

BID SET
May 2, 2018



PROJECT:

Camp Arrowhead Rehabilitation

Natick, MA 01760

OWNER:

Town of Natick

13 East Central Street
Natick, MA 01760

Consultants

Mechanical:

AKAL Engineering, Inc.
44 Central Street
Berlin, MA 01503

(508) 869-0403

Electrical:

VGNA Inc.
541 Main Street #420
South Weymouth, MA 02190

(781) 335-4200

Structural:

M2 Structural Engineering PC
23 Thornbury Way
Windham, ME 04062

(207) 892-0983

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NATICK, MASSACHUSETTS
BOARD OF SELECTMEN

INVITATION FOR BIDS - REBID

Pursuant to the provisions of Chapter 149, Sections 44A to 44H, inclusive, of the Massachusetts General Laws, the Town of Natick, MA, the Awarding Authority, (hereinafter referred to as "Owner"), by the Natick Board of Selectmen, will receive sealed bids from responsible and eligible bidders for the General Contract ("Contract") for Rehabilitation of the Camp Arrowhead Building, Worcester Road, Natick, MA 01760 (REBID (2)), until 9:30 A.M. local time, Thursday, May 17, 2018 (local time), at Natick Public Works, 75 West Street, Natick, MA 01760, at which time they will be publicly opened, read, and registered. If the Procurement Office is closed due to weather or other emergency, the deadline for receipt of bids shall be extended until 9:30 A.M. local time on the next business day that the Procurement Office is open. No filed sub-bids will be used for this project.

The DCAMM classification required for the general contractor is "General Building Construction." No filed sub-bids.

Each and every bid shall be submitted on the Bid Form furnished with the Bidding Documents and shall be sealed in an envelope which is clearly marked in the lower left hand corner "BID FOR REHABILITATION (INTERIOR) OF THE CAMP ARROWHEAD BUILDING."

A voluntary Pre-Bid conference/Site Walk-Through will be held at 9:30 A.M. local time on May 9, 2018, at Camp Arrowhead, located at 1054 Worcester Road (Route 9) in Natick.

This Invitation for Bids contemplates the following Work to be performed: Rehabilitation (Interior) at the Camp Arrowhead Building in the Town of Natick.

The Contractor shall supply all labor and materials and equipment necessary to complete the work shown on the Contract Drawings and hereafter 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, beginning at 2:00 P.M. local time on Wednesday, May 2, 2018.

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", 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 Board of Selectmen"; (3) a copy of a "Certificate of Eligibility" issued by the Deputy Commissioner of the Commonwealth of Massachusetts 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 the Deputy Commissioner of DCAMM shall prescribe.

Wage rates paid under this Contract are subject to the minimum prevailing wage rates established

under the provisions of Chapter 149, Sections 26 to 27G inclusive of the Massachusetts General Laws.

The successful Bidder shall furnish a Performance Bond in the amount of one hundred percent (100%) of the amount of the Contract Price and a Payment Bond in the amount of one hundred percent (100%) of the amount of the Contract Price with a surety company which is acceptable to Owner.

Contract payment shall be by the lump sum price indicated in the Bid Form.

No Bidder may withdraw his Bid for a period of thirty (30) days (Saturdays, Sundays and legal holidays excluded) after the actual date of the opening of the General Bids.

Bids for this Contract are subject to the provisions of Massachusetts General Laws Chapter 149, Sections 44A *et seq.*

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 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 and award by the Natick Board of Selectmen. Award is also subject to approval of the Commonwealth of Massachusetts Department of Conservation and Recreation.

The estimate for this project is two hundred ninety-five thousand dollars and zero cents (\$295,000.00).

Town of Natick, Massachusetts

BOARD OF SELECTMEN

Amy K. Mistrot, Chairman
Susan G. Salamoff, Vice Chairman
Michael J. Hickey, Jr., Clerk
Jonathan H. Freedman
Richard P. Jennett, Jr.

Acting Town Administrator
William D. Chenard

ARTICLE 1. DEFINED TERMS AND PROCEDURES

1.1. Terms used in these Instructions to Bidders that are defined in the Standard General Conditions of the Construction Contract (AIA A201 (2007)) and in the Supplementary General Conditions have the meanings assigned to them in the General Conditions and in the Supplementary General Conditions.

1.2. Other terms used in the Bid Documents and not defined elsewhere have the following meanings which are applicable to both the singular and plural thereof:

1.2.1. Owner - the terms "Owner" and "Town" are interchangeable and shall mean the "Town of Natick, Massachusetts".

1.2.2. Engineer/Architect – Resolution Architects, LLC, One South Avenue, Natick, MA 01760.

1.2.3. Bidder - shall mean a person or entity who submits a Bid directly to Owner.

1.2.4. General Bidder - shall mean a person or entity who submits a Bid directly to Owner on the Work.

1.2.5. Filed Sub-Bidder - shall mean a person or entity who submits a Bid directly to Owner on the work of a Filed Sub-Contract.

1.2.6. Successful Bidder - shall mean the lowest, qualified, responsible and eligible Bidder, as those terms are defined in M.G.L. c. 149, §44A, to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award.

1.2.7. Bid Documents - includes the Invitation for Bids, Instructions to Bidders, the Bid Form and the proposed Contract Documents (which include the Specifications, the Drawings and all Addenda issued prior to receipt of Bids).

1.2.8. Bid Form - shall mean either the "Bid Form for General Bid" or the "Bid Form for Filed Sub-Bid," unless a specific Bid Form is named.

1.2.9. Work - The furnishing all of labor, materials, equipment and other incidentals necessary for or convenient to the successful completion of the Contract and the carrying out of all the duties and obligations imposed by the Contract. Work shall include, in addition to work to be performed on the Contract location in the actual construction process, necessary meetings, shop plans, computations, ordering of materials and equipment, fabrication of material, parts and components, etc.

1.2.10. Provide - Wherever the word "provide" is used in the Specifications in reference to work to be performed by the Contractor, it shall be understood to mean "furnished and installed complete in place" in accordance with the Contract.

1.2.11 Contract – The General Contract for the Project, entered into between the Owner and the General Contractor.

1.2.12 Contractor – The General Contractor for the Project.

1.3. The procedure which is described in the Bid Documents for Bidding and Award of a Contract for the Work will be in accordance with the provisions of Chapter 149, Sections 44A through 44H inclusive of the General Laws of the Commonwealth of Massachusetts, as last revised (hereinafter referred to as "M.G.L. c.149" appropriate Section).

ARTICLE 2. COPIES OF BID DOCUMENTS

2.1. 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, beginning on May 2, 2018.

2.2. DELETED.

2.3. Complete sets of Bid Documents shall be used in preparing Bids; Owner does not assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bid Documents.

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

ARTICLE 3. QUALIFICATIONS OF BIDDERS

3.1. To demonstrate qualifications to perform the Work, each Bidder shall be prepared to submit, within five (5) days of Owner's request, written evidence, such as financial data, previous experience, present commitments, and other such data as may be called for below. Each Bid shall contain evidence of Bidder's qualification to do business in the Commonwealth of Massachusetts.

3.2. Every Bid submitted for work of the General Contract work shall be accompanied, inter alia, by: (1) a copy of a "Certificate of Eligibility" issued by the Deputy Commissioner of the Commonwealth of Massachusetts Division of Capital Asset Management and Maintenance (DCAMM), showing that the General Bidder has a classification of "General Building Construction" and capacity rating to perform the work required, and (2) an update statement in such form as the Deputy Commissioner shall prescribe. A blank copy of such form shall be furnished by the Engineer to every person or business entity requesting a copy.

Any Bid submitted without the appropriate certification and update statement shall be invalid; and Owner shall reject such Bid.

3.3. Owner reserves the right to reject any Bid if the evidence submitted by such Bidder, or the investigation of such Bidder, fails to satisfy Owner that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein.

ARTICLE 4. PRE-BID CONFERENCE, QUESTIONS, INTERPRETATIONS AND ADDENDA

4.1. A voluntary Pre-Bid conference/Site Walk-Through will be held at 9:30 A.M. local time on May 9, 2018, at Camp Arrowhead, located at 1055 Worcester Road (Route 9) in Natick. Questions, if any, concerning the Bid Documents shall be addressed to:

Procurement Officer
Natick Public Works
75 West Street
Natick, MA 01760.

Questions regarding this IFB shall be submitted in writing and shall be delivered to the Procurement Officer by the close of business (4:00 P.M. local time, Monday through Thursday, and 12:00 P.M. (noon) local time, Friday) on May 10, 2018. Questions may also be submitted at the following email address: bleblanc@natickma.org. Questions presented after this time shall not be considered. No question shall be considered which is not submitted in writing.

4.2. Addenda may also be issued to modify the Bid Documents as deemed advisable by Owner or Owner.

4.3 Bidder shall be responsible for determining that it has received all Addenda which have been issued.

ARTICLE 5. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

5.1. It is the responsibility of each Bidder before submitting a Bid to: (a) examine the Contract Documents thoroughly; (b) visit the site to become familiar with local conditions that may affect cost, progress, performance or furnishing of the Work; (c) consider federal, state and local Laws and Regulations that may affect cost, progress, performance or furnishing of the Work; (d) study and carefully correlate Bidder's observations with the Contract Documents; and (e) notify Owner of all conflicts, errors or discrepancies in the Contract Documents.

5.2. Reference is made to the Supplementary General Conditions for identification of:

5.2.1. Those reports of explorations and tests of subsurface conditions at the site which have been utilized by Owner in preparation of the Contract Documents. Each Bidder may rely upon the accuracy of the technical data contained in such reports but not upon non-technical data, interpretations or opinions contained therein or for the completeness thereof for the purposes of bidding or construction.

5.2.2. Those drawings of physical conditions in or relating to existing surface and subsurface conditions (except Underground Facilities) which are at or contiguous to the site and which have been utilized by Owner in preparation of the Contract Documents. Bidder may rely upon the accuracy of the technical data contained in such drawings, but not upon the completeness thereof, for the purposes of bidding or construction.

5.2.3 Copies of such reports and drawings will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the technical data contained therein upon which Bidder is entitled to rely are incorporated therein by reference. Such technical data has been identified and established in the Supplementary General Conditions.

5.3. Information and data reflected in the Contract Documents with respect to Underground Facilities at or contiguous to the site is based upon information and data furnished to Owner by owners of such Underground Facilities or others, and Owner does not assume responsibility for the accuracy or completeness thereof, unless it is expressly provided otherwise in the Supplementary General Conditions.

5.4. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders on subsurface conditions, Underground Facilities and other physical conditions, and possible changes in the Contract Documents due to differing conditions appear in Paragraph 4.2 and 4.3 of the General Conditions.

5.5. Before submitting a Bid, each Bidder shall, at Bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work and which Bidder deems necessary to determine its Bid for performing and furnishing of the Work in accordance with the time, price and other terms and conditions of the Contract Documents.

5.6. The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by Contractor in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by Contractor. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by Owner unless otherwise provided in the Contract Documents.

5.7. Submission of a Bid shall be conclusive evidence that the Bidder has examined the Bid Documents and is familiar with all the conditions of the Contract. Upon finding any omissions or discrepancy in this the Bid Documents, each Bidder shall notify the Owner immediately so that any necessary addenda may be issued. Failure of a Bidder to investigate completely the Bid Documents 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.

5.8 The submission of a Bid shall constitute a representation by Bidder that Bidder has complied with every requirement of this Article 5, that without exception the Bid is premised upon performing and furnishing the Work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

5.9. By submission of a Bid, the Bidder agrees that if its Bid is accepted, then it shall enter into a Contract with the Owner which incorporates all of the requirements herein.

5.10 By submission of a Bid, the Bidder further indicates acceptance of all terms and conditions expressed herein. 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 the Bidder or relieve the Bidder from fulfilling any of the conditions of the Contract.

ARTICLE 6. BID SECURITY

6.1. Each Bid shall be accompanied by Bid security in the form of a Bid Bond, or cash, or a certified check on, or a treasurer's or cashier's check issued by, a responsible bank or trust company, payable to the Owner. A Bid Bond shall be: (a) in a form satisfactory to Owner; (b) with a surety company qualified to do business in the Commonwealth of Massachusetts and satisfactory to Owner; and (c) conditional upon the faithful performance by the principal of the agreements contained in the Bid.

The amount of such Bid security shall be five (5%) per cent of the PROPOSED LUMP SUM CONTRACT PRICE as entered in the Bid Form for General Bid.

6.2. All Bid security of General Bidders, except those of the three (3) lowest responsible and eligible General Bidders, shall be returned within five (5) days (Saturdays, Sundays and legal holidays excluded) after the opening of the General Bids.

The Bid security of the three (3) lowest responsible and eligible General Bidders shall be returned upon the execution and delivery of the General Contract or, if no award is made, within thirty (30) days (Saturday, Sundays and legal holidays excluded) after the opening of the General Bids; except that if any General Bidder fails to perform its agreement to execute a General Contract and furnish a Performance Bond and also a Labor and Materials or Payment Bond as stated in its Bid in accordance with M.G.L. c.149 Section 44E, its Bid security shall become the property of Owner, as liquidated damages; provided that the amount of the Bid security which becomes the property of Owner shall not, in any event, exceed the difference between its Bid and the Bid of the next lowest responsible and eligible Bidder; and provided further that, in case of death, disability, bona fide clerical or mechanical error of a substantial nature, or other similar unforeseen circumstances affecting the General Bidder, its Bid security shall be returned.

6.3. Any Bid which is not accompanied by Bid security as described in Paragraph 6.1 shall be invalid; and Owner shall reject such Bid.

ARTICLE 7. CONTRACT TIME

7.1. The number of days within which the Work is to be substantially completed and also completed and ready for final payment (the Contract Times) are set forth in the Bid Form and the Contract, as may be modified by the General Conditions or Supplementary General Conditions.

ARTICLE 8. LIQUIDATED DAMAGES

8.1. Provisions for liquidated damages are set forth in the Contract or in the General Conditions or Supplementary General Conditions.

ARTICLE 9. SUBSTITUTE OR "OR-EQUAL" ITEMS

9.1. 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 Owner, application for such acceptance will not be considered by Owner until after the Effective Date of the Contract; all consideration shall comply with M.G.L. c. 30, §39M(b). See General and Supplementary Conditions for further detail.

ARTICLE 10. FILED SUB-CONTRACTS

Unless an objection is raised, general Bidders shall carry the lowest responsible and eligible filed sub-bidder in each subcategory. – Not Applicable.

ARTICLE 11. BID FORM

11.1. The "Bid Form for General Bid" and the "Bid Form for Sub-Bid" are included with the Bid Documents; additional copies of each form may be obtained from Owner.

11.2. The term "Bid Form" shall apply to "Bid Form for General Bid" unless the specific Bid Form is named.

11.3. The Bid price of each item on the Bid Form shall be written in words and in figures. In the event there is a discrepancy in the Bid between a Bid price written in words and a Bid price written in figures, the Bid Price stated in words shall govern.

11.4. All Bids will be compared on the basis of the **"Proposed Contract Price"** listed on the Bid Form for General Bid. The Bid entered shall be for the complete Work as specified and shall include the work of the General Contractor.

11.5. Bids by corporations shall be executed in the corporate name by the president and treasurer (or other corporate officer accompanied by evidence of authority to sign), and the corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.

11.6. Bids by partnerships shall be executed in the partnership name and shall be signed by a partner, whose title shall appear under the signature and the official address of the partnership shall be shown below the signature.

11.7. All names shall be typed or printed in ink below the signature.

11.8. The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form). If no Addenda are received the Bidder shall fill in "none" on the Bid Form.

11.9. The address, e-mail and telephone number for communications regarding the Bid shall be shown.

11.10. A conditional or qualified Bid shall not be accepted.

ARTICLE 12. SUBMISSION OF BIDS

12.1. Sealed Bids marked "Town of Natick: Sealed Bid for Rehabilitation (Interior) of the Camp Arrowhead Building in Natick" shall be received by 9:30 A.M. local time, May 17, 2018, at this address:

Natick Public Works
75 West Street
Natick, MA 01760.

Bids received after that date and time will be rejected. The clock in the Procurement Office in the Natick Town Hall shall be considered official. The time of receipt of a Bid will 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.

Each Bidder's name, address and contact phone number shall be clearly visible from the outside of each sealed envelope. No faxed Bids shall be accepted. Conditional Bids will not be accepted.

12.2. Bids submitted for the Work of the General Contract shall be valid only when accompanied by all of the following: (1) a fully completed and properly executed "Bid Form for General Bid"; (2) Bid security in the amount of five percent (5%) of the amount bid and in a form as described in the Instructions to Bidders; (3) a copy of a "Certificate of Eligibility" issued by the Deputy Commissioner of the Commonwealth of Massachusetts Division of Capital Asset Management and Maintenance (DCAMM) showing that the Bidder has the classification and capacity rating to perform the work required. (The DCAMM classification required for this project is "General Building Construction"); and (4) an update statement in such form as the Deputy Commissioner of DCAMM shall prescribe.

12.3 The Bidder assumes all responsibility for the Bid arriving on time. Bids received after the time specified in the Invitation for Bids shall not be accepted. No faxed Bids shall be accepted. The time of receipt of a Bid will 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.

ARTICLE 13. MODIFICATION AND WITHDRAWAL OF BIDS

13.1. Changes, modifications or withdrawal of Bids shall be submitted in writing to the Procurement Officer prior to the deadline and shall be contained in a sealed envelope clearly marked, as

appropriate, "CORRECTION, MODIFICATION OR WITHDRAWAL OF SEALED BID FOR SERVICES RELATED TO REHABILITATION (INTERIOR) OF THE CAMP ARROWHEAD BUILDING IN THE TOWN OF NATICK." No corrections, modifications, or withdrawal of Bids shall be permitted after Bids have been opened.

13.2 Bids may be withdrawn at any time prior to the scheduled time (or authorized postponement thereof) for the opening of Bids.

ARTICLE 14. OPENING OF BIDS

14.1. All Bids will be opened and read aloud publicly at the time and place indicated in the Invitation for Bids.

ARTICLE 15. BIDS TO REMAIN OPEN

15.1. All Bids will remain open by Owner for a period of thirty (30) days (Saturdays, Sundays and legal holidays excluded) after the actual day of opening of General Bids.

ARTICLE 16. AWARD OF CONTRACT

16.1. A contract will be awarded, if at all, pursuant to M.G.L. c. 149, §44A, to the lowest qualified responsible and eligible Bidder. According to M.G.L. c. 149, §44A, the term "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 M.G.L. c. 149, §44D.

According to M.G.L. c. 149, §44A, the term "Eligible" means able to meet all requirements for bidders or offerors set forth in M.G.L. c. 149, §§44A-44H and not debarred from bidding under M.G.L. c. 149, §44C 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.

16.2. The Owner reserves the right to eliminate sections of the work or parts of sections, as may be determined by the Owner as a basis of award, to keep within the limits of available funds, or to add sections of the work previously eliminated, provided that such action comports with generally accepted principles of public bidding in the Commonwealth.

16.3. Owner reserves the right to reject any and all Bids, to waive any and all informalities if it is in the Owner's best interest to do so, and the right to disregard all nonconforming, non-responsive or conditional Bids.

16.4. Owner also reserves the right to reject the Bid of any Bidder that it considers to be unqualified.

16.5. Every Bid which is not accompanied by all of the items required by Articles 12.1 and 12.2 of these Instructions to Bidders or which otherwise does not conform with M.G.L. c.149 Section 44A to 44H inclusive, or which is on a form not completely filled in, or which is incomplete, conditional or obscure or which contains any information not called for, shall be invalid and shall be rejected by Owner.

16.6. Owner may conduct such investigations as Owner deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of Bidders to perform and furnish the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.

16.7. If a contract is to be awarded, Owner will give the Successful Bidder a Notice of Award within thirty (30) days (excluding Saturdays, Sundays and legal holidays) after the day of the General Bid opening. All Bids shall remain open for thirty (30) days (excluding Saturdays, Sundays and legal holidays) after the day of the General Bid opening, but Owner may, in its lawful discretion, release any Bid and return the Bid security prior to that date. The time allowed between the opening of General Bids and the Notice of Award of the Contract specified above may be extended by mutual agreement between Owner and the Bidder.

ARTICLE 17. CONTRACT SECURITY AND INSURANCE CERTIFICATES

17.1. The General Conditions and the Supplementary Conditions set forth Owner's requirements as to Performance and Payment Bonds. When the Successful Bidder delivers the executed Contract to Owner, it shall be accompanied by the required performance and payment Bonds.

17.2. The General Conditions and Supplementary Conditions sets forth Owner's requirements as to insurance. When the successful Bidder delivers the executed Contract to Owner, it shall be accompanied by certificates indicating that the required insurance has been secured.

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

17.4. The Successful Bidder shall provide insurance as indicated in the General Conditions and as amended in the Supplementary Conditions. The successful Bidder shall provide separate Owner's Protective Liability Insurance, with the Owner only as insured. A Rider clause to the Contractor's Liability Insurance shall not be acceptable. Each certificate and policy of insurance required by this 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 therefore, the issuing insurer or the Contractor will mail within thirty (30) days written notice to the certificate holder named to the left”.

17.5 The Successful Bidder 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 is named as an additional insured on each such policy.

ARTICLE 18. SIGNING OF CONTRACT

18.1. When Owner gives a Notice of Award to the Successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Contract with all other written Contract Documents attached. Within five (5) days (Saturdays, Sundays and legal holidays excluded) after presentation thereof by Owner, Contractor shall sign and deliver the required number of counterparts of the Contract and attached documents to Owner with the required Bonds and insurance certificates. Within ten (10) days thereafter, Owner will deliver one fully signed counterpart to Contractor.

18.2. If the Successful Bidder fails to perform its agreement to execute a Contract in accordance with the terms of its Bid, within the above time limits, and furnish the required Bonds and insurance certificates, which are acceptable to Owner, Owner may consider the Bidder in default.

If the Bidder is determined to be in default, Bidder's Bid security shall become the property of Owner, as liquidated damages, and Owner will consider the Bid of the next lowest qualified responsible and eligible Bidder.

ARTICLE 19. NOTICE TO PROCEED

19.1. The Notice to Proceed will be issued within thirty (30) days of the execution of the Contract by Owner. This time may be extended by mutual agreement between Owner and Successful Bidder.

19.2. The Notice to Proceed will establish the date of Commencement of the Work, the date of Substantial Completion and the date of Final Completion, as they are defined in the General Conditions and the Supplementary General Conditions.

ARTICLE 20. SALES AND USE TAX EXEMPTION

20.1. Owner is exempt from Commonwealth of Massachusetts Sales and Use Tax on materials and equipment to be incorporated in the Work. Said taxes shall not be included in the Contract Price. Owner shall provide a Certificate of Exemption Number at the pre-construction meeting.

ARTICLE 21. LAWS, REGULATIONS AND PERMITS

21.1. The Bidder's attention is directed to the fact that all applicable local, federal and state laws; municipal ordinances; and the rules and regulations of all authorities having jurisdiction over the Work, shall apply to the Contract throughout, and they shall be deemed to be included in the Contract Documents as though they were written out in full therein.

21.2. The Owner shall be responsible for monitoring Bidder's compliance with any Laws or Regulations.

21.3 Contractor shall obtain building, electrical, road opening and trench opening permits.

ARTICLE 22. MINIMUM PREVAILING WAGE RATES

22.1. Minimum Prevailing Wage Rates as determined by the Commissioner of the Executive Office of Labor and Workforce Development (EOLWD) (“the Commissioner”) under the provisions of the Commonwealth of Massachusetts General Laws, Chapter 149, Section 26 to 27D, as most recently revised, shall apply to the Work of this Contract. The Minimum Prevailing Wage Rates Determination of the Commissioner for the Work is included in the Supplementary General Conditions.

22.2. The Minimum Prevailing Wage Rates Determination establishes minimum wage rates only. Owner will not consider any claims by Contractor for additional compensation which is paid in excess of these minimum prevailing wage rates.

22.3. The Minimum Prevailing Wage Rates Determination shall be kept posted in a conspicuous place at the site of the Work throughout the active progress of the Work.

22.4. Regulations implementing M.G.L. c. 149, §§26-27D 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 Bidder employing these methods.

22.5. The Contractor shall submit weekly payrolls to the Owner during the progress of this Contract for each day work is performed.

ARTICLE 23. GUARANTEE

23.1. The Contractor shall furnish all supplies, equipment, and labor necessary for the performance of the services and/or delivery of equipment required by the Contract. 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. All manufacturers’ warranties on any equipment delivered shall be assigned to the Town of Natick.

23.2 The Contractor warrants that it has in its employ, and throughout the term of the Contract or any extension or renewal thereof, shall continue to have in its employ a sufficient number of persons experienced in performing services required by the Contract, such that the Contractor’s obligations under the Contract shall be carried out with the highest degree of professionalism and care.

23.3 The Contractor shall further 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 a) the Contractor fully completes the work and b) the Owner takes possession for occupancy, whichever occurs later. 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.

ARTICLE 24. WEATHER PROTECTION

24.1. Pursuant to Section 44G of M.G.L. 149, the Contractor shall provide weather protection and adequate heat for all construction included in this Contract during the months of November through March.

ARTICLE 25. NONDISCRIMINATION IN EMPLOYMENT

25.1. 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.

ARTICLE 26. SAFETY

26.1. This project is subject to the Safety and Health Regulations of the U.S. Department of Labor, as set forth in Title 29 CFR Part 1926, to all subsequent amendments thereto, and to the Massachusetts Executive Office of Labor and Workforce Development (EOLWD), 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.

26.2. 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 State Occupational Safety and Health Administration that is at least ten (10) hours in duration at the time the employee begins work. Each Bidder shall also certify that he shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that the Bidder shall comply fully with all laws and regulations applicable to awards made subject to section 44A.

ARTICLE 27. CONTRACT TERMINATION

27.1. In addition to rights afforded under the Contract General Conditions, Owner reserves the right to

terminate this 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.

ARTICLE 28. UNBALANCED BIDS

28.1. Bidder shall not submit unbalanced prices for any of the bid items on the Bid. All prices shall be reasonable for the Work entailed.

28.2. 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.

ARTICLE 29. COMPLIANCE WITH LAWS

29.1 The Successful Bidder 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 of 1970, as amended, and related regulations, as amended, in effect throughout the term of this Contract and any extension or renewal thereof. Without limitation, the Successful Bidder shall comply, to the extent applicable, with the provisions of Chapter 149, Section 26 to 27D of the Massachusetts General Laws, as amended. Any 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.

ARTICLE 30. USE OF ALCOHOL AND CONTROLLED AND/OR SUBSTANCES PROHIBITED

The use of alcoholic beverages, narcotics, and controlled and/or mood altering substances, except for current valid, legal prescriptions, by any officer, employee, agent, or representative of the Successful Bidder is prohibited on the Owner's property which is the subject matter of the Bid Documents and during all hours of work under any contract with the Owner. If any officer, employee, agent, or representative of the Successful Bidder violates the foregoing provision, the Owner shall have the right to order that such officer, employee, agent, or representative of the Successful Bidder shall not be permitted to return to work under any contract with the Owner. Under such circumstances, the Successful Bidder shall promptly remove the subject officer, employee, agent, or representative from the job site and shall not permit the subject officer, employee, agent, or representative to perform further work in conjunction with any contract with the Owner.

ARTICLE 31. SUPPLIER DIVERSITY OFFICE

The Successful Bidder shall be required to comply with all applicable Supplier Diversity Office thresholds for this project. The combined MBE/WBE goal for this project is 10.4%. See SDO guidelines, which are attached hereto and which are incorporated herein by reference.

BID FORM FOR GENERAL BID

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

A. The undersigned Bidder proposes to furnish all labor and materials required for Rehabilitation (Interior) at the Camp Arrowhead Building in the Town of Natick, 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. _____ Add \$ _____; Subtract _____

Not/Applicable
(Repeat preceding line for each alternate)

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>
_____	_____	\$ _____	_____

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.

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.

The Bidder has familiarized himself 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.

This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.

The Bidder certifies that it has reviewed the insurance requirements contained in the Contract Documents and certifies that it will comply with them. The Bidder also certifies its completion of the attached Contractor Certification forms.

The following documents are attached to and made a condition of this Bid:

(a) Required Bid Security in the amount of five (5%) percent of PROPOSED LUMP SUM CONTRACT PRICE appearing in Paragraph 4 above, and in a form as described in the Instructions to Bidders.

(b) A copy of a "Certificate of Eligibility" issued by the Deputy Commissioner of the Commonwealth of Massachusetts Division of Capital Asset Management and Maintenance (DCAMM) showing that the Bidder has the classification and capacity rating to perform the work required.

(c) An update statement in such form as the Deputy Commissioner of DCAMM shall prescribe.

The undersigned hereby certifies that the Bidder named below will comply with the minority workforce percentage ratio and specific affirmative action steps contained in the EEO/AA/Supplier Diversity Office (SDO) provisions of this Contract. The Bidder receiving the award of the Contract shall be required to obtain from each of its subcontractors a copy of the certification by said subcontractor, regardless of tier, that it will comply with the minority workforce ratio and specific affirmative action steps contained in these EEO/AA/SDO Contract provisions and submit it to the contracting agency prior to the award of such subcontract.

The undersigned certifies under penalties of perjury that there have been no substantial changes in his financial position or business organization of the Bidder named below other than those changes noted within the application since the applicant's most recent statement and that the bid is in all respects *bona fide*, fair and made without collusion or fraud with any other person. "Person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity which sells materials, equipment or supplies used in or for, or engages in the performance of, the same or similar construction, reconstruction, installation, demolition, maintenance or repair work or any part thereof. C 149 s44D (1)(b)

The undersigned further certifies under penalty of perjury that the said Bidder named below is not presently debarred from doing public construction work in the Commonwealth of Massachusetts under the provision of Section 29F of Chapter 29, 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 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)

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

BID 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

Town of Natick, Massachusetts

(Name of Owner)

c/o Natick Board of Selectmen, 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 has submitted to the Natick Board of Selectmen a certain Bid, attached hereto and made a part hereof and hereby incorporated by reference herein, to enter into a Contract, in writing, for the replacement of the existing Equipment Maintenance Garage roof.

NOW, THEREFORE,

(a) If said Bid shall be rejected, or

(b) If said Bid shall be accepted and the Principal shall executed 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 furnishing materials or performing labor 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 full 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 hands 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:

(Witness as to Surety)

By _____
Attorney-in-Fact Signature

Printed Name

Printed Title

(Address)

(Address)

NOTE: Date of Bond must not be prior to date of Contract.

If the Principal is a partnership, all partners should execute this 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.

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

Update Statement

TO ALL BIDDERS AND AWARDING AUTHORITIES

A Completed and Signed Contractor Update Statement Must Be Submitted with Every Bid for a Contract Pursuant To M.G.L. c.149, AND M.G.L. c. 149A. Any Bid Submitted Without An Update Statement Is Invalid And Must Be Rejected.

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

Bid Date

Print Name of Company

Project Number
(or name if no number)

Bidder's Address

Awarding Authority

Bidder Telephone Number

SIGNATURE⇒

Bidder's Authorized Representative

INSTRUCTIONS

INSTRUCTIONS TO BIDDERS

- This form must be completed and submitted by all contractors bidding on projects where DCAMM Certification is required.
- 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 may not have been previously reported on the application used for your company's most recently issued (not extended or amended) 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.**

INSTRUCTIONS TO AWARDING AUTHORITIES

Determination of Bidder Qualifications

- It is the awarding authority's responsibility to determine who the lowest eligible and responsible bidder is. 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 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.

Bidding Limits for Prime Contractors

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 projects in progress, may not exceed the bidder's Aggregate Work Limit.

Correction of Errors and Omissions in Update Statements

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.

PART 1 - COMPLETED PROJECTS

List all public *building* projects your company has completed since your most recently issued DCAMM Certificate of Eligibility. You must report all requested information not previously reported on that DCAMM application*.

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

Attach additional sheets if necessary

* If your 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 (Project Performance) of this Update Statement.

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

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

List all public building construction projects your company has under contract on this date regardless of when or whether the work commenced.

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

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

\$_____

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

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

PROJECT TITLE	COMPANY NAME	CONTACT PERSON	TELEPHONE
	OWNER:	<i>Owner Contact Person</i>	
	DESIGNER:	<i>Designer Contact Person</i>	
	GC:	<i>GC Contact Person</i>	
	OWNER:	<i>Owner Contact Person</i>	
	DESIGNER:	<i>Designer Contact Person</i>	
	GC:	<i>GC Contact Person</i>	
	OWNER:	<i>Owner Contact Person</i>	
	DESIGNER:	<i>Designer Contact Person</i>	
	GC:	<i>GC Contact Person</i>	
	OWNER:	<i>Owner Contact Person</i>	
	DESIGNER:	<i>Designer Contact Person</i>	
	GC:	<i>GC Contact Person</i>	
	OWNER:	<i>Owner Contact Person</i>	
	DESIGNER:	<i>Designer Contact Person</i>	
	GC:	<i>GC Contact Person</i>	
	OWNER:	<i>Owner Contact Person</i>	
	DESIGNER:	<i>Designer Contact Person</i>	
	GC:	<i>GC Contact Person</i>	

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) DCAMM Certificate of Eligibility. You must report all requested information not previously reported on that DCAMM Application for 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 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) Certificate of Eligibility. You must report all requested information not previously reported on that DCAMM application for Certificate of Eligibility.

The term "administrative proceeding" as used in this 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 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 www.osha.gov	<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, such as project managers and superintendents, 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 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 a copy of the completed construction projects which was submitted with your company's most recent DCAMM online application DCAMM Certificate of Eligibility.

- The Attachment must include a complete copy of the Completed Projects and Projects in Progress
- Dated signature page of your online application report submitted to the Division of Capital Asset Management and Maintenance Contractor Certification Office

NATICK, MASSACHUSETTS
BOARD OF SELECTMEN

NOTICE OF AWARD

DATED _____

To: BIDDER: _____
ADDRESS: _____

The 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 \$ _____, based upon summation of lump sum prices.

You shall comply with the following conditions precedent within five (5) days (Saturdays, Sundays, and legal holidays excluded) of the date of this Notice of Award, that is by _____.

1. You shall deliver to the OWNER five (5) fully executed counterparts of the Contract, 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 Contract, 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 Contract 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
this ____ day of _____, 20____.

Printed Name of Contractor

By _____
Authorized Signature

Printed Name

Printed Title



AIA[®]

Document A101[™] – 2007

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the ____ day of _____ in the year 2018
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

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

and the Contractor:
(Name, legal status, address and other information)

for the following Project:
(Name, location and detailed description)

Rehabilitation (Interior) of the Camp Arrowhead Building
Worcester Road
Natick, MA 01760

The Architect:
(Name, legal status, address and other information)

Resolution Architects, LLC
One South Avenue
Natick, MA 01760

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

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

AIA Document A201[™]–2007, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

Init.

TABLE OF ARTICLES

1	THE CONTRACT DOCUMENTS
2	THE WORK OF THIS CONTRACT
3	DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
4	CONTRACT SUM
5	PAYMENTS
6	DISPUTE RESOLUTION
7	TERMINATION OR SUSPENSION
8	MISCELLANEOUS PROVISIONS
9	ENUMERATION OF CONTRACT DOCUMENTS
10	INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.

(Insert the date of commencement if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)

| N/A

If, prior to the commencement of the Work, the Owner requires time to file mortgages and other security interests, the Owner's time requirement shall be as follows:

| N/A

§ 3.2 The Contract Time shall be measured from the date of commencement.

§ 3.3 The Contractor shall achieve Substantial Completion of the entire Work not later than sixty (60) calendar days from the date of commencement.

(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. If appropriate, insert requirements for earlier Substantial Completion of certain portions of the Work.)

Portion of Work

Substantial Completion Date

, subject to adjustments of this Contract Time as provided in the Contract Documents.
(Insert provisions, if any, for liquidated damages relating to failure to achieve Substantial Completion on time or for bonus payments for early completion of the Work.)

SEE PROJECT MANUAL.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be (\$), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:
(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

§ 4.3 Unit prices, if any:
(Identify and state the unit price; state quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price Per Unit (\$0.00)
------	-----------------------	-------------------------

See Project Manual.

§ 4.4 Allowances included in the Contract Sum, if any:
(Identify allowance and state exclusions, if any, from the allowance price.)

Item	Price
N/A	N/A

ARTICLE 5 PAYMENTS

§ 5.1 PROGRESS PAYMENTS

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

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

Per M.G.L. c. 30, §39K.

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the first day of a month, the Owner shall make payment of the certified amount to the Contractor not later than the fifteenth day of the same month. If an Application for Payment is received by the Architect after the application date fixed above, payment shall be made by the Owner not later than fifteen (15) days after the Architect receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

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

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

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

- .1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of five percent (5 %). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.9 of AIA Document A201™–2007, General Conditions of the Contract for Construction;
- .2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of five percent (5 %);
- .3 Subtract the aggregate of previous payments made by the Owner; and
- .4 Subtract amounts, if any, for which the Architect has withheld or nullified a Certificate for Payment as provided in Section 9.5 of AIA Document A201–2007.

§ 5.1.7 The progress payment amount determined in accordance with Section 5.1.6 shall be further modified under the following circumstances:

- .1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Architect shall determine for incomplete Work, retainage applicable to such work and unsettled claims; and
(Section 9.8.5 of AIA Document A201–2007 requires release of applicable retainage upon Substantial Completion of Work with consent of surety, if any.)
- .2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 9.10.3 of AIA Document A201–2007.

§ 5.1.8 Reduction or limitation of retainage, if any, shall be as follows:

(If it is intended, prior to Substantial Completion of the entire Work, to reduce or limit the retainage resulting from the percentages inserted in Sections 5.1.6.1 and 5.1.6.2 above, and this is not explained elsewhere in the Contract Documents, insert here provisions for such reduction or limitation.)

| None.

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

§ 5.2 FINAL PAYMENT

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

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Section 12.2.2 of AIA Document A201–2007, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 INITIAL DECISION MAKER

The Architect will serve as Initial Decision Maker pursuant to Section 15.2 of AIA Document A201–2007, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

| N/A

§ 6.2 BINDING DISPUTE RESOLUTION

For any Claim subject to, but not resolved by, mediation pursuant to Section 15.3 of AIA Document A201–2007, the method of binding dispute resolution shall be as follows:

(Check the appropriate box. If the Owner and Contractor do not select a method of binding dispute resolution below, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.)

[☐] Arbitration pursuant to Section 15.4 of AIA Document A201–2007

| [☒] Litigation in a court of competent jurisdiction

[☐] Other *(Specify)*

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2007.

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2007.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2007 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

| Zero percent (0%).

§ 8.3 The Owner's representative:

(Name, address and other information)

William D. Chenard
Acting Town Administrator
Natick Town Hall
13 East Central Street
Natick, MA 01760

§ 8.4 The Contractor's representative:

Init.

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User Notes:

(1262899504)

(Name, address and other information)

§ 8.5 Neither the Owner's nor the Contractor's representative shall be changed without ten days written notice to the other party.

§ 8.6 Other provisions:

N/A

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 9.1.1 The Agreement is this executed AIA Document A101–2007, Standard Form of Agreement Between Owner and Contractor.

§ 9.1.2 The General Conditions are AIA Document A201–2007, General Conditions of the Contract for Construction.

§ 9.1.3 The Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
Supplementary General Conditions	Supplementary General Conditions	February 1, 2018	39

§ 9.1.4 The Specifications:
(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

See Project Manual.

Section	Title	Date	Pages
-	-	-	-

§ 9.1.5 The Drawings:
(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

Number	Title	Date
-	-	-

§ 9.1.6 The Addenda, if any:

Number	Date	Pages
--------	------	-------

Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this Article 9.

§ 9.1.7 Additional documents, if any, forming part of the Contract Documents:

Init.

- .1 AIA Document E201™–2007, Digital Data Protocol Exhibit, if completed by the parties, or the following:

N/A

- .2 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201–2007 provides that bidding requirements such as advertisement or invitation to bid, Instructions to Bidders, sample forms and the Contractor's bid are not part of the Contract Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

N/A

ARTICLE 10 INSURANCE AND BONDS

The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A201–2007.

(State bonding requirements, if any, and limits of liability for insurance required in Article 11 of AIA Document A201–2007.)

Type of insurance or bond	Limit of liability or bond amount (\$0.00)
Performance Bond	100% of Total Contract Price
Labor and Materials Payment Bond	100% of Total Contract Price

This Agreement entered into as of the day and year first written above.

(Paragraphs deleted)

OWNER

The Town of Natick, Massachusetts

By: The Natick Board of Selectmen

Jonathan H. Freedman, Chairman

Susan G. Salamoff, Vice Chairman

Richard P. Jennett, Jr., Clerk

Michael J. Hickey, Jr.

Amy K. Mistrot

CONTRACTOR

(Printed Name of Contractor)

by:

Signature

Printed Name

Printed Title

Init.

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User Notes:

(1262899504)

Dated: _____

Dated: _____



Init.

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APPROVED AS TO AVAILABILITY OF APPROPRIATION:

This is to certify, pursuant to M.G.L. c. 44, §31C, that an appropriation in the amount of this Agreement is available therefor, and that the Natick Board of Selectmen is authorized to execute this Agreement and to approve all requisitions and execute change orders.

Arti P. Mehta
Comptroller, Town of Natick

Dated: _____

APPROVED AS TO FORM ONLY, AND NOT AS TO SUBSTANCE

John P. Flynn, Esq.

Dated: _____

CERTIFICATE OF VOTE

I, _____, hereby certify that I am the duly qualified and acting
(Clerk/Secretary)

_____ of _____ and I further certify that at a
(Title) (Corporation Name)

meeting of said Corporation duly called and held on _____, 20____, at which meeting all
Directors were present and voting, the following vote was unanimously passed:

VOTED: To Authorize and empower either _____,
(Name)

_____; _____,
(Title) (Name)

_____; or _____,
(Title) (Name)

_____, any one acting singly, to execute all contracts and bonds on behalf of the
(Title)
Corporation.

I, further certify that the above vote is still in effect on this the _____ day of _____, 20____
and has not been changed or modified in any respect.

Signature

Printed Name

Printed Title

The certification contained hereabove shall be executed by CONTRACTOR or copy of current "certification of
authority to sign for the Corporation" shall be attached.

Init.

/

NOTICE TO PROCEED

Dated _____, 20__.

To: _____
(Contractor)

(Address)

You are hereby notified to commence work in accordance with the Contract dated _____, 20__, on or before _____, 20__, and you are required to achieve substantial completion of all work within _____ () consecutive calendar days thereafter, and to achieve final completion within _____ () consecutive calendar days thereafter. In accordance with Article 3 of the Contract, the dates of Substantial Completion and Final Completion are _____ and _____, respectively.

OWNER: TOWN OF NATICK, MASSACHUSETTSBy _____
(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

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

Town of Natick, Massachusetts

(Name of Owner)

c/o Natick Board of Selectmen, 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 _____ 2018, a copy of which is hereto attached and made a part hereof for Rehabilitation (Interior) of the Camp Arrowhead Building in the Town of Natick.

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 Owner, with or without notice to the Surety and during the one (1) 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 security, 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 _____, 2018.

ATTEST:

Principal

(Principal Secretary)

(SEAL)(s)

By _____
Signature

Printed Name

Printed Title

(Address)

(Address)

(Surety)

ATTEST:

(Witness as to Surety)

By _____
Attorney-in-Fact Signature

Printed Name

Printed Title

(Address)

(Address)

NOTE: Date of Bond must not be prior to date of Contract.

If the Principal is a partnership, all partners should execute this 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.

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

Town of Natick, Massachusetts

(Name of Owner)

c/o Natick Board of Selectmen, 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 _____ 2018, a copy of which is hereto attached and made a part hereof for Rehabilitation (Interior) at the Camp Arrowhead Building in the Town of Natick.

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, including, without limitation, 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 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 _____ 2018.

ATTEST:

Principal

(Principal Secretary)

(SEAL)(s)

By _____
Signature

Printed Name

Printed Title

(Address)

(Address)

(Surety)

ATTEST:

(Witness as to Surety)

By _____
Attorney-in-Fact Signature

Printed Name

Printed Title

(Address)

(Address)

NOTE: Date of Bond must not be prior to date of Contract.

If the Principal is a partnership, all partners should execute this 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

General Conditions

The General Conditions shall be AIA Document A201-2007, the provisions of which are incorporated herein by reference.

