furnish to the Owner through the Engineer one set of “as built” plans in such form as the Owner shall require. The Contractor shall also maintain a record set of the Specifications, Addenda, Change Orders and other Modifications in good order and marked and annotated currently to record changes made during the Work. Record documents in relation thereto shall be in compliance with M.G.L. Chapter 30, Section 39R.”

SC-6.13 Delete paragraphs 6.13-B and 6.13-C of the General Conditions in their entirety.

SC-6.19 In paragraph 6.19-A of the General Conditions insert at the beginning of the second sentence the words “Owner and”.

SC-6.20 Delete paragraph 6.20 of the General Conditions in its entirety and insert in its place the following:

“The Contractor shall compensate the Town of Natick for all damage to Town property of any nature arising out of the Contractor’s work. To the fullest extent permitted by law, the Contractor shall indemnify, defend, and hold harmless the Town of Natick and all of its officers, employees, boards, commissions, committees, agents and representatives from and against all claims, causes of action,



suits, costs, damages, and liability of any kind which arise out of the breach by the Contractor or its subcontractor(s) of their obligations under this Contract, or the act or omission of the Contractor, its subcontractor(s), or their officers, employees, agents and representatives or anyone directly or indirectly employed by them, or anyone for whose acts or omissions they may be liable, regarding the work to be performed by the Contractor under the Contract, or which arise out of the violation of any Federal, Massachusetts or Town of Natick statute, by-law, rule, regulation, order or directive, or which relate to personal injury or property damage suffered by the Contractor or any of its officers or employees regarding the subject matter of the Contract.

Neither the Town of Natick, nor any of its officers, employees, boards, committees, commissions, agents and representatives shall be under any personal obligation or shall incur any personal liability by reason of this Contract, the execution thereof or anything relating thereto which arises out of the violation of any provision of this Contract, or the violation of any Federal, Massachusetts or Town of Natick Law or Regulation, or which relates to personal injury or property damage suffered by the Contractor or its employees, regarding the subject matter of the Contract.”

SC-6.21 In paragraph 6.21-A of the General Conditions, delete the words “or unless such services are required to carry out contractor’s responsibilities for construction means, methods, techniques, sequences and procedures”

SC-6.22 Insert the following new paragraph 6.22 in the General Conditions:

“SC-6.22 Miscellaneous

6.22-A The Contractor shall give the Engineer timely notice of any additional Drawings, Specifications, or instructions required to define the Work in greater detail, or to permit the proper progress of the Work. The Contractor shall not proceed with any Work not clearly and consistently defined in the Contract Documents, but shall request additional drawings or instructions from the Engineer. If the Contractor proceeds with such Work without obtaining further Drawings, Specifications or instructions, the Contractor shall correct Work incorrectly done at the Contractor's own expense. The Contractor shall give continuous attention to the faithful prosecution of the Work and shall keep the same under its personal control. It shall be responsible for all the acts and omissions of its employees, subcontractors, and of all persons directly or indirectly employed by it in connection with the prosecution of this Work.

6.22-B The Contractor may submit Requests For Information to the Engineer to help facilitate the Contractor's performance of the Contract. Prior to submitting each Request for Information, the Contractor shall first carefully study and compare the Contract Documents, field conditions, Owner-provided information, Contractor prepared Coordination Drawings, and prior Project correspondence and documentation to determine that the information to be requested is not reasonably obtainable from such sources.

Each Request for Information shall be submitted to the Engineer, in writing, on such form and with such accompanying information as the Engineer may require for such purpose. Each Request for Information shall identify the specific sources which were reviewed by the Contractor in its efforts to determine the information requested, and a statement to the effect that the information being requested

could not be determined from such sources.

The Contractor shall submit each Request for Information sufficiently in advance of the date by which such information is required in order to allow the Engineer sufficient time, in the Engineer's professional judgment, to permit adequate review and response and to permit Contractor compliance with the latest Construction Schedule. The Contractor shall maintain a log at the Project site that sequentially numbers and lists each Request For Information. This log shall also contain the Drawing reference or Specification section to which the request pertains, the date of request, to whom the request was made, by whom the request was made, the nature of the request, and the Engineer's resolution thereof. This log shall be updated weekly by the Contractor and reviewed at each Project meeting, and the resolution of requests for information shall be made part of the minutes of such meetings.

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

6.22-C The Contractor shall be responsible to the Owner for the acts and omissions of all entities or persons performing or supplying the Work regardless of tier.

6.22-D The Contractor shall furnish sufficient forces, plant and equipment as may be necessary to insure the progress of the Work in accordance with the Project Schedule. If, in the opinion of the Owner, the Contractor has fallen behind the Project Schedule, the Contractor shall submit its bid demonstrating the manner in which the desired rate of progress may be increased and shall take such steps, at the Contractor's own cost, as may be necessary to meet the Project Schedule. It shall be the responsibility of the Contractor to maintain its schedule so as not to delay the progress of the Work or the scheduled work of separate Contractors.

6.22-E The Contractor shall be solely responsible for properly laying out the Work, and for all lines, elevations and measurements for all of the Work. It shall verify the figures shown on the Drawings before laying out the work and will be responsible for any error or inaccuracies resulting from its failure to do so. In the event that the Contractor shall, while laying out the Work, become aware of (i) any conflicts among or between the Drawings, the Specifications or any Modification to the Drawings or the Specifications and the actual layout of the Work, or (ii) any conflicts or inconsistencies in the Drawings and Specification themselves, it shall promptly notify the Engineer, without whose instructions the Contractor shall not adjust the matter except at his own risk.

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

6.22-G Chemical waste shall be stored in corrosion resistant containers, removed from the Project site, and disposed of not less frequently than every three weeks 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 Local regulations, the Contractor shall notify the Engineer 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 exclusively by the Contractor.

The Contractor shall be solely responsible for compliance with laws and regulations governing the handling, storage, use or disposal of hazardous materials or wastes used, stored, generated or disposed of in connection with construction of the Work and shall obtain all permits and approvals, give all required notices, and observe all applicable procedures prescribed by the EPA, DEP or other governmental authorities having jurisdiction with respect to such activities. At the Owner's request, the Contractor shall properly furnish the Owner with evidence satisfactory to the Owner demonstrating the Contractor's compliance with such procedures, the giving of such notices, and the issuance of such permits and approvals.

6.22-H The Contractor shall provide and maintain in good operating condition suitable and adequate fire protection equipment and services, and shall comply with all reasonable recommendations regarding fire protection made by the representatives of the fire insurance company carrying insurance on the Work or by the local fire chief or fire marshal. The area within the site limits shall be kept orderly and clean, and all combustible rubbish shall be promptly removed from the site.

6.22-I The Contractor shall at all times protect excavations, trenches, adjacent buildings and materials from rain water, ground water, backup or leakage of sewers, drains and other piping, and from water of any other origin, and shall remove promptly any accumulation of water. The Contractor shall provide and operate all pumps, piping and other equipment necessary to this end.

6.22-J The Contractor shall be responsible for all security measures necessary and appropriate to protect the Work area until acceptance by the Owner to assure that the Work, and all materials and equipment stored at the Site, are fully and completely protected against loss or damage due to vandalism, theft, or malicious mischief. The Contractor shall not use guard dogs for this purpose unless authorized in advance in writing by the Owner. If the Owner approves the use of guard dogs, each dog shall at all times be accompanied by an adult handler.

6.22-K The Contractor shall be responsible for the adequate strength and safety of all scaffolding, staging, and hoisting equipment and for temporary shoring, bracing, and tying.

6.22-L The Contractor shall furnish on site all personal protective equipment as required, approved first aid supplies, the name of its first-aid attendant, and a posted list of emergency facilities.

6.22-M No unauthorized visitors shall be allowed on the work site without permission from the Contractor.

6.22-N The Contractor shall employ labor subject to contract terms and conditions in order to ensure harmonious labor relations on the site and prevent strikes or labor disputes. The Contractor, in the event of a labor dispute including strikes, shall take whatever action is required at no expense to the Owner to prevent the disruption of the work. The Contractor shall also not permit employment of any person who is not of good character and morals nor permit disorderly or indecent conduct on the job site. He shall not permit the consumption of alcoholic beverages or illegal drugs on the job site nor permit any employment or person under his supervision or control to be under the influence thereof.”

6.22-O (Statutory reference: M.G.L. c.149, §§30 and 34)

No laborer, worker, mechanic, foreman or inspector working within this Commonwealth in the employ of the Contractor, Subcontractor or other person doing or contracting to do the whole or part of the work contemplated by the Contract, shall be required or permitted to work more than eight hours in any one day or more than forty-eight (48) hours in any one week, or more than six (6) days in any one (1) week, except in cases of emergency.

6.22-P (Statutory reference: M.G.L. c.149,§25)

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

6.22-Q (Statutory Reference: M.G.L. c.149,§34B)

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

6.22-R The Contractor is solely responsible for the proper and safe operation and maintenance of all utility systems within the construction limits, whether these are supplied by the Owner’s distribution system or otherwise, until the work is accepted by the Owner, and until the Owner has notified the Contractor that other arrangements have been made. The Contractor shall maintain and operate appurtenances within the construction area which serve the distribution system, subject to periodic inspection by the Owner’s operating personnel. Inspection by any representative or personnel of the Owner shall not relieve the Contractor of his responsibilities in connection with operation and maintenance of these facilities and equipment. The Contractor shall provide the Owner at least seventy-two (72) hours’ advance notice of the Contractor’s desire to extend, connect, disconnect, or turn on or off any steam, electric, water, or other service from the Owner’s supply systems. The actual operation shall be witnessed and approved by an authorized representative of the Owner. All plumbing, heating, and electrical work, including installation of equipment, and other work to be performed by the Contractor, shall be carried out without interference with the Owner’s normal operation. Where any work requires interruption of any service, the Contractor shall make advance arrangements with the Owner for dealing with and minimizing such interruption.

6.22-S The Contractor agrees to procure materials, equipment, labor and supplies from such sources and to perform all Work on the Project with labor, material suppliers and Subcontractors that will work harmoniously with the Owner’s employees, employees of other contractors employed by the Owner, and with other elements of labor involved in the construction of the Project or the operation of the building in which the Project is located, including, without limitation, any tenant improvement work

contractors engaged by Owner or any tenants of Owner.”

6.22-T Weather Protection Devices – Pursuant to M.G.L. Chapter 149, Section 44G(D), the Contractor shall install weather protection devices and shall furnish adequate heat in the area so the work is protected during the months of November through March.

#### ARTICLE 7 – OTHER WORK AT THE SITE

SC-7.01 and

SC-7.02 and

SC-7.03 Delete paragraphs 7.01, 7.02 and 7.03 of the General Conditions in their entirety except for the first sentence in paragraph 7.01(A).

#### ARTICLE 8 - OWNER'S RESPONSIBILITIES

SC-8.06 In paragraph 8.02-A of the General Conditions, in the second and third lines, delete the words “to whom Contractor makes no reasonable objection”.

SC 8.06 Delete paragraph 8.06-A of the General Conditions in its entirety.

SC-8.06 Delete paragraphs 8.10 and 8.11 of the General Conditions.

SC-8.09 Add the following at the end of paragraph 8.09 of the General Conditions:

“The Contractor shall provide services under any Contract with the Owner as an independent contractor with the Town of Natick and not as an employee of the Town of Natick. No employee, agent or representative of the Contractor shall be entitled to receive any benefits of employment with the Town of Natick, including without limitation salary, overtime, vacation pay, holiday pay, sick leave, health insurance, life insurance, pension or deferred compensation.”

#### ARTICLE 9 – ENGINEER’S STATUS DURING CONSTRUCTION

SC-9.01 Delete the first sentence of paragraph 9.01 of the General Conditions.

SC-9.02 Add the words “and Owner” after the word “Engineer” in the third line of paragraph 9.02-A of the General Conditions. Substitute the word “deem” for “deems” in the same line. Delete the second and third sentences of said paragraph 9.02-A.

SC-9.08-A Delete paragraph 9.08-A of the General Conditions.

SC-9.09-A Insert the following language at the beginning of paragraph 9.09-A “To the extent permitted by law”

## ARTICLE 10 -CHANGES IN THE WORK: CLAIMS

SC 10.01-A Delete Article 10 of the General Conditions in its entirety and insert in its place the following:

### “SC-10.01 Change Orders

A Change Order may be submitted for changes in the Contract work, including but not limited to, changes in:

- a. the plans and specifications
- b. in the method or manner or performance of the work; and/or
- c. in the schedule for performance of the work.

Whenever a Change Order is requested or ordered, and said Change Order will cause an adjustment in the Contractor's cost, the Contractor may request an equitable adjustment in writing in the Contract price.

The Owner and the Contractor shall attempt to negotiate an equitable adjustment in the Contract price before commencement of the pertinent work. In the absence of a Contract for an equitable adjustment and when so directed, the Contractor shall proceed with the Change Order work on a time and material basis, and the Contractor will provide the Owner with a written notice to that effect.

Contractor shall provide the Owner with all cost and pricing data used in computing the amount of the equitable adjustment, and the Contractor shall certify that the pricing data used was accurate, complete, and current.

With respect to any sum of money due to be paid by the Contractor to the Owner under the Contract, an appropriate Change Order shall be issued deducting said sum of money from payments then due or thereafter due to the Contractor from the Owner. If such deductions from payments then due or thereafter due to the Contractor from the Owner are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

### SC-10.02 COMPUTING EQUITABLE ADJUSTMENTS

Equitable adjustments in the Contract price shall be determined according to one of the following methods, or a combination thereof, as determined by the Owner:

- a. fixed price basis, provided that the fixed price shall be inclusive of items (1) through (5) (below) and shall be computed in accordance with those provisions;
- b. estimated lump sum basis, to be adjusted in accordance with contract unit prices, or other

agreed upon unit prices provided that the unit prices shall be inclusive of all costs related to such equitable adjustment;

c. time and materials basis, on a not-to-exceed predetermined upset amount to be subsequently adjusted on the basis of actual costs based on the following items (1) through (5):

(1) the cost at minimum prevailing rates for direct labor, material, supplies and use of equipment exclusive of hand tools;

(2) plus cost of Workers' Compensation Insurance, union fringe benefits, federal unemployment taxes, Federal Social Security, and Massachusetts Unemployment Compensation, or, as an alternative the Contractor may elect to use a flat twenty (20%) percent of the total labor rate in item (1);

(3) plus fifteen (15%) percent of item (1) for overhead, superintendence, and profit, which will be paid to the Contractor for work performed by the Contractors' own trade forces (for work performed by a Subcontractor, the Subcontractor will be entitled to a fifteen (15%) percent mark-up and the Contractor to a five (5%) percent mark-up; for work performed by a Sub-subcontractor, the Sub-subcontractor will be entitled to a fifteen (15%) percent mark-up, the Subcontractor to a five (5%) percent mark-up, and the Contractor to a five (5%) percent markup);

(4) if the net change is in addition to the contract price, it shall include the Contractor's overhead, superintendence, and profit. On any change which involves a net credit, no allowances for overhead, superintendence, and profit shall be figured;

(5) plus actual direct premium cost of payment and performance bonds required of the Contractor and its Subcontractors, provided there will be an appropriate credit for bond premiums in the case of a credit Change Order.

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

#### SC-10.03 WORK PERFORMED UNDER PROTEST

The Contractor shall perform all work as directed by the Owner and if the Owner 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 Owner cannot agree to the amount of compensation for a Change Order, the Contractor shall perform said work under protest and shall follow the procedures described in the following subparagraphs a. and b.:

a. If the Contractor claims compensation for a Change Order not approved by the Owner, the Contractor shall, on or before the first working day following commencement of any such work or sustaining of any such damage, submit to the Owner's representative a written statement of the nature of such work or damage sustained. The Contractor will not be entitled to compensation for any portion of its Change Order claim related to work performed prior to the Owner's receipt of the written

statement referred to in the previous sentence.

b. On or before the second (2nd) working day after the commencement of such work or sustaining of such damage, and daily thereafter, the Contractor shall file to the extent possible with the Engineer and the Owner itemized statements of the details and costs of such work performed or damage sustained; and unless such statements shall be made as so required, its claim for such compensation shall be forfeited and invalid and it shall not be entitled to payment on account of any such work or damage.

c. The Owner shall have the right to reject Change Orders executed by the Contractor under a reservation of rights.

#### SC-10.04 COMPUTING TIME EXTENSIONS

Contract Time shall not be changed due to a delay in the Contractor's early completion date until all Contract Float is used and performance of the specified work necessarily extends beyond the Contract Time. An extension in Contract Time will not be approved unless the Contractor demonstrates through a detailed CPM schedule analysis that unforeseeable causes, beyond the control of and without the fault or negligence of both the Contractor and the Subcontractors or Suppliers at any tier, led to performance or completion of all or part of the work beyond the corresponding Contract Time despite the Contractor's reasonable and diligent actions. If granted, an extension in Contract Time shall be the Contractor's sole and exclusive remedy for any delay, disruption, interference, hindrance, and associated costs, however caused.

#### SC-10.05 STATUTORY PROVISIONS – DIFFERING SITE CONDITIONS; TIMELY DECISIONS

The Contractor's attention is directed to M.G.L. c.30, Sections 39I, 39J, 39N, 39O, and 39P, the provisions of which apply to the Contract.

a. Differing Site Conditions, M.G.L. c.30, Section 39N.

If, during the progress of the work, the Contractor or the Owner discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the Contract Documents either the Contractor or the Owner may request an equitable adjustment in the Contract price 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 as discovered. 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 price and the Contract shall be modified in



writing accordingly.

b. Timely decision by the Owner. M.G.L. c.30, Section 39P.

Whenever the Contract requires the Owner or the Engineer 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 the event, no later than thirty (30) 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 Engineer shall, within thirty (30) days after the receipt of the submission, give the Contractor written notice of the reasons why the decision cannot be made within the thirty (30) day period and the date by which the decision will be made.”

#### SC-10.06 CERTIFICATE OF APPROPRIATION

(Statutory reference: M.G.L. c.44 §31C)

The contract shall not be deemed to have been made until the auditor or accountant or other officer of the city or town having similar duties has certified thereon that an appropriation in the amount of the contract is available therefor and that an officer or agent of the city, town, or Awarding Authority has been authorized to execute said contract and approve all requisitions and change orders. No order to the Contractor for a change in or addition to the work, whether in the form of a drawing, plan, detail or any other written instruction, unless it is an order which the Contractor is willing to perform without any increase in the contract price, shall be deemed to be given until the auditor or accountant, or other officer of the Awarding Authority having similar duties, has certified thereon that an appropriation in the amount of such order is available therefore; but such certificate shall not be construed as an admission by the Awarding Authority of its liability to pay for such work. The certificate of the auditor or accountant or other officer of the Awarding Authority having similar duties that an appropriation in the amount of the contract or in the amount of such order is available shall bar any defense by the Awarding Authority on the grounds of insufficient appropriation.”

#### ARTICLE 11- COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-11.01-A In paragraph 11.01-A of the General Conditions, in the last sentence, delete the word “and”, in the second last line, and insert at the end of the last sentence the following text “, and shall include no markup”.

SC-11.01-A In paragraph 11.01-A.1 of the General Conditions, in the last line, insert “in advance, in writing,” between the words “authorized” and “by”.

SC 11.01-A Add the following paragraph at the end of paragraph 11.01-A.2 of the General Conditions:

“11.01-A.2.a. Only those materials required as a result of such Work and reasonable freight charges for delivery of same are allowable. Only the equipment and machinery required as a result of such Work is allowable. Costs for equipment and machinery shall be based upon the current Nielson/Dataquest Rental Bluebook for Construction Equipment (the "Bluebook"). In determining the rental rate the

following shall apply:

- a. For equipment already on the project the monthly prorated rental rate by the hourly use shall be applicable;
- b. For equipment not on the project the daily rate, the weekly rate, or monthly rate will prevail, whichever will prove to be most cost effective. Small tools and manual equipment are examples of costs not allowable under this item. These costs are considered to be included in the Contractor's Fee as detailed in paragraphs 11.6 of the General Conditions.

(1 month (normal use) = 176 hours) (See 11.01-A.5.c. for equipment and machinery actually rented)."

Amend paragraph 11.01-A.5.a. of the General Conditions by adding the following language at the end of the paragraph:

", provided that the Contractor shall substantiate that this reimbursement payment is customarily considered normal to his operations."

Delete paragraph 11.01-A.5.c. of the General Conditions in its entirety and insert the following language in its place:

"11.01-A.5.c. All construction equipment and machinery and the parts thereof actually rented from others in accordance with rental agreements approved in advance, in writing, by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work."

Amend the first sentence of paragraph 11.01-A.5.f. of the General Conditions by striking out the following words:

"(except losses and damages within the deductible amounts of property insurance established by Owner in accordance with paragraph 5.06.D)."

and by deleting in the ninth line the word "negligence" and inserting in its place the words "act or omission".

Delete paragraph 11.01-A.5.h. of the General Conditions in its entirety.

SC-11.01-B In paragraph 11.01-B.4 of the General Conditions, in the first line, insert "or willful misconduct" between the words "negligence" and "of".

SC 11.01-D In paragraph 11.01-D of the General Conditions, in the first paragraph, third line, delete the word "will" and insert in its place the word "shall".

SC-11.01-D Add the following paragraphs after paragraph 11.01-D of the General Conditions:  
"11.01-D.1. Executed change orders shall be submitted to Owner in triplicate on the Change Order Form included in Part II of the Supplementary Conditions, and to the format of the Example

Calculation Sheet also located in Part II of the Supplementary Conditions.

11.01-D.2. The Contractor shall include three (3) copies of invoices to substantiate all costs for materials and equipment directly associated with work involved in the change order.

11.01-D.3. The Contractor shall include three (3) copies of labor summary to include name, classification, wage and date for all personnel directly involved in the work associated with the change order."

## ARTICLE 12 – CHANGE OF CONTRACT PRICE: CHANGE OF CONTRACT TIMES

SC-12.01 In paragraph 12.01-A of the General Conditions, last line, delete "10.05" and insert in its place "10.03".

SC-12.01 Delete paragraphs 12.01-C.2.a, through 12.01-C.2.c. of the General Conditions.

SC-12.01-C Paragraphs 12.01-C.2.d. through 12.01-C.2.f. of the General Conditions shall be renumbered 12.-1-C.2.a. through 12-1-C.2.c., respectively.

SC-12.01-C New paragraph 12.-1-C.2.a of the General Conditions (former paragraph 12.01-C-2.d.) shall read"

"No fee shall be paid on the basis of costs."

SC-12.02 Delete paragraph 12.02-B of the General Conditions in its entirety and insert in its place the following:

"SC-12.02 TIME

### 12.02-B TIME IS OF THE ESSENCE

Time is of the essence in the performance of the Contract. By executing the Contract, the Contractor represents that the time for performance stated in the Contract documents is a reasonable period for completing the Work to be performed under the Contract.

The Contractor shall prosecute the work with the diligence necessary to ensure its completion within the required time. The Contractor shall provide sufficient labor, materials, and equipment, and shall promptly take such appropriate action to recover schedule as may be necessary. The Contractor shall carry on the work and adhere to the schedule during all disputes and disagreements with the Owner. No work shall be delayed or postponed pending resolution of any disputes and disagreements. The Contractor shall exercise reasonable precautions, efforts, and measures to avoid or mitigate situations which would cause delays.

If no specific date is identified in the Contract Documents for Final Completion of the Project or a particular phase of the Project, Final Completion of the Project or Project phase shall be achieved by the Contractor within thirty (30) calendar days after the date of Substantial Completion of the Project or

Project phase.”

12.02-C At least ten (10) working days before the first Application for Payment, the Contractor shall submit to the Engineer a Progress Schedule showing for each class of work included in the Schedule of Values, the percentage completion to be obtained and the total dollar value of work to be completed as of the first of each month until Substantial Completion. All calculations shall be on the basis of work in place, but not including the value of materials delivered but not in place.

12.02-D The Progress Schedule shall be based on an orderly progression of the Work, allowing adequate time for each operation (including adequate time for submission and review of submittals), and leading to a reasonable certainty of Substantial Completion by the date established in the Contract. The Progress Schedule will be reviewed by the Engineer for compliance with the requirements of this Article and will be accepted by the Engineer or returned to the Contractor for revision and resubmittal. Unless specifically required by law, no payment under this Contract shall be due until the Progress Schedule has been approved by the Engineer. The Engineer's review of the Progress Schedule shall not impose any duty on the Engineer or the Owner with respect to the timing, planning, scheduling, or execution of the Work. In particular, if the Contractor proposes a Progress Schedule indicating a date of Substantial Completion which is earlier than the Contract Time, the Contractor shall not be entitled to additional payment or compensation of any kind if, for any reason, the full Contract Time is required to achieve Substantial Completion of the Work.

12.02-E If in any Application for Payment the total value of the completed Work in place, as certified by the Engineer, is less than ninety (90%) percent of the total value of the Work in place estimated in the Progress Schedule, the Owner shall have the right, at the Owner's option and without cost to the Owner, to order the Contractor to take corrective measures necessary to expedite the progress of construction, including without limitations: (i) working additional shifts or overtime, (ii) supplying additional workers, equipment, and facilities, and (iii) other similar measures (hereinafter referred to as “Extraordinary Measures”). The Owner's right to require Extraordinary Measures is solely for the purpose of ensuring the Contractor's compliance with the construction schedule.

12.02-F If each of three successive applications for payment, as certified by the Engineer, indicate that the actual Work completed is less than ninety (90%) percent of the values estimated in the Progress Schedule to be completed by the respective dates, the Owner may at the Owner's option, treat the Contractor's delinquency as a default.

12.02-G If the Engineer has determined that the Contractor should be permitted to extend the time for completion, the calendar dates in the Progress Schedule shall be adjusted accordingly to retain their same relationship to the adjusted date of Substantial Completion, and the dollar value of Work to be completed as of the first of each month shall be adjusted prorata.

12.02-H If the Contractor fails to submit any Application for Payment in any month, the Engineer shall, for the purpose of this evaluation of progress, certify separately to the actual value of the Work in place completed as of the first of the month to the best of the Engineer's knowledge.

12.02-I The Owner and the Contractor shall comply with M.G.L. c.30, §39K, which provides:

Within fifteen (15) days (thirty (30) days in the case of the commonwealth, including local housing authorities) after receipt from the contractor, at the place designated by the awarding authority if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the awarding authority will make a periodic payment to the contractor for the work performed during the preceding month and for the materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the contractor has title or to which a subcontractor has title and has authorized the contractor to transfer title to the awarding authority, upon certification by the contractor that he is the lawful owner and that the materials are free from all encumbrances, but less (1) a retention based on its estimate of the fair value of its claims against the contractor and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and less (3) a retention not exceeding five per cent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within sixty-five days after (a) the contractor fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the awarding authority, less than one per cent of the original contract price, or (b) the contractor substantially completes the work and the awarding authority takes possession for occupancy, whichever occurs first, the awarding authority shall pay the contractor the entire balance due on the contract less (1) a retention based on its estimate of the fair value of its claims against the contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, 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 thirty-nine F. If the awarding authority fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of three percentage points above the rediscount rate than charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the contractor; provided, that no interest shall be due, in any event, on the amount due on a periodic estimate for final payment until fifteen days (twenty-four days in the case of the commonwealth) after receipt of such a periodic estimate from the contractor, at the place designated by the awarding authority if such a place is so designated. The contractor agrees to pay to each subcontractor a portion of any such interest paid in accordance with the amount due each subcontractor.

The awarding authority may make changes in any periodic estimate submitted by the contractor and the payment due on said periodic estimate shall be computed in accordance with the changes so made, but such changes or any requirement for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made, as provided herein; provided, that the awarding authority may, within seven days after receipt, return to the contractor for correction, any periodic estimate which is not in the required form or which contains computations not arithmetically correct and, in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter. The provisions of section thirty-nine G shall not apply to any contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building to which this section applies. All periodic estimates shall be submitted to the awarding authority, or to its designee as set forth in writing to the contractor, and the date of receipt by the awarding authority or its designee shall be

marked on the estimate. All periodic estimates shall contain a separate item for each filed subtrade and each sub-subtrade listed in sub-bid form as required by specifications and a column listing the amount paid to each subcontractor and sub-subcontractor as of the date the periodic estimate is filed. The person making payment for the awarding authority shall add the daily interest provided for herein to each payment for each day beyond the due date based on the date of receipt marked on the estimate. A certificate of the architect to the effect that the contractor has fully or substantially completed the work shall, subject to the provisions of section thirty-nine J, be conclusive for the purposes of this section.

Notwithstanding the provisions of this section, at any time after the value of the work remaining to be done is, in the estimation of the awarding authority, less than 1 per cent of the adjusted contract price, or the awarding authority has determined that the contractor has substantially completed the work and the awarding authority has taken possession for occupancy, the awarding authority may send to the general contractor by certified mail, return receipt requested, a complete and final list of all incomplete and unsatisfactory work items, including, for each item on the list, a good faith estimate of the fair and reasonable cost of completing such item. The general contractor shall then complete all such work items within 30 days of receipt of such list or before the contract completion date, whichever is later. If the general contractor fails to complete all incomplete and unsatisfactory work items within 45 days after receipt of such items furnished by the awarding authority or before the contract completion date, whichever is later, subsequent to an additional 14 days' written notice to the general contractor by certified mail, return receipt requested, the awarding authority may terminate the contract and complete the incomplete and unsatisfactory work items and charge the cost of same to the general contractor and such termination shall be without prejudice to any other rights or remedies the awarding authority may have under the contract. The awarding authority shall note any such termination in the evaluation form to be filed by the awarding authority pursuant to the provisions of section 44D of chapter 149.

12.02-J Nothing herein shall limit the Owner's right to liquidated or other damages for delays by the Contractor or to any other remedy which the Owner may possess under other provisions of the Contract Documents or by law.

12.02-K Should the Contractor request additional time to complete the work, it shall document its reasons therefor and request an extension of time the alleged delay occurred. Failure to notify the Owner of any delay as provided in this Article shall preclude the Contractor from subsequently claiming any time extension or other relief due to said delay. Request for extensions of time shall be submitted as a Change Order request to the Owner.

The Contractor shall submit the amount of a claim 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 the Contract and, except for costs due to a suspension order, the Owner shall not approve any costs in the claim incurred more than twenty (20) days before the Contractor notified the Owner in writing of the act or failure to act involved in the claim.

The Owner and the Contractor agree that they understand that this subparagraph places a burden on the Contractor to inform the Owner, as soon as practicable, whenever the Contractor considers that an action or inaction of the Owner or the Engineer could result or has resulted in a delay in the Project, thereby providing the Owner and the Engineer with the opportunity to take action to avoid or lessen the

time extensions or damages that might be associated with such action or inaction.

The Contractor and the Surety on the Contractor's performance bond shall be jointly and severally liable for, and shall pay to the Owner the expenses for inspection of Work performed after the time stipulated in the Owner-Contractor Contract for Substantial Completion. Such inspection costs shall include fees paid to the Engineer and its consultants as extra services at the rate stipulated in the Owner-Engineer Contract, the costs of any other project representatives of the Owner at the current salary rate and any other direct expenses due to inspection. The Owner may retain from monies otherwise due the Contractor whatever sums accrue to the Owner pursuant to this provision. The Contractor shall not be liable for inspection costs for delay in performance as provided hereunder for any period for which an extension of the Contract Time has been granted.

12.02-L No claim for extension of time shall be allowed on account of failure of the Engineer to furnish Drawings, Specifications or instructions until fifteen (15) days after receipt by the Engineer by registered or certified mail, or by hand delivery acknowledged by the Engineer, of written demand for such instructions, Drawings, or Samples, and not then unless such claim be reasonable.

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

The Contractor hereby agrees that the Contractor shall have no claim for damages of any kind against the Owner or the Engineer on account of any delay in the commencement of the Work and/or any hindrance, delay or suspension of any portion of the Work, whether such delay is caused by the Owner, the Engineer, or otherwise, except as and to the extent expressly provided under M.G.L. c.30, §39O in the case of written orders by the Owner. The Contractor acknowledges that the Contractor's sole remedy for any such delay and/or suspension will be an extension of time as provided in this Article.

12.02-M (Statutory reference: M.G.L. c.30 §39O)

a. The Awarding Authority may order the Contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the Awarding Authority; provided, however, that if there is a suspension, delay or interruption for fifteen days or more or due to a failure of the Awarding Authority to act within the time specified in this contract, the Awarding Authority shall make an adjustment in the contract price for any increase in the cost of performance of this contract but shall not include any profit to the Contractor on such increase; and provided further, that the Awarding Authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

b. The Contractor shall submit the amount of a claim under provision (a) to the Awarding Authority in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, in any event, not later than the date of final payment under this contract and, except for costs

due to a suspension order, the Awarding Authority shall not approve any costs in the claim incurred more than twenty (20) days before the Contractor notified the Awarding Authority in writing of the act or failure to act involved in the claim.

In the event a suspension, delay, interruption or failure to act of the Awarding Authority increases the cost of performance to any Subcontractor, that Subcontractor shall have the same rights against the Contractor for payment for an increase in the cost of his performance as provisions a. and b. give the Contractor against the Awarding Authority, but nothing in provisions a. and b. shall in any way change, modify or alter any other rights which the Contractor or the Subcontractor may have against each other.

## 12.02-N - LIQUIDATED DAMAGES

If the Contractor shall fail to achieve Substantial Completion within the Contract Time, it shall be liable to pay the Owner the daily amount as stipulated in the Contract not as a penalty, but as fixed and agreed upon damages for breach of contract. The said amount is fixed and agreed upon because of the difficulty of ascertaining the Owner's actual damages. It is mutually understood that the said amount is a reasonable approximation or estimate thereof as of the date of the Contract. The said amount may be withheld from periodic or final payments due to the Contractor, in addition to retainage and other backcharges.”

SC-12.03      In paragraph 12.03-A of the General Conditions, in the eighth line, insert “acts or neglect by Engineer,” after “acts or neglect by Owner”.

SC-12.03      In paragraph 12.03-C of the General Conditions, in the fifth line, insert “and Engineer” between “Owner” and “and”.

## ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK:

SC-13.03      Delete paragraph 13.03-B of the General Conditions in its entirety.

SC-13.07      In paragraph 13.07-B of the General Conditions, in the last line, delete “will” and insert in its place “shall”.

SC 13.09      Add the following paragraph immediately after paragraph 13.09-D of the General Conditions:

"13.09-E In the event of an emergency caused by defective Work, if the Contractor fails to respond to notification within twelve (12) hours, the Owner may proceed with alleviating the condition, and at his option may impose a surcharge upon the Contractor or a decrease in the Contract Price to cover associated costs in relation thereto."

## ARTICLE 14 -PAYMENTS TO CONTRACTOR AND COMPLETION



SC-14.02 Delete paragraph 14.02 A, B and C of the General Conditions in their entirety and insert in its place the following:

“M.G.L. c.30, § 39G or M.G.L. c. 30, §39K, as appropriate, is incorporated herein by reference. See Part II of the SUPPLEMENTARY CONDITIONS, p. 00810-7.”

SC 14.03-A Add a new paragraph immediately after paragraph 14.03-A of the General Conditions:

"14.03-A.1. No materials or supplies for the Work shall be purchased by Contractor or Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. Contractor shall warrant that he has clear title to all materials and supplies used by him in the Work, free from all liens, claims or encumbrances."

SC 14.04 Delete paragraphs 14.04-A through 14.04-D of the General Conditions in their entirety and insert in their place the following:

"14.04-A Substantial completion and payment in relation thereto shall be in compliance with M.G.L. Chapter 30, Section 39G for Utility Contracts, and M.G.L. Chapter 30, Section 39K for Building Associated Contracts, as included in Part II of the Supplementary Conditions.

14.04-A.1. For utility contracts, Owner, within twenty one (21) days of receipt of certification from Contractor that the work has been Substantially Complete, shall present to Contractor a written declaration that work has been Substantially Complete, or an itemized list of incomplete or unsatisfactory work items.

14.04-A.1.a. Within sixty five (65) days after the effective date of Substantial Completion and receipt of an Application for Payment, Owner shall submit to Contractor payment for the quantity and price of the work done with the following deductions:

- a. A retainer of one (1%) percent of the undisputed Substantial Completion payment amount.
- b. Less the estimated cost of completing all incomplete and unsatisfactory work items.
- c. An amount equal to sum of all demands for direct payment filed by subcontractors and not yet paid to subcontractors or deposited in a joint account."

SC-14.07-14.09 Delete paragraphs 14.07 through 14.09 of the General Conditions and insert in their place the following:

“(Statutory Reference – M.G.L. c.30, §39F:

Forthwith after the Contractor receives payment on account of a periodic estimate, the Contractor shall pay to each Subcontractor the amount paid for the labor performed and the materials furnished by that Subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the Contractor.

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

Each payment made by the Awarding Authority to the Contractor for the labor performed and the materials furnished by a Subcontractor shall be made to the Contractor for the account of that Subcontractor; and the Awarding Authority shall take reasonable steps to compel the Contractor to make each such payment to each such Subcontractor. If the Awarding Authority has received a demand for direct payment from a Subcontractor for any amount which has already been included in a payment to the Contractor or which is to be included in a payment to the Contractor for payment to the Subcontractor, the Awarding Authority shall act upon the demand as provided herein.

If, within seventy (70) days after the Subcontractor has substantially completed the subcontract work, the Subcontractor has not received from the Contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the Contractor, less any amount retained by the Awarding Authority as the estimated cost of completing the incomplete and unsatisfactory items of work, the Subcontractor may demand direct payment of that balance from the Awarding Authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the Awarding Authority, and a copy shall be delivered to or sent by certified mail to the Contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth (70th) day after the Subcontractor has substantially completed the subcontract work. Within ten (10) days after the Subcontractor has delivered or so mailed the demand to the Awarding Authority and delivered or so mailed a copy to the Contractor, the Contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the Awarding Authority, and a copy shall be delivered to or sent by certified mail to the Subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract, including any amount due for extra labor and materials furnished to the Contractor and of the amount due for each claim made by the Contractor against the Subcontractor.

Within fifteen (15) days after receipt of the demand by the Awarding Authority, but in no event prior to the seventieth (70th) day after substantial completion of the subcontract work, the Awarding Authority shall make direct payment to the Subcontractor of the balance due under the subcontract, including any amount due for extra labor and materials furnished to the Contractor, less any amount (i) retained by the Awarding Authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the Contractor in the sworn reply; provided that the Awarding Authority shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by M.G.L. c 30, §39F. The Awarding Authority shall make further direct payments to the Subcontractor forthwith after the removal of the basis for deductions from direct payments made.

The Awarding Authority shall forthwith deposit the amount deducted from a direct payment in an interest-bearing joint account in the names of the Contractor and the Subcontractor in a bank in Massachusetts selected by the Awarding Authority or agreed upon by the Contractor and the Subcontractor and shall notify the Contractor and the Subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in a Contract between the Contractor and the Subcontractor or as determined by decree of a court of competent jurisdiction.

All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to the provisions herein shall be made out of amounts payable to the Contractor at the time of receipt of a demand for direct payment from a Subcontractor and out of amounts which later become payable to the Contractor and in the order of receipt of such demands from Subcontractors. All direct payments shall discharge the obligation of the Awarding Authority to the Contractor to the extent of such payment.

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

If the Subcontractor does not receive payment as provided herein or if the Contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the Subcontractor and the Subcontractor does not receive payment for same when due less the deductions provided for herein, the Subcontractor may demand direct payment by following the procedure provided for in M.G.L. c.30, §39F, and the Contractor may file a sworn reply as provided in that same Sub-subparagraph. A demand made after the first day of the month following that for which the Subcontractor performed or furnished the labor and materials for which the Subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the Contractor. Thereafter the Awarding Authority shall proceed as provided in M.G.L. c.30, §39F.

Any assignment by a Subcontractor of the rights under this section to a surety company furnishing a bond under the provisions of M.G.L. c.149, §29 shall be invalid. The assignment and subrogation rights of the surety to amounts included in a demand for direct payment which are in the possession of the Awarding Authority or which are on deposit pursuant to the provisions herein shall be subordinate to the rights of all Subcontractors who are entitled to be paid under this section and who have not been paid in full.

(3) "Subcontractor" as used in this section (i) for contracts awarded as provided in sections forty-four A to forty-four H, inclusive, of chapter one hundred forty-nine shall mean a person who files a sub-bid and receives a subcontract as a result of that filed sub-bid or who is approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor

A Contractor or a Subcontractor shall enforce a claim to any portion of the amount of a demand for direct payment deposited pursuant to M.G.L. c.30, §39F by a petition in equity in the superior court against the other and the bank shall not be a necessary party. A Subcontractor shall enforce a claim for direct payment or a right to require a deposit by a petition in equity in the superior court against the Awarding Authority and the Contractor shall not be a necessary party. Upon motion of any party the court shall advance for speedy trial any petition filed as provided in this paragraph. M.G.L. c.231, §§59 and 59B shall apply to such petitions. The court shall enter an interlocutory decree upon which execution shall issue for any part of a claim found due pursuant to §§59 and 59B and, upon motion of any party, shall advance for speedy trial the petition to collect the remainder of the claim. Any party aggrieved by such interlocutory decree shall have the right to appeal therefrom as from a final decree. The court shall not consolidate for trial the petition of any Subcontractor with the petition of one or more Subcontractors of the same general contract unless the court finds that a substantial portion of the evidence of the same events during the course of construction (other than the fact that the claims sought to be consolidated arise under the same general contract) is applicable to the petitions sought to be consolidated and that such consolidation will prevent unnecessary duplication of evidence. A decree in any such proceeding shall not include interest on the disputed amount deposited in excess of the interest earned for the period of any such deposit. No person except a Subcontractor filing a demand for direct payment for which no funds due the Contractor are available for direct payment shall have a right to file a petition in a court of equity against the Awarding Authority claiming a demand for direct payment is premature, and such Subcontractor must file the petition before the Awarding Authority has made a direct payment to the Subcontractor and has made a deposit of the disputed portion.

In any petition to collect any claim for which a Subcontractor has filed a demand for direct payment the court shall, upon motion of the Contractor, reduce by the amount of any deposit of a disputed amount by the Awarding Authority as provided herein any amount held under a trustee writ or pursuant to a restraining order or injunction.”

## ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

SC 15.01 Delete paragraph 15.01 A of the General Conditions in its entirety and insert in its place the following :

"15.01-A The Owner may order the Contractor in writing to suspend, delay, or interrupt all or any part of the Work for such period of time as it may determine to be appropriate for the convenience of the Owner; provided however, that if there is a suspension, delay or interruption for fifteen (15) days or more or due to a failure of the Owner to act within the time specified in this Contract, the Owner shall make an adjustment in the Contract Price for any increase in the cost of performance of this Contract but shall not include any profit to the Contractor on such increase; and provided further, that the Owner shall not make any adjustment in the Contract Price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this Contract provides for an equitable adjustment of the Contract Price under any other Contract provisions.

The Contractor shall submit the amount of said claim 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 (20) days before the Contractor notified the Owner in writing of act or failure to act involved in the claim.

15.01-A-1. The above revisions contained in paragraph under SC 15.01 are in compliance with Massachusetts General Laws Chapter 30, Section 39O."

SC-15.02 Delete paragraph 15.02 A, B, C, D, E and F of the General Conditions in their entirety and insert in its place the follow provision:

"15.02-A If the Contractor persistently or repeatedly refuses or fails, except in cases for which extension of time is provided, to supply enough properly skilled workmen or proper materials, or if the Contractor fails to make prompt payment to Subcontractors or for materials or labor, or persistently disregards laws, ordinances, rules, regulations or orders of any public authority having jurisdiction or disregards an instruction, order or decision of the Engineer, or otherwise is guilty of a substantial violation of any provision of the Contract, then the Contractor shall be in default, and the Owner may, without prejudice to any other right or remedy and upon written notice to the Contractor of such default, take possession of all materials, tools, appliances, equipment, construction equipment and machinery and vehicles, offices and other facilities on the Project site, and all materials intended for the Work, wherever stored, and, if such default is not cured within seven (7) days after such notice, may terminate the employment of the Contractor, accept assignment of any or all subcontracts, and finish the Work by whatever method the Owner may deem expedient. The Owner shall be entitled to collect from the Contractor all direct, indirect, and consequential damages suffered by the Owner on account of the Contractor's default, including without limitation additional services and expenses of the Engineer made necessary thereby. The Owner shall be entitled to hold all amounts due the Contractor at the date of termination until all of the Owner's damages have been established, and to apply such amounts to such damages.

If, after final completion of the Work, the Owner determines that the unpaid amount (if any) due to the Contractor for the portion of the Work performed by the Contractor in accordance with the Contract exceeds any costs and damages incurred by the Owner as the result of the Contractor's breach of this Contract, such excess shall be paid to the Contractor. If the costs and damages incurred by the Owner as the result of the Contractor's breach of this Contract exceeds the unpaid amount (if any) due to the Contractor for the portion of the Work performed by the Contractor, the Contractor shall promptly pay such excess upon written demand by the Owner. In the event of a termination of the Contract pursuant to this Article, the Owner and the Contractor shall forthwith return to the other all papers, materials and other properties of the other held by each for the purposes of execution of the Contract. In addition, each party will make reasonable efforts to assist the other party in an orderly termination of this Contract."

15.02-B If the Contractor is determined by a court of competent jurisdiction to be bankrupt, or if any assignment shall be made by the Contractor or by any guarantor of the Contractor for the benefit of creditors, or if a petition is filed by the Contractor or by guarantor of the Contractor for adjudication as a bankrupt, or for reorganization or an arrangement under any provision of the Bankruptcy Act as then in force and effect, or in an involuntary petition under any of the provisions of the Bankruptcy Act is filed against the Contractor and such involuntary petition is not discharged within ninety (90) days thereafter, in any event the Owner may terminate this Contract upon written notice to the Contractor."

SC-15.03 Delete paragraph 15.03 of the General Conditions in its entirety and insert in its place the following:

#### “15.03 OWNER’S TERMINATION FOR CONVENIENCE

The Owner may, at any time, terminate the Contract for the Owner’s convenience and without cause. Upon receipt of written notice from the Owner of such termination for the Owner’s convenience, the Contractor shall:

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and/or purchase orders.

In the event of such termination for the Owner’s convenience, the Contractor shall be compensated only for Work performed and expenses incurred in accordance with the Contract prior to termination, together with reasonable demobilization expenses (provided that there are appropriated Project funds available for such demobilization expenses). The Owner, however, shall not compensate the Contractor for lost profits, overhead expenses, termination expenses, or other such costs or expenses.”

#### ARTICLE 16 - DISPUTE RESOLUTION

SC 16.01 Delete paragraph 16.01 A, B and C of the General Conditions in their entirety and insert in its place the following:

“Any Claim arising out of or related to the Contract, except those waived as provided in herein, shall, after final decision by the Engineer or thirty (30) days after submission of the Claim to the Engineer, be subject to mediation as a condition precedent to the institution of legal or equitable proceedings by either party.

The Owner and Contractor shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be conducted under the auspices of the American Arbitration Association in accordance with the most current version of the Association’s Construction Industry Mediation Rules in effect at the time the request for mediation is filed. Request for mediation shall be filed in writing with the other party to this Contract and with the American Arbitration Association. All necessary parties may be brought into such mediation.