SUPPLEMENTARY GENERAL CONDITIONS

I. THE GENERAL CONDITIONS

The "General Conditions of the Contract for Construction", AIA Document A201, (2007), is a part of the Contract.

II. THE SUPPLEMENTARY GENERAL CONDITIONS

The following supplements modify, delete and/or add to the General Conditions. Where any Article, Paragraph or subparagraph in the General Conditions is supplemented by one of the following paragraphs, the provisions of such Article, Paragraph, or subparagraph shall remain in effect and the supplemental provisions shall be considered as added thereto. Where any Article, Paragraph, or subparagraph in the General Conditions is amended, voided or superseded by any of the following paragraphs, the provisions of such Article, Paragraph or subparagraph not so amended, voided, or superseded shall remain in effect.

All references to the "Architect" shall mean the Engineer, Resolution Architects, LLC, One South Avenue, Natick, MA 01760.

III. MODIFICATIONS TO VARIOUS ARTICLES OF THE AIA GENERAL CONDITIONS

ARTICLE 1: GENERAL PROVISIONS

1.1.1 Delete the final sentence. Add the following provision:

"In the event of any conflict among the Contract Documents, the Documents shall be construed according to the following priorities:

Highest Priority:	Modifications to the Contract
Second Priority:	Contract
Third Priority:	Addenda to Bid Documents--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 drawings 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 Article 1.1.1, 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 Owner, without whose instructions the Contractor shall not adjust the matter except at his own risk. Any instructions of the Owner shall be given in writing."

ARTICLE 2: OWNER

2.1.1 Add the following at the end of the text:

"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."

2.1.2 Delete subparagraph 2.1.2.

2.1.3 Add Subparagraph 2.1.3

"No officer, official, agent or employee of Owner shall have the power to amend, modify or alter the Contract or waive any of its provisions or to bind the Owner 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 of 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.”

2.2.1 Delete subparagraph 2.2.1.

2.2.2 Delete subparagraph 2.2.2.

2.2.3 Delete the terms “legal limitations” and “a legal description of the site.”
Delete the second sentence.

2.2.4 Change subparagraph 2.2.4 to read as follows:

“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.”

2.2.6 Add the following subparagraph:

“Reference is made to Massachusetts General Laws Chapter 30, Section 39P, the provisions of which are incorporated herein.”

2.3 After the last sentence, add: “The Contractor shall remain responsible for maintaining progress and shall not be entitled to any increase in Contract Time or Contract Sum, and the Contractor shall reimburse the Owner for all costs incurred by the Owner and attributable to such an order to stop the Work. The Owner shall also have the authority, without any notice to the Contractor, to clean up or correct any situation which presents a hazardous or unsafe condition or which materially affects the Owner’s use of the facility. Reasonable costs incurred by the Owner for such clean-up or correction shall be charged to the Contractor and paid to the Owner by the Contractor.”

2.4 Delete paragraph 2.4 in its entirety and substitute the following in its place:

“If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven (7)-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, or if, having commenced such correction, the Contractor fails to continue such cure with diligence, then the Owner may, upon written notice to the Contractor, and without prejudice to other remedies the Owner may have, correct such deficiencies. In performing any work pursuant to this paragraph, the Owner shall have the right to take possession of the site

and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor or any Subcontractor.”

ARTICLE 3: CONTRACTOR

3.1.2 Add the following new provision after the present text:

“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.”

3.1.3 Add the following new provision after the present text:

“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 precedent thereto.”

3.3.4-

3.3.17 Add the following new provisions:

“3.3.4 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.

3.3.5 If, in the opinion of the Owner, the Contractor has fallen behind the Project Schedule, the Contractor shall submit a revised schedule 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.

3.3.6 The Contractor shall be solely responsible for properly laying out the Work, and for all lines, elevations and measurements for all of the Work. It shall verify the figures shown on the Drawings before laying out the Work and will be responsible for any 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 Owner, without whose instructions the Contractor shall not adjust the matter except at his own risk. Coordination of all work shall include without limitation, review of all shop drawings (including, without limitation, structural, mechanical, and electrical drawings) submitted by Subcontractors for various trades or subdivisions of work and approval of shop drawings indicated by Contractor's stamp of approval.

3.3.7 The Contractor shall comply with all provisions of Federal, Massachusetts and local 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 of 1970, as amended, and related regulations, as amended, in effect throughout the term of the 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 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.

3.3.8 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.

3.3.9 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 Owner 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.

3.3.10 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.

3.3.11 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 state 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.

3.3.12 The Contractor shall at all times protect excavations, trenches, 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.

3.3.13 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.

3.3.14 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.

3.3.15 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.

3.3.16 No unauthorized visitors shall be allowed on the Work site without permission from the Contractor.

3.3.17 If the Contractor fails to comply with its obligations under Subparagraphs 3.3.4 - 3.3.16, the Owner, without prejudice to any other remedies available to the Owner, may provide for such measures and charge the reasonable cost thereof to the Contractor."

3.4.1 At the end of this subparagraph, add the following:

"The word "provide" shall mean furnish and install completely, including connections, unless otherwise specified."

3.4.2.1-

3.4.2.9 Add the following new provisions:

3.4.2.1* (Statutory reference: M.G.L. c. 30, §39M(b)

Where products or materials are prescribed manufacturer name, trade name, or catalog reference, the word "or approved equal" shall be understood to follow. An item shall be considered equal to the item so named or described if, in the opinion of the Owner,

(a) it is at least equal in quality, durability, appearance, strength, and design,

(b) it performs at least equally the function imposed by the general design for the Work,

(c) it conforms substantially, even with deviations, to the detailed requirements for the items as indicated by the specifications."

Any structural or material changes made necessary to accommodate any substitute products or materials under this paragraph shall be at the expense of the Contractor or Subcontractor responsible for the Work items.

3.4.2.2 The Contractor shall be responsible for determining that all materials furnished for the Work meet all requirements of the Contract Documents. The Owner may require the Contractor to produce reasonable evidence that a material meets such requirements such as certified reports of past tests by qualified testing laboratories, reports of studies by qualified experts, or other evidence which, in the opinion of the Owner, would lead to a reasonable certainty that any material used or proposed to be used, in the Work meets the requirements of the Contract Documents. All such data shall be furnished at the Contractor's expense. This provision shall not require the Contractor to pay for periodic testing of different batches of the same material, unless such testing is specifically required by the Contract Documents to be performed at the Contractor's expense

3.4.2.3 In all cases in which a manufacturer's name, trade name or other proprietary designation is used in connection with materials or articles to be furnished under the Contract, whether or not the phrase "or equal" is used after such name, the Contractor shall furnish the product of the named manufacturer(s) without substitution, unless written request for a substitute has been submitted by the Contractor and approved in writing by the Owner.

3.4.2.4 If the Contractor proposed to use a material which, while suitable for the intended use, deviates in any way from the detailed requirements of the Contract Documents, the Contractor shall inform the Owner in writing of the nature of such deviations at the time material is submitted for approval, and shall request such written approval of the deviation from the requirements of the Contract Documents.

3.4.2.5 In requesting approval of deviations or substitutions, the Contractor shall provide, upon request, evidence leading to a reasonable certainty that the proposed substitution or deviation will provide a quality of result at least equal to that otherwise attainable. If, in the opinion of the Owner, the evidence presented by the Contractor does not provide a sufficient basis for such reasonable certainty, the Owner may reject such a substitution or deviation without further investigation.

3.4.2.6 The Contract Documents are intended to produce a building of consistent character and quality of design. All components of the building including visible items of mechanical and electrical equipment have been selected to have a coordinated design in relation to the overall appearance of the building. The

Owner shall judge the design and appearance of proposed substitutes on the basis of their suitability in relation to the overall design of the Project, as well as for their intrinsic merits. The Owner will not approve as equal to materials specified in the proposed substitutes which, the Owner's opinion, would be out of character, obtrusive, or otherwise inconsistent with the character or quality of the design of Project. In order to permit coordinated design of color and finishes the Contractor shall, if required by the Engineer, furnish the substituted material in any color, finish, texture, or pattern which would have been available from the manufacturer originally specified, at no cost to the Owner.

3.4.2.7 Any additional cost, or any loss or damage arising from the substitution of any material or any method for those originally specified shall be borne by the Contractor, notwithstanding approval or acceptance of such substitution by the Owner, unless such substitution was made at the written request or direction of the Owner.

3.4.2.8 The representations provided in this paragraph shall be in addition to and not in limitation of any warranty required by the Contract Documents or otherwise prescribed by law.

3.4.2.9 The Contractor shall procure and deliver to the Owner, no later than the date claimed by the Contractor as the date of Final Completion, all special warranties required by the Contract Documents. Delivery by the Contractor shall constitute the Contractor's guarantee to the Owner that the warranty will be performed in accordance with its terms and conditions.

3.4.3 At the end of this subparagraph, add the following:

"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 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."

Add new Subparagraphs as follows:

* (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 (8) 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 week, except in cases of emergency."

* (Statutory reference: M.G.L. c.149 §25)

"Every employee under the 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."

* (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."

"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.

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."

3.9 Change the title of this article to "Superintendence."

Change the text to read as follows:

"3.9.1 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 Final Completion. The Contractor shall remove the superintendent if requested to do so in writing by 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.

3.9.2 The Contractor shall establish the building grades, lines, levels, column, wall and partition lines required by the various Subcontractors in laying out their Work.

3.9.3 The Contractor shall coordinate and supervise the Work performed by Subcontractors to the end that the Work is carried out without conflict between trades so that no trade, at any time, causes delay to the general progress of the Work. The Contractor and all Subcontractors shall at all times afford each trade, any separate contractor, or the Owner, every reasonable opportunity for the installation of Work and the storage of materials.

3.9.4 The Contractor shall attend job meetings with the Owner and its designees from time to time as the Owner may desire. The Contractor shall be represented by a principal, or project manager or 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 Owner. 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.”

3.10.4 Add the following subparagraph:

“A copy of the progress schedule shall be kept in the Contractor's field office and be brought up to date weekly to show the actual progress of the Work and to indicate Work to be performed over the next five (5) – ten (10) workdays, for coordination with Owner's administrators. This progress schedule shall clearly show by bar graph or critical path method, as acceptable to the Owner, in sufficient detail, the interrelationships between the various operations and the percentage of completion and the dollar value on the first day of each month for the Work in each section of the specifications and also for the entire Work. The graph shall also show the date that the Work in each section commenced.”

3.11 Delete and insert the following in its place:

“The Contractor shall maintain at the construction site 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 shall have free and complete access to such Contract Documents during the Work. Upon Substantial Completion, the Contractor shall furnish to the Owner 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.”

3.13 Change paragraph 3.13 to read as follows:

“3.13 The right of possession of the premises and improvements made thereon 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 law, ordinances, the Contract Documents and permits and/or directions of the Owner 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 statutes and regulations and shall indemnify and hold harmless the Owner and the Owner's officers, employees, boards, commissions, committees 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 agents, representatives, and assigns for parking, storage of materials and construction operations and shall comply with all Town of Natick 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.

* Statutory Reference (M.G.L. c. 149, §44G(D))

Nothing herein shall alter the Contractor's responsibilities pursuant to M.G.L. c. 149, §44G(D), which provides:

“(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.”

3.18 Delete this Paragraph in its entirety and replace with the following:

“3.18.1 The Contractor shall compensate the Owner for all damage to the Owner's 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 Owner and the Owner's 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 the Contract, or the act or omission of the Contractor, its Subcontractors, or their officers, employees, agents and representatives and assigns 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 local 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 Owner, 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 the Contract, the execution thereof or anything relating thereto which arises out of the violation of any provision of the Contract, or the violation of any Federal, Massachusetts or local statute, by-law, rule, regulation, order or directive, or which relates to personal injury or property damage suffered by the Contractor or its employees, regarding the subject matter of the Contract..”

ARTICLE 4: ARCHITECT

No changes.

ARTICLE 5: SUBCONTRACTORS

5.1.3 Add the following new provision:

“5.1.3 All Subcontractors shall be obligated to the Owner for indemnification defense and to hold the Owner harmless and to have the same insurance requirements and obligations as the Contractor, with the Owner being listed as an additional insured as relates to claims which may be made against the Owner.”

5.2.5 Add the following new provision:

“5.2.5 The form of the subcontract shall be submitted to the Owner for its approval, which shall not be unreasonably withheld or delayed. Each subcontract shall expressly provide for such contingent assignment referred to in subparagraph 5.4.1.”

5.3.2 Add the following new provision:

“5.3.2 The Contractor shall be fully responsible to the Owner for all acts and omissions of the Subcontractors and Suppliers at all tiers, to the same extent as the Contractor is responsible for the Contractor’s own acts and omissions. Nothing in the Contract Documents shall create a contractual relationship between the Owner and any Subcontractor or Supplier, nor create an express or implied duty or obligation on the part of the Owner to any Subcontractor or Supplier or the Subcontractor’s sureties, to pay or to see the payment of any monies owed to them.”

5.4.2 Delete subparagraph 5.4.2.

ARTICLE 6: CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1.4 Delete Subparagraph 6.1.4 and insert in its place:

“6.1.4 The Owner reserves the right of access to any part of the Project at all times to install other work either with its own forces or with separate contractors hired by Owner. Such access is not to be construed to mean partial occupancy by the Owner, and no claim for increase in the Contract Time or Sum will be considered unless such Owner’s contractors have delayed or damaged the Contractor’s work. The Contractor shall permit the Owner to place and to install as much furniture, equipment, wiring, and other materials during the progress of the Work as is possible before the completion of the various parts of the Work and agrees that such placing and installation of equipment shall not in any way evidence the completion or acceptance of the Work or any portion of it.”

6.1.5 Add the following new provision:

“6.1.5 The Contractor acknowledges that there may be separate contractors performing other work related to the Project, including, without limitation, utility work and telecommunications work. The Contractor agrees to coordinate the performance of the Work with the Work of such other contractors, and the Contractor covenants and agrees that the Contractors and all of its forces shall work in harmony with all such separate contractors. The Owner agrees to include a substantially similar provision in its contracts with other contractors performing work at the Project site. “

6.2.4 Add the following at the end of subparagraph 6.2.4:

“If such separate contractor sues the Owner on account of any damage alleged to have been caused by the Contractor, the Owner shall notify the Contractor, who shall defend such proceedings at the Contractor’s expense, and if any judgment or award against the Owner arises therefrom, the Contractor shall pay or satisfy it and shall reimburse the Owner for all attorneys’ fees and court costs which the Owner has incurred. The Owner shall have no responsibility for attorneys’ fees or court or arbitration costs that the Contractor has incurred.

6.2.5 Delete subparagraph 6.2.5. Add the following as new subparagraph 6.2.5:

“6.2.5 Should the Contractor sustain damage through an act or omission of a Subcontractor or any party providing labor, materials, equipment, or services to the Contractor, the Contractor shall have no claim against the Owner for such damage.”

ARTICLE 7: CHANGES IN THE WORK

Delete all in its entirety. Replace with the following:

7.1 GENERAL

A Change Order is a written order to the Contract signed to show the recommendation of the Project Manager, the approval 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 Project Manager, or the Contractor and shall be submitted to the Owner. The Change Order request must 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.

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 an Contract for an equitable adjustment and when so directed, the Contractor shall proceed with the Change Order work on a time and material basis as provided in subparagraph 7.2(c) of this Article, 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.

7.1.1 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.

7.2 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 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 (I);

(3) plus fifteen (15%) percent of item (I) 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.

7.3 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 must 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 Owner itemized statements of the details and costs of such work performed or damage sustained; calculated pursuant to subparagraph 7.2c or this Article; 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.

7.4 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. The Contract Float is the period during which the schedule entitles the contractor to an excusable delay even though the original Contract delivery or completion schedule allows more time than is actually necessary to perform the Work. An extension in Contract Time will not be approved unless the Contractor demonstrates through a detailed Critical Path Method (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.

7.5 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, as well as to 39G (if applicable), 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 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 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.”

7.6 Add new Paragraph 7.6 as follows:

7.6* CERTIFICATE OF APPROPRIATIONS

7.6.1* 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 therefor; but such certificate shall not be construed as an admission by the Awarding Authority of its liability to pay for such work. The certificate of the auditor or accountant or other officer of the Awarding Authority having similar duties that an appropriation in the amount of 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 8: TIME

8.3.4 Add the following language:

The Owner and the Contractor shall comply with M.G.L. c.30, §39K, as stated in Article 9.6, below.

The Owner and the Contractor shall also comply with M.G.L. c. 30, §39O:

*(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 (15) days or more or due to a failure of the Awarding Authority to act within the time specified in the Contract, the Awarding Authority shall make an adjustment in the contract price for any increase in the cost of performance of the 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 the 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 the 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."

ARTICLE 9: PAYMENTS AND COMPLETION

9.6: Delete all and add new Sub-subparagraphs 9.6.1.1 through 9.6.1.4, as follows: (Statutory reference: M.G.L. c.30 §39K)

"9.6.1.1* Within fifteen (15) days (thirty (30) days in the case of the Commonwealth, including local housing authority) after receipt from the Contractor, at the place designated by the Awarding Authority if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the Awarding Authority will make a periodic payment to the Contractor for the Work performed during the preceding month and for the materials not incorporated in the Work but delivered and suitably stored at the site (or some location agreed upon in writing) to which the Contractor has title or to which a Subcontractor has title and has authorized the Contractor to transfer title to the Awarding Authority, upon certification by the Contractor that he is the lawful owner and 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 Subparagraph 9.6.2, and less (3) a retention not exceeding five (5) percent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within sixty-five (65) days after (a) the Contractor fully completes the Work or substantially completes the Work so that the value of the Work remaining to be done is, in the estimate of the Awarding Authority, less than one (1) percent of the original Contract price, or (b) the Contractor substantially completes the Work and the Awarding Authority takes possession for occupancy, whichever occurs first, the Awarding Authority shall pay the Contractor the entire balance due on the Contract less (1) a retention based on its estimate of the fair

value of its claims against the Contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payments to Subcontractors based on demands for same in accordance with the provisions of Subparagraph 9.6.2 of these Supplementary General Conditions, or based on the record of payments by the Contractor to the Subcontractors under the Contract if such record of payment indicates that the Contractor has not paid Subcontractors as provided in Subparagraph 9.6.2. 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 (3) 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 (15) days (twenty four (24) days in the case of the Commonwealth, including local housing authority) after receipt of such periodic estimate from the Contractor, at the place designated by the Awarding Authority if such a place is so designated. The Contractor agrees to pay to each Subcontractor a portion of any such interest paid in accordance with the amount due each Subcontractor.

9.6.1.2* The Awarding Authority may make changes in any periodic estimate submitted by the Contractor, and the payment due on said periodic estimate shall be computed in accordance with the changes so made, but such changes or any 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 (7) 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.

9.6.1.3* All periodic estimates shall be submitted to the Awarding Authority, or to its designee as set forth in writing to the Contractor, and the date of receipt by the Awarding Authority or its designee shall be marked on the estimate. All periodic estimates shall contain a separate item for each subtrade and each sub-subtrade listed in sub-bid form as required by 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.

9.6.1.4* A certificate of the Owner to the effect that the Contractor has fully or substantially completed the Work shall, subject to the provisions of Subparagraph 4.6.2 be conclusive for the purposes of this Subparagraph 9.6.1.”

9.6.2 Add new Sub-subparagraphs 9.6.2.1 through 9.6.2.13, as follows: (Statutory reference: M.G.L. c.30 §39F)

“9.6.2.1* Forthwith after the Contractor receives payment on account of a periodic estimate, the Contractor shall pay to each Subcontractor the amount paid for the labor performed and the materials furnished by that Subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the Contractor.

9.6.2.2* 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.

9.6.2.3* Each payment made by the Awarding Authority to the Contractor pursuant to Sub-subparagraphs 9.6.2.1 and 9.6.2.2 for the labor performed and the materials furnished by a Subcontractor shall be made to the Contractor for the account of that Subcontractor; and the Awarding Authority shall take reasonable steps to compel the Contractor to make each such payment to each such Subcontractor. If the Awarding Authority has received a demand for direct payment from a Subcontractor for any amount which has already been included in a payment to the Contractor or which is to be included in a payment to the Contractor for payment to the Subcontractor as provided in Sub-subparagraphs 9.6.2.1 and 9.6.2.2, the Awarding Authority shall act upon the demand as provided in this Subparagraph 9.6.2.

9.6.2.4* 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.

9.6.2.5* 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 Sub-subparagraph 9.6.2.4. The Awarding Authority shall make further direct payments to the Subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this Sub-subparagraph.

9.6.2.6* The Awarding Authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of Sub-subparagraph 9.6.2.5 in an interest-bearing joint account in the names of the Contractor and the Subcontractor in a bank in Massachusetts selected by the Awarding Authority or agreed upon by the Contractor and the Subcontractor and shall notify the Contractor and the Subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an Contract between the Contractor and the Subcontractor or as determined by decree of a court of competent jurisdiction.

9.6.2.7* All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to Sub-subparagraph 9.6.2.6 shall be made out of amounts payable to the Contractor at the time of receipt of a demand for direct payment from a Subcontractor and out of amounts which later become payable to the Contractor

and in the order of receipt of such demands from Subcontractors. All direct payments shall discharge the obligation of the Awarding Authority to the Contractor to the extent of such payment.

9.6.2.8* The Awarding Authority shall deduct from payments to a Contractor amounts which, together with the deposits in interest-bearing accounts pursuant to Sub-subparagraph 9.6.2.6, are sufficient to satisfy all unpaid balances of demands for direct payment received from Subcontractors. All such amounts shall be earmarked for such direct payments, and the Subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the Contractor.

9.6.2.9* If the Subcontractor does not receive payment as provided in Sub-subparagraph 9.6.2.1 or if the Contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the Subcontractor and the Subcontractor does not receive payment for same when due less the deductions provided for in Sub-subparagraph 9.6.2.1, the Subcontractor may demand direct payment by following the procedure in Sub-subparagraph 9.6.2.4 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 Sub-subparagraphs 9.6.2.5 through 9.6.2.8

9.6.2.10* Any assignment by a Subcontractor of the rights under this section to a surety company furnishing a bond under the provisions of M.G.L. c.149, §29 shall be invalid. The assignment and subrogation rights of the surety to amounts included in a demand for direct payment which are in the possession of the Awarding Authority or which are on deposit pursuant to Sub-subparagraph 9.6.2.6 shall be subordinate to the rights of all Subcontractors who are entitled to be paid under this section and who have not been paid in full.

9.6.2.11* "Subcontractor" as used in Sub-subparagraphs 9.6.2.1 through 9.6.2.13 shall mean a person who is approved by the Awarding Authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the Contractor.

9.6.2.12* A Contractor or a Subcontractor shall enforce a claim to any portion of the amount of a demand for direct payment deposited as provided in Sub-subparagraph 9.6.2.6 by a petition in equity in the superior court against the other and the bank shall not be a necessary party. A Subcontractor shall enforce a claim for direct payment or a right to require a deposit as provided in Sub-subparagraph 9.6.2.6 by a petition in equity in the superior court against the

Awarding Authority and the Contractor shall not be a necessary party. Upon motion of any party the court shall advance for speedy trial any petition filed as provided in this paragraph. M.G.L. 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 as provided in part (iii) of Sub-subparagraph 9.6.2.5 and in Sub-subparagraph 9.6.2.6.

9.6.2.13* In any petition to collect any claim for which a Subcontractor has filed a demand for direct payment the court shall, upon motion of the Contractor, reduce by the amount of any deposit of a disputed amount by the Awarding Authority as provided in part (iii) of Sub-subparagraph 9.6.2.5 and in Sub-subparagraph 9.6.2.6 any amount held under a trustee writ or pursuant to a restraining order or injunction.”

ARTICLE 10: PROTECTION OF PERSONS AND PROPERTY

10.1 Add the following language to the end of the present text:

* Statutory Reference (M.G.L. c. 149, §44G(D))

The Contractor shall comply with M.G.L. c. 149, §44G(D), which provides:

“(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.'

Prior to commencing services under this Contract, the Contractor shall furnish the Owner, in writing, the names, addresses and telephone numbers of not fewer than two (2) principal employees of his business who are to be contacted in the event of an after-hours emergency."

10.2.8 Add the following language after the present text:

"The Contractor shall promptly remedy damage and loss to property of the Owner. If the damage or loss is due in whole or in part to Contractor's failure to take the precautions required in Article 10, the Contractor shall, subject to any reimbursement to which the Contractor is entitled under Property insurance required by the Contract Documents, bear the cost. The Contractor shall be fully and solely responsible for all Work and other operations carried out on any adjacent properties. The insurance required under the General Conditions, as modified by the Supplementary General Conditions, shall cover such Work operations, and the Contractor shall indemnify and defend the Owner from and against any and all claims suits, losses or costs arising out of such Work or operations or caused by the failure of the Subcontractor, regardless of tier, or anyone directly or indirectly employed by any of them or anyone for whose acts they may be liable, to take precautions required by Article 10."

10.2.9-

10.2.12 Add the following new provisions:

"10.2.9 The Contractor shall provide and maintain in good operating condition suitable, adequate fire protection equipment and services, and shall comply with all reasonable recommendations regarding fire protection made by the representatives of the insurance company carrying insurance on the Work or by the local fire chief or state 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.

10.2.10 The Contractor shall at all times protect excavations, trenches, filling material from rain water, ground water, backup or leakage of sewers, drains, and 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.

10.2.11 The Contractor shall remove all snow and ice which may result in damage or delay.

10.2.12 The Contractor shall arrange for, coordinate and pay all costs associated with crossing guards and police details required for the Work.”

10.3 Delete the present text and replace with the following language:

“In the event that the Contractor encounters on the site material reasonably believed to be asbestos, polychlorinated biphenyl (PCB), or any other toxic or hazardous waste or oil as defined by M.G.L. c. 21E, which has not been rendered harmless, the Contractor shall immediately stop work in the area affected and shall immediately notify the Owner in writing. Work in the area affected shall not be resumed except upon written order of the Owner.”

ARTICLE 11: INSURANCE AND BONDS

11.1 Delete Article 11.1 and replace with the following text:

“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 Owner is named as an additional insured and meet the following requirements.

a. Workers’ Compensation Insurance as required by the laws of the Commonwealth of Massachusetts and Employer’s Liability Insurance in the amount of \$1,000,000/\$1,000,000/\$1,000,000.

b. Commercial General Liability Insurance, \$1,000,000 each occurrence and \$2,000,000 aggregate limit. Commercial General Liability insurance shall include personal injury liability, broad form property damage liability, products/completed operations liability and broad form contractual liability. Products/completed operations liability insurance shall be maintained for at least three (3) years after the completion of the Work required to be performed by the Contractor under the Contract.

c. Automobile Liability Insurance – Combined single limit of \$1,000,000.

d. Professional Liability Insurance - If the Contractor or any Subcontractor or Sub-subcontractor provides architectural, design, and/or architecting services, the Contractor shall procure professional liability insurance with limits of \$1,000,000 per occurrence and \$2,000,000 aggregate.

e. Pollution/Environmental Legal Liability - Combined single limit of \$1,000,000.

f. Aviation and/or Marine Insurance – DELETED

g. Excess Liability Insurance, Umbrella Form - \$2,000,000 per occurrence and \$2,000,000 aggregate limit, which shall be following form, providing coverage over commercial general liability insurance, automobile liability insurance, pollution/environmental legal liability insurance, and employer's liability under workers' compensation insurance.

The Owner shall be named as an additional insured on each such policy of Commercial General Liability Insurance, Excess Liability insurance, Umbrella Form, Automobile Liability Insurance, Pollution/Environmental Legal Liability.

h. Owner's Protective Liability Insurance, issued to the Owner at the expense of the Contractor, with the Owner only as named insured - \$1,000,000 each occurrence and \$2,000,000 aggregate limit.

i. 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.

j. All certificates and policies shall contain the following provision:

"Notwithstanding any other provision herein, should any of the above policies be cancelled or materially amended before the expiration date thereof, the issuing company will mail thirty (30) days prior written notice thereof to the named certificate holder and to the Natick Board of Selectmen, Natick Town Hall, 13 East Central Street, Natick, MA 01760, before such cancellation or amendment shall take place."

k. Certificates evidencing such insurance in five (5) copies shall be furnished to the Owner at the execution of the Contract. Such certificated

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. The Contractor shall make no claims against the Owner or their officers for any injury to any officers or employees or for damage to its equipment arising out of work contemplated by the Contract.

l. 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, pollution/environmental legal liability insurance and excess umbrella liability insurance, umbrella form, which indicate that the Owner is named as an additional insured on each such policy.

m. No insurance shall be obtained from an insurer which:

- i. is not licensed to sell insurance in the Commonwealth of Massachusetts; or
- ii. 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."

11.4.3 Add the following paragraph:

"The Contractor shall furnish a Performance Bond, acceptable to the Owner, 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."

The Contractor shall furnish a Payment Bond, acceptable to the Owner, 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."

ARTICLE 12: UNCOVERING AND CORRECTION OF WORK

12.2.1 In the second sentence, insert the words “and any cost, loss or damage to the Owner resulting from such failure or defect,” between the words “thereby,” and “shall.”

12.2.5 In the second sentence, insert the words “and to pay any cost, loss, or damage incurred by the Owner resulting from such breach, failure, or defect” between the words “Documents” and “may.”

ARTICLE 13: STATUTORY PROVISIONS

Renumber Article 13 as Article 17, and renumber paragraphs 13.01 through 13.07 as paragraphs 17.01 through 17.07.

Insert new paragraphs 13.1 through 13.7 in the General Conditions:

“ARTICLE 13 - CONTRACTOR'S ACCOUNTING METHOD REQUIREMENTS

(Statutory reference: M.G.L. c.30, §39R)

SC_13.1*-

SC-13.5* Add new paragraphs 13.1 through 13.5, to the General Conditions as follows:

“13.1 The words defined herein shall have the meaning stated below whenever they appear in this Article 13:

13.1.1 “Contractor” means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a contract pursuant to §39M of c.30, §§44A-44H inclusive, of c.149, §11C of c.25, or (§§44 et seq. inclusive, of c.7C), which is for an amount or estimated amount greater than one hundred thousand dollars.

13.1.2 “Contract” means any contract awarded or executed pursuant to (§§44 et seq. 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.

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

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

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

13.1.6 "Accountant's Report", when used in regard to financial statements, means a document in which an independent certified public accountant indicates the scope of the audit which 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.

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

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

13.2 Every Contract or contract awarded or executed pursuant to (§§44 et seq. 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:

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

13.2.2 Until the expiration of six years after final payment, the 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.

13.2.3 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.

13.2.4 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 13.3 below prior to the execution of the contract.

13.2.5 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 13.5 below.

13.3 Every Contractor awarded a contract shall file with the Awarding Authority a statement of management as to whether the system of internal accounting controls of the Contractor and its subsidiaries reasonably assures that:

13.3.1 transactions are executed in accordance with management's general and specific authorization;

13.3.2 transactions are recorded as necessary:

(i) to permit preparation of financial statements in conformity with generally accepted accounting principles, and

(ii) to maintain accountability for assets;

13.3.3 access to assets is permitted only in accordance with management's general or specific authorization; and

13.3.4 the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

13.4 Every Contractor awarded a contract shall also file with the Awarding Authority a statement prepared and signed by an independent certified public accountant, stating that he or she has examined the statement of management on internal accounting controls, and expressing an opinion as to

13.4.1 whether the representations of management in response to this paragraph and Paragraph 13.2 above are consistent with the result of management's evaluation of the system of internal accounting controls; and

13.4.2 whether such representations of management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statements.

13.5 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.

13.6 Records and statements required to be made, kept or filed under the provisions of this Article 13 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 13.2.2 and 13.5.”

13.7 M.G.L. Chapter 30, Section 39M (b) provides that, where a proprietary specification is used: “(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.”

13.8 Additional Statutory Incorporations - 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 applicable provisions of any other laws, including, without limitation, Chapter 30, Sections 39F, 39G, 39K, 39L, 39M, 39N, 39O, 39P, and 39R of the Massachusetts General Laws, as amended, and Chapter 149, Sections 34, 34A, and 34B of the Massachusetts General Laws, as amended, and Chapter 82, Section 40 of the Massachusetts General Laws, as amended, as though such terms were set forth in their entirety herein.

ARTICLE 14: TERMINATION OR SUSPENSION OF THE CONTRACT

14.2 - Replace Article 14.2 with the following:

“14.2 TERMINATION BY THE OWNER

If the Contractor is adjudged a bankrupt, or if the Contractor makes a general assignment for the benefit of the Contractor's creditors, or if a receiver is appointed on account of the Contractor's insolvency, or 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 Owner, 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, 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, seven (7) days after such notice, may, if such default is not cured within such seven (7) day period, terminate the Contract, terminate the employment of the Contractor, accept assignment of any or all subcontracts pursuant to Paragraph 5.4, 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 Owner 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."

ARTICLE 15: CLAIMS AND DISPUTES

15.3 Delete all references to arbitration.

15.4 Delete the arbitration provision in its entirety.

ARTICLES 16 : NONDISCRIMINATION IN EMPLOYMENT

16.1 Contracts for work under this bid will obligate the Contractor and Subcontractors not to discriminate in employment practices.

16.2 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 previous sentence 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 take affirmative actions to insure that applicants are employed, and that employees are treated during their employment, without regard to race, color, religious creed, national origin, sex, gender identity, sexual orientation (which shall not include persons whose sexual orientation involves minor children as the sex object), age, genetic information, ancestry, children, marital status, veteran status or membership in the armed services, the receiving of public assistance, and handicap.

ARTICLE 17: MISCELLANEOUS PROVISIONS

Add the following provisions after renamed 17.01 through 17.07:

17.08 The Contract is made subject to all laws of the Commonwealth of Massachusetts.

17.09 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.

17.10 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 is 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.

17.11 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.

17.12 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.

17.13 The Contract may be amended only by written Contract of the parties.

17.14 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.

17.15 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.

17.16 Prevailing Wage - Prevailing wage rates, as contained in the bidding documents, shall be paid, pursuant to M.G.L. Chapter 149, Sections 26-27G, if they are applicable.

17.17 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.

17.18 Independent Contractor Status - The Contractor shall provide services under any Contract with the Owner as an independent contractor with the Owner and not as an employee of the Owner. No employee, agent or representative of the Contractor shall be entitled to receive any benefits of employment with the Owner, including without limitation salary, overtime, vacation pay, holiday pay, sick leave, health insurance, life insurance, pension or deferred compensation.



OPERATIONAL SERVICES DIVISION

SUPPLIER DIVERSITY OFFICE

Reginald Nunnally
Executive Director

THE COMMONWEALTH OF MASSACHUSETTS Executive Office for Administration and Finance OPERATIONAL SERVICES DIVISION

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Secretary

Gary J. Lambert
Assistant Secretary for
Operational Services

SUPPLIER DIVERSITY OFFICE CONSTRUCTION REFORM PROGRAM MUNICIPALITIES GENERAL GUIDELINES

The Supplier Diversity Office (SDO) issues the Construction Reform Program guidelines on the [Municipality Guidelines](#) webpage in accordance with the statutory standards set forth in [Chapter 193 of the Acts of 2004](#), which includes a municipal affirmative marketing program for currently certified firms in the Commonwealth of Massachusetts.

THE BIDDING AND CONTRACT INSTRUCTIONS ON THE [MUNICIPALITY GUIDELINES](#) WEBPAGE MUST BE INCORPORATED INTO CONTRACT DOCUMENTS, AS REQUIRED BY CHAPTER 193 OF THE ACTS OF 2004.

Municipalities must incorporate Minority Business Enterprise (MBE) and Women Business Enterprise (WBE) goals into both their design and construction procurement for municipal contracts for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building by any city or town that includes funding provided by the Commonwealth such as legislative appropriations, grant awards, reimbursements and municipal commitments to use state funds.

Only firms which are **currently** MBE or WBE **certified** by the Supplier Diversity Office (SDO) at the date of contract award will be counted for Construction Reform program purposes. The firm's current SDO state certification letter **shall serve as the sole and exclusive proof of state certification**.

Certification as a Disadvantaged Business Enterprise (DBE), certification as an MBE/WBE by any agency other than SDO, or submission of an application to SDO for certification as an MBE/WBE **shall not confer** MBE or WBE status on a firm for purposes of construction reform program participation credit.

Affirmative Marketing Participation Goals:

The combined goals below were established by the Division of Capital Asset Management and Maintenance (DCAMM) and the Supplier Diversity Office (SDO) and require a reasonable representation of both MBE and WBE firms:

Design Participation:	Combined MBE/WBE goal of (17.9%)
Construction Participation:	Combined MBE/WBE goal of (10.4%)

Documentation submitted with your signature means that you swear under the pains and penalties of perjury that you have read and understand it. Any false claims for MBE/WBE credit are subject to the Massachusetts False Claims Act and any applicable civil or criminal penalties as determined by the Massachusetts Attorney General's office.¹

Questions and Contact Information:

Separate and individual PDF files are attached for your reference. All questions concerning the Construction Reform Act and the implementation of the new law may be directed to the SDO Director of Construction Reform at **617-502-8851** or by e-mail at John.B.Fitzpatrick@state.ma.us

¹ See generally, MG.L. c.12, §§5A-5O, inclusive.

ATTACHMENT A

PROCEDURE FOR PRE-ADVERTISING ADJUSTMENT OF MBE/WBE PARTICIPATION GOALS

A. Affirmative Marketing Participation Goals:

The combined goals below were established by the Division of Capital Asset Management and Maintenance (DCAMM) and the Supplier Diversity Office (SDO) and require a reasonable representation of both MBE and WBE firms.

Design Participation: Combined MBE/WBE goal of (17.9%)

Construction Participation: Combined MBE/WBE goal of (10.4%)

All documentation submitted in connection with MBE/WBE credit must be true, accurate and correct to the best of your knowledge. Your signature on any MBE/WBE goal-related document means that you have read and understand it. Any false claims for MBE/WBE credit are subject to the Massachusetts False Claims Act and any applicable civil or criminal penalties as determined by the Massachusetts Attorney General's office.¹

B. Criteria for Adjustment of Goals:

An Awarding Authority may file a written request for the adjustment of participation goals with the Executive Director of the SDO prior to the advertising of the contract.² Factors that may be considered include any or all of the following:

- Actual availability of SDO certified Minority-Owned Business Enterprises (MBE) or Women-Owned Business Enterprises (WBE);
- The geographic location of the project;
- The scope of work of the project including the opportunities for sub-contracting and subdividing the work and other relevant factors; and
- The SDO, at the request of the awarding authority or any perspective bidder may agree to assist in MBE/WBE outreach. The SDO is not required nor obligated to do this. It is a complementary service provided, and one the SDO strongly suggests be taken advantage of.

C. Project Thresholds:

Participation Goals³ can be adjusted by the Awarding Authority without filing a formal request with SDO if the total estimated construction or design cost is \$100,000 or less.

D. Supporting Documentation for Design and Construction Projects will include, but are not limited to the following:

1. Documents to support a reduction/waiver request should include a general description of the project, a copy of the detailed project estimates and the deadline for placement of project advertisement;
2. The reasons that the Awarding Authority or its representative is requesting a reduction/waiver of the MBE/WBE participation goals;
3. Documentation that there may be a lack of eligible MBE/WBEs to perform the design or construction contract work after reviewing the SDO Business Directory;
4. Documentation that all subcontracting opportunities were identified and made available to meet the MBE/WBE participation goals;
5. The Awarding Authority may also submit any other information supporting its request for adjustment of the MBE/WBE participation goals; and
6. All applicable sections of the **Massachusetts False Claims Act** as well as any related civil or criminal penalties as determined by the Massachusetts Attorney General are incorporated by reference into this document.⁴

E. Request for Adjustment of Design and Construction Goals:

1. Requests by an Awarding Authority for Adjustment of MBE/WBE Participation Goals must be submitted in writing no less than ten (10) working days before the deadline for placement of advertisements for the contract. Applications should be directed to the SDO Director of Construction Reform, One Ashburton Place, Room 1017, Boston, MA 02108 or by e-mail to: John.B.Fitzpatrick@state.ma.us.
2. Requests for adjustments on Design and Construction Goals must be applied for separately and are not interchangeable. Participation credits for modular projects can be awarded under either the design or construction goals, but not both.
3. The written request for the reduction/waiver must include the reasons for it and all supporting documentation.
4. The SDO will provide a written response prior to the advertising deadline.

¹ See generally, MG.L. c.12, §§5A-5O, inclusive.

² In rare instances after advertising and before bidding based on new information you may request an adjustment post-advertisement. Any adjustment granted must be the subject of an Addendum.

³ For state-assisted building projects.

⁴ See generally, MG.L. c.12, §§5A-5O, inclusive.

ATTACHMENT B

PROCEDURES FOR PRE-BID REDUCTION/WAIVER OF MBE/WBE PARTICIPATION GOALS

A. Affirmative Marketing Participation Goals:

The combined goals below were established by the Division of Capital Asset Management and Maintenance (DCAMM) and the Supplier Diversity Office (SDO) and require a reasonable representation of both MBE and WBE firms.

Design Participation: Combined MBE/WBE goal of (17.9%)
Construction Participation: Combined MBE/WBE goal of (10.4%)

All documentation submitted in connection with MBE/WBE credit must be true, accurate and correct to the best of your knowledge. Your signature on any MBE/WBE goal-related document means that you have read and understand it. Any false claims for MBE/WBE credit are subject to the Massachusetts False Claims Act and any applicable civil or criminal penalties as determined by the Massachusetts Attorney General's office.¹

B. Criteria for Adjustment of Goals:²

Potential Bidders may request a written adjustment before bids are submitted. An awarding authority cannot grant an adjustment of goals. Only the SDO has the authority to do this. Written requests must demonstrate that there is no feasible way to meet established contract goals and that a **"Diligent Good Faith Effort"** was made to comply. The request for reduction/waiver will ultimately be decided by the SDO. Factors that may be considered include any or all of the following:

- Actual availability of certified Minority- and/or Women-Owned Business Enterprises (MBE/WBEs);
- The geographic location of the project;
- The scope of work of the project including the opportunities for sub-contracting and subdividing the work;
- Documentation that shows the Bidder attempted in a diligent good faith effort to fulfill contract goals and was unable to do so; and
- Other relevant factors;

Although the SDO is not obligated to do so, the SDO may agree to assist either an awarding authority or any potential bidder with its MBE/WBE outreach. **We strongly encourage you to use this service.**

C. Required Supporting Documentation from Potential Construction Bidders:

- Using the SDO Reduction/Waiver Request form, the Bidder must prove that notices were sent to certified firms.
- They must break down larger scopes of work into its smallest component parts so that the widest available pool of ready, willing and able certified MBE/WBE firms may participate;
- In the event that an individual scope of work was not made available to ready, willing and able certified firms in certain trade categories,³ a bidder must explain why in writing. Follow up documentation such as phone logs, or e-mail may be required to determine with certainty whether the firms were interested in performing the work.
- Additional documentation of reasonable efforts on the part of the Bidder to assist a potential MBE/WBE firm may include items such as, but not limited to: (a) bonding, insurance, lines of credit or any other type of assistance; or (b) evidence that the Bidder placed advertisements in appropriate media and trade association publications.
- The Bidder shall also submit any other information reasonably requested by the Awarding Authority.

D. Process for Requesting Waiver/Reduction of Construction Goals:

Requests from prospective general Bidders to reduce or waive the MBE/WBE participation goals must be written. An awarding authority must receive such requests no later than **ten (10) working days** before the general bids are due. Requests submitted beyond this deadline will not be considered.

¹ See generally, M.G.L. c.12, §§5A-5O, inclusive.

² Applies to waivers and reductions.

³ Other than work performed by filed Sub-Bidders.