The parties shall bear equally the mediator’s fee and any filing fees required for the mediation. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Written Contracts reached in mediation shall be enforceable as written settlement Contracts in any court having jurisdiction thereof. In the event that any such claim, dispute or

controversy is not resolved through the mediation process, either party is free to pursue any such claim, dispute or other matter in an appropriate court proceeding.

This paragraph 16.01 shall not prohibit the initiation of legal proceedings or equitable proceedings in circumstances where mediation will not be completed before the expiration of the applicable time within which to initiate legal proceedings or equitable proceedings. Under no circumstances shall either party call for mediation of any claim or dispute arising out of this Contract after such period of time as would normally bar the initiation of legal proceedings to litigate such a claim or dispute under the laws of the Commonwealth of Massachusetts.

This Paragraph 16.01 shall survive completion or termination of the Contract.”

ARTICLE 17 Renumber Article 17 as Article 19, and renumber paragraphs 17.01 thru 17.06 as paragraphs 19.01 thru 19.06.

Insert new paragraphs 17.01 through 17.06 in the General Conditions:

“ARTICLE 17 - CONTRACTOR'S ACCOUNTING METHOD REQUIREMENTS  
(Statutory reference: M.G.L. c.30, §39R)

SC\_17.01\*-SC-17.06\* Add new paragraphs 17.01 through 17.06, to the General Conditions as follows:

“17.01-A\* The words defined herein shall have the meaning stated below whenever they appear in this Article 17:

17.01-A.1 “Contractor” means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a contract pursuant to §39M of c.30, §§44A-44H inclusive, of c.149, §11C of c.25, or §§44-58, inclusive, of c.7C, which is for an amount or estimated amount greater than one hundred thousand dollars.

17.01-A.2 “Contract” means any contract awarded or executed pursuant to §§44-58, inclusive of c.7C, and any contract awarded or executed pursuant to §11C of c.25A, §39M of c.30, or §§44A-44H, inclusive, of c.149, which is for an amount or estimated amount greater than one hundred thousand dollars.

17.01-A.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.

17.01-A.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. In determining whether an accountant is independent with respect to a particular person, appropriate consideration should be given to all relationships between the accountant and that person or any affiliate thereof. Determination of an accountant's independence shall not be confined to the relationships existing in connection with the

filing of reports with the Awarding Authority.

17.01-A.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.

17.01-A.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 s/he has made and sets forth his/her opinion regarding the financial statements taken as a whole with a listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed the reason therefor shall be stated. An accountant's report shall include as a part thereof a signed statement by the responsible corporate officer attesting that management has fully disclosed all material facts to the independent certified public accountant, and that the audited financial statement is a true and complete statement of the financial condition of the Contractor.

17.01-A.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.

17.01-A.8 Accounting terms, unless otherwise defined herein, shall have a meaning in accordance with generally accepted accounting principles and auditing standards.

17.02-A Every Contract or contract awarded or executed pursuant to §§44-58, inclusive of c.7C, §11C of c.25A, and pursuant to §39M of c.30 or to §§44A-44H, inclusive, of c.149, shall provide that:

17.02-A.1 The Contractor shall make, and keep for at least six (6) years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the Contractor.

17.02-A.2 Until the expiration of six (6) years after final payment, the Awarding Authority, Office of Inspector General, and the Commissioner of Capital Asset Management and Maintenance shall have the right to examine any books, documents, papers or records of the Contractor or of his/her Subcontractors that directly pertain to, and involve transactions relating to, the Contractor or his/her Subcontractors.

17.02-A.3 If the Contract is a contract as defined herein, the Contractor shall describe any change in the method of maintaining records or recording transactions which materially affect any statements filed with the Awarding Authority, including in his/her description the date of the change and reasons therefor, and shall accompany said description with a letter from the Contractor's independent certified public accountant approving or otherwise commenting on the changes.

17.02-A.4 If the Contract is a contract as defined herein, the Contractor has filed a statement of management on internal accounting controls as set forth in Paragraph 17.03 below prior to the execution of the contract.



17.02-A.5 If the Contract is a contract as defined herein, the Contractor has filed prior to the execution of the contracts and will continue to file annually, an audited financial statement for the most recent completed fiscal year as set forth in Paragraph 17.05 below.

17.03-A Every Contractor awarded a contract shall file with the Awarding Authority a statement of management as to whether the system of internal accounting controls of the Contractor and its subsidiaries reasonably assures that:

17.03-A.1 transactions are executed in accordance with management's general and specific authorization;

17.03-A.2 transactions are recorded as necessary:

(i) to permit preparation of financial statements in conformity with generally accepted accounting principles, and

(ii) to maintain accountability for assets;

17.03-A.3 access to assets is permitted only in accordance with management's general or specific authorization; and

17.03-A.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.

17.04-A Every Contractor awarded a contract shall also file with the Awarding Authority a statement prepared and signed by an independent certified public accountant, stating that he or she has examined the statement of management on internal accounting controls, and expressing an opinion as to

17.04-A.1 whether the representations of management in response to this paragraph and Paragraph 17.02 above are consistent with the result of management's evaluation of the system of internal accounting controls; and

17.04-A.2 whether such representations of management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statements.

17.05-A Every Contractor awarded a contract by the Commonwealth or by any political subdivision thereof shall annually file with the Commissioner of Division of Capital Asset Management during the term of the Contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report. Such statement shall be made available to the Owner upon request.

17.06-A Records and statements required to be made, kept or filed under the provisions of this Article 17 shall not be public records as defined in M.G.L. c.4, §7 and shall not be open to public inspection;

provided, however, that such records and statements shall be made available pursuant to the provisions of Subparagraph 17.02-A.2 and 17.05-A.”

#### ARTICLE 18 INSERT A NEW ARTICLE 18 IN THE GENERAL CONDITIONS AS FOLLOWS:

##### “ARTICLE 18: NONDISCRIMINATION IN EMPLOYMENT

18.01-A Contracts for work under this bid will obligate the Contractor and Subcontractors not to discriminate in employment practices.

18.02-A Contracts for work under this project will obligate the Contractor and Subcontractors to maintain not less than five (5%) percent ratio of minority employee man hours to total man hours.

18.03-A In connection with the performance of work under the Contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, age, sex, gender identity, sexual orientation (which shall not include persons whose sexual orientation involves minor children as the sex object), genetic information, ancestry, children, marital status, veteran status or membership in the armed services, the receiving of public assistance, and handicap. The aforesaid provision shall include, but not be limited to the following: advertising; recruitment; hiring; rates of pay or other forms of compensation; terms, conditions or privileges of employment; employment upgrading; transfer; demotion; layoff; and termination. The Contractor shall post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Massachusetts Commission Against Discrimination or other applicable agency of the Commonwealth of Massachusetts setting forth the provisions of the Fair Employment Practices Law of the Commonwealth. The Contractor shall also undertake in good faith, affirmative action measures designed to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, age, sex, gender identity, sexual orientation (which shall not include persons whose sexual orientation involves minor children as the sex object; genetic information, ancestry, children, marital status, veteran status or membership in the armed services, the receiving of public assistance, and handicap, and to eliminate and remedy any effects of such discrimination in the past.

18.04-A Successful Bidder shall submit a Contractor’s Certification Form and a Subcontractor’s Certification Form concerning its employment practices and policies in order to maintain its eligibility to receive the award of the Contract. These forms shall be submitted with the signed Contract Documents.”

#### ARTICLE 19 -MISCELLANEOUS

SC 19.01-B Add the following new paragraph immediately after paragraph 19.01-A.2. of the General Conditions:

"19.01-B Both the address given in the Bid Form upon which this Agreement is founded, and Contractor’s office at or near the site of the Work are hereby designated as places to either of which notices, letters, and other communications to Contractor shall be certified, mailed, or delivered, the delivering at the above named place, or depositing in a postpaid wrapper directed to the first named

place, in any post office box regularly maintained by the post office department, of any notice, letter or other communication to Contractor shall be deemed sufficient service thereof upon Contractor; and the date of said service shall be the date of such delivery or mailing.

The first named address may be changed at any time by an instrument in writing, executed and acknowledged by Contractor, and delivered to Owner and Engineer in accordance with this Article 19. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter or other communication upon Contractor personally."

SC-19.01-C Add the following new paragraph 19.01-C to the General Conditions:

Notices given to the Owner shall be given to the Town Administrator, Town of Natick, Natick Town Hall, 13 East Central Street, Natick, MA 01760, to the Director, Natick Department of Public Works, 75 West Street, Natick, MA 01760 and to the Engineer.

SC-19.05-A Delete paragraph 19.05-A (formerly 17.05-A) of the General Conditions and insert the following paragraph:

"A. This Contract shall be governed by and interpreted in accordance with the laws of the Commonwealth of Massachusetts, regardless of choice of law principles".

Insert the following new paragraphs 19.07 through 19.15 in the General Conditions.

#### "19.07 MINIMUM PREVAILING WAGE RATES

19.07 -A The requirements and provisions of all applicable laws and any amendments thereof or additions thereto as to the employment of labor, and to the schedule of minimum prevailing wage rates established in compliance with laws, including without limitation M.G.L. c.149, §26-27G, shall be a part of these Contract Documents. Copies of Federal and/or State wage schedules are included at the end of Part I of these Supplementary Conditions. If, after the Notice to Proceed, it becomes necessary to employ any person in a trade or occupation not classified in the wage determinations, such person shall be paid at not less than such wages as shall be determined by the officials administering the laws mentioned above. Such approved minimum rate shall be retroactive to the time of the initial employment of such person on such trade or occupation. Contractor shall notify Owner of his intention to employ persons in trades or occupations not classified in sufficient time for Owner to obtain approved rates for such trades or occupations.

19.07-A.1. The schedules of wages referred to above are minimum rates only, and Owner will not consider any claims for additional compensation made by Contractor because of payment by Contractor of any wage rate in excess of the applicable rate contained in these Contract Documents. All disputes in regard to the payment of wages in excess of these specified in the schedules shall be adjusted by Contractor.

19.07-A.2 The said schedules of wages shall continue to be the minimum rates to be paid during the life of the Agreement and a legible copy of said schedules shall be kept posted in a conspicuous place

at the site of the Work.

19.07-A.3 Federal and/or State schedule of minimum prevailing wage rates are included in Part I of these Supplementary Conditions. Where rates differ, the higher rates shall apply as a minimum for that trade.

19.07-A.4 The Contractor shall submit weekly payroll records to the Owner during the progress of the Contract, for each day work is performed and keep them on file for three (3) years.

19.07-A.5 The Contractor should obtain a schedule of minimum prevailing wage rates for every public building construction project from the Owner. It is the Owner's responsibility to ensure that a copy of the wage schedule is provided to all Contractors from whom estimates or bids are solicited for all projects. The Department of Labor and Workforce Development will not issue wage schedules directly to contractors or employees.

19.07-A.6 Once a wage schedule has been issued for a project by the Department of Labor and Workforce Development, it will remain in effect for the entire project. Appeals of wage determinations or classifications of employment may be made to the Department of Labor and Workforce Development Commissioner.

19.07-A.7 A wage schedule issued for a project may not be issued on any other project. If, by chance, the Owner fails to provide a wage schedule to use when figuring your bid, do not use one from another project. In this case, the Contractor should contact the Department of Labor and Workforce Development immediately and urge the Owner to contact the Department of Labor and Workforce Development to correct the oversight.

19.07-A.8 The failure of the Owner to provide a wage schedule does not excuse the Contractor from paying the minimum prevailing wage rate.

19.07-A.9 The Attorney General's Division of Fair Labor & Business Practices enforces the minimum prevailing wage law. All bids shall reflect minimum prevailing wage rates. CONTRACTORS may be required by an awarding authority to "demonstrate how they could complete the project and comply with Mass. Gen. Laws". The Division issued an "Advisory" discussing these and other points. For a copy, please contact the Attorney General's Office.

19.07-A.10 Minimum prevailing wages shall be paid to all employees on public building construction projects regardless of whether they are employed by the General Contractor, a filed sub-bidder or any sub-contractor. The minimum prevailing wage applies equally to unionized and non-unionized workers.

19.07-A.11 All employees who perform work on a public building construction project shall be paid hourly according to the wage schedule issued for the particular project.

19.07-A.12 The wage schedule issued for each project is in effect for the duration of that project. All wage increases listed on the schedule shall be paid on the specified dates.

19.07-A.13 Contractors are limited in the deductions that can be made from the hourly rate (represented as the “total rate” on the wage schedules). Only contributions to the following plans may be deducted:

- Health and Welfare
- Pension
- Supplementary Unemployment

All contributions shall be made to bona fide plans.

19.07-A.14 If the Contractor contributes to any, or all, of the above plans, it may deduct the hourly amount contributed from the “total rate”. If the Contractor does not contribute to any of the benefit plans listed above, then the hourly rate of pay will be the “total rate” from the wage schedule.

19.07-A.15 All other deductions, including but not limited to the following, may not be subtracted from the employee's hourly minimum prevailing wage rate:

- Vacation Time
- Sick Time
- Training Funds
- Charitable Contributions
- Workers Compensation
- Unemployment Insurance
- Uniforms

19.07-A.16 Overtime, which shall be paid to all employees who work more than forty (40) hours per week, shall be at least time-and-one-half the base rate (“total rate” less benefits, if any).

19.07-A.17 Any “separate check” given to any employee as the “benefit portion” of the minimum prevailing wage may not be treated differently than the check for “base wages”. All “separate checks” are considered wages and subject to state and federal taxes, unemployment insurance and worker's compensation requirements.

19.07-A.18 A reporting form is sent along with each wage schedule that may be used. Each report shall contain at least: the employee's name, address, occupational classification, hours worked and wages paid. Do not submit weekly payroll reports to the Department of Labor and Workforce Development.

19.07-A.19 After the Contractor completes its portion of the public building construction project, the Contractor shall submit a Statement of Compliance to the Department of Labor and Workforce Development. A Statement of Compliance form is also sent along with each wage schedule issued.

19.07-A.20 Apprentices shall be registered with the Division of Apprentice Training (DAT). All persons not registered with DAT shall be paid the “total rate” listed on the wage schedule. An apprentice sheet showing percentages based on the apprentice steps is included with all wage schedules.

19.07-A.21 Failure to pay the minimum prevailing wage subjects the Contractor to potential civil and criminal liability.

“SC-19.08-A If any provision of the Contract Documents is determined to be invalid or unenforceable by final judgment of a court of competent jurisdiction, the remaining provisions shall continue in effect to the extent permitted by law.

SC-19.09-A All provisions of law required to be inserted in the Contract Documents shall be and are inserted herein. If any such provision is not herein inserted or inserted in improper form, upon the application of either party, the Contract Documents shall be changed by the Owner, at no increase in contract sum or contract time, so as to strictly comply with the law and without prejudice to the rights of either party herein.

SC-19.10-A No forbearance or indulgence in any form or manner by the Owner shall be construed as a waiver or in any way limit the legal or equitable remedies available to the Owner. No waiver by the Owner of any default or breach shall constitute a waiver of any subsequent default or breach.

SC-19.11-A Attorney’s Fees. In the event that any legal or equitable action, suit, or claim, counter-claim, cross-claim, or third-party claim of any kind relating to the Contract is filed, pleaded or initiated by the Owner or Contractor against the other party to the Contract, which results in a judgment, award or order of any kind in favor of the Owner, the Contractor shall be responsible for all reasonable costs, expenses, attorney’s fees and expert witness fees incurred by the Owner in filing, prosecuting, maintaining, appealing or defending against such action, suit, or claim, counter-claim, cross-claim, or third-party claim.

SC-19.12-A Any cause of action which the Owner may have in connection with Work shall be deemed to accrue only when the Owner has obtained actual knowledge of the act of omission which gives rise to the cause of action, not before.

SC-19.13-A No officer, member of a board, commission or committee, employee or agent of the Owner shall be personally or individually liable to the Contractor with respect to the Contract or the Work. Each subcontract shall include the foregoing limitation, which shall be effective if the Owner ever succeeds to the Contractor’s rights and obligations under the subcontract.

SC-19.14-A The Contract may be amended only by written Contract of the parties.

SC-19.15-A The Contract may not be assigned by the Contractor without the prior written assent of the Owner.”

Insert a new Article 20 in the General Conditions, as follows:

## ARTICLE 20: ADDITIONAL PROVISIONS

20.01 Certification of Tax Compliance - By entering into an Contract with the Owner, the Contractor certifies under the penalties of perjury, pursuant to M.G.L. Chapter 62C, Section 49A(b), that it has complied with all laws of the Commonwealth of Massachusetts relating to taxes, to the reporting of employees and Contractors, and to the withholding and remitting of child support.

20.02 Conflict of Interest - The Contractor understands that the Massachusetts Conflict of Interest

Law, Chapter 268A of the Massachusetts General Laws, applies to the Contractor with respect to the services required to be provided under the Contract. The Contractor and its officers, employees, agents, Subcontractors and affiliated agencies shall not participate in any activity which constitutes a violation of the Massachusetts Conflict of Interest Law or which creates an appearance of a violation of the Massachusetts Conflict of Interest Law.

20.03 Non-Collusion - By entering into the Contract with the Owner, the Contractor certifies under penalties of perjury that its bid has been made and submitted in good faith and without collusion or fraud with any person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

20.04 Independent Contractor Status - The Contractor shall provide services under any Contract with the Owner as an independent contractor with the Town of Natick and not as an employee of the Town of Natick. No employee, agent or representative of the Contractor shall be entitled to receive any benefits of employment with the Town of Natick, including without limitation salary, overtime, vacation pay, holiday pay, sick leave, health insurance, life insurance, pension or deferred compensation.

20.05 Additional Statutory Incorporations - The provisions of M.G.L. Chapter 149, Sections 34 (Public contracts; stipulation as to hours and days of work; void contracts), 34A (Contracts for public works; workers' compensation insurance; breach of contract; enforcement and violation of statute ), and 34B (Contracts for public works; wages for reserve police officer) shall hereby be incorporated into this Contract by reference.

## SUPPLEMENTARY CONDITIONS

### TABLE OF CONTENTS

#### PART II

<u>DESCRIPTION</u>	<u>PAGE NUMBER</u>
1. Commonwealth of Massachusetts Provisions	
Chapter 30 M.G.L. Section 39F	00810-1
Chapter 30 M.G.L. Section 39G	00810-4
Chapter 30 M.G.L. Section 39K	00810-6
Chapter 30 M.G.L. Section 39M	00810-8
Chapter 30 M.G.L. Section 39N	00810-10
Chapter 30 M.G.L. Section 39O	00810-11
Chapter 30 M.G.L. Section 39P	00810-11
Chapter 30 M.G.L. Section 39R	00810-12
Chapter 149 M.G.L. Section 25	00810-15
Chapter 149 M.G.L. Section 26	00810-15
Chapter 149 M.G.L. Section 34	00810-16
Chapter 149 M.G.L. Section 34A	00810-16
Chapter 149 M.G.L. Section 34B	00810-17
Chapter 149 M.G.L. Section 44A	00810-17
Chapter 149 M.G.L. Section 44G(D)	00810-21
 Insurance Certification Form	 00810-22
 Change Order Form	 00810-24
 Example Calculation Sheet	 00810-26



## SUPPLEMENTARY CONDITIONS

### PART II - STATE AND LEGAL GOVERNMENT PROVISIONS

State and Local Government provisions included herein, have been selected from those to which specific references have been made elsewhere in the Contract Documents. Each and every other provision of law or clause required by law to be inserted in this Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though it were included herein and our provision contrary to such law or clause shall be deemed null and void. If through mistake or otherwise any such provision is not correctly inserted, then upon the application of either party, the Contract shall forthwith be physically amended to make such insertion.

1.0 State Government Provisions were current as of March 6, 2019.

1.1 Contractor and Owner agree that the following provisions of the Commonwealth of Massachusetts apply to the work to be performed under this Contract, and that these provisions supersede any conflicting provisions of said Contract.

1.1.1 CHAP. 30 M.G.L, SECTION 39F

Construction contracts; assignment and subrogation; Subcontractor defined; enforcement of claim for direct payment; deposit, reduction of disputed amounts

Section 39F. (1) Every contract awarded pursuant to sections forty-four A to L, inclusive, of chapter one hundred and forty-nine shall contain the following subparagraphs (a) through (i) and every contract awarded pursuant to section thirty-nine M of chapter thirty shall contain the following subparagraphs (a) through (h) and in each case those subparagraphs shall be binding between the general contractor and each subcontractor.

(a) Forthwith after the general contractor receives payment on account of a periodic estimate, the general contractor shall pay to each subcontractor the amount paid for the labor performed and the materials furnished by that subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

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

(c) Each payment made by the awarding authority to the general contractor pursuant to subparagraphs (a) and (b) of this paragraph for the labor performed and the materials furnished by a subcontractor shall be made to the general contractor for the account of that subcontractor; and the awarding authority shall take reasonable steps to compel the general contractor to make each such payment to each such subcontractor. If the awarding authority has received a demand for direct payment from a subcontractor for any amount which has already been included in a payment to the general contractor or which is to be included in a payment to the general contractor for payment to the

subcontractor as provided in subparagraphs (a) and (b), the awarding authority shall act upon the demand as provided in this section.

(d) If, within seventy days after the subcontractor has substantially completed the subcontract work, the subcontractor has not received from the general contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, the subcontractor may demand direct payment of that balance from the awarding authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the awarding authority, and a copy shall be delivered to or sent by certified mail to the general contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the subcontractor has substantially completed the subcontract work. Within ten days after the subcontractor has delivered or so mailed the demand to the awarding authority and delivered or so mailed a copy to the general contractor, the general contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the awarding authority and a copy shall be delivered to or sent by certified mail to the subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor and of the amount due for each claim made by the general contractor against the subcontractor.

(e) Within fifteen days after receipt of the demand by the awarding authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the awarding authority shall make direct payment to the subcontractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount (i) retained by the awarding authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the general contractor in the sworn reply; provided, that the awarding authority shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The awarding authority shall make further direct payments to the subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.

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

(g) All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (f) shall be made out of amounts payable to the general contractor at the time of receipt of a demand for direct payment from a subcontractor and out of amounts which later become payable to the general contractor and in the order of receipt of such demands from subcontractors. All direct payments shall discharge the obligation of the awarding authority to the general contractor to the extent of such payment.

(h) The awarding authority shall deduct from payments to a general contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph (f), are sufficient to satisfy all unpaid balances of demands for direct payment received from subcontractors. All such amounts

shall be earmarked for such direct payments, and the subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the general contractor.

(i) If the subcontractor does not receive payment as provided in subparagraph (a) or if the general contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the subcontractor and the subcontractor does not receive payment for same when due less the deductions provided for in subparagraph (a), the subcontractor may demand direct payment by following the procedure in subparagraph (d) and the general contractor may file a sworn reply as provided in that same subparagraph. A demand made after the first day of the month following that for which the subcontractor performed or furnished the labor and materials for which the subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the general contractor. Thereafter the awarding authority shall proceed as provided in subparagraph (e), (f), (g) and (h).

(2) Any assignment by a subcontractor of the rights under this section to a surety company furnishing a bond under the provisions of section twenty-nine of chapter one hundred forty-nine shall be invalid. The assignment and subrogation rights of the surety to amounts included in a demand for direct payment which are in the possession of the awarding authority or which are on deposit pursuant to subparagraph (f) of paragraph (1) shall be subordinate to the rights of all subcontractors who are entitled to be paid under this section and who have not been paid in full.

(3) "Subcontractor" as used in this section (i) for contracts awarded as provided in sections forty-four A to forty-four H, inclusive, of chapter one hundred forty-nine shall mean a person who files a sub-bid and receives a subcontract as a result of that filed sub-bid or who is approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, (ii) for contracts awarded as provided in paragraph (a) of section thirty-nine M of chapter thirty shall mean a person approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the general contractor, and (iii) for contracts with the commonwealth not awarded as provided in forty-four A to forty-four H, inclusive, of chapter one hundred forty-nine shall also mean a person contracting with the general contractor to supply materials used or employed in a public works project for a price in excess of five thousand dollars.

(4) A general contractor or a subcontractor shall enforce a claim to any portion of the amount of a demand for direct payment deposited as provided in subparagraph (f) of paragraph 1 by a petition in equity in the superior court against the other and the bank shall not be a necessary party. A subcontractor shall enforce a claim for direct payment or a right to require a deposit as provided in subparagraph (f) of paragraph 1 by a petition in equity in the superior court against the awarding authority and the general contractor shall not be a necessary party. Upon motion of any party the court shall advance for speedy trial any petition filed as provided in this paragraph. Sections fifty-nine and fifty-nine B of chapter two hundred thirty-one shall apply to such petitions. The court shall enter an interlocutory decree upon which execution shall issue for any part of a claim found due pursuant to sections fifty-nine and fifty-nine B and, upon motion of any party, shall advance for speedy trial the petition to collect the remainder of the claim. Any party aggrieved by such interlocutory decree shall have the right to appeal therefrom as from a final decree. The court shall not consolidate for trial the petition of any subcontractor with the petition of one or more subcontractors or the same general contract unless the court finds that a substantial portion of the evidence of the same events during the course of construction (other than the fact that the claims sought to be consolidated arise under the same general contract) is applicable to the petitions sought to be consolidated and that such consolidation will prevent unnecessary duplication of evidence. A decree in any such proceeding shall not include interest on the disputed amount deposited in excess of the interest earned for the period of any such deposit. No person except a subcontractor filing a demand for direct payment for which no funds due the general contractor are available for direct payment shall have a right

to file a petition in court of equity against the awarding authority claiming a demand for direct payment is premature and such subcontractor must file the petition before the awarding authority has made a direct payment to the subcontractor and has made a deposit of the disputed portion as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1).

(5) In any petition to collect any claim for which a subcontractor has filed a demand for direct payment the court shall, upon motion of the general contractor, reduce by the amount of any deposit of a disputed amount by the awarding authority as provided in part (iii) of subparagraph (e) and in subparagraph (f) of paragraph (1) any amount held under a trustee writ or pursuant to a restraining order or injunction.

#### 1.1.2 CHAP. 30 M.G.L. SECTION 39G

Completion of public works; semi-final and final estimates; payments; extra work; disputed items

Section 39G. Upon substantial completion of the work required by a contract with the commonwealth, or any agency or political subdivision thereof, for the construction, reconstruction, alteration, remodeling, repair or improvement of public ways, including bridges and other highway structures, sewers and, water mains, airports and other public works, the contractor shall present in writing to the awarding authority its certification that the work has been substantially completed. Within twenty-one days thereafter, the awarding authority shall present to the contractor either a written declaration that the work has been substantially completed or an itemized list of incomplete or unsatisfactory work items required by the contract sufficient to demonstrate that the work has not been substantially completed. The awarding authority may include with such list a notice setting forth a reasonable time, which shall not in any event be prior to the contract completion date, within which the contractor must achieve substantial completion of the work. In the event that the awarding authority fails to respond, by presentation of a written declaration or itemized list as aforesaid, to the contractor's certification within the twenty-one day period, the contractor's certification shall take effect as the awarding authority's declaration that the work has been substantially completed.

Within sixty-five days after the effective date of a declaration of a substantial completion, the awarding authority shall prepare and forthwith send to the contractor for acceptance a substantial completion estimate for the quantity and price of the work done and all but one per cent retainage, if held by the awarding authority, on that work, including the quantity, price and all but one per cent retainage, if held by the awarding authority, for the undisputed part of each work item and extra work item in dispute but excluding the disputed part thereof, less the estimated cost of completing all incomplete and unsatisfactory work items and less the total periodic payments made to date for the work. The awarding authority also shall deduct from the substantial completion estimate an amount equal to the sum of all demands for direct payment filed by subcontractors and not yet paid to subcontractors or deposited in joint accounts pursuant to section thirty-nine F, but no contract subject to said section thirty-nine F shall contain any other provision authorizing the awarding authority to deduct any amount by virtue of claims asserted against the contract by subcontractors, material suppliers or others.

If the awarding authority fails to prepare and send to the contractor any substantial completion estimate required by this section on or before the date herein above set forth, the awarding authority shall pay to the contractor interest on the amount which would have been due to the contractor pursuant to such substantial completion estimate at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston from such date to the date on which the awarding authority sends that substantial completion estimate to the contractor for acceptance or to the date of

payment therefor, whichever occurs first. The awarding authority shall include the amount of such interest in the substantial completion estimate.

Within fifteen days after the effective date of the declaration of substantial completion, the awarding authority shall send to the contractor by certified mail, return receipt requested, a complete list of all incomplete or unsatisfactory work items, and, unless delayed by causes beyond his control, the contractor shall complete all such work items within forty-five days after the receipt of such list or before the then contract completion date, whichever is later. If the contractor fails to complete such work within such time, the awarding authority may, subsequent to seven days' written notice to the contractor by certified mail, return receipt requested, terminate the contract and complete the incomplete or unsatisfactory work items and charge the cost of same to the contractor.

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

The awarding authority shall pay the amount due pursuant to any substantial completion or final estimate within thirty-five days after receipt of written acceptance for such estimate from the contractor and shall pay interest on the amount due pursuant to such estimate at the rate hereinabove provided from that thirty-fifth day to the date of payment. Within 15 days, 30 days in the case of the commonwealth, after receipt from the contractor, at the place designated by the awarding authority, if such place is so designated, of a periodic estimate requesting payment of the amount due for the preceding periodic estimate period, the awarding authority shall make a periodic payment to the contractor for the work performed during the preceding periodic estimate period and for the materials not incorporated in the work but delivered and suitably stored at the site, or at some location agreed upon in writing, to which the contractor has title or to which a subcontractor has title and has authorized the contractor to transfer title to the awarding authority, upon certification by the contractor that he is the lawful owner and that the materials are free from all encumbrances. The awarding authority shall include with each such payment interest on the amount due pursuant to such periodic estimate at the rate herein above provided from the due date. In the case of periodic payments, the contracting authority may deduct from its payment a retention based on its estimate of the fair value of its claims against the contractor, a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and a retention to secure satisfactory performance of the contractual work not exceeding five per cent of the approved amount of any periodic payment, and the same right to retention shall apply to bonded subcontractors entitled to direct payment under section thirty-nine F of chapter thirty; provided,

that a five per cent value of all items that are planted in the ground shall be deducted from the periodic payments until final acceptance.

No periodic, substantial completion or final estimate or acceptance or payment thereof shall bar a contractor from reserving all rights to dispute the quantity and amount of, or the failure of the awarding authority to approve a quantity and amount of, all or part of any work item or extra work item.

Substantial completion, for the purposes of this section, shall mean either that the work required by the contract has been completed except for work having a contract price of less than one per cent of the then adjusted total contract price, or substantially all of the work has been completed and opened to public use except for minor incomplete or unsatisfactory work items that do not materially impair the usefulness of the work required by the contract.

### 1.1.3 CHAP. 30 MGL SECTION 39K

#### Public building construction contracts; payments

Section 39K. Every contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building by the commonwealth, or by any county, city, town, district, board, commission or other public body, when the amount is more than five thousand dollars in the case of the commonwealth and more than two thousand dollars in the case of any county, city, town, district, board, commission or other public body, shall contain the following paragraph: Within fifteen days (30 days in the case of the commonwealth, including local housing authorities) after receipt from the contractor, at the place designated by the awarding authority if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the awarding authority will make a periodic payment to the contractor for the work performed during the preceding month and for the materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the contractor has title or to which a subcontractor has title and has authorized the contractor to transfer title to the awarding authority, upon certification by the contractor that he is the lawful owner and that the materials are free from all encumbrances, but less (1) a retention based on its estimate of the fair value of its claims against the contractor and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and less (3) a retention not exceeding five per cent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within sixty-five days after (a) the contractor fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the awarding authority, less than one per cent of the original contract price, or (b) the contractor substantially completes the work and the awarding authority takes possession for occupancy, whichever occurs first, the awarding authority shall pay the contractor the entire balance due on the contract less (1) a retention based on its estimate of the fair value of its claims against the contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, 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 thirty-nine F. If the awarding authority fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the contractor; provided, that no interest shall be due, in any event, on the amount due on a periodic estimate

for final payment until fifteen days (twenty-four days in the case of the commonwealth) after receipt of such a periodic estimate from the contractor, at the place designated by the awarding authority if such a place is so designated. The contractor agrees to pay to each subcontractor a portion of any such interest paid in accordance with the amount due each subcontractor.

The awarding authority may make changes in any periodic estimate submitted by the contractor and the payment due on said periodic estimate shall be computed in accordance with the changes so made, but such changes or any requirement for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made, as provided herein; provided, that the awarding authority may, within seven days after receipt, return to the contractor for correction, any periodic estimate which is not in the required form or which contains computations not arithmetically correct and, in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter. The provisions of section thirty-nine G shall not apply to any contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building to which this section applies.

All periodic estimates shall be submitted to the awarding authority, or to its designee as set forth in writing to the contractor, and the date of receipt by the awarding authority or its designee shall be marked on the estimate. All periodic estimates shall contain a separate item for each filed subtrade and each sub-subtrade listed in sub-bid form as required by specifications and a column listing the amount paid to each subcontractor and sub-subcontractor as of the date the periodic estimate is filed. The person making payment for the awarding authority shall add the daily interest provided for herein to each payment for each day beyond the due date based on the date of receipt marked on the estimate.

A certificate of the architect to the effect that the contractor has fully or substantially completed the work shall, subject to the provisions of section thirty-nine J, be conclusive for the purposes of this section.

Notwithstanding the provisions of this section, at any time after the value of the work remaining to be done is, in the estimation of the awarding authority, less than 1 per cent of the adjusted contract price, or the awarding authority has determined that the contractor has substantially completed the work and the awarding authority has taken possession for occupancy, the awarding authority may send to the general contractor by certified mail, return receipt requested, a complete and final list of all incomplete and unsatisfactory work items, including, for each item on the list, a good faith estimate of the fair and reasonable cost of completing such item. The general contractor shall then complete all such work items within 30 days of receipt of such list or before the contract completion date, whichever is later. If the general contractor fails to complete all incomplete and unsatisfactory work items within 45 days after receipt of such items furnished by the awarding authority or before the contract completion date, whichever is later, subsequent to an additional 14 days' written notice to the general contractor by certified mail, return receipt requested, the awarding authority may terminate the contract and complete the incomplete and unsatisfactory work items and charge the cost of same to the general contractor and such termination shall be without prejudice to any other rights or remedies the awarding authority may have under the contract. The awarding authority shall note any such termination in the evaluation form to be filed by the awarding authority pursuant to the provisions of section 44D of chapter 149.

## Contracts for construction and materials; manner of awarding

(a) Every contract for the construction, reconstruction, alteration, remodeling or repair of any public work, or for the purchase of any material, as hereinafter defined, by the commonwealth, or political subdivision thereof, or by any county, city, town, district or housing authority that is and estimated by the awarding authority to cost less than \$10,000 dollars shall be obtained through the exercise of sound business practices as defined in section 2 of chapter 30B. The awarding authority shall make and keep a record of each procurement that, at a minimum, shall include the name and address of the person from whom the services were procured. An awarding authority that utilizes a vendor on a statewide contract procured through the operational services division, or a blanket contract procured by the awarding authority pursuant to this section, shall be deemed to have obtained the contract through sound business practices.

Every contract for the construction, reconstruction, alteration, remodeling or repair of any public work, or for the purchase of any material, as hereinafter defined, by the commonwealth, or political subdivision thereof, or by any county, city, town, district or housing authority that is estimated by the awarding authority to cost not less than \$10,000 but not more than \$50,000 shall be awarded to the responsible bidder offering to perform the contract at the lowest price. The awarding authority shall make public notification of the contract and shall seek written responses from no fewer than 3 persons who customarily perform such work. For purposes of this subsection, the term "public notification" shall include, but need not be limited to, posting, at least 2 weeks before the time specified in the notification for the receipt of responses, the contract and scope-of-work statement: (1) on the website of the awarding authority, (2) on the COMMBUYS system administered by the operational services division, (3) in the central register published pursuant to section 20A of chapter 9 and (4) in a conspicuous place in or near the primary office of the awarding authority; provided, however, that if the awarding authority obtains a minimum of 2 written responses from a vendor list established through a blanket contract or a statewide contract procured through the operational services division, and the lowest of those written responses is deemed acceptable to the awarding authority, public notification is not required. The solicitation shall include a scope-of-work statement that defines the work to be performed and provides potential responders with sufficient information regarding the objectives and requirements of the awarding authority and the time period within which the work shall be completed. The awarding authority shall record the names and addresses of all persons from whom written responses were sought, the names of the persons submitting written responses and the date and amount of each written response.

An awarding authority may utilize a vendor list established through a statewide contract procured through the operational services division to identify 1 or more of the persons from whom it will seek written responses for purposes of this subsection. An awarding authority may also procure a blanket contract to establish a listing of vendors in certain defined categories of work that are under contract to provide services for multiple individual tasks of not more than \$50,000 each, and from whom written responses will be sought. Any such blanket contract procured by the awarding authority shall be procured pursuant to this section or sections 44A to 44J, inclusive, of chapter 149 which are applicable to projects over \$50,000.

Every contract for the construction, reconstruction, alteration, remodeling or repair of any public work, or for the purchase of any material, as hereinafter defined, by the commonwealth, or political subdivision thereof, or by any county, city, town, district or housing authority that is estimated by the awarding authority to cost more than \$50,000, and every contract for the construction, reconstruction, installation, demolition, maintenance or repair of any building by a public agency, as defined by subsection (1) of



section 44A of chapter 149, estimated to cost more than \$50,000 but not more than \$150,000, shall be awarded to the lowest eligible responsible bidder on the basis of competitive bids publicly opened and read by the awarding authority forthwith upon expiration of the time for the filing thereof; provided, however, that such awarding authority may reject any and all bids, if it is in the public interest to do so. Every bid for such contract shall be accompanied by a bid deposit in the form of: (1) a bid bond, (2) cash, or (3) a certified check on, or a treasurer's or cashier's check issued by, a responsible bank or trust company, payable to the awarding authority. The amount of the bid deposit shall be 5 per cent of the value of the bid. Any person submitting a bid pursuant to this section shall, on such bid, certify as follows:

The undersigned certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this paragraph the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

(Name of person signing bid)

(Company)

This subsection shall not apply to the award of any contract subject to the provisions of sections 44A to 44J, inclusive, of chapter 149 and every such contract shall continue to be awarded as provided therein. In cases of extreme emergency: (1) caused by enemy attack, sabotage or other such hostile actions or (2) resulting from an imminent security threat explosion, fire, flood, earthquake, hurricane, tornado or other such catastrophe, an awarding authority may, without competitive bids and notwithstanding any general or special law, award contracts otherwise subject to this subsection to perform work and to purchase or rent materials and equipment, all as may be necessary for temporary repair and restoration to service of any and all public work in order to preserve the health and safety of persons or property; provided, that this exception shall not apply to any permanent reconstruction, alteration, remodeling or repair of any public work.

(b) Specifications for such contracts, and specifications for contracts awarded pursuant to the provisions of said sections forty-four A to forty-four L of said chapter one hundred and forty-nine, shall be written to provide for full competition for each item of material to be furnished under the contract; except, however, that said specifications may be otherwise written for sound reasons in the public interest stated in writing in the public records of the awarding authority or promptly given in writing by the awarding authority to anyone making a written request therefor, in either instance such writing to be prepared after reasonable investigation. Every such contract shall provide that an item equal to that named or described in the said specifications may be furnished; and an item shall be considered equal to the item so named or described if, in the opinion of the awarding authority: (1) it is at least equal in quality, durability, appearance, strength and design, (2) it will perform at least equally the function imposed by the general design for the public work being contracted for or the material being purchased, and (3) it conforms substantially, even with deviations, to the detailed requirements for the item in the said specifications. For each item of material the specifications shall provide for either a minimum of three named brands of material or a description of material which can be met by a minimum of three manufacturers or producers, and for the equal of any one of said name or described materials.

(c) The term "lowest responsible and eligible bidder" shall mean the bidder: (1) whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work; (2) who shall certify, that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (3) who shall certify 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; (4) who, where the provisions of section 8B of chapter 29 apply, shall have been determined to be qualified thereunder; and (5) who obtains within 10 days of the notification of contract award the security by bond required under section 29 of chapter 149; provided that for the purposes of this section the term "security by bond" shall mean the bond of a surety company qualified to do business under the laws of the commonwealth and satisfactory to the awarding authority; provided further, that if there is more than 1 surety company, the surety companies shall be jointly and severally liable.

(d) The provisions of this section shall not apply (1) to the extent that they prevent the approval of such specifications by any contributing federal agency, (2) to materials purchased under specifications of the state department of highways at prices established by the said department pursuant to advertisement and bidding in connection with work to be performed under the provisions of chapter eighty-one or chapter ninety, (3) to any transaction between the commonwealth and any of its political subdivisions or between the commonwealth and any public service corporation, and (4) to any contract of not more than \$50,000 awarded by a governmental body, as defined by section two of chapter thirty B, in accordance with the provisions of section five of said chapter thirty B; and (5) to any contract solely for the purchase of material awarded by a governmental body, as defined by section 2 of chapter 30B, in accordance with section 5 of said chapter 30B, or procured through the operational services division pursuant to sections 22 and 52 of chapter 7.

(e) The word "material" as used in this section shall mean and include any article, assembly, system, or any component part thereof.

#### 1.1.5 CHAP. 30 MGL SECTION 39N

Construction contracts; equitable adjustment in contract price for differing subsurface or latent physical conditions

Every contract subject to section forty-four A of chapter one hundred and forty-nine or subject to section thirty-nine M of chapter thirty shall contain the following paragraph in its entirety and an Awarding Authority may adopt reasonable rules or regulations in conformity with that paragraph concerning the filing, investigation and settlement of such claims:

If, during the progress of the work, the contractor or the awarding authority discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the contract documents either the contractor or the contracting authority may request an equitable adjustment in the contract price of the contract applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a contractor, or upon its own initiative, the contracting authority shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the contract documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and contract documents and are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the contracting authority shall make an equitable adjustment in the contract price and the contract shall be modified in writing accordingly.

Contracts for construction and materials; suspension, delay or interruption due to order of awarding authority; adjustment in contract price; written claim

Every contract subject to the provisions of section thirty-nine M of this chapter or subject to section forty-four A of chapter one hundred forty-nine shall contain the following provisions (a) and (b) in their entirety and, in the event a suspension, delay, interruption or failure to act of the awarding authority increases the cost of performance to any subcontractor, that subcontractor shall have the same rights against the general contractor for payment for an increase in the cost of his performance as provisions (a) and (b) give the general contractor against the awarding authority, but nothing in provisions (a) and (b) shall in any way change, modify or alter any other rights which the general contractor or the subcontractor may have against each other.

(a) The awarding authority may order the general contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the awarding authority; provided however, that if there is a suspension, delay or interruption for fifteen days or more or due to a failure of the awarding authority to act within the time specified in this contract, the awarding authority shall make an adjustment in the contract price for any increase in the cost of performance of this contract but shall not include any profit to the general contractor on such increase; and provided further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

(b) The general contractor must submit the amount of a claim under provision (a) to the awarding authority in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, in any event, not later than the date of final payment under this contract and, except for costs due to a suspension order, the awarding authority shall not approve any costs in the claim incurred more than twenty days before the general contractor notified the awarding authority in writing of the act or failure to act involved in the claim.

Contracts for construction and materials; awarding authority's decisions on interpretation of specifications, etc.; time limit; notice

Every contract subject to section thirty-nine M of this chapter or section forty-four A of chapter one hundred forty-nine which requires the awarding authority, any official, its architect or engineer to make a decision on interpretation of the specifications, approval of equipment, material or any other approval, or progress of the work, shall require that the decision be made promptly and, in any event, no later than thirty days after the written submission for decision; but if such decision requires extended investigation and study, the awarding authority, the official, architect or engineer shall, within thirty days after the receipt of the submission, give the party making the submission written notice of the reasons why the decision cannot be made within the thirty day period and the date by which the decision will be made.

1.1.8(a) CHAP. 30 MGL SECTION 39R

Definitions; contract provisions; management and financial statements; enforcement

(a) The words defined herein shall have the meaning stated below whenever they appear in this section:

(1) "Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a contract pursuant to sections thirty-eight A1/2 to thirty-eight O, inclusive, of chapter seven and any contract awarded or executed pursuant to section eleven C of chapter twenty-five A, section thirty-nine M of chapter thirty, or sections forty-four A to forty-four H, inclusive, of chapter one hundred and forty-nine, which is for an amount or estimated amount greater than one hundred thousand dollars.

(2) "Contract" means any contract awarded or executed pursuant to sections thirty-eight A1/2 to thirty-eight O, inclusive, of chapter seven and any contract awarded or executed pursuant to section eleven C of chapter twenty-five A, section thirty-nine M of chapter thirty, or sections forty-four A through forty-four H, inclusive, of chapter one hundred and forty-nine, which is for amount or estimated amount greater than one hundred thousand dollars.

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

(4) "Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of his residence or principal office and who is in fact independent. In determining whether an accountant is independent with respect to a particular person, appropriate consideration should be given to all relationships between the accountant and that person or any affiliate thereof. Determination of an accountant's independence shall not be confined to the relationships existing in connection with the filing of reports with the awarding authority.

(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.

(6) "Accountant's Report", when used in regard to financial statements, means a document in which an independent certified public accountant indicates the scope of the audit which he has made and sets forth his opinion regarding the financial statements taken as a whole with a listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed the reason therefor shall be stated. An accountant's report shall include as a part thereof a signed statement by the responsible corporate officer attesting that management has fully disclosed all material facts to the independent certified public accountant, and that the audited financial statement is a true and complete statement of the financial condition of the contractor.

(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.

(8) Accounting terms, unless otherwise defined herein, shall have a meaning in accordance with generally accepted accounting principles and auditing standards.

(b) Subsection (a)(2) hereof notwithstanding, every agreement or contract awarded or executed pursuant to sections thirty-eight A1/2 to thirty-eight O, inclusive, of chapter seven, or eleven C of chapter twenty-five A, and pursuant to section thirty-nine M of chapter thirty or to section forty-four A through H, inclusive, of chapter one hundred and forty-nine, shall provide that:

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

(2) until the expiration of six years after final payment, the office of inspector general, and the commissioner of capital asset management and maintenance shall have the right to examine any books, documents, papers or records of the contractor or of his subcontractors that directly pertain to, and involve transactions relating to, the contractor or his subcontractors, and

(3) if the agreement is a contract as defined herein, the contractor shall describe any change in the method of maintaining records or recording transactions which materially affect any statements filed with the awarding authority, including in his description the date of the change and reasons therefor, and shall accompany said description with a letter from the contractor's independent certified public accountant approving or otherwise commenting on the changes, and

(4) if the agreement is a contract as defined herein, the contractor has filed a statement of management on internal accounting controls as set forth in paragraph (c) below prior to the execution of the contract, and

(5) if the agreement is a contract as defined herein, the contractor has filed prior to the execution of the contracts and will continue to file annually, an audited financial statement for the most recent completed fiscal year as set forth in paragraph (d) below.

(c) Every contractor awarded a contract shall file with the awarding authority a statement of management as to whether the system of internal accounting controls of the contractor and its subsidiaries reasonably assures that:

(1) transactions are executed in accordance with management's general and specific authorization;

(2) transactions are recorded as necessary

i. to permit preparation of financial statements in conformity with generally accepted accounting principles, and

ii. to maintain accountability for assets;

(3) 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.

Every contractor awarded a contract shall also file with the awarding authority a statement prepared and signed by an independent certified public accountant, stating that he 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 this paragraph and paragraph (b) above are consistent with the result of management's evaluation of the system of internal accounting controls; and

(2) whether such representations of management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statements.

(d) Every contractor awarded a contract by the commonwealth or by any political subdivision thereof shall annually file with the commissioner of capital asset management and maintenance during the term of the contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report. Such statements shall be made available to the awarding authority upon request.

(e) The office of inspector general, the commissioner of capital asset management and maintenance and any other awarding authority shall enforce the provisions of this section. The commissioner of capital asset management and maintenance may after providing an opportunity for the inspector general and other interested parties to comment, promulgate pursuant to the provisions of chapter thirty A such rules, regulations and guidelines as are necessary to effectuate the purposes of this section. Such rules, regulations and guidelines may be applicable to all awarding authorities. A contractor's failure to satisfy any of the requirements of this section may be grounds for debarment pursuant to section forty-four C of chapter one hundred and forty-nine.

(f) Records and statements required to be made, kept or filed under the provisions of this section shall not be public records as defined in section seven of chapter four and shall not be open to public inspection; provided, however, that such records and statements shall be made available pursuant to the provisions of clause (2) of paragraph (b).

#### 1.1.9 CHAP. 149 MGL SECTION 25

Lodging, board and trade of public employees; statute part of employment contract

Every employee in public work shall lodge, board and trade where and with whom he elects; and no person or his agents or employees under contract with the commonwealth, a county, city or town, or with a department, board, commission or officer acting therefor, for the doing of public work shall

directly or indirectly require, as a condition of employment therein, that the employee shall lodge, board or trade at a particular place or with a particular person. This section shall be made a part of the contract for such employment.

1.1.10 CHAP. 149 MGL SECTION 26

Public works; preference to veterans and citizens; wages

In the employment of mechanics and apprentices, teamsters, chauffeurs and laborers in the construction of public works by the commonwealth, or by a county, town, authority or district, or by persons contracting or subcontracting for such works, preference shall first be given to citizens of the commonwealth who have been residents of the commonwealth for at least six months at the commencement of their employment who are veterans as defined in clause Forty-third of section 7 of chapter 4 and who are qualified to perform the work to which the employment relates and, within such preference, preference shall be given to service-disabled veterans; and secondly, to citizens of the commonwealth generally who have been residents of the commonwealth for at least six months at the commencement of their employment, and if they cannot be obtained in sufficient numbers, then to citizens of the United States, and every contract for such work shall contain a provision to this effect. Each county, town or district in the construction of public works, or persons contracting or sub-contracting for such works, shall give preference to veterans and citizens who are residents of such county, town, authority or district and, within such preference, preference shall be given to service-disabled veterans. The rate per hour of the wages paid to said mechanics and apprentices, teamsters, chauffeurs and laborers in the construction of public works shall not be less than the rate or rates of wages to be determined by the commissioner as hereinafter provided; provided, that the wages paid to laborers employed on said works shall not be less than those paid to laborers in the municipal service of the town or towns where said works are being constructed; provided, further, that where the same public work is to be constructed in two or more towns, the wages paid to laborers shall not be less than those paid to laborers in the municipal service of the town paying the highest rate; provided, further, that if, in any of the towns where the works are to be constructed, a wage rate or wage rates have been established in certain trades and occupations by collective agreements or understandings in the private construction industry between organized labor and employers, the rate or rates to be paid on said works shall not be less than the rates so established; provided further, that in towns where no such rate or rates have been so established, the wages paid to mechanics, teamsters, chauffeurs and laborers on public works, shall not be less than the wages paid to the employees in the same trades and occupations by private employers engaged in the construction industry. This section shall also apply to regular employees of the commonwealth or of a county, town, authority or district, when such employees are employed in the construction, addition to or alteration of public buildings for which special appropriations of more than one thousand dollars are provided. Payments by employers to health and welfare plans, pension plans and supplementary unemployment benefit plans under collective bargaining agreements or understandings between organized labor and employers shall be included for the purpose of establishing minimum wage rates as herein provided.

Permanent and temporary laborers employed by the state department of highways and by the metropolitan district commission shall receive such salary or compensation as may be fixed under and in accordance with sections forty-five to fifty inclusive of chapter thirty.

1.1.11 CHAP. 149 MGL SECTION 34

Public contracts; stipulation as to hours and days of work; void contracts

Every contract, except for the purchase of material or supplies, involving the employment of laborers, workmen, mechanics, foremen or inspectors, to which the commonwealth or any county or any town, subject to section thirty, is a party, shall contain a stipulation that no laborer, workman, mechanic, foreman or inspector working within the commonwealth, in the employ of the contractor, sub-contractor or other person doing or contracting to do the whole or a part of the work contemplated by the contract, shall be required or permitted to work more than eight hours in any one day or more than forty-eight hours in any one week, or more than six days in any one week, except in cases of emergency, or, in case any town subject to section thirty-one is a party to such a contract, more than eight hours in any one day, except as aforesaid; provided, that in contracts entered into by the department of highways for the construction or reconstruction of highways there may be inserted in said stipulation a provision that said department, or any contractor or sub-contractor for said department, may employ laborers, workmen, mechanics, foremen and inspectors for more than eight hours in any one day in such construction or reconstruction when, in the opinion of the commissioner, public necessity so requires. Every such contract not containing the aforesaid stipulation shall be null and void.

#### 1.1.12 CHAP. 149 MGL SECTION 34A

Contracts for public works; workers' compensation insurance; breach of contract; enforcement and violation of statute

Every contract for the construction, alteration, maintenance, repair or demolition of, or addition to, any public building or other public works for the commonwealth or any political subdivision thereof shall contain stipulations requiring that the contractor shall, before commencing performance of such contract, provide by insurance for the payment of compensation and the furnishing of other benefits under chapter one hundred and fifty-two to all persons to be employed under the contract, and that the contractor shall continue such insurance in full force and effect during the term of the contract. No officer or agent contracting in behalf of the commonwealth or any political subdivision thereof shall award such a contract until he has been furnished with sufficient proof of compliance with the aforesaid stipulations. Failure to provide and continue in force such insurance as aforesaid shall be deemed a material breach of the contract and shall operate as an immediate termination thereof. No cancellation of such insurance, whether by the insurer or by the insured, shall be valid unless written notice thereof is given by the party proposing cancellation to the other party and to the officer or agent who awarded the contract at least fifteen days prior to the intended effective date thereof, which date shall be expressed in said notice. Notice of cancellation sent by the party proposing cancellation by registered mail, postage prepaid, with a return receipt of the addressee requested, shall be a sufficient notice. An affidavit of any officer, agent or employee of the insurer or of the insured, as the case may be, duly authorized for the purpose, that he has so sent such notice addressed as aforesaid shall be prima facie evidence of the sending thereof as aforesaid. This section shall apply to the legal representative, trustee in bankruptcy, receiver, assignee, trustee and the successor in interest of any such contractor. The superior court shall have jurisdiction in equity to enforce this section.

Whoever violates any provision of this section shall be punished by a fine of not more than one hundred dollars or by imprisonment for six months, or both; and, in addition, any contractor who violates any provision of this section shall be prohibited from contracting, directly or indirectly, with the commonwealth or any political subdivision thereof, for the construction, alteration, demolition, maintenance or repair of, or addition to, any public works or public building for a period of two years from the date of conviction of said violation.



1.1.13 CHAP. 149 MGL SECTION 34B

Contracts for public works; wages for reserve police officer

Every contract for the construction, alteration, maintenance, repair or demolition of, or addition to, any public works for the commonwealth or any political subdivision thereof shall contain stipulations requiring that the contractor shall pay to any reserve police officer employed by him in any city or town the prevailing rate of wage paid to regular police officers in such city or town.

1.1.14 CHAP.149 MGL SECTION 44A

(1) The words defined in this section shall have the meaning set forth below whenever they appear in sections forty-four A through forty-four H, inclusive, of this chapter unless indicated otherwise or unless the context in which they are used clearly requires a different meaning.

"Commissioner", means the commissioner of the division of capital asset management and maintenance or his designee.

"Public Agency" means a department, agency, board, commission, authority, or other instrumentality of the commonwealth or political subdivision of the commonwealth, or two or more subdivisions thereof but not including the Massachusetts Bay Transportation Authority;

"Responsible" means demonstrably possessing the skill, ability and integrity necessary to faithfully perform the work called for by a particular contract, based upon a determination of competent workmanship and financial soundness in accordance with the provisions of section forty-four D of this chapter;

"Eligible" means able to meet all requirements for bidders or offerors set forth in sections forty-four A through forty-four H of this chapter and not debarred from bidding under section forty-four C of this chapter or any other applicable law, and who shall certify 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.

"Modular Building", a pre-designed building or units of a pre-designed building assembled and equipped with internal plumbing, electrical or similar systems prior to movement to the site where such units are attached to each other and such building is affixed to a foundation and connected to external utilities; or any portable structure with walls, a floor, and a roof, designed or used for the shelter of persons or property, transportable in one or more sections and affixed to a foundation and connected to external utilities.

"Procurement", buying, purchasing, or otherwise acquiring and installing a modular building, and all functions that pertain to the acquisition and installation of a modular building, including description of requirements, selection and solicitation of sources, preparation and award of contract, and all phases of contract administration.

"Proprietary environmental technology systems", systems, in the town of Nantucket, including solid waste related equipment, supporting structures, and buildings, designed, manufactured, and produced under exclusive individual right to sell such product, pertaining to solid waste related environmental protection or remediation. Such systems shall include, but not be limited to, sequential,

turnkey, construction management, design/build procurement, and the phasing of such procurement, including approval of design and construction stages as separate or combined phases.

(A) Every contract or procurement for the construction, reconstruction, installation, demolition, maintenance or repair of a building by a public agency estimated to cost less than \$10,000 shall be obtained through the exercise of sound business practices as defined in section 2 of chapter 30B. The public agency shall make and keep a record of each procurement that, at a minimum, shall include the name and address of the person from whom the services were procured. A public agency that utilizes a vendor on a statewide contract procured through the operational services division of the commonwealth, or a blanket contract procured by the public agency pursuant to this subsection, shall be deemed to have obtained the contract through sound business practices.

(B) Every contract for the construction, reconstruction, installation, demolition, maintenance or repair of any building estimated to cost not less than \$10,000 but not more than \$50,000 shall be awarded to the responsible person offering to perform the contract at the lowest price. The public agency shall make public notification of the contract and shall seek written responses from no fewer than 3 persons who customarily perform such work. The solicitation shall include a scope-of-work statement that defines the work to be performed and provides potential responders with sufficient information regarding the objectives and requirements of the public agency and the time period within which the work shall be completed. The public agency shall record the names and addresses of all persons from whom written responses were sought, the names of the persons submitting written responses and the date and amount of each written response. A public agency may utilize a vendor list established through a statewide contract procured through the operational services division to identify 1 or more of the persons from whom it will seek written responses for purposes of this paragraph. A public agency may also procure a blanket contract to establish a listing of vendors in certain defined categories of work that are under contract to provide services for multiple individual tasks of not more than \$50,000 each, and from whom written responses will be sought. Any such blanket contract procured by the awarding authority shall be procured pursuant to either section 39M of chapter 30 or sections 44A to 44J, inclusive, of chapter 149 which are applicable to projects over \$50,000. For purposes of this paragraph, the term "public notification" shall include, but not be limited to, posting at least 2 weeks before the time specified in the notification for the receipt of responses, the contract and scope-of-work statement: (1) on the website of the public agency, (2) on the COMMBUYS system administered by the operational services division, (3) in the central register published pursuant to section 20A of chapter 9 and (4) in a conspicuous place in or near the primary office of the public agency; provided, however, that if the public agency obtains a minimum of 2 written responses from a vendor list established through a blanket contract or a statewide contract procured through the operational services division, and the lowest of those written responses is deemed acceptable to the public agency, public notification is not required.

(C) Every contract for the construction, reconstruction, installation, demolition, maintenance or repair of any building by a public agency estimated to cost more than \$50,000 but not more than \$150,000, except for a pumping station to be constructed as an integral part of a sewer construction or water construction project bid under the provisions of section 39M of chapter 30, shall be awarded to the lowest responsible and eligible bidder on the basis of competitive bids publicly opened and read in accordance with the procedure set forth in said section 39M of said chapter 30. The term "pumping station" as used in this section shall mean a building or other structure which houses solely pumps and appurtenant electrical and plumbing fixtures.

(D) Every contract for the construction, reconstruction, installation, demolition, maintenance or repair of any building by a public agency estimated to cost more than \$150,000, except for a pumping station to be constructed as an integral part of a sewer construction or water construction project bid under the provisions of section 39M of chapter 30, shall be awarded to the lowest responsible and eligible general bidder on the basis of competitive bids in accordance with the procedure set forth in section 44A to 44H, inclusive.

(E) When the general court has approved the use of an alternative mode of procurement of construction for a project pursuant to section 7E of chapter 29, the awarding authority responsible for procuring construction services for the project shall follow the policies and procedures of this section and of section 44B to 44H, inclusive, to the extent compatible with the mode of construction procurement selected.

(F) Notwithstanding paragraph (E), a public agency may undertake the procurement of modular buildings, in accordance with section 44E. A public agency may procure site work for modular buildings, including but not limited to, construction of foundations, installations, and attachment to external utilities, or any portion of site work, either in combination with the procurement of modular buildings pursuant to section 44E or on the basis of competitive bids pursuant to the paragraph (E). Notwithstanding the paragraph (E), a public agency may procure energy management services in accordance with section 11C of chapter 25A and regulations promulgated thereunder.

(G) Every contract by a state agency or state assisted contract for design, construction, reconstruction, installation, demolition, maintenance or repair shall set forth the participation goals of minority and women workers to be employed on each such contract and the processes and procedures to ensure compliance with those workforce participation goals, including reporting and enforcement provisions.

(3) The award of every such contract in connection with which approval by an officer, board or agency of the federal government is required shall be made within thirty days, Saturdays, Sundays and legal holidays excluded, after such approval; and the award of every contract subject to this section in connection with which approval by an officer, board or agency of the federal government is not required shall be made within thirty days, Saturdays, Sundays and legal holidays excluded, after the opening of the bids therefor. If the bidder selected as the general contractor fails to perform his agreement to execute a contract in accordance with the terms of his bid and furnish a performance bond and also a labor and materials or payment bond as stated in his bid in accordance with section forty-four E, an award shall be made to the next lowest responsible and eligible bidder, subject to the provisions of sections forty-four A to forty-four H, inclusive, of this chapter. The thirty-day time limit shall not be applicable to a second or subsequent award made after expiration of the time limit with the consent of said next lowest responsible and eligible bidder, and made because the original award made within the time limit was invalid, or because the bidder failed to execute the contract or to provide a performance bond and labor and materials or payment bond.

(4) In cases of extreme emergency, the awarding authority may, with the prior approval of the commissioner, award a contract for that portion of the work necessary to preserve the health or safety of persons or property or to alleviate an imminent security threat on the basis of such competitive bids or proposals as it can obtain in time to care for the extreme emergency and without public opening of the bids or proposals.

Where the nature of the emergency prevents the awarding authority from obtaining the prior approval of the commissioner, the awarding authority may contract for the necessary work without said prior approval; provided, however, that the approval of the commissioner shall still be sought at the earliest possible time; and provided, further, that if the commissioner at that time fails to approve the emergency determination the awarding authority shall promptly cease all work for which the emergency determination was denied. In such cases, the contractor shall be entitled to payment for the fair value of the labor and materials furnished prior to cessation of the work.

The commissioner shall maintain a record of all contracts awarded pursuant to this subsection, containing a description of the circumstances and the reasons for the commissioner's determination.

(5) (a) Notwithstanding the provisions of this section or any other general or special law to the contrary, a municipality may enter into a contract for proprietary environmental technology systems as defined in subsection (1) of this section without said contract being subject to the competitive bid process as set forth in sections thirty-eight A1/2 to thirty-eight O, inclusive, of chapter seven; this section and sections forty-four B to forty-four H, inclusive, of this chapter, and section thirty-nine M of chapter thirty; provided that the awarding authority meets the conditions set forth and receives the approvals required in paragraph (b) of this subsection.

(b) Prior to the issuance of any request for proposal with respect to the awarding of any contract pursuant to the provisions of paragraph (a) of this subsection, the awarding authority shall meet or obtain each of the following conditions or required approvals: (1) the municipality shall appoint qualified persons to conduct a thorough review of all available environmental technology, including both proprietary and non-proprietary environmental technology, and if the conclusion of this review is that a contract for proprietary environmental technology systems is in the public interest, such conclusion shall be supported by sound documented reasons in writing available for public inspection; (2) the city council, the board of selectmen, or the town meeting shall take a majority vote finding that it is in the public interest to enter into a contract for proprietary environmental technology systems, as defined in subsection (1) of this section, providing such vote is supported by the conclusion of the review conducted pursuant to condition (1); (3) both the attorney general and the commissioner of the department of environmental protection shall grant written approval; (4) said contract shall be subject to any limitation in the waiver of sections thirty-eight A1/2 to thirty-eight O, inclusive, of chapter seven, sections forty-four A to forty-four H of chapter one hundred and forty-nine, and section thirty-nine M of chapter thirty imposed by either the attorney general or the commissioner of the department of environmental protection as a condition for a grant of approval by said officers; and (5) every proprietary environmental technology systems contract shall be as compatible with sections thirty-eight A to thirty-eight O, inclusive, of chapter seven, sections forty-four A to forty-four H of chapter one hundred and forty-nine, and section thirty-nine M of chapter thirty as is feasible for the procurement of the proprietary environmental technology systems chosen.

#### 1.1.15 CHAP.149 MGL SECTION 44G(D)

(D) Every contract subject to section forty-four A shall include specifications for the installation of weather protection and shall require that the contractor shall install the same and that he shall furnish adequate heat in the area so protected during the months of November through March. Standards for such specifications shall be established by the commissioner or his designee.

#### INSURANCE CERTIFICATION FORM

This form is to be completed by an authorized representative of each insurance company providing coverages, to verify that contract insurance requirements are provided.

CONTRACT PARAGRAPH NUMBER	DESCRIPTION OF COVERAGE	COMPANY LETTER	POLICY NUMBER	LIMITS	LIMIT EXTENDED BY UMBRELLA
---------------------------------	----------------------------	-------------------	------------------	--------	----------------------------------

**WORKMAN'S COMPENSATION**  
(Contractor as Insured)

SC 5.4	Workman's Compensation	_____	# _____	\$ _____	_____
SC 5.4	Employer's Liability	_____	# _____		
	a. Each Accident			\$ _____	_____
	b. Disease Policy Limit			\$ _____	_____
	c. Disease Each Employee			\$ _____	_____

**COMMERCIAL GENERAL LIABILITY**  
(Contractor as Insured, Owner and Engineer as Additional Insured)

SC 5.4	General Liability	_____	# _____		
	a. General Aggregate			\$ _____	_____
	b. Each Occurrence			\$ _____	_____
	1. Premises/Operations			\$ _____	_____
	2. Products/Completed Operation			\$ _____	_____
	3. Contractual			\$ _____	_____
	4. Independent Contractors			\$ _____	_____
	5. Broad Form Property Damage			\$ _____	_____
	6. Personal Injury			\$ _____	_____
	7. Medical Expense			\$ _____	_____
	8. XCU			\$ _____	_____

**AUTOMOTIVE LIABILITY**  
(Contractor as Named Insured)

a.	Combined Single Limit	_____	# _____	\$ _____	_____
	1. Scheduled Autos			\$ _____	_____
	2. Hired Autos			\$ _____	_____
	3. Non Owned Autos			\$ _____	_____

INSURANCE CERTIFICATION FORM (Continued)

CONTRACT PARAGRAPH NUMBER	DESCRIPTION OF COVERAGE	COMPANY LETTER	POLICY NUMBER	LIMITS	LIMIT EXTENDED BY UMBRELLA
---------------------------------	----------------------------	-------------------	------------------	--------	----------------------------------

#### EXCESS UMBRELLA LIABILITY

(Contractor as Named Insured, Owner and Engineer as Additional Insured)

a.	General Aggregate	_____	# _____	\$ _____	_____
b.	Each Occurrence	_____	# _____	\$ _____	_____

#### INSTALLATION FLOATER

(Contractor as Named Insured, Owner and Engineer as Additional Insured)

a.	General Aggregate	_____	# _____	\$ _____	_____
b.	Each Occurrence	_____	# _____	\$ _____	_____
c.	Installation Floater	_____	# _____	\$ _____	_____

#### BUILDER'S ALL RISK

(Contractor as Named Insured, Owner and Engineer as Additional Insured)

a.	General Aggregate	_____	# _____	\$ _____	_____
b.	Each Occurrence	_____	# _____	\$ _____	_____
c.	All Risk	_____	# _____	\$ _____	_____

#### OWNER'S PROTECTIVE LIABILITY

(Owner and Engineer as Named Insured)

a.	General Aggregate	_____	# _____	\$ _____	_____
b.	Each Occurrence	_____	# _____	\$ _____	_____

I hereby certify that the information contain herein is accurate to the best of knowledge.

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
PRINTED NAME

\_\_\_\_\_  
DATE

\_\_\_\_\_  
PRINTED TITLE

TOWN OF NATICK, MASSACHUSETTS  
SELECT BOARD

CHANGE ORDER FORM

Original Contract Price	\$ _____
Previous Change Orders #	\$ _____
Present Contract Price	\$ _____
This Change Order #    Increase/Decrease	\$ _____

Total Adjusted Contract Price	\$ _____
-------------------------------	----------

This Change Order changes the time of completion by \_\_\_\_ calendar Days.

The extended completion date is \_\_\_\_\_

This Change Order checked by _____	
Engineer	Date

This Change Order requested by \_\_\_\_\_

This Change Order prepared by _____	
Engineer	

The undersigned agree to the terms of the Change Order.

_____ Contractor	_____ Date
---------------------	---------------

_____ Owner	_____ Date
----------------	---------------

Certification of Appropriation under M.G.L. c.44, §31C: Adequate funding in the amount sufficient to cover the total cost of this Change Order is available.

_____ Town Accountant	_____ Date
--------------------------	---------------

Change Order Form (continued)

Public Entity \_\_\_\_\_

Project Number \_\_\_\_\_

Contract Number: \_\_\_\_\_

Change Order Number: \_\_\_\_\_

Contract Title: \_\_\_\_\_

\_\_\_\_\_

Owner's Name: \_\_\_\_\_

Owner's Address: \_\_\_\_\_

\_\_\_\_\_

Contractor's Name: \_\_\_\_\_

Contractor's Address: \_\_\_\_\_

\_\_\_\_\_

Description of Change

Reason for Change



(1)	Labor			
	Foreman	10 hrs @ \$45.00/hr.	\$ 450.00	
	Engineer	10 hrs @ 35.00/hr.	350.00	
	Operator	10 hrs @ 40.00/hr.	400.00	
	Laborers	24 hrs @ 28.00/hr.	672.00	
				\$ 1,872.00
(2)	Direct Labor Cost (use the agreed upon Direct Labor Cost) *(30) % of \$1,872 *(used for example purposes only)			561.60
(3)	Materials & Freight			
	150 l.f. of 12" pipe @ \$15.00/l.f.	\$2,250.00		
	15 v.f. precast SMH	2,500.00		
	Freight (slip #      Enclosed)	110.00		
				4,860.00
(4)	Equipment			
	1 Backhoe 10 hrs @ \$140.00/hr.	\$1,400.00		
	1 Truck crane 10 hrs @ \$180.00/hr.	1,800.00		
				- 3,200.00
	Total items 1 through 4)			\$ 10,493.60
(5)	15% markup for Overhead, Profit			
	15% of \$10,493.60			\$ 1,574.04
(6)	5% markup for General Contractor (if Subcontractor is involved)			
	5% of \$10,493.60			524.68
(7)	Credits deductible			- 323.00
		Total Cost		\$ 12,269.32

Reminder: Provide support documentation as necessary i.e. vouchers, correspondence, calculations, Blue Book equipment rental rate printouts, photographs, reports, etc.

**Town of Natick, Massachusetts**

**Form of Subcontract**

**SUBCONTRACT**

THIS AGREEMENT MADE THIS \_\_\_\_ DAY OF \_\_\_\_ (insert year), by and between \_\_\_\_ a corporation organized and existing under the laws of \_\_\_\_ an individual doing business as \_\_\_\_ hereinafter called the "Contractor" and \_\_\_\_ a corporation organized and existing under the laws of \_\_\_\_ an individual doing business as \_\_\_\_ hereinafter called the "Subcontractor".

WITNESSETH that the Contractor and the Subcontractor for the considerations hereafter named, agree as follows:

1. The Subcontractor agrees to furnish all labor and materials required for the completion of all work specified in Section No. 26 of the specifications for Electrical

(Name of Sub-Trade) and the plans referred to therein and addenda No. \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ for the

Morse Institute Library HVAC and Controls Upgrade

(complete title of the project and the project number taken from the title page of the specifications)all as prepared by B2Q Associates

(Name of Architect or Engineer) for the sum of \_\_\_\_ (\$\_\_\_\_) and the Contractor agrees to pay the Subcontractor said sum for said work. This price includes the following alternates (and other items set forth in the sub-bid): Alternate No(s). , , , , , , , , , , \_\_\_\_

(a) The Subcontractor agrees to be bound to the Contractor by the terms of the hereinbefore described plans; specifications (including all general conditions stated therein) and addenda No. , and , and , and to assume to the Contractor all the obligations and responsibilities that the Contractor by those documents assumes to the Town of Natick, Massachusetts, hereinafter called the "Awarding Authority", except to the extent that provisions contained therein are by their terms or by law applicable only to the Contractor.

(b) The Contractor agrees to be bound to the Subcontractor by the terms of the hereinbefore described documents and to assume to the Subcontractor all the obligations and responsibilities that the Awarding Authority by the terms of the hereinbefore described documents assumes to the Contractor, except to the extent that provisions contained therein are by their terms or by law applicable only to the Awarding Authority.

2. The Contractor agrees to begin, prosecute and complete the entire work specified by the Awarding Authority in an orderly manner so that the Subcontractor will be able to begin, prosecute and complete the work described in this subcontract; and, in consideration thereof, upon notice from the Contractor, either oral or in writing, the Subcontractor agrees to begin, prosecute and complete the work described in this Subcontract in an orderly manner and with due consideration to the date or time specified by the Awarding Authority for the completion of the entire work.

3. The Subcontractor agrees to furnish to the Contractor within a reasonable time after the execution of this subcontract, evidence of workers' compensation insurance as required by law and evidence of public liability and property damage insurance of the type and in limits required to be furnished to the Awarding Authority by the Contractor.

4. The Contractor agrees that no claim for services rendered or materials furnished by the Contractor to the Subcontractor shall be valid unless written notice thereof is given by the Contractor to the Subcontractor during the first ten (10) days of the calendar month following that in which the claim originated.

5. This agreement is contingent upon the execution of a general contract between the Contractor and the Awarding Authority for the complete work.

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

SEAL

ATTEST \_\_\_\_\_

\_\_\_\_\_  
(Name of Subcontractor)

By \_\_\_\_\_

SEAL

ATTEST \_\_\_\_\_

(Name of Contractor)

By \_\_\_\_\_



CHARLES D. BAKER  
Governor

KARYN E. POLITO  
Lt. Governor

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

Prevailing Wage Rates

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

ROSALIN ACOSTA  
Secretary  
MICHAEL FLANAGAN  
Director

**Awarding Authority:** Town of Natick, Massachusetts  
**Contract Number:**  
**Description of Work:** Installation of a Heat Pump/HVAC upgrades

**City/Town:** NATICK

**Job Location:** 14 East Central Street, Natick, MA 01760

---

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 Department of Labor Standards, Division of Apprentice Standards (DLS/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. **Any apprentice not registered with DLS/DAS regardless of whether or not they are registered with any other federal, state, local, or private agency 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
<b>Construction</b>						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$35.95	\$13.41	\$16.01	\$0.00	\$65.37
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.02	\$13.41	\$16.01	\$0.00	\$65.44
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.14	\$13.41	\$16.01	\$0.00	\$65.56
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2021	\$36.16	\$9.10	\$16.64	\$0.00	\$61.90
	06/01/2022	\$37.06	\$9.10	\$16.64	\$0.00	\$62.80
	12/01/2022	\$37.91	\$9.10	\$16.64	\$0.00	\$63.65
	06/01/2023	\$38.81	\$9.10	\$16.64	\$0.00	\$64.55
	12/01/2023	\$39.71	\$9.10	\$16.64	\$0.00	\$65.45
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$36.16	\$9.10	\$16.64	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i>	12/01/2020	\$38.10	\$12.80	\$9.45	\$0.00	\$60.35
ASPHALT RAKER <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 2</i>	12/01/2021	\$36.16	\$9.10	\$16.64	\$0.00	\$61.90
	06/01/2022	\$37.06	\$9.10	\$16.64	\$0.00	\$62.80
	12/01/2022	\$37.91	\$9.10	\$16.64	\$0.00	\$63.65
	06/01/2023	\$38.81	\$9.10	\$16.64	\$0.00	\$64.55
	12/01/2023	\$39.71	\$9.10	\$16.64	\$0.00	\$65.45
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i> For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"	12/01/2021	\$36.16	\$9.10	\$16.64	\$0.00	\$61.90
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2020	\$46.10	\$7.07	\$17.98	\$0.00	\$71.15

**Apprentice - BOILERMAKER - Local 29**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$29.97	\$7.07	\$11.69	\$0.00	\$48.73
2	65	\$29.97	\$7.07	\$11.69	\$0.00	\$48.73
3	70	\$32.27	\$7.07	\$12.59	\$0.00	\$51.93
4	75	\$34.58	\$7.07	\$13.49	\$0.00	\$55.14
5	80	\$36.88	\$7.07	\$14.38	\$0.00	\$58.33
6	85	\$39.19	\$7.07	\$15.29	\$0.00	\$61.55
7	90	\$41.49	\$7.07	\$16.18	\$0.00	\$64.74
8	95	\$43.80	\$7.07	\$17.09	\$0.00	\$67.96

**Notes:**

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

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (LOWELL)</i>	02/01/2022	\$55.01	\$11.39	\$21.65	\$0.00	\$88.05
---	------------	---------	---------	---------	--------	---------

**Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Lowell**

**Effective Date - 02/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.51	\$11.39	\$21.65	\$0.00	\$60.55
2	60	\$33.01	\$11.39	\$21.65	\$0.00	\$66.05
3	70	\$38.51	\$11.39	\$21.65	\$0.00	\$71.55
4	80	\$44.01	\$11.39	\$21.65	\$0.00	\$77.05
5	90	\$49.51	\$11.39	\$21.65	\$0.00	\$82.55

**Notes:**

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

BULLDOZER/GRADER/SCRAPER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
--	------------	---------	---------	---------	--------	---------

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$42.33	\$9.10	\$17.72	\$0.00	\$69.15
--	------------	---------	--------	---------	--------	---------

For apprentice rates see "Apprentice- LABORER"

CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$41.18	\$9.10	\$17.72	\$0.00	\$68.00
---	------------	---------	--------	---------	--------	---------

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$41.18	\$9.10	\$17.72	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	09/01/2021	\$44.18	\$8.58	\$19.82	\$0.00	\$72.58
	03/01/2022	\$44.78	\$8.58	\$19.82	\$0.00	\$73.18
	09/01/2022	\$45.43	\$8.58	\$19.82	\$0.00	\$73.83
	03/01/2023	\$46.03	\$8.58	\$19.82	\$0.00	\$74.43

**Apprentice - CARPENTER - Zone 2 Eastern MA**

**Effective Date -** 09/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.09	\$8.58	\$1.70	\$0.00	\$32.37
2	60	\$26.51	\$8.58	\$1.70	\$0.00	\$36.79
3	70	\$30.93	\$8.58	\$14.63	\$0.00	\$54.14
4	75	\$33.14	\$8.58	\$14.63	\$0.00	\$56.35
5	80	\$35.34	\$8.58	\$16.36	\$0.00	\$60.28
6	80	\$35.34	\$8.58	\$16.36	\$0.00	\$60.28
7	90	\$39.76	\$8.58	\$18.09	\$0.00	\$66.43
8	90	\$39.76	\$8.58	\$18.09	\$0.00	\$66.43

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.39	\$8.58	\$1.70	\$0.00	\$32.67
2	60	\$26.87	\$8.58	\$1.70	\$0.00	\$37.15
3	70	\$31.35	\$8.58	\$14.63	\$0.00	\$54.56
4	75	\$33.59	\$8.58	\$14.63	\$0.00	\$56.80
5	80	\$35.82	\$8.58	\$16.36	\$0.00	\$60.76
6	80	\$35.82	\$8.58	\$16.36	\$0.00	\$60.76
7	90	\$40.30	\$8.58	\$18.09	\$0.00	\$66.97
8	90	\$40.30	\$8.58	\$18.09	\$0.00	\$66.97

**Notes:**

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80  
Step 1&2 \$30.19/ 3&4 \$36.28/ 5&6 \$55.87/ 7&8 \$62.01

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

CARPENTER WOOD FRAME <i>CARPENTERS-ZONE 3 (Wood Frame)</i>	04/01/2021	\$23.16	\$7.21	\$4.80	\$0.00	\$35.17
	04/01/2022	\$23.66	\$7.21	\$4.80	\$0.00	\$35.67
	04/01/2023	\$24.16	\$7.21	\$4.80	\$0.00	\$36.17

All Aspects of New Wood Frame Work



## Classification

Effective Date

Base Wage

Health

Pension

Supplemental  
Unemployment

Total Rate

**Apprentice - CARPENTER (Wood Frame) - Zone 3****Effective Date -** 04/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$13.90	\$7.21	\$0.00	\$0.00	\$21.11
2	60	\$13.90	\$7.21	\$0.00	\$0.00	\$21.11
3	65	\$15.05	\$7.21	\$0.00	\$0.00	\$22.26
4	70	\$16.21	\$7.21	\$0.00	\$0.00	\$23.42
5	75	\$17.37	\$7.21	\$3.80	\$0.00	\$28.38
6	80	\$18.53	\$7.21	\$3.80	\$0.00	\$29.54
7	85	\$19.69	\$7.21	\$3.80	\$0.00	\$30.70
8	90	\$20.84	\$7.21	\$3.80	\$0.00	\$31.85

**Effective Date -** 04/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$14.20	\$7.21	\$0.00	\$0.00	\$21.41
2	60	\$14.20	\$7.21	\$0.00	\$0.00	\$21.41
3	65	\$15.38	\$7.21	\$0.00	\$0.00	\$22.59
4	70	\$16.56	\$7.21	\$0.00	\$0.00	\$23.77
5	75	\$17.75	\$7.21	\$3.80	\$0.00	\$28.76
6	80	\$18.93	\$7.21	\$3.80	\$0.00	\$29.94
7	85	\$20.11	\$7.21	\$3.80	\$0.00	\$31.12
8	90	\$21.29	\$7.21	\$3.80	\$0.00	\$32.30

**Notes:**

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80  
 Step 1&2 \$17.63/ 3&4 \$19.95/ 5&6 \$27.22/ 7&8 \$29.54

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

CEMENT MASONRY/PLASTERING

01/01/2020

\$45.23

\$12.75

\$22.41

\$0.62

\$81.01

BRICKLAYERS LOCAL 3 (LOWELL)

**Apprentice - CEMENT MASONRY/PLASTERING - Lowell****Effective Date -** 01/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.62	\$12.75	\$15.41	\$0.00	\$50.78
2	60	\$27.14	\$12.75	\$17.41	\$0.62	\$57.92
3	65	\$29.40	\$12.75	\$18.41	\$0.62	\$61.18
4	70	\$31.66	\$12.75	\$19.41	\$0.62	\$64.44
5	75	\$33.92	\$12.75	\$20.41	\$0.62	\$67.70
6	80	\$36.18	\$12.75	\$21.41	\$0.62	\$70.96
7	90	\$40.71	\$12.75	\$22.41	\$0.62	\$76.49

**Notes:**

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

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CHAIN SAW OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$52.38	\$14.00	\$16.05	\$0.00	\$82.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$33.69	\$14.00	\$16.05	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) <i>PAINTERS LOCAL 35 - ZONE 2</i>	01/01/2022	\$53.66	\$8.65	\$23.05	\$0.00	\$85.36
	07/01/2022	\$54.86	\$8.65	\$23.05	\$0.00	\$86.56
	01/01/2023	\$56.06	\$8.65	\$23.05	\$0.00	\$87.76
	07/01/2023	\$57.26	\$8.65	\$23.05	\$0.00	\$88.96
	01/01/2024	\$58.46	\$8.65	\$23.05	\$0.00	\$90.16
	07/01/2024	\$59.66	\$8.65	\$23.05	\$0.00	\$91.36
	01/01/2025	\$60.86	\$8.65	\$23.05	\$0.00	\$92.56

**Classification**
**Effective Date**
**Base Wage**
**Health**
**Pension**
**Supplemental  
Unemployment**
**Total Rate**
**Apprentice - PAINTER Local 35 - BRIDGES/TANKS**
**Effective Date - 01/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.83	\$8.65	\$0.00	\$0.00	\$35.48
2	55	\$29.51	\$8.65	\$6.27	\$0.00	\$44.43
3	60	\$32.20	\$8.65	\$6.84	\$0.00	\$47.69
4	65	\$34.88	\$8.65	\$7.41	\$0.00	\$50.94
5	70	\$37.56	\$8.65	\$19.63	\$0.00	\$65.84
6	75	\$40.25	\$8.65	\$20.20	\$0.00	\$69.10
7	80	\$42.93	\$8.65	\$20.77	\$0.00	\$72.35
8	90	\$48.29	\$8.65	\$21.91	\$0.00	\$78.85

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.43	\$8.65	\$0.00	\$0.00	\$36.08
2	55	\$30.17	\$8.65	\$6.27	\$0.00	\$45.09
3	60	\$32.92	\$8.65	\$6.84	\$0.00	\$48.41
4	65	\$35.66	\$8.65	\$7.41	\$0.00	\$51.72
5	70	\$38.40	\$8.65	\$19.63	\$0.00	\$66.68
6	75	\$41.15	\$8.65	\$20.20	\$0.00	\$70.00
7	80	\$43.89	\$8.65	\$20.77	\$0.00	\$73.31
8	90	\$49.37	\$8.65	\$21.91	\$0.00	\$79.93

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**
**DEMO: ADZEMAN**
*LABORERS - ZONE 2*

12/01/2021	\$41.33	\$9.10	\$17.57	\$0.00	\$68.00
06/01/2022	\$42.33	\$9.10	\$17.57	\$0.00	\$69.00
12/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
06/01/2023	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
12/01/2023	\$45.58	\$9.10	\$17.57	\$0.00	\$72.25

For apprentice rates see "Apprentice- LABORER"

**DEMO: BACKHOE/LOADER/HAMMER OPERATOR**
*LABORERS - ZONE 2*

12/01/2021	\$42.33	\$9.10	\$17.57	\$0.00	\$69.00
06/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
12/01/2022	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
06/01/2023	\$45.33	\$9.10	\$17.57	\$0.00	\$72.00
12/01/2023	\$46.58	\$9.10	\$17.57	\$0.00	\$73.25

For apprentice rates see "Apprentice- LABORER"

**DEMO: BURNERS**
*LABORERS - ZONE 2*

12/01/2021	\$42.08	\$9.10	\$17.57	\$0.00	\$68.75
06/01/2022	\$43.08	\$9.10	\$17.57	\$0.00	\$69.75
12/01/2022	\$44.08	\$9.10	\$17.57	\$0.00	\$70.75
06/01/2023	\$45.08	\$9.10	\$17.57	\$0.00	\$71.75
12/01/2023	\$46.33	\$9.10	\$17.57	\$0.00	\$73.00

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 2</i>	12/01/2021	\$42.33	\$9.10	\$17.57	\$0.00	\$69.00
	06/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
	12/01/2022	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	06/01/2023	\$45.33	\$9.10	\$17.57	\$0.00	\$72.00
	12/01/2023	\$46.58	\$9.10	\$17.57	\$0.00	\$73.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2021	\$42.08	\$9.10	\$17.57	\$0.00	\$68.75
	06/01/2022	\$43.08	\$9.10	\$17.57	\$0.00	\$69.75
	12/01/2022	\$44.08	\$9.10	\$17.57	\$0.00	\$70.75
	06/01/2023	\$45.08	\$9.10	\$17.57	\$0.00	\$71.75
	12/01/2023	\$46.33	\$9.10	\$17.57	\$0.00	\$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 2</i>	12/01/2021	\$41.33	\$9.10	\$17.57	\$0.00	\$68.00
	06/01/2022	\$42.33	\$9.10	\$17.57	\$0.00	\$69.00
	12/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
	06/01/2023	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	12/01/2023	\$45.58	\$9.10	\$17.57	\$0.00	\$72.25
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$68.70	\$9.40	\$23.12	\$0.00	\$101.22
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$73.60	\$9.40	\$23.12	\$0.00	\$106.12
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>DRAWBRIDGE - SEIU LOCAL 888</i>	07/01/2020	\$26.77	\$6.67	\$3.93	\$0.16	\$37.53
ELECTRICIAN <i>ELECTRICIANS LOCAL 103</i>	09/01/2021	\$56.36	\$13.00	\$20.54	\$0.00	\$89.90
	03/01/2022	\$57.32	\$13.00	\$20.82	\$0.00	\$91.14
	09/01/2022	\$58.76	\$13.00	\$20.86	\$0.00	\$92.62
	03/01/2023	\$60.43	\$13.00	\$20.91	\$0.00	\$94.34

**Classification**
**Effective Date**
**Base Wage**
**Health**
**Pension**
**Supplemental  
Unemployment**
**Total Rate**
**Apprentice - ELECTRICIAN - Local 103**
**Effective Date - 09/01/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$22.54	\$13.00	\$0.68	\$0.00	\$36.22
2	40	\$22.54	\$13.00	\$0.68	\$0.00	\$36.22
3	45	\$25.36	\$13.00	\$15.36	\$0.00	\$53.72
4	45	\$25.36	\$13.00	\$15.36	\$0.00	\$53.72
5	50	\$28.18	\$13.00	\$15.84	\$0.00	\$57.02
6	55	\$31.00	\$13.00	\$16.31	\$0.00	\$60.31
7	60	\$33.82	\$13.00	\$16.77	\$0.00	\$63.59
8	65	\$36.63	\$13.00	\$17.25	\$0.00	\$66.88
9	70	\$39.45	\$13.00	\$17.71	\$0.00	\$70.16
10	75	\$42.27	\$13.00	\$18.19	\$0.00	\$73.46

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$22.93	\$13.00	\$0.69	\$0.00	\$36.62
2	40	\$22.93	\$13.00	\$0.69	\$0.00	\$36.62
3	45	\$25.79	\$13.00	\$15.62	\$0.00	\$54.41
4	45	\$25.79	\$13.00	\$15.62	\$0.00	\$54.41
5	50	\$28.66	\$13.00	\$16.10	\$0.00	\$57.76
6	55	\$31.53	\$13.00	\$16.58	\$0.00	\$61.11
7	60	\$34.39	\$13.00	\$17.04	\$0.00	\$64.43
8	65	\$37.26	\$13.00	\$17.52	\$0.00	\$67.78
9	70	\$40.12	\$13.00	\$17.98	\$0.00	\$71.10
10	75	\$42.99	\$13.00	\$18.46	\$0.00	\$74.45

**Notes: :**

App Prior 1/1/03; 30/35/40/45/50/55/65/70/75/80

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

ELEVATOR CONSTRUCTOR

ELEVATOR CONSTRUCTORS LOCAL 4

01/01/2022

\$65.62

\$16.03

\$20.21

\$0.00

\$101.86

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
<b>Apprentice - ELEVATOR CONSTRUCTOR - Local 4</b>						
<b>Effective Date - 01/01/2022</b>						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.81	\$16.03	\$0.00	\$0.00	\$48.84
2	55	\$36.09	\$16.03	\$20.21	\$0.00	\$72.33
3	65	\$42.65	\$16.03	\$20.21	\$0.00	\$78.89
4	70	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
5	80	\$52.50	\$16.03	\$20.21	\$0.00	\$88.74
<b>Notes:</b> Steps 1-2 are 6 mos.; Steps 3-5 are 1 year						
<b>Apprentice to Journeyworker Ratio:1:1</b>						
ELEVATOR CONSTRUCTOR HELPER <i>ELEVATOR CONSTRUCTORS LOCAL 4</i>	01/01/2022	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2021	\$46.53	\$13.75	\$15.80	\$0.00	\$76.08
	05/01/2022	\$47.86	\$13.75	\$15.80	\$0.00	\$77.41
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2021	\$48.06	\$13.75	\$15.80	\$0.00	\$77.61
	05/01/2022	\$49.22	\$13.75	\$15.80	\$0.00	\$78.77
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2021	\$23.16	\$13.75	\$15.80	\$0.00	\$52.71
	05/01/2022	\$23.83	\$13.75	\$15.80	\$0.00	\$53.38
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	09/01/2021	\$56.36	\$13.00	\$20.54	\$0.00	\$89.90
	03/01/2022	\$57.32	\$13.00	\$20.82	\$0.00	\$91.14
	09/01/2022	\$58.76	\$13.00	\$20.86	\$0.00	\$92.62
	03/01/2023	\$60.43	\$13.00	\$20.91	\$0.00	\$94.34
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS LOCAL 103</i>	09/01/2021	\$43.40	\$13.00	\$18.37	\$0.00	\$74.77
	03/01/2022	\$44.71	\$13.00	\$18.74	\$0.00	\$76.45
	09/01/2022	\$46.42	\$13.00	\$18.87	\$0.00	\$78.29
	03/01/2023	\$48.34	\$13.00	\$19.01	\$0.00	\$80.35
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$41.76	\$14.00	\$16.05	\$0.00	\$71.81
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$24.50	\$9.10	\$16.64	\$0.00	\$50.24
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE I</i>	09/01/2021	\$49.38	\$8.58	\$20.12	\$0.00	\$78.08
	03/01/2022	\$50.18	\$8.58	\$20.12	\$0.00	\$78.88

**Classification**
**Effective Date**
**Base Wage**
**Health**
**Pension**
**Supplemental  
Unemployment**
**Total Rate**
**Apprentice - FLOORCOVERER - Local 2168 Zone I**
**Effective Date - 09/01/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.69	\$8.58	\$1.79	\$0.00	\$35.06
2	55	\$27.16	\$8.58	\$1.79	\$0.00	\$37.53
3	60	\$29.63	\$8.58	\$14.75	\$0.00	\$52.96
4	65	\$32.10	\$8.58	\$14.75	\$0.00	\$55.43
5	70	\$34.57	\$8.58	\$16.54	\$0.00	\$59.69
6	75	\$37.04	\$8.58	\$16.54	\$0.00	\$62.16
7	80	\$39.50	\$8.58	\$18.33	\$0.00	\$66.41
8	85	\$41.97	\$8.58	\$18.33	\$0.00	\$68.88

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.09	\$8.58	\$1.79	\$0.00	\$35.46
2	55	\$27.60	\$8.58	\$1.79	\$0.00	\$37.97
3	60	\$30.11	\$8.58	\$14.75	\$0.00	\$53.44
4	65	\$32.62	\$8.58	\$14.75	\$0.00	\$55.95
5	70	\$35.13	\$8.58	\$16.54	\$0.00	\$60.25
6	75	\$37.64	\$8.58	\$16.54	\$0.00	\$62.76
7	80	\$40.14	\$8.58	\$18.33	\$0.00	\$67.05
8	85	\$42.65	\$8.58	\$18.33	\$0.00	\$69.56

**Notes:** Steps are 750 hrs.  
 % After 10/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)  
 Step 1&2 \$32.59/ 3&4 \$39.26/ 5&6 \$59.69/ 7&8 \$66.41

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

<b>FORK LIFT/CHERRY PICKER</b> <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>GENERATOR/LIGHTING PLANT/HEATERS</b> <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$33.69	\$14.00	\$16.05	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)</b> <i>GLAZIERS LOCAL 35 (ZONE 2)</i>	01/01/2022	\$43.16	\$8.65	\$23.05	\$0.00	\$74.86
	07/01/2022	\$44.36	\$8.65	\$23.05	\$0.00	\$76.06
	01/01/2023	\$45.56	\$8.65	\$23.05	\$0.00	\$77.26
	07/01/2023	\$46.76	\$8.65	\$23.05	\$0.00	\$78.46
	01/01/2024	\$47.96	\$8.65	\$23.05	\$0.00	\$79.66
	07/01/2024	\$49.16	\$8.65	\$23.05	\$0.00	\$80.86
	01/01/2025	\$50.36	\$8.65	\$23.05	\$0.00	\$82.06

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental  
Unemployment    Total Rate**

**Apprentice -    GLAZIER - Local 35 Zone 2**

**Effective Date -    01/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.58	\$8.65	\$0.00	\$0.00	\$30.23
2	55	\$23.74	\$8.65	\$6.27	\$0.00	\$38.66
3	60	\$25.90	\$8.65	\$6.84	\$0.00	\$41.39
4	65	\$28.05	\$8.65	\$7.41	\$0.00	\$44.11
5	70	\$30.21	\$8.65	\$19.63	\$0.00	\$58.49
6	75	\$32.37	\$8.65	\$20.20	\$0.00	\$61.22
7	80	\$34.53	\$8.65	\$20.77	\$0.00	\$63.95
8	90	\$38.84	\$8.65	\$21.91	\$0.00	\$69.40

**Effective Date -    07/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.18	\$8.65	\$0.00	\$0.00	\$30.83
2	55	\$24.40	\$8.65	\$6.27	\$0.00	\$39.32
3	60	\$26.62	\$8.65	\$6.84	\$0.00	\$42.11
4	65	\$28.83	\$8.65	\$7.41	\$0.00	\$44.89
5	70	\$31.05	\$8.65	\$19.63	\$0.00	\$59.33
6	75	\$33.27	\$8.65	\$20.20	\$0.00	\$62.12
7	80	\$35.49	\$8.65	\$20.77	\$0.00	\$64.91
8	90	\$39.92	\$8.65	\$21.91	\$0.00	\$70.48

**Notes:**

Steps are 750 hrs.