ATTACHMENT C
MODEL BIDDING INSTRUCTIONS

A. Affirmative Marketing Participation Goals:

Each Municipality must enforce the current Affirmative Marketing Goals developed by the Division of Capital Asset Management and Maintenance (DCAMM) and Supplier Diversity Office (SDO) as follows: ¹

Design Participation:	Combined MBE/WBE goal of (17.9%)
Construction Participation:	Combined MBE/WBE goal of (10.4%)

All documentation submitted in connection with MBE/WBE credit must be true, accurate and correct to the best of your knowledge. Your signature on any MBE/WBE goal-related document means that you have read and understand it. Any false claims for MBE/WBE credit are subject to the Massachusetts False Claims Act and any applicable civil or criminal penalties as determined by the Massachusetts Attorney General's office. ²

A. MBE and WBE Participation Requirements:

1. Compliance with the requirements of this Section is a pre-requisite for receiving a Contract Award. The Contractor must utilize a reasonable representation mix of both MBE and WBE firms whose collective participation either meets or exceeds the overall combined contract goal. Both MBE and WBE firms shall have an opportunity to work on public projects with a combined MBE/WBE goal.
2. Projects with a combined goal must include a reasonable representation of **both** MBE **and** WBE firms to meet or exceed the combined goal. Both categories must be reflected in the participation goals, e.g. bidders who meet the participation goals of one category, such as MBE, must still find WBE representation. Combined contract participation goals must be reported and tracked separately.
3. The MBE and WBE participation goals for this Contract are set forth above. The Awarding Authority reserves the right to accept and review written requests but does not have the authority to reduce or waive the MBE or WBE participation goals established for this contract. Waivers or reductions of MBE/WBE participation are contingent on the following: (a) MBE/WBE availability, (b) geographic location, (c) scope of work, (d) the percentage of work available for subcontracting to MBE/WBEs and/or (e) other relevant factors including documentation by General Bidder showing a **Diligent, Good Faith Effort** to secure commitments from MBE/WBE subcontractors. If these criteria are met, the Awarding Authority may submit the General Bidders request along with all the foregoing documentation to the Executive Director of the Supplier Diversity Office (SDO) for final determination.
4. All contracts shall provide MBE/WBE firms with contracting opportunities. If a bidder fails to make a subcontracting opportunity available to certified MBEs/WBEs, it must explain why in writing. The Bidder shall also demonstrate that, where commercially reasonable, subcontracts were divided into smaller scopes or tasks capable of being performed by MBE/WBEs.
5. A successful bidder must provide notice of: (a) each MBE/WBE solicited, and (b) each MBE/WBE listed in the SDO directory under the applicable trade category that was not solicited and reasons therefore. The Bidder shall also state the date that notices were mailed and provide a copy of the written notice(s) sent.
6. Reasonable follow up efforts include written notices sent to MBE/WBEs with telephone calls or personal visits in order to determine with certainty whether the MBE/WBEs were interested in performing the work. Phone logs or other documentation must be submitted.
7. A statement of the response received from each MBE/WBE solicited, including the reason for rejecting any MBE/WBE who submitted a bid or proposal may also be provided
8. If MBE/WBEs have difficulty obtaining bonding, insurance or lines of credit to participate in the project, prospective bidders must show reasonable efforts were made to assist MBE/WBEs to obtain bonding, insurance, or lines of credit.
9. Reasonable efforts may also include whether a Bidder placed advertisements in appropriate media and trade association publications announcing the Bidder's interest in obtaining bids or proposals from MBE/WBEs, and/or sent written notification to MBE/WBE economic development assistance agencies, trade groups and other organizations notifying them of the Contract and the work to be subcontracted by the Bidder to MBE/WBEs. The Bidder shall also submit any other information reasonably requested by the Awarding Authority to show that the Bidder has taken all possible reasonable steps to achieve the MBE/WBE participation goals.
10. If **filed Sub-Bids** are solicited for this Contract, requests to reduce or waive the MBE/WBE participation goals must be received by the Awarding Authority no later than ten (10) working days after the list of filed Sub-Bidders is sent by the Awarding Authority to persons who have taken out plans for the Contract. If there are no filed Sub-Bids solicited for this Contract, requests to reduce or waive the MBE/WBE participation goals for this Contract must be received by the Awarding Authority no later than ten (10) working days before the date set for the receipt of general Bids. **The Awarding Authority Will Not Consider Any Request To Reduce Or Waive The MBE/WBE Participation Goals For This Contract That Is Received After These Deadlines.**
11. Within five (5) working days after the opening of general Bids, the low Bidder shall submit the following documents to the Awarding Authority's Affirmative Marketing Construction Officer (AMCO): (a) a completed Schedule for Participation by MBE/WBE ("Schedule for Participation") in the form provided by the Awarding Authority showing MBE/WBE participation in amounts equal to or exceeding the MBE/WBE participation goals for this Contract, (b) a completed Letter of Intent in the form provided by the Awarding Authority for each MBE/WBE listed in the Schedule for Participation, and (c) the most recent SDO

¹ Periodically, goals may be changed or adjusted. Check the [SDO web site](#) for current MBE/WBE participation goals.

² See generally, MG.L. c.12, §§5A-5O, inclusive.

certification letter for each MBE/WBE listed in the Schedule of MBE/WBE Participation showing that the MBE/WBE is certified in the area of work for which it is listed on the Letter of Intent.

12. Each Letter of Intent shall describe the work to be performed by the MBE/WBE (the “MBE/WBE Work”) with enough specificity to allow an awarding authority to determine which specific items count for MBE/WBE participation credit. The Awarding Authority reserves the right to reject any Letter of Intent if the price to be paid for the MBE/WBE Work does not bear a reasonable relationship to the value of such work under the Contract.
13. Within five (5) working days after receipt of the Schedule for MBE/WBE Participation, Letters of Intent, and most recent SDO certification letter, the Awarding Authority shall review and either approve or disapprove the apparent low Bidder’s submissions. If the apparent low Bidder has not submitted an appropriate Schedule for MBE/WBE Participation and appropriate Letters of Intent and SDO most recent certification letter establishing that the MBE/WBE participation goal for the project will be met, the apparent low Bidder will be considered ineligible for Award of the Contract and the Awarding Authority will Award the Contract to the second lowest eligible and responsible Bidder, subject to said Bidder’s compliance with these conditions. If funds are insufficient to award to the second lowest Bidder, the project may have to be re-bid.
14. General Conditions of the Contract require the Contractor to submit, within thirty (30) days of the Contract Date, copies of current certification letters for all subcontractors, signed subcontracts with all subcontractors or a purchase order or invoice from each material supplier and/or manufacturer listed on the Schedule for MBE/WBE Participation.
15. A filed sub-Bidder is not required to submit a Schedule of MBE/WBE Participation with its Bid. It may submit a Letter of Intent with its Bid if it is a SDO certified MBE/ WBE. If a filed sub-Bidder intends to sub-subcontract work to a SDO certified MBE/WBE, and the awarding authority permits limited sub-sub-contracting for purposes of MBE/WBE participation, and the filed sub-Bidder wishes that sub-subcontract to be credited toward the participation goals for this Contract, the filed sub-Bidder should submit a Letter of Intent from that MBE/WBE with its Bid.

ATTACHMENT D
MODEL CONTRACT INSTRUCTIONS FOR
MUNICIPAL CONTRACTS AND STATE ASSISTED BUILDING PROJECTS

A. Affirmative Marketing Participation Goals:

The combined goals below were established by the Division of Capital Asset Management and Maintenance (DCAMM) and the Supplier Diversity Office (SDO) and require a reasonable representation of both MBE and WBE firms:

Design Participation:	Combined MBE/WBE goal of (17.9%)
Construction Participation:	Combined MBE/WBE goal of (10.4%)

All documentation submitted in connection with MBE/WBE credit must be true, accurate and correct to the best of your knowledge. Your signature on any MBE/WBE goal-related document means that you have read and understand it. Any false claims for MBE/WBE credit are subject to the Massachusetts False Claims Act and any applicable civil or criminal penalties as determined by the Massachusetts Attorney General's Office. ¹

B. MBE/WBE Participation Credit:

1. MBE and WBE participation goals are not interchangeable.
2. Participation credit is only given for actual contract work performed by currently certified MBE, WBE or M/WBE firm.
3. If the firm awarded the contract is itself currently certified as a MBE/WBE, 100% participation credit will be given for the work performed.
4. If the prime contractor is not a certified firm, it shall only receive credit for the portion of work completed by the certified firm.
5. MBE/WBE participation credit will be given to a supplier **only** if they are regularly engaged in sales of equipment or supplies to the construction industry from an established place of businesses and bear the risk of loss for product sold prior to delivery to a customer.
6. A contractor can count only 10% of the contract price towards an MBE or WBE goal on DCAMM projects.

C. Establishing MBE/WBE Status:

1. A business will be eligible for participation credit only if it has been certified by the Supplier Diversity Office (SDO) as a minority business enterprise (MBE) or a woman business enterprise (WBE).
2. Certification as a MBE/WBE **by any other agency other than SDO does not** confer the status to the firm for the purposes of contract participation credit.
3. Participation credit shall only be given to firms which are certified at the time of contract award
4. A firm currently being initially reviewed as part of the certification process cannot be used by a contractor towards MBE/WBE participation credit.

D. Performance of Contract Work by MBE/WBEs:

1. Only currently certified MBE/WBE firms count towards participation goals. If during the course of a contract, a SDO certified MBE/WBE firm is decertified their participation credit will be counted up until the date of decertification
2. An awarding authority will not grant MBE/WBE participation credit unless the contract work is actually completed by a certified SDO MBE/WBE firm. No credit will be given for work done by others or for work not on a MBE/WBE schedule of participation.
3. Once a letter of intent and a MBE/WBE letter of participation are approved, a contractor may not perform this same work using its own staff without the prior express written prior approval of the Awarding Authority.
4. The Contractor shall monitor the performance of MBE/WBE Work to ensure that each scheduled MBE/WBE performs its own work with its own workforce.

¹ See generally, MG.L. c. 12, §§5A-5O, inclusive.

5. The Contractor and each MBE/WBE subcontractor shall provide the Awarding Authority with all information and documentation necessary to ascertain whether or not an MBE/WBE has performed its own MBE/WBE Work with its own personnel, tools and equipment.
6. Failure to submit documentation to the Awarding Authority shall establish conclusively for the purpose of giving MBE/WBE participation credit under this Contract that such MBE/WBE did not perform such work.

E. Notification of Changes in MBE/WBE Work:

If during the performance of a contract, a contractor determines or has reason to believe that:

1. A scheduled MBE/WBE is unable or unwilling to perform its MBE/WBE Work;
2. There has been or will be a change in any MBE/WBE Work; or
3. That the Contractor will be unable to meet the MBE/WBE participation goal(s) for the Contract for any reason.

Then he/she shall immediately notify the Awarding Authority in writing. Any notice of a change in MBE/WBE Work shall include a revised Schedule of MBE/WBE Participation, and additional or amended Letters of Intent and related subcontracts, as needed.

F. Good Faith Efforts Needed to Support Changes/Reduction of MBE/WBE Participation Goals:

If there is a change or reduction in any MBE/WBE Work which will result in the Contractor failing to meet the MBE/WBE participation goal(s), then he/she shall undertake a diligent, good faith effort to make up the shortfall as follows:

1. The Contractor shall identify all items of the Work remaining to be performed under the Contract that they made available for subcontracting to MBE/WBEs along with that which wasn't along with reasons why.
2. The Contractor shall send written notices to all MBE/WBEs ready, willing and able to perform such work. The contractor will provide the Awarding Authority with documentation identifying: (i) each MBE/WBE solicited, and (ii) each MBE/WBE listed in the SDO directory under the applicable trade category that was not solicited and the reasons why. The Contractor shall also advise the Awarding Authority of the dates that notices were sent and provide a copy of the written notice(s) sent.
3. The Contractor shall make reasonable efforts to follow up on the written notices, including telephone calls or personal visits in order to determine with certainty whether the MBE/WBEs were interested in performing the work. Phone logs or other documentation must be submitted to the Awarding Authority upon request.
4. The Contractor shall make documented reasonable efforts to assist MBE/WBEs that need assistance in obtaining insurance, bonds, or lines of credit in order to perform work under the Contract. Supporting documentation will be provided to the Awarding Authority upon request.
5. The Contractor shall provide the Awarding Authority with a statement of the response received from each MBE/WBE solicited, including the reason for rejecting any MBE/WBE who submitted a proposal.
6. The Contractor shall take any additional measures including, without limitation, placing advertisements in appropriate media and trade association publications announcing the Contractor's interest in obtaining proposals from MBE/WBEs, and/or sending written notification to MBE/WBE economic development assistance agencies, trade groups and other organizations notifying them of the project and of the work available to be subcontracted by the Contractor to MBE/WBEs.

If the Contractor is unable to meet the MBE/WBE participation goals for this Contract after complying fully with each of the above requirements and is otherwise in full compliance with the terms of this provision, the Awarding Authority may reduce the MBE/WBE participation goals for this Contract to the extent that such goals cannot be achieved.

G. Suspension of Payment and/or Performance for Noncompliance:

If a reduction of MBE/WBE goals was given but sufficient good faith efforts (see above) were not documented, then after proper written notice, the Awarding Authority has the discretion to:

1. Suspend payment to the Contractor of an amount equal to the value of the work which was to have been performed by an MBE/WBE pursuant to the Contractor's Schedule of MBE/WBE Participation but which was not so performed, in order to ensure that sufficient Contract funds will be available if liquidated damages are assessed;
2. Suspend the Contractor's performance of this Contract in whole or in part.

Notice Required Prior to Suspension: The Awarding Authority shall give the Contractor prompt written notice of any action taken and shall give the Contractor and any other interested party, including any MBE/WBEs, an opportunity to present evidence to it that the Contractor is in compliance with the requirements, or that there is some justifiable reason for waiving the requirements in whole or in part. The Awarding Authority may invite SDO to participate in these proceedings

If, based on a totality of the circumstances, it can be shown that all reasonable steps were taken and that the Contractor is in full compliance with the requirements of this Attachment, or that the Contractor has met or will meet the MBE/WBE participation goals for this Contract, the Awarding Authority shall release any funds withheld and lift any related suspension of the Contractor's performance.

H. Liquidated Damages; Termination

If payment by the Awarding Authority or performance by the Contractor is suspended, and if the breach cannot be cured or that same contractor fails to take all reasonable and immediate efforts to comply with the MBE/WBE participation goals set forth in this Contract, subject to the notice provisions above:

1. The Awarding Authority may terminate this Contract; or
2. The Awarding Authority may retain from final payment to the Contractor, as liquidated damages, an amount equal to the difference between:
 - a. The total of the MBE/WBE participation goals set forth in this Contract, and;
 - b. The amount of MBE/WBE participation credit earned by the Contractor for MBE/WBE Work performed under this Contract minus the cost to restore the loss to the Awarding Authority.
3. Any liquidated damages will be assessed separately for MBE and WBE participation.

Discretionary Option to Review Any Additional Mitigating Evidence Prior to Final Decision: Before exercising its rights and remedies, the Awarding Authority may but is not required to give the Contractor and any other interested party a final opportunity to present evidence that the Contractor is in compliance with the requirements or that there is some justifiable reason for waiving the requirements of this Attachment in whole or in part. The Awarding Authority may invite SDO to participate in these proceedings.

**SCHEDULE FOR PARTICIPATION
BY MINORITY/WOMEN BUSINESS ENTERPRISES**

Project Number _____
 Project Location _____
 Project Name _____

- A. Filed Sub-bidders utilizing MBE/WBE firms, and MBE/WBE Sub-bidders - attach to Filed Sub-bid.**
B. General Contractor must submit to the Awarding Authority within five (5) working days of the opening of General Bids.

BIDDER CERTIFICATION:

The Bidder agrees that if awarded the contract it will expend at least the amount of the contract set forth below for MBE/WBE participation. For purposes of this commitment, the MBE and WBE designation means that a business has been certified by SDO as a MBE, WBE or MBE/WBE. The Bidder must indicate the MBE/WBE firms it intends to utilize on the project as follows (attach additional sheets if necessary):

Company Name & Address	MBE or WBE	Describe MBE/WBE Scopes of Work (clarify "Labor Only", "Material Only" or "Labor and Material")	If Supplier, Indicate Total Value of Supplies (60% of Total Counts toward Participation)	Total Dollar Value of Participation
1.				
2.				
3.				
4.				
5.				

MBE Goal: \$ _____ Total Dollar Value of MBE Commitment: \$ _____

WBE Goal: \$ _____ Total Dollar Value of WBE Commitment: \$ _____

The undersigned hereby certifies that he/she has read the terms and conditions of the contract with regard to MBE/WBE participation and is authorized to bind the Bidder to the commitment set forth above.

Name of Firm _____

Business Address _____

Print Name _____

Authorized Signature _____

Title _____

Telephone No. _____ Fax No. _____

Date _____

January 20, 2012



**LETTER OF INTENT
MINORITY/WOMEN BUSINESS ENTERPRISES PARTICIPATION**

(To be completed by MBE/WBE, and submitted by the General Bidder to the Municipal Affirmative Marketing Construction Officer (AMCO) within five (5) working days of the opening of General Bids or by Filed Sub-bidder with its bid.)

Project Number _____

Project Name _____

Project Location _____

To _____

Name of General Bidder/Sub-bidder _____

Indicate SDO Certification:

_____ MBE

_____ WBE

_____ M/WBE

1. This firm intends to perform work in connection with the above project.
2. This firm is currently certified by SDO to perform the work identified below, and has not changed its minority/women ownership, control, or management without notifying SDO within thirty (30) days of such a change.
3. This firm understands that if the General Bidder/Sub-bidder referenced above is awarded the contract, the Bidder intends to enter into an agreement with this firm to perform the activity described below for the prices indicated. This firm also understands that the above-referenced firm, as General Bidder/Sub-Bidder, will make substitutions only as allowed by the terms of the Contract.
4. This firm understands that under the terms of the contract, only work actually performed by an MBE/WBE will be credited toward MBE/WBE participation goals, and this firm cannot assign or subcontract out any of its work without prior written approval of the Awarding Authority, and that any such assignment or subcontracting will not be credited toward MBE/WBE participation goals.

MBE/WBE PARTICIPATION

Section/Item Number (If Applicable)	Describe MBE/WBE Scopes of Work (Clarify "Labor Only", "Material Only" or "Labor and Material")	If Supplier, Indicate Total Value of Supplies (60% of Total Counts Toward Participation)	Dollar Value of Participation

Total Dollar Value: \$ _____

Name of MBE/WBE Firm _____

Business Address _____

Print Name _____

Authorized Signature _____

Title _____

Telephone No. _____

Fax No. _____

Date _____

EXHIBIT C**CONTRACTOR PROGRESS PAYMENT REPORT
MINORITY/WOMEN BUSINESS ENTERPRISES PARTICIPATION****Project Number:** _____**Project Name:** _____**Project Location:** _____**Date:** _____**Periodical Payment No.:** _____**General Contractor:** _____**MBE and/or WBE:** _____

One copy of this report is to be submitted for each Minority Business Enterprise (MBE) and/or Women Business Enterprise (WBE) at the time of submitting a request for payment. Copies of the report must be sent to the Minority Business Enterprise (MBE) and/or Women Business Enterprise (WBE) named above and to the municipalities Affirmative Marketing Construction Officer (AMCO). The AMCO will forward a copy of each Contractor Progress Payment Report to SDO on a quarterly basis.

1. The total price to be paid to the above-named Minority Business Enterprise _____ and/or Women Business Enterprise _____:
\$ _____
2. The amount remitted to the Minority Business Enterprise and/or Women Business Enterprise as of the above date for work performed under this project: \$ _____
3. Balance due the Minority Business Enterprise and/or Women Business Enterprise as of the above date for work performed under the above-named project: \$ _____
4. Comments or explanation of amounts indicated under items 1 and 2 above: _____

5. We hereby certify that the information supplied herein (including pages attached) is correct and complete.

General Contractor:**Minority and/or Women Business Enterprise**_____
(Signed)_____
(Signed)_____
(Title)_____
(Title)_____
(Date)_____
(Date)

ATTACHMENT D
MODEL CONTRACT INSTRUCTIONS FOR
MUNICIPAL CONTRACTS AND STATE ASSISTED BUILDING PROJECTS

A. Affirmative Marketing Participation Goals:

The combined goals below were established by the Division of Capital Asset Management and Maintenance (DCAMM) and the Supplier Diversity Office (SDO) and require a reasonable representation of both MBE and WBE firms:

Design Participation:	Combined MBE/WBE goal of (17.9%)
Construction Participation:	Combined MBE/WBE goal of (10.4%)

All documentation submitted in connection with MBE/WBE credit must be true, accurate and correct to the best of your knowledge. Your signature on any MBE/WBE goal-related document means that you have read and understand it. Any false claims for MBE/WBE credit are subject to the Massachusetts False Claims Act and any applicable civil or criminal penalties as determined by the Massachusetts Attorney General's Office. ¹

B. MBE/WBE Participation Credit:

1. MBE and WBE participation goals are not interchangeable.
2. Participation credit is only given for actual contract work performed by currently certified MBE, WBE or M/WBE firm.
3. If the firm awarded the contract is itself currently certified as a MBE/WBE, 100% participation credit will be given for the work performed.
4. If the prime contractor is not a certified firm, it shall only receive credit for the portion of work completed by the certified firm.
5. MBE/WBE participation credit will be given to a supplier **only** if they are regularly engaged in sales of equipment or supplies to the construction industry from an established place of businesses and bear the risk of loss for product sold prior to delivery to a customer.
6. A contractor can count only 10% of the contract price towards an MBE or WBE goal on DCAMM projects.

C. Establishing MBE/WBE Status:

1. A business will be eligible for participation credit only if it has been certified by the Supplier Diversity Office (SDO) as a minority business enterprise (MBE) or a woman business enterprise (WBE).
2. Certification as a MBE/WBE **by any other agency other than SDO does not** confer the status to the firm for the purposes of contract participation credit.
3. Participation credit shall only be given to firms which are certified at the time of contract award
4. A firm currently being initially reviewed as part of the certification process cannot be used by a contractor towards MBE/WBE participation credit.

D. Performance of Contract Work by MBE/WBEs:

1. Only currently certified MBE/WBE firms count towards participation goals. If during the course of a contract, a SDO certified MBE/WBE firm is decertified their participation credit will be counted up until the date of decertification
2. An awarding authority will not grant MBE/WBE participation credit unless the contract work is actually completed by a certified SDO MBE/WBE firm. No credit will be given for work done by others or for work not on a MBE/WBE schedule of participation.
3. Once a letter of intent and a MBE/WBE letter of participation are approved, a contractor may not perform this same work using its own staff without the prior express written prior approval of the Awarding Authority.
4. The Contractor shall monitor the performance of MBE/WBE Work to ensure that each scheduled MBE/WBE performs its own work with its own workforce.

¹ See generally, MG.L. c. 12, §§5A-5O, inclusive.

5. The Contractor and each MBE/WBE subcontractor shall provide the Awarding Authority with all information and documentation necessary to ascertain whether or not an MBE/WBE has performed its own MBE/WBE Work with its own personnel, tools and equipment.
6. Failure to submit documentation to the Awarding Authority shall establish conclusively for the purpose of giving MBE/WBE participation credit under this Contract that such MBE/WBE did not perform such work.

E. Notification of Changes in MBE/WBE Work:

If during the performance of a contract, a contractor determines or has reason to believe that:

1. A scheduled MBE/WBE is unable or unwilling to perform its MBE/WBE Work;
2. There has been or will be a change in any MBE/WBE Work; or
3. That the Contractor will be unable to meet the MBE/WBE participation goal(s) for the Contract for any reason.

Then he/she shall immediately notify the Awarding Authority in writing. Any notice of a change in MBE/WBE Work shall include a revised Schedule of MBE/WBE Participation, and additional or amended Letters of Intent and related subcontracts, as needed.

F. Good Faith Efforts Needed to Support Changes/Reduction of MBE/WBE Participation Goals:

If there is a change or reduction in any MBE/WBE Work which will result in the Contractor failing to meet the MBE/WBE participation goal(s), then he/she shall undertake a diligent, good faith effort to make up the shortfall as follows:

1. The Contractor shall identify all items of the Work remaining to be performed under the Contract that they made available for subcontracting to MBE/WBEs along with that which wasn't along with reasons why.
2. The Contractor shall send written notices to all MBE/WBEs ready, willing and able to perform such work. The contractor will provide the Awarding Authority with documentation identifying: (i) each MBE/WBE solicited, and (ii) each MBE/WBE listed in the SDO directory under the applicable trade category that was not solicited and the reasons why. The Contractor shall also advise the Awarding Authority of the dates that notices were sent and provide a copy of the written notice(s) sent.
3. The Contractor shall make reasonable efforts to follow up on the written notices, including telephone calls or personal visits in order to determine with certainty whether the MBE/WBEs were interested in performing the work. Phone logs or other documentation must be submitted to the Awarding Authority upon request.
4. The Contractor shall make documented reasonable efforts to assist MBE/WBEs that need assistance in obtaining insurance, bonds, or lines of credit in order to perform work under the Contract. Supporting documentation will be provided to the Awarding Authority upon request.
5. The Contractor shall provide the Awarding Authority with a statement of the response received from each MBE/WBE solicited, including the reason for rejecting any MBE/WBE who submitted a proposal.
6. The Contractor shall take any additional measures including, without limitation, placing advertisements in appropriate media and trade association publications announcing the Contractor's interest in obtaining proposals from MBE/WBEs, and/or sending written notification to MBE/WBE economic development assistance agencies, trade groups and other organizations notifying them of the project and of the work available to be subcontracted by the Contractor to MBE/WBEs.

If the Contractor is unable to meet the MBE/WBE participation goals for this Contract after complying fully with each of the above requirements and is otherwise in full compliance with the terms of this provision, the Awarding Authority may reduce the MBE/WBE participation goals for this Contract to the extent that such goals cannot be achieved.

G. Suspension of Payment and/or Performance for Noncompliance:

If a reduction of MBE/WBE goals was given but sufficient good faith efforts (see above) were not documented, then after proper written notice, the Awarding Authority has the discretion to:

1. Suspend payment to the Contractor of an amount equal to the value of the work which was to have been performed by an MBE/WBE pursuant to the Contractor's Schedule of MBE/WBE Participation but which was not so performed, in order to ensure that sufficient Contract funds will be available if liquidated damages are assessed;
2. Suspend the Contractor's performance of this Contract in whole or in part.

Notice Required Prior to Suspension: The Awarding Authority shall give the Contractor prompt written notice of any action taken and shall give the Contractor and any other interested party, including any MBE/WBEs, an opportunity to present evidence to it that the Contractor is in compliance with the requirements, or that there is some justifiable reason for waiving the requirements in whole or in part. The Awarding Authority may invite SDO to participate in these proceedings

If, based on a totality of the circumstances, it can be shown that all reasonable steps were taken and that the Contractor is in full compliance with the requirements of this Attachment, or that the Contractor has met or will meet the MBE/WBE participation goals for this Contract, the Awarding Authority shall release any funds withheld and lift any related suspension of the Contractor's performance.

H. Liquidated Damages; Termination

If payment by the Awarding Authority or performance by the Contractor is suspended, and if the breach cannot be cured or that same contractor fails to take all reasonable and immediate efforts to comply with the MBE/WBE participation goals set forth in this Contract, subject to the notice provisions above:

1. The Awarding Authority may terminate this Contract; or
2. The Awarding Authority may retain from final payment to the Contractor, as liquidated damages, an amount equal to the difference between:
 - a. The total of the MBE/WBE participation goals set forth in this Contract, and;
 - b. The amount of MBE/WBE participation credit earned by the Contractor for MBE/WBE Work performed under this Contract minus the cost to restore the loss to the Awarding Authority.
3. Any liquidated damages will be assessed separately for MBE and WBE participation.

Discretionary Option to Review Any Additional Mitigating Evidence Prior to Final Decision: Before exercising its rights and remedies, the Awarding Authority may but is not required to give the Contractor and any other interested party a final opportunity to present evidence that the Contractor is in compliance with the requirements or that there is some justifiable reason for waiving the requirements of this Attachment in whole or in part. The Awarding Authority may invite SDO to participate in these proceedings.

EXHIBIT A**SCHEDULE FOR PARTICIPATION
BY MINORITY/WOMEN BUSINESS ENTERPRISES**

Project Number _____
Project Location _____
Project Name _____

- A. Filed Sub-bidders utilizing MBE/WBE firms, and MBE/WBE Sub-bidders - attach to Filed Sub-bid.**
B. General Contractor must submit to the Awarding Authority within five (5) working days of the opening of General Bids.

BIDDER CERTIFICATION:

The Bidder agrees that if awarded the contract it will expend at least the amount of the contract set forth below for MBE/WBE participation. For purposes of this commitment, the MBE and WBE designation means that a business has been certified by SDO as a MBE, WBE or MBE/WBE. The Bidder must indicate the MBE/WBE firms it intends to utilize on the project as follows (attach additional sheets if necessary):

Company Name & Address	MBE or WBE	Describe MBE/WBE Scopes of Work (clarify "Labor Only", "Material Only" or "Labor and Material")	If Supplier, Indicate Total Value of Supplies (60% of Total Counts toward Participation)	Total Dollar Value of Participation
1.				
2.				
3.				
4.				
5.				

MBE Goal: \$ _____ **Total Dollar Value of MBE Commitment: \$** _____

WBE Goal: \$ _____ **Total Dollar Value of WBE Commitment: \$** _____

The undersigned hereby certifies that he/she has read the terms and conditions of the contract with regard to MBE/WBE participation and is authorized to bind the Bidder to the commitment set forth above.

Name of Firm _____

Business Address _____

Print Name _____

Authorized Signature _____

Title _____

Telephone No. _____ **Fax No.** _____

Date _____

January 20, 2012



**LETTER OF INTENT
MINORITY/WOMEN BUSINESS ENTERPRISES PARTICIPATION**

(To be completed by MBE/WBE, and submitted by the General Bidder to the Municipal Affirmative Marketing Construction Officer (AMCO) within five (5) working days of the opening of General Bids or by Filed Sub-bidder with its bid.)

Project Number _____

Project Name _____

Project Location _____

To _____

Name of General Bidder/Sub-bidder _____

Indicate SDO Certification:

_____ MBE

_____ WBE

_____ M/WBE

1. This firm intends to perform work in connection with the above project.
2. This firm is currently certified by SDO to perform the work identified below, and has not changed its minority/women ownership, control, or management without notifying SDO within thirty (30) days of such a change.
3. This firm understands that if the General Bidder/Sub-bidder referenced above is awarded the contract, the Bidder intends to enter into an agreement with this firm to perform the activity described below for the prices indicated. This firm also understands that the above-referenced firm, as General Bidder/Sub-Bidder, will make substitutions only as allowed by the terms of the Contract.
4. This firm understands that under the terms of the contract, only work actually performed by an MBE/WBE will be credited toward MBE/WBE participation goals, and this firm cannot assign or subcontract out any of its work without prior written approval of the Awarding Authority, and that any such assignment or subcontracting will not be credited toward MBE/WBE participation goals.

MBE/WBE PARTICIPATION

Section/Item Number (If Applicable)	Describe MBE/WBE Scopes of Work (Clarify "Labor Only", "Material Only" or "Labor and Material")	If Supplier, Indicate Total Value of Supplies (60% of Total Counts Toward Participation)	Dollar Value of Participation

Total Dollar Value: \$ _____

Name of MBE/WBE Firm _____

Business Address _____

Print Name _____

Authorized Signature _____

Title _____

Telephone No. _____

Fax No. _____

Date _____

EXHIBIT C**CONTRACTOR PROGRESS PAYMENT REPORT
MINORITY/WOMEN BUSINESS ENTERPRISES PARTICIPATION****Project Number:** _____**Project Name:** _____**Project Location:** _____**Date:** _____**Periodical Payment No.:** _____**General Contractor:** _____**MBE and/or WBE:** _____

One copy of this report is to be submitted for each Minority Business Enterprise (MBE) and/or Women Business Enterprise (WBE) at the time of submitting a request for payment. Copies of the report must be sent to the Minority Business Enterprise (MBE) and/or Women Business Enterprise (WBE) named above and to the municipalities Affirmative Marketing Construction Officer (AMCO). The AMCO will forward a copy of each Contractor Progress Payment Report to SDO on a quarterly basis.

1. The total price to be paid to the above-named Minority Business Enterprise _____ and/or Women Business Enterprise _____:
\$ _____
2. The amount remitted to the Minority Business Enterprise and/or Women Business Enterprise as of the above date for work performed under this project: \$ _____
3. Balance due the Minority Business Enterprise and/or Women Business Enterprise as of the above date for work performed under the above-named project: \$ _____
4. Comments or explanation of amounts indicated under items 1 and 2 above: _____

5. We hereby certify that the information supplied herein (including pages attached) is correct and complete.

General Contractor:**Minority and/or Women Business Enterprise****(Signed)** _____**(Signed)** _____**(Title)** _____**(Title)** _____**(Date)** _____**(Date)** _____

SECTION 00.73.43
PREVAILING WAGES and LABOR REGULATIONS

1. PREVAILING WAGE RATES

- A. The rate per hour to be paid to mechanics, apprentices, teamsters, chauffeurs, and laborers employed on the Work shall not be less than the rate of wages in the attached "Minimum Wage Rates" as determined by the Commissioner of the Massachusetts Department of Labor Division of Occupational Safety. This schedule shall continue to be the minimum rate of wages for said employees during the life of this Contract. Any questions relative to the applicability of any wage rate shall be directed to the Division of Occupational Safety.
- B. Keep a legible copy of said schedule posted on the site at all times. Provide the Owner, on a weekly basis, and keep an on-site file of the wage rates and classifications of labor employed on this Work in order that they may be available for inspection by the Owner, Department, Architect, or any agency having jurisdiction.
- C. Pay reserve police officers employed on the Work the prevailing rate of wages paid to regular police officers as required by MGL c149 § 34B, as amended. Such police officers shall be covered by Worker's Compensation Insurance and Employers Liability Insurance provided by the Contractor.

2. WAGE RATE REPORTING

- A. The Contractor and all subcontractors shall provide certified payroll affidavits verifying compliance with MGL c.149 §§26 - 27H.
- B. The Contractor and all subcontractors shall provide a Statement of Compliance within 15 days of the completion of its portion of the work. This statement shall be submitted to the Owner on the form found elsewhere in this section.
- C. [Weekly Payroll Form](http://www.mass.gov/lwd/docs/dos/prevaling-wage/pw-payroll.pdf) www.mass.gov/lwd/docs/dos/prevaling-wage/pw-payroll.pdf
- D. [Statement of Compliance](http://www.mass.gov/lwd/docs/dos/prevaling-wage/pw-compliance.pdf) www.mass.gov/lwd/docs/dos/prevaling-wage/pw-compliance.pdf

3. APPRENTICE REQUIREMENTS

Apprentices employed pursuant to this determination of wage rates must be registered and approved by the State Apprenticeship Council wherever rates for journeymen or apprentices are not listed.

4. EMPLOYEE OSHA SAFETY TRAINING

- A. All employees who work on this construction site must have no less than 10 hours of OSHA-approved safety and health training. See Chapter 306 of the Acts of 2004.
- B. The Contractor and all Subcontractors shall furnish to the Owner, with the certified payroll reports, documentation indicating that each employee has successfully completed 10 hours of a course in construction safety and health. This course must be approved by the United States Occupational Health and Safety Administration (OSHA).

END OF PREVAILING WAGE AND LABOR REGULATIONS
00.73.43



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
WILLIAM D MCKINNEY
Director

Awarding Authority: Town of Natick
Contract Number: **City/Town:** NATICK
Description of Work: Camp Arrowhead - Rehabilitation of 2000 SF Season Camp Structure, at 1054 Worcester Road in Natick, MA.
Rough carpentry, roofing, windows, doors, interior finishes, plumbing, HV and Electrical
Job Location: 1054 Worcester Road (On Lake Cochituate) Natick

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2016	\$32.15	\$10.91	\$10.89	\$0.00	\$53.95
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2016	\$32.22	\$10.91	\$10.89	\$0.00	\$54.02
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2016	\$32.34	\$10.91	\$10.89	\$0.00	\$54.14
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2017	\$92.97	\$9.90	\$21.15	\$0.00	\$124.02
	08/01/2018	\$97.80	\$9.90	\$21.15	\$0.00	\$128.85
	08/01/2019	\$102.78	\$9.90	\$21.15	\$0.00	\$133.83
	For apprentice rates see "Apprentice- PILE DRIVER"					
AIR TRACK OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2017	\$33.58	\$7.70	\$13.60	\$0.00	\$54.88
	06/01/2018	\$34.42	\$7.70	\$13.60	\$0.00	\$55.72
	12/01/2018	\$35.26	\$7.70	\$13.60	\$0.00	\$56.56
	06/01/2019	\$36.13	\$7.70	\$13.60	\$0.00	\$57.43
	12/01/2019	\$36.99	\$7.70	\$13.60	\$0.00	\$58.29
	06/01/2020	\$37.88	\$7.70	\$13.60	\$0.00	\$59.18
	12/01/2020	\$38.77	\$7.70	\$13.60	\$0.00	\$60.07
	06/01/2021	\$39.69	\$7.70	\$13.60	\$0.00	\$60.99
	12/01/2021	\$40.60	\$7.70	\$13.60	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	12/01/2017	\$35.90	\$11.50	\$7.10	\$0.00	\$54.50
	06/01/2018	\$36.90	\$11.50	\$7.10	\$0.00	\$55.50
	12/01/2018	\$37.90	\$11.50	\$7.10	\$0.00	\$56.50
	06/01/2019	\$38.90	\$11.50	\$7.10	\$0.00	\$57.50
	12/01/2019	\$39.90	\$11.50	\$7.10	\$0.00	\$58.50
	06/01/2020	\$40.90	\$11.50	\$7.10	\$0.00	\$59.50
	12/01/2020	\$41.90	\$11.50	\$7.10	\$0.00	\$60.50
ASPHALT RAKER <i>LABORERS - ZONE 2</i>	12/01/2017	\$33.08	\$7.70	\$13.60	\$0.00	\$54.38
	06/01/2018	\$33.92	\$7.70	\$13.60	\$0.00	\$55.22
	12/01/2018	\$34.76	\$7.70	\$13.60	\$0.00	\$56.06
	06/01/2019	\$35.63	\$7.70	\$13.60	\$0.00	\$56.93
	12/01/2019	\$36.49	\$7.70	\$13.60	\$0.00	\$57.79
	06/01/2020	\$37.38	\$7.70	\$13.60	\$0.00	\$58.68
	12/01/2020	\$38.27	\$7.70	\$13.60	\$0.00	\$59.57
	06/01/2021	\$39.19	\$7.70	\$13.60	\$0.00	\$60.49
	12/01/2021	\$40.10	\$7.70	\$13.60	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.63	\$10.50	\$15.50	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.63	\$10.50	\$15.50	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i>	12/01/2017	\$33.08	\$7.70	\$13.60	\$0.00	\$54.38
	06/01/2018	\$33.92	\$7.70	\$13.60	\$0.00	\$55.22
	12/01/2018	\$34.76	\$7.70	\$13.60	\$0.00	\$56.06
	06/01/2019	\$35.63	\$7.70	\$13.60	\$0.00	\$56.93
	12/01/2019	\$36.49	\$7.70	\$13.60	\$0.00	\$57.79
	06/01/2020	\$37.38	\$7.70	\$13.60	\$0.00	\$58.68
	12/01/2020	\$38.27	\$7.70	\$13.60	\$0.00	\$59.57
	06/01/2021	\$39.19	\$7.70	\$13.60	\$0.00	\$60.49
	12/01/2021	\$40.10	\$7.70	\$13.60	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 2</i>	12/01/2017	\$33.58	\$7.70	\$13.60	\$0.00	\$54.88
	06/01/2018	\$34.42	\$7.70	\$13.60	\$0.00	\$55.72
	12/01/2018	\$35.26	\$7.70	\$13.60	\$0.00	\$56.56
	06/01/2019	\$36.13	\$7.70	\$13.60	\$0.00	\$57.43
	12/01/2019	\$36.99	\$7.70	\$13.60	\$0.00	\$58.29
	06/01/2020	\$37.88	\$7.70	\$13.60	\$0.00	\$59.18
	12/01/2020	\$38.77	\$7.70	\$13.60	\$0.00	\$60.07
	06/01/2021	\$39.69	\$7.70	\$13.60	\$0.00	\$60.99
	12/01/2021	\$40.60	\$7.70	\$13.60	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2017	\$42.92	\$6.97	\$16.21	\$0.00	\$66.10

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$27.90	\$6.97	\$10.54	\$0.00	\$45.41
2	65	\$27.90	\$6.97	\$10.54	\$0.00	\$45.41
3	70	\$30.04	\$6.97	\$11.35	\$0.00	\$48.36
4	75	\$32.19	\$6.97	\$12.16	\$0.00	\$51.32
5	80	\$34.34	\$6.97	\$12.97	\$0.00	\$54.28
6	85	\$36.48	\$6.97	\$13.78	\$0.00	\$57.23
7	90	\$38.63	\$6.97	\$14.59	\$0.00	\$60.19
8	95	\$40.77	\$6.97	\$15.40	\$0.00	\$63.14

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (LOWELL)</i>	03/01/2018	\$49.96	\$10.75	\$19.43	\$0.00	\$80.14
	08/01/2018	\$51.31	\$10.75	\$19.56	\$0.00	\$81.62
	02/01/2019	\$51.91	\$10.75	\$19.56	\$0.00	\$82.22
	08/01/2019	\$53.26	\$10.75	\$19.70	\$0.00	\$83.71
	02/01/2020	\$53.86	\$10.75	\$19.70	\$0.00	\$84.31
	08/01/2020	\$55.21	\$10.75	\$19.85	\$0.00	\$85.81
	02/01/2021	\$55.81	\$10.75	\$19.85	\$0.00	\$86.41
	08/01/2021	\$57.21	\$10.75	\$20.01	\$0.00	\$87.97
	02/01/2022	\$57.79	\$10.75	\$20.01	\$0.00	\$88.55

Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Lowell

Effective Date - 03/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.98	\$10.75	\$19.43	\$0.00	\$55.16
2	60	\$29.98	\$10.75	\$19.43	\$0.00	\$60.16
3	70	\$34.97	\$10.75	\$19.43	\$0.00	\$65.15
4	80	\$39.97	\$10.75	\$19.43	\$0.00	\$70.15
5	90	\$44.96	\$10.75	\$19.43	\$0.00	\$75.14

Effective Date - 08/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.66	\$10.75	\$19.56	\$0.00	\$55.97
2	60	\$30.79	\$10.75	\$19.56	\$0.00	\$61.10
3	70	\$35.92	\$10.75	\$19.56	\$0.00	\$66.23
4	80	\$41.05	\$10.75	\$19.56	\$0.00	\$71.36
5	90	\$46.18	\$10.75	\$19.56	\$0.00	\$76.49

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2017	\$38.60	\$7.70	\$14.95	\$0.00	\$61.25
	06/01/2018	\$39.55	\$7.70	\$14.95	\$0.00	\$62.20
	12/01/2018	\$40.50	\$7.70	\$14.95	\$0.00	\$63.15
	06/01/2019	\$41.50	\$7.70	\$14.95	\$0.00	\$64.15
	12/01/2019	\$42.50	\$7.70	\$14.95	\$0.00	\$65.15
	06/01/2020	\$43.49	\$7.70	\$14.95	\$0.00	\$66.14
	12/01/2020	\$44.47	\$7.70	\$14.95	\$0.00	\$67.12
	06/01/2021	\$45.49	\$7.70	\$14.95	\$0.00	\$68.14
	12/01/2021	\$46.50	\$7.70	\$14.95	\$0.00	\$69.15

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2017	\$37.45	\$7.70	\$14.95	\$0.00	\$60.10
	06/01/2018	\$38.40	\$7.70	\$14.95	\$0.00	\$61.05
	12/01/2018	\$39.35	\$7.70	\$14.95	\$0.00	\$62.00
	06/01/2019	\$40.35	\$7.70	\$14.95	\$0.00	\$63.00
	12/01/2019	\$41.35	\$7.70	\$14.95	\$0.00	\$64.00
	06/01/2020	\$42.34	\$7.70	\$14.95	\$0.00	\$64.99
	12/01/2020	\$43.32	\$7.70	\$14.95	\$0.00	\$65.97
	06/01/2021	\$44.34	\$7.70	\$14.95	\$0.00	\$66.99
	12/01/2021	\$45.35	\$7.70	\$14.95	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2017	\$37.45	\$7.70	\$14.95	\$0.00	\$60.10
	06/01/2018	\$38.40	\$7.70	\$14.95	\$0.00	\$61.05
	12/01/2018	\$39.35	\$7.70	\$14.95	\$0.00	\$62.00
	06/01/2019	\$40.35	\$7.70	\$14.95	\$0.00	\$63.00
	12/01/2019	\$41.35	\$7.70	\$14.95	\$0.00	\$64.00
	06/01/2020	\$42.34	\$7.70	\$14.95	\$0.00	\$64.99
	12/01/2020	\$43.32	\$7.70	\$14.95	\$0.00	\$65.97
	06/01/2021	\$44.34	\$7.70	\$14.95	\$0.00	\$66.99
	12/01/2021	\$45.35	\$7.70	\$14.95	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2017	\$33.08	\$7.70	\$13.60	\$0.00	\$54.38
	06/01/2018	\$33.92	\$7.70	\$13.60	\$0.00	\$55.22
	12/01/2018	\$34.76	\$7.70	\$13.60	\$0.00	\$56.06
	06/01/2019	\$35.63	\$7.70	\$13.60	\$0.00	\$56.93
	12/01/2019	\$36.49	\$7.70	\$13.60	\$0.00	\$57.79
	06/01/2020	\$37.38	\$7.70	\$13.60	\$0.00	\$58.68
	12/01/2020	\$38.27	\$7.70	\$13.60	\$0.00	\$59.57
	06/01/2021	\$39.19	\$7.70	\$13.60	\$0.00	\$60.49
	12/01/2021	\$40.10	\$7.70	\$13.60	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	03/01/2018	\$40.28	\$9.90	\$17.50	\$0.00	\$67.68
	09/01/2018	\$41.32	\$9.90	\$17.50	\$0.00	\$68.72
	03/01/2019	\$42.35	\$9.90	\$17.50	\$0.00	\$69.75

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER - Zone 2 Eastern MA
Effective Date - 03/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.14	\$9.90	\$1.73	\$0.00	\$31.77
2	60	\$24.17	\$9.90	\$1.73	\$0.00	\$35.80
3	70	\$28.20	\$9.90	\$12.31	\$0.00	\$50.41
4	75	\$30.21	\$9.90	\$12.31	\$0.00	\$52.42
5	80	\$32.22	\$9.90	\$14.04	\$0.00	\$56.16
6	80	\$32.22	\$9.90	\$14.04	\$0.00	\$56.16
7	90	\$36.25	\$9.90	\$15.77	\$0.00	\$61.92
8	90	\$36.25	\$9.90	\$15.77	\$0.00	\$61.92

Effective Date - 09/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.66	\$9.90	\$1.73	\$0.00	\$32.29
2	60	\$24.79	\$9.90	\$1.73	\$0.00	\$36.42
3	70	\$28.92	\$9.90	\$12.31	\$0.00	\$51.13
4	75	\$30.99	\$9.90	\$12.31	\$0.00	\$53.20
5	80	\$33.06	\$9.90	\$14.04	\$0.00	\$57.00
6	80	\$33.06	\$9.90	\$14.04	\$0.00	\$57.00
7	90	\$37.19	\$9.90	\$15.77	\$0.00	\$62.86
8	90	\$37.19	\$9.90	\$15.77	\$0.00	\$62.86

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 \$29.76/ 3&4 \$35.45/ 5&6 \$52.14/ 7&8 \$57.89

Apprentice to Journeyworker Ratio:1:5

CARPENTER WOOD FRAME	10/01/2017	\$26.25	\$7.07	\$7.86	\$0.00	\$41.18
CARPENTERS -ZONE 2 (Wood Frame)	04/01/2018	\$26.67	\$7.07	\$7.86	\$0.00	\$41.60
	10/01/2018	\$27.09	\$7.07	\$7.86	\$0.00	\$42.02
	04/01/2019	\$27.52	\$7.07	\$7.86	\$0.00	\$42.45
	10/01/2019	\$27.95	\$7.07	\$7.86	\$0.00	\$42.88

As of 9/1/09 Carpentry work on wood-frame WEATHERIZATION projects shall be paid the WOOD FRAME CARPENTER rate.

Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - CARPENTER (Wood Frame) - Zone 2
Effective Date - 10/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$15.75	\$7.07	\$0.00	\$0.00	\$22.82
2	60	\$15.75	\$7.07	\$0.00	\$0.00	\$22.82
3	65	\$17.06	\$7.07	\$7.86	\$0.00	\$31.99
4	70	\$18.38	\$7.07	\$7.86	\$0.00	\$33.31
5	75	\$19.69	\$7.07	\$7.86	\$0.00	\$34.62
6	80	\$21.00	\$7.07	\$7.86	\$0.00	\$35.93
7	85	\$22.31	\$7.07	\$7.86	\$0.00	\$37.24
8	90	\$23.63	\$7.07	\$7.86	\$0.00	\$38.56

Effective Date - 04/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$16.00	\$7.07	\$0.00	\$0.00	\$23.07
2	60	\$16.00	\$7.07	\$0.00	\$0.00	\$23.07
3	65	\$17.34	\$7.07	\$7.86	\$0.00	\$32.27
4	70	\$18.67	\$7.07	\$7.86	\$0.00	\$33.60
5	75	\$20.00	\$7.07	\$7.86	\$0.00	\$34.93
6	80	\$21.34	\$7.07	\$7.86	\$0.00	\$36.27
7	85	\$22.67	\$7.07	\$7.86	\$0.00	\$37.60
8	90	\$24.00	\$7.07	\$7.86	\$0.00	\$38.93

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 \$18.88/ 3&4 \$26.26/ 5&6 \$33.31/ 7&8 \$35.93

Apprentice to Journeyworker Ratio:1:5

CARPENTER WOOD FRAME (All Other Work) CARPENTERS -ZONE 2 (Wood Frame)	06/01/2016	\$25.32	\$9.80	\$16.82	\$0.00	\$51.94
CEMENT MASONRY/PLASTERING BRICKLAYERS LOCAL 3 (LOWELL)	01/01/2018	\$41.67	\$12.35	\$22.41	\$0.30	\$76.73
	07/01/2018	\$42.59	\$12.35	\$22.41	\$0.30	\$77.65
	01/01/2019	\$43.83	\$12.35	\$22.41	\$0.30	\$78.89
	07/01/2019	\$44.71	\$12.35	\$22.41	\$0.30	\$79.77
	01/01/2020	\$45.95	\$12.35	\$22.41	\$0.30	\$81.01

Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - CEMENT MASONRY/PLASTERING - Lowell
Effective Date - 01/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.84	\$12.35	\$15.41	\$0.00	\$48.60
2	60	\$25.00	\$12.35	\$17.41	\$0.30	\$55.06
3	65	\$27.09	\$12.35	\$18.41	\$0.30	\$58.15
4	70	\$29.17	\$12.35	\$19.41	\$0.30	\$61.23
5	75	\$31.25	\$12.35	\$20.41	\$0.30	\$64.31
6	80	\$33.34	\$12.35	\$21.41	\$0.30	\$67.40
7	90	\$37.50	\$12.35	\$22.41	\$0.30	\$72.56

Effective Date - 07/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.30	\$12.35	\$15.41	\$0.00	\$49.06
2	60	\$25.55	\$12.35	\$17.41	\$0.30	\$55.61
3	65	\$27.68	\$12.35	\$18.41	\$0.30	\$58.74
4	70	\$29.81	\$12.35	\$19.41	\$0.30	\$61.87
5	75	\$31.94	\$12.35	\$20.41	\$0.30	\$65.00
6	80	\$34.07	\$12.35	\$21.41	\$0.30	\$68.13
7	90	\$38.33	\$12.35	\$22.41	\$0.30	\$73.39

Notes:

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

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR	12/01/2017	\$33.08	\$7.70	\$13.60	\$0.00	\$54.38
LABORERS - ZONE 2	06/01/2018	\$33.92	\$7.70	\$13.60	\$0.00	\$55.22
	12/01/2018	\$34.76	\$7.70	\$13.60	\$0.00	\$56.06
	06/01/2019	\$35.63	\$7.70	\$13.60	\$0.00	\$56.93
	12/01/2019	\$36.49	\$7.70	\$13.60	\$0.00	\$57.79
	06/01/2020	\$37.38	\$7.70	\$13.60	\$0.00	\$58.68
	12/01/2020	\$38.27	\$7.70	\$13.60	\$0.00	\$59.57
	06/01/2021	\$39.19	\$7.70	\$13.60	\$0.00	\$60.49
	12/01/2021	\$40.10	\$7.70	\$13.60	\$0.00	\$61.40

For apprentice rates see "Apprentice- LABORER"

CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES	12/01/2017	\$47.63	\$10.50	\$15.50	\$0.00	\$73.63
OPERATING ENGINEERS LOCAL 4						

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

COMPRESSOR OPERATOR	12/01/2017	\$31.80	\$10.50	\$15.50	\$0.00	\$57.80
OPERATING ENGINEERS LOCAL 4						

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

DELEADER (BRIDGE)	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36
PAINTERS LOCAL 35 - ZONE 2						

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.71	\$7.85	\$0.00	\$0.00	\$33.56
2	55	\$28.28	\$7.85	\$3.66	\$0.00	\$39.79
3	60	\$30.85	\$7.85	\$3.99	\$0.00	\$42.69
4	65	\$33.42	\$7.85	\$4.32	\$0.00	\$45.59
5	70	\$35.99	\$7.85	\$14.11	\$0.00	\$57.95
6	75	\$38.56	\$7.85	\$14.44	\$0.00	\$60.85
7	80	\$41.13	\$7.85	\$14.77	\$0.00	\$63.75
8	90	\$46.27	\$7.85	\$15.44	\$0.00	\$69.56

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN LABORERS - ZONE 2	12/01/2017	\$37.65	\$7.70	\$14.75	\$0.00	\$60.10
	06/01/2018	\$38.60	\$7.70	\$14.75	\$0.00	\$61.05
	12/01/2018	\$39.55	\$7.70	\$14.75	\$0.00	\$62.00
	06/01/2019	\$40.55	\$7.70	\$14.75	\$0.00	\$63.00
	12/01/2019	\$41.55	\$7.70	\$14.75	\$0.00	\$64.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS - ZONE 2	12/01/2017	\$38.65	\$7.70	\$14.75	\$0.00	\$61.10
	06/01/2018	\$39.60	\$7.70	\$14.75	\$0.00	\$62.05
	12/01/2018	\$40.55	\$7.70	\$14.75	\$0.00	\$63.00
	06/01/2019	\$41.55	\$7.70	\$14.75	\$0.00	\$64.00
	12/01/2019	\$42.55	\$7.70	\$14.75	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS LABORERS - ZONE 2	12/01/2017	\$38.40	\$7.70	\$14.75	\$0.00	\$60.85
	06/01/2018	\$39.35	\$7.70	\$14.75	\$0.00	\$61.80
	12/01/2018	\$40.30	\$7.70	\$14.75	\$0.00	\$62.75
	06/01/2019	\$41.30	\$7.70	\$14.75	\$0.00	\$63.75
	12/01/2019	\$42.30	\$7.70	\$14.75	\$0.00	\$64.75
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER LABORERS - ZONE 2	12/01/2017	\$38.65	\$7.70	\$14.75	\$0.00	\$61.10
	06/01/2018	\$39.60	\$7.70	\$14.75	\$0.00	\$62.05
	12/01/2018	\$40.55	\$7.70	\$14.75	\$0.00	\$63.00
	06/01/2019	\$41.55	\$7.70	\$14.75	\$0.00	\$64.00
	12/01/2019	\$42.55	\$7.70	\$14.75	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR LABORERS - ZONE 2	12/01/2017	\$38.40	\$7.70	\$14.75	\$0.00	\$60.85
	06/01/2018	\$39.35	\$7.70	\$14.75	\$0.00	\$61.80
	12/01/2018	\$40.30	\$7.70	\$14.75	\$0.00	\$62.75
	06/01/2019	\$41.30	\$7.70	\$14.75	\$0.00	\$63.75
	12/01/2019	\$42.30	\$7.70	\$14.75	\$0.00	\$64.75

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER	12/01/2017	\$37.65	\$7.70	\$14.75	\$0.00	\$60.10
LABORERS - ZONE 2	06/01/2018	\$38.60	\$7.70	\$14.75	\$0.00	\$61.05
	12/01/2018	\$39.55	\$7.70	\$14.75	\$0.00	\$62.00
	06/01/2019	\$40.55	\$7.70	\$14.75	\$0.00	\$63.00
	12/01/2019	\$41.55	\$7.70	\$14.75	\$0.00	\$64.00
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
OPERATING ENGINEERS LOCAL 4						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER	08/01/2017	\$61.98	\$9.90	\$21.15	\$0.00	\$93.03
PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2018	\$65.20	\$9.90	\$21.15	\$0.00	\$96.25
	08/01/2019	\$68.52	\$9.90	\$21.15	\$0.00	\$99.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER	08/01/2017	\$44.27	\$9.90	\$21.15	\$0.00	\$75.32
PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2018	\$46.57	\$9.90	\$21.15	\$0.00	\$77.62
	08/01/2019	\$48.94	\$9.90	\$21.15	\$0.00	\$79.99
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT)	08/01/2017	\$66.41	\$9.90	\$21.15	\$0.00	\$97.46
PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2018	\$69.86	\$9.90	\$21.15	\$0.00	\$100.91
	08/01/2019	\$73.41	\$9.90	\$21.15	\$0.00	\$104.46
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT)	08/01/2017	\$92.97	\$9.90	\$21.15	\$0.00	\$124.02
PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2018	\$97.80	\$9.90	\$21.15	\$0.00	\$128.85
	08/01/2019	\$102.78	\$9.90	\$21.15	\$0.00	\$133.83
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction)	03/01/2018	\$50.15	\$13.00	\$17.85	\$0.00	\$81.00
ELECTRICIANS LOCAL 103	09/01/2018	\$51.34	\$13.00	\$17.89	\$0.00	\$82.23
	03/01/2019	\$52.53	\$13.00	\$17.93	\$0.00	\$83.46
For apprentice rates see "Apprentice- ELECTRICIAN"						
ELECTRICIAN	03/01/2018	\$50.15	\$13.00	\$17.85	\$0.00	\$81.00
ELECTRICIANS LOCAL 103	09/01/2018	\$51.34	\$13.00	\$17.89	\$0.00	\$82.23
	03/01/2019	\$52.53	\$13.00	\$17.93	\$0.00	\$83.46

Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - ELECTRICIAN - Local 103
Effective Date - 03/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$20.06	\$13.00	\$0.60	\$0.00	\$33.66
2	40	\$20.06	\$13.00	\$0.60	\$0.00	\$33.66
3	45	\$22.57	\$13.00	\$13.61	\$0.00	\$49.18
4	45	\$22.57	\$13.00	\$13.61	\$0.00	\$49.18
5	50	\$25.08	\$13.00	\$13.99	\$0.00	\$52.07
6	55	\$27.58	\$13.00	\$14.38	\$0.00	\$54.96
7	60	\$30.09	\$13.00	\$14.76	\$0.00	\$57.85
8	65	\$32.60	\$13.00	\$15.15	\$0.00	\$60.75
9	70	\$35.11	\$13.00	\$15.53	\$0.00	\$63.64
10	75	\$37.61	\$13.00	\$15.93	\$0.00	\$66.54

Effective Date - 09/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$20.54	\$13.00	\$0.62	\$0.00	\$34.16
2	40	\$20.54	\$13.00	\$0.62	\$0.00	\$34.16
3	45	\$23.10	\$13.00	\$13.62	\$0.00	\$49.72
4	45	\$23.10	\$13.00	\$13.62	\$0.00	\$49.72
5	50	\$25.67	\$13.00	\$14.01	\$0.00	\$52.68
6	55	\$28.24	\$13.00	\$14.40	\$0.00	\$55.64
7	60	\$30.80	\$13.00	\$14.78	\$0.00	\$58.58
8	65	\$33.37	\$13.00	\$15.17	\$0.00	\$61.54
9	70	\$35.94	\$13.00	\$15.56	\$0.00	\$64.50
10	75	\$38.51	\$13.00	\$15.96	\$0.00	\$67.47

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

01/01/2017

\$55.86

\$15.28

\$15.71

\$0.00

\$86.85

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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Apprentice - ELEVATOR CONSTRUCTOR - Local 4

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.93	\$15.28	\$0.00	\$0.00	\$43.21
2	55	\$30.72	\$15.28	\$15.71	\$0.00	\$61.71
3	65	\$36.31	\$15.28	\$15.71	\$0.00	\$67.30
4	70	\$39.10	\$15.28	\$15.71	\$0.00	\$70.09
5	80	\$44.69	\$15.28	\$15.71	\$0.00	\$75.68

Notes:

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

Apprentice to Journeyworker Ratio:1:1

ELEVATOR CONSTRUCTOR HELPER <i>ELEVATOR CONSTRUCTORS LOCAL 4</i>	01/01/2017	\$39.10	\$15.28	\$15.71	\$0.00	\$70.09
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR <i>LABORERS - ZONE 2</i>	12/01/2017	\$33.08	\$7.70	\$13.60	\$0.00	\$54.38
	06/01/2018	\$33.92	\$7.70	\$13.60	\$0.00	\$55.22
	12/01/2018	\$34.76	\$7.70	\$13.60	\$0.00	\$56.06
	06/01/2019	\$35.63	\$7.70	\$13.60	\$0.00	\$56.93
	12/01/2019	\$36.49	\$7.70	\$13.60	\$0.00	\$57.79
	06/01/2020	\$37.38	\$7.70	\$13.60	\$0.00	\$58.68
	12/01/2020	\$38.27	\$7.70	\$13.60	\$0.00	\$59.57
	06/01/2021	\$39.19	\$7.70	\$13.60	\$0.00	\$60.49
	12/01/2021	\$40.10	\$7.70	\$13.60	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2017	\$42.88	\$10.00	\$15.25	\$0.00	\$68.13
	05/01/2018	\$43.59	\$10.00	\$15.25	\$0.00	\$68.84
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2017	\$44.34	\$10.00	\$15.25	\$0.00	\$69.59
	05/01/2018	\$45.06	\$10.00	\$15.25	\$0.00	\$70.31
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2017	\$22.83	\$10.00	\$15.25	\$0.00	\$48.08
	05/01/2018	\$23.26	\$10.00	\$15.25	\$0.00	\$48.51
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	03/01/2018	\$50.15	\$13.00	\$17.85	\$0.00	\$81.00
	09/01/2018	\$51.34	\$13.00	\$17.89	\$0.00	\$82.23
	03/01/2019	\$52.53	\$13.00	\$17.93	\$0.00	\$83.46
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS LOCAL 103</i>	03/01/2018	\$37.61	\$13.00	\$15.93	\$0.00	\$66.54
	09/01/2018	\$38.51	\$13.00	\$15.96	\$0.00	\$67.47
	03/01/2019	\$39.40	\$13.00	\$15.98	\$0.00	\$68.38
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$38.57	\$10.50	\$15.50	\$0.00	\$64.57
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FLAGGER & SIGNALER <i>LABORERS - ZONE 2</i>	12/01/2017	\$21.50	\$7.70	\$13.60	\$0.00	\$42.80
	06/01/2018	\$21.50	\$7.70	\$13.60	\$0.00	\$42.80
	12/01/2018	\$22.50	\$7.70	\$13.60	\$0.00	\$43.80
	06/01/2019	\$22.50	\$7.70	\$13.60	\$0.00	\$43.80
	12/01/2019	\$23.50	\$7.70	\$13.60	\$0.00	\$44.80
	06/01/2020	\$23.50	\$7.70	\$13.60	\$0.00	\$44.80
	12/01/2020	\$24.50	\$7.70	\$13.60	\$0.00	\$45.80
	06/01/2021	\$24.50	\$7.70	\$13.60	\$0.00	\$45.80
	12/01/2021	\$24.50	\$7.70	\$13.60	\$0.00	\$45.80
For apprentice rates see "Apprentice- LABORER"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE I</i>	03/01/2016	\$42.13	\$9.80	\$17.62	\$0.00	\$69.55

Apprentice - FLOORCOVERER - Local 2168 Zone I

Effective Date - 03/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.07	\$9.80	\$1.79	\$0.00	\$32.66
2	55	\$23.17	\$9.80	\$1.79	\$0.00	\$34.76
3	60	\$25.28	\$9.80	\$12.25	\$0.00	\$47.33
4	65	\$27.38	\$9.80	\$12.25	\$0.00	\$49.43
5	70	\$29.49	\$9.80	\$14.04	\$0.00	\$53.33
6	75	\$31.60	\$9.80	\$14.04	\$0.00	\$55.44
7	80	\$33.70	\$9.80	\$15.83	\$0.00	\$59.33
8	85	\$35.81	\$9.80	\$15.83	\$0.00	\$61.44

Notes: Steps are 750 hrs.
 % After 09/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)
 Step 1&2 \$30.55/ 3&4 \$36.49/ 5&6 \$53.33/ 7&8 \$59.33

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.63	\$10.50	\$15.50	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$31.80	\$10.50	\$15.50	\$0.00	\$57.80
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 35 (ZONE 2)</i>	01/01/2017	\$40.91	\$7.85	\$16.10	\$0.00	\$64.86

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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Apprentice - GLAZIER - Local 35 Zone 2

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.46	\$7.85	\$0.00	\$0.00	\$28.31
2	55	\$22.50	\$7.85	\$3.66	\$0.00	\$34.01
3	60	\$24.55	\$7.85	\$3.99	\$0.00	\$36.39
4	65	\$26.59	\$7.85	\$4.32	\$0.00	\$38.76
5	70	\$28.64	\$7.85	\$14.11	\$0.00	\$50.60
6	75	\$30.68	\$7.85	\$14.44	\$0.00	\$52.97
7	80	\$32.73	\$7.85	\$14.77	\$0.00	\$55.35
8	90	\$36.82	\$7.85	\$15.44	\$0.00	\$60.11

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

HOISTING ENGINEER/CRANES/GRADALLS OPERATING ENGINEERS LOCAL 4	12/01/2017	\$46.63	\$10.50	\$15.50	\$0.00	\$72.63
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Apprentice - OPERATING ENGINEERS - Local 4

Effective Date - 12/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$25.65	\$10.50	\$0.00	\$0.00	\$36.15
2	60	\$27.98	\$10.50	\$15.50	\$0.00	\$53.98
3	65	\$30.31	\$10.50	\$15.50	\$0.00	\$56.31
4	70	\$32.64	\$10.50	\$15.50	\$0.00	\$58.64
5	75	\$34.97	\$10.50	\$15.50	\$0.00	\$60.97
6	80	\$37.30	\$10.50	\$15.50	\$0.00	\$63.30
7	85	\$39.64	\$10.50	\$15.50	\$0.00	\$65.64
8	90	\$41.97	\$10.50	\$15.50	\$0.00	\$67.97

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 - A	02/01/2018	\$44.11	\$12.20	\$24.12	\$2.41	\$82.84
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For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 103	03/01/2018	\$50.15	\$13.00	\$17.85	\$0.00	\$81.00
	09/01/2018	\$51.34	\$13.00	\$17.89	\$0.00	\$82.23
	03/01/2019	\$52.53	\$13.00	\$17.93	\$0.00	\$83.46

For apprentice rates see "Apprentice- ELECTRICIAN"

HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 17 - A	02/01/2018	\$44.11	\$12.20	\$24.12	\$2.41	\$82.84
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For apprentice rates see "Apprentice- SHEET METAL WORKER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC (TESTING AND BALANCING -WATER) <i>PIPEFITTERS LOCAL 537</i>	03/01/2017	\$51.19	\$9.70	\$18.14	\$0.00	\$79.03
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PIPEFITTERS LOCAL 537</i>	03/01/2017	\$51.19	\$9.70	\$18.14	\$0.00	\$79.03
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS <i>LABORERS - ZONE 2</i>	12/01/2017	\$33.58	\$7.70	\$13.60	\$0.00	\$54.88
	06/01/2018	\$34.42	\$7.70	\$13.60	\$0.00	\$55.72
	12/01/2018	\$35.26	\$7.70	\$13.60	\$0.00	\$56.56
	06/01/2019	\$36.13	\$7.70	\$13.60	\$0.00	\$57.43
	12/01/2019	\$36.99	\$7.70	\$13.60	\$0.00	\$58.29
	06/01/2020	\$37.88	\$7.70	\$13.60	\$0.00	\$59.18
	12/01/2020	\$38.77	\$7.70	\$13.60	\$0.00	\$60.07
	06/01/2021	\$39.69	\$7.70	\$13.60	\$0.00	\$60.99
For apprentice rates see "Apprentice- LABORER"						
INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (BOSTON)</i>	09/01/2017	\$47.09	\$11.75	\$14.20	\$0.00	\$73.04
	09/01/2018	\$49.34	\$11.75	\$14.20	\$0.00	\$75.29
	09/01/2019	\$51.84	\$11.75	\$14.20	\$0.00	\$77.79

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

Effective Date - 09/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.55	\$11.75	\$10.45	\$0.00	\$45.75
2	60	\$28.25	\$11.75	\$11.20	\$0.00	\$51.20
3	70	\$32.96	\$11.75	\$11.95	\$0.00	\$56.66
4	80	\$37.67	\$11.75	\$12.70	\$0.00	\$62.12

Effective Date - 09/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.67	\$11.75	\$10.45	\$0.00	\$46.87
2	60	\$29.60	\$11.75	\$11.20	\$0.00	\$52.55
3	70	\$34.54	\$11.75	\$11.95	\$0.00	\$58.24
4	80	\$39.47	\$11.75	\$12.70	\$0.00	\$63.92

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER <i>IRONWORKERS LOCAL 7 (BOSTON AREA)</i>	03/16/2017	\$44.65	\$7.80	\$20.85	\$0.00	\$73.30
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Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - IRONWORKER - Local 7 Boston
Effective Date - 03/16/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$26.79	\$7.80	\$20.85	\$0.00	\$55.44
2	70	\$31.26	\$7.80	\$20.85	\$0.00	\$59.91
3	75	\$33.49	\$7.80	\$20.85	\$0.00	\$62.14
4	80	\$35.72	\$7.80	\$20.85	\$0.00	\$64.37
5	85	\$37.95	\$7.80	\$20.85	\$0.00	\$66.60
6	90	\$40.19	\$7.80	\$20.85	\$0.00	\$68.84

Notes:

** Structural 1:6; Ornamental 1:4

Apprentice to Journeyworker Ratio:**
JACKHAMMER & PAVING BREAKER OPERATOR

LABORERS - ZONE 2

12/01/2017	\$33.08	\$7.70	\$13.60	\$0.00	\$54.38
06/01/2018	\$33.92	\$7.70	\$13.60	\$0.00	\$55.22
12/01/2018	\$34.76	\$7.70	\$13.60	\$0.00	\$56.06
06/01/2019	\$35.63	\$7.70	\$13.60	\$0.00	\$56.93
12/01/2019	\$36.49	\$7.70	\$13.60	\$0.00	\$57.79
06/01/2020	\$37.38	\$7.70	\$13.60	\$0.00	\$58.68
12/01/2020	\$38.27	\$7.70	\$13.60	\$0.00	\$59.57
06/01/2021	\$39.19	\$7.70	\$13.60	\$0.00	\$60.49
12/01/2021	\$40.10	\$7.70	\$13.60	\$0.00	\$61.40

For apprentice rates see "Apprentice- LABORER"

LABORER

LABORERS - ZONE 2

12/01/2017	\$32.83	\$7.70	\$13.60	\$0.00	\$54.13
06/01/2018	\$33.67	\$7.70	\$13.60	\$0.00	\$54.97
12/01/2018	\$34.51	\$7.70	\$13.60	\$0.00	\$55.81
06/01/2019	\$35.38	\$7.70	\$13.60	\$0.00	\$56.68
12/01/2019	\$36.24	\$7.70	\$13.60	\$0.00	\$57.54
06/01/2020	\$37.13	\$7.70	\$13.60	\$0.00	\$58.43
12/01/2020	\$38.02	\$7.70	\$13.60	\$0.00	\$59.32
06/01/2021	\$38.94	\$7.70	\$13.60	\$0.00	\$60.24
12/01/2021	\$39.85	\$7.70	\$13.60	\$0.00	\$61.15

Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - LABORER - Zone 2
Effective Date - 12/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$19.70	\$7.70	\$13.60	\$0.00	\$41.00
2	70	\$22.98	\$7.70	\$13.60	\$0.00	\$44.28
3	80	\$26.26	\$7.70	\$13.60	\$0.00	\$47.56
4	90	\$29.55	\$7.70	\$13.60	\$0.00	\$50.85

Effective Date - 06/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.20	\$7.70	\$13.60	\$0.00	\$41.50
2	70	\$23.57	\$7.70	\$13.60	\$0.00	\$44.87
3	80	\$26.94	\$7.70	\$13.60	\$0.00	\$48.24
4	90	\$30.30	\$7.70	\$13.60	\$0.00	\$51.60

Notes:
Apprentice to Journeyworker Ratio:1:5
LABORER: CARPENTER TENDER
LABORERS - ZONE 2

12/01/2017	\$32.83	\$7.70	\$13.60	\$0.00	\$54.13
06/01/2018	\$33.67	\$7.70	\$13.60	\$0.00	\$54.97
12/01/2018	\$34.51	\$7.70	\$13.60	\$0.00	\$55.81
06/01/2019	\$35.38	\$7.70	\$13.60	\$0.00	\$56.68
12/01/2019	\$36.24	\$7.70	\$13.60	\$0.00	\$57.54
06/01/2020	\$37.13	\$7.70	\$13.60	\$0.00	\$58.43
12/01/2020	\$38.02	\$7.70	\$13.60	\$0.00	\$59.32
06/01/2021	\$38.94	\$7.70	\$13.60	\$0.00	\$60.24
12/01/2021	\$39.85	\$7.70	\$13.60	\$0.00	\$61.15

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER
LABORERS - ZONE 2

12/01/2017	\$32.83	\$7.70	\$13.60	\$0.00	\$54.13
06/01/2018	\$33.67	\$7.70	\$13.60	\$0.00	\$54.97
12/01/2018	\$34.51	\$7.70	\$13.60	\$0.00	\$55.81
06/01/2019	\$35.38	\$7.70	\$13.60	\$0.00	\$56.68
12/01/2019	\$36.24	\$7.70	\$13.60	\$0.00	\$57.54
06/01/2020	\$37.13	\$7.70	\$13.60	\$0.00	\$58.43
12/01/2020	\$38.02	\$7.70	\$13.60	\$0.00	\$59.32
06/01/2021	\$38.94	\$7.70	\$13.60	\$0.00	\$60.24
12/01/2021	\$39.85	\$7.70	\$13.60	\$0.00	\$61.15

For apprentice rates see "Apprentice- LABORER"

LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER
LABORERS - ZONE 2

12/01/2017	\$33.03	\$7.70	\$13.55	\$0.00	\$54.28
06/01/2018	\$33.87	\$7.70	\$13.55	\$0.00	\$55.12
12/01/2018	\$34.71	\$7.70	\$13.55	\$0.00	\$55.96
06/01/2019	\$35.58	\$7.70	\$13.55	\$0.00	\$56.83
12/01/2019	\$36.44	\$7.70	\$13.55	\$0.00	\$57.69

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: MASON TENDER <i>LABORERS - ZONE 2</i>	12/01/2017	\$33.08	\$7.70	\$13.60	\$0.00	\$54.38
	06/01/2018	\$33.92	\$7.70	\$13.60	\$0.00	\$55.22
	12/01/2018	\$34.76	\$7.70	\$13.60	\$0.00	\$56.06
	06/01/2019	\$35.63	\$7.70	\$13.60	\$0.00	\$56.93
	12/01/2019	\$36.49	\$7.70	\$13.60	\$0.00	\$57.79
	06/01/2020	\$37.38	\$7.70	\$13.60	\$0.00	\$58.68
	12/01/2020	\$38.27	\$7.70	\$13.60	\$0.00	\$59.57
	06/01/2021	\$39.19	\$7.70	\$13.60	\$0.00	\$60.49
	12/01/2021	\$40.10	\$7.70	\$13.60	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 2</i>	12/01/2017	\$32.83	\$7.70	\$13.60	\$0.00	\$54.13
	06/01/2018	\$33.67	\$7.70	\$13.60	\$0.00	\$54.97
	12/01/2018	\$34.51	\$7.70	\$13.60	\$0.00	\$55.81
	06/01/2019	\$35.38	\$7.70	\$13.60	\$0.00	\$56.68
	12/01/2019	\$36.24	\$7.70	\$13.60	\$0.00	\$57.54
	06/01/2020	\$37.13	\$7.70	\$13.60	\$0.00	\$58.43
	12/01/2020	\$38.02	\$7.70	\$13.60	\$0.00	\$59.32
	06/01/2021	\$38.94	\$7.70	\$13.60	\$0.00	\$60.24
	12/01/2021	\$39.85	\$7.70	\$13.60	\$0.00	\$61.15
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 2</i>	12/01/2017	\$32.83	\$7.70	\$13.60	\$0.00	\$54.13
	06/01/2018	\$33.67	\$7.70	\$13.60	\$0.00	\$54.97
	12/01/2018	\$34.51	\$7.70	\$13.60	\$0.00	\$55.81
	06/01/2019	\$35.38	\$7.70	\$13.60	\$0.00	\$56.68
	12/01/2019	\$36.24	\$7.70	\$13.60	\$0.00	\$57.54
	06/01/2020	\$37.13	\$7.70	\$13.60	\$0.00	\$58.43
	12/01/2020	\$38.02	\$7.70	\$13.60	\$0.00	\$59.32
	06/01/2021	\$38.94	\$7.70	\$13.60	\$0.00	\$60.24
	12/01/2021	\$39.85	\$7.70	\$13.60	\$0.00	\$61.15
This classification applies to all tree work associated with the removal of standing trees, and trimming and removal of branches and limbs when the work is not done for a utility company for the purpose of operation, maintenance or repair of utility company equipment. For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2017	\$33.08	\$7.70	\$13.60	\$0.00	\$54.38
	06/01/2018	\$33.92	\$7.70	\$13.60	\$0.00	\$55.22
	12/01/2018	\$34.76	\$7.70	\$13.60	\$0.00	\$56.06
	06/01/2019	\$35.63	\$7.70	\$13.60	\$0.00	\$56.93
	12/01/2019	\$36.49	\$7.70	\$13.60	\$0.00	\$57.79
	06/01/2020	\$37.38	\$7.70	\$13.60	\$0.00	\$58.68
	12/01/2020	\$38.27	\$7.70	\$13.60	\$0.00	\$59.57
	06/01/2021	\$39.19	\$7.70	\$13.60	\$0.00	\$60.49
	12/01/2021	\$40.10	\$7.70	\$13.60	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2018	\$39.82	\$10.75	\$18.34	\$0.00	\$68.91
	08/01/2018	\$40.90	\$10.75	\$18.47	\$0.00	\$70.12
	02/01/2019	\$41.41	\$10.75	\$18.47	\$0.00	\$70.63
	08/01/2019	\$42.49	\$10.75	\$18.61	\$0.00	\$71.85
	02/01/2020	\$43.00	\$10.75	\$18.61	\$0.00	\$72.36
	08/01/2020	\$44.08	\$10.75	\$18.76	\$0.00	\$73.59
	02/01/2021	\$44.59	\$10.75	\$18.76	\$0.00	\$74.10
	08/01/2021	\$45.71	\$10.75	\$18.92	\$0.00	\$75.38
	02/01/2022	\$46.18	\$10.75	\$18.92	\$0.00	\$75.85

Apprentice - MARBLE & TILE FINISHER - Local 3 Marble & Tile

Effective Date - 02/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.91	\$10.75	\$18.34	\$0.00	\$49.00
2	60	\$23.89	\$10.75	\$18.34	\$0.00	\$52.98
3	70	\$27.87	\$10.75	\$18.34	\$0.00	\$56.96
4	80	\$31.86	\$10.75	\$18.34	\$0.00	\$60.95
5	90	\$35.84	\$10.75	\$18.34	\$0.00	\$64.93

Effective Date - 08/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.45	\$10.75	\$18.47	\$0.00	\$49.67
2	60	\$24.54	\$10.75	\$18.47	\$0.00	\$53.76
3	70	\$28.63	\$10.75	\$18.47	\$0.00	\$57.85
4	80	\$32.72	\$10.75	\$18.47	\$0.00	\$61.94
5	90	\$36.81	\$10.75	\$18.47	\$0.00	\$66.03

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS, TILELAYERS & TERRAZZO MECH <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2018	\$52.10	\$10.75	\$20.03	\$0.00	\$82.88
	08/01/2018	\$53.45	\$10.75	\$20.16	\$0.00	\$84.36
	02/01/2019	\$54.07	\$10.75	\$20.16	\$0.00	\$84.98
	08/01/2019	\$55.42	\$10.75	\$20.30	\$0.00	\$86.47
	02/01/2020	\$56.05	\$10.75	\$20.30	\$0.00	\$87.10
	08/01/2020	\$57.40	\$10.75	\$20.45	\$0.00	\$88.60
	02/01/2021	\$58.04	\$10.75	\$20.45	\$0.00	\$89.24
	08/01/2021	\$59.44	\$10.75	\$20.61	\$0.00	\$90.80
	02/01/2022	\$60.01	\$10.75	\$20.61	\$0.00	\$91.37

Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile
Effective Date - 02/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.05	\$10.75	\$20.03	\$0.00	\$56.83
2	60	\$31.26	\$10.75	\$20.03	\$0.00	\$62.04
3	70	\$36.47	\$10.75	\$20.03	\$0.00	\$67.25
4	80	\$41.68	\$10.75	\$20.03	\$0.00	\$72.46
5	90	\$46.89	\$10.75	\$20.03	\$0.00	\$77.67

Effective Date - 08/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.73	\$10.75	\$20.16	\$0.00	\$57.64
2	60	\$32.07	\$10.75	\$20.16	\$0.00	\$62.98
3	70	\$37.42	\$10.75	\$20.16	\$0.00	\$68.33
4	80	\$42.76	\$10.75	\$20.16	\$0.00	\$73.67
5	90	\$48.11	\$10.75	\$20.16	\$0.00	\$79.02

Notes:
Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) OPERATING ENGINEERS LOCAL 4	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE OPERATING ENGINEERS LOCAL 4	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 2) MILLWRIGHTS LOCAL 1121 - Zone 2	10/01/2017	\$36.32	\$9.90	\$18.50	\$0.00	\$64.72
	04/01/2018	\$37.17	\$9.90	\$18.50	\$0.00	\$65.57
	10/01/2018	\$38.02	\$9.90	\$18.50	\$0.00	\$66.42
	04/01/2019	\$38.87	\$9.90	\$18.50	\$0.00	\$67.27

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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Apprentice - MILLWRIGHT - Local 1121 Zone 2

Effective Date - 10/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$19.98	\$9.90	\$5.31	\$0.00	\$35.19
2	65	\$23.61	\$9.90	\$15.13	\$0.00	\$48.64
3	75	\$27.24	\$9.90	\$16.10	\$0.00	\$53.24
4	85	\$30.87	\$9.90	\$17.06	\$0.00	\$57.83

Effective Date - 04/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$20.44	\$9.90	\$5.31	\$0.00	\$35.65
2	65	\$24.16	\$9.90	\$15.13	\$0.00	\$49.19
3	75	\$27.88	\$9.90	\$16.10	\$0.00	\$53.88
4	85	\$31.59	\$9.90	\$17.06	\$0.00	\$58.55

Notes:

Steps are 2,000 hours

Apprentice to Journeyworker Ratio:1:5

MORTAR MIXER LABORERS - ZONE 2	12/01/2017	\$33.08	\$7.70	\$13.60	\$0.00	\$54.38
	06/01/2018	\$33.92	\$7.70	\$13.60	\$0.00	\$55.22
	12/01/2018	\$34.76	\$7.70	\$13.60	\$0.00	\$56.06
	06/01/2019	\$35.63	\$7.70	\$13.60	\$0.00	\$56.93
	12/01/2019	\$36.49	\$7.70	\$13.60	\$0.00	\$57.79
	06/01/2020	\$37.38	\$7.70	\$13.60	\$0.00	\$58.68
	12/01/2020	\$38.27	\$7.70	\$13.60	\$0.00	\$59.57
	06/01/2021	\$39.19	\$7.70	\$13.60	\$0.00	\$60.49
	12/01/2021	\$40.10	\$7.70	\$13.60	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS) OPERATING ENGINEERS LOCAL 4	12/01/2017	\$23.24	\$10.50	\$15.50	\$0.00	\$49.24
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) OPERATING ENGINEERS LOCAL 4	12/01/2017	\$27.40	\$10.50	\$15.50	\$0.00	\$53.40
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II OPERATING ENGINEERS LOCAL 4	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) PAINTERS LOCAL 35 - ZONE 2	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36

Apprentice - PAINTER Local 35 - BRIDGES/TANKS**Effective Date -** 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.71	\$7.85	\$0.00	\$0.00	\$33.56
2	55	\$28.28	\$7.85	\$3.66	\$0.00	\$39.79
3	60	\$30.85	\$7.85	\$3.99	\$0.00	\$42.69
4	65	\$33.42	\$7.85	\$4.32	\$0.00	\$45.59
5	70	\$35.99	\$7.85	\$14.11	\$0.00	\$57.95
6	75	\$38.56	\$7.85	\$14.44	\$0.00	\$60.85
7	80	\$41.13	\$7.85	\$14.77	\$0.00	\$63.75
8	90	\$46.27	\$7.85	\$15.44	\$0.00	\$69.56

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2017	\$42.31	\$7.85	\$16.10	\$0.00	\$66.26
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* If 30% or more of surfaces to be painted are new construction,

NEW paint rate shall be used. *PAINTERS LOCAL 35 - ZONE 2***Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - New****Effective Date -** 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.16	\$7.85	\$0.00	\$0.00	\$29.01
2	55	\$23.27	\$7.85	\$3.66	\$0.00	\$34.78
3	60	\$25.39	\$7.85	\$3.99	\$0.00	\$37.23
4	65	\$27.50	\$7.85	\$4.32	\$0.00	\$39.67
5	70	\$29.62	\$7.85	\$14.11	\$0.00	\$51.58
6	75	\$31.73	\$7.85	\$14.44	\$0.00	\$54.02
7	80	\$33.85	\$7.85	\$14.77	\$0.00	\$56.47
8	90	\$38.08	\$7.85	\$15.44	\$0.00	\$61.37

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	01/01/2017	\$40.37	\$7.85	\$16.10	\$0.00	\$64.32
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PAINTERS LOCAL 35 - ZONE 2

Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint**Effective Date -** 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.19	\$7.85	\$0.00	\$0.00	\$28.04
2	55	\$22.20	\$7.85	\$3.66	\$0.00	\$33.71
3	60	\$24.22	\$7.85	\$3.99	\$0.00	\$36.06
4	65	\$26.24	\$7.85	\$4.32	\$0.00	\$38.41
5	70	\$28.26	\$7.85	\$14.11	\$0.00	\$50.22
6	75	\$30.28	\$7.85	\$14.44	\$0.00	\$52.57
7	80	\$32.30	\$7.85	\$14.77	\$0.00	\$54.92
8	90	\$36.33	\$7.85	\$15.44	\$0.00	\$59.62

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (TRAFFIC MARKINGS)

LABORERS - ZONE 2

12/01/2017	\$32.83	\$7.70	\$13.60	\$0.00	\$54.13
06/01/2018	\$33.67	\$7.70	\$13.60	\$0.00	\$54.97
12/01/2018	\$34.51	\$7.70	\$13.60	\$0.00	\$55.81
06/01/2019	\$35.38	\$7.70	\$13.60	\$0.00	\$56.68
12/01/2019	\$36.24	\$7.70	\$13.60	\$0.00	\$57.54
06/01/2020	\$37.13	\$7.70	\$13.60	\$0.00	\$58.43
12/01/2020	\$38.02	\$7.70	\$13.60	\$0.00	\$59.32
06/01/2021	\$38.94	\$7.70	\$13.60	\$0.00	\$60.24
12/01/2021	\$39.85	\$7.70	\$13.60	\$0.00	\$61.15

For Apprentice rates see "Apprentice- LABORER"

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

01/01/2017	\$40.91	\$7.85	\$16.10	\$0.00	\$64.86
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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.46	\$7.85	\$0.00	\$0.00	\$28.31
2	55	\$22.50	\$7.85	\$3.66	\$0.00	\$34.01
3	60	\$24.55	\$7.85	\$3.99	\$0.00	\$36.39
4	65	\$26.59	\$7.85	\$4.32	\$0.00	\$38.76
5	70	\$28.64	\$7.85	\$14.11	\$0.00	\$50.60
6	75	\$30.68	\$7.85	\$14.44	\$0.00	\$52.97
7	80	\$32.73	\$7.85	\$14.77	\$0.00	\$55.35
8	90	\$36.82	\$7.85	\$15.44	\$0.00	\$60.11