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

HOISTING ENGINEER/CRANES/GRADALLS OPERATING ENGINEERS LOCAL 4	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
--	------------	---------	---------	---------	--------	---------



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
<b>Apprentice - OPERATING ENGINEERS - Local 4</b>						
<b>Effective Date - 12/01/2021</b>						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$28.26	\$14.00	\$0.00	\$0.00	\$42.26
2	60	\$30.83	\$14.00	\$16.05	\$0.00	\$60.88
3	65	\$33.40	\$14.00	\$16.05	\$0.00	\$63.45
4	70	\$35.97	\$14.00	\$16.05	\$0.00	\$66.02
5	75	\$38.54	\$14.00	\$16.05	\$0.00	\$68.59
6	80	\$41.10	\$14.00	\$16.05	\$0.00	\$71.15
7	85	\$43.67	\$14.00	\$16.05	\$0.00	\$73.72
8	90	\$46.24	\$14.00	\$16.05	\$0.00	\$76.29
<b>Notes:</b>						
<b>Apprentice to Journeyworker Ratio:1:6</b>						
HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 - A	02/01/2022	\$53.70	\$13.80	\$25.60	\$2.79	\$95.89
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 103	09/01/2021	\$56.36	\$13.00	\$20.54	\$0.00	\$89.90
	03/01/2022	\$57.32	\$13.00	\$20.82	\$0.00	\$91.14
	09/01/2022	\$58.76	\$13.00	\$20.86	\$0.00	\$92.62
	03/01/2023	\$60.43	\$13.00	\$20.91	\$0.00	\$94.34
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 17 - A	02/01/2022	\$53.70	\$13.80	\$25.60	\$2.79	\$95.89
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) PIPEFITTERS LOCAL 537	03/01/2021	\$57.94	\$11.70	\$20.24	\$0.00	\$89.88
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC PIPEFITTERS LOCAL 537	03/01/2021	\$57.94	\$11.70	\$20.24	\$0.00	\$89.88
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS LABORERS - ZONE 2	12/01/2021	\$36.16	\$9.10	\$16.64	\$0.00	\$61.90
	06/01/2022	\$37.06	\$9.10	\$16.64	\$0.00	\$62.80
	12/01/2022	\$37.91	\$9.10	\$16.64	\$0.00	\$63.65
	06/01/2023	\$38.81	\$9.10	\$16.64	\$0.00	\$64.55
	12/01/2023	\$39.71	\$9.10	\$16.64	\$0.00	\$65.45
For apprentice rates see "Apprentice- LABORER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2021	\$36.16	\$9.10	\$16.64	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
INSULATOR (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 (BOSTON)	09/01/2021	\$51.40	\$13.80	\$17.14	\$0.00	\$82.34
	09/01/2022	\$53.85	\$13.80	\$17.14	\$0.00	\$84.79

**Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Boston****Effective Date - 09/01/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.70	\$13.80	\$12.42	\$0.00	\$51.92
2	60	\$30.84	\$13.80	\$13.36	\$0.00	\$58.00
3	70	\$35.98	\$13.80	\$14.31	\$0.00	\$64.09
4	80	\$41.12	\$13.80	\$15.25	\$0.00	\$70.17

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.93	\$13.80	\$12.42	\$0.00	\$53.15
2	60	\$32.31	\$13.80	\$13.36	\$0.00	\$59.47
3	70	\$37.70	\$13.80	\$14.31	\$0.00	\$65.81
4	80	\$43.08	\$13.80	\$15.25	\$0.00	\$72.13

**Notes:**

Steps are 1 year

**Apprentice to Journeyworker Ratio:1:4****IRONWORKER/WELDER***IRONWORKERS LOCAL 7 (BOSTON AREA)*

09/16/2021

\$50.13

\$8.15

\$25.80

\$0.00

\$84.08

03/16/2022

\$50.60

\$8.20

\$26.50

\$0.00

\$85.30

**Apprentice - IRONWORKER - Local 7 Boston****Effective Date - 09/16/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$30.08	\$8.15	\$25.80	\$0.00	\$64.03
2	70	\$35.09	\$8.15	\$25.80	\$0.00	\$69.04
3	75	\$37.60	\$8.15	\$25.80	\$0.00	\$71.55
4	80	\$40.10	\$8.15	\$25.80	\$0.00	\$74.05
5	85	\$42.61	\$8.15	\$25.80	\$0.00	\$76.56
6	90	\$45.12	\$8.15	\$25.80	\$0.00	\$79.07

**Effective Date - 03/16/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$30.36	\$8.20	\$26.50	\$0.00	\$65.06
2	70	\$35.42	\$8.20	\$26.50	\$0.00	\$70.12
3	75	\$37.95	\$8.20	\$26.50	\$0.00	\$72.65
4	80	\$40.48	\$8.20	\$26.50	\$0.00	\$75.18
5	85	\$43.01	\$8.20	\$26.50	\$0.00	\$77.71
6	90	\$45.54	\$8.20	\$26.50	\$0.00	\$80.24

**Notes:**

\*\* Structural 1:6; Ornamental 1:4

**Apprentice to Journeyworker Ratio:\*\***

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
JACKHAMMER & PAVING BREAKER OPERATOR LABORERS - ZONE 2	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						

LABORER LABORERS - ZONE 2	12/01/2021	\$35.41	\$9.10	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.31	\$9.10	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
	12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70

**Apprentice - LABORER - Zone 2**

**Effective Date -** 12/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.25	\$9.10	\$16.64	\$0.00	\$46.99
2	70	\$24.79	\$9.10	\$16.64	\$0.00	\$50.53
3	80	\$28.33	\$9.10	\$16.64	\$0.00	\$54.07
4	90	\$31.87	\$9.10	\$16.64	\$0.00	\$57.61

**Effective Date -** 06/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.79	\$9.10	\$16.64	\$0.00	\$47.53
2	70	\$25.42	\$9.10	\$16.64	\$0.00	\$51.16
3	80	\$29.05	\$9.10	\$16.64	\$0.00	\$54.79
4	90	\$32.68	\$9.10	\$16.64	\$0.00	\$58.42

**Notes:**

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

LABORER (HEAVY & HIGHWAY) LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2021	\$35.41	\$9.10	\$16.64	\$0.00	\$61.15
--	------------	---------	--------	---------	--------	---------

**Apprentice - LABORER (Heavy & Highway) - Zone 2**

**Effective Date -** 12/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.25	\$9.10	\$16.64	\$0.00	\$46.99
2	70	\$24.79	\$9.10	\$16.64	\$0.00	\$50.53
3	80	\$28.33	\$9.10	\$16.64	\$0.00	\$54.07
4	90	\$31.87	\$9.10	\$16.64	\$0.00	\$57.61

**Notes:**

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: CARPENTER TENDER <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.41	\$9.10	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.31	\$9.10	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
	12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.41	\$9.10	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.31	\$9.10	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
	12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.50	\$9.10	\$16.70	\$0.00	\$61.30
	06/01/2022	\$36.40	\$9.10	\$16.70	\$0.00	\$62.20
	12/01/2022	\$37.25	\$9.10	\$16.70	\$0.00	\$63.05
	06/01/2023	\$38.15	\$9.10	\$16.70	\$0.00	\$63.95
	12/01/2023	\$39.05	\$9.10	\$16.70	\$0.00	\$64.85
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.41	\$9.10	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.31	\$9.10	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
	12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.41	\$9.10	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.31	\$9.10	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
	12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70
This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	02/01/2022	\$43.69	\$11.39	\$20.37	\$0.00	\$75.45
<b>Apprentice - MARBLE &amp; TILE FINISHER - Local 3 Marble &amp; Tile</b> <b>Effective Date - 02/01/2022</b>						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.85	\$11.39	\$20.37	\$0.00	\$53.61
2	60	\$26.21	\$11.39	\$20.37	\$0.00	\$57.97
3	70	\$30.58	\$11.39	\$20.37	\$0.00	\$62.34
4	80	\$34.95	\$11.39	\$20.37	\$0.00	\$66.71
5	90	\$39.32	\$11.39	\$20.37	\$0.00	\$71.08
<b>Notes:</b>						
<b>Apprentice to Journeyworker Ratio:1:3</b>						
MARBLE MASONS,TILELAYERS & TERRAZZO MECH <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	02/01/2022	\$57.17	\$11.39	\$22.31	\$0.00	\$90.87
<b>Apprentice - MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble &amp; Tile</b> <b>Effective Date - 02/01/2022</b>						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.59	\$11.39	\$22.31	\$0.00	\$62.29
2	60	\$34.30	\$11.39	\$22.31	\$0.00	\$68.00
3	70	\$40.02	\$11.39	\$22.31	\$0.00	\$73.72
4	80	\$45.74	\$11.39	\$22.31	\$0.00	\$79.44
5	90	\$51.45	\$11.39	\$22.31	\$0.00	\$85.15
<b>Notes:</b>						
<b>Apprentice to Journeyworker Ratio:1:5</b>						
MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 2) <i>MILLWRIGHTS LOCAL 1121 - Zone 2</i>	01/03/2022	\$40.67	\$8.58	\$21.57	\$0.00	\$70.82
	01/02/2023	\$41.92	\$8.58	\$21.57	\$0.00	\$72.07

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
<b>Apprentice - MILLWRIGHT - Local 1121 Zone 2</b>						
<b>Effective Date - 01/03/2022</b>						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.37	\$8.58	\$5.72	\$0.00	\$36.67
2	65	\$26.44	\$8.58	\$17.93	\$0.00	\$52.95
3	75	\$30.50	\$8.58	\$18.98	\$0.00	\$58.06
4	85	\$34.57	\$8.58	\$20.01	\$0.00	\$63.16
<b>Effective Date - 01/02/2023</b>						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$23.06	\$8.58	\$5.72	\$0.00	\$37.36
2	65	\$27.25	\$8.58	\$17.93	\$0.00	\$53.76
3	75	\$31.44	\$8.58	\$18.98	\$0.00	\$59.00
4	85	\$35.63	\$8.58	\$20.01	\$0.00	\$64.22
<div><b>Notes:</b> Step 1&amp;2 Appr. indentured after 1/6/2020 receive no pension, but do receive annuity. (Step 1 \$5.72, Step 2 \$6.66) Steps are 2,000 hours</div>						
<b>Apprentice to Journeyworker Ratio:1:4</b>						
MORTAR MIXER	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
LABORERS - ZONE 2	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS)	12/01/2021	\$23.48	\$14.00	\$16.05	\$0.00	\$53.53
OPERATING ENGINEERS LOCAL 4						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS)	12/01/2021	\$28.44	\$14.00	\$16.05	\$0.00	\$58.49
OPERATING ENGINEERS LOCAL 4						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
OPERATING ENGINEERS LOCAL 4						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS)	01/01/2022	\$53.66	\$8.65	\$23.05	\$0.00	\$85.36
PAINTERS LOCAL 35 - ZONE 2	07/01/2022	\$54.86	\$8.65	\$23.05	\$0.00	\$86.56
	01/01/2023	\$56.06	\$8.65	\$23.05	\$0.00	\$87.76
	07/01/2023	\$57.26	\$8.65	\$23.05	\$0.00	\$88.96
	01/01/2024	\$58.46	\$8.65	\$23.05	\$0.00	\$90.16
	07/01/2024	\$59.66	\$8.65	\$23.05	\$0.00	\$91.36
	01/01/2025	\$60.86	\$8.65	\$23.05	\$0.00	\$92.56

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental  
Unemployment    Total Rate**

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

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.83	\$8.65	\$0.00	\$0.00	\$35.48
2	55	\$29.51	\$8.65	\$6.27	\$0.00	\$44.43
3	60	\$32.20	\$8.65	\$6.84	\$0.00	\$47.69
4	65	\$34.88	\$8.65	\$7.41	\$0.00	\$50.94
5	70	\$37.56	\$8.65	\$19.63	\$0.00	\$65.84
6	75	\$40.25	\$8.65	\$20.20	\$0.00	\$69.10
7	80	\$42.93	\$8.65	\$20.77	\$0.00	\$72.35
8	90	\$48.29	\$8.65	\$21.91	\$0.00	\$78.85

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.43	\$8.65	\$0.00	\$0.00	\$36.08
2	55	\$30.17	\$8.65	\$6.27	\$0.00	\$45.09
3	60	\$32.92	\$8.65	\$6.84	\$0.00	\$48.41
4	65	\$35.66	\$8.65	\$7.41	\$0.00	\$51.72
5	70	\$38.40	\$8.65	\$19.63	\$0.00	\$66.68
6	75	\$41.15	\$8.65	\$20.20	\$0.00	\$70.00
7	80	\$43.89	\$8.65	\$20.77	\$0.00	\$73.31
8	90	\$49.37	\$8.65	\$21.91	\$0.00	\$79.93

**Notes:**

Steps are 750 hrs.

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

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2022	\$44.56	\$8.65	\$23.05	\$0.00	\$76.26
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. <i>PAINTERS LOCAL 35 - ZONE 2</i>	07/01/2022	\$45.76	\$8.65	\$23.05	\$0.00	\$77.46
	01/01/2023	\$46.96	\$8.65	\$23.05	\$0.00	\$78.66
	07/01/2023	\$48.16	\$8.65	\$23.05	\$0.00	\$79.86
	01/01/2024	\$49.36	\$8.65	\$23.05	\$0.00	\$81.06
	07/01/2024	\$50.56	\$8.65	\$23.05	\$0.00	\$82.26
	01/01/2025	\$51.76	\$8.65	\$23.05	\$0.00	\$83.46

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - New**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.28	\$8.65	\$0.00	\$0.00	\$30.93
2	55	\$24.51	\$8.65	\$6.27	\$0.00	\$39.43
3	60	\$26.74	\$8.65	\$6.84	\$0.00	\$42.23
4	65	\$28.96	\$8.65	\$7.41	\$0.00	\$45.02
5	70	\$31.19	\$8.65	\$19.63	\$0.00	\$59.47
6	75	\$33.42	\$8.65	\$20.20	\$0.00	\$62.27
7	80	\$35.65	\$8.65	\$20.77	\$0.00	\$65.07
8	90	\$40.10	\$8.65	\$21.91	\$0.00	\$70.66

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.88	\$8.65	\$0.00	\$0.00	\$31.53
2	55	\$25.17	\$8.65	\$6.27	\$0.00	\$40.09
3	60	\$27.46	\$8.65	\$6.84	\$0.00	\$42.95
4	65	\$29.74	\$8.65	\$7.41	\$0.00	\$45.80
5	70	\$32.03	\$8.65	\$19.63	\$0.00	\$60.31
6	75	\$34.32	\$8.65	\$20.20	\$0.00	\$63.17
7	80	\$36.61	\$8.65	\$20.77	\$0.00	\$66.03
8	90	\$41.18	\$8.65	\$21.91	\$0.00	\$71.74

**Notes:**

Steps are 750 hrs.

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

PAINTER (SPRAY OR SANDBLAST, REPAINT)	01/01/2022	\$42.62	\$8.65	\$23.05	\$0.00	\$74.32
PAINTERS LOCAL 35 - ZONE 2	07/01/2022	\$43.82	\$8.65	\$23.05	\$0.00	\$75.52
	01/01/2023	\$45.02	\$8.65	\$23.05	\$0.00	\$76.72
	07/01/2023	\$46.22	\$8.65	\$23.05	\$0.00	\$77.92
	01/01/2024	\$47.42	\$8.65	\$23.05	\$0.00	\$79.12
	07/01/2024	\$48.62	\$8.65	\$23.05	\$0.00	\$80.32
	01/01/2025	\$49.82	\$8.65	\$23.05	\$0.00	\$81.52



**Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint****Effective Date - 01/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.31	\$8.65	\$0.00	\$0.00	\$29.96
2	55	\$23.44	\$8.65	\$6.27	\$0.00	\$38.36
3	60	\$25.57	\$8.65	\$6.84	\$0.00	\$41.06
4	65	\$27.70	\$8.65	\$7.41	\$0.00	\$43.76
5	70	\$29.83	\$8.65	\$19.63	\$0.00	\$58.11
6	75	\$31.97	\$8.65	\$20.20	\$0.00	\$60.82
7	80	\$34.10	\$8.65	\$20.77	\$0.00	\$63.52
8	90	\$38.36	\$8.65	\$21.91	\$0.00	\$68.92

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.91	\$8.65	\$0.00	\$0.00	\$30.56
2	55	\$24.10	\$8.65	\$6.27	\$0.00	\$39.02
3	60	\$26.29	\$8.65	\$6.84	\$0.00	\$41.78
4	65	\$28.48	\$8.65	\$7.41	\$0.00	\$44.54
5	70	\$30.67	\$8.65	\$19.63	\$0.00	\$58.95
6	75	\$32.87	\$8.65	\$20.20	\$0.00	\$61.72
7	80	\$35.06	\$8.65	\$20.77	\$0.00	\$64.48
8	90	\$39.44	\$8.65	\$21.91	\$0.00	\$70.00

**Notes:**

Steps are 750 hrs.

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

PAINTER / TAPER (BRUSH, NEW) \*

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

01/01/2022	\$43.16	\$8.65	\$23.05	\$0.00	\$74.86
07/01/2022	\$44.36	\$8.65	\$23.05	\$0.00	\$76.06
01/01/2023	\$45.56	\$8.65	\$23.05	\$0.00	\$77.26
07/01/2023	\$46.76	\$8.65	\$23.05	\$0.00	\$78.46
01/01/2024	\$47.96	\$8.65	\$23.05	\$0.00	\$79.66
07/01/2024	\$49.16	\$8.65	\$23.05	\$0.00	\$80.86
01/01/2025	\$50.36	\$8.65	\$23.05	\$0.00	\$82.06

**Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW****Effective Date - 01/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.58	\$8.65	\$0.00	\$0.00	\$30.23
2	55	\$23.74	\$8.65	\$6.27	\$0.00	\$38.66
3	60	\$25.90	\$8.65	\$6.84	\$0.00	\$41.39
4	65	\$28.05	\$8.65	\$7.41	\$0.00	\$44.11
5	70	\$30.21	\$8.65	\$19.63	\$0.00	\$58.49
6	75	\$32.37	\$8.65	\$20.20	\$0.00	\$61.22
7	80	\$34.53	\$8.65	\$20.77	\$0.00	\$63.95
8	90	\$38.84	\$8.65	\$21.91	\$0.00	\$69.40

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.18	\$8.65	\$0.00	\$0.00	\$30.83
2	55	\$24.40	\$8.65	\$6.27	\$0.00	\$39.32
3	60	\$26.62	\$8.65	\$6.84	\$0.00	\$42.11
4	65	\$28.83	\$8.65	\$7.41	\$0.00	\$44.89
5	70	\$31.05	\$8.65	\$19.63	\$0.00	\$59.33
6	75	\$33.27	\$8.65	\$20.20	\$0.00	\$62.12
7	80	\$35.49	\$8.65	\$20.77	\$0.00	\$64.91
8	90	\$39.92	\$8.65	\$21.91	\$0.00	\$70.48

**Notes:**

Steps are 750 hrs.

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

PAINTER / TAPER (BRUSH, REPAINT)

PAINTERS LOCAL 35 - ZONE 2

01/01/2022	\$41.22	\$8.65	\$23.05	\$0.00	\$72.92
07/01/2022	\$42.42	\$8.65	\$23.05	\$0.00	\$74.12
01/01/2023	\$43.62	\$8.65	\$23.05	\$0.00	\$75.32
07/01/2023	\$44.82	\$8.65	\$23.05	\$0.00	\$76.52
01/01/2024	\$46.02	\$8.65	\$23.05	\$0.00	\$77.72
07/01/2024	\$47.22	\$8.65	\$23.05	\$0.00	\$78.92
01/01/2025	\$48.42	\$8.65	\$23.05	\$0.00	\$80.12

**Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.61	\$8.65	\$0.00	\$0.00	\$29.26
2	55	\$22.67	\$8.65	\$6.27	\$0.00	\$37.59
3	60	\$24.73	\$8.65	\$6.84	\$0.00	\$40.22
4	65	\$26.79	\$8.65	\$7.41	\$0.00	\$42.85
5	70	\$28.85	\$8.65	\$19.63	\$0.00	\$57.13
6	75	\$30.92	\$8.65	\$20.20	\$0.00	\$59.77
7	80	\$32.98	\$8.65	\$20.77	\$0.00	\$62.40
8	90	\$37.10	\$8.65	\$21.91	\$0.00	\$67.66

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.21	\$8.65	\$0.00	\$0.00	\$29.86
2	55	\$23.33	\$8.65	\$6.27	\$0.00	\$38.25
3	60	\$25.45	\$8.65	\$6.84	\$0.00	\$40.94
4	65	\$27.57	\$8.65	\$7.41	\$0.00	\$43.63
5	70	\$29.69	\$8.65	\$19.63	\$0.00	\$57.97
6	75	\$31.82	\$8.65	\$20.20	\$0.00	\$60.67
7	80	\$33.94	\$8.65	\$20.77	\$0.00	\$63.36
8	90	\$38.18	\$8.65	\$21.91	\$0.00	\$68.74

**Notes:**

Steps are 750 hrs.

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

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2021	\$35.41	\$9.10	\$16.64	\$0.00	\$61.15
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
PANEL & PICKUP TRUCKS DRIVER TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/01/2021	\$35.78	\$13.41	\$16.01	\$0.00	\$65.20
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
PILE DRIVER PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59

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

**Apprentice - PILE DRIVER - Local 56 Zone 1**

**Effective Date - 08/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.54	\$9.40	\$23.12	\$0.00	\$57.06
2	60	\$29.44	\$9.40	\$23.12	\$0.00	\$61.96
3	70	\$34.35	\$9.40	\$23.12	\$0.00	\$66.87
4	75	\$36.80	\$9.40	\$23.12	\$0.00	\$69.32
5	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
6	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
7	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68
8	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68

**Notes:**

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80  
Step 1&2 \$34.01/ 3&4 \$41.46/ 5&6 \$62.80/ 7&8 \$69.25

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

PIPEFITTER & STEAMFITTER	03/01/2021	\$57.94	\$11.70	\$20.24	\$0.00	\$89.88
PIPEFITTERS LOCAL 537						

**Apprentice - PIPEFITTER - Local 537**

**Effective Date - 03/01/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$23.18	\$11.70	\$8.25	\$0.00	\$43.13
2	45	\$26.07	\$11.70	\$20.24	\$0.00	\$58.01
3	60	\$34.76	\$11.70	\$20.24	\$0.00	\$66.70
4	70	\$40.56	\$11.70	\$20.24	\$0.00	\$72.50
5	80	\$46.35	\$11.70	\$20.24	\$0.00	\$78.29

**Notes:**

\*\* 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.  
Refrig/AC Mechanic \*\*1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)

**Apprentice to Journeyworker Ratio:\*\***

PIPELAYER	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
LABORERS - ZONE 2						
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95

For apprentice rates see "Apprentice- LABORER"

PIPELAYER (HEAVY & HIGHWAY)	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
LABORERS - ZONE 2 (HEAVY & HIGHWAY)						

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PLUMBERS & GASFITTERS	09/01/2021	\$61.79	\$13.57	\$17.26	\$0.00	\$92.62
PLUMBERS & GASFITTERS LOCAL 12	02/27/2022	\$63.39	\$13.57	\$17.26	\$0.00	\$94.22
	09/04/2022	\$65.09	\$13.57	\$17.26	\$0.00	\$95.92
	02/26/2023	\$66.79	\$13.57	\$17.26	\$0.00	\$97.62
	09/03/2023	\$68.54	\$13.57	\$17.26	\$0.00	\$99.37
	03/03/2024	\$70.34	\$13.57	\$17.26	\$0.00	\$101.17
	09/01/2024	\$72.14	\$13.57	\$17.26	\$0.00	\$102.97
	03/02/2025	\$73.94	\$13.57	\$17.26	\$0.00	\$104.77

**Apprentice - PLUMBER/GASFITTER - Local 12**

**Effective Date - 09/01/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$21.63	\$13.57	\$6.24	\$0.00	\$41.44
2	40	\$24.72	\$13.57	\$7.08	\$0.00	\$45.37
3	55	\$33.98	\$13.57	\$9.63	\$0.00	\$57.18
4	65	\$40.16	\$13.57	\$11.33	\$0.00	\$65.06
5	75	\$46.34	\$13.57	\$13.03	\$0.00	\$72.94

**Effective Date - 02/27/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$22.19	\$13.57	\$6.24	\$0.00	\$42.00
2	40	\$25.36	\$13.57	\$7.08	\$0.00	\$46.01
3	55	\$34.86	\$13.57	\$9.63	\$0.00	\$58.06
4	65	\$41.20	\$13.57	\$11.33	\$0.00	\$66.10
5	75	\$47.54	\$13.57	\$13.03	\$0.00	\$74.14

**Notes:**

\*\* 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr  
Step4 with lic\$69.00, Step5 with lic\$76.87

**Apprentice to Journeyworker Ratio:\*\***

PNEUMATIC CONTROLS (TEMP.)	03/01/2021	\$57.94	\$11.70	\$20.24	\$0.00	\$89.88
PIPEFITTERS LOCAL 537						

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

PNEUMATIC DRILL/TOOL OPERATOR	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
LABORERS - ZONE 2	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95

For apprentice rates see "Apprentice- LABORER"

PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY)	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
LABORERS - ZONE 2 (HEAVY & HIGHWAY)						

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
POWDERMAN & BLASTER <i>LABORERS - ZONE 2</i>	12/01/2021	\$36.41	\$9.10	\$16.64	\$0.00	\$62.15
	06/01/2022	\$37.31	\$9.10	\$16.64	\$0.00	\$63.05
	12/01/2022	\$38.16	\$9.10	\$16.64	\$0.00	\$63.90
	06/01/2023	\$39.06	\$9.10	\$16.64	\$0.00	\$64.80
	12/01/2023	\$39.96	\$9.10	\$16.64	\$0.00	\$65.70
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$36.41	\$9.10	\$16.64	\$0.00	\$62.15
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$33.69	\$14.00	\$16.05	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS 170 - Dauphinais (Bellingham)</i>	01/01/2022	\$25.75	\$9.76	\$4.00	\$0.00	\$39.51
	12/01/2022	\$26.40	\$10.26	\$4.75	\$0.00	\$41.41
	01/01/2023	\$26.40	\$10.26	\$4.75	\$0.00	\$41.41
	12/01/2023	\$27.00	\$10.76	\$5.45	\$0.00	\$43.21
	01/01/2024	\$27.00	\$10.76	\$5.45	\$0.00	\$43.21
	12/01/2024	\$27.60	\$11.26	\$6.15	\$0.00	\$45.01
	01/01/2025	\$27.60	\$11.26	\$6.15	\$0.00	\$45.01
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roof Waterproofng &Roof Damproofg) <i>ROOFERS LOCAL 33</i>	02/01/2022	\$47.03	\$12.28	\$19.45	\$0.00	\$78.76

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
<b>Apprentice - ROOFER - Local 33</b>						
<b>Effective Date - 02/01/2022</b>						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.52	\$12.28	\$5.21	\$0.00	\$41.01
2	60	\$28.22	\$12.28	\$19.45	\$0.00	\$59.95
3	65	\$30.57	\$12.28	\$19.45	\$0.00	\$62.30
4	75	\$35.27	\$12.28	\$19.45	\$0.00	\$67.00
5	85	\$39.98	\$12.28	\$19.45	\$0.00	\$71.71
<b>Notes:</b> ** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1 Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs. (Hot Pitch Mechanics' receive \$1.00 hr. above ROOFER)						
<b>Apprentice to Journeyworker Ratio:**</b>						
ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 33	02/01/2022	\$47.28	\$12.28	\$19.45	\$0.00	\$79.01
For apprentice rates see "Apprentice- ROOFER"						
SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 17 - A	02/01/2022	\$53.70	\$13.80	\$25.60	\$2.79	\$95.89
<b>Apprentice - SHEET METAL WORKER - Local 17-A</b>						
<b>Effective Date - 02/01/2022</b>						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$22.55	\$13.80	\$6.01	\$0.00	\$42.36
2	42	\$22.55	\$13.80	\$6.01	\$0.00	\$42.36
3	47	\$25.24	\$13.80	\$11.26	\$1.51	\$51.81
4	47	\$25.24	\$13.80	\$11.26	\$1.51	\$51.81
5	52	\$27.92	\$13.80	\$12.23	\$1.62	\$55.57
6	52	\$27.92	\$13.80	\$12.48	\$1.63	\$55.83
7	60	\$32.22	\$13.80	\$13.87	\$1.80	\$61.69
8	65	\$34.91	\$13.80	\$14.84	\$1.91	\$65.46
9	75	\$40.28	\$13.80	\$16.77	\$2.13	\$72.98
10	85	\$45.65	\$13.80	\$18.20	\$2.33	\$79.98
<b>Notes:</b> Steps are 6 mos.						
<b>Apprentice to Journeyworker Ratio:1:4</b>						
SPECIALIZED EARTH MOVING EQUIP < 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/01/2021	\$36.24	\$13.41	\$16.01	\$0.00	\$65.66
SPECIALIZED EARTH MOVING EQUIP > 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/01/2021	\$36.53	\$13.41	\$16.01	\$0.00	\$65.95
SPRINKLER FITTER SPRINKLER FITTERS LOCAL 550 - (Section A) Zone I	03/01/2021	\$62.45	\$10.00	\$21.25	\$0.00	\$93.70

**Apprentice - SPRINKLER FITTER - Local 550 (Section A) Zone 1****Effective Date -** 03/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$21.86	\$10.00	\$11.99	\$0.00	\$43.85
2	40	\$24.98	\$10.00	\$12.70	\$0.00	\$47.68
3	45	\$28.10	\$10.00	\$13.41	\$0.00	\$51.51
4	50	\$31.23	\$10.00	\$14.13	\$0.00	\$55.36
5	55	\$34.35	\$10.00	\$14.84	\$0.00	\$59.19
6	60	\$37.47	\$10.00	\$15.55	\$0.00	\$63.02
7	65	\$40.59	\$10.00	\$16.26	\$0.00	\$66.85
8	70	\$43.72	\$10.00	\$16.98	\$0.00	\$70.70
9	75	\$46.84	\$10.00	\$17.69	\$0.00	\$74.53
10	80	\$49.96	\$10.00	\$18.40	\$0.00	\$78.36

**Notes:** Apprentice entered prior 9/30/10:  
40/45/50/55/60/65/70/75/80/85  
Steps are 850 hours

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

STEAM BOILER OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 103</i>	09/01/2021	\$43.40	\$13.00	\$18.37	\$0.00	\$74.77
	03/01/2022	\$44.71	\$13.00	\$18.74	\$0.00	\$76.45
	09/01/2022	\$46.42	\$13.00	\$18.87	\$0.00	\$78.29
	03/01/2023	\$48.34	\$13.00	\$19.01	\$0.00	\$80.35



Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103

Effective Date - 09/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$19.53	\$13.00	\$0.59	\$0.00	\$33.12
2	45	\$19.53	\$13.00	\$0.59	\$0.00	\$33.12
3	50	\$21.70	\$13.00	\$14.79	\$0.00	\$49.49
4	50	\$21.70	\$13.00	\$14.79	\$0.00	\$49.49
5	55	\$23.87	\$13.00	\$15.12	\$0.00	\$51.99
6	60	\$26.04	\$13.00	\$15.47	\$0.00	\$54.51
7	65	\$28.21	\$13.00	\$15.84	\$0.00	\$57.05
8	70	\$30.38	\$13.00	\$16.20	\$0.00	\$59.58
9	75	\$32.55	\$13.00	\$16.57	\$0.00	\$62.12
10	80	\$34.72	\$13.00	\$16.92	\$0.00	\$64.64

Effective Date - 03/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$20.12	\$13.00	\$0.60	\$0.00	\$33.72
2	45	\$20.12	\$13.00	\$0.60	\$0.00	\$33.72
3	50	\$22.36	\$13.00	\$15.06	\$0.00	\$50.42
4	50	\$22.36	\$13.00	\$15.06	\$0.00	\$50.42
5	55	\$24.59	\$13.00	\$15.39	\$0.00	\$52.98
6	60	\$26.83	\$13.00	\$15.74	\$0.00	\$55.57
7	65	\$29.06	\$13.00	\$16.11	\$0.00	\$58.17
8	70	\$31.30	\$13.00	\$16.48	\$0.00	\$60.78
9	75	\$33.53	\$13.00	\$16.85	\$0.00	\$63.38
10	80	\$35.77	\$13.00	\$17.20	\$0.00	\$65.97

Notes:

Apprentice to Journeyworker Ratio:1:1

TERRAZZO FINISHERS	02/01/2022	\$56.09	\$11.39	\$22.34	\$0.00	\$89.82
BRICKLAYERS LOCAL 3 - MARBLE & TILE						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
<b>Apprentice - TERRAZZO FINISHER - Local 3 Marble &amp; Tile</b>						
<b>Effective Date - 02/01/2022</b>						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.05	\$11.39	\$22.34	\$0.00	\$61.78
2	60	\$33.65	\$11.39	\$22.34	\$0.00	\$67.38
3	70	\$39.26	\$11.39	\$22.34	\$0.00	\$72.99
4	80	\$44.87	\$11.39	\$22.34	\$0.00	\$78.60
5	90	\$50.48	\$11.39	\$22.34	\$0.00	\$84.21
<b>Notes:</b>						
<b>Apprentice to Journeyworker Ratio:1:3</b>						
TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$42.58	\$9.10	\$17.72	\$0.00	\$69.40
For apprentice rates see "Apprentice- LABORER"						
TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$41.30	\$9.10	\$17.72	\$0.00	\$68.12
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$41.18	\$9.10	\$17.72	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.82	\$13.41	\$16.01	\$0.00	\$66.24
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	12/01/2021	\$53.41	\$9.10	\$18.17	\$0.00	\$80.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	12/01/2021	\$55.41	\$9.10	\$18.17	\$0.00	\$82.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2021	\$45.48	\$9.10	\$18.17	\$0.00	\$72.75
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2021	\$47.48	\$9.10	\$18.17	\$0.00	\$74.75
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.24	\$13.41	\$16.01	\$0.00	\$65.66
WAGON DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS &amp; GASFITTERS LOCAL 12</i>	09/01/2021	\$61.79	\$13.57	\$17.26	\$0.00	\$92.62
	02/27/2022	\$63.39	\$13.57	\$17.26	\$0.00	\$94.22
	09/04/2022	\$65.09	\$13.57	\$17.26	\$0.00	\$95.92
	02/26/2023	\$66.79	\$13.57	\$17.26	\$0.00	\$97.62
	09/03/2023	\$68.54	\$13.57	\$17.26	\$0.00	\$99.37
	03/03/2024	\$70.34	\$13.57	\$17.26	\$0.00	\$101.17
	09/01/2024	\$72.14	\$13.57	\$17.26	\$0.00	\$102.97
	03/02/2025	\$73.94	\$13.57	\$17.26	\$0.00	\$104.77
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
<b>Outside Electrical - East</b>						
CABLE TECHNICIAN (Power Zone) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$29.67	\$9.25	\$1.89	\$0.00	\$40.81
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$42.03	\$9.25	\$10.27	\$0.00	\$61.55
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$34.62	\$9.25	\$10.07	\$0.00	\$53.94
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$27.20	\$9.25	\$1.82	\$0.00	\$38.27
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class A CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$42.03	\$9.25	\$14.35	\$0.00	\$65.63
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class B CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$37.09	\$9.25	\$10.87	\$0.00	\$57.21
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$27.20	\$9.25	\$1.82	\$0.00	\$38.27
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN -Inexperienced (<2000 Hrs.) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$22.25	\$9.25	\$1.82	\$0.00	\$33.32
For apprentice rates see "Apprentice- LINEMAN"						
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$49.45	\$9.25	\$17.48	\$0.00	\$76.18

Apprentice - LINEMAN (Outside Electrical) - East Local 104

Effective Date - 08/30/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$29.67	\$9.25	\$3.39	\$0.00	\$42.31
2	65	\$32.14	\$9.25	\$3.46	\$0.00	\$44.85
3	70	\$34.62	\$9.25	\$3.54	\$0.00	\$47.41
4	75	\$37.09	\$9.25	\$5.11	\$0.00	\$51.45
5	80	\$39.56	\$9.25	\$5.19	\$0.00	\$54.00
6	85	\$42.03	\$9.25	\$5.26	\$0.00	\$56.54
7	90	\$44.51	\$9.25	\$7.34	\$0.00	\$61.10

Notes:

Apprentice to Journeyworker Ratio:1:2

TELEDATA CABLE SPLICER OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	02/04/2019	\$30.73	\$4.70	\$3.17	\$0.00	\$38.60
TELEDATA LINEMAN/EQUIPMENT OPERATOR OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	02/04/2019	\$28.93	\$4.70	\$3.14	\$0.00	\$36.77
TELEDATA WIREMAN/INSTALLER/TECHNICIAN OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	02/04/2019	\$28.93	\$4.70	\$3.14	\$0.00	\$36.77

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 00 0101 PROJECT TITLE PAGE**

**PROJECT MANUAL**

**FOR**

**MORSE INSTITUTE LIBRARY HVAC AND CONTROLS UPGRADE**

**TOWN OF NATICK  
PROCUREMENT OFFICE  
NATICK PUBLIC WORKS  
75 WEST STREET  
NATICK, MA 01760**

**DATE: March 8, 2022**

**PREPARED BY:**

**B2Q ASSOCIATES  
100 BURTT RD  
SUITE 212  
ANDOVER, MA 01810**

**END OF SECTION**

## SECTION 00 0110 TABLE OF CONTENTS

SECTION 00 0101 PROJECT TITLE PAGE .....	1
SECTION 00 0110 TABLE OF CONTENTS.....	2
SECTION 01 1000 SUMMARY.....	3
SECTION 01 2500 SUBSTITUTION PROCEDURES .....	4
SECTION 01 3000 ADMINISTRATIVE REQUIREMENTS .....	6
SECTION 01 6000 PRODUCT REQUIREMENTS.....	11
SECTION 01 7800 CLOSEOUT SUBMITTALS.....	14
SECTION 05 1200 STRUCTURAL STEEL .....	17
SECTION 23 0513 COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT .	20
SECTION 23 0519 METERS AND GAUGES FOR HVAC PIPING .....	22
SECTION 23 0523 GENERAL-DUTY VALVES FOR HVAC PIPING.....	24
SECTION 23 0529 HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT .....	29
SECTION 23 0548 VIBRATION AND SEISMIC CONTROLS FOR HVAC .....	32
SECTION 23 0553 IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT .....	35
SECTION 23 0593 TESTING, ADJUSTING, AND BALANCING FOR HVAC .....	37
SECTION 23 0719 HVAC PIPING INSULATION .....	43
SECTION 23 0800 COMMISSIONING OF HVAC.....	46
SECTION 23 0913 INSTRUMENTATION AND CONTROL DEVICES FOR HVAC .....	52
SECTION 23 0923 DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC .....	56
SECTION 23 2113 HYDRONIC PIPING .....	64
SECTION 23 2114 HYDRONIC SPECIALTIES.....	69
SECTION 23 2123 HYDRONIC PUMPS .....	72
SECTION 23 2500 HVAC WATER TREATMENT .....	74
SECTION 23 5700 HEAT EXCHANGERS FOR HVAC .....	75
SECTION 236416 AIR-TO-WATER HEAT PUMP .....	76
SECTION 26 0000 ELECTRICAL .....	81
SECTION 26 2923 VARIABLE-FREQUENCY MOTOR CONTROLLERS.....	95

**END OF SECTION**

## **SECTION 01 1000 SUMMARY**

### **PART 1 GENERAL**

#### **1.01 PROJECT**

- A. Project Name: Morse Institute Library Electrification and Controls Upgrade.
- B. Owner's Name: Town of Natick, MA.
- C. Engineer's Name: B2Q Associates.
- D. The Project consists of the construction of the replacement of an existing air-cooled chiller with a new air-to-water heat pump to serve both chilled water and hot water loads through the use of an existing ice thermal energy storage system. The Project also consists of the replacement of the existing DDC controls and building automation system with a new controls system, as well as the following:
  - 1. Demolish the existing Trane building automation system, Tridium Niagara overlay front-end, supervisory and equipment field controllers, and space thermostats.
  - 2. Provide new building automation system, supervisory controller, equipment field controllers, and space thermostats.
  - 3. Install a new IP-based wired network throughout the building for the new controls system. Reuse existing control wiring if it is compatible with the new equipment. Provide new control wiring as necessary.
  - 4. Demolish control and lock existing exhaust fan inlet guide vanes in AHU-1 and AHU-2 in place.
  - 5. Provide new VFDs for exhaust fans in AHU-1 and AHU-2.
  - 6. Demolish existing oil tanks in basement mechanical room.
  - 7. Demolish existing hydronic piping on the roof and in the basement mechanical room, as delineated on the drawings, with vertical pipe risers to remain.
  - 8. Demolish the existing air-cooled chiller on the roof.
  - 9. Install a new plate and frame heat exchanger in the basement mechanical room to interface between the chilled/hot glycol loop and the existing hot water loop.
  - 10. Flush, clean, refill, charge, and treat the existing glycol loop and ice storage tanks.
  - 11. Install (1) ice storage tank header retrofit kit to correct an existing leak.
  - 12. Install new hydronic piping, insulation, valves, appurtenances, etc. on the roof and in the basement mechanical room in accordance with the design drawings.
  - 13. Furnish and install (1) new base-mounted end suction hydronic pump, P-8, with associated VFD and accessories.
  - 14. Furnish and install new control sensors and valves as indicated on the Controls Points list drawings.
  - 15. Provide project management, permits, disposal, startup, TAB, commissioning, Owner training, warranty, and closeout documentation, within the base scope of project, as outlined in the design documents.

#### **1.02 OWNER OCCUPANCY**

- A. Owner intends to continue to occupy portions of the existing building during the entire construction period.
- B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner occupancy.

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

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

**END OF SECTION**

## **SECTION 01 2500 SUBSTITUTION PROCEDURES**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Procedural requirements for proposed substitutions.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 01 3000 - Administrative Requirements: Submittal procedures, coordination.
- B. Section 01 6000 - Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling.

#### **1.03 DEFINITIONS**

- A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
  - 1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
  - 2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.

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

### **PART 3 EXECUTION**

#### **3.01 GENERAL REQUIREMENTS**

- A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
  - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
  - 2. Agrees to provide the same warranty for the substitution as for the specified product.
  - 3. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
  - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
- B. A Substitution Request for specified installer constitutes a representation that the submitter:
  - 1. Has acted in good faith to obtain services of specified installer, but was unable to come to commercial, or other terms.
- C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
  - 1. Note explicitly any non-compliant characteristics.
- D. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
  - 1. No specific form is required. Contractor's Substitution Request documentation must include the following:
    - a. Project Information:
    - b. Substitution Request Information:
      - 1) Description of Substitution.
      - 2) Reason why the specified item cannot be provided.
      - 3) Differences between proposed substitution and specified item.
      - 4) Description of how proposed substitution affects other parts of work.
    - c. Attached Comparative Data: Provide point-by-point, side-by-side comparison addressing essential attributes specified, as appropriate and relevant for the item:
      - 1) Physical characteristics.
      - 2) In-service performance.
      - 3) Sustainable design features.
      - 4) Warranties.



- 5) Other salient features and requirements.
- d. Impact of Substitution:
  - 1) Savings to Owner for accepting substitution.
  - 2) Change to Contract Time due to accepting substitution.
- E. Limit each request to a single proposed substitution item.
  - 1. Submit an electronic document, combining the request form with supporting data into single document.

### **3.02 RESOLUTION**

- A. Engineer may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.
- B. Engineer will notify Contractor in writing of decision to accept or reject request.

### **3.03 ACCEPTANCE**

- A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

**END OF SECTION**

## **SECTION 01 3000 ADMINISTRATIVE REQUIREMENTS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. General administrative requirements.
- B. Preconstruction meeting.
- C. Construction progress schedule.
- D. Coordination drawings.
- E. Submittals for review, information, and project closeout.
- F. Number of copies of submittals.
- G. Requests for Interpretation (RFI) procedures.
- H. Submittal procedures.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 01 7800 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.
- B. Section 01 9113 - General Commissioning Requirements: Additional procedures for submittals relating to commissioning.
  - 1. Where submittals are indicated for review by both Engineer and the Commissioning Authority, submit one extra and route to Engineer first, for forwarding to the Commissioning Authority.
  - 2. Where submittals are not indicated to be reviewed by Engineer, submit directly to the Commissioning Authority; otherwise, the procedures specified in this section apply to commissioning submittals.

#### **1.03 GENERAL ADMINISTRATIVE REQUIREMENTS**

- A. Comply with requirements of Section 01 7000 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
- B. Make the following types of submittals to Engineer:
  - 1. Requests for Interpretation (RFI).
  - 2. Requests for substitution.
  - 3. Shop drawings, product data, and samples.
  - 4. Test and inspection reports.
  - 5. Design data.
  - 6. Manufacturer's instructions and field reports.
  - 7. Applications for payment and change order requests.
  - 8. Progress schedules.
  - 9. Coordination drawings.
  - 10. Startup procedures.
  - 11. TAB plan.
  - 12. TAB reports.
  - 13. Commissioning records.
  - 14. Correction Punch List and Final Correction Punch List for Substantial Completion.
  - 15. Closeout submittals.

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

### **PART 3 EXECUTION**

#### **3.01 PRECONSTRUCTION MEETING**

- A. Owner will schedule a meeting after Notice of Award.
- B. Attendance Required:
  - 1. Owner.

2. Engineer.
  3. Contractor.
- C. Agenda:
1. Execution of Owner-Contractor Agreement.
  2. Submission of executed bonds and insurance certificates.
  3. Distribution of Contract Documents.
  4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
  5. Designation of personnel representing the, Project Contact List and Engineer.
  6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
  7. Scheduling.
  8. Safety and Security Procedures
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, participants, and those affected by decisions made.

### **3.02 CONSTRUCTION PROGRESS SCHEDULE**

- A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.
- B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
- C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
  1. Include written certification that major contractors have reviewed and accepted proposed schedule.
- D. Within 10 days after joint review, submit complete schedule.
- E. Submit updated schedule with each Application for Payment.

### **3.03 COORDINATION DRAWINGS**

- A. Provide information required by Project Coordinator for preparation of coordination drawings.
- B. Review drawings prior to submission to Engineer.

### **3.04 REQUESTS FOR INTERPRETATION (RFI)**

- A. Definition: A request seeking one of the following:
  1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
  2. A resolution to an issue which has arisen due to field conditions and affects design intent.
- B. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
  1. Prepare a separate RFI for each specific item.
- C. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
- D. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
- E. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
  1. Indicate current status of every RFI. Update log promptly and on a regular basis.
  2. Note dates of when each request is made, and when a response is received.
  3. Highlight items requiring priority or expedited response.

- F. Review Time: Engineer will respond and return RFIs to Contractor within ten calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
- G. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.

### **3.05 SUBMITTALS FOR REVIEW**

- A. When the following are specified in individual sections, submit them for review:
  - 1. Product data.
  - 2. Shop drawings.
  - 3. Tests, start-up, commissioning, inspection plans and reports.
  - 4. Installation manuals with product data where appropriate for review.
  - 5. Change order requests.
  - 6. Commissioning schedule.
  - 7. Commissioning pre-functional and functional test results.
  - 8. Testing, adjusting, and balancing plan.
  - 9. Testing, adjusting, and balancing results.
  - 10. Maintenance plan.
  - 11. Trend data.
  - 12. BAS graphics mock-ups.
  - 13. As-built drawings.
  - 14. Coordination drawings.
  - 15. Operations and maintenance manuals.
  - 16. Owner's training plan.
- B. Submit to Engineer for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
- C. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below.

### **3.06 SUBMITTALS FOR INFORMATION**

- A. When the following are specified in individual sections, submit them for information:
  - 1. Design data.
  - 2. Certificates.
  - 3. Test reports.
  - 4. Inspection reports.
  - 5. Manufacturer's instructions.
  - 6. Manufacturer's field reports.
  - 7. Other types indicated.
- B. Submit for Engineer's knowledge as contract administrator or for Owner.

### **3.07 SUBMITTALS FOR PROJECT CLOSEOUT**

- A. Submit Final Correction Punch List for Substantial Completion.
- B. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 7800 - Closeout Submittals:
  - 1. Project record documents.
  - 2. Operation and maintenance data.
  - 3. Warranties.
  - 4. Bonds.
  - 5. Summary notes from Owner training.
  - 6. Other types as indicated.

- C. Submit for Owner's benefit during and after project completion.

### **3.08 NUMBER OF COPIES OF SUBMITTALS**

- A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.

### **3.09 SUBMITTAL PROCEDURES**

- A. General Requirements:
  - 1. Use a separate transmittal for each item.
  - 2. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
  - 3. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
  - 4. Schedule submittals to expedite the Project, and coordinate submission of related items.
    - a. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
  - 5. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
  - 6. When revised for resubmission, identify all changes made since previous submission.
  - 7. Call out specific model numbers, options, ordering information, etc. from general catalog lists.
  - 8. Cross out, delete sections, or otherwise mark equipment or materials models, options, sizes, etc. that do not apply to the scope of this project and are not being furnished.
  - 9. Submittals with superfluous information unrelated to equipment and or options furnished for this project will be rejected.
- B. Product Data Procedures:
  - 1. Submit only information required by individual specification sections.
  - 2. Collect required information into a single submittal.
  - 3. Do not submit (Material) Safety Data Sheets for materials or products.
- C. Shop Drawing Procedures:
  - 1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
  - 2. Do not reproduce Contract Documents to create shop drawings.
  - 3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.

### **3.10 SUBMITTAL REVIEW**

- A. Submittals for Review: Engineer will review each submittal, and approve, or take other appropriate action.
- B. Submittals for Information: Engineer will acknowledge receipt and review. See below for actions to be taken.
- C. Engineer's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
  - 1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.
- D. Engineer's and consultants' actions on items submitted for review:
  - 1. Authorizing purchasing, fabrication, delivery, and installation:
    - a. "Approved", or language with same legal meaning.
    - b. "Approved as Noted, Resubmission not required", or language with same legal meaning.
      - 1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
    - c. "Approved as Noted, Resubmit for Record", or language with same legal meaning.

- 1) Resubmit corrected item, with review notations acknowledged and incorporated.  
Resubmit separately, or as part of project record documents.
  2. Not Authorizing fabrication, delivery, and installation:
    - a. "Revise and Resubmit".
      - 1) Resubmit revised item, with review notations acknowledged and incorporated.
      - 2) Non-responsive resubmittals may be rejected.
    - b. "Rejected".
      - 1) Submit item complying with requirements of Contract Documents.
- E. Engineer's and consultants' actions on items submitted for information:
  1. Items for which no action was taken:
    - a. "Received" - to notify the Contractor that the submittal has been received for record only.
  2. Items for which action was taken:
    - a. "Reviewed" - no further action is required from Contractor.

**END OF SECTION**

## **SECTION 01 6000 PRODUCT REQUIREMENTS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Re-use of existing products.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations.
- E. Maintenance materials, including extra materials, spare parts, tools, and software.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 01 1000 - Summary: Lists of products to be removed from existing building.
- B. Section 01 2500 - Substitution Procedures: Substitutions made during procurement and/or construction phases.
- C. Section 23 0513 - Common Motor Requirements for HVAC Equipment: Motors for HVAC equipment.

#### **1.03 SUBMITTALS**

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
  - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

### **PART 2 PRODUCTS**

#### **2.01 EXISTING PRODUCTS**

- A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.
- B. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.
- C. Specific Products to be Reused: The reuse of certain materials and equipment already existing on the project site is required.
  - 1. See drawings for list of items required to be salvaged for reuse and relocation.
- D. If, during the course of work, any existing materials and equipment found not to be in working order shall immediately be documented by the Contractor. Submit list to the Owner for review. Do not proceed with new work until documentation of existing conditions has been submitted to the Owner. The Owner will furnish repairs and/or replacements to existing out of scope materials or equipment prior to the Contractor proceeding with work or the Owner may authorize a change order to the Contractor's contract to incorporate said additional scope. See also Section 23 0800 Commissioning of HVAC.

#### **2.02 NEW PRODUCTS**

- A. Provide new products unless specifically required or permitted by Contract Documents.
- B. Motors: Refer to Section 23 0513 - Common Motor Requirements for HVAC Equipment, NEMA MG 1 Type. Specific motor type is specified in individual specification sections.

### **2.03 PRODUCT OPTIONS**

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

### **2.04 MAINTENANCE MATERIALS**

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

## **PART 3 EXECUTION**

### **3.01 SUBSTITUTION LIMITATIONS**

- A. See Section 01 2500 - Substitution Procedures.

### **3.02 TRANSPORTATION AND HANDLING**

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- F. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- G. Arrange for the return of packing materials, such as wood pallets, where economically feasible.
- H. All piping materials shall be protected from dust and debris from point of fabrication until final acceptance.

### **3.03 STORAGE AND PROTECTION**

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- G. Comply with manufacturer's warranty conditions, if any.
- H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- I. Prevent contact with material that may cause corrosion, discoloration, or staining.



- J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.
- L. All piping materials shall be protected from dust and debris from point of fabrication until final acceptance.

**END OF SECTION**

## **SECTION 01 7800 CLOSEOUT SUBMITTALS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Warranties and Bonds.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- B. Individual Product Sections: Specific requirements for operation and maintenance data.
- C. Individual Product Sections: Warranties required for specific products or Work.

#### **1.03 SUBMITTALS**

- A. Project Record Documents: Submit documents to Engineer and Owner.
- B. Operation and Maintenance Data:
  - 1. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
  - 2. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Engineer comments. Revise content of all document sets as required prior to final submission.
  - 3. Submit two sets of revised final documents in final form within 10 days after final inspection.
  - 4. Review final documents with Owner during training.
- C. Warranties and Bonds:
  - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
  - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
  - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

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

### **PART 3 EXECUTION**

#### **3.01 GENERAL**

- A. Comply with all aspects in the Owner's published requirements for project closeout, per Section 1.02 above.

#### **3.02 PROJECT RECORD DOCUMENTS**

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
  - 1. Drawings.
  - 2. Addenda.
  - 3. Change Orders and other modifications to the Contract.
  - 4. Record drawings.
  - 5. Progress markups.
  - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Record Drawings: Legibly mark each item to record actual construction including:

1. Field changes of dimension and detail.
2. Details not on original Contract drawings.

### **3.03 OPERATION AND MAINTENANCE DATA**

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

### **3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS**

- A. For Each Item of Equipment and Each System:
  1. Description of unit or system, and component parts.
  2. Identify function, normal operating characteristics, and limiting conditions.
  3. Include performance curves, with engineering data and tests.
  4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- D. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- E. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Provide servicing and lubrication schedule, and list of lubricants required, and calibration schedule.
- G. Include manufacturer's printed operation and maintenance instructions.
- H. Include as-built sequence of operation by controls contractor, including final values for all setpoints, all deadbands, all time delays, all reset schedules, and all other adjustable control parameters.
- I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Provide control diagrams by controls manufacturer as installed.
- K. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- L. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- M. Include test and balancing reports.
- N. Additional Requirements: As specified in individual product specification sections.

### **3.05 WARRANTIES AND BONDS**

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for

items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

**END OF SECTION**

## **SECTION 05 1200 STRUCTURAL STEEL**

### **PART 1 GENERAL**

#### **1.01 SCOPE OF WORK**

- A. Furnish all labor and materials required and install structural steel including bearing plates, columns, beams and miscellaneous shapes and plates required to erect the structural framing as shown on the Drawings and as specified herein.

#### **1.02 RELATED WORK**

- A. Field painting shall be as required to match existing dunnage.

#### **1.03 SUBMITTALS**

- A. Submit to the Engineer, in accordance with Section 01 300, erection drawings, detailed shop drawings, schedules and data for all structural steel. Approval will be for strength only and shall not relieve the Contractor of responsibility for proper fit of members, of connections not detailed on the Drawings, or for supplying all material required by the Contract Documents. Mark numbers painted on the shop assembled pieces of steel shall be the same mark numbers used on the detailed shop and erection drawings.
- B. Product data and installation instructions for Contractor proposed load indicator bolts or direct tension indicators.
- C. Certified mill test reports for the structural steel and the bolting materials.
- D. Certifications that welders are qualified, in accordance with AWS D1.1, on the shop and field welding procedures to be used.

#### **1.04 REFERENCE STANDARDS**

- A. American Institute of Steel Construction (AISC)
  - 1. AISC S302 - Code of Standard Practice for Steel Buildings and Bridges
  - 2. AISC 360 – Specifications for Structural Steel Buildings.
  - 3. AISC 341 – Seismic Provisions for Structural Steel Buildings including Supplement No. 1 dated 2010
- B. American Society for Testing and Materials (ASTM)
  - 1. ASTM A36 Standard Specification for Carbon Structural Steel
  - 2. ASTM A53 Standard Specification for Pipe, Steel, Black and Hot Dipped, Zinc Coated, Welded and Seamless
  - 3. ASTM A123 Standard Specification for Zinc (Hot Dipped Galvanized) Coatings on Iron and Steel Products
  - 4. ASTM A153 Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware
  - 5. ASTM A307 Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
  - 6. ASTM A325 Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
  - 7. ASTM A490 Standard Specification for Heat Treated Steel Structural Bolts, 150 ksi Minimum Tensile Strength
  - 8. ASTM A500 Standard Specification for Cold Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
  - 9. ASTM A501 Standard Specification for Hot Formed Welded and Seamless Carbon Steel Structural Tubing
  - 10. ASTM B695 Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
- C. American Welding Society (AWS)
  - 1. AWS A5.1 Specification for Carbon Steel Electrodes for Shielded Metal Arc Welding.
  - 2. AWS D1.1 Structural Welding Code Steel.

- D. Research Council on Structural Connections of the Engineering Foundation (RCSCEF)
  - 1. Specification for Structural Joints using ASTM A325 or ASTM A490 Bolts.
- E. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

#### **1.05 QUALITY ASSURANCE**

- A. Structural steel shall be in accordance with the AISC Standard for Structural Steel Buildings Allowable Stress Design and Plastic Design and the Code of Standard Practice for Steel Buildings and Bridges, unless otherwise specified herein.
- B. Welding shall be in accordance with AWS D1.1 unless otherwise specified herein or in the AISC Standard.

#### **1.06 SYSTEM DESCRIPTION**

- A. Design connections not detailed on the Drawings to support loads shown on the Drawings. Calculations for these connections shall be sealed by a registered professional engineer in the State of Massachusetts.
- B. Beam connections not detailed on the Drawings shall be bolted framed beam connections as shown the AISC Manual of Steel Construction – 14th edition.
- C. Bolted shear connections shall be slip critical connections unless otherwise shown.

#### **1.07 DELIVERY, STORAGE AND HANDLING**

- A. Deliver materials promptly so as to cause no delay with other parts of the work.
- B. Store materials on skids and not on the ground. Pile and block materials so that they will not become bent or otherwise damaged.
- C. Handle materials with cranes or derricks as far as practicable. Do not dump steel off cars or trucks nor handle in any other manner likely to cause damage.

### **PART 2 PRODUCTS**

#### **2.01 MATERIALS**

- A. Structural W shapes: ASTM A572, Grade 50 or A992.
- B. Structural plates, rods and bars unless otherwise noted: ASTM A36.
- C. Structural tube: ASTM A500, Grade B or ASTM A501.
- D. Structural pipe: ASTM A53, Type S, Grade B.
- E. Welding electrodes: AWS A5.1, E70XX.
- F. High strength steel bolts, nuts and washers: ASTM A325 Type SC or N.
- G. Anchor bolts: ASTM F-1554.

#### **2.02 FABRICATION**

- A. Match mark materials for field assembly. Ream unmatched holes in shop assembly of field connections. Reject and replace with new pieces any piece weakened by reaming to a point where the strength of the joint is impaired.
- B. Welding of parts shall be done only where shown on the Drawings or specified herein and by welders and welding operators qualified for the procedures used.

#### **2.03 SURFACE PREPARATION SHOP COATINGS AND FINISHED COATING**

- A. Prepare and shop prime paint non galvanized members with the fabricators standard shop primer. Do not prime paint faying surfaces of slip critical connections.
- B. Prepare and provide a finished coating on all exposed structural steel framing. Paint color shall match the color of exposed steel in the plant.
- C. Provide a written guarantee from the supplier of the coating system within fourteen (14) days of completion of coating operations stating that the product will perform satisfactorily for a minimum period of five (5) years from the completion date, provided that both the surface

preparation and application of the paint has been carried out in accordance with the Manufacturer's recommendations. The supplier shall state that they have reviewed this Specification and the surface preparation and application procedures and find them in accordance with their recommendations. The supplier shall guarantee the replacement of the coating, including any surface preparation, touch-ups, and final overcoats, at no cost to the Department in the event that the coating system does not perform satisfactorily over the five (5) year guaranteed time period.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. Furnish and install temporary bracing to provide stability during erection and to prevent distortion or damage to the framing due to wind, seismic, or erection forces. Remove temporary bracing when erection is complete.
- B. Use drift pins only to bring members into position and not to enlarge or distort holes.
- C. Make all steel to steel connections by high strength bolting except where field welding is shown or specified. Provide not less than two 3/4 in bolts per connection and use not less than 1/4 in thick clip angles.
- D. Tighten bolted connections designated as bearing type connections to the snug tight condition. Tighten all other bolted connections to full pretension by turn of nut or calibrated wrench tightening.
- E. Field welding shall be done only where shown or specified and only by welders qualified for the procedures used. No welding shall be done when surfaces are wet, exposed to rain or wind, or when welders are exposed to inclement conditions that will hamper good workmanship.
- F. Each bolting crew and welder shall be assigned an identification mark. This mark shall be made at each completed connection with a paint stick.
- G. After erection, prime paint abrasions, field welds and unprimed surfaces, using shop primer except surfaces designated to be unpainted or surfaces in contact with concrete.

#### **3.02 FIELD TESTING**

- A. Allow the Owner's inspection agency free access to the work. Notify the Prime Contractor's inspection agency in writing 4 working days in advance of high strength bolting or field welding operations.
- B. High strength bolting will be inspected visually. All high strength bolts shall have the turned portion marked with reference to the steel being connected after the nut has been made snug and prior to final tightening. Retighten rejected bolts or remove and provide new bolts. In cases of disputed bolt installations, the bolts in question shall be checked using a calibrated wrench certified by the Prime Contractor's inspection agency. The certification shall be at the Contractor's expense.
- C. Field welding will be inspected visually by AWS certified welding inspectors provided by the Prime Contractor. Testing procedures will include magnetic particle testing. Comply with all requests of inspectors to correct deficiencies.
- D. The fact that steel work has been accepted at the shop and mill will not prevent its final rejection at the site, before or after erection, if it is found to be defective.
- E. Remove rejected steel work from the site within 10 working days after notification of rejection.

**END OF SECTION**

## **SECTION 23 0513 COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. General construction and requirements.
- B. Three phase electric motors.

#### **1.02 REFERENCE STANDARDS**

- A. ABMA STD 9 - Load Ratings and Fatigue Life for Ball Bearings; 2015.
- B. IEEE 112 - IEEE Standard Test Procedure for Polyphase Induction Motors and Generators; 2017.
- C. NEMA MG 1 - Motors and Generators; 2018.
- D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

#### **1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.

### **PART 2 PRODUCTS**

#### **2.01 GENERAL CONSTRUCTION AND REQUIREMENTS**

- A. Electrical Service:
  - 1. Motors Larger than 1/2 Horsepower: 208 volts, three phase, 60 Hz.
- B. Construction:
  - 1. Open drip-proof type except where specifically noted otherwise.
  - 2. Design for continuous operation in 104 degrees F (40 degrees C) environment.
  - 3. Design for temperature rise in accordance with NEMA MG 1 limits for insulation class, service factor, and motor enclosure type.
- C. Visible Nameplate: Indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor, efficiency.
- D. Wiring Terminations:
  - 1. Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70, threaded for conduit.
  - 2. For fractional horsepower motors where connection is made directly, provide threaded conduit connection in end frame.
- E. Inverter-duty rated.
- F. Premium efficiency

#### **2.02 THREE PHASE POWER - SQUIRREL CAGE MOTORS**

- A. Motor Frames: NEMA Standard T-Frames of steel, aluminum, or cast iron with end brackets of cast iron or aluminum with steel inserts.
- B. Bearings: Grease lubricated anti-friction ball bearings with housings equipped with plugged provision for relubrication, rated for minimum ABMA STD 9, L-10 life of 20,000 hours. Calculate bearing load with NEMA minimum V-belt pulley with belt center line at end of NEMA standard shaft extension. Stamp bearing sizes on nameplate.
- C. Nominal Efficiency: As indicated at full load and rated voltage when tested in accordance with IEEE 112.
- D. Nominal Power Factor: As indicated at full load and rated voltage when tested in accordance with IEEE 112.



## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install securely on firm foundation. Mount ball bearing motors with shaft in any position.
- C. Check line voltage and phase and ensure agreement with nameplate.

**END OF SECTION**

## **SECTION 23 0519 METERS AND GAUGES FOR HVAC PIPING**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Flow meters.
- B. Pressure gauges and pressure gauge taps.
- C. Thermometers and thermometer wells.

#### **1.02 REFERENCE STANDARDS**

- A. ASME B40.100 - Pressure Gauges and Gauge Attachments; 2013.
- B. ASME MFC-3M - Measurement of Fluid Flow in Pipes Using Orifice, Nozzle and Venturi; 2004 (Reaffirmed 2017).
- C. ASTM E1 - Standard Specification for ASTM Liquid-in-Glass Thermometers; 2014.
- D. ASTM E77 - Standard Test Method for Inspection and Verification of Thermometers; 2014, with Editorial Revision (2017).
- E. AWWA C701 - Cold-Water Meters -- Turbine Type, for Customer Service; 2015.
- F. AWWA C702 - Cold-Water Meters -- Compound Type; 2015.
- G. AWWA M6 - Water Meters -- Selection, Installation, Testing, and Maintenance; 2012, with Addendum (2018).
- H. UL 393 - Indicating Pressure Gauges for Fire-Protection Service; Current Edition, Including All Revisions.

#### **1.03 SUBMITTALS**

- A. Product Data: Provide list that indicates use, operating range, total range and location for manufactured components.
- B. Project Record Documents: Record actual locations of components and instrumentation.

### **PART 2 PRODUCTS**

#### **2.01 PRESSURE GAUGES**

- A. Pressure Gauges: ASME B40.100, UL 393 drawn steel case, phosphor bronze bourdon tube, rotary brass movement, brass socket, with front recalibration adjustment, black scale on white background.
  - 1. Case: Steel with brass bourdon tube.
  - 2. Size: 4-1/2 inch (115 mm) diameter.
  - 3. Mid-Scale Accuracy: One percent.
  - 4. Scale: Psi and KPa.
  - 5. Maximum Expected Pressure: 100 psig
  - 6. Typical Expected Pressure: 30 psig

#### **2.02 PRESSURE GAUGE TAPPINGS**

- A. Gauge Cock: Tee or lever handle, brass for maximum 150 psi (1034 kPa).

#### **2.03 STEM TYPE THERMOMETERS**

- A. Thermometers - Fixed Mounting: Red- or blue-appearing non-toxic liquid in glass; ASTM E1; lens front tube, cast aluminum case with enamel finish.
  - 1. Size: 9 inch (225 mm) scale.
  - 2. Window: Clear Lexan.
  - 3. Accuracy: 2 percent, per ASTM E77.
  - 4. Calibration:  $\pm 1$  Degrees F.
  - 5. Typical Expected Temperature: 22 Degrees F for chilled glycol, 140 Degrees F for hot glycol, 140 Degrees F for hot water.

6. Maximum Expected Temperature: 80 Degrees F for chilled glycol, 140 Degrees F for hot glycol, 180 Degrees F for hot water.

## **2.05 TEST PLUGS**

- A. Test Plug: 1/4 inch (6 mm) or 1/2 inch (13 mm) brass fitting and cap for receiving 1/8 inch (3 mm) outside diameter pressure or temperature probe with neoprene core for temperatures up to 200 degrees F (93 degrees C).

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Refer to Mechanical Details and P&ID drawings.
- C. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inch (60 mm) for installation of thermometer sockets. Ensure sockets allow clearance from insulation.
- D. Provide instruments with scale ranges selected according to service with largest appropriate scale.
- E. Install gauges and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.
- F. Adjust gauges and thermometers to final angle, clean windows and lenses, and calibrate to zero.

**END OF SECTION**

## **SECTION 23 0523 GENERAL-DUTY VALVES FOR HVAC PIPING**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Applications.
- B. General requirements.
- C. Globe valves.
- D. Ball valves.
- E. Butterfly valves.
- F. Check valves.
- G. Chainwheels.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 23 0553 - Identification for HVAC Piping and Equipment.
- B. Section 23 0719 - HVAC Piping Insulation.
- C. Section 23 2113 - Hydronic Piping.

#### **1.03 REFERENCE STANDARDS**

- A. ASME B1.20.1 - Pipe Threads, General Purpose (Inch); 2013 (Reaffirmed 2018).
- B. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250; 2015.
- C. ASME B16.5 - Pipe Flanges and Flanged Fittings NPS 1/2 Through NPS 24 Metric/Inch Standard; 2017.
- D. ASME B16.10 - Face-to-Face and End-to-End Dimensions of Valves; 2017.
- E. ASME B16.34 - Valves - Flanged, Threaded and Welding End; 2017.
- F. ASME B31.1 - Power Piping; 2018.
- G. ASME B31.9 - Building Services Piping; 2017.
- H. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings; 2004 (Reapproved 2019).
- I. ASTM A536 - Standard Specification for Ductile Iron Castings; 1984 (Reapproved 2014).
- J. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings; 2017.
- K. MSS SP-67 - Butterfly Valves; 2017.
- L. MSS SP-70 - Cast Iron Gate Valves, Flanged and Threaded Ends; 2011.
- M. MSS SP-71 - Cast Iron Swing Check Valves, Flanged and Threaded Ends; 2018.
- N. MSS SP-72 - Ball Valves with Flanged or Butt-Welding Ends for General Service; 2010a.
- O. MSS SP-80 - Bronze Gate, Globe, Angle and Check Valves; 2013.
- P. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010.
- Q. MSS SP-125 - Gray Iron and Ductile Iron In-Line, Spring-Loaded, Center-Guided Check Valves; 2018.

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

#### **1.05 QUALITY ASSURANCE**

- A. Manufacturer:
  - 1. Obtain valves for each valve type from single manufacturer.

## **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Prepare valves for shipping as follows:
  - 1. Minimize exposure of operable surfaces by setting plug and ball valves to open position.
  - 2. Protect valve parts exposed to piped medium against rust and corrosion.
  - 3. Protect valve piping connections such as grooves, weld ends, threads, and flange faces.
  - 4. Adjust globe, gate, and angle valves to the closed position to avoid clattering.
  - 5. Secure check valves in either the closed position or open position.
- B. Use the following precautions during storage:
  - 1. Maintain valve end protection and protect flanges and specialties from dirt.
    - a. Provide temporary inlet and outlet caps.
    - b. Maintain caps in place until installation.
- C. Exercise the following precautions for handling:
  - 1. Avoid the use of operating handles or stems as rigging or lifting points.

## **PART 2 PRODUCTS**

### **2.01 APPLICATIONS**

- A. See drawings for specific valve locations.
- B. Provide the following valves for the applications if not indicated on drawings:
  - 1. Throttling (Hydronic): Butterfly and Ball.
  - 2. Isolation (Shutoff): Butterfly and Ball.
  - 3. Swing Check (Pump Outlet):
    - a. 2 NPS (50 DN) and Smaller: Bronze with bronze disc.
    - b. 2-1/2 NPS (65 DN) and Larger: Iron with lever and weight, lever and spring, center-guided metal, or center-guided with resilient seat.
- C. Substitutions of valves with higher CWP classes or SWP ratings for same valve types are permitted when specified CWP ratings or SWP classes are not available.
- D. Chilled Water Valves:
  - 1. 2-1/2 NPS (65 DN) and Larger, Iron Valves:
    - a. 2-1/2 NPS (65 DN) to 4 NPS (100 DN): Threaded ends.
    - b. Ball: 2-1/2 NPS (65 DN) to 10 NPS (250 DN), Class 150.
    - c. Single-Flange Butterfly: 14 NPS (350 DN) to 24 NPS (600 DN), aluminum-bronze disc, EPDM seat, 150 CWP.
    - d. Swing Check: Metal seats, Class 125.
- E. Heating Hot Water Valves:
  - 1. 2 NPS (50 DN) and Smaller, Brass and Bronze Valves:
    - a. Threaded ends.
    - b. Ball: Full port, one piece, brass trim.
    - c. Swing Check: Bronze disc, Class 125.
  - 2. 2-1/2 NPS (65 DN) and Larger, Iron Valves:
    - a. Single-Flange Butterfly: 14 NPS (350 DN) to 24 NPS (600 DN), aluminum-bronze disc, EPDM seat, 150 CWP.
    - b. Swing Check: Metal seats, Class 125.

### **2.02 GENERAL REQUIREMENTS**

- A. Valve Pressure and Temperature Ratings: No less than rating indicated; as required for system pressures and temperatures.
- B. Valve Sizes: Match upstream piping unless otherwise indicated.
- C. Valve Actuator Types:
  - 1. Gear Actuator: Quarter-turn valves 8 NPS (200 DN) and larger.
  - 2. Handwheel: Valves other than quarter-turn types.
  - 3. Hand Lever: Quarter-turn valves 6 NPS (150 DN) and smaller.

4. Chainwheel: Device for attachment to valve handwheel, stem, or other actuator, of size and with chain for mounting height, as indicated in the "Valve Installation" Article.
- D. Valves in Insulated Piping: Provide 2 NPS (50 DN) stem extensions and the following features:
  1. Ball Valves: Extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation.
  2. Butterfly Valves: Extended neck.
- E. Valve-End Connections:
  1. Threaded End Valves: ASME B1.20.1.
  2. Flanges on Iron Valves: ASME B16.1 for flanges on iron valves.
  3. Pipe Flanges and Flanged Fittings 1/2 NPS (15 DN) through 24 NPS (600 DN): ASME B16.5.
- F. General ASME Compliance:
  1. Ferrous Valve Dimensions and Design Criteria: ASME B16.10 and ASME B16.34.
  2. Power Piping Valves: ASME B31.1.
  3. Building Services Piping Valves: ASME B31.9.
- G. Bronze Valves:
  1. Fabricate from dezincification resistant material.
  2. Copper alloys containing more than 15 percent zinc are not permitted.
- H. Source Limitations: Obtain each valve type from a single manufacturer.

### **2.03 BRASS BALL VALVES**

- A. Two Piece, Full Port and Standard Port with Stainless Steel Trim:
  1. Comply with MSS SP-110.
  2. SWP Rating: 150 psig (1035 kPa).
  3. CWP Rating: 600 psig (4140 kPa).
  4. Body: Forged brass.
  5. Ends: Threaded.
  6. Seats: EPDM.
  7. Ball: Chrome-plated brass.

### **2.04 BRONZE BALL VALVES**

- A. Two Piece, Standard Port and Full Port with Bronze or Brass Trim:
  1. Comply with MSS SP-110.
  2. SWP Rating: 150 psig (1035 kPa).
  3. CWP Rating: 600 psig (4140 kPa).
  4. Body: Bronze.
  5. Ends: Threaded.
  6. Seats: EPDM .

### **2.05 IRON BALL VALVES**

- A. Split Body, Full Port:
  1. Comply with MSS SP-72.
  2. CWP Rating: 200 psig (1380 kPa).
  3. Body: ASTM A126, gray iron.
  4. Ends: Flanged.
  5. Seats: EPDM.
  6. Stem: Stainless steel.
  7. Ball: Stainless steel.

### **2.06 IRON, SINGLE FLANGE BUTTERFLY VALVES**

- A. Lug type: Bi-directional dead end service without downstream flange.
  1. Comply with MSS SP-67, Type I.
  2. CWP Rating: 150 psig (1035 kPa), and 200 psig (1680 kPa).

3. Body Material: ASTM A126 cast iron or ASTM A536 ductile iron.
4. Stem: One or two-piece stainless steel.
5. Seat: EPDM.
6. Disc: Coated ductile iron.

## **2.07 BRONZE SWING CHECK VALVES**

- A. Class 125: CWP Rating: 200 psig (1380 kPa).
  1. Comply with MSS SP-80, Type 3.
  2. Body Design: Horizontal flow.
  3. Body Material: Bronze, ASTM B62.
  4. Ends: Threaded.
  5. Disc: Bronze.

## **2.08 IRON, FLANGED END SWING CHECK VALVES**

- A. Class 125: CWP Rating: 150 psig (1035 kPa) with Metal Seats.
  1. Comply with MSS SP-71, Type I.
  2. Design: Clear or full waterway with flanged ends.
  3. Body: Gray iron with bolted bonnet in accordance with ASTM A126.
  4. Trim: Bronze.
  5. Disc Holder: Bronze.
  6. Gasket: Asbestos free.

## **2.09 IRON SWING CHECK VALVES WITH CLOSURE CONTROL**

- A. Class 125:
  1. Comply with MSS SP-71, Type I.
  2. Body Design: Clear or full waterway.
  3. Body Material: ASTM A126, gray iron with bolted bonnet.
  4. Ends: Flanged.
  5. Trim: Bronze.
  6. Gasket: Asbestos free.
  7. Closer Control: Factory installed, exterior lever, and spring or weight.

## **2.10 IRON, CENTER-GUIDED CHECK VALVES**

- A. Class 125, Compact-Wafer:
  1. Comply with MSS SP-125.
  2. Body Material: ASTM A126, gray iron.

## **2.11 CHAINWHEELS**

- A. Description: Valve actuation assembly with sprocket rim, brackets, and chain.
  1. Brackets: Type, number, size, and fasteners required to mount actuator on valve.
  2. Attachment: For connection to ball and butterfly valve stems.
  3. Sprocket Rim with Chain Guides: Ductile iron include zinc coating.
  4. Chain: Hot-dip galvanized steel. Sized to fit sprocket rim.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Discard all packing materials and verify that valve interior, including threads and flanges, are completely clean without signs of damage or degradation that could result in leakage.
- B. Verify valve parts to be fully operational in all positions from closed to fully open.
- C. Confirm gasket material to be suitable for the service, to be of correct size, and without defects that could compromise effectiveness.
- D. Should valve is determined to be defective, replace with new valve.

### **3.02 INSTALLATION**

- A. Provide unions or flanges with valves to facilitate equipment removal and maintenance while maintaining system operation and full accessibility for servicing.
- B. Provide separate valve support as required and locate valve with stem at or above center of piping, maintaining unimpeded stem movement.
- C. Install check valves where necessary to maintain direction of flow as follows:
  - 1. Swing Check: Install horizontal maintaining hinge pin level.
- D. Provide chainwheels on operators for valves 4 in. and larger where located 96 in. or more above finished floor, terminating 60 in. above finished floor.

**END OF SECTION**



## **SECTION 23 0529 HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Support and attachment components for equipment, piping, and other HVAC/hydronic work.

#### **1.02 REFERENCE STANDARDS**

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- C. ASTM A181/A181M - Standard Specification for Carbon Steel Forgings, for General - Purpose Piping; 2014.
- D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- E. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings; 1999, with Editorial Revision (2018).
- F. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2019.
- G. MFMA-4 - Metal Framing Standards Publication; 2004.
- H. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018.

#### **1.03 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
  - 2. Coordinate the work with other trades to provide additional framing and materials required for installation.
  - 3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
  - 4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
  - 5. Notify Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Sequencing:
  - 1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 03 3000.

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

#### **1.05 QUALITY ASSURANCE**

- A. Comply with Massachusetts Building Code.
- B. Design, select, apply, and install in accordance with ANSI/MSS SP-58 2018: Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

### **PART 2 PRODUCTS**

#### **2.01 SUPPORT AND ATTACHMENT COMPONENTS**

- A. General Requirements:
  - 1. Comply with MSS SP-58.

2. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of plumbing work.
  3. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
  4. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported. Include consideration for vibration, equipment operation, and shock loads where applicable.
  5. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
    - a. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
    - b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel, stainless steel, or approved equivalent unless otherwise indicated.
    - c. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
    - d. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Metal Channel (Strut) Framing Systems: Factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required for field-assembly of supports.
1. Comply with MFMA-4.
- C. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
1. Minimum Size, Unless Otherwise Indicated or Required:
    - a. Equipment Supports: 1/2 inch (13 mm) diameter.
    - b. Piping: 3/8 inch (10 mm) diameter.
- D. Pipe Supports:
1. Liquid Temperatures Up To 122 degrees F (50 degrees C):
    - a. Overhead Support: MSS SP-58 Types 1, 3 through 12.
    - b. Support From Below: MSS SP-58 Types 35 through 38.
  2. Operating Temperatures from 122 to 446 degrees F (50 to 230 degrees C):
    - a. Overhead Support: MSS SP-58 Type 1 or 3 through 12, with appropriate saddle of MSS SP-58 Type 40 for insulated pipe.
    - b. Roller Support: MSS SP-58 Types 41 or 43 through 46, with appropriate saddle of MSS SP-58 Type 39 for insulated pipe.
    - c. Sliding Support: MSS SP-58 Types 35 through 38.
- E. Beam Clamps: MSS SP-58 Types 19 through 23, 25 or 27 through 30 based on required load.
1. Material: ASTM A36/A36M carbon steel or ASTM A181/A181M forged steel.
  2. Provide clamps with hardened steel cup-point set screws and lock-nuts for anchoring in place.
- F. Pipe Hangers: For a given pipe run, use hangers of the same type and material.
1. Material: Malleable iron, ASTM A47/A47M; or carbon steel, ASTM A36/A36M.
  2. Provide coated or plated hangers to isolate steel hangers from dissimilar metal tube or pipe.
- G. Anchors and Fasteners:
1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
  2. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
  3. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
  4. Hollow Masonry: Use toggle bolts.
  5. Steel: Use beam clamps, machine bolts, or welded threaded studs.
  6. Preset Concrete Inserts: Continuous metal channel (strut) and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
    - a. Comply with MFMA-4.

- b. Channel Material: Use galvanized steel.
- c. Manufacturer: Same as manufacturer of metal channel (strut) framing system.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

#### **3.02 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.
- B. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.
- C. Provide independent support from building structure. Do not provide support from piping, ductwork, conduit, or other systems.
- D. Unless specifically indicated or approved by Engineer, do not provide support from suspended ceiling support system or ceiling grid.
- E. Unless specifically indicated or approved by Engineer, do not provide support from roof deck.
- F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- G. Equipment Support and Attachment:
  - 1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
  - 2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
  - 3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
  - 4. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- H. Preset Concrete Inserts: Use manufacturer-provided closure strips to inhibit concrete seepage during concrete pour.
- I. Secure fasteners according to manufacturer's recommended torque settings.
- J. Remove temporary supports.

#### **3.03 FIELD QUALITY CONTROL**

- A. Inspect support and attachment components for damage and defects.
- B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- C. Correct deficiencies and replace damaged or defective support and attachment components.

### **END OF SECTION**

## **SECTION 23 0548 VIBRATION AND SEISMIC CONTROLS FOR HVAC**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Vibration isolation requirements.
- B. Vibration-isolated equipment support bases.
- C. Vibration isolators.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete.

#### **1.03 REFERENCE STANDARDS**

- A. ASHRAE (HVACA) - ASHRAE Handbook - HVAC Applications; Most Recent Edition Cited by Referring Code or Reference Standard.

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

#### **1.05 QUALITY ASSURANCE**

- A. Comply with applicable building code.

### **PART 2 PRODUCTS**

#### **2.01 VIBRATION ISOLATION REQUIREMENTS**

- A. Design and provide vibration isolation systems to reduce vibration transmission to supporting structure from vibration-producing HVAC equipment and/or HVAC connections to vibration-isolated equipment.
- B. Comply with applicable general recommendations of ASHRAE (HVACA), where not in conflict with other specified requirements:
- C. General Requirements:
  - 1. Select vibration isolators to provide required static deflection.
  - 2. Select vibration isolators for uniform deflection based on distributed operating weight of actual installed equipment.
  - 3. Select vibration isolators for outdoor equipment to comply with wind design requirements.
- D. Equipment Isolation:
  - 1. Equipment Type: Air-to-Water Heat Pump.
    - a. Location: Outdoor.
    - b. Mounting: Vibration-isolated structural steel base.
    - c. Isolator Type (Nonseismic Application): Restrained spring isolators.
    - d. Isolator Static Deflection: 1 inches.

#### **2.02 VIBRATION-ISOLATED EQUIPMENT SUPPORT BASES**

- A. Vibration-Isolated Structural Steel Bases:
  - 1. Description: Engineered structural steel frames with integral mounting provisions for vibration isolators, sized and configured for mounting of equipment.
- B. Vibration-Isolated Concrete Inertia Bases:
  - 1. Description: Concrete-filled engineered steel forms with integral mounting provisions for vibration isolators, sized and configured for mounting of equipment.
  - 2. Minimum Base Depth: 6 inches (152 mm).
  - 3. Minimum Base Mass (Including Concrete): 1.5 times weight of supported equipment.
  - 4. Concrete Reinforcement: Welded or tied reinforcing bars running both ways in a single layer.
  - 5. Concrete: Filled on site with minimum 3000 psi (20 mPa) concrete in accordance with Section 03 3000.

## **2.03 VIBRATION ISOLATORS**

- A. General Requirements:
  - 1. Resilient Materials for Vibration Isolators: Oil, ozone, and oxidant resistant.
  - 2. Spring Elements for Spring Isolators:
    - a. Color code or otherwise identify springs to indicate load capacity.
    - b. Lateral Stability: Minimum lateral stiffness to vertical stiffness ratio of 0.8.
    - c. Designed to operate in the linear portion of their load versus deflection curve over deflection range of not less than 50 percent above specified deflection.
    - d. Designed to provide additional travel to solid of not less than 50 percent of rated deflection at rated load.
    - e. Selected to provide designed deflection of not less than 75 percent of specified deflection.
    - f. Selected to function without undue stress or overloading.
- B. Vibration Isolators for Nonseismic Applications:
  - 1. Open (Unhoused) Spring Isolators:
    - a. Description: Isolator assembly consisting of single or multiple free-standing, laterally stable steel spring(s) without a housing.
    - b. Bottom Load Plate: Nonskid, molded, elastomeric isolator material or steel with nonskid elastomeric isolator pad with provisions for bolting to supporting structure as required.
    - c. Furnished with integral leveling device for positioning and securing supported equipment.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that mounting surfaces are ready to receive vibration isolation and/or seismic control components and associated attachments.
- C. Verify that conditions are satisfactory for installation prior to starting work.

### **3.02 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.
- B. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.
- C. Secure fasteners according to manufacturer's recommended torque settings.
- D. Install flexible piping connections to provide sufficient slack for vibration isolation and/or seismic relative displacements as indicated or as required.
- E. Vibration Isolation Systems:
  - 1. Vibration-Isolated Equipment Support Bases:
    - a. Provide specified minimum clearance beneath base.
  - 2. Spring Isolators:
    - a. Position equipment at operating height; provide temporary blocking as required.
    - b. Lift equipment free of isolators prior to lateral repositioning to avoid damage to isolators.
    - c. Level equipment by adjusting isolators gradually in sequence to raise equipment uniformly such that excessive weight or stress is not placed on any single isolator.
  - 3. Clean debris from beneath vibration-isolated equipment that could cause short-circuiting of isolation.
  - 4. Use elastomeric grommets for attachments where required to prevent short-circuiting of isolation.
  - 5. Adjust isolators to be free of isolation short circuits during normal operation.

6. Do not overtighten fasteners such that resilient material isolator pads are compressed beyond manufacturer's maximum recommended deflection.

**END OF SECTION**

## **SECTION 23 0553 IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Nameplates.
- B. Tags.
- C. Pipe markers.

#### **1.02 REFERENCE STANDARDS**

- A. ASME A13.1 - Scheme for the Identification of Piping Systems; 2015.
- B. ASTM D709 - Standard Specification for Laminated Thermosetting Materials; 2017.

#### **1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.
- C. Chart and Schedule: Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.
- D. Product Data: Provide manufacturers catalog literature for each product required.

### **PART 2 PRODUCTS**

#### **2.01 IDENTIFICATION APPLICATIONS**

- A. Automatic Controls: Tags. Key to control schematic.
- B. Control Panels: Nameplates.
- C. Heat Transfer Equipment: Nameplates.
- D. Instrumentation: Tags.
- E. Water Piping: Tags.
- F. Pumps: Nameplates.
- G. Relays: Tags.
- H. Tanks: Nameplates.
- I. Valves: Tags.

#### **2.02 NAMEPLATES**

- A. Plastic: Comply with ASTM D709.

#### **2.03 TAGS**

- A. Plastic Tags: Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2 inch (40 mm) diameter.
- B. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch (40 mm) diameter with smooth edges.
- C. Valve Tag Chart: Typewritten letter size list in anodized aluminum frame.

#### **2.04 PIPE MARKERS**

- A. Plastic Pipe Markers: Factory fabricated, flexible, semi-rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.
- B. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

### **PART 3 EXECUTION**

#### **3.01 PREPARATION**

- A. Degrease and clean surfaces to receive adhesive for identification materials.

### **3.02 INSTALLATION**

- A. Install nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.
- B. Install tags with corrosion resistant chain.
- C. Install plastic pipe markers in accordance with manufacturer's instructions.
- D. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.
- E. Install plastic nameplate on plate and frame heat exchanger on insulation jacket so that the nameplate is visible without having to remove insulation. Replicate information from the existing nameplate.

**END OF SECTION**



## **SECTION 23 0593 TESTING, ADJUSTING, AND BALANCING FOR HVAC**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Testing, adjustment, and balancing of new hydronic equipment.
- B. Testing, adjustment, and balancing of air systems. Base scope includes AHU-1 and AHU-2, only.
- C. Commissioning activities.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 01 4000 - Quality Requirements: Employment of testing agency and payment for services.

#### **1.03 REFERENCE STANDARDS**

- A. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems; 2008 (Reaffirmed 2017).
- B. NEBB (TAB) - Procedural Standards for Testing Adjusting and Balancing of Environmental Systems; 2015, with Errata (2017).
- C. SMACNA (TAB) - HVAC Systems Testing, Adjusting and Balancing; 2002.