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT)	01/01/2017	\$38.97	\$7.85	\$16.10	\$0.00	\$62.92
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PAINTERS LOCAL 35 - ZONE 2

Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 01/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.49	\$7.85	\$0.00	\$0.00	\$27.34
2	55	\$21.43	\$7.85	\$3.66	\$0.00	\$32.94
3	60	\$23.38	\$7.85	\$3.99	\$0.00	\$35.22
4	65	\$25.33	\$7.85	\$4.32	\$0.00	\$37.50
5	70	\$27.28	\$7.85	\$14.11	\$0.00	\$49.24
6	75	\$29.23	\$7.85	\$14.44	\$0.00	\$51.52
7	80	\$31.18	\$7.85	\$14.77	\$0.00	\$53.80
8	90	\$35.07	\$7.85	\$15.44	\$0.00	\$58.36

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PANEL & PICKUP TRUCKS DRIVER	12/01/2012	\$30.28	\$9.07	\$8.00	\$0.00	\$47.35
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TEAMSTERS JOINT COUNCIL NO. 10 ZONE B

PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)	08/01/2017	\$44.27	\$9.90	\$21.15	\$0.00	\$75.32
PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2018	\$46.57	\$9.90	\$21.15	\$0.00	\$77.62
	08/01/2019	\$48.94	\$9.90	\$21.15	\$0.00	\$79.99

For apprentice rates see "Apprentice- PILE DRIVER"

PILE DRIVER	08/01/2017	\$44.27	\$9.90	\$21.15	\$0.00	\$75.32
PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2018	\$46.57	\$9.90	\$21.15	\$0.00	\$77.62
	08/01/2019	\$48.94	\$9.90	\$21.15	\$0.00	\$79.99

Apprentice - PILE DRIVER - Local 56 Zone 1**Effective Date - 08/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.14	\$9.90	\$21.15	\$0.00	\$53.19
2	60	\$26.56	\$9.90	\$21.15	\$0.00	\$57.61
3	70	\$30.99	\$9.90	\$21.15	\$0.00	\$62.04
4	75	\$33.20	\$9.90	\$21.15	\$0.00	\$64.25
5	80	\$35.42	\$9.90	\$21.15	\$0.00	\$66.47
6	80	\$35.42	\$9.90	\$21.15	\$0.00	\$66.47
7	90	\$39.84	\$9.90	\$21.15	\$0.00	\$70.89
8	90	\$39.84	\$9.90	\$21.15	\$0.00	\$70.89

Effective Date - 08/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.29	\$9.90	\$21.15	\$0.00	\$54.34
2	60	\$27.94	\$9.90	\$21.15	\$0.00	\$58.99
3	70	\$32.60	\$9.90	\$21.15	\$0.00	\$63.65
4	75	\$34.93	\$9.90	\$21.15	\$0.00	\$65.98
5	80	\$37.26	\$9.90	\$21.15	\$0.00	\$68.31
6	80	\$37.26	\$9.90	\$21.15	\$0.00	\$68.31
7	90	\$41.91	\$9.90	\$21.15	\$0.00	\$72.96
8	90	\$41.91	\$9.90	\$21.15	\$0.00	\$72.96

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

PIPEFITTER & STEAMFITTER

03/01/2017

\$51.19

\$9.70

\$18.14

\$0.00

\$79.03

PIPEFITTERS LOCAL 537

Apprentice - PIPEFITTER - Local 537**Effective Date - 03/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$20.48	\$9.70	\$7.50	\$0.00	\$37.68
2	45	\$23.04	\$9.70	\$18.14	\$0.00	\$50.88
3	60	\$30.71	\$9.70	\$18.14	\$0.00	\$58.55
4	70	\$35.83	\$9.70	\$18.14	\$0.00	\$63.67
5	80	\$40.95	\$9.70	\$18.14	\$0.00	\$68.79

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:**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PIPELAYER	12/01/2017	\$33.08	\$7.70	\$13.60	\$0.00	\$54.38
LABORERS - ZONE 2	06/01/2018	\$33.92	\$7.70	\$13.60	\$0.00	\$55.22
	12/01/2018	\$34.76	\$7.70	\$13.60	\$0.00	\$56.06
	06/01/2019	\$35.63	\$7.70	\$13.60	\$0.00	\$56.93
	12/01/2019	\$36.49	\$7.70	\$13.60	\$0.00	\$57.79
	06/01/2020	\$37.38	\$7.70	\$13.60	\$0.00	\$58.68
	12/01/2020	\$38.27	\$7.70	\$13.60	\$0.00	\$59.57
	06/01/2021	\$39.19	\$7.70	\$13.60	\$0.00	\$60.49
	12/01/2021	\$40.10	\$7.70	\$13.60	\$0.00	\$61.40

For apprentice rates see "Apprentice- LABORER"

PLUMBERS & GASFITTERS	03/01/2018	\$54.69	\$11.57	\$15.76	\$0.00	\$82.02
PLUMBERS & GASFITTERS LOCAL 12	09/01/2018	\$56.19	\$11.57	\$15.76	\$0.00	\$83.52
	03/01/2019	\$57.69	\$11.57	\$15.76	\$0.00	\$85.02
	09/01/2019	\$59.19	\$11.57	\$15.76	\$0.00	\$86.52
	03/01/2020	\$60.69	\$11.57	\$15.76	\$0.00	\$88.02
	09/01/2020	\$62.19	\$11.57	\$15.76	\$0.00	\$89.52
	03/01/2021	\$63.69	\$11.57	\$15.76	\$0.00	\$91.02

Apprentice - PLUMBER/GASFITTER - Local 12

Effective Date - 03/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$19.14	\$11.57	\$5.72	\$0.00	\$36.43
2	40	\$21.88	\$11.57	\$6.49	\$0.00	\$39.94
3	55	\$30.08	\$11.57	\$8.81	\$0.00	\$50.46
4	65	\$35.55	\$11.57	\$10.36	\$0.00	\$57.48
5	75	\$41.02	\$11.57	\$11.90	\$0.00	\$64.49

Effective Date - 09/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$19.67	\$11.57	\$5.72	\$0.00	\$36.96
2	40	\$22.48	\$11.57	\$6.49	\$0.00	\$40.54
3	55	\$30.90	\$11.57	\$8.82	\$0.00	\$51.29
4	65	\$36.52	\$11.57	\$10.36	\$0.00	\$58.45
5	75	\$42.14	\$11.57	\$11.90	\$0.00	\$65.61

Notes:

** 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr
Step4 with lic\$61.00, Step5 with lic\$67.99

Apprentice to Journeyworker Ratio:**

PNEUMATIC CONTROLS (TEMP.)	03/01/2017	\$51.19	\$9.70	\$18.14	\$0.00	\$79.03
PIPEFITTERS LOCAL 537						

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2017	\$33.08	\$7.70	\$13.60	\$0.00	\$54.38
	06/01/2018	\$33.92	\$7.70	\$13.60	\$0.00	\$55.22
	12/01/2018	\$34.76	\$7.70	\$13.60	\$0.00	\$56.06
	06/01/2019	\$35.63	\$7.70	\$13.60	\$0.00	\$56.93
	12/01/2019	\$36.49	\$7.70	\$13.60	\$0.00	\$57.79
	06/01/2020	\$37.38	\$7.70	\$13.60	\$0.00	\$58.68
	12/01/2020	\$38.27	\$7.70	\$13.60	\$0.00	\$59.57
	06/01/2021	\$39.19	\$7.70	\$13.60	\$0.00	\$60.49
	12/01/2021	\$40.10	\$7.70	\$13.60	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER <i>LABORERS - ZONE 2</i>	12/01/2017	\$33.83	\$7.70	\$13.60	\$0.00	\$55.13
	06/01/2018	\$34.67	\$7.70	\$13.60	\$0.00	\$55.97
	12/01/2018	\$35.51	\$7.70	\$13.60	\$0.00	\$56.81
	06/01/2019	\$36.38	\$7.70	\$13.60	\$0.00	\$57.68
	12/01/2019	\$37.24	\$7.70	\$13.60	\$0.00	\$58.54
	06/01/2020	\$38.13	\$7.70	\$13.60	\$0.00	\$59.43
	12/01/2020	\$39.02	\$7.70	\$13.60	\$0.00	\$60.32
	06/01/2021	\$39.94	\$7.70	\$13.60	\$0.00	\$61.24
	12/01/2021	\$40.85	\$7.70	\$13.60	\$0.00	\$62.15
For apprentice rates see "Apprentice- LABORER"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.63	\$10.50	\$15.50	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.63	\$10.50	\$15.50	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$31.80	\$10.50	\$15.50	\$0.00	\$57.80
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY MIX CONCRETE DRIVERS after 4/30/10 (Drivers Hired After 4/30/2010) <i>TEAMSTERS LOCAL 25c</i>	07/01/2017	\$28.18	\$8.48	\$9.72	\$0.00	\$46.38
READY-MIX CONCRETE DRIVER <i>TEAMSTERS LOCAL 25c</i>	07/01/2017	\$29.48	\$8.48	\$9.72	\$0.00	\$47.68
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2017	\$33.08	\$7.70	\$13.60	\$0.00	\$54.38
	06/01/2018	\$33.92	\$7.70	\$13.60	\$0.00	\$55.22
	12/01/2018	\$34.76	\$7.70	\$13.60	\$0.00	\$56.06
	06/01/2019	\$35.63	\$7.70	\$13.60	\$0.00	\$56.93
	12/01/2019	\$36.49	\$7.70	\$13.60	\$0.00	\$57.79
	06/01/2020	\$37.38	\$7.70	\$13.60	\$0.00	\$58.68
	12/01/2020	\$38.27	\$7.70	\$13.60	\$0.00	\$59.57
	06/01/2021	\$39.19	\$7.70	\$13.60	\$0.00	\$60.49
	12/01/2021	\$40.10	\$7.70	\$13.60	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ROOFER (Inc.Roofing Waterproofing &Roofing Damproofg) <i>ROOFERS LOCAL 33</i>	02/01/2018	\$42.36	\$11.35	\$14.80	\$0.00	\$68.51
	08/01/2018	\$43.46	\$11.35	\$14.80	\$0.00	\$69.61
	02/01/2019	\$44.61	\$11.35	\$14.80	\$0.00	\$70.76

Apprentice - ROOFER - Local 33

Effective Date - 02/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.18	\$11.35	\$3.44	\$0.00	\$35.97
2	60	\$25.42	\$11.35	\$14.80	\$0.00	\$51.57
3	65	\$27.53	\$11.35	\$14.80	\$0.00	\$53.68
4	75	\$31.77	\$11.35	\$14.80	\$0.00	\$57.92
5	85	\$36.01	\$11.35	\$14.80	\$0.00	\$62.16

Effective Date - 08/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.73	\$11.35	\$3.44	\$0.00	\$36.52
2	60	\$26.08	\$11.35	\$14.80	\$0.00	\$52.23
3	65	\$28.25	\$11.35	\$14.80	\$0.00	\$54.40
4	75	\$32.60	\$11.35	\$14.80	\$0.00	\$58.75
5	85	\$36.94	\$11.35	\$14.80	\$0.00	\$63.09

Notes: ** 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)

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE <i>ROOFERS LOCAL 33</i>	02/01/2018	\$42.61	\$11.35	\$14.80	\$0.00	\$68.76
	08/01/2018	\$43.71	\$11.35	\$14.80	\$0.00	\$69.86
	02/01/2019	\$44.86	\$11.35	\$14.80	\$0.00	\$71.01

For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER <i>SHEETMETAL WORKERS LOCAL 17 - A</i>	02/01/2018	\$44.11	\$12.20	\$24.12	\$2.41	\$82.84
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Classification
Effective Date
Base Wage
Health
Pension
**Supplemental
Unemployment**
Total Rate
Apprentice - SHEET METAL WORKER - Local 17-A
Effective Date - 02/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.64	\$12.20	\$5.61	\$0.00	\$35.45
2	40	\$17.64	\$12.20	\$5.61	\$0.00	\$35.45
3	45	\$19.85	\$12.20	\$10.85	\$1.29	\$44.19
4	45	\$19.85	\$12.20	\$10.85	\$1.29	\$44.19
5	50	\$22.06	\$12.20	\$11.80	\$1.38	\$47.44
6	50	\$22.06	\$12.20	\$12.05	\$1.39	\$47.70
7	60	\$26.47	\$12.20	\$13.70	\$1.57	\$53.94
8	65	\$28.67	\$12.20	\$14.65	\$1.67	\$57.19
9	75	\$33.08	\$12.20	\$16.56	\$1.86	\$63.70
10	85	\$37.49	\$12.20	\$17.96	\$2.03	\$69.68

Notes:

Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

SIGN ERECTOR

PAINTERS LOCAL 35 - ZONE 2

06/01/2013

\$25.81

\$7.07

\$7.05

\$0.00

\$39.93

Apprentice - SIGN ERECTOR - Local 35 Zone 2
Effective Date - 06/01/2013

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

Notes:

Steps are 4 mos.

Apprentice to Journeyworker Ratio:1:1

SPECIALIZED EARTH MOVING EQUIP < 35 TONS

TEAMSTERS JOINT COUNCIL NO. 10 ZONE B

12/01/2016

\$32.44

\$10.91

\$10.89

\$0.00

\$54.24

SPECIALIZED EARTH MOVING EQUIP > 35 TONS

TEAMSTERS JOINT COUNCIL NO. 10 ZONE B

12/01/2016

\$32.73

\$10.91

\$10.89

\$0.00

\$54.53

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SPRINKLER FITTER	03/01/2018	\$57.78	\$9.12	\$18.15	\$0.00	\$85.05
<i>SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1</i>	10/01/2018	\$59.28	\$9.12	\$18.15	\$0.00	\$86.55
	01/01/2019	\$59.28	\$9.47	\$18.35	\$0.00	\$87.10
	03/01/2019	\$60.78	\$9.47	\$18.35	\$0.00	\$88.60
	10/01/2019	\$62.28	\$9.47	\$18.35	\$0.00	\$90.10
	03/01/2020	\$63.78	\$9.47	\$18.35	\$0.00	\$91.60
	10/01/2020	\$65.28	\$9.47	\$18.35	\$0.00	\$93.10
	03/01/2021	\$66.78	\$9.47	\$18.35	\$0.00	\$94.60

Apprentice - SPRINKLER FITTER - Local 550 (Section A) Zone 1

Effective Date - 03/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$20.22	\$9.12	\$8.90	\$0.00	\$38.24
2	40	\$23.11	\$9.12	\$8.90	\$0.00	\$41.13
3	45	\$26.00	\$9.12	\$8.90	\$0.00	\$44.02
4	50	\$28.89	\$9.12	\$8.90	\$0.00	\$46.91
5	55	\$31.78	\$9.12	\$8.90	\$0.00	\$49.80
6	60	\$34.67	\$9.12	\$10.40	\$0.00	\$54.19
7	65	\$37.56	\$9.12	\$10.40	\$0.00	\$57.08
8	70	\$40.45	\$9.12	\$10.40	\$0.00	\$59.97
9	75	\$43.34	\$9.12	\$10.40	\$0.00	\$62.86
10	80	\$46.22	\$9.12	\$10.40	\$0.00	\$65.74

Effective Date - 10/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$20.75	\$9.12	\$8.90	\$0.00	\$38.77
2	40	\$23.71	\$9.12	\$8.90	\$0.00	\$41.73
3	45	\$26.68	\$9.12	\$8.90	\$0.00	\$44.70
4	50	\$29.64	\$9.12	\$8.90	\$0.00	\$47.66
5	55	\$32.60	\$9.12	\$8.90	\$0.00	\$50.62
6	60	\$35.57	\$9.12	\$10.40	\$0.00	\$55.09
7	65	\$38.53	\$9.12	\$10.40	\$0.00	\$58.05
8	70	\$41.50	\$9.12	\$10.40	\$0.00	\$61.02
9	75	\$44.46	\$9.12	\$10.40	\$0.00	\$63.98
10	80	\$47.42	\$9.12	\$10.40	\$0.00	\$66.94

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	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
<i>OPERATING ENGINEERS LOCAL 4</i>						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
<i>OPERATING ENGINEERS LOCAL 4</i>						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TELECOMMUNICATION TECHNICIAN	03/01/2018	\$37.61	\$13.00	\$15.93	\$0.00	\$66.54
<i>ELECTRICIANS LOCAL 103</i>	09/01/2018	\$38.51	\$13.00	\$15.96	\$0.00	\$67.47
	03/01/2019	\$39.40	\$13.00	\$15.98	\$0.00	\$68.38

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103

Effective Date - 03/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$15.04	\$13.00	\$0.45	\$0.00	\$28.49
2	40	\$15.04	\$13.00	\$0.45	\$0.00	\$28.49
3	45	\$16.92	\$13.00	\$12.74	\$0.00	\$42.66
4	45	\$16.92	\$13.00	\$12.74	\$0.00	\$42.66
5	50	\$18.81	\$13.00	\$13.03	\$0.00	\$44.84
6	55	\$20.69	\$13.00	\$13.32	\$0.00	\$47.01
7	60	\$22.57	\$13.00	\$13.61	\$0.00	\$49.18
8	65	\$24.45	\$13.00	\$13.90	\$0.00	\$51.35
9	70	\$26.33	\$13.00	\$14.19	\$0.00	\$53.52
10	75	\$28.21	\$13.00	\$14.48	\$0.00	\$55.69

Effective Date - 09/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$15.40	\$13.00	\$0.46	\$0.00	\$28.86
2	40	\$15.40	\$13.00	\$0.46	\$0.00	\$28.86
3	45	\$17.33	\$13.00	\$12.75	\$0.00	\$43.08
4	45	\$17.33	\$13.00	\$12.75	\$0.00	\$43.08
5	50	\$19.26	\$13.00	\$13.05	\$0.00	\$45.31
6	55	\$21.18	\$13.00	\$13.34	\$0.00	\$47.52
7	60	\$23.11	\$13.00	\$13.62	\$0.00	\$49.73
8	65	\$25.03	\$13.00	\$13.92	\$0.00	\$51.95
9	70	\$26.96	\$13.00	\$14.21	\$0.00	\$54.17
10	75	\$28.88	\$13.00	\$14.50	\$0.00	\$56.38

Notes:

Apprentice to Journeyworker Ratio:1:1

TERRAZZO FINISHERS	02/01/2018	\$51.00	\$10.75	\$20.03	\$0.00	\$81.78
<i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	08/01/2018	\$52.35	\$10.75	\$20.16	\$0.00	\$83.26
	02/01/2019	\$52.99	\$10.75	\$20.16	\$0.00	\$83.90
	08/01/2019	\$54.34	\$10.75	\$20.30	\$0.00	\$85.39
	02/01/2020	\$54.98	\$10.75	\$20.30	\$0.00	\$86.03
	08/01/2020	\$56.33	\$10.75	\$20.45	\$0.00	\$87.53
	02/01/2021	\$56.97	\$10.75	\$20.45	\$0.00	\$88.17
	08/01/2021	\$58.37	\$10.75	\$20.61	\$0.00	\$89.73
	02/01/2022	\$58.96	\$10.75	\$20.61	\$0.00	\$90.32

Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 02/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.50	\$10.75	\$20.03	\$0.00	\$56.28
2	60	\$30.60	\$10.75	\$20.03	\$0.00	\$61.38
3	70	\$35.70	\$10.75	\$20.03	\$0.00	\$66.48
4	80	\$40.80	\$10.75	\$20.03	\$0.00	\$71.58
5	90	\$45.90	\$10.75	\$20.03	\$0.00	\$76.68

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER	12/01/2017	\$38.85	\$7.70	\$14.95	\$0.00	\$61.50
LABORERS - FOUNDATION AND MARINE	06/01/2018	\$39.80	\$7.70	\$14.95	\$0.00	\$62.45
	12/01/2018	\$40.75	\$7.70	\$14.95	\$0.00	\$63.40
	06/01/2019	\$41.75	\$7.70	\$14.95	\$0.00	\$64.40
	12/01/2019	\$42.75	\$7.70	\$14.95	\$0.00	\$65.40
	06/01/2020	\$43.74	\$7.70	\$14.95	\$0.00	\$66.39
	12/01/2020	\$44.72	\$7.70	\$14.95	\$0.00	\$67.37
	06/01/2021	\$45.74	\$7.70	\$14.95	\$0.00	\$68.39
	12/01/2021	\$46.75	\$7.70	\$14.95	\$0.00	\$69.40

For apprentice rates see "Apprentice- LABORER"

TEST BORING DRILLER HELPER	12/01/2017	\$37.57	\$7.70	\$14.95	\$0.00	\$60.22
LABORERS - FOUNDATION AND MARINE	06/01/2018	\$38.52	\$7.70	\$14.95	\$0.00	\$61.17
	12/01/2018	\$39.47	\$7.70	\$14.95	\$0.00	\$62.12
	06/01/2019	\$40.47	\$7.70	\$14.95	\$0.00	\$63.12
	12/01/2019	\$41.47	\$7.70	\$14.95	\$0.00	\$64.12
	06/01/2020	\$42.46	\$7.70	\$14.95	\$0.00	\$65.11
	12/01/2020	\$43.44	\$7.70	\$14.95	\$0.00	\$66.09
	06/01/2021	\$44.46	\$7.70	\$14.95	\$0.00	\$67.11
	12/01/2021	\$45.47	\$7.70	\$14.95	\$0.00	\$68.12

For apprentice rates see "Apprentice- LABORER"

TEST BORING LABORER	12/01/2017	\$37.45	\$7.70	\$14.95	\$0.00	\$60.10
LABORERS - FOUNDATION AND MARINE	06/01/2018	\$38.40	\$7.70	\$14.95	\$0.00	\$61.05
	12/01/2018	\$39.35	\$7.70	\$14.95	\$0.00	\$62.00
	06/01/2019	\$40.35	\$7.70	\$14.95	\$0.00	\$63.00
	12/01/2019	\$41.35	\$7.70	\$14.95	\$0.00	\$64.00
	06/01/2020	\$42.34	\$7.70	\$14.95	\$0.00	\$64.99
	12/01/2020	\$43.32	\$7.70	\$14.95	\$0.00	\$65.97
	06/01/2021	\$44.34	\$7.70	\$14.95	\$0.00	\$66.99
	12/01/2021	\$45.35	\$7.70	\$14.95	\$0.00	\$68.00

For apprentice rates see "Apprentice- LABORER"

TRACTORS/PORTABLE STEAM GENERATORS	12/01/2017	\$46.17	\$10.50	\$15.50	\$0.00	\$72.17
OPERATING ENGINEERS LOCAL 4						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2016	\$33.02	\$10.91	\$10.89	\$0.00	\$54.82
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>						
	12/01/2017	\$49.73	\$7.70	\$15.35	\$0.00	\$72.78
	06/01/2018	\$50.68	\$7.70	\$15.35	\$0.00	\$73.73
	12/01/2018	\$51.63	\$7.70	\$15.35	\$0.00	\$74.68
	06/01/2019	\$52.63	\$7.70	\$15.35	\$0.00	\$75.68
	12/01/2019	\$53.63	\$7.70	\$15.35	\$0.00	\$76.68
	06/01/2020	\$54.62	\$7.70	\$15.35	\$0.00	\$77.67
	12/01/2020	\$55.60	\$7.70	\$15.35	\$0.00	\$78.65
	06/01/2021	\$56.62	\$7.70	\$15.35	\$0.00	\$79.67
	12/01/2021	\$57.63	\$7.70	\$15.35	\$0.00	\$80.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	12/01/2017	\$51.73	\$7.70	\$15.35	\$0.00	\$74.78
	06/01/2018	\$52.68	\$7.70	\$15.35	\$0.00	\$75.73
	12/01/2018	\$53.63	\$7.70	\$15.35	\$0.00	\$76.68
	06/01/2019	\$54.63	\$7.70	\$15.35	\$0.00	\$77.68
	12/01/2019	\$55.63	\$7.70	\$15.35	\$0.00	\$78.68
	06/01/2020	\$56.62	\$7.70	\$15.35	\$0.00	\$79.67
	12/01/2020	\$57.60	\$7.70	\$15.35	\$0.00	\$80.65
	06/01/2021	\$58.62	\$7.70	\$15.35	\$0.00	\$81.67
	12/01/2021	\$59.63	\$7.70	\$15.35	\$0.00	\$82.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2017	\$41.80	\$7.70	\$15.35	\$0.00	\$64.85
	06/01/2018	\$42.75	\$7.70	\$15.35	\$0.00	\$65.80
	12/01/2018	\$43.70	\$7.70	\$15.35	\$0.00	\$66.75
	06/01/2019	\$44.70	\$7.70	\$15.35	\$0.00	\$67.75
	12/01/2019	\$45.70	\$7.70	\$15.35	\$0.00	\$68.75
	06/01/2020	\$46.69	\$7.70	\$15.35	\$0.00	\$69.74
	12/01/2020	\$47.67	\$7.70	\$15.35	\$0.00	\$70.72
	06/01/2021	\$48.69	\$7.70	\$15.35	\$0.00	\$71.74
	12/01/2021	\$49.70	\$7.70	\$15.35	\$0.00	\$72.75
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2017	\$43.80	\$7.70	\$15.35	\$0.00	\$66.85
	06/01/2018	\$44.75	\$7.70	\$15.35	\$0.00	\$67.80
	12/01/2018	\$45.70	\$7.70	\$15.35	\$0.00	\$68.75
	06/01/2019	\$46.70	\$7.70	\$15.35	\$0.00	\$69.75
	12/01/2019	\$47.70	\$7.70	\$15.35	\$0.00	\$70.75
	06/01/2020	\$48.69	\$7.70	\$15.35	\$0.00	\$71.74
	12/01/2020	\$49.67	\$7.70	\$15.35	\$0.00	\$72.72
	06/01/2021	\$50.69	\$7.70	\$15.35	\$0.00	\$73.74
	12/01/2021	\$51.70	\$7.70	\$15.35	\$0.00	\$74.75
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2016	\$32.44	\$10.91	\$10.89	\$0.00	\$54.24

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
WAGON DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2017	\$33.08	\$7.70	\$13.60	\$0.00	\$54.38
	06/01/2018	\$33.92	\$7.70	\$13.60	\$0.00	\$55.22
	12/01/2018	\$34.76	\$7.70	\$13.60	\$0.00	\$56.06
	06/01/2019	\$35.63	\$7.70	\$13.60	\$0.00	\$56.93
	12/01/2019	\$36.49	\$7.70	\$13.60	\$0.00	\$57.79
	06/01/2020	\$37.38	\$7.70	\$13.60	\$0.00	\$58.68
	12/01/2020	\$38.27	\$7.70	\$13.60	\$0.00	\$59.57
	06/01/2021	\$39.19	\$7.70	\$13.60	\$0.00	\$60.49
	12/01/2021	\$40.10	\$7.70	\$13.60	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2017	\$46.63	\$10.50	\$15.50	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS & GASFITTERS LOCAL 12</i>	03/01/2018	\$54.69	\$11.57	\$15.76	\$0.00	\$82.02
	09/01/2018	\$56.19	\$11.57	\$15.76	\$0.00	\$83.52
	03/01/2019	\$57.69	\$11.57	\$15.76	\$0.00	\$85.02
	09/01/2019	\$59.19	\$11.57	\$15.76	\$0.00	\$86.52
	03/01/2020	\$60.69	\$11.57	\$15.76	\$0.00	\$88.02
	09/01/2020	\$62.19	\$11.57	\$15.76	\$0.00	\$89.52
	03/01/2021	\$63.69	\$11.57	\$15.76	\$0.00	\$91.02
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Outside Electrical - East						
CABLE TECHNICIAN (Power Zone) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$27.14	\$7.75	\$1.81	\$0.00	\$36.70
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$38.45	\$7.75	\$9.53	\$0.00	\$55.73
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$31.66	\$7.75	\$9.44	\$0.00	\$48.85
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$24.88	\$7.75	\$1.75	\$0.00	\$34.38
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class A CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$38.45	\$7.75	\$13.61	\$0.00	\$59.81
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class B CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$33.92	\$7.75	\$10.21	\$0.00	\$51.88
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$24.88	\$7.75	\$1.75	\$0.00	\$34.38
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN -Inexperienced (<2000 Hrs.) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$20.35	\$7.75	\$1.61	\$0.00	\$29.71
For apprentice rates see "Apprentice- LINEMAN"						
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$45.23	\$7.75	\$16.61	\$0.00	\$69.59

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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Apprentice - LINEMAN (Outside Electrical) - East Local 104

Effective Date - 09/03/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$27.14	\$7.75	\$3.31	\$0.00	\$38.20
2	65	\$29.40	\$7.75	\$3.38	\$0.00	\$40.53
3	70	\$31.66	\$7.75	\$3.45	\$0.00	\$42.86
4	75	\$33.92	\$7.75	\$5.02	\$0.00	\$46.69
5	80	\$36.18	\$7.75	\$5.09	\$0.00	\$49.02
6	85	\$38.45	\$7.75	\$5.15	\$0.00	\$51.35
7	90	\$40.71	\$7.75	\$7.22	\$0.00	\$55.68

Notes:

Apprentice to Journeyworker Ratio:1:2

TELEDATA CABLE SPLICER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/01/2016	\$28.98	\$4.25	\$3.12	\$0.00	\$36.35
TELEDATA LINEMAN/EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/01/2016	\$27.31	\$4.25	\$3.07	\$0.00	\$34.63
TELEDATA WIREMAN/INSTALLER/TECHNICIAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/01/2016	\$27.31	\$4.25	\$3.07	\$0.00	\$34.63
TREE TRIMMER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/31/2016	\$18.51	\$3.55	\$0.00	\$0.00	\$22.06
This classification applies only to tree work done: (a) for a utility company, R.E.A. cooperative, or railroad or coal mining company, and (b) for the purpose of operating, maintaining, or repairing the utility company's equipment, and (c) by a person who is using hand or mechanical cutting methods and is not on the ground. This classification does not apply to wholesale tree removal.						
TREE TRIMMER GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	01/31/2016	\$16.32	\$3.55	\$0.00	\$0.00	\$19.87
This classification applies only to tree work done: (a) for a utility company, R.E.A. cooperative, or railroad or coal mining company, and (b) for the purpose of operating, maintaining, or repairing the utility company's equipment, and (c) by a person who is using hand or mechanical cutting methods and is on the ground. This classification does not apply to wholesale tree removal.						

Additional Apprentice Information:

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

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

All steps are six months (1000 hours.)

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

** Multiple ratios are listed in the comment field.

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

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

SUMMARY OF WORK

11.1 GENERAL SCOPE OF WORK

A. The work under the Contract consists of:

1. Rehabilitation of existing summer camp (seasonal) structure.
 - a. Interior Finishes, including rehab of existing concrete floor.
 - b. Exterior Roofing and Siding
 - c. Entrance Canopy
 - d. Cabinets
 - e. Accessories
 - f. MEP
 - g. Storm Water recharge
 - h. Site Paving – Bituminous Concrete walkway
 - i. Erosion / Sedimentation control during construction.
2. All Work either shown on the drawings or included in the specifications unless specifically indicated as not to be done.
3. A “Phase 1” demolition project has been conducted at the site, which removed the bulk of fire damaged materials and equipment. Minor selective demo remains, including floor slab removal for sub-slab plumbing.

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

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

C. Additional Selection Criteria:

1. General Bidders must meet the additional selection criteria stated in of the Instructions to Bidders / RFP package.
2. If the Awarding Authority (Owner) cannot verify compliance with the additional selection criteria from the apparent low bidder’s Update Statement, the Awarding Authority (Owner) or its Architect may request the bidder provide additional documentation demonstrating compliance with the Contract requirement. This may occur after the general bid opening, but prior to the Contract Award.

11.2 TIME OF COMPLETION

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

11.3 NOTICE TO PROCEED

- A. Upon the Owner’s Validation of the Owner Contractor Agreement the Owner shall Issue the Notice to

Proceed for Construction. The Notice to Proceed shall include:

1. The starting date and Construction Completion date for construction.
 2. The names of the Owner's contract Officer and Alternate Contract Officer.
- B. The Owner shall send three copies of the Notice to Proceed to the Contractor.
- C. The Contractor shall sign two originals and then;
1. return one to the Owner, and
 2. keep one copy for its own records.

11.4 WORK UNDER SEPARATE CONTRACT

A. Coordination by Owner:

1. As provided in the General Conditions, the following items shall be provided by others under a separate agreement with the Owner for which the Owner has coordinating responsibility.
 - a. Water Meter supplied by town.

B. Coordination by the Contractor:

1. The following items shall be provided to the Contractor by other persons under a separate agreement with the Owner for which the Contractor has coordinating responsibility.
 - a. Water Meter installation.

11.5 ITEMS FURNISHED BY THE OWNER

- A. The following items will be furnished and delivered f.o.b. to the Project Site by others at no expense to the Contractor: (N/A)
- B. The Contractor shall include in the Contract Sum the Cost of Unloading, uncrating and permanently installing the above listed items and remove and properly recycle or dispose off the Project Site all crating and packing materials.

11.6 SAMPLE WORK

- A. (not applicable)

11.7 COORDINATION WITH PROJECT OCCUPANTS

- A. (not applicable – site will not be occupied)

11.8 Permitting

A. As the site is a state-owned property, the Building Permit application is done through the State Building Inspector, District 6. (Gene Novak, (617) 590-3943). Mr. Novak has pre-reviewed the documents. Requested changes have been made.

B. As the site is a state-owned property, the plumbing permit application is done through the State Plumbing Inspector. (Taylor Roth, (617) 727-6092). Resolution Architects has met with Mr. Roth. His requested modifications have been made.

- C. The Electrical Permit application is administrated locally. The Town of Natick Chief Electrical Inspector is Scott Chavious, (508) 647-6450. There are no fees for the local permits. The documents have been reviewed by Mr. Chavious, and he will issue permit upon application.
- D. Resolution Architects has met with the Natick Fire Department prior to the contractor's building permit application with the state inspector. VGNA has modified design according to the requests of the NFD.
- E. Resolution Architects has prepared a code report, which is attached to this section.
- F. The project has received approval of the Natick Conservation Commission.

**END OF SECTION 01.11.00
SUMMARY OF WORK**

April 10, 2018
April 20, 2018 (Rev 1)
April 26, 2018 (Rev 2)

Camp Arrowhead Restoration
Natick, MA

Code Analysis

Project

Restoration of a fire damaged seasonal-use camp structure.

Use Category

A-3

Assembly uses intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A (Community Halls, for example)

Occupancy

100 (40 campers, 60 staff)

Type Of Construction

VB. (Un-rated)

Allowable footprint: 6,000 SF

Proposed / Existing enclosed space: 2,067 SF

Fire Suppression

903.2.1. In A-3, Needed for:

1. Greater than 5,000 SF
2. Occupant Load of 300 or more
3. Fire area is on a floor other than a level of exit discharge

Therefore, fire suppression is not needed.

Plumbing Fixtures

See Plumbing Chart

Energy Conservation

Although this is a seasonal use building, thermal properties included.

Walls – full depth of existing framing cavity

Attic - U 0.027, as per 2015 IECC Table C402.1.4 (R37, Min; R38 Proposed where possible)

248 CMR: BOARD OF STATE EXAMINERS
OF PLUMBERS AND GAS FITTERS

10.10: continued

Table 1: Minimum Facilities For Building Occupancy.

Building Clarification	Use Group	Toilets		Urinals Males	Lavatories Each Sex	Drinking Water Station with drain	Bath/ Show.	Other Fixtures	Pertinent Regulations. 248 CMR 10.10(19)
		Females	Males						
Theaters	A-1	1 per 30	1 per 60	50%	1 per 100	1 per 1000		1 service sink per floor	(b), (i)1., (m), (n), (p)
Nightclubs, Pubs	A-2	1 per 30	1 per 50	50%	1 per 75				(b), (m), (n), (p)
Restaurants	A-3	1 per 30	1 per 60	50%	1 per 200				(b), (m), (n), (p)
Hall, Museums, Libraries etc.	A-3	1 per 50	1 per 100	50%	1 per 200				(b), (i)1., (m), (n), (p)
Coliseums, Arenas	A-3	1 per 30	1 per 60	50%	1 per 150				(b), (i)1., (m), (n), (p)
House of Worship					1 per 200				(b), (c), (m), (n), (p)
Stadiums etc.					1 per 150				(i)1., (m), (n), (p)
Pool/Fitness Centers	A-3	1 per 40	1 per 40	33%	1 per 60	At least one source	1 for every 40		(i)1., (m), (n), (p). For pools, see 105 CMR for bather load.
Bathing (Public Beaches)		1 per 200	1 per 500	33%	1 per 1000		1 per 1000	1 Service Sink	(d), (m), (n), (p)
Day Care Facility (Child)	E-I-3	1 per 20	1 per 20		1 per 20			1 Service Sink	(e), (m), (n)
(Staff)	N/A	1 per 20	1 per 25	33%	1 per 40				(i), (m), (n), (p)
Detention Facility (Detainee)	I-3	1 per 6	1 per 8	33%	1 per 6		1 per 8		(f), (m), (p)
(Staff)	N/A	1 per 20	1 per 25	33%	1 per 40				(i), (m), (n), (p)
Dwellings (Single)	R	One Bathroom Group and One Kitchen Sink							(o), (q)
(Multiple)	R	One Bathroom Group and One Kitchen Sink per Unit							(o), (q)
(Hotel/Motel)	R	One Bathroom Group per Unit							(m), (q)
(Dormitories)	R-2	1 per 6	1 per 8	33%	1 per 8		1 per 8	1 Service Sink per Floor	(g), (m), (n), (p)
Educational (Kindergarten)	E	1 per 20	1 per 20		1 per 20	1 per 75			(h), (i), (m), (n), (p)
(Elementary)	E	1 per 30	1 per 60	1 per 60	1 per 60	1 per 75		1 Service Sink Per Floor	
(Secondary)	E	1 per 30	1 per 90	1 per 90	1 per 90	1 per 75			
(Post Secondary)	E	1 per 90	1 per 180	1 per 180	1 per 180	1 per 75			
(Staff)	E	1 per 20	1 per 25	33%	1 per 40				
Employee (Non-industrial)*		1 per 20	1 per 25	33%	1 per 40			1 Service Sink per Floor	(i), (m), (n), (p)



2015 IEBC Review

Project is a fire restoration. The project has space planning changes, which normally would trigger compliance with Chapter 8, Level 2. However, all space planning changes relate to compliance with the accessibility requirements of Section 705.2. Therefore, as part of the Exception to 801.1, the project shall be permitted to comply with Chapter 7.

703 Fire Protection remains as-is (no system).

704 Means of Egress. Reduction of one exit for a total of three. Proposed configuration meets requirements of the IBC:

- a. 1007.1.1 - Remoteness of exit
- b. Max Travel Distance is less than 200'
- c. Common path of travel is less than 75'.

705 Accessibility. Proposed design meets applicable requirements.

706 Reroofing shall be done as per requirements of the IBC.

707 Structural. Existing structure shall be maintained. Canopy is designed so as to not increase roof loads. Fire damaged components replaced either in-kind or with supplemental framing.



SECTION 01 25 00**SUBSTITUTIONS****1. SCOPE / GENERAL REQUIREMENTS**

- A. This section Supplements the General Conditions and other sections of Division 1 and supersedes any provisions regarding material substitutions/Or equals found in any of the technical sections of the specifications.
- B. The requirements of this section are in addition to any provisions of all other sections of these specifications.
- C. Definition-When ever a specification section names one or more brands for a given item,and the Contractor wishes to submit, for consideration, another brand, the submission shall be considered an "or-equal" or a "material substitution". For the purposes of this Contract, the terms "or-equal" and "material substitution" shall be considered synonymous
- D. In no case may an item be furnished on the Work other than the item named or described, unless the Architect, with the Owner's written concurrence, shall consider the item equal to the Item so named or described.
- E. The equality of items offered as "equal" to items named or described shall be proved to the satisfaction of the Architect at the expense of the Contractor submitting the substitution.
- F. The Architect and/or the Owner may require that full size samples of both the specified and proposed products be submitted for review and evaluation. The Contractor shall bear full cost for providing, delivering, and disposal of all such samples.
- G. The Contractor shall assume full responsibility for the performance of any item submitted as an "Or- Equal" and assume the costs of any changes in any Work that may be caused by such substitution.

2. RELATED SECTIONS

- A. 01 33 00 SUBMITTALS

3. OR EQUAL APPROVAL PROCESS

- A. On the form attached to this section, attached to the submission, the Contractor shall direct attention to any deviations, including minor limitations and variations, from the Contract Documents.

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

(2) Such submittal shall in no event be made later than 90 calendar days after the Award of the Contract or 120 calendar days prior to the incorporation of the item into the Work. In any case in which the time period specified in the Contract

Documents from the Notice to Proceed to Substantial Completion is less than 120 days, this requirement can be modified by the Architect.

- (3) The Contractor shall be completely responsible for the timely submission of supporting documentation.
- (4) Upon receipt of a written request for approval of an or-equal substitution, the Architect shall investigate whether the proposed item shall be considered equal to the item named or described in the Contract Documents.
- (5) Upon conclusion of the investigation, the Architect shall promptly advise the Owner with written notice that the item is, or is not, considered acceptable as on Or-Equal substitution with documentation to support the determination.
- (6) Should the Architect determine that the submitted product substitution is not equal to the specified standard the Architect shall send written notice of this to the Contractor.
- (7) Proceeding with work using the submitted item without the concurrence of the Architect may result in rejection of the work and removal and replacement at the expense of the Contractor.

SUBSTITUTION REQUEST FORM

No substitutions will be considered without this completed for and supporting documentation
Substitutions made without the completion of this form will be considered defective work as stated in AIA A201

Date _____ **Number** _____

Project _____

To: Resolution Architects
Re: Request for Substitution

The contractor proposes the following substitution in accordance with the requirements of the Contract Documents:

Scope of Substitution _____

Specification Reference _____

Drawing Reference _____

Reason for Proposed Substitution _____

Benefit to Owner _____

Impact on Project Cost _____

Impact on Project Schedule _____

Impact on Guarantees And Warranties _____

Coordination and Compatibility Required with Adjacent Materials and Systems _____

List Deviations from Specified Requirements _____

Attachments: Attach supporting documentation sufficient for Architect to evaluate substitution. Substitution Request Forms submitted without adequate documentation will be returned without review.

Attachments _____

Attachments: Attach supporting documentation sufficient for Architect to evaluate substitution. Substitution Request Forms submitted without adequate documentation will be returned without review.

Response Date: . List date by which response by Architect is requested to maintain project schedule and allow sufficient time for inclusion of proposed substitution.

Response Date _____

Submitted By: _____

Firm and Address _____

Signature below signifies acceptance of responsibility for accuracy and completeness of information included in this Substitutions Request Form

Authorized Signature _____

ARCHITECT RESPONSE

Notations listed below shall have the same meaning as on Architect’s submittal approval stamp. Clarifications or changes in the project schedule or time shall be processed using standard project forms

Architect’s Response	_____	Substitution Accepted
	_____	Accepted as Corrected
	_____	Revise and resubmit
	_____	Rejected
	_____	Returned Without review

Remarks

Date

Signed

End of Form

SECTION 01 31 00 PROJECT MANAGEMENT AND COORDINATION

31.1 GENERAL PROVISIONS

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

31.2 RELATED SECTIONS

- A.** Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B.** Related Specification Sections include the following:
 - (1.) Section 01.45.00 Quality Control
 - (2.) Section 01.50.00 Temporary Facilities and Controls
 - (3.) Section 01.74.19 Construction Waste and Demolition Management

31.3 PROJECT MANAGEMENT

- A.** The Contractor's attention is directed to the General Conditions.
- B.** Project Superintendent.
 - (1.) The Contractor shall employ a Superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The Superintendent shall represent the Contractor, and communications given to the Superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.
 - (2.) The Superintendent shall be a competent and responsible employee, satisfactory to the Owner, who is regularly employed by the Contractor and is designated by the Contractor as its representative to be in full time attendance at the Project site throughout the construction of the Work.
 - (3.) The Superintendent shall be responsible for coordinating all the Work of the Contractor and the Subcontractors. The Superintendent shall be licensed consistent with the Massachusetts Building Code.
 - (4.) The Superintendent's resume shall be submitted to the Owner prior to commencement of construction and must demonstrate to the Owner's reasonable satisfaction that the Superintendent has performed the same duties on previous construction projects similar to the Project
 - (5.) The Superintendent shall attend each job meeting.
- C.** The Contractor must supply to the Owner the home telephone number of a responsible person who may be contacted during non-work-hours for emergencies on the Project.