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. TAB Plan: Submit a written plan indicating the testing, adjusting, and balancing standard to be followed and the specific approach for each system and component.
  - 1. Submit to Engineer.
  - 2. Submit to the Commissioning Authority.
  - 3. Submit two weeks prior to starting the testing, adjusting, and balancing work.
  - 4. Include at least the following in the plan:
    - a. List of all air flow, water flow, sound level, system capacity and efficiency measurements to be performed and a description of specific test procedures, parameters, formulas to be used.
    - b. Copy of field checkout sheets and logs to be used, listing each piece of equipment to be tested, adjusted and balanced with the data cells to be gathered for each.
    - c. Identification and types of measurement instruments to be used and their most recent calibration date.
    - d. Meet with controls contractor to coordinate programming, setpoints, and calibration.
    - e. Discussion of what notations and markings will be made on the duct and piping drawings during the process.
    - f. Final test report forms to be used.
    - g. Expected problems and solutions, etc.
    - h. Details of how TOTAL flow will be determined; for example:
      - 1) Water: Pump curves, circuit setter, flow station, ultrasonic, etc.
      - 2) Note all flows shall be measured. Calculated flows will not be accepted. For example, for air: Sum of terminal flows via control system calibrated readings or via hood readings of all terminals, supply (SA) and return air (RA) pitot traverse, SA or RA flow stations.
    - i. Methods for making coil or other system plant capacity measurements, if specified.
    - j. False loading of systems to complete TAB work, if specified.
    - k. Procedures for field technician logs of discrepancies, deficient or uncompleted work by others, contract interpretation requests and lists of completed tests (scope and frequency).
    - l. Measurement methodology of the outside air ventilation criteria under various conditions ranging from minimum flow (unoccupied) to full flow (fully occupied).

- m. Method of checking building static and exhaust fan and/or relief damper capacity.
  - n. Procedures for formal deficiency reports, including scope, frequency and distribution.
- C. Control System Coordination Reports: Communicate in writing to the controls installer all setpoint and parameter changes made or problems and discrepancies identified during TAB that affect, or could affect, the control system setup and operation.
- D. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
  - 1. Submit under provisions of Section 01 4000.
  - 2. Submit to the Commissioning Authority and Engineer within two weeks after completion of testing, adjusting, and balancing.
  - 3. Revise TAB plan to reflect actual procedures and submit as part of final report.
  - 4. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Engineer and for inclusion in operating and maintenance manuals.
  - 5. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
  - 6. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
  - 7. Units of Measure: Report data in I-P (inch-pound) units only.
- E. Project Record Documents: Record actual locations of flow measuring stations and balancing valves and rough setting.

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

## **PART 3 EXECUTION**

### **3.01 GENERAL REQUIREMENTS**

- A. Perform total system balance in accordance with one of the following:
  - 1. ASHRAE Std 111, Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning, and Refrigeration Systems.
  - 2. SMACNA (TAB).
- B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.
- C. TAB Agency Qualifications:
  - 1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.
  - 2. Certified by one of the following:
    - a. NEBB, National Environmental Balancing Bureau: [www.nebb.org/#sle](http://www.nebb.org/#sle).
    - b. TABB, The Testing, Adjusting, and Balancing Bureau of National Energy Management Institute: [www.tabbcertified.org/#sle](http://www.tabbcertified.org/#sle).
- D. TAB Supervisor and Technician Qualifications: Certified by same organization as TAB agency.

### **3.02 EXAMINATION**

- 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. Temperature control systems are installed complete and operable.
  - 3. Proper thermal overload protection is in place for electrical equipment.
  - 4. Hydronic systems are flushed, filled, and vented.
  - 5. Pumps are rotating correctly.
  - 6. Proper strainer baskets are clean and in place.
  - 7. Service and balance valves are open.
  - 8. Final filters are clean and in place. If required, install temporary media in addition to final filters.
  - 9. Duct systems are clean of debris.
  - 10. Fans are rotating correctly.

11. Fire and volume dampers are in place and open.
  12. Access doors are closed and duct end caps are in place.
  13. Air outlets are installed and connected.
  14. Duct system leakage is minimized.
- B. Submit field reports. Report defects and deficiencies that will or could prevent proper system balance.

### **3.03 ADJUSTMENT TOLERANCES**

- A. Hydronic Systems: Adjust to within plus or minus 10 percent of design.
- B. Air Systems: Adjust to within plus or minus 10 percent of design.

### **3.04 RECORDING AND ADJUSTING**

- A. Field Logs: Maintain written logs including:
1. Running log of events and issues.
  2. Discrepancies, deficient or uncompleted work by others.
  3. Contract interpretation requests.
  4. Lists of completed tests.
- B. Ensure recorded data represents actual measured or observed conditions.
- C. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.
- D. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
- E. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

### **3.05 WATER SYSTEM PROCEDURE**

- A. Adjust water systems to provide required or design quantities for pumps, heat pump, and heat exchanger.
- B. 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.
- C. Effect adjustment of 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.
- D. Calibrate existing wet-to-wet differential pressure sensor.
- E. Calibrate new water flow meters.

### **3.06 AIR SYSTEM PROCEDURE**

- A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities.
- B. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.
- C. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions. Record outside air damper position corresponding to minimum outside air CFM and communicate to building automation system contractor for programming.
- D. Where modulating dampers are provided, take measurements and balance at extreme conditions. Balance variable volume systems at maximum air flow rate, full cooling, and at minimum air flow rate, full heating.
- E. Take and record pressure readings across all AHU system components.
- F. Replace all adjustable sheaves/pulleys with fixed ones selected for final balance requirements.
- G. Repeat Air System Procedure at various outside air volume requirements. Coordinate with BAS contractor to manually override control signals, as required, to conduct tests with 50% and 10%

of the design outside air is required. For each test measure mixed air plenum pressurization and note it on the TAB report. Note whether damper position adjustments are required to achieve proper pressurization and coordinate with Owner, Engineer, and Commissioning Agent, as required to implement required changes.

- H. Coordinate with the BAS contractor to command each AHU into full cooling mode with 0% outside air. Verify that the units provide design supply air volume.

### **3.07 COMMISSIONING**

- A. Perform prerequisites prior to starting commissioning activities.
- B. Fill out Prefunctional Checklists for:
  - 1. Water side systems.
  - 2. Air side systems.
- C. Furnish to the Commissioning Authority, upon request, any data gathered but not shown in the final TAB report.
- D. In the presence of the Commissioning Authority, verify that:
  - 1. Final settings of all valves, splitters, dampers and other adjustment devices have been permanently marked.
  - 2. The water system is being controlled to the lowest possible pressure while still meeting design loads, less diversity; this shall include a review of TAB methods, established control setpoints, and physical verification of at least one leg from the pump to the coil having all balancing valves wide open and that during full cooling the cooling coil valve of that leg is 90 percent or more open.
  - 3. The air systems are being controlled to the lowest possible pressure while still meeting design loads, less diversity; this shall include a review of TAB methods and established control setpoints.

### **3.07 SCOPE**

- A. Test, adjust, and balance the following:
  - 1. HVAC Pumps.
  - 2. Air-to-Water Heat Pumps.
  - 3. Plate and Frame Heat Exchangers
  - 4. Ice Thermal Energy Storage Tanks.
  - 5. Air Handling Units (AHU-1 and AHU-2, only).

### **3.08 MINIMUM DATA TO BE REPORTED**

- A. Electric Motors:
  - 1. Manufacturer.
  - 2. Model/Frame.
  - 3. HP/BHP.
  - 4. Phase, voltage, amperage; nameplate, actual, no load.
  - 5. RPM.
- B. Pumps:
  - 1. Identification/number.
  - 2. Manufacturer.
  - 3. Size/model.
  - 4. Impeller.
  - 5. Service.
  - 6. Design flow rate, pressure drop, BHP.
  - 7. Actual flow rate, pressure drop, BHP.
  - 8. Discharge pressure.
  - 9. Suction pressure.
  - 10. Total operating head pressure.
- C. Air-to-Water Heat Pumps:
  - 1. Identification/number.

2. Manufacturer.
  3. Capacity in heating, space cooling, and ice-making modes.
  4. Model number.
  5. Serial number.
  6. Evaporator entering water temperature in heating, space cooling, and ice-making modes, design and actual.
  7. Evaporator leaving water temperature in heating, space cooling, and ice-making modes, design and actual.
  8. Evaporator pressure drop in heating, space cooling, and ice-making modes, design and actual.
  9. Evaporator water flow rate in heating, space cooling, and ice-making modes, design and actual.
- D. Heat Exchangers:
1. Identification/number.
  2. Location.
  3. Service.
  4. Manufacturer.
  5. Model number.
  6. Serial number.
  7. Primary water entering temperature, design and actual.
  8. Primary water leaving temperature, design and actual.
  9. Primary water flow, design and actual.
  10. Primary water pressure drop, design and actual.
  11. Secondary water leaving temperature, design and actual.
  12. Secondary water flow, design and actual.
  13. Secondary water pressure drop, design and actual.
- E. Ice Thermal Energy Storage Tanks:
1. Identification/number.
  2. Location.
  3. Size.
  4. Manufacturer.
  5. Model number.
  6. Serial number.
  7. Design Flow rate.
  8. Design pressure drop.
  9. Actual/final pressure drop.
  10. Actual/final flow rate.
- F. Air Moving Equipment:
1. Manufacturer.
  2. Model number.
  3. Serial number.
  4. Arrangement/Class/Discharge.
  5. Air flow, specified and actual.
  6. Return air flow, specified and actual.
  7. Outside air flow, specified and actual.
  8. Total static pressure (total external), specified and actual, min and max flow rate, pressure drop, BHP, and VDF settings.
  9. Total static pressure, BHP, flow rate, and VFD setting at minimum flow.
  10. Inlet pressure.
  11. Discharge pressure.
  12. Sheave Make/Size/Bore.
  13. Number of Belts/Make/Size.
  14. Design Fan RPM.

15. Actual Fan RPM.

**END OF SECTION**

## **SECTION 23 0719 HVAC PIPING INSULATION**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Piping insulation.
- B. Flexible removable and reusable blanket insulation.
- C. Jackets and accessories.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 23 2113 - Hydronic Piping: Placement of hangers and hanger inserts.

#### **1.03 REFERENCE STANDARDS**

- A. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- B. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric); 2014.
- C. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2017.
- D. ASTM C585 - Standard Practice for Inner and Outer Diameters of Thermal Insulation for Nominal Sizes of Pipe and Tubing; 2010 (Reapproved 2016).
- E. ASTM C591 - Standard Specification for Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation; 2020.
- F. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics; 2019.
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- H. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- I. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.
- C. Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.

#### **1.06 FIELD CONDITIONS**

- A. Maintain ambient conditions required by manufacturers of each product.
- B. Maintain temperature before, during, and after installation for minimum of 24 hours.

### **PART 2 PRODUCTS**

#### **2.01 REGULATORY REQUIREMENTS**

- A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

#### **2.02 POLYISOCYANURATE CELLULAR PLASTIC**

- A. Manufacturers:
  - 1. ITW Insulation Systems; Trymer 2000 XP Polyisocyanurate Insulation:  
[www.itwinsulation.com/trymer/..](http://www.itwinsulation.com/trymer/)

2. Substitutions: See Section 01 6000 - Product Requirements.
- B. Insulation Material: ASTM C591, rigid molded modified polyisocyanurate cellular plastic.
  1. Dimension: Comply with requirements of ASTM C585.
  2. K (Ksi) Value: 0.18 at 75 degrees F (0.026 at 24 degrees C), when tested in accordance with ASTM C518.
  3. Minimum Service Temperature: Minus 70 degrees F (Minus 57 degrees C).
  4. Maximum Service Temperature: 300 degrees F (150 degrees C).
  5. Water Absorption: 0.5 percent by volume, maximum, when tested in accordance with ASTM D2842.
  6. Thickness: Refer to drawings.
  7. Moisture Vapor Transmission: 4.0 perm inch (5.8 ng/Pa s m).
  8. Connection: Waterproof vapor barrier adhesive.

## 2.03 JACKETS

- A. Vapor Barrier (On all new insulation)
  1. Manufacturers:
    - a. ITW Insulation: SARANEX 540 CX Vapor Retarder Film; [www.itwinsulation.com](http://www.itwinsulation.com)
    - b. Substitutions: See Section 01 6000 - Product Requirements.
  2. Moisture vapor transmission when tested in accordance with ASTM E96 of 0.02 perm-inches.
- B. PVC Plastic (On all interior piping).
  1. Jacket: One piece molded type fitting covers and sheet material, off-white color.
    - a. Minimum Service Temperature: 0 degrees F (minus 18 degrees C).
    - b. Maximum Service Temperature: 150 degrees F (66 degrees C).
    - c. Moisture Vapor Permeability: 0.002 perm inch (0.0029 ng/Pa s m), maximum, when tested in accordance with ASTM E96/E96M.
    - d. Min. Thickness: 10 mil (0.25 mm).
    - e. Connections: Pressure sensitive color matching vinyl tape.
  2. Covering Adhesive Mastic: Compatible with insulation.
- C. Aluminum Jacket (On all exterior piping): ASTM B209 (ASTM B209M) formed aluminum sheet with Polyfilm moisture barrier (PFMB). Provide precision formed molded aluminum fittings for all valves and fittings.
  1. Min. Thickness: 0.020 inch (0.50 mm) sheet.
  2. Finish: Embossed.
  3. Joining: Longitudinal slip joints and 2 inch (50 mm) laps.
  4. Fittings: 0.020 inch (0.50 mm) thick die shaped fitting covers with factory attached protective liner.
  5. Metal Jacket Bands: 3/8 inch (10 mm) wide; 0.015 inch (0.38 mm) thick aluminum.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify that piping has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.

### 3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with NAIMA National Insulation Standards.
- C. Exposed Piping: Locate insulation and cover seams in least visible locations.
- D. Insulated Pipes Conveying Fluids Below Ambient Temperature:
  1. Insulate entire system, including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
- E. For hot piping conveying fluids over 140 degrees F (60 degrees C), insulate flanges and unions at equipment.



- F. Inserts and Shields:
1. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
  2. Insert location: Between support shield and piping and under the finish jacket.
  3. Insert Configuration: Minimum 6 inches (150 mm) long, of same thickness and contour as adjoining insulation; may be factory fabricated.
  4. Insert Material: Hydrous calcium silicate insulation or other heavy density insulating material suitable for the planned temperature range.
- G. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces (less than 10 feet (3 meters) above finished floor): Finish with PVC jacket and fitting covers.
- H. Exterior Applications: Provide vapor barrier jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor barrier cement. Cover with aluminum jacket with seams located on bottom side of horizontal piping.
- I. Because of the low operating temperature, it is critical that all glycol loop piping, including valves and other accessories, be well insulated with secure and continuous vapor barrier. Existing to remain insulation must be checked by the Contractor and any deficiencies shall be reported to the Owner.

**END OF SECTION**

## **SECTION 23 0800 COMMISSIONING OF HVAC**

### **PART 1 GENERAL**

#### **1.01 SUMMARY**

- A. This section covers the Contractor's responsibilities for commissioning; each subcontractor or installer responsible for the installation of a particular system or equipment item to be commissioned is responsible for the commissioning activities relating to that system or equipment item.
- B. The Commissioning Authority (CA) directs and coordinates all commissioning activities and provides Prefunctional Checklists and Functional Test Procedures for Contractor's use.
- C. The following HVAC equipment is to be commissioned, including commissioning activities for the following specific items:
  - 1. AHUs
  - 2. Fan-powered boxes
  - 3. Air-to-water heat pump
  - 4. Pumps
  - 5. Hydronic control valves
  - 6. Supervisory building automation system controllers
  - 7. Building automation system user interface
- D. The Prefunctional Checklist and Functional Test requirements specified in this section are in addition to, not a substitute for, start-up services, inspection or testing specified in other sections.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 01 7800 - Closeout Submittals: Scope and procedures for operation and maintenance manuals and project record documents.
- B. Section 23 0923 - Direct-Digital Control System for HVAC.
- C. Section 23 0913 - Instrumentation and Control Devices for HVAC.
- D. Section 23 0593 - Testing, Adjusting, and Balancing for HVAC.

#### **1.03 SUBMITTALS**

- A. Updated Submittals: Keep the Commissioning Authority informed of all changes to control system documentation made during programming and setup; revise and resubmit when substantial changes are made.
- B. Startup Reports, Prefunctional Checklists, and Trend Logs: Submit for approval of Commissioning Authority.
- C. HVAC Control System O&M Manual Requirements. In addition to documentation specified elsewhere, compile and organize at minimum the following data on the control system:
  - 1. Specific step-by-step instructions on how to perform and apply all functions, features, modes, etc. mentioned in the controls training sections of this specification and other features of this system. Provide an index and clear table of contents. Include the detailed technical manual for programming and customizing control loops and algorithms.
  - 2. Full as-built set of control drawings.
  - 3. Full as-built sequence of operations for each piece of equipment.
  - 4. Full points list; in addition to the information on the original points list submittal.
  - 5. Full print out of all schedules and set points after testing and acceptance of the system.
  - 6. Full as-built print out of software program.
  - 7. Mark/note the location of all system sensors and thermostats on the as-built floor plan and HVAC drawings with their control system designations.
  - 8. Maintenance instructions for all components furnished and/or installed, identifying all periodic and longer term maintenance activities including the expected time periods

- between maintenance practice periods, including sensor calibration requirements and methods by sensor type, etc.
9. Control equipment component submittals, parts lists, etc.
  10. Warranty requirements.
  11. Copies of all checkout tests and calibrations performed by the Contractor (not commissioning tests).
  12. Organize and subdivide the manual with permanently labeled tabs for each of the following data in the given order:
    - a. Sequences of operation.
    - b. Control drawings.
    - c. Points lists.
    - d. Controller and/or module data.
    - e. Thermostats and timers.
    - f. Sensors and DP switches.
    - g. Valves and valve actuators.
    - h. Dampers and damper actuators.
    - i. Program setups (software program printouts).
- D. Project Record Documents: See Section 01 7800 for additional requirements.
1. Submit updated version of control system documentation, for inclusion with operation and maintenance data.
  2. Show actual locations of all static and differential pressure sensors (air, water and building pressure) and air-flow stations on project record drawings.
- E. Draft Training Plan: In addition to requirements specified in Section 01 7900, include:
1. Follow the recommendations of ASHRAE Guideline 1.1.
  2. Control system manufacturer's recommended training.
  3. Demonstration and instruction on function and overrides of any local packaged controls not controlled by the HVAC control system.
- F. Training Manuals: See Section 01 7900 for additional requirements.
1. Provide three extra copies of the controls training manuals in a separate manual from the O&M manuals.

## **PART 2 PRODUCTS**

### **2.01 TEST EQUIPMENT**

- A. Provide all standard testing equipment required to perform startup and initial checkout and required functional performance testing; unless otherwise noted such testing equipment will NOT become the property of Owner.
- B. Equipment-Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment, tools, and instruments as part of the work at no extra cost to Owner; such equipment, tools, and instruments are to become the property of Owner.

## **PART 3 EXECUTION**

### **3.01 PREPARATION**

- A. Cooperate with the Commissioning Authority in development of the Prefunctional Checklists and Functional Test Procedures.
- B. Furnish additional information requested by the Commissioning Authority.
- C. Prepare a preliminary schedule for HVAC pipe system testing, flushing and cleaning, equipment start-up and testing, adjusting, and balancing start and completion for use by the Commissioning Authority; update the schedule as appropriate.
- D. Notify the Commissioning Authority when pipe system testing, flushing, cleaning, startup of each piece of equipment and testing, adjusting, and balancing will occur; when commissioning activities not yet performed or not yet scheduled will delay construction notify ahead of time and

be proactive in seeing that the Commissioning Authority has the scheduling information needed to efficiently execute the commissioning process.

- E. Put all HVAC equipment and systems into operation and continue operation during each working day of testing, adjusting, and balancing and commissioning, as required.
- F. Provide test holes in ducts and plenums where directed to allow air measurements and air balancing; close with an approved plug.
- G. Provide temperature and pressure taps in accordance with Contract Documents.

### **3.02 INSPECTING AND TESTING - GENERAL**

- A. Submit startup plans, startup reports, and Prefunctional Checklists for each item of equipment or other assembly to be commissioned.
- B. Perform the Functional Tests directed by the Commissioning Authority for each item of equipment or other assembly to be commissioned.
- C. Provide two-way radios for use during the testing.
- D. Valve/Damper Stroke Setup and Check:
  - 1. For all valve/damper actuator positions checked, verify the actual position against the control system readout.
  - 2. Set pump/fan to normal operating mode.
  - 3. Command valve/damper closed; visually verify that valve/damper is closed and adjust output zero signal as required.
  - 4. Command valve/damper open; verify position is full open and adjust output signal as required.
  - 5. Command valve/damper to a few intermediate positions.
  - 6. If actual valve/damper position does not reasonably correspond, replace actuator or add pilot positioner (for pneumatics).
- E. Isolation Valve or System Valve Leak Check: For glycol plant valves and AHU coil valves.
  - 1. With full pressure in the system, command valve closed.
  - 2. Use an ultra-sonic flow meter to detect flow or leakage.
- F. Deficiencies: Correct deficiencies and re-inspect or re-test, as applicable, at no extra cost to Owner.

### **3.03 TAB COORDINATION**

- A. TAB: Testing, adjusting, and balancing of HVAC.
- B. Coordinate commissioning schedule with TAB schedule.
- C. Review the TAB plan to determine the capabilities of the control system toward completing TAB.
- D. Provide all necessary unique instruments and instruct the TAB technicians in their use; such as handheld control system interface for setting terminal unit boxes, etc.
- E. Have all required Prefunctional Checklists, calibrations, startup and component Functional Tests of the system completed and approved by the Commissioning Authority prior to starting TAB.
- F. Provide a qualified control system technician to operate the controls to assist the TAB technicians or provide sufficient training for the TAB technicians to operate the system without assistance.

### **3.04 CONTROL SYSTEM FUNCTIONAL TESTING**

- A. Prefunctional Checklists for control system components will require a signed and dated certification that all system programming is complete as required to accomplish the requirements of Contract Documents and the detailed Sequences of Operation documentation submittal.
- B. Do not start Functional Testing until all controlled components have themselves been successfully Functionally Tested in accordance with Contract Documents.

- C. Using a skilled technician who is familiar with this building, execute the Functional Testing of the control system as required by the Commissioning Authority.
- D. Functional Testing of the control system constitutes demonstration and trend logging of control points monitored by the control system.
  - 1. Perform all trend logging specified in Prefunctional Checklists and Functional Test procedures.
- E. Functionally Test integral or stand-alone controls in conjunction with the Functional Tests of the equipment they are attached to, including any interlocks with other equipment or systems; further testing during control system Functional Test is not required unless specifically indicated below.
- F. Demonstrate the following to the Commissioning Authority during testing of controlled equipment; coordinate with commissioning of equipment.
  - 1. Setpoint changing features and functions.
  - 2. Sensor calibrations.
- G. Demonstrate to the Commissioning Authority:
  - 1. That all specified functions and features are set up, debugged and fully operable.
  - 2. That scheduling features are fully functional and setup, including holidays.
  - 3. That all graphic screens and value readouts are completed.
  - 4. Correct date and time setting in central computer.
  - 5. That field panels read the same time as the central computer; sample 10 percent of field panels; if any of those fail, sample another 10 percent; if any of those fail test all remaining units at no extra cost to Owner.
  - 6. Functionality of field panels using local operator keypads and local ports (plug-ins) using portable computer/keypad; demonstrate 100 percent of panels and 10 percent of ports; if any ports fail, sample another 10 percent; if any of those fail, test all remaining units at no extra cost to Owner.
  - 7. Power failure and battery backup and power-up restart functions.
  - 8. Global commands features.
  - 9. Security and access codes.
  - 10. Occupant over-rides (manual, telephone, key, keypad, etc.).
  - 11. O&M schedules and alarms.
  - 12. Occupancy sensors and controls.
  - 13. All control strategies and sequences not tested during controlled equipment testing.
  - 14. Trend logging and graphing features that are specified.
- H. If the control system, integral control components, or related equipment do not respond to changing conditions and parameters appropriately as expected, as specified and according to acceptable operating practice, under any of the conditions, sequences, or modes tested, correct all systems, equipment, components, and software required at no additional cost to Owner.

### **3.05 TREND LOGGING**

- A. Configure, collect, and provide trend log files according to the following requirements. These trend logs will be evaluated by the Commissioning Authority and deficiencies shall be noted. Deficiencies shall be corrected by the Contractor and the system performance test shall be repeated.
- B. Trend logs should be configured for all analog input/output/value, binary input/output/value, and digital input/output points. Trend logs should also be configured for all critical system variables, such as setpoints, control modes (e.g. economizer, occupancy, heating/cooling), and global points (e.g. outside air conditions).
- C. Trend log output files should be retrievable in .csv, .txt, .xls, or .xlsx format. Files should be consolidated such that as many as possible of the relevant points for a given piece of equipment are included in the same file corresponding to the same date/time column. Units of measure for each point should be clearly marked within the trend log output file or as part of a

separate reference document. A separate reference document should also be provided to give a plain English definition or explanation of any ambiguous or unclear point names.

- D. 15-minute intervals between timestamps are preferred. If possible, "change of value" data points should be exported with the current value given for each timestamp.
- E. Trends should be configured for continuous or extended logging so that data is saved for the duration of the Project.
- F. Verify that trend log data is backed up regularly and that redundant copies of any exported files are maintained to ensure that all required data is available for the duration of the Project.
- G. Trends shall continue to collect and archive as defined above after the Project is complete for future use by the Owner.

### **3.06 OPERATION AND MAINTENANCE MANUALS**

- A. See Section 01 7800 for additional requirements.
- B. Add design intent documentation furnished by Engineer to manuals prior to submission to Owner.
- C. Submit manuals related to items that were commissioned to Commissioning Authority for review; make changes recommended by Commissioning Authority.
- D. Commissioning Authority will add commissioning records to manuals after submission to Owner.

### **3.07 DEMONSTRATION AND TRAINING**

- A. See Section 01 7900 for additional requirements.
- B. Demonstrate operation and maintenance of HVAC system to Owner' personnel; if during any demonstration, the system fails to perform in accordance with the information included in the O&M manual, stop demonstration, repair or adjust, and repeat demonstration. Demonstrations may be combined with training sessions if appropriate.
- C. These demonstrations are in addition to, and not a substitute for, Prefunctional Checklists and demonstrations to the Commissioning Authority during Functional Testing.
- D. Provide classroom and hands-on training of Owner's designated personnel on operation and maintenance of the HVAC system, control system, and all equipment items indicated to be commissioned.
- E. TAB Review: Instruct Owner's personnel for minimum two hours, after completion of TAB, on the following:
  - 1. Review final TAB report, explaining the layout and meanings of each data type.
  - 2. Discuss any outstanding deficient items in control, ducting or design that may affect the proper delivery of air or water.
  - 3. Identify and discuss any terminal units, duct runs, diffusers, coils, fans and pumps that are close to or are not meeting their design capacity.
  - 4. Discuss any temporary settings and steps to finalize them for any areas that are not finished.
  - 5. Other salient information that may be useful for facility operations, relative to TAB.
- F. HVAC Control System Training: Perform training in at least two phases:
  - 1. Phase 1 - Basic Control System: Provide minimum of four hours of actual training on the control system itself. Upon completion of training, each attendee, using appropriate documentation, should be able to perform elementary operations and describe general hardware architecture and functionality of the system.
    - a. This training may be held on-site or at the manufacturer's facility.
    - b. If held off-site, the training may occur prior to final completion of the system installation.
    - c. For off-site training, Contractor shall pay expenses of up to two attendees.
    - d. The Contractor shall use the BAS graphics to explain the new sequences of operation covered by this project. If possible, the Contractor shall demonstrate the

effect of the new sequences of operation by simulating aspects of the functional testing.

2. Phase 2 - Integrating with HVAC Systems: Provide minimum of four hours of on-site, hands-on training after completion of Functional Testing. Include instruction on:
  - a. The specific hardware configuration of installed systems in this facility and specific instruction for operating the installed system, including interfaces with other systems, if any.
  - b. Security levels, alarms, system start-up, shut-down, power outage and restart routines, changing setpoints and alarms and other typical changed parameters, overrides, freeze protection, manual operation of equipment, optional control strategies that can be considered, energy savings strategies and set points that if changed will adversely affect energy consumption, energy accounting, procedures for obtaining vendor assistance, etc.
  - c. Trend logging and monitoring features (values, change of state, totalization, etc.), including setting up, executing, downloading, viewing both tabular and graphically and printing trends; provide practice in setting up trend logging and monitoring during training session.
  - d. Every display screen, allowing time for questions.
  - e. Use of remote access to the system via phone lines or networks.
  - f. Point database entry and modifications.
- G. Provide the services of manufacturer representatives to assist instructors where necessary.
- H. Provide the services of the HVAC controls instructor at other training sessions, when requested, to discuss the interaction of the controls system as it relates to the equipment being discussed.
- I. The Contractor shall be responsible for documenting the agenda and discussion occurring during the training session. Documentation shall include notes of items reviewed during the session, instructions for how to replicate demonstrations conducted during the session, and BAS screenshots clarifying the instructions.
  1. Documentation of the training session shall be distributed to the attending group electronically and at least one paper copy shall be produced and provided to the Owner for record.

**END OF SECTION**

## **SECTION 23 0913 INSTRUMENTATION AND CONTROL DEVICES FOR HVAC**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Control panels.
- B. Control Valves:
  - 1. Ball valves and actuators.
  - 2. Globe pattern.
  - 3. Butterfly pattern.
- C. Dampers.
- D. Damper Operators:
- E. Input/Output Sensors:
  - 1. Temperature sensors.
  - 2. Humidity sensors.
  - 3. Static pressure (air pressure) sensors.
  - 4. Carbon monoxide sensors.
  - 5. Carbon dioxide sensors.
- F. Flow Sensors:
  - 1. Insertion electromagnetic flow meters.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 23 0923 - Direct-Digital Control System for HVAC.
- B. Section 26 0000 - Electrical: Electrical characteristics and wiring connections.

#### **1.03 REFERENCE STANDARDS**

- A. ANSI/FCI 70-2 - Control Valve Seat Leakage; 2013.
- B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.
- C. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2018.

#### **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

#### **1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Manufacturer's Instructions: Provide for all manufactured components.
- C. Operation and Maintenance Data: Include inspection period, cleaning methods, recommended cleaning materials, and calibration tolerances.
- D. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

#### **1.06 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

### **PART 2 PRODUCTS**

#### **2.01 EQUIPMENT - GENERAL**

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.
- B. Refer to attached points list for required control end devices. New control end devices are identified with their associated basis of design make and model. Where specific make and model are not given, submit proposed device that matches pre-existing Owner standards where applicable.



## 2.02 CONTROL PANELS

- A. Unitized cabinet type for each system under automatic control with relays and controls mounted in cabinet and temperature indicators, pressure gauges, pilot lights, push buttons and switches flush on cabinet panel face.
- B. NEMA 250 Type 1, general purpose utility enclosures with enameled finished face panel.

## 2.03 CONTROL VALVES

- A. Ball Valves and Actuators:
  - 1. Service: Use for brine (30 percent glycol), chilled water, or hot water.
  - 2. Flow Characteristic: Include 2-way, 3-way diverting, and 3-way mixing operation configured to fail normally closed (NC).
  - 3. Rangeability: 500 to 1.
  - 4. ANSI Rating: Class 150.
  - 5. Leakage: Class IV (0.1 percent of rated capacity) per ANSI/FCI 70-2.
  - 6. Body Size:
    - a. Under 2-1/2 inches (64 mm):
      - 1) Connection: NPT.
      - 2) Materials:
        - (a) Body: Brass.
        - (b) Flanges: Ductile iron.
        - (c) Ball: Chrome-plated brass.
        - (d) Stem: Nickel-plated brass.
        - (e) Seat: Graphite-reinforced PTFE with EPDM O-Ring backing.
        - (f) Stem Seal: EPDM O-Rings.
        - (g) Flow Control Disk: Thermoplastic synthetic-resin.
    - b. Service Temperature:
      - 1) Fluid Side: 0 to 284 degrees F (0 to 140 degrees C) liquid or 25 psig (172.4 kPa) steam.
      - 2) Ambient Side: From minus 4 to 122 degrees F (minus 20 to 50 degrees C).
  - 7. Actuator Requirements:
    - a. Assembly: Factory-mounted.
    - b. Input: 0 to 10 VDC configured for proportional control.
    - c. Accessories: Provide with valve position indicator and manual override.
- B. Globe Pattern:
  - 1. Over 2 inches (50 mm): Iron body, bronze trim, rising stem, plug-type disc, flanged ends, renewable seat and disc.
  - 2. Hydronic Systems:
    - a. Rate for service pressure of 125 psig at 250 degrees F (860 kPa at 121 degrees C).
    - b. Replaceable plugs and seats of stainless steel.
- C. Butterfly Pattern:
  - 1. Iron body, bronze disc, resilient replaceable seat for service to 180 degrees F (82 degrees C) wafer or lug ends, extended neck.
  - 2. Hydronic Systems:
    - a. Rate for service pressure of 125 psig at 250 degrees F (860 kPa at 121 degrees C).

## 2.04 DAMPERS

- A. Frames: Galvanized steel, welded or riveted with corner reinforcement, minimum 12 gage, 0.1046 inch (2.66 mm).
- B. Blades: Galvanized steel, maximum blade size 8 inches (200 mm) wide, 48 inches (1200 mm) long, minimum 22 gage, 0.0299 inch (0.76 mm), attached to minimum 1/2 inch (13 mm) shafts with set screws.
- C. Blade Seals: Synthetic elastomeric, inflatable, mechanically attached, field replaceable.
- D. Shaft Bearings: Oil impregnated sintered bronze.

- E. Linkage Bearings: Oil impregnated sintered bronze.
- F. Leakage: Less than one percent based on approach velocity of 2000 ft per min (10 m per sec) and 4 inches wg (1.0 kPa).

## **2.05 DAMPER OPERATORS**

- A. General: Provide smooth proportional control with sufficient power for air velocities 20 percent greater than maximum design velocity and to provide tight seal against maximum system pressures. Provide spring return for two position control and for fail safe operation.

## **2.04 INPUT/OUTPUT SENSORS**

- A. Temperature Sensors:
  - 1. Use thermistor or RTD type temperature sensing elements with characteristics resistant to moisture, vibration, and other conditions consistent with the application without affecting accuracy and life expectancy.
  - 2. Performance Characteristics:
    - a. RTD:
      - 1) Chilled Water Accuracy: Plus/minus 0.50 degrees F (0.28 degrees C) minimum.
      - 2) Range: Minus 32 degrees F (Minus 0 degrees C) through 220 degrees F (104.4 degrees C) minimum.
    - b. Thermistor:
      - 1) Accuracy (All): Plus/minus 0.36 degrees F (0.20 degrees C) minimum.
      - 2) Range: Minus 25 degrees F (Minus 13 degrees C) through 230 degrees F (110 degrees C) minimum.
    - c. Temperature Transmitter:
      - 1) Accuracy: 0.10 degree F (0.06 degrees C) minimum or plus/minus 0.20 percent of span.
    - d. Room Sensors: Locking cover.
    - e. Outside Air Sensors: Watertight inlet fitting shielded from direct rays of the sun.
    - f. Room Temperature Sensors with Integral Digital Display:
      - 1) Construct for surface or wall box.
      - 2) Provide a four button keypad with the following capabilities:
        - (a) Indication of space and outdoor temperatures.
        - (b) Setpoint adjustment to accommodate room setpoint and Sequence of Operation.
        - (c) Manual occupancy override and indication of occupancy status.
- B. Humidity Sensors:
  - 1. Outdoor Sensor: Voltage type encased in a die-cast metal, weather-proof housing.
    - a. Humidity:
      - 1) Accuracy 1 percent at 10 to 80 percent relative humidity at 77 degrees F (25 degrees C), multi-point calibration, NIST traceable.
      - 2) Scaling: 0 to 100 percent RH.
    - b. Temperature Effect:
      - 1) Outdoor Mounted: 4 to 20mA version:  $(0.0013 \times \%RH \times (T_{\text{degreeC}} - 25))$ .
    - c. Operating Environment:
      - 1) Operating Humidity Range: 0 to 100 percent RH noncondensing.
      - 2) Operating Temperature Range: Minus 40 degrees F (Minus 40 degrees C) to 122 degrees F (50 degrees C).
- C. Carbon Monoxide Sensors:
  - 1. General:
    - a. Provide gas platform, wired to the building controller, with replaceable sensor.
    - b. Operating Temperature Range: Minus 4 degrees F (Minus 20 degrees C) to 122 degrees F (50 degrees C).
  - 2. Sensor:
    - a. Sensor Type: Electrochemical.

- b. Measurement Range: 0 to 200 ppm.
  - c. Sensor Warranty: 2 years from manufacture date.
- D. Carbon Dioxide Sensors, Duct:
  - 1. General: Provide non-dispersive infrared (NDIR), diffusion sampling CO2 sensors with integral transducers and linear output.
  - 2. Calibration Characteristics:
    - a. User calibratable with a minimum calibration interval of 5 years.
  - 3. Construction:
    - a. Provide duct mounted sensors with duct probe designed to protect sensing element from dust accumulation and mechanical damage.

## **2.05 FLOW SENSORS**

- A. Insertion Electromagnetic Flow Meters:
  - 1. Provide insertion type magnetic flow meters with all installation hardware necessary to enable the insertion and removal of the meter without system shutdown.
  - 2. All Parts: Meet or exceed the pressure classification of the piping system installed in.
  - 3. Accuracy: No greater than 1 percent of the rate from 2 fps (0.6 mps) to 20 fps (6 mps).

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that systems are ready to receive work.

### **3.02 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Mount outdoor reset thermostats and outdoor sensors indoors, with sensing elements outdoors with sun shield.
- C. Provide guards on thermostats in entrances and public areas.
- D. Provide valves with position indicators and with pilot positioners where sequenced with other controls.
- E. Provide mixing dampers of opposed blade construction arranged to mix streams. Provide pilot positioners on mixed air damper motors.
- F. Mount control panels adjacent to associated equipment on vibration free walls or free standing angle iron supports. One cabinet may accommodate more than one system in same equipment room. Provide engraved plastic nameplates for instruments and controls inside cabinet and engraved plastic nameplates on cabinet face.
- G. Provide conduit and electrical wiring in accordance with Section 26 0000. Electrical material and installation shall be in accordance with appropriate requirements of Division 26.

### **END OF SECTION**

## **SECTION 23 0923 DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Controllers.
- B. Building Automation System.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 23 0913 - Instrumentation and Control Devices for HVAC.
- B. Section 26 0000 - Electrical: Electrical characteristics and wiring connections.
- C. Substitutions: See Section 01 2500 - Substitution Procedures.

#### **1.03 REFERENCE STANDARDS**

- A. ASHRAE Std 135 - A Data Communication Protocol for Building Automation and Control Networks; 2016.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

#### **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

#### **1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for each system component and software module.
- C. Manufacturer's Instructions: Indicate manufacturer's installation instructions for all manufactured components.
- D. Operation and Maintenance Data:
  - 1. Include interconnection wiring diagrams complete field installed systems with identified and numbered, system components and devices.
  - 2. Include keyboard illustrations and step-by-step procedures indexed for each operator function.
  - 3. Include inspection period, cleaning methods, cleaning materials recommended, and calibration tolerances.
- E. Sequence of Operation Documentation: Submit written sequence of operation for entire HVAC system and each piece of equipment.
  - 1. Preface: 1 or 2 paragraph overview narrative of the system describing its purpose, components and function.
  - 2. State each sequence in small segments and give each segment a unique number for referencing in Functional Test procedures; provide a complete description regardless of the completeness and clarity of the sequences specified in the contract documents.
  - 3. Include at least the following sequences:
    - a. Start-up.
    - b. Warm-up mode.
    - c. Normal operating mode.
    - d. Unoccupied mode.
    - e. Shutdown.
    - f. Capacity control sequences and equipment staging.
    - g. Temperature and pressure control, such as setbacks, setups, resets, etc.
    - h. Detailed sequences for all control strategies, such as economizer control, optimum start/stop, staging, optimization, demand limiting, etc.
    - i. Effects of power or equipment failure with all standby component functions.
    - j. Sequences for all alarms and emergency shut downs.

- k. Seasonal operational differences and recommendations.
- l. Interactions and interlocks with other systems.
- m. Loss of power.
- 4. Include initial and recommended values for all adjustable settings, setpoints and parameters that are typically set or adjusted by operating staff; and any other control settings or fixed values, delays, etc. that will be useful during testing and operating the equipment.

F. BAS color graphics mock ups for review.

## **1.06 QUALITY ASSURANCE**

A. Perform work in accordance with NFPA 70.

## **1.07 WARRANTY**

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Correct defective Work within a one year period after Substantial Completion.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Network, Hydronic Plant, and Equipment Controllers - Acceptable Manufacturers:
  - 1. Automated Logic – Carrier Global Corporation
  - 2. Siemens Corporation
  - 3. Johnson Controls, Inc.
  - 4. Trane Technologies Inc.
- B. Substitutions: See Section 01 2500 - Substitution Procedures.
- C. Source Limitations: Furnish network and equipment controllers and associated components produced by a single manufacturer and obtained from a single supplier.
- D. It is the intent of the Owner that the new building automation system be integrated and managed through the Owner's existing town-wide Automated Logic server and web-based user interface. Any new system to be installed shall be compatible and integrateable with said existing system.

### **2.02 CONTROLLERS**

- A. Hydronic Plant and Equipment Controllers:
  - 1. General:
    - a. Provide sufficient memory to support controller's operating system, database, and programming requirements.
    - b. Share data between networked, microprocessor based controllers.
    - c. Controller operating system manages input and output communication signals allowing distributed controllers to share real and virtual object information and allowing for central monitoring and alarms.
    - d. Utilize real-time clock for scheduling.
    - e. Continuously check processor status and memory circuits for abnormal operation.
    - f. Controller to assume predetermined failure mode and generate alarm notification upon detection of abnormal operation. Controller shall be able to route alarm conditions to the network controller
    - g. Communication with other network devices to be based on assigned protocol.
    - h. The equipment controllers shall be fully programmable and configurable.
    - i. Programming software shall be embedded into the controllers. The controllers shall not require any external configuration tool or programming tool.
    - j. Each controller shall have expansion ability to support additional I/O requirements through the use of remote input/output modules and a local communication bus.
    - k. Each controller shall support standard Web browser access via the Intranet/Internet.
    - l. UL listed.
  - 2. Communication:

- a. Controllers to reside on a BACnet network using IP protocol.
  - b. Provide service communication port for connection to a portable operator's terminal or hand held device with compatible protocol.
  - c. Controllers to use daisy-chain IP communications with other controllers.
- 3. Anticipated Environmental Ambient Conditions:
  - a. Conditioned Space:
    - 1) Mount within dustproof enclosures.
    - 2) Rated for operation at 32 to 120 degrees F (0 to 50 degrees C).
- 4. Provisions for Serviceability:
  - a. Diagnostic LED's for power, communication, and processor.
  - b. Make all wiring connections to field removable, modular terminal strips, or to a termination card connected by a ribbon cable.
- 5. Memory:
  - a. In the event of a power loss, maintain all BIOS and programming information for a minimum of 72 hours.
- 6. Power and Noise Immunity:
  - a. Maintain operation at 90 to 110 percent of nominal voltage rating.
  - b. Perform orderly shutdown below 80 percent of nominal voltage.
  - c. Operation protected against electrical noise of 5 to 120 Hz and from keyed radios up to 5 W. at 3 feet (1 m).
- 7. Security:
  - a. The controllers shall support the following security functions:
    - 1) Role-Based Access Control (RBAC) for managing user roles and permissions.
    - 2) Data in Motion and Sensitive Data at Rest be encrypted.
    - 3) Encryption and secure communication over IP networks.
- B. Network Controller:
  - 1. General:
    - a. The network controller shall be fully programmable or configurable to meet the unique requirements of the facility it shall control.
    - b. The network controller shall be capable of peer-to-peer communications with other future network controllers and applicable equipment controllers on the control network.
    - c. Copies of all network controller hardware licenses and certificates shall be stored on a separate media device as backup in case of failure.
    - d. The network controller shall provide standard Web browser access via the Intranet/Internet. Coordinate with the Owner's IT department as required.
    - e. The network controller shall execute application control programs, including:
      - 1) Calendar functions.
      - 2) Scheduling.
      - 3) Trending.
      - 4) Alarm monitoring and routing.
      - 5) Time synchronization.
      - 6) Integration of BACnet controller data.
      - 7) Network management functions for all connected devices.
  - 2. Communication:
    - a. Controller to reside on a BACnet network using IP protocol.
    - b. Provide service communication port for connection to a portable operator's terminal or hand held device with compatible protocol.
    - c. Use of a proprietary communication protocol for peer-to-peer communications between network controllers is not allowed.
    - d. The network controller shall be enabled to support and shall be licensed with the BACnet Open protocol drivers (client and server) by default.
  - 3. Anticipated Environmental Ambient Conditions:
    - a. Conditioned Space:

- 1) Mount within dustproof enclosures.
- 2) Rated for operation at 32 to 120 degrees F (0 to 50 degrees C).
4. Provisions for Serviceability:
  - a. Diagnostic LED's for power, communication, and processor.
  - b. Make all wiring connections to field removable, modular terminal strips, or to a termination card connected by a ribbon cable.
5. Memory:
  - a. In the event of a power loss, maintain all BIOS and programming information for a minimum of 72 hours.
6. Power and Noise Immunity:
  - a. Maintain operation at 90 to 110 percent of nominal voltage rating.
  - b. Perform orderly shutdown below 80 percent of nominal voltage.
  - c. Operation protected against electrical noise of 5 to 120 Hz and from keyed radios up to 5 W. at 3 feet (1 m).
7. Graphical User Interface Software:
  - a. The building automation system (BAS) shall be fully accessible via web browser.
  - b. The Graphical User Interface (GUI) shall be browser and operating system agnostic, meaning it will support HTML5 enabled browsers without requiring proprietary operator interface and configuration programs or browser plug-ins. Microsoft, Firefox, and Chrome browsers (current released versions), and Windows as well as non-Windows operating systems.
  - c. The web browser GUI shall provide an interactive user interface that supports the following features as a minimum:
    - 1) Trending.
    - 2) Scheduling.
    - 3) Electrical demand limiting.
    - 4) Duty Cycling.
    - 5) Downloading Memory to field devices.
    - 6) Real time 'live' Graphic Programs.
    - 7) Tree Navigation.
    - 8) Floor Plans.
    - 9) Parameter change of properties.
    - 10) Set point adjustments.
    - 11) Alarm / event information.
    - 12) Configuration of operators.
    - 13) Execution of global commands.
    - 14) Add, delete, and modify graphics and displayed data.
8. Network Controller and Server Licensing Requirements:
  - a. All New and Existing Network Controllers and Server equipment and software furnished by or integrated with this project shall be fully licensed to the Owner. The licensing rights shall include the rights for the Owner to authorize any Contractor of their choosing to perform work on the system. The installing contractor shall hold no exclusive rights to the system as it pertains to software, hardware, system updates, system access, modifications, developed databases, etc.
  - b. Provide the Owner all required user names and passwords for system access yielding full administration and configuration rights. These shall apply to workstations, servers, network controllers, configurable network electronics, controllers, system software / database and the like.
  - c. The Contractor shall not limit in any fashion the ability for the Owner or Owner-authorized contractors, vendors or operators the ability to manage, configure, or modify the parameters of each Network Controller, server or system software / database.
  - d. The Contractor shall coordinate and hold no exclusive rights pertaining to inter-station links between Network Controllers.

- e. The Owner shall reserve the right and possess the ability to hire a contractor to service, maintain and modify the system. The ability to program, configure, and perform database modifications associated with all the DDC controllers shall likewise be the property of the Owner. The Contractor shall hold no exclusive rights, or access levels to the system. Third-party Contractors shall have full rights and access to the system at any point for system expansion or existing system modifications.
- 9. Software:
  - a. All software shall be the most current version. All software components of the system shall be provided and installed as part of this project.
- 10. Database Backup and Storage:
  - a. The network controller shall automatically back up its database. The database shall be backed up based on a user-defined time interval.
  - b. Copies of the current database and, at the most recently saved database shall be stored in the network controller.
  - c. Provisioning - Automatic downloading of software updates, backups to the entire system database etc. based on user defined parameters.
- 11. Audit Log:
  - a. Provide and maintain an Audit Log that tracks all activities performed on the network controller. Provide the ability to specify a buffer size for the log and the ability to archive log based on time or when the log has reached its user-defined buffer size. Provide the ability to archive the log locally (to the network controller), to another network controller on the network, or to a server. For each log entry, provide the following data:
    - 1) Time and date.
    - 2) User ID.
    - 3) Change or activity (change set point, add or delete objects, commands, etc.).
- 12. Security:
  - a. The network controller shall support the following security functions:
    - 1) Role-Based Access Control (RBAC) for managing user roles and permissions.
    - 2) Require users to use strong credentials.
    - 3) Encryption and secure communication over IP networks.
- 13. Alarm Functionality:
  - a. The network controller shall provide alarm recognition, storage, routing, management and analysis.
  - b. Alarm generation shall be selectable for annunciation type and acknowledgement requirements including but not limited to:
    - 1) Alarm.
    - 2) Return to normal.
    - 3) To default.
  - c. Alarms shall be annunciated in any of the following manners as defined by the user:
    - 1) BAS screen message text.
    - 2) Email of complete alarm message to multiple recipients.
    - 3) Graphics with flashing alarm object(s).
    - 4) SMS message to multiple recipients.
  - d. The following shall be recorded by the network controller for each alarm (at a minimum):
    - 1) Time and date.
    - 2) Equipment (air handler #, room name, etc.).
    - 3) Acknowledge time, date, and user who issued acknowledgement.
- C. Input/Output Interface:
  - 1. Hardwired inputs and outputs tie into the DDC system through building, custom application, or application specific controllers.
  - 2. All Input/Output Points:



- a. Protect controller from damage resulting from any point short-circuiting or grounding and from voltage up to 24 volts of any duration.
  - b. Provide universal type for building and custom application controllers where input or output is software designated as either binary or analog type with appropriate properties.
3. Binary Inputs:
  - a. Allow monitoring of On/Off signals from remote devices.
  - b. Provide wetting current of 12 mA minimum, compatible with commonly available control devices and protected against the effects of contact bounce and noise.
  - c. Sense dry contact closure with power provided only by the controller.
4. Pulse Accumulation Input Objects: Comply with all requirements of binary input objects and accept up to 10 pulses per second.
5. Analog Inputs:
  - a. Allow for monitoring of low voltage 0 to 10 VDC, 4 to 20 mA current, or resistance signals (thermistor, RTD).
  - b. Compatible with and field configurable to commonly available sensing devices.
6. Binary Outputs:
  - a. Used for On/Off operation or a pulsed low-voltage signal for pulse width modulation control.
  - b. Outputs provided with three position (On/Off/Auto) override switches.
  - c. Status lights for building and custom application controllers to be selectable for normally open or normally closed operation.
7. Analog Outputs:
  - a. Monitoring signal provides a 0 to 10 VDC or a 4 to 20 mA output signal for end device control.
  - b. Provide status lights and two position (AUTO/MANUAL) switch for building and custom application controllers with manually adjustable potentiometer for manual override on building and custom application controllers.
  - c. Drift to not exceed 0.4 percent of range per year.
8. Tri State Outputs:
  - a. Coordinate two binary outputs to control three point, floating type, electronic actuators without feedback.
  - b. Limit the use of three point, floating devices to the following zone and terminal unit control applications:
  - c. Control algorithms run the zone actuator to one end of its stroke once every 24 hours for verification of operator tracking.
9. System Object Capacity:
  - a. System size to be expandable to twice the number of input output objects required by providing additional controllers, including associated devices and wiring.
  - b. Hardware additions or software revisions for the installed operator interfaces are not to be required for future, system expansions.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that conditioned power supply is available to the control units and to the operator work station. Verify that field end devices, wiring, and pneumatic tubing is installed prior to installation proceeding.

### **3.02 INSTALLATION**

- A. Install control units and other hardware in position on permanent walls where not subject to excessive vibration.
- B. Install software in control units and in operator work station. Implement all features of programs to specified requirements and appropriate to sequence of operation. Refer to Section 23 0993.

- C. Provide conduit and electrical wiring in accordance with Section 26 0583. Electrical material and installation shall be in accordance with appropriate requirements of Division 26.

### **3.03 SOFTWARE**

- A. Install manufacturer's latest version of software, firmware, etc. associated with new controls infrastructure.
- B. Verify that new hardware and software are compatible.

### **3.04 BAS GRAPHICS**

- A. The Contractor shall provide color graphic displays as depicted in the mechanical drawings for each system and floor plan. For each system or floor plan, the display shall contain the associated points identified in the point list and allow for setpoint changes as required by the Owner.
- B. Mock-ups of BAS Graphics shall be provided by the Contractor during the Submittal Review process for comment and approval by the Engineer.
- C. Contractor shall incorporate the following into the design of the Graphics:
  - 1. Physical location of sensors shall be reflected accurately.
  - 2. Points shall be labeled with plain text descriptors directly on the Graphic – longer point tags can be shown on mouse-over.
  - 3. Flow arrows shall be used for all air AND water flows.
  - 4. BACnet points shall be differentiated visually on the Graphic.
  - 5. All graphics shall have a series of tabs for links to related systems graphics, sequences of operation, occupancy schedules, reset schedules, and "Home" graphic.
  - 6. Hyperlinks shall be used extensively to allow navigation from equipment to floor plans to schedules without returning to the home screen.
  - 7. Setpoints and actual values shall be shown adjacent to each other to the greatest extent possible.
  - 8. Equipment operating status shall be shown on the graphic (On/Off/Manual).
  - 9. Equipment modes shall be shown on the graphic (i.e. Occupied, Unoccupied, Heating, Cooling, Economizer, Warm-Up, Cool-Down).
  - 10. Variable Frequency Drives shall be shown as well as their status (hand/off/auto – with color differentiation).
  - 11. Lead/Lag Status.
  - 12. All equipment overrides shall be designated in red text and alarmed after 24 hours.
  - 13. Summary screen for each equipment type (AHUs, fan-powered VAV boxes, baseboard radiation, exhaust fans). The summary screen shall include a subset of critical control points for each piece of equipment in matrix format in order facilitate easy comparison of operation among the units. Examples of points to be included on the summary screen include, but are not limited to, fan command, fan status, VFD speed, space temperature, space temperature setpoint, cooling status, and heating status.
- D. The Contractor shall ensure that critical control variables, such as loop tuning parameters, sensor scaling factors, and actuator response times are not adjustable by the Owner through the graphics. Final values for these variables shall be documented in the record documentation for reference in the event of future operational issues.

### **3.05 SEQUENCE OF OPERATIONS**

- A. Program sequences of operation in accordance with the Contract Drawings. The Contract Drawings convey the design intent for the system. The Contractor's as-programmed sequences of operation shall include additional details, such as time delays, deadbands, virtual points, data quality checks, contingencies, etc. so that the system achieves the design intent in a stable and repeatable fashion.
- B. The Contractor shall document all such details as part of the Closeout Documentation.
- C. The Contractor shall submit written requests for information to address discrepancies, ambiguities, or unaddressed operating conditions in the design intent sequences of operation.

The Owner and Engineer reserve the right to direct the Contractor to modify the programmed sequences of operation at no additional cost to the Owner in response to unilateral changes made by the Contractor without proper written coordination among the Project Team.

**END OF SECTION**

## SECTION 23 2113 HYDRONIC PIPING

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Hydronic system requirements.
- B. Heating water piping, above grade.
- C. Heating water and glycol piping, above grade.
- D. Chilled water piping, above grade.
- E. Equipment drains and overflows.
- F. Pipe hangers and supports.
- G. Unions, flanges, mechanical couplings, and dielectric connections.
- H. Valves:
  - 1. Ball valves.
  - 2. Butterfly valves.
  - 3. Check valves.
- I. Flow controls.
- J. Design and build requirements for pipe expansion and seismic restraint system.

#### 1.02 RELATED REQUIREMENTS

- A. Section 23 0523 - General-Duty Valves for HVAC Piping.
- B. Section 23 0719 - HVAC Piping Insulation.
- C. Section 23 0593 - Testing, Adjusting, and Balancing for HVAC.
- D. Section 23 0800 - Commissioning of HVAC.
- E. Section 23 2114 - Hydronic Specialties.
- F. Section 23 2500 - HVAC Water Treatment: Pipe cleaning.

#### 1.03 REFERENCE STANDARDS

- A. ASME BPVC-IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators - Welding Brazing and Fusing Qualifications; 2019.
- B. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300; 2016.
- C. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2018.
- D. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2018.
- E. ASME B31.9 - Building Services Piping; 2017.
- F. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2018.
- G. ASTM A106/A106M - Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service; 2019a.
- H. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service; 2019.
- I. ASTM A536 - Standard Specification for Ductile Iron Castings; 1984 (Reapproved 2014).
- J. ASTM B32 - Standard Specification for Solder Metal; 2008 (Reapproved 2014).
- K. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers; 1992, with Editorial Revision (2018).
- L. ASTM F1476 - Standard Specification for Performance of Gasketed Mechanical Couplings for Use in Piping Applications; 2007 (Reapproved 2019).
- M. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).

- N. AWWA C110/A21.10 - Ductile-Iron and Gray-Iron Fittings; 2012.
- O. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast; 2017, with Errata (2018).
- P. AWWA C606 - Grooved and Shouldered Joints; 2015.
- Q. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018.

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data:
  - 1. Shop drawings.
  - 2. Include data on pipe materials, pipe fittings, valves, and accessories.
  - 3. Provide manufacturers catalog information.
  - 4. Indicate valve data and ratings.
  - 5. Show couplings, fittings, valves, and specialties on drawings and product submittals, specifically identified with the manufacturer's style or series designation.
- C. Manufacturer's Installation Instructions: Indicate hanging and support methods, joining procedures.
- D. Project Record Documents: Provide as-builts and record actual locations of valves.
- E. Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Provide temporary protective coating on cast iron and steel valves.
- C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

### **PART 2 PRODUCTS**

#### **2.01 HYDRONIC SYSTEM REQUIREMENTS**

- A. Comply with ASME B31.9 and applicable federal, state, and local regulations.
- B. Piping: Provide piping, fittings, hangers, and supports as required, as indicated, and as follows:
  - 1. Where more than one piping system material is specified, provide joining fittings that are compatible with piping materials and ensure that the integrity of the system is not jeopardized.
  - 2. Use non-conducting dielectric connections whenever jointing dissimilar metals.
  - 3. Grooved mechanical joints may be used for hot water loop piping only in accessible locations only.
    - a. Accessible locations include those exposed on interior of building, in pipe chases, and in mechanical rooms, aboveground outdoors, and as approved by Engineer.
    - b. Grooved mechanical connections and joints comply with AWWA C606.
      - 1) Ductile Iron: Comply with ASTM A536, Grade 65-45-12.
      - 2) Steel: Comply with ASTM A106/A106M, Grade B or ASTM A53/A53M.
    - c. Use rigid joints unless otherwise indicated.
  - 4. Provide pipe hangers and supports in accordance with ASME B31.9 or MSS SP-58 unless indicated otherwise.
- C. Pipe-to-Valve and Pipe-to-Equipment Connections: Use flanges or unions to allow disconnection of components for servicing; do not use direct welded, soldered, or threaded connections.
  - 1. Where grooved joints are used in piping, provide grooved valve/equipment connections if available; if not available, provide flanged ends and grooved flange adapters.

- D. Valves: Provide valves where indicated:
1. Provide drain valves where indicated, and if not indicated, provide at least at main shut-off, low points of piping, bases of vertical risers, and at equipment. Use 3/4 inch (20 mm) ball valves with cap; pipe to nearest floor drain.
  2. On discharge of pumps, use spring-loaded check valves.
  3. Isolate equipment using butterfly valves with lug end flanges or grooved mechanical couplings.
  4. For throttling, bypass, or manual flow control services, use ball or butterfly valves.
  5. For throttling and isolation service in chilled water systems, use only butterfly valves.
  6. For shut-off and to isolate parts of systems or vertical risers, use ball or butterfly valves.
- E. Welding Materials and Procedures: Comply with ASME BPVC-IX.

## **2.02 HEATING WATER PIPING, ABOVE GRADE**

- A. Steel Pipe: ASTM A53/A53M, Schedule 40, black, using one of the following joint types:
1. Welded Joints: ASTM A234/A234M, wrought steel welding type fittings; AWS D1.1/D1.1M welded for all glycol loop piping.
  2. Grooved Joints: AWWA C606 grooved pipe, fittings of same material, and mechanical couplings for all hot water loop piping only.

## **2.03 CHILLED/HOT GLYCOL PIPING, ABOVE GRADE**

- A. Steel Pipe: ASTM A53/A53M, Schedule 40, black; using one of the following joint types:
1. Welded Joints (2-1/2" and larger): ASTM A234/A234M, wrought steel welding type fittings; AWS D1.1/D1.1M welded.

## **2.04 EQUIPMENT DRAINS AND OVERFLOWS**

- A. Steel Pipe: ASTM A53/A53M, Schedule 40 galvanized; using one of the following joint types:
1. Threaded Joints: Galvanized cast iron, or ASME B16.3 malleable iron fittings.

## **2.05 PIPE HANGERS AND SUPPORTS**

- A. Provide hangers and supports that comply with MSS SP-58.
1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
- B. In grooved installations, use rigid couplings with offsetting angle-pattern bolt pads or with wedge-shaped grooves in header piping to permit support and hanging in accordance with ASME B31.9.

## **2.06 UNIONS, FLANGES, MECHANICAL COUPLINGS, AND DIELECTRIC CONNECTIONS**

- A. Unions for Pipe 2 Inches (50 mm) and Less:
1. Ferrous Piping: 150 psig (1034 kPa) malleable iron, threaded.
- B. Flanges for Pipe 2 Inches (50 mm) and Greater:
1. Ferrous Piping: 150 psig (1034 kPa) forged steel, slip-on.
  2. Gaskets: 1/16 inch (1.6 mm) thick, preformed neoprene.
- C. Mechanical Couplings for Grooved and Shouldered Joints: Two or more curved housing segments with continuous key to engage pipe groove, circular C-profile gasket, and bolts to secure and compress gasket.
1. Dimensions and Testing: In accordance with AWWA C606.
  2. Mechanical Couplings: Comply with ASTM F1476.
  3. Gasket Material: EPDM suitable for operating temperature range from minus 30 degrees F (minus 34 degrees C) to 230 degrees F (110 degrees C).
  4. Bolts and Nuts: Hot dipped galvanized or zinc-electroplated steel.
  5. When pipe is field grooved, provide coupling manufacturer's grooving tools.
- D. Dielectric Connections:
1. Waterways:
    - a. Water impervious insulation barrier capable of limiting galvanic current to 1 percent of short circuit current in a corresponding bimetallic joint.

- b. Dry insulation barrier able to withstand 600-volt breakdown test.
- c. Construct of galvanized steel with threaded end connections to match connecting piping.
- d. Suitable for the required operating pressures and temperatures.
- 2. Flanges:
  - a. Dielectric flanges with same pressure ratings as standard flanges.
  - b. Water impervious insulation barrier capable of limiting galvanic current to 1 percent of short circuit current in a corresponding bimetallic joint.
  - c. Dry insulation barrier able to withstand 600-volt breakdown test.
  - d. Construct of galvanized steel with threaded end connections to match connecting piping.
  - e. Suitable for the required operating pressures and temperatures.

## **2.07 BALL VALVES (USE ON 2" AND SMALLER PIPING)**

- A. Up To and Including 2 Inches (50 mm):
  - 1. Bronze one piece body, chrome plated brass ball, teflon seats and stuffing box ring, lever handle with balancing stops, solder ends with union.

## **2.08 BUTTERFLY VALVES (USE ON 2-1/2" AND LARGER PIPING)**

- A. Manufacturers:
- B. Body: Cast or ductile iron with resilient replaceable EPDM seat, lug ends, extended neck.
- C. Disc: Construct of aluminum bronze, chrome plated ductile iron, stainless steel, ductile iron with EPDM encapsulation, or Buna-N encapsulation.
- D. Operator: 10 position lever handle.

## **2.09 SWING CHECK VALVES**

- A. Up To and Including 2 Inches (50 mm):
  - 1. Bronze body, bronze trim, bronze rotating swing disc, with composition disc, solder ends.
- B. Over 2 Inches (50 mm):
  - 1. Iron body, bronze trim, stainless steel, bronze, or bronze faced rotating swing disc, renewable disc and seat, flanged or grooved ends.

## **2.10 FLOW CONTROLS**

- A. Construction: Class 125, Brass or bronze body with union on inlet and outlet, temperature and pressure test plug on inlet and outlet, blowdown/backflush drain.
- B. Calibration: Control flow within 5 percent of selected rating, over operating pressure range of 10 times minimum pressure required for control, minimum pressure 3.5 psi (24 kPa).
- C. Actuators: Torque and stroke compatible with the proposed valve model. Modulating control (i.e. not floating control), slow acting, non-spring return, no position feedback. Actuator shall be able to fully close against 150% of the maximum operating pressure of the system.

# **PART 3 EXECUTION**

## **3.01 PREPARATION**

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Prepare pipe for grooved mechanical joints as required by coupling manufacturer.
- C. Remove scale and dirt on inside and outside before assembly.
- D. Prepare piping connections to equipment using jointing system specified.
- E. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps. Clean pipe strainers as necessary to remove debris.
- F. After completion, fill, clean, and treat systems. Refer to Section 23 2500 for additional requirements.

### 3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Route piping in orderly manner, parallel to building structure, and maintain gradient.
- C. Install piping to conserve building space and to avoid interference with use of space.
- D. Group piping whenever practical at common elevations.
- E. Sleeve pipe passing through partitions, walls, and floors.
- F. Slope piping and arrange to drain at low points.
- G. Prior to filling with water and/or glycol, thoroughly flush all new piping so that no remaining chemicals, such as adhesives, solvents, seals, etc., remain. Failure to properly flush piping may lead to compromised performance of pipe fittings, especially grooved fittings. Refer to section 23 2500.
- H. After filling piping with water and charging with appropriate glycol concentrations, verify that automatic air vents are in working order and are eliminating air. Verify that manual air vents are open during fill and are closed upon completion of fill when the minimum loop pressure at the suction of the pumps and at the highest point of each loop is at least 15 psig.
- I. Grooved Joints:
  - 1. Install in accordance with the manufacturer's latest published installation instructions.
  - 2. Gaskets to be suitable for the intended service, molded, and produced by the coupling manufacturer.
- J. Pipe Hangers and Supports:
  - 1. Install in accordance with ASME B31.9, ASTM F708, or MSS SP-58.
  - 2. Support horizontal piping as scheduled.
  - 3. Install hangers to provide minimum 1/2-inch (13 mm) space between finished covering and adjacent work.
  - 4. Place hangers within 12 inches (300 mm) of each horizontal elbow.
  - 5. Use hangers with 1-1/2 inches (38 mm) minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
  - 6. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
  - 7. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
  - 8. 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. Use eccentric reducers to maintain top of pipe level.
- L. Conduct hydrostatic pressure testing in accordance with ASME B31.9.

### 3.03 SCHEDULES

- A. Hanger Spacing for Steel Piping.
  - 1. 1/2 Inch (15 mm), 3/4 Inch (20 mm), and 1 Inch (25 mm): Maximum span, 7 feet (2100 mm); minimum rod size, 1/4 inch (6 mm).
  - 2. 2 Inches (50 mm): Maximum span, 10 feet (3.0 m); minimum rod size, 3/8 inch (9 mm).
  - 3. 3 Inches (80 mm): Maximum span, 12 feet (3.6 m); minimum rod size, 3/8 inch (9 mm).
  - 4. 4 Inches (100 mm): Maximum span, 14 feet (4.3 m); minimum rod size, 1/2 inch (13 mm).
  - 5. 6 Inches (150 mm): Maximum span, 17 feet (5.1 m); minimum rod size, 1/2 inch (13 mm).
  - 6. 8 Inches (200 mm): Maximum span, 19 feet (5.8 m); minimum rod size, 5/8 inch (16 mm).

**END OF SECTION**



## SECTION 23 2114 HYDRONIC SPECIALTIES

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Expansion tanks.
- B. Air vents.
- C. Air separators.
- D. Strainers.
- E. Suction diffusers.
- F. Pressure-temperature test plugs.
- G. Balancing valves.
- H. Flow meters.
- I. Glycol system.

#### 1.02 RELATED REQUIREMENTS

- A. Section 23 2113 - Hydronic Piping.
- B. Section 23 2500 - HVAC Water Treatment: Pipe cleaning.

#### 1.03 REFERENCE STANDARDS

- A. ASME B16.5 - Pipe Flanges and Flanged Fittings NPS 1/2 Through NPS 24 Metric/Inch Standard; 2017.
- B. ASME BPVC-VIII-1 - Boiler and Pressure Vessel Code, Section VIII, Division 1: Rules for Construction of Pressure Vessels; 2019.

#### 1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide product data for manufactured products and assemblies required for this project. Include component sizes, rough-in requirements, service sizes, and finishes. Include product description and model.
- C. Manufacturer's Installation Instructions: Indicate hanging and support methods, joining procedures.
- D. Maintenance Data: Include installation instructions, assembly views, lubrication instructions, and replacement parts list.

#### 1.05 DELIVERY, STORAGE, AND HANDLING

- A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
- B. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- C. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

### PART 2 PRODUCTS

#### 2.01 EXPANSION TANKS

- A. Construction: Welded steel, tested and stamped in accordance with ASME BPVC-VIII-1; supplied with National Board Form U-1, rated for working pressure of 125 psi (860 kPa), with flexible EPDM diaphragm or bladder sealed into tank, and steel support stand.
- B. Accessories: Pressure gauge and air-charging fitting, tank drain; precharge to 12 psi (80 kPa).

#### 2.02 AIR VENTS

- A. Manual Type: Short vertical sections of 2-inch (50 mm) diameter pipe to form air chamber, with 1/8 inch (3 mm) brass needle valve at top of chamber.

- B. Float Type:
  - 1. Brass or semi-steel body, copper, polypropylene, or solid non-metallic float, stainless steel valve and valve seat; suitable for system operating temperature and pressure; with isolating valve.

## **2.03 STRAINERS**

- A. Size 2 inch (50 mm) and Under:
  - 1. Screwed brass or iron body for 175 psi (1200 kPa) working pressure, Y pattern with 1/32 inch (0.8 mm) stainless steel perforated screen.
- B. Size 2-1/2 inch (65 mm) to 4 inch (100 mm):
  - 1. Provide flanged or grooved iron body for 175 psi (1200 kPa) working pressure, Y pattern with 1/16 inch (1.6 mm) stainless steel perforated screen.
- C. Size 5 inch (125 mm) and Larger:
  - 1. Provide flanged or grooved iron body for 175 psi (1200 kPa) working pressure, basket pattern with 1/8 inch (3.2 mm) stainless steel perforated screen.

## **2.04 SUCTION DIFFUSERS**

- A. Fitting: Angle pattern, cast-iron body, threaded for 2 inch (50 mm) and smaller, flanged for 2-1/2 inch (65 mm) and larger, rated for 175 psi (1200 kPa) working pressure, with inlet vanes, cylinder strainer with 3/16 inch (5 mm) diameter openings, disposable 5/32 inch (4 mm) mesh strainer to fit over cylinder strainer, 20 mesh startup screen, and permanent magnet located in flow stream and removable for cleaning.
- B. Accessories: Adjustable foot support, blowdown tapping in bottom, gauge tapping in side.

## **2.05 PRESSURE-TEMPERATURE TEST PLUGS**

- A. Construction: Brass body designed to receive temperature or pressure probe with removable protective cap, and Neoprene rated for minimum 200 degrees F (93 degrees C).
- B. Application: Use extended length plugs to clear insulated piping.

## **2.06 BALANCING VALVES**

- A. Size 2 inch (50 mm) and Smaller:
  - 1. Provide ball style with flow balancing, flow measurement, and shut-off capabilities, memory stops, minimum of two metering ports and NPT threaded connections.
  - 2. Metal construction materials consist of bronze.
  - 3. Non-metal construction materials consist of Teflon or EPDM.
- B. Size 2.5 inch (64 mm) and Larger:
  - 1. Provide butterfly style with flow balancing, flow measurement, and shut-off capabilities, memory stops, minimum of two metering ports and flanged, grooved, or weld end connections.
  - 2. Valve body construction materials consist of carbon steel or ductile iron.
  - 3. Internal components construction materials consist of brass, aluminum bronze, bronze, Teflon, or EPDM.

## **2.07 GLYCOL SYSTEM**

- A. Glycol Solution:
  - 1. Inhibited propylene glycol and water solution mixed 30 percent glycol - 70 percent water, suitable for operating temperatures from minus 40 degrees F (minus 40 degrees C) to 250 degrees F (121 degrees C).
  - 2. Utilize existing fill connection.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install specialties in accordance with manufacturer's instructions.
- B. Provide manual air vents at system high points and as indicated.

- C. Support pump fittings with floor mounted pipe and flange supports.
- D. Provide valved drain and hose connection on strainer blowdown connection.
- E. Provide pump suction fitting on suction side of base-mounted centrifugal pumps. Remove temporary strainers after cleaning systems.
- F. Clean and flush glycol system before adding glycol solution. Refer to Section 23 2500.

**END OF SECTION**

## **SECTION 23 2123 HYDRONIC PUMPS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Base-mounted pumps.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete.
- B. Section 23 0513 - Common Motor Requirements for HVAC Equipment.
- C. Section 23 2113 - Hydronic Piping.
- D. Section 23 2114 - Hydronic Specialties.

#### **1.03 REFERENCE STANDARDS**

- A. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- B. UL 778 - Standard for Motor-Operated Water Pumps; Current Edition, Including All Revisions.

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: 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.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Bell & Gossett, a Xylem Inc. brand; [www.bellgossett.com/#sle](http://www.bellgossett.com/#sle).
- B. Taco Comfort Solutions, Inc.; [www.tacomfort.com](http://www.tacomfort.com).
- C. Substitutions: See Section 01 6000 - Product Requirements.

#### **2.02 HVAC PUMPS - GENERAL**

- A. Provide pumps that operate at specified system fluid temperatures without vapor binding and cavitation, are non-overloading in parallel or individual operation, and operate within 25 percent of midpoint of published maximum efficiency curve.
- B. Products Requiring Electrical Connection: Listed and classified by UL or testing agency acceptable to Authority Having Jurisdiction as suitable for the purpose specified and indicated.

#### **2.03 BASE-MOUNTED PUMPS**

- A. Type: Horizontal shaft, single stage, direct connected, radially split casing, for 125 psi (860 kPa) maximum working pressure.
- B. Casing: Cast iron, or ductile iron with suction and discharge gauge ports, renewable bronze casing wearing rings, seal flush connection, drain plug, flanged suction and discharge.
- C. Seal: Mechanical seal, 225 degrees F (107 degrees C) maximum continuous operating temperature.
- D. Electrical Characteristics:
  - 1. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Provide access space around pumps for service. Provide no less than minimum space recommended by manufacturer.

- C. Provide line sized shut-off valve and strainer on pump suction, and line sized soft seat check valve and balancing valve on pump discharge.
- D. Check, align, and certify alignment of base-mounted pumps prior to start-up.
- E. Install close-coupled and base-mounted pumps on concrete housekeeping base, with anchor bolts, set and level, and grout in place.

**END OF SECTION**

## **SECTION 23 2500 HVAC WATER TREATMENT**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Materials.
  - 1. Closed system treatment (water).

#### **1.02 RELATED REQUIREMENTS**

- A. Section 23 2113 - Hydronic Piping.
- B. Section 23 2114 - Hydronic Specialties.

#### **1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

### **PART 2 PRODUCTS**

#### **2.01 REGULATORY REQUIREMENTS**

- A. Comply with applicable codes for addition of non-potable chemicals to building mechanical systems and to public sewage systems.

#### **2.02 MATERIALS**

- A. Closed System Treatment (Water):
  - 1. Sequestering agent to reduce deposits and adjust pH; polyphosphate.
  - 2. Corrosion inhibitors; boron-nitrite, sodium nitrite and borax, sodium totyltriazole, low molecular weight polymers, phosphonates, sodium molybdate, or sulphites.

### **PART 3 EXECUTION**

#### **3.01 CLEANING SEQUENCE**

- A. Hot Water Heating Systems:
  - 1. Apply heat while circulating, slowly raising temperature to 160 degrees F (71 degrees C) and maintain for 12 hours minimum.
  - 2. Remove heat and circulate to 100 degrees F (37.8 degrees C) or less; drain systems as quickly as possible and refill with clean water.
  - 3. Circulate for 6 hours at design temperatures, then drain.
  - 4. Refill with clean water and repeat until system cleaner is removed.
- B. Chilled Water Systems:
  - 1. Circulate for 48 hours, then drain systems as quickly as possible.
  - 2. Refill with clean water, circulate for 24 hours, then drain.
  - 3. Refill with clean water and repeat until system cleaner is removed.
- C. Flush open systems and glycol filled closed systems with clean water for one hour minimum. Drain completely and refill.
- D. Remove, clean, and replace strainer screens.
- E. Inspect, remove sludge, and flush low points with clean water after cleaning process is completed. Include disassembly of components as required.

#### **3.02 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.

#### **3.03 CLOSED SYSTEM TREATMENT**

- A. Introduce closed system treatment through bypass feeder when required or indicated by test.

**END OF SECTION**

## **SECTION 23 5700 HEAT EXCHANGERS FOR HVAC**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Plate type heat exchangers.
- B. Accessories and trim.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 23 0913 - Instrumentation and Control Devices for HVAC.
- B. Section 23 2113 - Hydronic Piping.
- C. Section 23 2114 - Hydronic Specialties.

#### **1.03 REFERENCE STANDARDS**

- A. ASME BPVC-VIII-1 - Boiler and Pressure Vessel Code, Section VIII, Division 1: Rules for Construction of Pressure Vessels; 2019.

#### **1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data with dimensions, locations, and size of tappings and performance data.
- C. Manufacturer's Instructions: Indicate installation and support requirements.
- D. Operation and Maintenance Data: Include start up and shut down instructions, assembly drawings, and spare parts lists.
- E. Warranty: Submit manufacturer's warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Protect internals from entry of foreign material by temporary caps on flanged openings.

### **PART 2 PRODUCTS**

#### **2.01 PLATE AND FRAME TYPE HEAT EXCHANGER**

- A. Comply with ASME BPVC-VIII-1 for manufacture of plate and frame type heat exchangers.
- B. Frames: Carbon steel with baked epoxy enamel paint, side bolts and shroud.
- C. Plates: Stainless steel Type 304.
- D. Gaskets: EPDM.
- E. Nozzles: 125 psi (860 kPa) rated lined flange type.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install to permit removal of plates with minimum disturbance to installed equipment and piping.
- C. Support heat exchangers on concrete housekeeping pad.
- D. Pipe drain valves to nearest floor drain.
- E. Install new insulation, vapor barrier, and jacketing per Section 23 0716.

#### **3.02 WATER TO WATER HEAT EXCHANGER TRIM**

- A. Water Inlets and Outlets: Thermometer wells, pressure gauge tappings.

**END OF SECTION**

## SECTION 236416 AIR-TO-WATER HEAT PUMP

### PART 1 - GENERAL

#### 1.01. RELATED REQUIREMENTS

- A. Section 23 0913 - Instrumentation and Control Devices for HVAC.
- B. Section 23 2113 - Hydronic Piping.
- C. Section 23 2114 - Hydronic Specialties.

#### 1.02. REFERENCE STANDARDS

- A. ASHRAE 15 – Safety Code for Mechanical Refrigeration
- B. ASHRAE 90.1 – Energy Efficient Design of New Buildings
- C. ASHRAE 90.2 – Energy Efficient Design of New Low-Rise Residential Buildings
- D. ASME (BPV VIII, 1) – Boiler and Pressure Vessel Code, Section VIII, Division 1 – Rules for Construction of Pressure Vessels; 1995.
- E. NEMA MG1 – Motors and Generators; 1993 (and Revision 1).
- F. UL 465 – Central Cooling Air Conditioners; 1982.

#### 1.03. SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide rated capacities, weights, specialties and accessories, electrical requirements and wiring diagrams.
- C. Shop Drawings: Indicate components, assembly, dimensions, weights and loadings, required clearances and location and size of field connections. Indicate equipment, piping and connections, valves, strainers and thermostatic valves required for complete system.
- D. Test Reports: Indicate energy input versus cooling and heating load output from 25 to 100 percent of full load (at specified and minimum ambient temperatures).
- E. Manufacturer's Instructions: Submit manufacturer's complete installation instructions.
- F. Manufacturer's Certificate: Certify that components of package not furnished by manufacturer have been selected in accordance with manufacturer's requirements.
- G. Operation and Maintenance Data: Include start-up instructions, maintenance data, parts lists, controls and accessories. Include trouble-shooting guide.
- H. Product data shall be submitted for approval as follows:
  - 1. Air-to-Water Heat Pump and accessories.
  - 2. All other auxiliaries.
  - 3. Full load and part load performance data by manufacturer's computer.
- I. The electrical connections shown on the electrical design drawings are based upon a single manufacturer. Additional electrical requirements for other manufacturers for pumps, controls, etc., shall be the responsibility of the Contractor to coordinate and carry the additional cost to furnish and install all electrical equipment necessary to provide a complete operable system. Additional charges to the Owner will not be acceptable for substitute equipment.
- J. Modules, if applicable, shall ship wired and charged with refrigerant. All modules shall be factory run tested prior to shipment on an AHRI certified or 3rd party verified test stand. Proof of this testing must be provided to the engineer and owner.
- K. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

#### 1.04. QUALITY ASSURANCE

- A. Provide certification of inspection for conformance to requirements of authority having jurisdiction.



- B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

#### **1.05. DELIVERY, STORAGE AND PROTECTION**

- A. Comply with manufacturer's installation instructions for rigging, unloading and transporting units.

#### **1.06. WARRANTY**

- A. All equipment to be furnished in this Section of the specifications shall be guaranteed against defects in material or workmanship for a period of two (2) years from date of startup or 6 months from shipment, whichever occurs first. 5 year compressor parts warranty shall be carried by the manufacturer.

### **PART 2 – PRODUCTS**

#### **2.01. GENERAL**

- A. Furnish and install as scheduled Air-to-Water heat pump using Refrigerant R-410A.
- B. Five (5) year compressor parts warranty from date of startup.
- C. Prior to shipment the chiller controls shall be tested under power to verify proper controls operation.
- D. Unit shall be stored and handled in accordance with manufacturer's instructions.
- E. Unit shall be shipped with all refrigerant piping and control wiring factory installed.
  - 1. Each Chiller shall have:
    - a. A single point power connection.
    - b. A single hot water/chilled glycol supply connection.
    - c. A single hot water/chilled glycol return connection.
    - d. A single point for all BAS control connections.
    - e. Evaporator insulation.
- F. Unit shall be shipped with firmly attached metal plates that indicate name of manufacturer, heat pump model number, serial number, and refrigerant used.
- G. The heat pump shall be selected to meet or exceed performance requirements as indicated in drawings.
- H. Compressors, heat exchangers, condenser fans, piping and controls shall be mounted on a heavy gauge, powder coated steel frame. Electrical controls, contactors, and relays for each module shall be mounted within that module. Module shall be provided within a steel enclosure suitable for outdoor use. Exposed steel surfaces shall be provided with a powder coat paint finish.

#### **2.02. MANUFACTURERS**

- A. Acceptable Manufacturers:
  - 1. Multistack
  - 2. Aermec
  - 3. Trane/ArtiCool
  - 4. Daikin Applied
  - 5. Carrier
- B. Substitutions: See Section 01 2500 - Substitution Procedures.

#### **2.03. HEAT PUMP**

- A. Each refrigerant circuit shall consist of an individual compressor set, common dual circuit evaporator, dual circuit condenser, electronic expansion valves, reversing valves, liquid line solenoid valves, filter driers, Fin and Tube coil, and control system. Each circuit shall be constructed to be independent of other circuits (if there are multiple circuits) from a refrigeration and electrical stand-point. The multi-circuit Heat Pump must be able to produce heating or cooling water even in the event of a failure of one or more refrigerant circuits. Compressor,

motor and transmission shall be hermetically sealed into a common assembly or open motor driven and arranged for easy field servicing. Internal compressor parts shall be accessible for servicing without removing the compressor from the heat pump. Connections to the compressor shall be flanged or bolted for easy disassembly.

- B. Glycol Loop Piping Connections: Each module, if applicable, shall include supply and return mains for Load water. Cut grooved end connections shall be provided for interconnection to six (6) inch standard piping with grooved type couplings. Rolled grooved shall be unacceptable.
- C. Source/Sink Fans: Each module shall contain electronically-commutated motor (ECM) fans for each refrigerant circuit. Blades are aluminum construction fan with integral EC motor. Individual fans are factory tested.
- D. Compressor: Provide hermetic compressor(s) mounted to the heat pump assembly with rubber-in-shear isolators. Include high discharge pressure and low suction pressure safety cut-outs.
- E. Heat Exchangers: Each heat exchanger shall be a brazed plate heat exchangers constructed of 316 stainless steel; designed, tested, and stamped in accordance with UL 1995 code for 650 psig working pressure.
- F. Heat Pump shall have external inputs and outputs to be compatible with the building management system to include Remote Start/Stop capability, Remote Temperature Setpoint control, and Alarm output.
- G. Each refrigerant circuit shall include all refrigerant specialties including a properly sized refrigerant receiver to provide reliable operation down to 0°F Ambient. Heating capacity shall meet or exceed the scheduled values on the design drawings.
- H. Heat Pump shall be provided with single point power connection. Include pre-engineered wiring for field installation and connection to a factory mounted Heat Pump junction box. Junction box shall include individual fusing for each Module Set.
- I. Heat Pump shall ship from the factory on an I-beam painted steel frame with all modules, as applicable, mounted upon it. If applicable, all water and wiring connections will be made between the modules at the factory.
- J. Provide one flow switch per module. Integral to each module and powered by the module for individual module proof of flow and flow safety.
- K. All wiring, including communication wiring from the master controller must be factory installed. Heat pump must be controlled by a single master controller able to oversee the operation of all subcomponents/modules.

#### **2.04. CONTROLS, SAFETIES AND DIAGNOSTICS**

- A. Scheduling of the various compressors shall be performed by a microprocessor based control system (Master Controller). A new lead compressor (if there are multiple) is selected every 24 hours to assure even distribution of compressor run time.
- B. The Master Controller shall monitor and report the following on each refrigeration system:
  - 1. Discharge Pressure Fault
  - 2. Suction Pressure Fault
  - 3. Compressor Winding Temperature
  - 4. Suction Temperature
  - 5. Glycol Leaving Temp.
- C. The Master Controller shall monitor and report the following system parameters:
  - 1. Glycol Entering and Leaving Temperature
  - 2. Discharge/Suction Refrigerant Temperature
  - 3. Glycol Flow
- D. An out of tolerance indication from these controls or sensors shall cause a "fault" indication at the Master Controller and shutdown of that compressor(if there are multiple) with the transfer of load requirements to the next available compressor. In the case of a System Fault the entire

Heat Pump will be shut down. When a fault occurs, the Master Controller shall record conditions at the time of the fault and store the data for recall. This information shall be capable of being recalled through the keypad of the Master Controller and displayed on the Master Controller's LCD. A history of faults shall be maintained including date and time of day of each fault.

- E. Individual monitoring of leaving glycol temperatures from each circuit shall be programmed to protect against freeze-up.
- F. Provide Master Controller with BACnet MS/TP communication protocol. Controller shall be BACnet Testing Laboratory (BTL) listed.

## **2.05. ELECTRICAL REQUIREMENTS**

- A. It shall be the responsibility of the HVAC Contractor to furnish the Electrical and ATC Contractor with all wiring requirements to be performed as specified hereinafter.
- B. Electrical contractor shall supply and install main electrical power line, disconnect switches, circuit breakers, electrical protection devices per local code requirements and indicated necessary by the heat pump manufacturer.
- C. ATC Contractor shall wire the water flow switches to the chiller control circuit to ensure that heat pump will not operate until flows are established and maintained.
- D. ATC Contractor shall supply and install electrical and network wiring and devices required to interface the heat pump controls with the building control system.
- E. Electrical power shall be supplied to the unit by the Electrical Contractor at the voltage, phase and frequency listed in the equipment schedule.

## **2.06. PIPING REQUIREMENTS - INSTRUMENTATION AND SAFETIES**

- A. The HVAC Contractor shall supply and install pressure and temperature gauges in readily accessible locations in piping adjacent to the chiller such that they can be easily read from a standing position on the floor. Refer to the P&ID drawing.

## **2.07. INSTALLATION**

- A. In accordance with manufactures written instructions and recommendations.
- B. Coordinate location and all required clearances and code clearances required.
- C. Coordinate and provide all interlock wiring.
- D. Provide a factory-trained representative, employed by the heat pump manufacturer, to perform the start-up procedures as outlined in the start-up, operation and maintenance manual provided by the heat pump manufacturer.
- E. The HVAC Contractor shall supply the Owner with the following literature as furnished by the manufacturer prior to start-up:
  - 1. One (1) complete set of installation drawings
  - 2. Field wiring diagrams
  - 3. Installation instructions
  - 4. Start-up, operation and maintenance instructions
- F. Piping System Flushing Procedure
  - 1. Prior to connecting the Heat Pump to the building glycol loop, the piping shall be flushed with a detergent and hot water (110-130° F) mixture to remove previously accumulated dirt and other organic residue.
  - 2. During the flushing a 30 mesh (max.) Y-strainers (or acceptable equivalent) shall be in place in the system piping and examined periodically as necessary to remove collected residue. The use of on board chiller strainers shall not be acceptable. The flushing process shall take no less than 24 hours or until the strainers, when examined after each flushing, are clean. Detergent and acid concentrations shall be used in strict accordance with the respective chemical manufacturer's instructions. After flushing with the detergent and/or dilute acid concentrations the system loop shall be purged

with clean water for at least two hours to ensure that all residual cleaning chemicals have been flushed out.

3. Prior to supplying water to the Heat Pump, the Water Treatment Specification shall be consulted for requirements regarding the water quality during Heat Pump operation. The Heat Pump manufacturer's service literature shall be referenced by the Contractor and consulted for guidelines concerning preventative maintenance and off-season shutdown procedures.

G. Water Treatment Requirements

1. Supply water for the glycol circuit shall be analyzed and treated by a professional water treatment specialist who is familiar with the operating conditions and materials of construction specified for the Heat Pump's heat exchangers, headers and associated piping. Cycles of concentration shall be controlled such that recirculated water quality for Heat Pumps using 316 stainless steel brazed plate heat exchangers and carbon steel headers is maintained within the following parameters:
  - a. pH Greater than 7 and less than 9
  - b. Total Dissolved Solids (TDS) Less than 1000 ppm
  - c. Hardness as CaCO<sub>3</sub> 30 to 500 ppm
  - d. Alkalinity as Ca CO<sub>3</sub> 30 to 500 ppm
  - e. Chlorides Less than 200 ppm
  - f. Sulfates Less than 200 ppm

**END OF SECTION**

## **SECTION 26 0000 ELECTRICAL**

### **PART 1 GENERAL**

#### **1.01 GENERAL PROVISIONS**

- A. The Conditions of the Contract and General Requirements shall be part of this Section.
- B. Examine all Drawings and all other Sections of the Specifications for requirements affecting the work of this Section.

#### **1.02 WORK INCLUDED**

- A. The scope of the work consists of the installation of all materials to be furnished under this Section, and without limiting the generality thereof, includes all materials, equipment, hoisting, rigging, staging, labor and services required for furnishing, delivering, and installing the principal items of work hereinafter, and all items incidental thereto, as specified herein and as shown on the drawings under the base bid, except where there is specific reference of exclusion and incorporation in other quotations.
- B. The scope of work shall also include the complete removal and disconnection of all existing electrical components, as required. Reference section 3.02, "DEMOLITION, RELOCATION AND REMOVAL OF EXISTING WIRING," for additional requirements.
- C. Electrical work shall include, but not be limited to, the following systems:
  - 1. Miscellaneous materials to ensure complete installation
  - 2. Wireways and pullboxes
  - 3. Wire and cable systems
  - 4. Wiring devices and device plates and outlet boxes
  - 5. Temporary light and power
  - 6. Nameplates
  - 7. Motor wiring
  - 8. All grounding required by the National Electrical Code
  - 9. Operating and maintenance manuals
  - 10. Record Drawings
  - 11. Testing

#### **1.03 RELATED WORK**

- A. The following work or equipment shall be furnished and installed by the Electrical Contractor:
  - 1. Power wiring to all mechanical equipment
- B. The following work is not included in this Section and shall be furnished and installed by others:
  - 1. All temperature control wiring shall be furnished and installed by the HVAC Contractor.
  - 2. Disconnect Switch shall be integral to the mechanical equipment and supplied by the Mechanical Contractor, wired by the Electrical Contractor.
  - 3. Painting (except for factory finished items) specified under Section "Painting".
  - 4. Access panels, where required, are furnished under this Section, but shall be installed under the related trades of the surface in which they are installed.
  - 5. All cutting and patching required for the electrical installation shall be done by the General Contractor.
  - 6. Fireproofing will be furnished and installed under Sprayed Fireproofing. Patching and repairing of fireproofing due to cutting or damage during course of work of this Section shall be performed by installer of fireproofing and paid for under this Section.

#### **1.04 REFERENCE**

- A. Installation shall comply with the latest revisions of the National Electrical Code and with all prevailing federal, state, and local codes.
- B. All material and equipment shall be Underwriters' Laboratories, Inc. listed, where a standard has been established.