D. Project Meetings

- (1.) Prior to commencement of the Work, the Contractor shall meet in conference with representatives of the Owner, Department, and Architect to discuss and develop mutual understandings relative to administration of the quality assurance program, safety program, labor provisions, the schedule of work, and other Contract procedures.
- (2.) The Architect will regularly conduct job meetings, and keep the Owner informed of the progress and quality of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work. The Architect's minutes of meetings shall be the official minutes kept on the Project. The Architect shall provide copies of the meeting minutes to the Contractor and Owner.

31.4 COORDINATION

- A. The Contractor is responsible for the security of partially completed work until the project is accepted by the Owner.

31.5 LABOR

- A. The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them, and whenever the Owner shall notify the Contractor, in writing, that any worker is, in its opinion, incompetent, unfaithful, disorderly, or otherwise unsatisfactory, such employee shall be discharged from the Work and shall not again be employed on the Project except with the consent of the Owner.
- B. Workers shall refrain from smoking while performing work inside the building, including basement areas. The Contractor shall remove from the project workers who consistently violate this provision

31.6 SHUTDOWN OF SERVICES. (not applicable)**31.7 COORDINATION**

- A.** The Contractor shall submit for approval to the Owner a detailed operational plan showing the sequence of operations prior to commencement of any work at the site. The Owner must approve any changes to this operational plan.
- B.** The work must be completed in a continuous uninterrupted operation. The Contractor must use sufficient personnel and adequate equipment to complete all the necessary work requirements within a minimum period of time.
- C.** Unless specifically authorized by the Owner, in writing, the work must be conducted between the hours of 7:00 a.m. and 4:30 p.m. on Monday through Friday. Saturday work is permitted, subject to Owner approval. No work is to be done on holidays, or Sundays other than for emergencies.

31.8 OWNER'S COOPERATION

- A.** The Owner shall assist the Contractor to perform the Work in accordance with the approved operational plan by removing obstructions that may be in the Contractor's way, upon proper notice from the Contractor.

END OF SECTION 01.31.00

SECTION 01.33.00

SUBMITTALS - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

1. RELATED DOCUMENTS

- A.** This Section supplements the General Conditions.
- B.** Consult the individual sections of the specifications for the specific submittals required under those sections and for further details and descriptions of the requirements.
- C.** Section 01.25.00 OR Equals - Product Substitution Procedures

2. GENERAL PROCEDURES FOR SUBMITTALS

- A.** Timeliness - The Contractor shall transmit each submittal to the Architect sufficiently in advance of performing related Work or other applicable activities so that the installation is not delayed by processing times, including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals to the Architect in advance of the Work.
- B.** Sequence - The Contractor shall transmit each submittal in a sequence which will not result in the Architect's approval having to be later modified or rescinded by reason of subsequent submittals which should have been processed earlier or concurrently for coordination.
- C.** Contractor's Review and Approval - Only submittals received from and bearing the stamp of approval of the Contractor will be considered for review by the Architect. Submittals shall be accompanied by a transmittal notice stating name of Project, date of submittal, "To", "From" (Contractor, Subcontractor, Installer, Manufacturer, Supplier), Specification Section, or Drawing No. to which the submittal refers, purpose (first submittal, resubmittal), description, remarks, distribution record, and signature of transmitter.
- D.** Architect's Action - The Architect will review the Contractor's submittals and return them with one of the following actions recorded thereon by appropriate markings:
 - (1) Final Unrestricted Release: Where marked "Approved" the Work covered by the submittal may proceed provided it complies with the requirements of the Contract Documents.
 - (2) Final-But-Restricted Release: When marked "Approved as Noted" the Work may proceed provided it complies with the Architect's notations or corrections on the submittal and complies with the requirements of the Contract Documents. Acceptance of the Work will depend on these compliances.
 - (3) Returned for Resubmittal: When marked "Revise and Resubmit" or "Disapproved" the Work covered by the submittal (such as purchasing, fabrication, delivery, or other activity) should not proceed. The submittal should be revised or a new submittal resubmitted without delay, in accordance with the Architect's notations stating the reasons for returning the submittal.
- E.** Processing - All costs for printing, preparing, packaging, submitting, resubmitting, and mailing, or delivering submittals required by this contract shall be included in the Contract Sum.

3. OR EQUALS

- A.** Definition - Whenever a specification section names one or more brands for a given item, and the Contractor wishes to submit, for consideration, another brand, the submission shall be considered an "or-equal" or a "material substitution". For the purposes of this Contract, the terms "or-equal" and "material substitution" shall be considered synonymous.
- B.** In no case may an item be furnished on the Work other than the item named or described, unless the Architect, with the Administrator's written concurrence, shall consider the item equal to the Item so named or described, as provided by M.G.L. c.30 § 39M.
- C.** The equality of items offered as "equal" to items named or described shall be proved to the satisfaction of the Architect at the expense of the Contractor submitting the substitution in accordance with the process described in Section 01.25.00 of these specifications.

4. SUBMISSION OF PRODUCT DATA

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

5. SUBMISSION OF SHOP DRAWINGS

- A.** Shop Drawings shall be complete, giving all information necessary or requested in the individual section of the specifications. They shall also show adjoining Work and details of connection thereto.
- B.** Shop Drawings shall be for whole systems. Partial submissions will not be accepted.
- C.** The Architect reserves the right to review and approve shop drawings only after approval of related product data and samples.
- D.** Shop drawings shall be properly identified and contain the name of the project, name of the firm submitting the shop drawings, shop drawing number, date of shop drawings and revisions, Contractor's stamp of approval, and sufficient spaces near the title block for the Architect's stamp.
- E.** The Contractor shall submit to the Architect seven (7) black line prints of each shop drawing. Prints shall be mailed or delivered in roll form. Each submittal shall be accompanied by a transmittal notice bearing the Contractor's approval stamp.
- F.** In addition to the hard copies described above, the Architect and Contractor may utilize a mutually acceptable electronic system to expedite the submittal process. This electronic system shall not be used as a substitute for the hard copy process.
- G.** When the Architect returns a marked submittal with the stamp "Revise and Resubmit" or "Disapproved", the Contractor shall correct the original drawing or prepare a new drawing and

resubmit seven prints thereof to the Architect for approval. This procedure shall be repeated until the Architect's approval is obtained.

- H. When the Architect returns submittal with the stamp "Approved" or "Approved as Corrected", the Contractor shall provide and distribute the prints for all Contractor and Subcontractors use, and in addition submit, within 10 calendar days after approval, 4 prints to the Architect.
- I. The Contractor shall maintain one full set of approved shop drawings at the site.

6. SUBMISSION OF SAMPLES

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

END OF SECTION 01.33.00

SUBMITTALS

SECTION 01.45.00

QUALITY CONTROL

45.1 GENERAL SCOPE OF THE WORK

- A** General Contractor's quality control and control of installation.
- B** Tolerances.
- C** References.
- D** Mock up requirements.
- E** Testing and Inspection Services.
- F** Manufacturers' field services.
- G** Examination.

45.2 RELATED DOCUMENTS

- A** This section supplements the General Conditions, Supplementary Conditions, the Drawings, and all other parts of the Contract Documents.
- B** Consult the individual sections of the specifications for specific items required under those sections.

45.3 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A** The General Contractor shall provide inspections, tests, and quality control services specified herein and in individual specification sections and required by governing authorities having jurisdiction, except where they are specifically required under a filed sub-bid section of the specification. In those cases they will be the responsibility of the filed subcontractor. Monitor quality control over suppliers, manufacturers, products , services, site conditions, and workmanship, to produce Work of specified quality.
- B** Comply with manufacturer's instructions, including each step in sequence.
- C** When manufacturer's instructions conflict with the Contract Documents, request clarification from the Architect before proceeding.
- D** Comply with specified standards as minimum quality of Work except where more stringent tolerances, codes, or specific requirements indicate higher standards or workmanship.
- E** Perform the Work using persons qualified to produce the required and specified quality.
- F** Verify field measurements are as indicated on Shop Drawings or as instructed by the manufacturer.
- G** Secure products in place with appropriate positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

45.4 TOLERANCES

- A** Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not allow tolerances to accumulate.
- B** Comply with manufacturer's tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from the Architect before proceeding.
- C** Adjust products to appropriate dimensions; position before securing products into place.

45.5 REFERENCES

- A** For products or workmanship specified by associations, trade or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.
- B** Conform to reference standard by date of issue current on the date of Bid Opening. Except where specific date is established by applicable code.
- C** Obtain copies of standards where required by product specification sections.
- D** When specified reference standards conflict with Contract Documents, request clarification from the Architect before proceeding.
- E** Neither contractual relationships, duties, nor responsibilities of parties, nor those of the Architect shall be altered from the Contract Documents by mention or inference otherwise in reference documents.

45.6 MOCK UP REQUIREMENTS Tests will be performed under provisions identified in this section and identified in respective product specifications.

- B** Assemble and erection specified items with specified attachment and anchorage devices, flashings, seals and finishes.
- C** Accepted mock-ups shall be the comparison standard for remaining Work.
- D** Where mock-up has been accepted by the Architect and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so by the Architect.

45.7 TESTING AND INSPECTION SERVICES

- A** The Owner may employ and pay for specified services of an independent firm to perform testing and inspection.
- B** Reports will be submitted by the independent firm to the Architect and Contractor indicating observations and results of tests.
- C** The Contractor and all Subcontractors shall cooperate with the independent firm, furnish sample materials, design mixes, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - (1.)** Notify the Architect 24 hours prior to expected time for operations requiring services.
 - (2.)** The Architect will make the final decision as to when services or testing will or will not be performed.
 - (3.)** Make arrangements with the independent firm and pay for additional samples and tests for the Contractor's use.

- D** Testing and employment of testing agency or laboratory shall not relieve the Contractor of the obligation to perform work in accordance with the requirements of the Contract Documents.
- E** Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Architect. Payment for re-testing or re-inspection will be charged to the Contractor by deducting testing charges from the Contract Sum.
- F** Testing Agency responsibilities:
- (1.) Test samples of mixes submitted by the Contractor.
 - (2.) Provide qualified personnel at the site. Cooperate with the Architect and Contractor in performance of services.
 - (3.) Perform specified sampling and testing of products in accordance with specified standards.
 - (4.) Promptly notify the Architect and Contractor of observed irregularities or non-conformance of Work or products.
 - (5.) Perform additional tests required by the Architect.
 - (6.) Attend progress meetings if requested by the Architect.
- G** Testing Agency Reports: After each test, promptly submit two copies of the report to the Architect and to the Contractor. Provide interpretation of the results when requested by the Architect. All test reports shall include:
- (1.) Date issued.
 - (2.) Project title and number.
 - (3.) Name of inspector.
 - (4.) Date and time of sampling or inspection.
 - (5.) Identification of product and specification section(s).
 - (6.) Test location.
 - (7.) Type of inspection or test.
 - (8.) Date of test.
 - (9.) Results of tests or inspection.
 - (10.) Conformance with Contract Documents.
- H** Limits of Testing Agency Authority
- (1.) Testing Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - (2.) Testing Agency may not approve or accept any portion of the Work.
 - (3.) Testing Agency may not assume duties of the Contractor.
 - (4.) Resting Agency has no authority to stop Work.

45.8 Manufacturers' Field Services

- A** When individual specification section(s), require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces to receive work, and installation quality of workmanship, start-up of equipment , test, adjust, and balance equipment as applicable and to initiate instructions when necessary these services shall be provided at no additional cost to the Owner.
- B** Submit the qualifications of any observers to the Architect and Owner prior to of required observations. Observers are subject to the approval of the Owner based on the observer's credentials. This submission shall be made allowing adequate time for the Architect to review the observer's credentials. This approval does not relieve the Contractor of any obligation to complete the Work in accordance with the Contract Documents.
- C** Report to the Architect, observations and site decisions or instruction given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

45.9 EXAMINATION

- A** The Contractor shall verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B** The Contractor shall verify existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C** The Contractor shall examine and verify specific conditions described in individual specification sections.
- D** The Contractor shall verify utility services are available, of correct characteristics, and in correct locations.

**END OF SECTION 01.45.00
QUALITY CONTROL**

SECTION 01.50.00 TEMPORARY FACILITIES AND CONTROLS

50.00 GENERAL REQUIREMENTS

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

50.01 TEMPORARY ELECTRICITY

- A.** Temporary service and lighting shall be provided by a licensed electrician selected and paid for by the Contractor. This work shall be performed under the direct supervision of at least one master electrician, who will be present on the project at all times when such work is being performed. This service shall include coordination with the local utility and other authorities having jurisdiction.
- B.** The Contractor may make use of the electricity available at the site, metered and paid for by the Owner.
- C.** Where heavy duty electric equipment drawing current in excess of 15 amperes is involved, the trade requiring such excessive amperage shall provide temporary service to supply the power.
- D.** All temporary work shall be provided in conformity with the National Electric Code, State laws, and requirements of the power company. Particular attention is called to Commonwealth of Massachusetts, Department of Labor Division of Occupational Safety Regulations.
- E.** Temporary Electric Service and Lighting shall include but not be limited to:
 - 1.** All labor, materials, and equipment necessary to supply temporary power of adequate capacity for the project.
 - 2.** Transformers and meters, when required by the power company, furnished by the power company and paid for by the Contractor.
 - 3.** Temporary work of a special nature, not otherwise specified hereunder, shall be provided, maintained, and paid for by the trade requiring same.
 - 4.** The Contractor shall furnish, install, and maintain lamps in operating condition.
 - 5.** The Contractor, and each Subcontractor, shall furnish their own extension cords and additional lamps as may be required for their work.
 - 6.** All lamps installed in permanent lighting fixtures and used as temporary lights during the construction period shall be removed and replaced shortly before Substantial Completion by the appropriate set of lamps required to be provided under the Electrical section of the specifications.
 - 7.** The temporary electrical facilities shall be dismantled and completely removed from the project

site. This removal shall occur when the permanent electrical system is operational and accepted by the Architect. Removal shall be done by a properly licensed electrician.

50.02 TEMPORARY FIRE PROTECTION

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

50.03 TEMPORARY HEAT

- A.** Providing temporary heating service and equipment in interior spaces:
 - 1.** The Contractor shall be completely responsible for providing all equipment and labor required to comply with this section.
 - 2.** The Contractor shall utilize the services of a qualified Heating subcontractor for providing Temporary Heat. These services shall be paid for by the Contractor.
- B.** (reserved)
- C.** The Contractor shall provide thermometers at places designated by the Architect in order to determine if specified temperatures are being maintained.
- D.** Temporary heating system work shall be performed under the direct supervision of individuals properly licensed to perform the necessary work.
- E.** All temporary work shall be provided in conformity with all applicable codes, State laws, and requirements of the utility company. Particular attention is called to Commonwealth of Massachusetts, Department of Labor Division of Occupational Safety Regulations.
- F.** The Contractor shall pay the costs of all fuel and electricity required for temporary heating until Substantial Completion unless specified otherwise.
- G.** Utilizing the Permanent Heating System for Temporary Heat:
 - 1.** The Contractor may, with the approval of the Owner, elect to utilize the permanent heating system for temporary heat. This may be allowed if the building is enclosed and after the heating system has been tested and is ready to operate and providing the Contractor complies with all provisions stated elsewhere in the Contract Documents.
 - 2.** If the permanent heating system cannot be utilized or if work requires a shutdown of the existing system the Contractor shall make arrangements, acceptable to the Owner, to comply with this requirement at no additional cost to the Owner.
 - 3.** The Contractor shall furnish and pay the costs of any materials and equipment which are not part of the permanent heating system and which may be required to operate the permanent heating system on a temporary basis.
 - 4.** The Contractor shall have a qualified heating mechanic check the heating system a minimum of twice daily, when no work is being performed at the site.
 - 5.** It shall be the Contractor's responsibility to have all portions of the permanent heating system that are used for heating during construction thoroughly cleaned and restored to first class condition, to the satisfaction of the Owner.

6. No parts of the air handling system shall be used until temporary filters have been installed satisfactory to the Architect. Such filters shall be kept clean and in efficient working condition, and at the time of Substantial Completion shall be replaced by the permanent filters at no cost to the Owner.
7. The Owner's warranty for the permanent heating system shall begin on the date of Substantial Completion of the entire project
- H. Installation of weather protection and heating devices shall comply with all safety regulations including provisions for adequate ventilation and fire protection devices.
- I. Unit heaters, if used, shall be of the smokeless type and be installed and operated in such a way that finished work will not be damaged. "Salamanders" shall not be used.
- J. Providing temporary heating service and equipment for exterior work:
 1. Temporary heat in outside areas shall be in compliance with MGL c149 §44G.
 2. Installation of weather protection and heating devices shall comply with all safety regulations including provisions for adequate ventilation and fire protection devices.
 3. Unit heaters, if used, shall be of the smokeless type and be installed and operated in such a way that finished work will not be damaged. "Salamanders" shall not be used.

50.04 TEMPORARY TELECOMMUNICATIONS & FIELD OFFICE

- A. The Contractor shall be available through mobile phone service at all times and shall provide a 24 hour phone number and contact in case of emergencies.
- B. Field office is not required. Use interior space for office function.

50.05 TEMPORARY WATER

- A. The Contractor may make use of the available water supply at the site for construction purposes, provided the permission of the Owner is obtained beforehand, water is verified at the source and only as long as the water is not used wastefully. Coordinate with town water department for activation of the water service.
- B. The Contractor shall provide all necessary piping and hoses to utilize the available sources of water.
- C. The Contractor shall provide an adequate supply of cool potable drinking water with individual drinking cups for personnel on the job.

50.06 TEMPORARY STRUCTURES AND MATERIAL HANDLING

- A. The Contractor shall provide such storage sheds, temporary buildings, or trailers as required for the performance of the Contract. Subcontractors shall provide their own temporary buildings and trailers. Storage shall be located where directed by the Owner.
- B. Materials shall be handled, stored, installed, cleaned, and protected in accordance with the best practice in the industry and, except where otherwise specified in the Contract Documents, in accordance with manufacturer's specifications and directions.
- C. The Contractor must obtain the permission of the Owner for the use of any storage facilities available on site, but the Owner assumes no responsibility for articles stored.
- D. Lawns, paving or other surfaces within areas used by the Contractor shall be restored to original condition when temporary structures are removed.

50.07 SANITARY FACILITIES

- A. The Contractor shall provide and service an adequate number of toilet booths with chemical type toilets.

- B. The toilets shall be erected in a location approved by the Architect and shall be maintained by the Contractor in a clean and orderly condition in compliance with all local and state health requirements.

50.08 TEMPORARY USE OF ELEVATOR (N/A)

50.09 HOISTING FACILITIES

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

50.10 TEMPORARY STAGING, STAIRS, CHUTES

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

50.11 TEMPORARY PARKING

- A. Use available space on site.

50.12 TEMPORARY TRAFFIC CONTROL (N/A)

50.13 TEMPORARY PROTECTION

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

50.15 NOISE AND DUST CONTROL

- A. The Contractor shall take special measures to protect the residents, neighbors, and general public from noise, dust, and other disturbances by:
 - 1. Keeping common pedestrian and vehicular circulation areas clean and unobstructed;
 - 2. Insulating work area from occupied portions as far as possible; and
 - 3. Sealing dust and fumes from contaminating occupied spaces.

50.16 TEMPORARY BARRICADES**A. The Contractor shall:**

1. In addition to the weather protection during the months of November to March specified elsewhere, provide temporary watertight enclosures for openings in exterior walls and in roof decks when and as required to protect the Work from damage by inclement weather. Temporary enclosures shall be provided with adequate means of ventilation to prevent accumulation of moisture in the buildings.
2. Provide temporary wood doors for exterior entrances and elsewhere as required. Permanent door enclosures shall not be used as temporary enclosures.
3. Protect sills, jambs, and heads of openings through which materials are handled.
4. Protect decks and slabs to receive work by other trades from any soiling which will prevent proper adhesion of subsequent Work. Decks and slabs shall be left clean and free of blemishes at the time other trades begin the application of their work.
5. Protect concrete slabs to remain exposed and finished floors against mechanical damage, plaster droppings, oil, grease, paint, or other material which will stain the floor finish. Install and maintain adequate strips of building paper or other protection on finished floors in rooms where other trades will do future Work.
6. Protect all surfaces to receive work by other trades from any soiling which will prevent proper execution of subsequent work
7. Protect other areas, furniture, and private property of the residents and the Owner. Any areas damaged by the Contractor shall be restored to the original condition or compensated at the Contractor's expense.

B. Roof surfaces and waterproofed surfaces shall not be subjected to traffic nor shall they be used for storage of materials. Where some activity must take place in order to carry out the Work, adequate protection must be provided.**C. After the installation of any Work is completed, the Contractor shall be responsible for its protection and for repairing, replacing, or cleaning any such Work which has been damaged by other trades or by any other cause, so that all Work is in first class condition at the time of Substantial Completion.****50.17 TEMPORARY PROTECTIVE WALKWAYS (not applicable)****50.18 TEMPORARY CONSTRUCTION FENCE (not applicable)****50.19 SECURITY**

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

50.20 TEMPORARY STORM WATER POLLUTION CONTROL

- A. Protect excavations, trenches, buildings, and materials at all times from rain water, ground water, backing-up, or leakage of sewers, drains, or other piping, or from water damage of any origin. Provide all pumps, piping, coverings, and other materials and equipment as required by job conditions to accomplish this requirement

- B. Adhere to the erosion / sedimentation control measures indicated on the drawings.

50.21 WEATHER PROTECTION

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

50.22 WIND PROTECTION

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

50.23 CONSERVATION REQUIREMENTS

- A. No vehicle refueling shall occur within 100' of Lake Cochituate.
- B. Maintain "spill kit" on site.

END OF SECTION 01.50.00

SECTION 01.73.29 CUTTING AND PATCHING

1 GENERAL SCOPE OF THE WORK

- A** Unless specified elsewhere, the Contractor shall be responsible for:
 - (1.) All cutting and patching required for the project construction.
 - (2.) Products and installation for patching and extending Work.
 - (3.) Transition and adjustments.
 - (4.) Repair of damaged surfaces, finishes, and cleaning.
 - (5.) Coordination of any cutting and patching required by subtrades.
- B** Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition
- C** The Contractor must comply with all safety laws and regulations of the Commonwealth of Massachusetts, the United States Government, and local government agencies applicable to Work under this contract. The Contractor's attention is directed to the Commonwealth of Massachusetts, Department of Labor, Division of Occupational Safety Regulations.

2 RELATED SECTIONS

- A** This section supplements the General Conditions.
- B** Consult the individual sections of the specifications for specific items required under those sections.
- C** Section 01.74.13 Progress Cleaning and Final Cleaning

3 EXAMINATION

- A** Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting, including elements subject to damage or movement during cutting and patching. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.
- B** Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace visually unacceptable areas of cutting and patching at no additional cost to the Owner.
- C** Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D** Beginning of cutting or patching means acceptance of existing conditions.
- E** After uncovering existing Work, assess conditions affecting performance of work.

4 PREPARATION

- A** Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
- B** Before proceeding, meet at the Project Site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- C** Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.
- D** Close openings in exterior surfaces to protect existing work [and salvage items] from weather and extremes of temperature and humidity. Insulate duct work and piping to prevent condensation in exposed areas.
- E** Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.
- F** Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- G** Remove debris and abandoned items from area and from concealed spaces.
- H** Prepare surface and remove surface finishes to provide for proper installation of new work and finishes.

5 CUTTING

- A** Execute all cutting and fitting necessary to complete the Work.
- B** Where services are required to be remove, relocated, or abandoned, by-pass utility services, such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or partitions scheduled to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.
- C** Uncover work to install improperly sequenced work.
- D** Remove and replace defective or non-conforming work.
- E** Provide openings in the Work for penetration of mechanical and electrical work. Cut holes and slots as small as possible, nearly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover opening when not in use.
- F** Employ skilled and experienced workers to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- G** Cut rigid materials using power saw or core drill. Cut through concrete and masonry using a cutting machine, such as a carborundum saw or a diamond-core drill. Pneumatic tools shall not be allowed without prior approval.
- H** Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original Installer; comply with the original Installer's recommendations.
- I** To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
- J** Comply with requirements of applicable Specification Sections where cutting and patching requires excavating and backfilling or patching of pavement or concrete.

- K** Do not cut structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.
- L** Do not cut operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety.
- M** Perform cutting in a fashion that does not denigrate the energy performance of the building(s).

6 PATCHING

- A** Execute patching to complement adjacent, undisturbed finishes.
- B** Fit products together to integrate with other Work.
- C** Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
- D** Perform patching in a fashion that does not denigrate the energy performance of the building(s).
- E** Restore work with new products in accordance with requirements of Contract Documents.
- F** Fit work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- G** At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with appropriate material to full thickness of the penetrated element as necessary to maintain the required rating.
- H** Where new work abuts or aligns with existing, perform a smooth and even transition. Patch work to match existing adjacent work in texture and appearance. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
- I** Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible if identical materials are unavailable or cannot be used. Use materials whose installed performance will equal or surpass that of existing materials.
- J** Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
- K** Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
- L** Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
- M** Where walls or partitions are to be removed, patch and repair voids left in floor, wall and ceiling surfaces where the existing construction is removed. Provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
- N** Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch after the area has received primer and second coat.
- O** Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
- P** Where cutting and patching involves plaster refer to applicable Sections for plastering requirements. In lieu of specific requirements, comply with the following:

- (1.) Comply with ASTM C 842
- (2.) Comply with manufacturer's instructions and install thickness and coats as indicated.
- (3.) Unless otherwise indicated, provide 3-coat work.
- (4.) Base Coat: Ready-mixed, sand aggregate gypsum plaster base.
- (5.) Finish Coat: Ready-mixed gypsum finish plaster.
- (6.) Finish gypsum plaster to match existing adjacent surfaces. Sand lightly to remove trowel marks and arises.

7 CLEANING

- A** In addition to cleaning specified in Section 01.74.13, clean all areas affected by the work of this Section including personal belongings affected by this work.
- B** Completely inappropriate remove paint, mortar, oils, putty, and similar items.
- C** Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.
- D** When cutting and patching in occupied units clean affected areas daily and or immediately after completion of the cutting and/or patching work.

**END OF SECTION 01.73.29
CUTTING AND PATCHING**

SECTION 01 74 13

PROGRESS CLEANING

FINAL CLEANING

1. SCOPE

- A.** This section specifies the requirements for maintaining a clean and orderly work site during and at the completion of the Work.
- B.** Pay special attention to work areas that affect occupied residents' spaces and public areas.

2. RELATED DOCUMENTS

- A.** This section supplements the General Conditions.
- B.** Consult the individual sections of the specifications for cleaning of Work installed under those sections.
- C.** Section 01.73.29 Cutting and Patching.

3. CLEANING DURING CONSTRUCTION

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

4. FINAL CLEANING

- A.** Prior to submitting a request to the Architect to certify Substantial Completion of the Work, the Contractor shall inspect all interior and exterior spaces and verify that all waste materials, rubbish, tools, equipment, machinery, and surplus materials have been removed, and that all sight-exposed surfaces are clean. Leave the Project clean and ready for occupancy.
- B.** Unless otherwise specified under other sections of the Specifications, the Contractor shall perform final cleaning operations as herein specified prior to final inspection.
- C.** Cleaning shall include all surfaces, interior and exterior, which the Contractor has had access to, whether new or existing.
- D.** Employ experienced workmen or professional cleaners for final cleaning.
- E.** Use only cleaning materials recommended by the manufacturer of the surface to be cleaned.
- F.** Use cleaning materials which will not create a hazard to health or property and which will not damage surfaces.
- G.** All broken or defective glass caused by the Contractor's Work shall be replaced at the expense of the Contractor.
- H.** Remove grease, mastic, adhesive, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed interior and exterior surfaces. This includes cleaning of the Work of all finishing trades where needed, whether or not cleaning by such trades is included in their respective specifications.
- I.** Clean and polish all new and existing glass and plastic glazing (if any) throughout the building(s), on both sides. Clean plastic glazing in accordance with the manufacturer's directions. This cleaning shall be completed by qualified window cleaners at the expense of the Contractor just prior to acceptance of the Work.
- J.** Wash and polish all mirrors.
- K.** Repair, patch, and touch up marred surfaces to the specified finish, to match adjacent surfaces.
- L.** Polish glossy surfaces to a clear shine.
- M.** Do the final cleaning of resilient floors and wood floors as specified under the respective sections of the Specifications.
- N.** Leave all architectural metals, hardware, and fixtures in undamaged, polished conditions.
- O.** Leave pipe and duct spaces, plenums, furred spaces and the like clean of debris and decayable materials.
- P.** In cleaning items with manufacturer's finish or items previously finished by a Subcontractor, care shall be taken not to damage such manufacturer's or Subcontractor's finish. In cleaning glass and finish surfaces, care shall be taken not to use detergents or other cleaning agents which may stain adjoining finish surfaces. Any damage to finishes caused by cleaning operations shall be repaired at the Contractor's expense.

- Q.** Broom clean exposed concrete surfaces and paved surfaces. Rake clean other surfaces of grounds.
- R.** Ventilating systems - Replace filters and clean ducts, blowers, and coils if units were operated during construction.
- S.** Owner's responsibility for cleaning commences at Substantial Completion.

END OF SECTION 01.74.13
Progress Cleaning and Final Cleaning

SECTION 01.78.39 PROJECT RECORD DRAWINGS

1. GENERAL REQUIREMENTS

- A. This section specifies the requirements for maintaining and preparing Projects Record Drawings during and at the completion of the Work.
- B. .Record Drawings shall consist of all the Contract Drawings.

2. RELATED DOCUMENTS

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

3. PROCEDURES DURING CONSTRUCTION

- A. From the sets of drawings furnished by the Owner, the Contractor shall reserve one set for record purposes. From this set, the Contractor shall detach and furnish, at no charge to the Mechanical and Electrical Subcontractors the drawings of their portion of the Work for the same purpose.
- B. The Contractor and the above Subcontractors shall keep their marked up As Built set on the site at all times and note on it in colored ink or pencil, neatly and accurately, at the end of each working day, the exact location of their work as actually installed. This shall include:
 - (1) The location and dimensions of underground and concealed Work, and any architectural, mechanical, or electrical variations from the Contract Drawings.
 - (2) All changes, including those issued by Addendum, Change Order, or instructions by the Architect shall be recorded.
- C. Marked up As Built drawings shall be prepared for the entire project and include all Work, including but not limited to:
 - (1) The location of all underground utilities and appurtenances referenced to permanent surface improvements, both horizontally and vertically at ten (10) foot intervals and at all changes of direction.
 - (2) The location of all internal utilities and appurtunces, concealed by finish materials, including but not limited to valves, coils, dampers, vents, cleanouts, strainers, pipes, junction boxes, turning vanes, variable and constant volume boxes, ducts, traps, and maintenance devices.
 - (3) The location of these, items shall be shown by offsets to structure and drawing grid lines.
- D. The tolerance for the actual location of these items on the marked up As Built Drawings shall be plus or minus two (2) inches.
- E. Each item shall be referenced by showing a tag number, areas served, and function on the marked up As Built drawing

- F. The Architect may periodically inspect the marked up As Built drawings at the site. The proper and current maintenance of the information required on these drawings shall be a condition precedent to approval of the monthly applications for payment.

4. PROCEDURES AT COMPLETION

- A. At Substantial Completion the Contractor shall submit the complete set of marked up As Built drawings to the Architect. The Contractor shall check all marked up As Builts prepared by subcontractors and certify in writing on the title sheet of the drawings that they are complete and correct, prior to submission to the Architect.
- B. The Architect shall review the marked up As Built drawings and verify by letter to the Owner that the Work is complete. The Architect shall incorporate all changes onto to original drawings.
- C. The Contractor may make a written request for copies of the completed Record Drawings. The Contractor shall reimburse the Owner directly for the cost of printing of any requested Record Drawings.
- D. Submission of accurate marked up As Built drawings and their approval by the Architect shall be a condition precedent to final payment.

END OF SECTION 01 78.39

PROJECT RECORD DRAWINGS

SECTION 02 20 00

ASSESSMENTS

1. GENERAL PROVISIONS

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

2. EXISTING CONDITIONS

- A. Before submitting a bid, the Contractor shall make a thorough examination of the conditions at the site, checking the requirements of the Plans and Specifications with the existing conditions.
- B. No claim for extra compensation or extension of time will be allowed on account of the Contractor's failure to estimate properly the quantities, locations, and measurements of all items required to complete the work which could be discerned from visiting the site.
- C. The Contractor shall report any discrepancies to the Architect and request an interpretation.

3. BUILDING DOCUMENTATION

- A. Drawing for the existing building are based on limited site observations and measurements. A preliminary demolition contract has removed finishes and exposed structure. Contractor shall make all necessary field measurements and assessments regarding the existing construction.
- B. The contractor shall make no assumptions about existing conditions being plumb or level, and shall take all required steps to verify these conditions.

4. HAZARDOUS MATERIALS

- A. A limited hazmat survey has been conducted for the Town of Natick by UEC. This document is included as an attachment to this section.
 - 1. As noted in the report, no asbestos containing materials were located.
 - 2. As noted in the report, Lead based paint was encountered in any test samples. The GC shall conform to all applicable regulations regarding renovation activities, and comply with OSHA 29 CFR 1926.62 "Lead" when performing any construction or demolition activities. See report for the category of each LBP+ surface.

END OF SECTION

July 19, 2017

Mr. Bryan LeBlanc, Procurement Officer
Town of Natick
C/o Natick DPW
75 West Street
Natick, MA 01760

Reference: **Asbestos Containing Materials and Lead Based Paint Sampling Services
Camp Arrowhead, Natick, MA**

Dear Mr. LeBlanc:

Thank you for the opportunity for Universal Environmental Consultants (UEC) to provide professional services.

UEC was contracted to perform a determination inspection for accessible Asbestos Containing Materials (ACM) and Lead Based Paint (LBP) at Camp Arrowhead, Natick, MA. Inspection was performed on Wednesday, July 12, 2017.

Bulk samples analyses for asbestos were performed using the standard Polarized Light Microscopy (PLM) in accordance with Environmental Protection Agency (EPA) standard. Bulk samples were collected by a Massachusetts licensed asbestos inspector Mr. Leonard J. Busa (AI-030673) and analyzed by a Massachusetts licensed laboratory ProScience, Woburn, MA. Bulk sample is determined to contain asbestos if the sample was found to contain more than 1-% asbestos.

Bulk samples analyses for lead based paint were performed by a Massachusetts licensed laboratory ProScience, Woburn, MA using SW846-7420/3051 method.

Samples results are attached.

Asbestos Sampling:

Thirty five (35) bulk samples were collected and analyzed for asbestos from various materials suspected to contain asbestos. Samples results indicated that asbestos was not found in any of the samples collected.

Lead Based Paint (LBP) Sampling:

Three (3) bulk samples were collected and analyzed for lead from various painted surfaces suspected to contain lead. Samples results indicated that lead was found on all painted surfaces.

All LBP activities performed should be in accordance with applicable Federal, State, or local laws, ordinances, codes or regulations governing evaluation and hazard reduction. In the event of discrepancies, the most protective requirements prevail. These requirements can be found in OSHA 29 CFR 1926-Construction

Mr. Bryan LeBlanc, Procurement Officer
July 19, 2017
Page 2

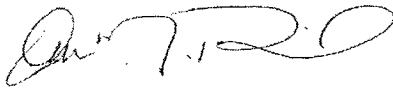
Industry Standards, 29 CFR 1926.62-Construction Industry Lead Standards, 29 CFR 1910.1200 Hazard Communication, 40 CFR 261-EPA Regulations.

Ballasts in light fixtures were assumed to contain Polychlorinated Biphenyls (PCB's). Tubes in light fixtures, in exit signs and in thermostats were assumed to contain mercury.

Please do not hesitate to call me at (508) 628-5486 if you have questions about our services.

Very truly yours,

Universal Environmental Consultants

A handwritten signature in black ink, appearing to read 'Ammar M. Dieb', is written over a horizontal line.

Ammar M. Dieb
President

UEC:\217 194.00\Report.DOC

Enclosure



ProScience Analytical Services, Inc

Ammar Dieb
Universal Environmental Consultants
12 Brewster Rd.
Framingham, MA 01702

July 13, 2017

Dear Ammar Dieb,

The enclosed analytical results have been obtained by using EPA 600/R-93/116 or EPA 600/M4-82-020. Calibrated Visual Estimate (CVE) is used by ProScience for the determination of the percentage of asbestos and other components in the sample. Point Counting is recommended when the sample contains less than 10% asbestos by CVE. Friable materials found to be less than 1% by CVE are automatically point counted (400 points) at no additional charge. ProScience recommends further analysis by a gravimetric method for non-friable materials that are less than 1% by CVE.

The Quality Control data related to the samples analyzed is available upon client's written request. ProScience Analytical Services Inc., assumes no responsibility for potential sample contamination that may have occurred during the sample collection process or erroneous data provided by the client.

The enclosed results may not be used under any circumstances as product endorsement by any US government agency including NIST/NVLAP.

All Laboratory records are retained for at least three years unless otherwise directed in writing by the client. The actual samples are retained for a period of two months and written request is necessary in order to be retained for a longer period of time. All analytical results and records are considered strictly confidential and will not be released under any circumstances to anyone except the actual client. The analytical results included in this report apply only to the items tested.

If you have any questions please contact the Laboratory Manager or the Laboratory Director.

Sincerely,

Patricia Weakley, Optical Asbestos Manager
Aimee Cormier, Laboratory Director

Enclosure: Version 2
LAB BATCH ID: B 105676 CLIENT PROJECT ID: N/A
Client Ref: Camp Arrowhead, Natick, MA
CT ID# PH-0209; MA ID# AA000156; ME ID# LB-055; ME ID# LA-056; NVLAP Lab Code 200090-0;
RI ID # AAL-093; VT ID# AL016876

ProScience Analytical Services, Inc.

Client Name: Universal Environmental Consultants
 PO #: N/A
 Client Project #: N/A
 Client Reference: Camp Arrowhead, Natick, MA
 Method: EPA/600/R-93/116

Batch: B105676
 Date Sampled: N/A
 Date Received: 7/12/2017
 Date Analyzed: 7/12/2017
 Date of Report: 7/13/2017

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
1	Pink	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: VT-I (12" Pink) Location: Main Bldg., Main Floor Comments:														
Is asbestos present? No.													Analyzed: Yes	

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
2	Multi	0	0	0	0	0	0	0	0	<1	0	0	0	100
Description: Mastic #1 Location: Main Bldg., Main Floor Comments:														
Is asbestos present? No.													Analyzed: Yes	

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
3	Pink	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: VT-I Location: Main Bldg., Kitchen Comments:														
Is asbestos present? No.													Analyzed: Yes	

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
4	Black	0	0	0	0	0	0	0	0	<1	0	0	0	100
Description: Mastic #3 Location: Main Bldg., Kitchen Comments:														
Is asbestos present? No.													Analyzed: Yes	

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
5	White	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: VT-II (12" White) Location: Main Bldg., Bathroom - I Comments:														
Is asbestos present? No.													Analyzed: Yes	

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
6	Yellow	0	0	0	0	0	0	0	0	<1	0	0	0	100
Description: Mastic #5 Location: Main Bldg., Bathroom - I Comments:														
Is asbestos present? No.													Analyzed: Yes	

ProScience Analytical Services, Inc.

Client Name: Universal Environmental Consultants
 PO #: N/A
 Client Project #: N/A
 Client Reference: Camp Arrowhead, Natick, MA
 Method: EPA/600/R-93/116

Batch: B105676
 Date Sampled: N/A
 Date Received: 7/12/2017
 Date Analyzed: 7/12/2017
 Date of Report: 7/13/2017

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
7	White	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: VT-II Location: Main Bldg., Bathroom - II Comments:														
Is asbestos present? No.													Analyzed: Yes	

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
8	Black	0	0	0	0	0	0	0	0	<1	0	0	0	100
Description: Mastic #7 Location: Main Bldg., Bathroom - II Comments:														
Is asbestos present? No.													Analyzed: Yes	

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
9	White	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Joint Compound (JC) Location: Main Bldg., Clg. - Kitchen Comments:														
Is asbestos present? No.													Analyzed: Yes	

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
10	Gray	0	0	0	0	0	0	<1	0	3	0	0	0	97
Description: Associated Gypsum Location: Main Bldg., Clg. - Kitchen Comments:														
Is asbestos present? No.													Analyzed: Yes	

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
11	White	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Joint Compound (JC) Location: Main Bldg., Clg. - Main Floor Comments:														
Is asbestos present? No.													Analyzed: Yes	

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
12	Gray	0	0	0	0	0	0	0	0	3	0	0	0	97
Description: Associated Gypsum Location: Main Bldg., Clg. - Main Floor Comments:														
Is asbestos present? No.													Analyzed: Yes	

ProScience Analytical Services, Inc.

Client Name: Universal Environmental Consultants
 PO #: N/A
 Client Project #: N/A
 Client Reference: Camp Arrowhead, Natick, MA
 Method: EPA/600/R-93/116

Batch: B105676
 Date Sampled: N/A
 Date Received: 7/12/2017
 Date Analyzed: 7/12/2017
 Date of Report: 7/13/2017

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
13	White	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Joint Compound (JC) Location: Main Bldg., Wall - Boiler Room Comments:														
Is asbestos present? No.													Analyzed: Yes	

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
14	White	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Joint Compound (JC) Location: Main Bldg., Wall - Nurse Comments:														
Is asbestos present? No.													Analyzed: Yes	

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
15	White	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Joint Compound (JC) Location: Main Bldg., Clg. - as Debris on Main Floor Comments:														
Is asbestos present? No.													Analyzed: Yes	

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
16	Brown	0	0	0	0	0	0	0	0	95	0	0	0	5
Description: Pressed Wood Clg. above Gypsum Location: Main Bldg., Bathroom I Comments:														
Is asbestos present? No.													Analyzed: Yes	

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
17	Brown	0	0	0	0	0	0	0	0	90	0	0	0	10
Description: Pressed Wood Clg. above Gypsum Location: Main Bldg., Bathroom II Comments:														
Is asbestos present? No.													Analyzed: Yes	

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
18	Multi	0	0	0	0	0	0	0	0	95	0	0	0	5
Description: Black in Clg. Batt. Location: Main Bldg., Main Floor Comments:														
Is asbestos present? No.													Analyzed: Yes	

ProScience Analytical Services, Inc.

Client Name: Universal Environmental Consultants
 PO #: N/A
 Client Project #: N/A
 Client Reference: Camp Arrowhead, Natick, MA
 Method: EPA/600/R-93/116

Batch: B105676
 Date Sampled: N/A
 Date Received: 7/12/2017
 Date Analyzed: 7/12/2017
 Date of Report: 7/13/2017

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
19	Brown	0	0	0	0	0	0	0	0	95	0	0	0	5
Description: Black in Wall Batt. Location: Main Bldg., Main Floor Comments: Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
20	Black	0	0	0	0	0	0	0	0	60	0	0	0	40
Description: Black Paper behind Wood Siding Location: Main Bldg., Exterior by Pavilion Comments: Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
21	Black	0	0	0	0	0	0	0	0	80	0	0	0	20
Description: Black Paper behind Wood Siding Location: Main Bldg., Exterior by Boiler Room Comments: Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
22	Black	0	0	0	0	0	0	20	0	<1	0	0	0	80
Description: Roof Shingle Location: Main Bldg., Exterior by Boiler Room Comments: Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
23	Black	0	0	0	0	0	0	0	0	<1	0	0	0	100
Description: Adhesive #22 Location: Main Bldg., Exterior by Boiler Room Comments: Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
24	Black	0	0	0	0	0	0	20	0	<1	0	0	0	80
Description: Roof Shingle Location: Main Bldg., Exterior by Boiler Room Comments: Is asbestos present? No. Analyzed: Yes														

ProScience Analytical Services, Inc.