- C. Manufacturers' names and nomenclature facilitates descriptions of certain materials and equipment, and are used to establish type, quality and function.
- D. Unless otherwise specified, all work shall be manufactured, tested and installed in accordance with the latest editions of applicable publications and standards of the following organizations:
  - 1. International Building Code
  - 2. Commonwealth of Massachusetts State Building Code (SBC).
  - 3. American Society of Testing and Material (ASTM).
  - 4. Underwriters' Laboratories, Inc. (UL)
  - 5. Insulated Power Cable Engineers Associates (IPCEA).
  - 6. National Electrical Manufacturers Associates (NEMA).
  - 7. Institute of Electrical and Electronic Engineers (IEEE).
  - 8. American National Standards Institute (ANSI).
  - 9. National Fire Protection Association (NFPA).
  - 10. National Electrical Code (NEC).
  - 11. Massachusetts Electrical Code (MEC).
  - 12. Americans with Disabilities Act (ADA), Public Law 101-336.
  - 13. Insulated Cable Engineers Association.
- E. Should specifications, Architects' instructions, laws, ordinances, or public authority require any special tests or approvals arrange for these and give the Architect timely notice. If the inspection is by another authority other than the Architect, notify the Architect of the dates fixed for such inspection.
- F. Where reference is made to Codes and Standards, these shall be interpreted as minimum requirements. Requirements in excess of these codes and standards may be indicated on the Drawings or in the Specifications and shall be so included in the contract work. Compliance with such code requirements only shall not be construed as fulfillment of the contract work, where the plans and/or Specifications indicate additional work, which may exceed such code standards.

#### **1.05 SUBMITTALS**

- A. Submit complete Product Data Sheets in accordance with the provisions of the GENERAL CONDITIONS AND SPECIAL CONDITIONS.
- B. Product Data Sheets shall be complete and include manufacturers name, factory assembly drawings and field installation drawings as required for a complete explanation and description of all items and equipment.
- C. Data sheets shall include - but are not necessarily limited to - the following items:
  - 1. Wiring devices (receptacles)
  - 2. Wires, cables and raceways
  - 3. Outlet boxes
  - 4. Conduit
  - 5. Operating and maintenance manuals
  - 6. Record Drawings
  - 7. Test results
  - 8. Guarantee
- D. The Acceptance of systems, equipment and data sheets is a general approval subject to the contract Drawings, Specifications, and verification of all measurements at the job. Acceptance does not relieve the Electrical Contractor from the responsibility of data sheet errors or omissions. Quantity of items indicated on submittal is the responsibility of the Electrical Contractor.
- E. All equipment and materials shall be new and without blemish or defect.
- F. It is the intent of these specifications that whenever a manufacturer of a product is specified, and the terms "other approved" or "or approved equal" or "equal" are used, the substituted item must conform in all respects to the specified item.

- G. Substituted equipment or optional equipment where permitted and approved, must conform to space requirements. Any substituted equipment that cannot meet space requirements, whether approved or not, shall be replaced at the Contractor's expense. Any modification of related systems as a result of substitutions shall be made at the Contractor's expense.

#### **1.06 RECORD DRAWINGS**

- A. In accordance with requirements, furnish and keep in the job at all times, two (2) complete and separate sets of blackline prints of the electrical work on which shall be clearly, neatly and accurately noted, promptly as the work progresses, all electrical changes, revisions and additions to the work. Whenever work is installed otherwise than as shown on the Contract Drawings, such changes shall be noted.
- B. At the conclusion of work, prepare Record Drawings in accordance with General Conditions.

#### **1.07 COORDINATION DRAWINGS**

- A. Before materials are purchased or work is begun, this Contractor shall prepare coordination drawings showing the size and location of his equipment and conduit runs.
- B. Coordination drawings are for the General Contractor's and the Engineer's use during construction and shall not be construed as replacing any shop, as-built or record drawings required elsewhere in the Contract Document.

#### **1.08 OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS**

- A. Instruct to the Owner's satisfaction, such persons as the Owner designates, in the proper operation and maintenance of the systems and their parts.
- B. Furnish operating and maintenance manuals and forward same to the Engineer for transmittal to the Owner.
- C. Operating instructions shall be specific for each system and shall include copies of posted specific instructions.
- D. For maintenance purposes, provide shop Drawings, part lists, specifications and manufacturer's maintenance bulletins for each piece of equipment.
- E. Provide name, address and telephone number of the manufacturer's representative and service company each piece of equipment so that service or spare parts can be readily obtained.

#### **1.09 GUARANTEE**

- A. Attention is directed to provisions of the GENERAL CONDITIONS AND SPECIAL CONDITIONS regarding guarantees and warranties for work under this Contract.
- B. Manufacturers shall provide their standard guarantee for work under this Section. However, such guarantees shall be in addition to and not in lieu of all other liabilities, which the manufacturer and Contractor may have by law or by other provisions of the Contract Documents.
- C. All material, items of equipment and workmanship furnished under this Section shall carry for this standard warranty against all defects in material and workmanship. Any fault due to defective or improper material, equipment workmanship or design which may develop shall be made good forthwith, by and at the expense of the Electrical Contractor, including all other damage done to areas, materials and other systems resulting from this failure.
- D. Electrical Contractor shall guarantee that all elements of the systems are of sufficient capacity to meet the specified performance requirements as set forth herein or as indicated.
- E. Upon receipt of notice from the Owner indicating failure of any part of the systems or equipment during the guarantee period, the affected part or parts shall be replaced by the Electrical Contractor at no cost to the Owner.
- F. Furnish, before the final payment is made, a written guarantee covering the above requirements for a period of one year. The warranty period shall commence upon the date of Substantial Completion as determined by the Architect.

### **1.10 WORKMANSHIP**

- A. The entire work provided in this Specification shall be constructed and finished in every respect in a workmanlike and substantial manner. Equipment shall be securely installed plumb and/or level. No electrical equipment shall be supported by work of other trades.
- B. Obtain detailed information from the manufacturers of apparatus as to the proper method of installing and connecting equipment. Obtain all information from the General Contractor and other Subcontractors, which may be necessary to facilitate work and the completion of the whole project.
- C. Remove daily, all rubbish and debris and all refuse from workmen's lunches and at completion, remove all their surplus materials, and leave the work in clean condition acceptable to the Engineer.

### **1.11 PROTECTION**

- A. This Contractor shall be responsible for the electrical work and equipment until finally inspected, tested and accepted. Carefully store materials and equipment, which are not immediately installed after delivery to site.

### **1.12 EXAMINATION OF SITE AND CONTRACT DOCUMENTS**

- A. Before submitting a proposal, this Contractor shall visit the premises and review the entire project, including ballasts in the existing fixtures, existing transformers and other devices classified as hazardous disposal. The Contractor shall determine the difficulties, conditions and disposal requirements, which may be encountered during the work. All charges related to meeting the intent of the Drawings and specifications shall be incorporated into the bid. If discrepancies arise between the Drawings and specifications, the more stringent requirement shall apply. No additional charges will be allowed due to existing conditions.
- B. Drawings, specifications and addenda shall comprise the bid documents. Work as shown on drawings, but not specified, or work specified, but not shown on the drawings shall be included as part of the bid documents. No additional changes will be allowed for failure to incorporate the work addressed in all bid documents.

### **1.13 DELIVERY/STORAGE**

- A. The Electrical Contractor shall be responsible for all materials delivered to the site in connection with the work and pay all charges for cartage, scaffolds, planking, rigging, and erecting. Take every precaution necessary to protect equipment and installation, in addition to plugging and protecting open ends of all pipes, outlet boxes, panelboxes, and junction boxes. All equipment shall be stored in a clean, dry place to preserve the quality of materials being use. Equipment and/or materials damaged during construction shall be replaced at no additional cost to the Owner.
- B. All materials and equipment required by this Specification shall be new, clean and free from defects at the time of installation. The Manufacturer's and Underwriter' label shall appear on all material and equipment, unless otherwise approved in writing by the Owner.

### **1.14 SUBSTITUTION OF MATERIALS OR EQUIPMENT**

- A. If the Electrical Contractor wishes to use materials or equipment other than those specifically designated herein, as being equal to those so specifically designated BEFORE PURCHASING AND/OR FABRICATION, the Electrical Contractor shall submit the proposed substitution in accordance with the requirements of the GENERAL CONDITIONS, and the decision of whether or not it is equal to that specified shall be determined by the Engineer.
- B. Unless requests for substitution are made in accordance with the above instructions and the instructions of the GENERAL CONDITIONS, supported by sufficient proof of equality, the successful Contractor will be required to furnish the specifically named items designated under the base bid.
- C. If the apparatus or materials substituted for those specified necessitate changes or additional connections, piping supports or construction, same shall be provided and the Electrical Contractor shall assume the cost and the entire responsibility thereto.



- D. The Engineer's permission to make such substitution shall not relieve the Electrical Contractor from full responsibility for the work.

#### **1.15 DRAWINGS**

- A. The Drawings are generally diagrammatic and are intended to convey the scope of work and indicate general arrangements of equipment, ducts, conduits, piping, and fixtures. The locations of all items shown on the Drawings or called for in the Specifications that are not definitely fixed by dimensions are approximate only.
- B. The Drawings showing layout of the electrical systems indicated the approximate location of outlets and equipment. The outlets as shown on the Drawings, are not intended to show the routing of the wire. The final determination as to the design of the system may change. It merely refers to the exact run of raceway between two points. Exact location of components shall be determined in the field by actual building conditions. Equipment or piping interfering with other installations shall be relocated at no additional cost to owner.

#### **1.16 FIELD MEASUREMENTS**

- A. The Electrical Contractor shall verify, in the field, all measurements necessary for the work and shall assume responsibility for their accuracy.

#### **1.17 PERMITS, LAWS, ORDINANCES AND CODES**

- A. The Electrical Contractor shall give all necessary notices, obtain all permits, and pay all taxes, fees, and other costs in connection with his work; file all necessary plans, prepare all necessary documents and obtain all necessary approvals of state authorities, all local town, city, or county departments having jurisdiction; obtain all required certificates of inspection for his work.
- B. The Electrical Contractor shall include in the work, without extra cost to the Owner, any labor, materials, services, apparatus, or drawings in addition to Contract Drawings and Documents, in order to comply with all applicable laws, ordinances, rules, and regulations whether or not shown on the Drawings and/or specified.

#### **1.18 DEFINITIONS**

- A. "This Contractor" means specifically the Electrical Contractor working under this Section of the Specifications.
- B. "Furnish and Install" means to supply, erect, install and connect up, complete for regular operation, the particular item referred to, unless otherwise specified.
- C. "Install" means to mount, erect and connect up, complete for regular operation, the particular item referred to, unless otherwise specified.
- D. "Piping" includes, in addition to conduit, all fittings, boxes, hangers and other accessories relating to such piping.
- E. "Provide" means to furnish and install.
- F. "Concealed" means hidden from sight as in trenches, chases, furred spaces, shafts, hung ceilings, embedded into construction, ground or concealed as defined above.

#### **1.19 CLEANING UP**

- A. The Electrical Contractor shall, at the completion of the work, clean, polish and/or wash all exposed items of material, equipment and fixtures in his contract so as to leave such items bright and clean. Special attention shall be given to interiors and exteriors of all panels, electrical equipment and enclosures.
- B. All painted metal surfaces, which have been scratched, dented, or marred shall be repainted by the Electrical Contractor.

#### **1.20 DAMAGE TO OTHER WORK**

- A. Each Contractor shall be held responsible for and shall pay for all damage to other work caused by his work or workmen.
- B. Repairing of such damage shall be done by the General Contractor or Contractors who installed the work, and so directed by the Engineer.

### **1.21 TEMPORARY ELECTRIC SERVICE**

- A. The Electrical Contractor shall provide temporary lighting and power system for the area of construction, during the project, and shall pay for the cost of installation.
- B. At the completion of the project, the Electrical Contractor shall completely remove the service and all cables and other devices and materials used for temporary construction power.

### **1.22 GROUNDING**

- A. A complete grounding system shall be furnished and installed in full compliance with the latest edition of the NEC.
- B. The equipment and materials required under this Section are included under PART 2 – PRODUCTS.
- C. Ground all systems and equipment in accordance with the best industry practice. Size all conductors per the latest addition of the NEC.
- D. Conductors utilized for grounding and bonding shall have type “THHN” or better insulation, color-coded green.
- E. For each feeder or run of lighting and appliance branch circuitry, include equipment and raceway grounding conductors run within the raceways. The indicated quantities of conductors do not include the ground wires.
- F. The central equipment for the fire protection alarm system shall have its grounding terminal connected to the nearest metallic cold water main by means of a #6 green coded insulated conductor, run in  $\frac{3}{4}$ ” threaded metallic conduit. Utilize a ground clamp of a type specifically manufactured for the purpose.
- G. Provide supplementary ground bonding where metallic conduits terminate at metal clad equipment (or at the metal pull box of equipment) for which a ground bus is specified. Accomplish this by equipping the conduits with bushings of the grounding type connected individually by means of jumpers to the ground bus.
- H. Provide proper grounding of Chiller support frame per the NEC.

### **1.23 NEUTRAL WIRING**

- A. For 120-volt branch circuit wiring to receptacles, common neutrals shall not be permitted.
- B. Individual neutral conductors shall be installed within the raceways and be run with the branch circuit.
- C. Conductors utilized for neutral wiring shall have type “TW” or better insulation, color coded white.

## **PART 2 PRODUCTS**

### **2.01 GENERAL**

- A. All materials and equipment necessary to make the installation complete in every detail shall be furnished and installed under this Contract, whether or not specifically indicated on the Drawings or specified herein. All materials and equipment shall be new.
- B. 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., except specific material classifications in which delivery time becomes a problem. The Engineer may give specific exemption from the requirements.
- C. 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.

### **2.02 PULLBOXES, WIREWAYS AND CHANNELS**

- A. Pull boxes shall be code gauge galvanized steel with screw covers to match. Pull boxes and wireways shall be as shown on Drawings and/or as required by NEC and/or job conditions, with steel barriers separating systems.

- B. Wireways shall be galvanized steel, manufactured standard sections and fittings, with combination hinged and screw covers.
- C. Steel channel supports shall be minimum 1 5/8" mold strip steel with minimum .105" wall thickness, Unistrut P1000, Kindorf, Husky Products, or equal.
- D. 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.
- E. Metal conduit fittings shall be of cast malleable iron, cadmium plated with neoprene gaskets and cast malleable iron covers. Fitting for use with conduit 1 1/4" diameter and smaller shall be "Form 35", those for use with conduit 1 1/2" diameter and larger shall be Mogol. Fitting shall be as manufactured by Appleton Electrical Co., Steel City, Crouse-Hinds, or approved equal.
- F. Expansion fitting shall be as manufactured by O. Z. Gedney, Electrical Manufacturing Co., Inc., or approved equal as manufactured by Crouse Hinds or Appleton.

### **2.03 OUTLET BOXES AND ACCESSORIES**

- A. Provide galvanized sheet steel outlet boxes for all outlets unless otherwise noted.
- B. Outlet boxes shall be of size and type to accommodate (1) structural conditions, (2) size and number of raceways, conductors or cables entering, and (3) devices or fixtures for which they are required.
- C. Install blank plates on all outlet boxes, in which no apparatus is installed, which do not integrally provide a cover for the box.
- D. Special care shall be taken to set all boxes correctly square and true with the building finish.
- E. Fixture outlet boxes shall have 3/8" solid male fixture studs and auxiliary fixture stems shall be supported from 3/8" male fixture studs.
- F. Outlet boxes and accessories shall be as manufactured by Steel City, Appleton, Racor, or equal.

### **2.04 ACCESS PANELS**

- A. Access panels shall be provided for all electrical equipment which requires access by National Electric Code above ceilings or behind walls which are constructed of materials of the type which are not readily removable.
- B. Access panels shall be furnished by the Electrical Contractor and installed by the General Contractor.
- C. Access panels shall be prime painted, have cylinder lock and two keys, as manufactured by Island Steel Products, Walsh Hannon Gladwin, Way Locktor, or equal. Type shall be similar to Milcor Type A.

### **2.05 RACEWAYS**

- A. Electric metallic tubing (EMT) shall be electrogalvanized or sheradized steel. EMT shall be used in all exposed areas which are not subject to physical abuse. Couplings and connectors for electrical metallic tubing shall be galvanized steel set screw. Tubing shall be as manufactured by Pyle National, Allied Tube and Conduit Corp., Wheatland Tube Company, or equal.
- B. Liquid tight flexible metal conduit shall be galvanized steel with separate copper grounding conductor. The outer jacket shall be an extruded, moisture and oil proof, covering of polyvinyl chloride. Liquid tight flexible metal conduit shall be used for the final connections to all roof top equipment and in all areas where motors and other equipment are subject to an oil or moisture type environment. Liquid tight flexible metal conduit shall be manufactured by American Flexible Conduit, Eastern Wiring Conduit, International Metal Hose Company, or equal.
- C. Polyvinyl Chloride (PVC) Conduit, schedule 40 shall be used for exterior applications as specifically stated on the Drawings. Conduit shall be rated for 90oC, UL rated and shall comply with NEMA specification TC 2 (Conduit), TC 3 (Fittings) and UL 651 Standard for rigid nonmetallic conduit. Conduit fittings shall be homogeneous plastic material free from visible

cracks, holes or foreign inclusions. Conduit shall be manufactured by Carlon, Cal Pipe, Kraloy, or approved equal.

- D. Galvanized Rigid Steel Conduit (GRC) shall be made of zinc coated steel. GRC conduit shall be installed as shown on the Drawings, as specified, and in all areas subject to physical abuse. Galvanized Rigid Conduit shall be manufactured by Allied Tube and Conduit, Wheatland Tube Company, Republic Conduit or equal.
- E. 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.
- F. For 20 ampere branch circuit wiring furnish and install the number of individual conduits required to limit the number of conductors in each conduit to a number which will not require derating to a value below 100 percent of the current rating of the circuit overcurrent protective device.

## **2.06 FIRESTOPPING**

- A. Firestopping shall be installed by the Electrical Contractor for all new electrical conduits which enter or pass through fire rated walls or floors. Fire seal fittings shall be used around cable, in sleeves, or in core drilled holes passing through fire rated walls and floors. Firestopping shall be T&B Fire Seal, or equal by O.Z. Gedney or Minnesota Mining and Manufacturing Company.

## **2.07 WIRE**

- A. Furnish, install and connect all wire in accordance with the requirements of the drawings and specifications.
- B. All feeders and branch circuit runs shall include a full size, green, insulated ground conductor unless otherwise specified on the drawings.
- C. All wire shall be delivered to the job site on reels and/or in complete coils, properly packaged and identified.
- D. Aluminum conductors shall not be installed.
- E. Conductors larger than No.10 AWG shall be stranded.
- F. All wire used for feeders, and sub feeders shall have the outer covering of the conductor marked with color coding tape as follows: for 120/208 volt systems with black for "A", red for "B", and blue for "C" phases, white for neutral and green for insulated ground. Conductors shall be marked at both ends and in all junction boxes by approved plastic tape applied spirally and half lapped over the exposed portions of the conductor insulation.
- G. All conductors shall be copper.
- H. Minimum size conductors shall be No. 12 AWG except for control use.
- I. Unless otherwise specified or indicated on the drawings, the type of conductor insulation shall be type THHN, THHW, THWN-2 or XHHW.
- J. Unless otherwise noted or indicated on the drawings, all branch circuit wiring shall be 2-#12&1-#12G-1/2"C.

## **2.08 BRANCH CIRCUIT WIRING – EXPOSED**

- A. All exposed branch circuit wiring shall be installed in type EMT conduit.
- B. All wire shall be #12 minimum.
- C. All wire shall be copper, no aluminum is permitted.
- D. Wire installed in conduit shall be type THWN-THHN building wire, 600V, rated for 75°C in wet locations and 90°C in dry locations.
- E. Wire shall be manufactured by Phelps Dodge Copper Products Corp., General Cable Co., Triangle Conduit and Cable Company or approved equal.

## **2.09 WIRING DEVICES**

- A. General

1. All wiring devices shall be of a single manufacturer, as manufactured by Legrand (Pass and Seymour), General Electric, Hubbell, Bryant Electric Company, Leviton, or equal. Manufacturers listed below establish minimum requirements. Coordinate color and style with Architect for wiring devices and wiring device plates, prior to purchase.
- B. Receptacles 20A GFI Commercial Grade
  1. Provide GFI duplex receptacles as indicated on the Drawings. Receptacles shall each have GFI tripping (no feed through is permitted) with self-test. Receptacles shall be rated 20 amp, 125 volt similar, or equal to Pass and Seymour Model No. 2097.
- C. Weatherproof Receptacles – Wet Locations
  1. Receptacles indicated to be weatherproof shall conform to NEC Article 406.8(B)(i). Receptacles shall have an enclosure that is weatherproof whether or not the attachment plug cap is inserted. Provide receptacle with cover equal to Pass & Seymour Cat. No. WIUC10-G (for grey) or WIUC10-C (for clear)

## **2.10 WIRE DEVICE PLATES**

- A. Wall plates shall be provided for all receptacles, light switches, blank junction boxes, and special purpose outlets. Wall plates shall be:
  1. Smooth type, no line, high strength, scratch resistance, thermoplastic.
  2. Type 403 stainless steel, 0.032" nominal thickness.
  3. Type 302 stainless steel, 0.032" nominal thickness with 18% chromium and 8% nickel content to prevent corrosion ... food processing, dairy, industrial projects.
  4. Brush brass, 0.040" thick, 70% copper, 30% zinc alloy. Plates shall have lacquered finish.
  5. Aluminum, 0.040" thick, satin finish, with lacquered coating.
  6. All plates shall have color matched mounting screws and conform to UL, CSA, and NEMA standards.
  7. Wall plate color shall be selected by the Architect.
- B. Device plates shall be by same manufacturer as devices.

## **2.11 EXISTING PANELBOARDS**

- A. The existing panelboards are suitable for 120/208 volts, 3-phase, 4-wire operation as previously installed.
- B. Where connections are made in existing panelboards, 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 revised to be typewritten indicating all loads served.
- C. New circuit breakers added to existing panelboards shall be the same frame size and an interrupting capacity as existing panelboards and circuit breakers. Current limiting circuit breakers shall not be used.
- D. Provide circuit breaker coordination study as to provide proper settings to new and existing circuit breakers within the project.

## **2.12 CLEARANCES**

- A. Spaces for electrical panelboards shall include an exclusively dedicated space extending from the floor to the structural ceiling with a width that of the the equipment (30 inches minimum) and a depth of 36 inches. No piping, ductwork or equipment foreign to the electrical equipment shall be permitted to be installed in, enter or pass through such space. All panelboards shall be mounted so that the distance from the top circuit breaker operating handle to the floor shall not exceed 6'-6". It is the responsibility of the Electrical Contractor to coordinate with all other trades and the General contractor as to provide the required clearances.

## **2.13 ELECTRICAL IDENTIFICATION**

- A. General
  1. The purpose of this section is to provide identification for electrical equipment, raceway and conductors.
  2. Provide labels, nameplates, panel directories and color-coding as specified herein.

- B. Engraved Nameplates
1. Provide nameplates constructed of 1/16-inch thick plastic laminated material. Engrave through colored surface material to contrasting colored sub-layer. Provide white lettering on black background.
  2. Provide nameplates for all electrical equipment including, but not limited to, disconnect switches.
- C. Electrical Labels (P-Touch)
1. Receptacle and toggle switch labels shall be printed using electronic labeler Brother P-Touch, model PT-20/25, Dymo-Tape or approved equal.
  2. Electronic labels shall state the panelboard and circuit number, example PP1-6 and, for motor toggle switches, shall also state the load served – example EF-4.
- D. Panelboard Directories
1. Provide permanent, neatly typed, as-built panelboard directory (schedule), under plastic jacket or protective cover for protection from damage or dirt. Hand written directories shall not be accepted.
    - a) Number each single pole space: Odd-numbered circuits on left side even on right side.
    - b) Securely mount on inside face of panelboard door.
    - c) When no cover, provide individual engraved type nameplates for each overcurrent and other device.
    - d) Define briefly, but accurately, nature of connected load and specific location, (i.e. Hall Lighting, Office Receptacles, Electrical Room Heater, etc) as approved.
    - e) Provide room locations for all loads and indicate panel name on schedule.
    - f) Multipole circuits to utilized first pole space number as its circuit number.
    - g) Panel schedules and as-built circuit numbers shall agree.
- E. Wire and Cable Labeling
1. Feeder cables shall be properly phased and identified throughout. Individual conductors shall be color coded as noted below.

Conductor	120/208V	
Phase A	Black	
Phase B	Red	
Phase C	Blue	
Neutral	White	
Ground	Green	
Isolated Ground	Green/Yellow	

2. Buses and connections shall be identified left to right, top to bottom, or front to rear; buses shall read A-B-C; and shall be color coded per the table above.
  3. Feeders for all new construction shall have color-coded phase identification at all junction boxes. Where the proper color wire insulation cannot be obtained, black insulation shall be used and the conductors shall be coded with plastic vinyl tape, 3M #190-A, 3/4 inch or equal.
- F. Attachment of Labels
1. Securely attach engraved labels and nameplates with rivets or screws.
  2. Clean surfaces thoroughly before attaching all labels. Use solvent on device plates before attaching electronic or Dymo-tape labels.
  3. No temporary markings permitted to remain on equipment. Remove all temporary markings where possible. Where markings cannot be removed, repaint trims, housing, etc. to cover markings. Refinish defaced finishes.

## **PART 3 EXECUTION**

### **3.01 SERVICE TO THE FACILITY**

- A. Electrical power outages must be minimized so as not to interfere with the building's operation. The time and duration of any power outage must be approved by and scheduled with the building owner/authority. The Electrical Contractor shall notify the owner/authority at least ten calendar days from the date of proposed power outage in the facility.

### **3.02 DEMOLITION, RELOCATION AND REMOVAL OF EXISTING WIRING**

- A. The Electrical Contractor shall provide all electrical demolition, relocation of circuits, and removal of existing wiring necessary for the electrical work, as shown on the Electrical Demolition drawing.
- B. The Contractor shall maintain, extend, and connect existing branch circuits which pass through the construction area, maintaining power to all equipment and lighting outside of the construction area.
- C. Devices removed back to the panelboard shall be marked as "spare" on the panel directory and the circuit breaker shall be switched off.

### **3.03 SPECIAL COORDINATION INSTRUCTIONS**

- A. Coordination with work of other trades is required. The following special instructions shall also be carefully noted:
  - 1. Locations and mounting height of all wall outlets shall be verified with the GC prior to roughing in conduits.
  - 2. All feeder, branch circuit or auxiliary system wiring passing through pull boxes and/or being made up in panelboards shall be properly grouped, bound, and tied together in a neat and orderly manner, in keeping with the highest standards of the trade, with plastic cable ties.
  - 3. All duplex convenience and power receptacles shall be mounted vertically with the grounding post to the bottom as the outlet is viewed from the front.
  - 4. All miscellaneous hardware and support accessories, including support rods, nuts, bolts, screws, and other such items, shall be of a galvanized or cadmium plated finish, or of other approved rust inhibiting coatings. Care should be taken that fixtures shall not be installed on both sides of existing or new building expansion joints.
  - 5. The Electrical Contractor shall provide all materials, equipment, and workmanship to provide for adequate protection of all electrical equipment during the course of construction of the project.
  - 6. The Electrical Contractor shall furnish and install approved insulation at terminal connection points for all electrical conducting materials, such as transformer terminals, terminal studs, and at any other special locations as directed by the Engineer.
  - 7. Prior to installation of conduit and wire, the Electrical Contractor shall coordinate wiring requirements with actual equipment supplied.
  - 8. The electrical Drawings indicate wire, conduit, and overcurrent protective devices to be installed for certain HVAC units. These sizes are based on certain manufacturer's requirements. Should the General Contractor allow the Mechanical Contractor to substitute HVAC equipment different than specified, then the General Contractor shall provide the required revised electrical wiring, conduit, and overcurrent protective devices in accordance with the manufacturer's recommendations at no additional charge to the owner.

### **3.04 CLEARANCES**

- A. Spaces for electrical panelboards shall include an exclusively dedicated space extending from the floor to the structural ceiling with a width that of the the equipment (30 inches minimum) and a depth of 36 inches. No piping, ductwork or equipment foreign to the electrical equipment shall be permitted to be installed in, enter or pass through such space. All panelboards shall be mounted so that the distance from the top circuit breaker operating handle to the floor shall not

exceed 6'-6". It is the responsibility of the Electrical Contractor to coordinate with all other trades and the General contractor as to provide the required clearances.

### **3.05 CUTTING, PATCHING AND DRILLING**

- A. The General Contractor shall perform plaster cutting and channeling and drilling through structural beams necessary for the installation of electrical work. The General Contractor shall be responsible for all painting and patching which shall match existing base materials in looks and color. The electrical contractor shall provide routine drilling through 2 x 4 and/or 2 x 6 metal frame walls and concrete floors to install wiring.

### **3.06 COOPERATION AND WORK PROGRESS**

- A. The Electrical work shall be carried on under the usual construction conditions, in conjunction with all other work at the site. The Electrical Contractor shall cooperate with the Engineer and all Contractors and equipment suppliers working on the site, coordinate the work, and proceed in a manner so as not to delay the progress of the project.
- B. The Electrical Contractor has a responsibility to coordinate the exact mounting arrangement and location of equipment indicated on the Drawings to allow for proper space requirements for equipment access, operation, and maintenance.
- C. It shall be the responsibility of the Electrical Contractor to coordinate the delivery of electrical equipment to the project prior to the time installation of equipment will be required.

### **3.07 INSTALLATION OF WIRING AND CONDUIT**

- A. Unless otherwise indicated, all branch circuit wiring shall be 2-#12 and 1 #12 ground, 1/2"C.
- B. Conduit ends shall be cut square, threaded, and reamed to remove burrs and sharp edges. Offsets and bends for changes in elevation of exposed conduit runs shall be made at walls or beams and not in open spaces between walls or beams. Conduits shall be routed so as not to interfere with the operation or maintenance of any equipment. The entire job shall be done in a neat and workmanlike manner, as approved by the Engineer. Steel supports or racks shall be galvanized steel channel and fittings. Supports shall be manufactured by Unistrut, Kindorf, Husky Products Company, or equal.
- C. Exposed conduits shall be run parallel to, or at right angles to, the walls of the building, and all bends shall be made with standard conduit ells or conduits bent to - not less than - the same radius. Horizontal runs of exposed conduits shall be close to ceiling beams, passing over water or other piping where possible and shall be supported by pipe straps or by other approved means, not more than 5' apart. Installation of exposed conduits in finished areas of the building shall be checked with the Engineers for layout before installation to conform to the pattern of the structural members, and when completed, is to present the most unobtrusive appearance possible. No exposed conduits will be permitted on walls or partitions in public areas, unless specifically noted.
- D. Conduits shall not be installed within 3" of hot water pipes, or appliances, except where crossing is unavoidable and, in that case, the conduit shall be kept at least 1" from covering or pipe crossed.
- E. Conduits shall be supported on approved type galvanized wall brackets, ceiling trapeze, strap hangers, or pipe straps, secured by means of toggle bolts on hollow masonry units or expansion bolts in concrete or brick.
- F. In general, no splices or joints will be permitted in either feeder or branches except at outlets or accessible junction boxes.
- G. All splices in wire #8 AWG and smaller shall be standard pigtail, made mechanically tight and insulated with proper thickness of insulating tape. Wire splicing nuts as manufactured by Minnesota Mining and Manufacturing Company (Scotch Lock) or Ideal wire nuts may be used, subject to the local wire inspector.
- H. Wire #6 and larger shall be connected to panels and apparatus by means of approved lugs or connectors. Connectors shall be solderless type, sufficiently large to enclose all strands of the conductor and securely fastened.



- I. Provide all required branch circuit wiring for electrical devices and lighting fixtures. Designations shown on Drawings are diagrammatic only. Circuit numbers beside receptacles and lighting fixtures convey that a complete branch circuit is required back to electrical panelboard. Switch control letters adjacent to lighting fixtures indicate branch wiring required from lighting fixture to light switch or dimmer.

### 3.08 COLOR CODING

- A. Provide color coding for secondary service, feeders, and branch circuits as follows:

<u>PHASE</u>	<u>COLOR</u>
120/208V, 3-phase, 4-wire, wye:	
A	Black
B	Red
C	Blue
Neutral	White
Equipment Ground	Green

- B. Make connections to terminals from left to right arranged Phase A, B, and C.
- C. Provide same color coding for switch legs as corresponding phase conductor. Provide colored plastic tape of specified color code identification for large size conductors available only in black.

### 3.09 MOTORS, CONNECTIONS AND CONTROLS

- A. Splices and Terminations:
  1. Make splices and terminations equivalent electrically and mechanically to conductor insulation.
  2. Make splices in branch circuit wiring with solderless, screw on connectors Ideal, Scotchlok, T&B or equal, rated 600V, of size and type required by manufacturer's recommendation, with temperature ratings equal to those of cable insulation. Insulate splices with integral covers or with plastic, rubber, or friction tape, Permacal or equal, to maintain integrity of cable insulation.
  3. Make splices and terminations to conductors #8 and larger with corrosion resistant, high conductivity, pressure indent, hex screw or bolt clamp connections, with or without tongues, designed specifically for intended service. Connectors for cables 250 MCM and larger shall have two clamping elements or compression indents. Terminals for bus connections shall have two bolt holes. Split bolt connectors, Burndy or equal, shall be acceptable for all splices of conductors #8 and larger.
  4. Make splices at motor junction boxes with pressure indent connectors or split bolt connectors as specified herein.
  5. Provide standard bolt on lugs with Allen cap screws to attach copper wire and cable to disconnect switches and other electrical equipment.

### 3.10 TEMPERATURE CONTROL WIRING

- A. The temperature control system shall be an electric system installed by the Heating and Air-Conditioning Contractor.
- B. All electric wiring and wiring connections required for the installation of the temperature control system shall be provided by the Temperature Control Contractor.

### 3.11 SALVAGE

- A. The Electrical Contractor shall remove all electrical equipment not to be used.
- B. All electrical equipment removed and deemed salvageable by the Owner shall be stored in an area designated by the Owner.

- C. Any electrical equipment removed that is not desired by the Owner shall be disposed of at the expense of the Electrical Contractor.

### **3.12 QUIET OPERATION**

- A. All equipment and material furnished by the Electrical Contractor shall operate under all conditions of load without objectionable noises or vibrations, which, in the opinion of the Engineer, is objectionable. Where sound or vibration conditions arise which is considered objectionable by the Engineer, the Electrical Contractor shall eliminate same in a manner approved by the Engineer.

### **3.13 TESTS**

- A. Furnish all labor, material, instruments, supplies, and services and bear all costs for the accomplishment of tests herein specified. Correct all defects appearing under test. Repeat the tests until no defects are disclosed. Leave the equipment clean and ready for use.
- B. The Electrical Contractor shall perform any test other than herein specified which may be specified by legal authorities or by agencies to whose requirements this work is to conform.

### **3.14 FINAL INSPECTION AND TEST**

- A. Prior to test, feeders and branches shall be continuous from service contact point to each outlet; all panels, feeders, and devices connected and fuses in place. Test system free from short circuits and grounds with insulation resistances not less than outlines in the National Electrical Code. Provide testing equipment necessary and conduct test in presence of the Owner's authorized representative.
- B. The final inspection and test shall include the following:
  - 1. Testing of the impedance of the grounding system.
  - 2. Testing of each outlet.
  - 3. Testing of branch and feeder conductors for continuity.
  - 4. Testing of panelboards to verify proper current balance and voltage.
  - 5. Testing of motors, verifying proper current balance and voltage.
- C. All new and existing (to be re-used) electrical wiring installed under this project shall be tested for continuity, grounds and short circuits by Megger test. The contractor shall demonstrate by Megger test that the insulation resistance of all circuits are in accordance with the ICEA requirements. When test values are below those specified by ICEA requirements for the particular type of insulation the contractor shall correct the fault(s) by replacing defective material with new materials and demonstrate by further test. At job completion, the entire installation shall be free of ground and short circuits.

**END OF SECTION**

## **SECTION 26 2923 VARIABLE-FREQUENCY MOTOR CONTROLLERS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Variable-frequency motor controllers for low-voltage (600 V and less) AC motor applications.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 26 0000 - Electrical.

#### **1.03 REFERENCE STANDARDS**

- A. IEC 60529 - Degrees of Protection Provided by Enclosures (IP Code); 2013 (Corrigendum 2019).
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2018.
- D. NEMA ICS 6 - Industrial Control and Systems: Enclosures; 1993 (Reaffirmed 2016).
- E. NEMA ICS 7 - Industrial Control and Systems: Adjustable-Speed Drives; 2014.
- F. NEMA ICS 7.1 - Safety Standards for Construction and Guide for Selection, Installation, and Operation of Adjustable-Speed Drive Systems; 2014.
- G. NEMA ICS 7.2 - Application Guide for AC Adjustable Speed Drive Systems; 2015.
- H. NEMA ICS 61800-2 - Adjustable Speed Electrical Power Drive Systems, Part 2: General Requirements-Rating Specifications for Low Voltage Adjustable Frequency AC Power Drive Systems; 2005.
- I. NEMA MG 1 - Motors and Generators; 2018.
- J. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; 2017.
- K. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- L. UL 508A - UL Standard for Safety Industrial Control Panels; 2018.
- M. UL 61800-5-1 - Standard for Adjustable Speed Electrical Power Drive Systems - Part 5-1: Safety Requirements – Electrical, Thermal, and Energy; Current Edition, Including All Revisions.

#### **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within dedicated equipment spaces and working clearances required by NFPA 70.
  - 2. Coordinate work to provide motor controllers suitable for use with actual motors to be installed.
  - 3. Coordinate work to provide controllers and associated wiring suitable for interface with control devices to be installed.
  - 4. Coordinate arrangement of electrical equipment with dimensions and clearance requirements of actual equipment to be installed.
  - 5. Verify with manufacturer that conductor terminations are suitable for use with conductors to be installed.
  - 6. Notify Engineer of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

#### **1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.

- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for motor controllers, enclosures, overcurrent protective devices, and other installed components and accessories.
- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- D. Field quality control test reports.
- E. Operation and Maintenance Data: Include detailed information on system operation, equipment programming and setup, replacement parts, and recommended maintenance procedures and intervals.
  - 1. Include contact information for entity providing contract maintenance and trouble call-back service.
- F. Executed Warranty: Submit documentation of final executed warranty completed in Owner's name and registered with manufacturer.
- G. Project Record Documents: Record actual installed locations of controllers and final equipment settings.
  - 1. Include nameplate data of actual installed motors and associated overload relay selections and settings.
  - 2. Motor Circuit Protectors: Include magnetic instantaneous trip settings.

#### **1.06 QUALITY ASSURANCE**

- A. Comply with requirements of NFPA 70.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Store in clean, dry space. Maintain factory wrapping or provide additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to internal components, enclosure, and finish.

#### **1.08 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.
- B. Provide minimum 18-month manufacturer warranty covering repair or replacement due to defective materials or workmanship.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Variable-Frequency Motor Controllers - Other Acceptable Manufacturers:
  - 1. Pumps: Danfoss.
  - 2. Fans: ABB.
- B. Substitutions: See Section 01 2500 - Substitution Procedures.
- C. Source Limitations: Furnish variable-frequency motor controllers and associated components produced by a single manufacturer and obtained from a single supplier.

#### **2.02 VARIABLE-FREQUENCY MOTOR CONTROLLERS**

- A. Provide variable-frequency motor control system consisting of required controller assemblies, operator interfaces, control power transformers, instrumentation and control wiring, sensors, accessories, system programming, etc. as necessary for complete operating system.
- B. Provide products listed, classified, and labeled as suitable for purpose intended.
- C. Variable-Frequency Motor Controller:
  - 1. Configuration: Packaged controller, non-bypass.
  - 2. Rectifier/Converter: Diode-based, 6-pulse type.
  - 3. Control Method: Vector; open-loop, with feedback.
  - 4. Filtering: Provide input/line reactor and output/load reactor.

- D. Provide controllers selected for actual installed motors and coupled mechanical loads in accordance with NEMA ICS 7.2, NEMA MG 1 Part 30, and recommendations of manufacturers of both controller and load, where not in conflict with specified requirements; considerations include, but are not limited to:
  - 1. Motor type (e.g., induction, reluctance, and permanent magnet); consider NEMA MG 1 design letter or inverter duty rating for induction motors.
  - 2. Motor load type (e.g., constant torque, variable torque, and constant horsepower); consider duty cycle, impact loads, and high inertia loads.
  - 3. Motor nameplate data.
  - 4. Requirements for speed control range, speed regulation, and braking.
- E. Devices on Load Side of Controller: Suitable for application across full controller output frequency range.
- F. Operating Requirements:
  - 1. Input Voltage Tolerance: Plus/minus 10 percent of nominal.
  - 2. Input Frequency Tolerance: Plus/minus 5 percent of nominal.
  - 3. Efficiency: Minimum of 96 percent at full speed and load.
  - 4. Input Displacement Power Factor: Minimum of 0.96 throughout speed and load range.
  - 5. Overload Rating:
    - a. Variable Torque Loads: Minimum of 110 percent of nominal for 60 seconds.
    - b. Constant Torque Loads: Minimum of 150 percent of nominal for 60 seconds.
- G. Power Conversion System: Microprocessor-based, pulse width modulation type consisting of rectifier/converter, DC bus/link, and inverter.
  - 1. Rectifier/Converter: Diode-based, 6-pulse type unless otherwise indicated.
- H. Control System:
  - 1. Provide microprocessor-based control system for automatic control, monitoring, and protection of motors. Include sensors, wiring, and connections necessary for functions and status/alarm indications specified.
  - 2. Provide integral operator interface for controller programming, display of status/alarm indications, fault reset, and local control functions including motor run/stop, motor forward/reverse selection, motor speed increase/decrease, and local/remote control selection.
  - 3. Control Functions:
    - a. Control Method: Selectable vector and scalar/volts per hertz unless otherwise indicated.
      - 1) Scalar/Volts per Hertz Control: Provide IR compensation for improved low-speed torque.
      - 2) Vector Control: Provide selectable autotuning function.
    - b. Adjustable acceleration and deceleration time; linear and S-curve ramps; selectable coast to stop.
    - c. Selectable braking control; DC injection or flux braking.
    - d. Adjustable minimum/maximum speed limits.
    - e. Adjustable pulse width modulation switching carrier frequency.
    - f. Adjustable motor slip compensation.
    - g. Selectable autorestart after noncritical fault; programmable number of time delay between restart attempts.
    - h. Automatic response to loss of speed reference; Selectable to run motor at last known speed, run motor at designated speed, or stop motor.
  - 4. Status Indications:
    - a. Motor run/stop status.
    - b. Motor forward/reverse status.
    - c. Local/remote control status.
    - d. Output voltage.
    - e. Output current.

- f. Output frequency.
  - g. DC bus voltage.
  - h. Motor speed.
  - i. Speed reference.
  - j. Instantaneous power.
  - k. Elapsed run time.
- 5. Protective Functions/Alarm Indications:
  - a. Overcurrent.
  - b. Motor overload.
  - c. Undervoltage.
  - d. Overvoltage.
  - e. Controller overtemperature.
  - f. Input/output phase loss.
  - g. Output short circuit protection.
  - h. Output ground fault protection.
  - i. External fault.
- 6. Inputs:
  - a. Refer to Points List on Mechanical Drawings.
- 7. Outputs:
  - a. Refer to Points List on Mechanical Drawings.
- 8. Communications: Compatible with connected systems. Provide accessories necessary for proper interface.
  - a. Serial Communications: RS-485; support for BACnet IP protocol.
  - b. Remote Monitoring Capabilities:
    - 1) Motor run/stop status.
    - 2) Hand-off-auto status.
    - 3) Fault information.
    - 4) Discrete input/output status.
    - 5) Analog input/output values.
- 9. Features:
  - a. Password-protected security access.
  - b. Event log.
- I. Power Conditioning/Filtering:
  - 1. Provide DC link choke or input/line reactor for each controller unless otherwise indicated or required.
  - 2. Provide where indicated:
    - a. Input/line reactor.
    - b. Output/load reactor.
  - 3. Reactor Impedance: 3 percent, unless otherwise indicated or required.
- J. Packaged Controllers: Controllers factory-mounted in enclosure with externally operable disconnect and specified accessories.
  - 1. Disconnects: Circuit breaker or disconnect switch type.
    - a. Disconnect Switches: Fusible type or nonfusible type with separate input fuses.
    - b. Provide externally operable handle with means for locking in OFF position. Provide safety interlock to prevent opening cover with disconnect in ON position with capability of overriding interlock for testing purposes.
    - c. Provide auxiliary interlock for disconnection of external control power sources where applicable.
  - 2. Provide door-mounted remote operator interface.
- K. Service Conditions:
  - 1. Provide controllers and associated components suitable for operation under following service conditions without derating:
    - a. Altitude: Less than 3,300 feet (1,000 m).

- b. Ambient Temperature: Between 32 degrees F (0 degrees C) and 104 degrees F (40 degrees C).
- 2. Provide controllers and associated components suitable for operation at indicated ratings under service conditions at installed location.
- L. Short Circuit Current Rating:
  - 1. Provide controllers with listed short circuit current rating not less than available fault current at installed location as indicated on drawings.
  - 2. Provide line/input reactors where specified by manufacturer for required short circuit current rating.
- M. Conductor Terminations: Suitable for use with conductors to be installed.
- N. Enclosures:
  - 1. Comply with NEMA ICS 6.
  - 2. NEMA 250 Environment Type or Equivalent IEC 60529 Rating: Unless otherwise indicated, as specified for following installation locations:
    - a. Indoor Clean, Dry Locations: Type 1 or Type 12.
  - 3. Finish: Manufacturer's standard unless otherwise indicated.
  - 4. Cooling: Forced air or natural convection as determined by manufacturer.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that ratings of controllers are consistent with indicated requirements.
- C. Verify that mounting surfaces are ready to accept controllers.
- D. Verify that conditions are satisfactory for installation prior to starting work.

### **3.02 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.
- B. Install controllers in accordance with NECA 1 (general workmanship).
- C. Install in accordance with NEMA ICS 7.1 and manufacturer's instructions.
- D. Do not exceed manufacturer's recommended maximum cable length between controller and motor.
- E. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- F. Provide required support and attachment in accordance with Section 26 0529.
- G. Install controllers plumb and level.
- H. Provide grounding and bonding.
- I. Install field-installed devices, components, and accessories.
- J. Where accessories are not self-powered, provide control power source as indicated or as required to complete installation.
- K. Set field-adjustable settings of controllers and associated components according to installed motor requirements, in accordance with recommendations of manufacturers of controller and load.
- L. Set field-adjustable circuit breaker tripping function settings as indicated.

### **3.03 FIELD QUALITY CONTROL**

- A. Provide services of manufacturer's authorized representative to perform inspection and testing. Include manufacturer's reports with submittals. Startup technician shall coordinate with the TAB subcontractor and the Controls subcontractor to verify proper VFD performance and adherence to the sequence of operation and specifications.
- B. Inspect and test in accordance with NETA ATS, except Section 4.

- C. Perform inspections and tests listed in NETA ATS, Section 7.17. Insulation-resistance test on control wiring listed as optional is not required.
- D. Correct deficiencies and replace damaged or defective controllers or associated components.
- E. Submit detailed reports indicating inspection and testing results and corrective actions taken.

#### **3.04 CLEANING**

- A. Clean dirt and debris from controller enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

#### **3.05 PROTECTION**

- A. Protect installed controllers from subsequent construction operations.

**END OF SECTION**