Client Name: Universal Environmental Consultants
 PO #: N/A
 Client Project #: N/A
 Client Reference: Camp Arrowhead, Natick, MA
 Method: EPA/600/R-93/116

Batch: B105676
 Date Sampled: N/A
 Date Received: 7/12/2017
 Date Analyzed: 7/12/2017
 Date of Report: 7/13/2017

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
25	Black	0	0	0	0	0	0	0	0	<1	0	0	0	100
Description: Adhesive #24 Location: Main Bldg., Exterior by Boiler Room Comments: Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
26	White	0	0	0	0	0	0	0	0	<1	0	0	0	100
Description: Joint Compound (JC) Location: Bathhouse - Clg. - Bathroom adj. to Nurse Comments: Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
27	White	0	0	0	0	0	0	0	0	<1	0	0	0	100
Description: Joint Compound (JC) Location: Bathhouse - Wall - Bathroom - 2 Comments: Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
28	Pink	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Pink Cove Base Location: Bathhouse - Wall - Bathroom - 2 Comments: Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
29	Yellow	0	0	0	0	0	0	0	0	<1	0	0	0	100
Description: Adhesive #28 Location: Bathhouse - Wall - Bathroom - 2 Comments: Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
30	Pink	0	0	0	0	0	0	0	0	0	0	0	0	100
Description: Pink Cove base Location: Bathhouse - Wall - Bathroom - 2 Comments: Is asbestos present? No. Analyzed: Yes														

ProScience Analytical Services, Inc.

Client Name: Universal Environmental Consultants
 PO #: N/A
 Client Project #: N/A
 Client Reference: Camp Arrowhead, Natick, MA
 Method: EPA/600/R-93/116

Batch: B105676
 Date Sampled: N/A
 Date Received: 7/12/2017
 Date Analyzed: 7/12/2017
 Date of Report: 7/13/2017

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
31	Yellow	0	0	0	0	0	0	0	0	<1	0	0	0	100
Description: Adhesive #30 Location: Bathhouse - Wall - Bathroom - 2 Comments:														
Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
32	Black	0	0	0	0	0	0	20	0	<1	0	0	0	80
Description: Roof Shingle Location: Bathhouse Exterior Comments:														
Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
33	Black	0	0	0	0	0	0	0	0	<1	0	0	0	100
Description: Adhesive #32 Location: Bathhouse Exterior Comments:														
Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
34	Black	0	0	0	0	0	0	20	0	<1	0	0	0	80
Description: Roof Shingle Location: Bathhouse Exterior Comments:														
Is asbestos present? No. Analyzed: Yes														

Sample ID	Color	Asbestos %						Non-Asbestos %						
		CHR	AMO	CRO	ACT	TRE	ANT	FBG	MNW	CEL	HAR	SYN	OTH	NON
35	Black	0	0	0	0	0	0	<1	0	<1	0	0	0	100
Description: Adhesive #34 Location: Bathhouse Exterior Comments:														
Is asbestos present? No. Analyzed: Yes														

Asbestos Codes: CHR = Chrysotile AMO = Amosite CRO = Crocidolite ACT = Actinolite TRE = Tremolite ANT = Anthophyllite
 Non-Asbestos Codes: FBG = Fiberglass MNW = Mineral Wool CEL = Cellulose HAR = Hair SYN = Synthetic OTH = Other NON = Non-Fibrous Minerals

Note: To create a unique lab sample ID, use the Batch # and the Sample ID (example: [Batch #] - [Sample ID]).

* All results are in percentage.

Analyst: Robert West *Patricia Westley For.*

CHAIN OF CUSTODY

Universal Environmental Consultants
12 Brewster Road
Frammingham, MA 01702
Tel: (508) 628-5486 - Fax: (508) 628-5488
adieb@uec-env.com

#12 → #25 = main bldg
 #262 → 135 = Bathhouse

Town/City: Abwick, MA Building Name: Camp Arrowhead

Sample	Result	Description of Material	Sample Location
1		VT-I (12" PINK)	main floor main bldg
2		MASTICS #1	" "
3		VT-I	Kitchen
4		MASTIC #3	" "
5		VT-II (12" white)	Bathrm - I
6		MASTICS #5	" "
7		VT-II	Bathrm - II
8		MASTIC #7	" "
9		Joint Compound (JC)	clg - kitchen
10		ASSOC. gyp	" "
11		JC	clg - main floor
12		ASSOC gyp	" "
13		JC	wall - Boiler rm
14		JC	wall - Horse
15		JC	clg - as debris on main floor
16		pressed wood clg above gyp	Bathrm - I
17		pressed wood clg above gyp	Bathrm - II
18		Black in clg Bott	main floor
19		Black in wall Bott	main floor
20		Black paper behind wood siding	by pavillion exterior

Reported By: General & Sons Date: 7/12/17 Due Date: 24-hr
 Received By: Carol DeWitt Date: 7/12/17 2:30

202

CHAIN OF CUSTODY B105676

Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702
Tel: (508) 628-5486 - Fax: (508) 628-5488
adleb@uec-env.com

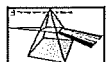
#12 → #28 = MAIN Bldg
#26 → #35 = Bathroom

Town/City: Norfolk, MA Building Name: Camp Arrowhead

Sample	Result	Description of Material	Sample Location
21		Black paper behind wood siding by Boiler room	main Bldg exterior
22		roof shingle	
23		adhesive #22	
24		roof shingle	
25		adh. #24	
26		JC	clg - bathroom adj to Nurse
27		JC	wall - Bathroom - 2
28		Pink COVE BASE	Bathroom - 2
29		adh #28	
30		Pink COVE BASE	
31		adh #30	
32		roof shingle	exterior
33		adh. #32	
34		roof sh.	
35		adh #34	

Reported By: [Signature] Date: 7/12/17 Due Date: 24-hr

Received By: _____ Date: _____



ProScience Analytical Services, Inc.
22 Cummings Park, Woburn, MA 01801

Telephone: 781-935-3212
Facsimile: 781-932-4857
Email: chemistry@proscience.net

Laboratory Report

Contact: Ammar Dieb
Client: Universal Environmental Consultants
Address: 12 Brewster Road
Framingham, MA 01702

Batch #: C 292340
Date received: 7/12/2017
Date analyzed: 7/13/2017
Date of report: 7/13/2017

Project # N/A
P.O.# N/A
Project Site: Camp Arrowhead
Natick, MA

AIHA-LAP, LLC Lab ID 102754

Lead Analysis In Paint Using SOP Based on SW846-7420/3051 Results in weight percent on an "as received" weight basis

Lab ID	Client ID	Sample date	Description	Result	Reporting Limit	Comments
C 577243	1	7/12/17	Tan Paint on Wood Siding - Main Bldg. Exterior	2.8	0.027	
C 577244	2	7/12/17	Tan Paint on Wood Siding - Main Bldg. Exterior	3.0	0.026	
C 577245	3	7/12/17	White Paint on Wood Sill - Main Bldg. Exterior	0.058	0.029	


Simona Peavey, Tech. Manager Chemistry
Aimee Cormier, Lab Director

Page 1 of 1

Unless otherwise indicated, all samples were received in acceptable condition.
All result apply only to the samples as received and are accurate to no more than two significant figures.
Unless otherwise indicated, all the quality control criteria for the method above have been met.
RL-Reporting Limit(%by weight) Note on units: mg/Kg is the same as ppm by weight.

40
C292339plc

1008

Town/City: Natick, MA Building Name Camp Arcanum

577243
44
45

Due Date: 48 hr

UNIVERSAL ENVIRONMENTAL CONSULTANTS

**SECTION 02 41 00
SELECTIVE DEMOLITION**

PART 1 - GENERAL

1.01 GENERAL

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

1.02 FILING OF SUB-BIDS
(Not Applicable)

1.03 SCOPE OF WORK

A. Work of this section includes:

0. Coordination of demolition work with hazardous materials abatement work, as needed. See UEC July 19, 2017 Asbestos and Lead report, which is attached to this Section.
1. Selective demolition and removal from the site of existing construction, materials, equipment, fixtures and systems as defined on the drawings and listed herein, including, but not limited to:
 - a. Windows and Security Shutters
 - b. Exterior Doors
 - c. Wall Framing, as noted on the drawings
 - d. Slab Demo as required for sub slab waste plumbing
 - e. Partition framing
 - f. Siding and roof trim.
2. Temporary protection of adjacent existing construction not indicated to be demolished, or indicated for removal and salvage and potential re-use for this project.
3. Removal from the site of all demolition debris, and dispose of such materials in a lawful manner.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. Temporary Electrical: DIV 01

B. Temporary Water: DIV 01

1.05 INTENT

- A. Upon completion of the work of this Section, all spaces and surfaces shall be ready and suitable for the installation of work of other Trades.
1. All surfaces shall be broom clean.
 2. All nails, wires, hangers and other items shall be removed down to the bare substrate.
 3. All flooring surfaces shall be level, and free from gaps resulting from partition removal.

1.06 PROJECT CONDITIONS

A. Condition of Structures: The owner and architect assume no responsibility nor make any claim as to the actual condition or structural adequacy of any existing construction to be demolished. The contractor shall investigate and assure himself of the condition of the work to be demolished and shall take all precautions to ensure safety of persons and property.

B. Salvage: Owner has no desire for any salvage.

C. Traffic: Conduct operations and removal of debris to ensure minimum interference with the normal use of public ways and other adjacent facilities. Do not close or obstruct traffic ways, corridors, streets, walks or other used facilities without the written permission of the owner and authorities having jurisdiction.

D. Occupancy: The site will be unoccupied throughout construction.

E. Protection: Ensure the safe passage of persons in and around the building during demolition. Prevent injury to persons and damage to property. Provide shoring and bracing. Immediately repair damaged property to its condition prior to being damaged. Take effective measures to control dust and noise.

F. Utilities: Maintain all utilities except those requiring removal or relocation. Keep utilities in service and protect from damage. This includes controls and wiring of the existing sewage pumping station.

1.07 RECYCLING OF DEMO WASTE

A. Demolition waste shall be recycled to the maximum extent possible.

PART 2 - PRODUCTS AND MATERIALS

(Not used)

PART 3 - EXECUTION

3.01 INSPECTION / JOB CONDITIONS

A. Defective Structure: Identify and remove all existing structure which is damaged or unsuitable for reuse. Notify architect immediately upon discovery of unsuitable existing structure and remove structural members only after obtaining architect's written permission.

B. Hazardous Materials: Notify owner and architect immediately upon the discovery of hazardous materials not otherwise indicated in the contract documents.

- 1 As noted in the hazmat report, exterior painted components, have lead paint contamination. The contractor shall handle such material in a manner consistent with all applicable regulations, in protection of both workers and the environment. Minimum procedures include the requirement that all debris related to painted exterior surfaces shall be carefully collected, and taken off site, without the spreading of paint debris onto the property or public ways.

3.02 DEMOLITION

A. General:

0. Verify that all required "Make Safe" work has been accomplished.
1. Demolish safely, completely and with limitations of governing authorities.
2. Proceed with demolition in a systematic manner.
3. Demolish in sections and avoid overloading structure.
4. Remove all debris from site and dispose legally.
5. No on-site burning is permitted.

B. Floors:

1. Saw Cut, in coordination with the plumbing layout.

C. Wall Framing:

1. Remove all fasteners.
2. Provide temporary support of ceiling framing.

D. Ceilings / Attic:

1. Remove in accordance with the proposed attic access design

End of Section 02070

**SECTION 03 30 00
CONCRETE**

PART 1 - GENERAL

1.01 GENERAL

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(Not Applicable)

1.03 SCOPE OF WORK

A. This Section includes the general scope of work to furnish the administration, facilities, materials, labor and equipment for the following:

1. Concrete footings for entrance canopy structure
2. Slab on Grade Patching and Finishing

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. DIV 02, Selective slab demo for plumbing
2. DIV 32, Portland Cement Concrete Paving (exterior)
3. SS 09 96 56, Epoxy Coatings

1.05 ALTERNATES
(N.A.)

1.06 SUBMITTALS

A. Attention is directed to Section 01 30 00 regarding required procedures for Submittals.

B. Submittals are required for the following:
(SD = Shop Drawing)

(FS = Field Sample)
(OS = Samples)
(PD = Printed Data)

- | | | |
|----|-------------------------|--------|
| 1. | Laboratory Test Reports | PD |
| 2. | Reinforcement | SD, PD |
| 3. | Concrete mix | PD |
| 4. | Rigid Insulation | PD |
| 5. | Vapor Barrier | PD |
| 6. | Sealing Coating | PD, OS |

C. On installation shop drawing, indicate reinforcement sizes, spacings, locations and quantities of reinforcing steel, bending and cutting schedules, splicing and supporting and spacing devices.

D. Laboratory Test Reports: Submit copies of reports for concrete materials and mix design specified.

1.07 QUALITY ASSURANCE

A. Design Criteria:

1. Design, construct, erect, support, brace, maintain, and remove forms to comply with ACI 318 Parts 1, 2, and 3 inclusive.
2. Comply with ACI 347 for loads, lateral pressures, and allowable stresses, and include wind load parameters.
3. Construct formwork so concrete surfaces comply with ACI 301 Chapter 4 and ACI 347 Chapter 2.
4. Maximum allowable deflection of forming surfaces from concrete pressure is length/360 between supports.

B. Owner shall perform field testing of concrete. Contractor shall fully cooperate.

1. Three concrete test cylinders will be taken for every 50 or less CY placed in one day.
2. One slump test will be taken for each of the test cylinders taken.

C. Environmental Precautions:

1. Cold weather placement shall conform to requirements to ACI 306R.
2. Hot weather placement shall conform to requirements of ACI 305R.

1.08 REFERENCE STANDARDS

A. The quality standards of the following agencies and organizations are used in references in this specification.

1. ASTM: American Society of Testing and Materials.

2. ACI: American Concrete Institute.

1.09 DELIVERY

- A. Conform to requirements of ACI 304, "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete".

PART 2 - PRODUCTS AND MATERIALS

2.01 FORMWORK

- A. Formwork:
 1. Not required

2.01 REINFORCEMENT

- A. Reinforcing Steel:
 1. Welded Wire Fabric: ASTM A185, 6x6 6/6 welded wire fabric, steel, in flat sheets. (at slab patching)
 3. Drawn Wire: ASTM A82.
 4. Bar Supports: Comply with CRSI "Manual of Standard Practice."
 - a. Interior Concealed Areas: Class A - "Bright Basic."
 - b. Interior Exposed Areas: Class C "Plastic Protected."
 - c. Exterior Painted or Concealed: Class D "Stainless Steel Protected."
 - d. Exterior Unpainted or Exposed: Class E "Special Stainless Steel Protected."

2.02 CONCRETE MATERIALS

- A. Conform to ASTM C94 general requirements for Ready-Mix Concrete.
 1. Mix shall have 3000 psi (28 day) compressive strength, with four inch maximum slump.
 2. Add air entraining agent to all concrete, as per ASTM C 260.
 3. Water-reducing agent shall conform to ASTM C 494, Type A. Water-reducing agent shall be compatible with air-entraining agent.
 4. Superplasticizer shall conform to ASTM C494, Type F or Type G. Superplasticizer shall be compatible with the other admixtures.
 5. Calcium Chloride or admixtures containing more than 0.1% Chloride ions are not permitted.
- B. Cement: ASTM C150, Normal, type 1 or II Portland Cement, grey color.
Fly Ash: ASTM C 618 Class F.

C. Coarse and Fine Aggregates:

1. Conform to ASTM C33.
2. Sand shall fine, natural or manufactured, or combination thereof.
3. Coarse aggregate shall have maximum size of 1/2 inch for floor slabs, 1-1/2 inch at footings, and 3/4 inch at other applications.

Coarse aggregate shall meet the following additional requirements:

Size: 67

Fineness Modulus: (+/- 0.20) 6.70 and 5.5 respectively

Organic: Plate 1 maximum.

Silt: 1.0 % maximum

Soundness: 5% - 8% maximum loss, magnesium sulfate, five cycles.

Fine aggregate shall meet the following additional requirements:

<u>Sieve</u>	<u>Retained Percent</u>
#4	0-5
#16	25-40
#50	70-87
#100	93-97

Fineness Modulus: 2.8 (+/- 0.20)

Organic: Plate 2 maximum

Silt: 2.0% maximum

Soundness: 5% - 10% maximum loss, magnesium sulfate, five cycles.

- D. Water shall be clean and not detrimental to concrete.

2.03 CONCRETE MIXES

- A. Strength, cement and water requirements:

Design Compr. <u>Strength, f_c</u>	Min. Cement Factor* <u>Sacks/yd³ lbs/yd³</u>		Max. Water Cement Ratio <u>Gal/sack Gal by wt.</u>	
Footings/F'dn Walls: 3000	5.5	517	6.5	0.57
Slab on Grade: 4000	6.5	611	5.5	0.49

*Fly Ash may be used in all concrete except exterior walks and site walls.
Amount may be up to approximately 20% of the total cement content.

- B. All concrete shall be proportioned in accordance with ACI Standard 211.1,
"Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass

Concrete" and comply with the requirements of ACI 301 "Specifications for Structural Concrete" Section 4, Method 1 (trial mixtures) or 2 (field test data).

- D. Total air entrained in freshly mixed interior concrete shall be 4.0% plus or minus 1.0% of volume of concrete with required strengths maintained, except that all interior slabs subject to abrasion shall have a maximum air content of 3% and all exterior concrete subjected to freezing and thawing shall have an air content of 5% plus or minus 1%.
- E. Water-Cement Ratio - All concrete subjected to freezing and thawing shall have a maximum water-cement ratio of 0.49 ($f'_c = 4000$ psi minimum). All concrete required to be watertight and/or subjected to de-icers shall have a maximum water-cement ratio of 0.45 ($f'_c = 4500$ psi minimum). This is a total water in mix at time of placement, including free water of aggregates and liquid admixtures.
- F. Slump of concrete shall be 4" (+/-1"). If a superplasticizer is used, the slump shall be 3" (+/-1") prior to adding the superplasticizer and 8" (+/-1") after adding the superplasticizer.
- G. Premix admixtures in solution form and dispense as recommended by the manufacturer. Include the water in the solution in the design water content of the mixtures.

2.03 ACCESSORIES

- A. Vapor Barrier: ASTM D2103, cross laminated, high tensile strength, high density, 10 mil minimum thickness.
 - 1. Vapor Barrier permeance shall be 0.06 gm per square per 24 hr. period.
 - 2. Acceptable manufacturers:
 - a. Reef Industries, Model Griffolyn T-85.
 - b. Equal by Raven Industries,
 - c. Equal by Sto-Cote Products
 - 3. Seam tape shall be as approved by manufacturer of vapor barrier.
- B. Grout shall be non-shrink, premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents and capable of developing minimum compressive strength of 2400 psi in 28 days.
- C. Curing materials:
 - 1. Water shall be clean and potable.
 - 2. Impervious sheeting shall conform to ASTM C171.
- D. Concrete sealer: As approved by architect and compatible with flooring materials.

1. Sealed concrete product shall be Concrete Sealer Enviroseal DurasealZero or approved low VOC (<100 g/L) or no VOC alternate.

2.04 Pre-Cast Concrete Piers

- A. As manufactured by Diversified Pre-Cast, or by other Pre-cast company producing comparable products.
 1. 8 inch by 8 inch top.
 2. 23 inch by 23 inch ground bearing
 3. 5 foot height.

PART 3 - EXECUTION

3.01 INSPECTION / JOB CONDITIONS

- A. Verify that base materials have been properly prepared and compacted.
- B. Coordinate work with other Sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors and other inserts.

3.02 PREPARATION

- A. Notify Architect and owner minimum 24 hours prior to commencement of concreting operations.
- B. Place, support and secure reinforcement against displacement.

3.03 INSTALLATION / FIELD QUALITY CONTROL

- A. Pre-cast piers:
 1. Install Piers as per manufacturer's instructions.
 2. Top of concrete shall uniform at each pier, as the piers will be exposed above grade.
- B. Reinforcement:
 1. Tolerances:
 - a. Maintain surface clearance dimensions shown, +/- 1/4 in.
 - b. Secure reinforcement with accessories and tie wire to prevent displacement before and during concreting.

- c. Do not place concrete if bars are not properly and securely placed with adequate supports.
 2. Dowels: Secure in position prior to placing concrete.
 3. Splices: Lap-splice all bars up to 11 gage to ACI 318, unless otherwise shown.
 4. Remove and replace damaged bars as directed.
- C. Compaction:
 1. Compact each layer of concrete by internal concrete vibrators supplemented by hand spading, rodding, and tamping.
 2. Do not permit tamping or other external vibration of forms for compaction or transport concrete inside forms.
 3. Maintain internal vibrators submerged in concrete at min. frequency of 8,000 vibrations per minute, with vibrating equipment to ACI 309.
- D. Vapor Barrier Placement:
 1. Cover subgrade under patch areas for slabs in building with vapor barrier.
 2. Lap edges min. 18 in. and seal with pressure sensitive tape, min. 2 in. wide, compatible with membrane.
 3. Patch all large penetrations and tears with compatible tape.
- E. Concrete Placement:
 1. Place concrete continuously to be monolithic in construction.
 2. Deliver concrete in a continuous manner in time interval specified without segregation or loss of ingredients.
 3. Place concrete in forms or excavation as close to final position, in uniform, approximately horizontal layers, max. 12 in. deep, unless otherwise directed.
 4. Do not allow concrete to drop freely more than 8 ft. in unexposed work nor more than 3 ft. in exposed work.
 5. Joints:
 - a. Isolation: Use at junctions with walls and slab with 1/2 in. wide premolded joints full depth of slab.
 6. Preformed Joints:
 - a. Use of plastic t-strip separators instead of saw cuts is approved for this Project.
 - b. Provide 1/2 in. premolded expansion joint material for slab on grade poured around vertical surfaces. See architectural details for thermal break design at exterior foundation walls

3.05 CURING

- A. Protect pours from excessive heat or cold. Conform to ACI 301 recommendations for concrete curing.

3.06 FINISHES

- A. Finishing Slabs:
 - 1. General:
 - a. Finished Slabs: True plane surfaces with deviation max. 1/8 in. in 10 ft.
 - b. Pitch surface to drains as indicated.
 - 2. Typical Slab Finish at patch areas:
 - a. Machine trowel: After floating, begin first trowel-finish operation using a power driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand trowelling operation, free of trowel marks, uniform in texture and appearance, and finish surfaces to tolerances of F(F) (Floor flatness) 20 and F(L) 17 (Floor levelness) measured according to ASTM E 1155. Grind smooth any surface defects that would telegraph through applied floor covering system.
- B. Finishing Surfaces Other Than Slabs:
 - 1. Not Applicable

3.07 SLAB SEALING (Storage Room)

- A. Install as per manufacturer's instructions.
 - 1. Verify that concrete moisture content is within the acceptable range.

END OF SECTION 03 30 00

SECTION 06 10 00**ROUGH CARPENTRY****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

**1.02 FILING OF SUB-BIDS
(N.A)****1.03 SCOPE OF WORK**

A. In general, the work of this section includes, but is not limited to:

1. Rough carpentry framing.
 - a. Fire damage repair at roof framing
 - b. Partition framing
 - c. Exterior wall infill
 - d. Exterior entrance canopy
2. Blocking
 - a. Blocking at doors and windows, PT where indicated.
 - b. Blocking for wall mounted equipment and furnishings, including grab bars, toilet partitions, ceiling mounted equipment, cabinets and finish carpentry
 - c. Blocking for compliance to accessibility regulations.
3. Galvanized framing accessories, bolts, anchors, nails, hangers, clips, ties and bridging to suit each span and bearing condition.
4. Pressure treated wood sills and low pitch roof edge nailers.
5. Building Paper and air barrier applications.
6. Engineered lumber, including LVL lumber and exterior posts and beams.
7. Labor, materials and equipment necessary to accomplish installation.
9. Coordination with air and water (weather) sealing.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. Section 03 30 00, Concrete
3. Section 07 46 20, Vinyl Siding
4. Section 08 11 00, Metal Doors and Frames
5. Section 08 14 00, Wood Doors and Frames
6. Section 08 53 00, Vinyl Windows

1.05 ALTERNATES (N.A.)

1.06 SUBMITTALS

A. Attention is directed to Section 01 30 00 regarding required procedures for Submittals.

B. Submittals are required for the following:

(SD = Shop Drawing)

(FS = Field Sample)

(OS = Samples)

(PD = Printed Data)

Grades and Dimensions of Lumber and panels	PD
Fasteners	PD, OS
Engineered Lumber	PD, SD
Bolts and Anchors	PD

1.07 QUALITY ASSURANCE

A. Carpentry items shall have a visible stamp of grade, or provide grade compliance certificate.

B. All Engineered Lumber /Trusses, accessories, connectors, hangers, etc., shall be subject to inspection in the field by an independent testing agency paid by the owner.

C. Inspection shall include, but not be limited to the following:

1. Size, type, installation of Engineered Lumber and Open Web joists.
2. Type, installation of accessories, hangers, connectors, etc.
3. Inspection shall be for conformance with approved shop drawings and submittals.

1.08 REFERENCE STANDARDS

A. The following agencies recommendations and quality standards are referenced in the specifications.

1. AWWA: American Wood Preserver's Association
2. NELMA: Northeastern Lumber Manufacturer's Association
3. APA: American Plywood Association.
4. ALSC: American Lumber Standards Committee (Board of Review)
5. ASTM: American Society for Testing and Materials.

1.09 DELIVERY AND STORAGE

A. Store wood materials in a controlled environment, under well ventilated conditions.

B. Should the contractor be required to quickly cover material temporarily, such as during an unanticipated rain shower, all materials shall be stored under a waterproof/fireproof cover on a raised platform. This is only temporary covering, as at the end of the day, materials shall be stored as per paragraph A, above.

C. Do not operate or situate material handling equipment such that it will hinder the smooth flow of vehicular or pedestrian traffic.

D. All application and handling equipment shall conform to and be operated in conformance with all safety requirements.

1. Specific attention is made to OSHA requirements.

1.10 SEQUENCING AND SCHEDULING

A. Conform to the requirements outlined in DIV 01 and the construction phasing schedule. It is noted that coordination is needed between the installation of the cold formed steel framing and this Section.

1.11 JOB CONDITIONS AND OPERATING PROCEDURES

A. Environmental

1. Materials shall be applied to properly prepared, dry areas. All materials shall be installed in a dry condition.
2. If conditions are uncovered or created that would be detrimental to the work of this Section, contact the owner or architect.
3. Contractor shall provide all necessary temporary protection and barriers to segregate work area(s).
4. All construction materials and equipment shall be secured from wind damage or blow-off.

- B. Existing Conditions.
 - 1. Protect the building, all contents, and the surrounding area from damage and building occupants from injury during the work.

PART 2 - PRODUCTS AND MATERIALS

2.01 Wood Materials

- A. Lumber - General
 - 1. Lumber shall be sound stock, straight, of consistent size, free of strains and mildew, and kiln-dried to a moisture content of not more than 19 percent.
 - 2. In the absence of drawing dimensions, lumber widths and thickness shall be construed to be nominal dimensions.
 - 3. Lumber shall be S4S
 - 4. Sill plates and all framing lumber in contact with concrete and porch structural framing shall be pressure treated.
- B. Dimensional Lumber
 - 1. Minimum Grade: #1 and # 2, SPF, graded according to ALSC National Grading Rule (NGR).
- C. Plywood Products
 - 1. Advantech
 - a. Roof: Nominal 5/8" 40/20 panel span rating
 - b. Walls: Nominal 1/2" Exposure 1
- D. Pressure Treatment shall be equal to AWPA C2 Standard, AWPB LP-2/3/5, kiln dried to 15% moisture content.
 - 1. Treatment:
 - a. Pressure treat in closed retort by vacuum pressure process.
 - b. AWPA C2 for lumber.
 - c. AWPA C9 for plywood.
- E. Engineered Lumber
 - 1. Glulam exposed exterior framing (columns and beams) shall be "Power Beam" by Anthony Forest Products Company, or equal by Weyerhaeuser.
 - a. Preservative treatment shall be Hoover "Clear-Guard" at 0.055 Pounds per CF, suitable for above ground uses, with 25 year warranty.
 - 2. LVL Framing, by Weyerhaeuser or equal.
 - 3. Product width, depth to be as indicated on the drawings.

2.02 RELATED MATERIALS

A. Fasteners

1. All nails, fasteners and accessories shall be compatible with surrounding metals so as to prevent galvanic action.
 - a. Follow manufacturer's requirements for preservative treated Glulam fasteners.
2. Length of fasteners shall be sufficient to prevent backing out by vibration, shrinkage or swelling action through out the life of the application. Fastener penetration shall be a minimum of 1-1/2 inches.
3. Sill plate attachment bolts in concrete foundations shall be 5/8" anchor bolts.
4. Fasteners:
 - a. Provide fastening devices necessary and suited for each application.
 - b. Bolts, Screws, Nuts, and Washers: Square, round, and hex head to ANSI B18 and ASTM A307.
 - c. Wood Screws: Slotted head ANSI B18 and ASTM A549.
 - d. Nails: ASTM A510 and F547.
 - e. Finish: ASTM A153 hot-dip galvanize all rough hardware supplies under this section.
5. Bolts and Anchors:
 - a. Expansion bolts and adhesive anchors shall be by Hilti or equivalent, approved by architect.

B. Miscellaneous Materials:

1. Sill Sealer: Closed cell foam type, equal to 1/4" Dow Model "Ethafoam".
2. Metal Hangers and Framing Anchors:
 - a. Use type and size suited for application, hot-dipped zinc coated.
 - b. Acceptable Manufacturer: Simpson Strong-Tie, Inc.

C. Adhesive: Construction Adhesive for plywood subfloor shall conform to APA specification AFG-01 or ASTM D3498.

D. Fasteners: All connectors, anchors, hangers, ties, straps, etc., shall be by Simpson Strong-Tie, Inc. or equivalent approved by Architect.

E. Air Barrier – TYVEK by DuPont, or equal.

2.03 POST BASES

- A. By Simpson, or equal By USP, a Mitek Company.
1. As noted on drawings.

2.04 Concealed Beam Supports

- A. By Simpson, or equal By USP, a Mitek Company.
1. As noted on drawings.

PART 3 - EXECUTION

3.01 INSPECTION / JOB CONDITIONS

A. The contractor shall determine all dimensions, quantities and site conditions. The plans are approximate only and shall not be relied upon in determining the exact work to be performed. Coordinate all installations with proposed MEP installations.

3.02 PREPARATION

A. Preparation shall provide a surface suitable to apply new materials. A substrate is suitable when application of new materials results in uniform and maximum contact between such materials and substrate.

3.03 INSTALLATION - GENERAL

A. Discard units of material with defects that might impair quality of work, and units which are too small to use in installing work with a minimum of joints, or optimum joint arrangement.

B. Set carpentry work to required level and lines, with members plumb and true to line.

C. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required to recognized standards, or as specified herein.

D. Countersink nail, screw or bolt heads.

E. Install without splitting of wood; predrill as required.

F. Cut wood with tools and equipment to provide smooth, uniform cuts without irregularities.

G. All butt joints in woodwork shall be flush to provide a smooth, uniform line with no irregularities. Built-up blocking shall have butt joints staggered at a 4-feet minimum, layer to layer. Where multiple layers of woodwork meet at corners, they shall be woven to provide a rigid connection. The minimum length of any individual piece of woodwork shall be 3 feet. All lengths of woodwork shall have a minimum of two fasteners.

H. Plywood panels shall be installed as per recommendations of APA, as printed in the *APA Engineered Wood Construction Guide*.

I. Install rough carpentry in a manner to provide rough openings for doors and windows as indicated on drawings. Where dimensions are not indicated, coordinate installation with indicated trim sizes.

3.04 ERECTION

A. General:

1. Assemble rough carpentry to produce joints true, tight, and well nailed to comply with Drawings and pertinent codes and regulations.
2. Select individual pieces so that knots and obvious defects do not interfere with placement of bolts or proper nailing.
3. Cut out and discard defects which will render lumber unsuitable for intended use.
4. Do not shim sills, joists, short studs, trimovers, headers, lintels, or other framing components.
5. In addition to all framing operations normal to fabrication and erection indicated on Drawings, install all backing required for Work.
6. Set all horizontal or sloped members with crown in up position.
7. Do not notch, bore, or cut members for pipes, ducts, conduits, or other reasons except as indicated on Drawings or approved in advance.
8. Alignment: For framing members to receive finished walls or ceiling, do not vary more than 1/8 in. from plane of surface of adjacent framing and furring members.

B. Plywood Sheathing:

1. Place all panels with face grain perpendicular to supports and continuously over min. 2 supports.
2. Center joints accurately over supports.
3. Stagger end joints of panels to achieve minimum joint continuity.
4. Provide 1/8 in. gap at side edges and 1/4 in. gap at end edges, using panel clips for roof sheathing.
5. Nailing:
 - a. Nail 6 in. o.c. along panel edge and 12 in. o.c. at intermediate supports.
 - b. Use min. nail sizes indicated in the Drawings.

C. Bridging:

1. Install metal cross bridging at joists where indicated on drawings.

D. Stud Walls and Partitions:

1. Make all studs single length, unspliced, and platform framed.
2. Frame all corners with a minimum of three studs and provide all required blocking for wall finish.

3. Frame the exterior wall where interior partitions butt in to ensure full and continuous access to wall cavities to permit complete installation of insulation.
- E. Blocking:
1. Provide blocking at locations scheduled to have wall hung items.
 2. Use 2 in. thick member of same width as wall or partition or continuous 3/4 in. plywood as shown on Drawings.
 3. Install solid blocking between joists at all points of support and wherever sheathing or flooring is discontinuous.
 4. Install solid wood "I" joist blocking between rim joist and wood "I" joist, where joists are parallel to exterior wall, as indicated on the drawings.
- F. Rafters and Ceiling Joist Framing (in areas of stick framed roofing):
1. Ceiling Joists:
 - a. Provide of size and spacing indicated.
 - b. Lap framing from opposite sides min. 4 in. or securely tie opposing members together.
 - c. Face nail to ends of parallel rafters.
 2. Rafters:
 - a. Provide member of size and spacing indicated.
 - b. Notch to fit exterior wall plates and toe nail or use preformed metal framing anchors.
 - c. Double to form headers and trimmers at openings and support with metal hangers.
 - d. Provide hip and valley rafters twice as thick as regular rafter and 2 in. deeper or as shown on Drawings.
 - e. Bevel ends of jack rafters for full bearing against hip and valley rafter.
 - f. Provide special framing for eaves, overhangs, dormers, and similar conditions.
- G. Air Barrier: By siding installation.

3.05 ENGINEERED LUMBER

- A. Install in accordance with manufacturer's recommendations.
1. Coordinate installation with concrete footings and post base installation.

3.06 ADJUSTING AND CLEANING

- A. Maintain premises in neat, safe, and orderly condition during execution of Work.
- B. Maintain free of accumulations of sawdust, cut ends, and debris.

END OF SECTION 06 10 00

SECTION 06 20 00**FINISH CARPENTRY****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(not applicable)**1.03 SCOPE OF WORK**

- A. Work of this Section includes, but is not limited to:
1. Exterior trim boards and exterior door casing.
 2. Interior Standing and Running Trim
 3. Wood closet shelving
 4. Wire closet shelving.
 5. Misc. trim items, apron and stool at windows.
 6. Installation of Access Panels, supplied by others.
 7. Electrical panel backer boards
 8. Installation of Hardware
 9. Installation of Bath Accessories
 10. Installation of signage
 12. Installation of residential casework
 13. Misc. Architectural Casework
 14. Attic Hatch

B. Where materials are supplied by other sections, consult such sections for installation methods, where applicable.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. Section 06.10.00, Rough Carpentry: Blocking support for installations

2. Section 07.46.20, Vinyl Siding
3. Section 08.14.00, Wood Doors
4. Section 08.11.00, Metal doors and frames,
5. Section 08.70.00, Finish hardware,
6. Section 12.35.30 Residential Casework
7. Section 10.14.00 Signage

1.05 ALTERNATES

(Not applicable)

1.06 SUBMITTALS

A. Attention is directed to Section 01.30.00 regarding required procedures for Submittals.

B. Submittals are required for the following:

(SD = Shop Drawing)

(FS = Field Sample)

(OS = Samples)

(PD = Printed Data)

1. Miscellaneous finish carpentry SD, OS, PD
2. Closet Shelving PD
3. Trim installation at exterior SD
Exterior trim shop drawing shall show the coordination of soffits, siding, Windows and other elements of the exterior, laid out in a manner that Is consistent with the manufacturer's requirements.
4. Interior Trim

1.07 QUALITY ASSURANCE

A. Manufacturer: Provide millwork only from manufacturers complying with AWI standards, and those producing similar work for a minimum of five years.

B. Installer: Employ only experienced personnel for installation of the work of this Section.

C. Factory-mark each piece of lumber and plywood with type, grade, mill and grading agency identification, except omit marking from surfaces to receive transparent finish, and submit mill certificate that material has been inspected and graded in accordance with requirements if it cannot be marked on a concealed surface.

1.08 REFERENCE STANDARDS

A. Refer to AWI Quality standards for definition of millwork grade. If not so identified, work shall conform to "Custom" grade.

B. AWI Fabrication / Installation Standards: Custom Grade

C. Materials Standards:

1. Softwood Lumber: Comply with PS 20, ANSI A199.1.
2. Hardwood Plywood Comply with PS 51

1.09 DELIVERY AND STORAGE

A. Protect finish carpentry materials during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

B. Do not delivery materials construction operations that could damage materials are completed. If, due to unforeseen circumstances, finish carpentry materials must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

1.10 JOB CONDITIONS

A. Conditioning: Installer shall advise Contractor of temperature and humidity requirements for finish carpentry installation areas. Do not install carpentry until required temperature and relative humidity have been stabilized and will be maintained in installation areas.

1. Maintain temperature and humidity in installation area as required to maintain moisture content of installed finish carpentry. The fabricator shall determine the optimum moisture content and required temperature, and acceptable tolerances.

PART 2 - PRODUCTS AND MATERIALS

2.01 WOOD MATERIALS

A. Solid Lumber Stock:

1. General:
 - a. Comply with AWI 100, plain sawn, S4S and work to shapes indicated, unless otherwise indicated.
 - b. Exposed - Transparent Finish: Grade 1, red oak for hardwood, clear white pine or white wood for softwood, no finger joints.
 - c. Exposed - Painted Finish: Grade II, birch for hardwood, white pine or white wood for softwood.
 - d. Coil Stock Covered Trim: Economy Grade, birch or pine.

2. Exterior Woodwork: Use decay-resistant lumber species, equal to cedar, cypress or redwood, or chemically treated softwoods to establish comparable level of decay resistance.

B. Plywood:

1. Comply with AWI 200, veneer core.
2. Face Veneer:
 - a. Hardwood: Match adjacent lumber (Birch for painted)
 - b. Softwood: Douglas fir.
3. Cut: Plain sliced, smooth.

C. Fasteners:

1. Wood Screws: ANSI B18, type, size, and material as required for condition of use.
2. Bolts and Nuts: ANSI B18 and ASTM A307 type, size, and material as required.
3. Exterior Fasteners: ASTM A153, hot-dip galvanize.

2.02 WOOD FABRICATION

A. Standing and Running Trim:

1. Lumber:
 - a. Transparent Finish: AWI 300, Premium Grade, using hardwood lumber.
 - b. Opaque Finish: AWI 300, Custom Grade, using softwood lumber.
2. Exterior and Interior Plywood:
 - a. Transparent Finish: AWI 200, Grade I, using face veneer to match lumber.
 - b. Opaque Finish: AWI 200, Grade II, using softwood face veneer.
3. Standing Trim: Items of fixed length to include but not be limited to:
 - a. Door and Window Casings.
 - b. Stops.
 - c. Stools or Sills.
 - d. Apron.
4. Running Trim: Items of continuing length to include but not be limited to:
 - a. Chair Rail– 1x4
5. Acceptable Manufacturer: Brosco Model Ponderosa Pine Mouldings.

B. Wood Shelving:

1. Provide all wood shelving to AWI 600 series, Custom Grade.
2. Material: Softwood plywood.

3. Exposed Edges: Solid lumber edge bands, 3/4" by 1-1/2"
4. Adjustable standards: Heavy Gauge Metal, with support brackets.

2.03 PVC TRIM AND PANELS

- A. Trim shall be "Azek", or approved equal, including Versatex Simulated Wood.
1. Fastener head filler shall be as recommended by manufacturer for areas where the fastener hole is visible.

2.04 WIRE SHELVING

- A. Wire Shelf System and Utility Closet Shelf System:
1. Type: Ventilated vinyl coated steel rod shelving with integral clothes rod – constant slide design
 2. Size: 18 in. deep x length to span closet or area.
 3. Color: White.
 4. Provide anchors, end brackets, support brackets, and joiners required to mount shelf.
 5. Acceptable Manufacturer: Clairson Industries Model Closet Maid.

2.05 ATTIC HATCH

- A. 22.5 x 30 RO – verify with with truss bottom chord spacing.
1. E-Z Hatch by Battic Door, R42 Delux Model (Keyed Lock)

PART 3 - EXECUTION

3.01 INSPECTION / JOB CONDITIONS

- A. Examine the areas and conditions under which finish carpentry work is to be performed. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Condition wood materials to average prevailing humidity conditions in installations areas prior to installing.
- B. Prior to fabrication, take field measurements of shop fabricated items to confirm dimensions.

3.03 FIELD QUALITY CONTROL

A. Pre-installation Meeting: Meet at project site prior to delivery, and review coordination and environmental controls required for proper installation and ambient conditioning in areas to receive work. Meeting shall include the Contractor, Architect and firms and persons responsible for continued operation of HVAC systems as required to maintain temperature and humidity conditions. Proceed with finish carpentry only when agreement is reached that required ambient conditions can be maintained.

3.04 INSTALLATION

A. General:

1. Set and secure items in place, rigid, plumb and level.
2. Scribe installations against other building materials, leaving gaps of 1/32 inch, maximum. Do not use additional overlay trim for this purpose.
3. Refinish cut surfaces or repair damaged areas.
4. Verify dimensions before proceeding and obtain measurements at site for Work required to be accurately fitted to other construction.
5. Coordinate Work with other trades affected by this installation.
6. Give particular attention to work of supporting and attachment items so as not to delay progress.
7. Condition wood materials to average prevailing humidity conditions before installing.
8. Coordinate with backprime of lumber by Section 09900 for painted finish exposed on exterior or where high moisture and humidity exists in interior.

C. Standing and Running Trim:

1. Install with minimum number of joints, using full-length pieces.
2. Stagger joints in adjacent or related members.
3. Cope at returns, miter at corners for tight fitting joints to have full surface contact.
4. Use butt joints for end-to-end joints.
5. Make exterior joints water-resistant by tight fitting.
6. Apply flat grain lumber with bark side exposed to weather.
7. Backprime trim on exterior or in high moisture areas that is scheduled for paint or stain finish.
8. Hall handrails and graspable support rail shall return to wall at end of run.

D. Installation of items furnished under other sections:

1. See individual section for installation instructions.
2. Install all items noted to be furnished only under other sections including but not limited to:
 - a. Wood doors and frames, Section 08 14 00

- b. Finish hardware, Section 08 70 00
- c. Cabinetwork, Section 12 35 00

E. Attic Hatch shall be positioned with review of architect, to location relative to Truss members.

3.05 TOLERANCES

A. Tolerances:

- 1. Plumb and Level: 1/8 in. in 8 ft.
- 2. Offset in Surface Alignment: Max. 1/16 in.
- 3. Offset in Revealed Adjoining Surface: Max. 1/8 in.

3.06 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION

A. Repair damaged and defective finish carpentry work wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace with new installation. Adjust joinery for uniform appearance.

B. Clean finish carpentry work on exposed and semi-exposed surfaces.

C. Refer to Painting Section for final finishing of finish carpentry work.

D. Protection: Protect and maintain conditions to ensure that work will be without damage or deterioration at time of acceptance.

3.07 Closet Shelving:

A. Install as per manufacturer's printed instructions regarding spacing of supports and wall attachment brackets.

3.08 Exterior Trim

A. Install trim, including cornerboard, panels and casing, with flashing at window and door heads in accordance with trim manufacturer's printed instructions regarding cutting and nailing.

- 1. Install with stainless steel Screws
- 2. Cover all fasteners with Cortex concealed fastening / plug system for PVC trim, with Stainless Steel screws.
- 3. Rabbet out slots for receiving Vinyl siding at door casing and corner boards.

End of Section 06 20 00

SECTION 07 21 00**THERMAL AND ACOUSTIC INSULATION****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(not applicable)**1.03 SCOPE OF WORK****A. Work shall include:**

1. Installation of thermal and acoustic insulation, floors and ceiling.
2. Perimeter sealing at exterior doors and windows.

B. Schedule of Thermal Insulation:

1. Exterior Wood Wall Framing Cavity:
 - a. Dense pack blown cellulose in exterior wall construction, to Grade I installation per RESNET standards. Full depth of nominal 4 inch cavity. Netting included, if required for selected installation method.
2. Vented Roof / Attic:
 - a. R38 fiberglass batts (two R19 batts)
3. Acoustic and Fire Rated walls (FASB)
 - a. Mineral Wool batts, min 3"
4. Window / door sealing:
 - a. Expanding foam

C. General Design Intent

1. Although building is for seasonal use, design intent is for air-tight structure, fully sealed.
 - a. Vapor barrier at ceiling, all penetrations sealed.
 - b. Walls will use gypsum board barrier, with all edges and penetrations sealed.

- c. Gaps at sill framing shall be sealed.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. Section 07 90 00, Sealants – general air sealing at exterior, including exposed framing.
2. Div 08 Windows: self-adhering flashing strips at window perimeter.

1.05 ALTERNATES

(not applicable)

1.06 SUBMITTALS

A. Attention is directed to Section 01 30 00 regarding required procedures for Submittals.

B. Submittals are required for the following:

(SD = Shop Drawing)

(FS = Field Sample)

(OS = Samples)

(PD = Printed Data)

- | | |
|---|----|
| 1. Fire, Acoustic and Thermal Batt Insulation | PD |
| 2. Expanding foam insulation | PD |
| 3. Spray Cellulose | PD |

C. Printed data for expanding foam insulation shall include the recommended rate of foam expansion for the particular installation requirements, and the requirement of thermal or ignition barriers.

1.07 REFERENCE STANDARDS

A. Blanket Insulation: ASTM C665, FS HH-I-521

B. Vapor Barrier: FS L-P-375

C. Thermal resistance: ASTM C-518

D. Water Vapor Transmission: ASTM E96

1.08 DELIVERY, STORAGE AND PROTECTION

A. General Protection:

1. Protect insulation materials from weather and construction processes.

2. Do not allow insulation to become wet or soiled.
 3. Comply with precautions and recommendations of manufacturer.
- B. Protection for Plastic Insulation:
1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
 2. Protect against ignition at all times.
 3. Do not deliver plastic insulating materials to Project site ahead of installation time.
 4. Complete installation and concealment of plastic materials as rapidly as possible in each area of Work.

PART 2 - PRODUCTS AND MATERIALS

2.01 INSULATION MATERIALS

- A. Dense pack blown cellulose in exterior wall construction. Product by National Fiber or equal. Minimum R-3.5 per inch. Netting included, if required for selected installation method. Acceptable substitute products: Wood fiber GUTEX Thermofiber or equal; Dense pack mineral wool Knauf EcoFill Wx Blowing Insulation or equal.
- B. Acoustic Insulation. Flexible units fabricated from glass or semi-refractory slag fibres, manufactured by Certain-Teed, Manville, Owens-Corning, USG or equal.
1. Floor Ceiling Cavities (where indicated)
 - a. 3.5" fiberglass, unfaced acoustic insulation.
 2. Acoustic and Fire Rated walls (FASB)
 - a. Mineral Wool batts, min 3"

2.03 ACCESSORIES:

- A. Adhesives: Use type suited for location and compatible with material to be adhered.
- B. Fasteners: Use type and size suited for application.
- C. Vapor Barrier: 6 Mil poly, taped seams.
- D. Air Seal Boot:
- 1.. Type: PVC or EPDM premolded pipe and seal for penetrations at ceiling vapor barrier.
 2. Install at all pipe penetrations through ceilings.
 3. Acceptable Manufacturer: Carlisle Syntec.

- E. Gap Insulation:
1. Foam-in-place for sealing around perimeter wall penetrations and electrical outlets and around all penetrations through wall and partition top plates.
 2. Acceptable Manufacturer: Insta-Foam Products Inc. Model Insta-Seal, W.R. Grace Model Poly- Cel.
 - 3.. At option of Contractor, use of appropriate foam backer rods sized to location and acoustical sealant may be substituted for foam-in-place gap insulation around window frames after receipt of written approval from Architect.
- F. Vent Baffles (Size as determined by rafter / truss spacing)
1. Raft-R-Mate, by Owens Corning
 2. ADO Products, Pro-vent
 3. PropaVent

PART 3 - EXECUTION

3.01 PREPARATION

- A. Substrate:
1. Installer must examine substrates and conditions under which insulation work is to be performed and must notify Contractor in writing of unsatisfactory conditions.
 2. Do not proceed with insulation work until unsatisfactory conditions have been corrected in manner acceptable to Installer.
 3. Clean substrates of substances harmful to insulations or vapor barriers, including removal of projections which might puncture vapor barriers.
- B. Utilities:
1. Insure completion of plumbing, mechanical, and electrical work is finished before start of insulation work and has been fully inspected and tested.
 2. Place air-seal boot in place at all ceiling penetrations by piping or ducts.

3.02 INSTALLATION

- A. General:
1. Extend insulation full thickness over entire area to be covered unless indicated otherwise.
 2. Cut and fit insulation, where required, tightly around all obstructions so no voids exist in insulation course.
 3. Comply with manufacturer's instructions for particular condition of use and type of insulation and accessory items.
 4. Consult manufacturer's representative for specific instructions if instructions are not applicable to conditions of use.
- B. Thermal and Acoustical Insulation:

1. Cut batt insulation for proper friction fit in length and width without gaps or voids.
2. Do not double over, compress, or overlap insulation.
3. Insulate voids at transverse walls before interior wall is framed.
4. Install where indicated on the drawings.

C. Gap Insulation:

1. Install around entire perimeter of windows, doors, electric boxes, ducts, fans, piping, and other exterior wall and ceiling penetrations after installation of gypsum board.
2. Install along entire perimeter of wall sill on the exterior before sheathing is applied or on the interior before wallboard is applied.
3. Foam Method:
 - a. Control flow of material to prevent buckling window jambs.
 - b. Use temporary blocking as necessary.
 - c. Excessively tight window sash will be cause for rejection if more than 15 lb. of operating pressure is required to open or close windows.
 - d. Perform remedial action required to loosen windows at no cost to Owner.
3. Backer Rod and Sealant Method:
 - a. Use care in rod size selection and fit if rod is required.
 - b. Apply sealant to bridge entire gap.
 - c. Allow for movement due to expansion and contraction when insulating gaps around vent piping, electric conduit, and other penetrations occurring in ceiling or wall.

D. Install as to preserve continuity of air barrier.

E. Install as to provide un-impeded attic ventilation.

3.03 FIELD QUALITY CONTROL

A. Tests:

1. At completion of installation of insulation and air seals, and again at completion of construction, Owner may conduct Door Fan Testing and Infrared Scanning.
2. Cooperate with this testing as required.
3. Correct deficiencies as required and requested.
4. Open finished walls and ceilings where insulation has been omitted or improperly installed.
5. Return to site where Infrared Scanning is delayed until first heating season.

End of Section 07 21 00

SECTION 07 31 00

ASPHALT SHINGLE ROOFING

PART 1 GENERAL

1.01 GENERAL

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS

(not applicable)

1.03 SUMMARY OF WORK

A. Section Includes:

1. Three Tab, 30 yr asphalt shingle roof.
2. Roofing felt
3. Fasteners.
4. Membrane Flashing
5. Ice and Water Shield.
6. Drip Edge.
7. Aluminum gutters and downspouts

B. Conformance to construction phasing schedule.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

0. Section 06 10 00, Sheathing repair and replacement
1. Section 06 20 00, Finish Carpentry: roof trim

2. Section 07 62 00, Flashing and Sheet Metal: Misc Flashing

1.05 ALTERNATES

(not applicable)

1.06 SUBMITTALS

A. Provide submittals to form defined in Section 01300, Submittals.

B. Submittals are required for the following:

(SD = Shop Drawing)

(FS = Field Sample)

(OS = Samples)

(PD = Printed Data)

1.	Asphalt Shingles	PD, OS
2.	Membrane materials	PD, OS
3.	Roof Edge	PD, OS
4.	Roof Cement	PD
5.	Fasteners	PD, OS
6.	Roof Caps	PD/ OS
7.	Alum. Gutters & downspouts	PD / OS
7.	Warranty Information	PD

C. Shingle and alum. samples shall include full color range.

D. Submit written, certified evidence that all conditions of the manufacturer's material and installation warranty are met by the proposed installation. Full warranty must be available for products installed over unventilated roof decks.

PART 2 PRODUCTS

2.01 MATERIALS

A. Shingles – Granule surfaced self-sealing asphalt shingle with fiberglass reinforced core and a mineral granular surfacing. Traditional 3-tab styling.

1. Description:

ASTM D 3462, Class H

ASTM D3018, Type 1

UL 790 Class A Fire resistance

UL 997 Wind uplift label.

ASTM D3161, Type 1 Class F Wind Resistance

- AC438 compliant
- CSA 123.5-98
- 2. Color: As selected from manufacturer's standard colors for Northeast region.
- 3. Warranty:
 - a. 30 Year for this project application
 - 8 year 100% labor and material
 - b. 10 Year algae / stain resistance
 - c. 10 Year 110 mph wind resistance warranty
- 10. Acceptable Manufacturers:
Certainteed – “Marquis” WeatherMax
Equal by GAF or Tamko.
- B. Flashing:
 - 1. Ice and Water membrane (Certainteed WinterGuard or equal)
 - 2. Drip Edge: 0.027 in. x 6 in. wide, Dark gray finish.
 - 3. Valley Flashing – Ice and Water Membrane and Roll Roofing
- C. Ridge Vent:
 - 1. Cobra Ridge Runner by GAF
- E. Roofing Felt:
 - 1. Application: Layer of No. 15 asphalt felt, or as required by manufacturer to achieve system warranty.
 - 2. No. 15 Asphalt Felt:
 - a. UL 55A, Type 15, plain.
 - b. Size: 36 in. wide.
 - c. Meeting ASTM D226, ASTM D4869, ASTM D6757
 - 3. Certainteed DiamondDeck Synthetic Underlayment
- F. Gutters and Downspouts - Aluminum:
 - 1. Material: 3005-H25 aluminum, 0.032 in. ga. for gutters and 0.027 in. ga. for downspouts.
 - 2. Provide gutters complete with strainers, outlet tubes, gutter ends, expansion joints, screens, and baffles.
 - 3. Provide rectangular corrugated downspouts complete with elbows.
 - 4. Color: As selected by architect from manufacturer's full standard range.
 - 5. Acceptable Manufacturer: Alcoa, System Six (6" nominal size, with 3" x 4" downspout) or equal by Standard Metal Products, Modern Materials Corp., Hunter Douglas, Hastings Aluminum Products.
 - 6. Hangers: Concealed type, equal to Alcoa #144160.
 - 7. At Transition to subsurface PVC, provide connector with overflow.

- G. Fasteners: Hot-dipped galvanized steel, 10-1/2 to 12 ga. roofing nails having 3/8 in. dia. heads, min. 1-1/4 in. long. Use shorter nails at roof deck areas exposed to exterior view.
1. Use of power activated fasteners is permitted, American made, and collated.
Staples not permitted.
- H. Cement: ASTM D2822, fibrated asphalt cement.
- I. Flashing Membranes:
1. For use at eave, rake , ridge and dormer side walls, as specified herein.
 2. Cold applied self-adhering preformed membrane.
 3. Size: 36 in. wide with end laps min. 2-1/2 in.
 4. Acceptable Manufacturer: W.R. Grace Model Bituthene Ice and Water Shield, Certainteed Corp. Model WinterGuard, Owens Corning Model Deck-Dri.
- J. Drip Edge:
1. Drip Edge: 0.027 in. x 6 in. wide aluminum – white or brown finish.
 2. Provide at all roof edges.
- K. Splash Blocks:
1. Not Applicable
- L. Ridge Cap shingles:
1. Seal-A Ridge by GAF – match field color

PART 3 EXECUTION

3.00 PREPARATION

- A. Remove all existing roofing materials down to the deck.
1. Alert owner and architect of any problematic sheathing areas.
 2. Coordinate work with siding and trim installations at eaves and rakes.
 3. Protect existing pavilion roofing.
 4. Where pavilion roof edge meets main building, remove trim as needed to Provide flashing at the roof intersections.

3.01 INSTALLATION

- A. Roofing underlayment:

1. Comply with recommended specifications of ARMA.
 2. Lap each sheet 2 in. over preceeding sheet and turn up vertical surface 4 in.
- B. Flashing Membranes:
1. Apply membrane to manufacturer's instructions at eave, rake, ridge and valleys. Apply full width over any roof framing in direct contact with occupied space, and 2 feet above. This pertains to the sloped portions visible in the interior of the building.
 2. Roll entire membrane and apply second course with min. 2-1/2 in. overlap.
 3. Cover all valleys with initial min. 18 in. wide strip centered on axis of valley and lay full width membrane (36") over initial strip.
 4. Apply double layer around penetrations occurring in membrane min. 6 in. in all directions and seal.
- C. Flashing:
1. Eaves and Rakes: Install "Ice and Water" membrane to point 24 in. inside wall line and beyond any exposed sloped areas visible from the interior and lay additional felt over membrane area.
 - a. Sandwich metal roof edge between bottom course of "Ice and Water" membrane and 9 inch flashing strip of "Ice and Water" membrane placed over roof edge.
 2. Valley: Lay 36 in. wide valley liner of Ice and Water membrane. Overlap as per manufacturer's recommendation.
- D. Shingles:
1. Apply with max. min. 4 nails per strip in nailing pattern recommended by manufacturer.
 2. Set shingles at eaves and rakes in solid coating of plastic cement 8 in. from all edges.
 3. Apply hip and ridge shingles to match field shingles.
 4. At valleys, comply with manufacturer's recommended installation approach, over valley liner.
- E. Gutters and Downspouts - Aluminum:
1. Use slip joint connectors to connect gutter sections, end joints, or miter corners together.
 2. Fill joints with sealant and connect together.
 3. Apply bead of sealant inside gutter along edge of connector.
 4. Attach gutter sections to building using strap hangers every other rafter, on each side of any miter course, and on each end section. Use strap hangers and roof apron flashing coordinated with gutter size, in longest lengths possible. Provide for expansion and contraction and isolation from other metals as per manufacturer's instructions and recommendations.

5. Drill holes for pop rivets in end cap and gutter section and bed end cap in sealant before pop riveting.
6. Connect downspout and elbows to gutter using pop rivets.
7. Make all connections in direction of water flow.
8. Fasten downspout to wall with concealed hangers, min. 2 per length of downspout.
9. Install drip edge under shingles to prevent water reaching roof.
10. Wash system with detergent and touch up scratches and chips.
11. Apply touch up paint to all damaged areas, if area of damage is deemed small enough by Architect.
12. Connect to subsurface collection system with PVC boot with integral overflow.

- END OF SECTION -

SECTION 07 46 00
CEMENT BASED SIDING

PART 1 - GENERAL

1.01 GENERAL

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(not applicable)

1.03 SCOPE OF WORK

A. Work of this Section includes, but is not limited to:

1. Bead Board Soffit

B. Where materials are supplied by other sections, consult such sections for installation methods, where applicable.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. Section 06 10 00, Rough Carpentry: Blocking support for installations
2. Section 06 20 00, Finish Carpentry: exterior trim, Block outs for lighting, Vents, hose bibs, etc.
3. Section 07 62 00, Flashing and Sheet Metal

1.05 ALTERNATES
(Not applicable)

1.06 SUBMITTALS

A. Attention is directed to Section 01 30 00 regarding required procedures for Submittals.

B. Submittals are required for the following:

(SD = Shop Drawing)

(FS = Field Sample)

(OS = Samples)

(PD = Printed Data)

- | | | |
|----|---------|------------|
| 1. | Panels | SD, OS, PD |
| 2. | Reglets | OS, PD, |

Office sample shall be 12" long section of product, one per style or Configuration.

Field Sample shall demonstrate the coordination of soffits, siding, Windows, weather barriers, sealants and other elements of the exterior, installed in a manner that is consistent with the manufacturer's requirements. Review coursing of siding with architect prior to installation on the field sample.

Field sample may be incorporated into the project, if satisfactory.

1.07 QUALITY ASSURANCE

A. Installer: Employ only experienced personnel for installation of the work of this Section.

1.08 REFERENCE STANDARDS

A. Refer to AWI Quality standards for definition of millwork grade. If not so identified, work shall conform to "Custom" grade.

B. AWI Fabrication / Installation Standards: Custom Grade

C. Materials Standards:

- | | | |
|----|------------------|---------------------------------|
| 1. | Softwood Lumber: | Comply with PS 20, ANSI A199.1. |
| 2. | Hardwood Plywood | Comply with PS 51 |

1.09 DELIVERY AND STORAGE

- A. Protect finish carpentry materials during transit, delivery, storage and handling to prevent damage, soiling and deterioration.
- B. Do not delivery materials construction operations that could damage materials are completed. If, due to unforeseen circumstances, finish carpentry materials must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

1.10 JOB CONDITIONS

- A. Proceed with installation only when existing and forecasted weather permit work to be performed, as per manufacturer's requirements.

1.11 WARRANTY

- A. Special warranty for Cement Based Siding:
 - 1. Manufacturer's standard form, signed by manufacturer, installer and contractor, in which manufacturer agrees to repair or replace siding that fails in materials or workmanship within specified warranty period. Failures included, but are not limited to deformation or deterioration beyond normal weathering.
 - a. Warranty period for material: 50 years from date of substantial completion.
 - b. Warranty period for factory finish: 15 years from date of substantial completion.

PART 2 - PRODUCTS AND MATERIALS

2.01 FIBER CEMENT LAP SIDING

- A. (not applicable)

2.02 PANELS AND BATTENS

- A. James Hardie HardiePanel.
 - a. Smooth finish.
 - b. 5/16" thickness.
 - c. Length as needed to avoid horizontal seams

2.03 SOFFITS

- A. James Hardie HardieSoffit panel.
 - a. Beadboard, max size to minimize field joints.
 - b. 1/4" thickness.
 - c. Submit layout for approval

2.04 WEATHER BARRIER

- A. "House Wrap"
 - a. HardieWrap by James Hardi, with seam tape
 - b. Tyvek by Dupont, with seam tape

PART 3 - EXECUTION

3.01 INSPECTION / JOB CONDITIONS

- A. Examine the areas and conditions under which siding is to be performed. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Clean all substrates of projections or substances detrimental to application.
- B. Cut materials to required size, and prime cut ends. Comply with the requirements in DIV 09.

3.03 FIELD QUALITY CONTROL

- A. Pre-installation Meeting: Meet at project site prior to delivery, and review coordination required for proper installation and ambient conditioning in areas to receive work. Meeting shall include the Contractor, Architect and firms and persons responsible for wall penetrations, including HVAC and electrical. Proceed with siding only after location of all penetrations is determined,

3.04 INSTALLATION

- A. General:
 - 1. Set and secure items in place, rigid, plumb and level. Do not use materials that are unsound, warped, improperly finished or too small for proper installation.

2. Scribe installations against other building materials, leaving gaps as prescribed by the manufacturer. Do not use additional overlay trim for this purpose.
3. Refinish cut surfaces or repair damaged areas.
4. Verify dimensions before proceeding and obtain measurements at site for Work required to be accurately fitted to other construction.
5. Coordinate Work with other trades affected by this installation.
6. Give particular attention to work of supporting and attachment items so as not to delay progress.

3.05 WEATHER BARRIER

- A. Comply with manufacturers installation instructions including methods for windows and wall penetrations.
 1. Tape all seams.

3.06 SIDING AND SOFFIT INSTALLATION

- A. General: Comply with siding and soffit manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
 1. Do not install damaged components.
 2. Center nails in elongated nailing slots without binding siding to allow for thermal movement.
- B. Install fiber-cement siding and soffit and related accessories.
 1. Install fasteners no more than 24 inches o.c. or as recommended by the manufacturer, whichever is stricter. Install fasteners into supporting structure so as to avoid any sag in soffits.
 2. Touch up all cut ends of siding with manufacturer's standard touch up kit, regardless of installed location.
 3. Blind nail or screw all siding.
 4. Seal as per manufacturer's instructions.
- C. Coordinate soffit layout with the perimeter reglet installations. Reglets shall be correct depth to receive material.

3.06 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION

- A. Repair damaged and defective siding work wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace with new installation. Adjust joinery for uniform appearance.
- B. Clean finish siding work on exposed and semi-exposed surfaces.
- C. Refer to Painting Section for any required touch up of siding work.
- D. Protection: Protect and maintain conditions to ensure that work will be without damage or deterioration at time of acceptance.

End of Section 07 46 00

SECTION 07462**VINYL SIDING****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(not applicable)**1.03 SCOPE OF WORK**

- A. Work of this Section includes, but is not limited to:
1. Vinyl siding. Applied over mineral wool insulation.
 2. Extra Stock for Owner maintenance use.
 3. Air barrier installation.
 4. All required trim and accessories for a complete application, including starter strips, undersill trim and all receiving channels.
 5. Blockout sections for attachment of lights, hosebibs, receptacles, etc.

B. Where materials are supplied by other sections, consult such sections for installation methods, where applicable.

C. Design intent is for no visible "J" trim. Design intent is for trim to receive ends of vinyl sections.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. Section 06 20 00, Finish Carpentry: solid PVC trim at doors
2. Fiber Cement Panels – Section 07 46 00

1.05 ALTERNATES

A. (not applicable)

1.06 SUBMITTALS

A. Attention is directed to Section 01 30 00 regarding required procedures for Submittals.

B. Submittals are required for the following:

(SD = Shop Drawing)
(FS = Field Sample)
(OS = Samples)
(PD = Printed Data)

- | | |
|--------------------|------------|
| 1. Vinyl materials | SD, OS, PD |
| 2. Fasteners | OS, PD |
| 3. Warranty | PD |

C. Submit manufacturer's limited lifetime warranty, with verification that warranty is applicable to multi-family rental housing.

1.07 QUALITY ASSURANCE

A. Provide standard manufacturer's warranty covering full cost of material and labor for designated period.

1. Equal to Certainteed Corporation Lifetime Limited Warranty

B. Solid vinyl siding shall comply with the provisions set forth in ASTM standard specification for Rigid Polyvinyl Chloride siding, #D3679, Class 2.

C. All procedures, operations and product specifications shall meet or exceed ASTM D3679, D696, D1042, D4224 and PS55-72.

D. Weathering shall be according to requirements of ASTM D1435, and free of any visual surface defects, such as peeling, chipping, cracking, flaking or crazing due to manufacturing conditions.

E. Chalking shall not exceed ASTM D659 Number 6 rating caused by manufacturing defects within 5 years in a vertical exposure.

F. Color shall be uniform on the surface and throughout the panel.

G. Manufacturer shall be VSI certified.

H. Fire Properties

1. Products shall meet Class 1 flame spread requirements, as per ASTM E84.
2. Products shall have self ignition temp no less than 813 deg F, as per ASTM D 1929.
3. Material is self-extinguishing with no measurable extent of burn when tested under ASTM D 635.
4. Products meet Radiant Heat Test, as per NFPA 268.

I. Installer shall have previous experience in applications over Rock Wool insulation.

1.08 REFERENCE STANDARDS

A. Rigid Vinyl Siding Application Instructions – Vinyl Siding Institute

B. ASTM D4756, Standard Practice for installation of vinyl siding

1.09 DELIVERY AND STORAGE

A. Deliver and store in accordance with manufacturer's instructions.

1.10 EXTRA STOCK

A. At the completion of the project, leave with the Owner extra stock equal to two percent (1%) of the area of vinyl siding used on the project, divided proportionally between each color and profile.

A. **PART 2 - PRODUCTS AND MATERIALS**

2.01 Products and Materials

A. Vinyl

1. Siding, General:
 - a. Type: Formed solid polyvinylchloride panels, min. 0.042 in. thick nominal.
 - b. 4" profile,
 - c. Texture: Grain pattern.
 - d. Color: As selected from full range of standard colors.
 - e. Acceptable Manufacturer: Certainteed Mainstreet.

B. Accessories and trim:

1. Nails:
 - a. Non-staining rustproof siding, box, or casing nails suited to application.
 - b. Use stainless steel fasteners for plastic siding.
 - c. Note that siding installation is through 1.5" mineral wool insulation.

PART 3 - EXECUTION

3.01 INSPECTION / JOB CONDITIONS

A. Examine the areas and conditions under which vinyl siding work is to be performed. Do not proceed with the work until unsatisfactory conditions have been corrected.

1. Verify that existing sills are level and walls are plumb. Make all necessary adjustments to layout in the event of existing conditions that are out of level or plumb.

3.02 PREPARATION

A. Verify that surfaces are ready to receive vinyl installation.

1. Coordinate work with Sections 07 21 00, Insulation and Air Sealing and 06 20 00 Finish Carpentry.

3.03 FIELD QUALITY CONTROL

A. Verify vinyl materials ability to produce design intent prior to commencing installations.

3.04 INSTALLATION

A. Plastic Siding:

1. General:
 - a. Use siding nails to penetrate 1 1/2 in. into stud or combination of stud and solid sheathing, 8 to 10 in. o.c.
 - b. Drive nails so head is only lightly flush to siding materials.
 - c. Do not drive nails to bind siding materials – especially important over the mineral wool insulation.
 - d. Nail in center of slots and do not face nail. Panels must move freely side to side.
 - e. Leave min. 1/4 in. clearance at channels and corner posts to allow expansion and contraction of siding. When installing with temperatures below 32 deg. F., increase clearances to 3/8"
 - f. Do not stretch siding or force panels up or down when fastening. Allow panels to hand without strain.
 - g. Cut siding panels with sharp knife, snips or power saw.
 - h. Do not caulk panels where they meet the receiver of inside corners, outside corners or J trim. Do not caulk overlap joints.
2. Horizontal Siding:
 - a. Run chalk line for starter strip around structure.
 - b. Install starter strip, nail max 8 in o.c. and double nail at ends.
 - c. Apply siding panels securely locked at bottom edge to starter strip or previous siding panel and nail top max. 16 in. o.c.
 - d. For cut areas of siding fitted below openings, use undersill trim and punch perforations a 4 in. intervals to lock siding into trim.
 - e. At wall penetrations and electrical equipment, install block-outs, etc. to provide suitable surface for wall mounted equipment and devices.
 - f. Allow sufficient expansion room for long panels.

3.05 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION

A. Remove all debris from site.

B. Clean vinyl materials. Remove and replace all damaged materials.

C. Leave Extra Stock with owner, and provide Architect with written record of receipt.

End of Section 07462

SECTION 07 62 00**FLASHING AND SHEET METAL****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(not applicable)**1.03 SCOPE OF WORK**

A. This Section includes the Following:

1. Misc. Exterior flashing,

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. Section 07 46 20, Siding
2. Section 07 31 00, Shingle Roofing – gutters and downspouts

1.05 ALTERNATES
(not applicable)**1.06 SUBMITTALS**

A. Provide submittals to form defined in Section 01 30 00, Submittals.

B. Submittals are required for the following:
(SD = Shop Drawing)

(FS = Field Sample)
(OS = Samples)
(PD = Printed Data)

Metal Roofing
Misc flashing

OS, SD, PD
OS, SD

1. Product Data: For each type of product specified.
2. OS for Initial Selection: Proposed profile.
 - a. All hangers, straps, etc.
3. SD shall indicate:
 - a. Fabrication details, showing hangers, etc.
4. Submit full range of color choices for alum coil stock.

1.07 QUALITY ASSURANCE AND REFERENCE STANDARDS

A. Metal flashing shall be fabricated and installed by experienced mechanics, in accordance with the publication entitled SMACNA details for thermal and moisture protection.

1.08 PROJECT CONDITIONS

A. Field Measurements: Verify substrates by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS AND MATERIALS

2.01 MISC FLASHING

A. Alum .035, coated. Coil stock, polyester coated.

PART 3 - EXECUTION

3.01 INSPECTION / JOB CONDITIONS

D. Report any damaged or unsuitable areas to the Architect and/or owner.

3.02 INSTALLATION

3.03 INSTALLATION OF NON-PREFABRICATED FLASHINGS

- A. General: Fabricate and install flashings and other sheet metal work in accordance with referenced standards. The architect shall review each field sample prior to full fabrication of the component.
- B. All installations shall be conducted to allow for thermal expansion, and such provisions shall be indicated on the required shop drawings.
- C. Verify that substrate is ready to receive flashing and fastenings. Request correction from the General Contractor when substrates are not adequately prepared.
- D. Generally, flashing and sheet metal work shall be in lengths not exceeding 8 feet and shall be free from longitudinal joints. Coat all flashing in contact with dissimilar metal with asphalt paint. Form expansion joints in running flashing work by joining ends of sheets together with a 3 inch loose lock, filled with plastic cement, and install expansion joints every 24 feet in straight runs.

3.03 CLEANING AND PROTECTING

- A. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.

End of Section 07 62 00

SECTION 07 92 00**SEALANTS****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(not applicable)**1.03 SCOPE OF WORK**

A. Furnish and install interior and exterior sealants, including backing materials, primers, and related work. Provide joint sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals. Locations include:

1. Door frame perimeters.
2. Window Perimeters.
2. Joints between dissimilar materials, including bathroom fixtures.
- .

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. Roofing and roof flashing sealants by Section 07 30 00.
2. Sealants at perimeter joints of gypsum drywall to provide sound transmission reduction shall be by Section 09 26 00, Gypsum Board Systems.

1.05 ALTERNATES
(not applicable)**1.06 SUBMITTALS**

A. Attention is directed to Section 01300 regarding required procedures for Submittals.

B. Submittals are required for the following:

(SD = Shop Drawing)

(FS = Field Sample)

(OS = Samples)

(PD = Printed Data)

1. Sealants

OS, PD

1.07 QUALITY ASSURANCE

A. Single Source responsibility for Joint Sealer Materials: Obtain joint sealer materials from a single manufacturer for each different product required.

1.08 REFERENCE STANDARDS

A. Comply with ASTM C920 (elastomeric joint sealers) and ASTM C834 (acrylic emulsion sealants) requirements, including those referenced for Type, Grade, Class and Uses.

1.09 DELIVERY AND STORAGE

A. Deliver materials to project site in original unopened containers or bundles with labels informing about manufacturer, product name and designation, color, expiration period for use, pot life, curing time and mixing instructions for multi-component materials.

B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants or other causes.

1.10 PRODUCT CONDITIONS

A. Do not proceed with installations of joint sealers under the following conditions:

1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealer manufacturer or below 40 degrees F.
2. When joint substrates are wet due to rain, frost, condensation or other causes.

B. Do not proceed with installation of joint sealers where joint widths are less than allowed by joint sealer manufacturer for application indicated.

C. Do not proceed with installation of joint sealers until contaminants capable of interfering with their adhesion are removed from joint substrates.

PART 2 - PRODUCTS AND MATERIALS

2.01 GENERAL

A. Compatibility: Provide joint sealers, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by testing and field experience.

B. Use self-leveling compounds for horizontal joints and non-sag compounds for all other areas except as indicated or specified.

C. Primer for all sealants shall be as recommended by the sealant manufacturer.

D. Compounds shall contain no acids or ingredients that will stain or corrode substrates, or have injurious effects on paint.

2.02 COLOR

A. Concealed Joints: Use sealant with manufacturer's custom color having best overall performance qualities for indicated applications.

B. Exposed Joints: Use sealant as selected from manufacturer's custom colors, unless special colors are shown or specified.

C. Colors shall be as selected by architect.

2.03 ELASTOMERIC JOINT SEALANTS

A. Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C920 requirements.

B. One-Part Mildew-Resistant Silicone Sealant:

1. Type S (one-part prepackaged), Grade NS (vertical non-sag), Class 25 (min. +/- 25 percent movement capability), Uses NT (non-traffic locations) and as applicable to non-porous joint substrates; formulated with fungicide; intended for sealing interior joints in vertical surfaces of rooms with plumbing fixtures, and around perimeter of plumbing fixtures to adjacent surfaces. Intended for vinyl window installation. Product:

- a. Model Dow Corning 786 by Dow Corning Corp.
 - b. Model SCS 1702 by General Electric Co.
 - c. Model Proglaze White, by Tremco, Inc.
- C. One-Part Non-Sag Urethane Sealant:
 - 1. Type S (one-part prepackaged), Grade NS (vertical non-sag), Class 25 (min. +/- 25 percent movement capability), Uses NT (non-traffic locations) and as applicable to joint substrates for joints at exterior doors and other exterior locations. Product:
 - a. Model Chem-Calk 900, by Bostik Construction Products Division.
 - b. Model Dynatrol I by Pecora Corp.
 - c. Model Sikaflex - 1A NS, by Sika Corp.
 - d. Model Dynomic, by Tremco Inc.

2.04 LATEX JOINT SEALANTS

- A. Latex Joint Sealants:
 - 1. Manufacturer's standard, one part, non-sag, mildew resistant, acrylic-emulsion sealant complying with ASTM C834, formulated to be paintable and recommended for use at interior vertical joints. Product:
 - a. Model Chem-Calk 600, by Bostik Construction Products Division.
 - b. Model AC-20, by Pecora Corp.
 - c. Model Acrylic Latix 834, by Tremco Inc.

2.05 MULTICOMPONENT POURABLE URETHANE SEALANT (not Applicable)

2.06 BACKING MATERIALS

A. General: Provide sealant backings of material and type which are nonstaining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturers based on field experience and laboratory testing.

B. Plastic Foam Joint Fillers: Preformed, compressible, resilient, non-waxing, non-extruding strips of flexible, non-gassing plastic foam of material indicated below; non-absorbent to water and gas, and of size, shape and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

- 1. Closed cell, round, polyethylene foam, subject to approval of sealant manufacturer, for cold applied sealants only.
- 2. Conform to ASTM D1565.

A. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler

materials or joint surfaces at back of joint where adhesion would result in sealant failure. Provide self adhesive tape where applicable.

2.06 MISCELLANEOUS MATERIAL

A. Cleaners for non-porous surfaces: Provide nonstaining, chemical cleaners of type which are acceptable to manufacturer of sealants and sealant backing materials, which are not harmful to substrates and adjacent nonporous materials, and which do not leave oily residues or otherwise have a detrimental effect on sealant adhesion or in-service performance.

B. Masking Tape: Provide non-staining, non-absorbent type compatible with joint sealants and to surfaces adjacent to joints.

PART 3 - EXECUTION

3.01 INSPECTION / JOB CONDITIONS

A. Examine joints indicated to receive joint sealers, with installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealer performance. Do not proceed with installation of joint sealers until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface cleaning of joints: Clean out joints immediately before installing joint sealers to comply with recommendation of joint sealer manufacturers and the following requirements:

1. Remove all foreign material from joint substrates which could interfere with adhesion of joint sealer, including dust, paints (except for permanent protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealers, oil grease, waterproofing, water repellents, water, surface dirt and frost.
2. Clean concrete, masonry, unglazed surfaces of ceramic tile and similar porous joint substrates by brushing, grinding, blast cleaning, mechanical abrading or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above operations by vacuuming or blowing out joints with oil free compressed air.
3. Remove laitance and form release agents from concrete.
4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile and other nonporous surfaces by chemical cleaners or other means which are

not harmful to substrates or leave residues capable of interfering with adhesion of joint surfaces.

B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealer manufacturer based on contractor conducted pre-construction joint sealer-substrate tests or prior experience. Apply primer to comply with joint sealer manufacturer's recommendations. Confine primers to areas of joint sealer bond, do not allow spillage or migration onto adjacent surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces which otherwise would be permanently strained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.03 INSTALLATION OF JOINT SEALERS

A. General: Comply with joint sealer manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply. Conform to applicable ASTM recommendations for each application type.

B. Sealant backings: Install to comply with the following requirements:

1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross sectional shapes and depths of installed sealants relative to joint widths which allow optimum sealant movement capability.
 - a. Do not leave gaps between ends of joint fillers.
 - b. Do not stretch, twist, puncture or tear joint fillers.
 - c. Remove absorbent joint fillers which have become wet prior to sealant and replace with dry material.
2. Install bond breaker tape between sealants and joint fillers, compression seals or back of joints where adhesion of sealant to surfaces at back of joints would result in sealant failure.

E. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration and providing uniform, cross-sectional shapes and depths relative to joint widths which allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or current begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets and to ensure contact and adhesion with sides of joint. Do not use tooling agents which discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

1. Provide concave joint configurations per Fig. 6A in ASTM C962, unless otherwise indicated.

3.04 CLEANING

- A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealers and or products in which joints occur.

3.05 PROTECTION

- A. Protect joint sealers during and after installation from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deteriorated joint occurs, immediately reseal joints with new materials to produce joint sealer installations with repaired areas indistinguishable from original work.

End of Section 07 92 00.

SECTION 08 11 00
METAL DOORS AND FRAMES

PART 1 - GENERAL

1.01 GENERAL

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(Not Applicable)

1.03 SCOPE OF WORK

- A. Work consists of:
1. Exterior insulated steel doors and welded frames.
 2. Interior Knock Down Steel Frames.
 3. Frame size to meet wall type requirements.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. Section 06 10 00 Rough Carpentry: Framing and blocking.
2. Section 07 92 00 Sealants: Sealing frame perimeters.
3. Section 08 70 00 Hardware
4. Section 09 90 00 Painting – Painting doors and frames
5. Section 08 80 00 Glazing

1.05 ALTERNATES
(not applicable)

1.06 SUBMITTALS

A. Attention is directed to Section 01 30 00 regarding required procedures for Submittals.

- B. Submittals are required for the following:
(SD = Shop Drawing)
(FS = Field Sample)
(OS = Samples)
(PD = Printed Data)
1. Steel Doors and Frames: SD, PD
- C. Submit SD information in accordance with requirements outlined in ANSI / SDI 100.

1.07 QUALITY ASSURANCE

- A. Comply with ANSI/SDI 100, Recommended Specifications for Standard Steel Doors and Frames.
1. Maintain copy of all referenced ANSI/SDI standards on site.
- B. Door and Frame manufacturer shall be a member of the Steel Door Institute.
- C. Door and Frame Installer shall have documented experience in the successful installation of steel frames under similar conditions.
1. Documentation shall consist of references for projects installed by same personnel as proposed for this project.
2. Documentation shall be submitted within one week of preconstruction meeting.
3. Architect will review said documentation, and determine adequacy of proposed installation personnel.
- D. Exterior doors shall comply with 780 CMR 34.07 regarding thermal and infiltration performance of new door installations. All exterior glazing shall be thermal insulated glazing units.
- E. Labeled doors shall have the label displayed on door and frame.

1.08 REFERENCE STANDARDS

- A. Performance Standards
1. Thermal Rated assemblies at exterior applications: ASTM C 236 or ASTM C 976.
- B. Material Reference Standards
1. Cold rolled steel sheets: ASTM A 366
2. Hot rolled steel sheets: ASTM A 569
3. Hot dipped galvanized steel sheets: ASTM A 525 and A 526

4. Prime painting: ANSI A224.1
5. Fasteners: ASTM A 153

1.09 DELIVERY AND STORAGE

- A. Store, protect and handle materials as per guidelines outlined in ANSI/SDI 100.

1.10 SEQUENCING AND SCHEDULING

- A. Order and install in coordination with general construction scheduling and phasing requirements established in Division 01.

PART 2 - PRODUCTS AND MATERIALS

2.01 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements, provide products from one of the following manufacturers offering steel doors and frames.

1. Amweld
2. Ceko Corporation.
3. Curries Mfg., Inc.
4. Fenestra Corp.
5. Kewanee Corp.
6. Steelcraft
7. Republic Builders Products

2.02 MATERIALS

- A. Hot-rolled steel sheets and strips: Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569.

- B. Cold-rolled steel sheets: Commercial quality carbon steel, complying with ASTM A 366.

- C. Galvanized steel sheets: Zinc-coated carbon steel sheets of commercial quality, complying with ASTM A 526, with ASTM A 525, G60 zinc coating, mill phosphatized. Galvanized steel shall be treated to insure proper paint adhesion. All component parts used in galvanized doors and/or frames shall meet the galvanize specification.

- D. Inserts, bolts and fasteners: Manufacturer's standard units, except hot-dip galvanized items when applied to exterior walls, complying with ASTM A 153, Class C or D as applicable.

- E. Supports and Anchors: Fabricate of not less than 18 - gage galvanized sheet steel.
- F. Primer: Rust inhibitive, zinc chromate type primer, suitable for substrate and specified finish paints, in accordance with ANSI A224.1, and performance requirements of FS TT-P-641, Type II .
 - a. Asphaltic Frame undercoating at exterior frames.

2.03 FABRICATION

A. GENERAL

- 1. Fabricate steel door and frames units to be rigid, neat in appearance, and free from defects, warp or buckle. Wherever practicable, fit and assemble units in manufacturer's plant. On submittals and components, clearly mark elements of work that cannot be pre-assembled, to assure proper assembly at project site. Comply with SDI requirements.
- 2. Doors shall have beveled (1/8"[3mm] in 2"[51mm]) hinge and lock edges.

B. DOOR FABRICATION

- 1. Exterior Insulated Doors:
 - Grade II, Heavy Duty, 1-3/4" thickness. Equal to Curries 777 Series - Trio
 - a. Model 4, Seamless Composite Construction, insulated, galvanized faces and edges, minimum 14 gage sheet steel. Provide door style as indicated on door type elevations. Reinforce "Full Glass" style with steel stiffened grid, or supply stile and rail fabrication (Model 5).
 - b. Insulating Fiberglass Between Stiffeners – R11
- 3. Glazing: Non-removable stops shall be installed on the outside of exterior doors, as per SDI standards. Glass trim for doors with cutouts shall be 24[.6mm] gage steel conforming to ASTM A 924 hot dipped galvanized steel with a zinc coating of 0.06 ounces per square foot [183g per square meter] (A60)]. The trim shall be installed into the door as a four sided welded assembly. The trim shall fit into a formed area of the door face, shall not extend beyond the door face and shall interlock into the recessed area. The corners of the assembly shall be mitered, all be reinforced and welded. The trim shall be the same on both sides of the door. Exposed fasteners shall not be permitted. Label and non-label doors shall use the same trim.

C. FRAME FABRICATION

- 1. Interior Frames in drywall: Knockdown, pre-primed . 16 gage, minimum. Frames shall be "DRYWALL TYPE", formed with double return backbends to prevent cutting into drywall surface. Frames shall be

knocked down, designed to be securely installed in the rough opening after wall board is applied. Mitered corners shall be reinforced with a wedge lock corner clip to provide a firm interlock of jambs to head.

2. Exterior frames: Welded, galvanized, pre-finished, 14 gage minimum, arc-welded and ground smooth. Miters of frames shall be back welded. Weld shall penetrate the outside face. Faces shall be dressed smooth. Filler materials are not permitted.
 - a. Provide frame glazing beads steel panels. Prepare frames for the type of glazing bead required to receive the glass and gaskets. Miter or butt joint heads at corners.
3. Hardware reinforcement and preparation shall as per SDI 100 requirements. Drilling and tapping for surface applied hardware may be done at project site.

D. FASTENERS

1. Exposed: unless otherwise indicated, provide countersunk flat Phillips heads for exposed screws and bolts. All hardware fasteners for closers, hold-open devices shall be “thru-bolted”.

E. HARDWARE

1. Prepare doors and frames to receive mortised and concealed finish hardware in accordance with final approved finish hardware submission, and templates provided by the hardware supplier.
2. Comply with applicable requirements of SDI 107.
3. Adhere to mounting heights required by Commonwealth of Massachusetts Architectural Access Board.

F. ACCESSORIES

1. Rubber silencers – at door frame of interior frames only that do not have sound or smoke gaskets.

G. FINISHES - SHOP APPLIED PRIMER

1. Apply primer immediately after cleaning and pretreatment.
2. Air dry primer / system. Doors and frames shall be cleaned, phosphatized and finished with baked-on rust inhibiting paint capable of passing a 200-hour salt spray and 500-hour humidity test in accordance with ASTM test method B117 and D1735.

PART 3 - EXECUTION

3.01 INSPECTION / JOB CONDITIONS

- A. Openings
 - 1. Confirm critical dimensions. All necessary anchors for jambs, heads and sills of assemblies shall be provided. When verification of field dimensions are necessary, they shall be made by the contractor. Frame fabrication shall not begin until these dimensions have been submitted.

3.02 INSTALLATION

- A. Frames
 - 1. Install at least 3 anchors per jamb, adjacent to hinge locations, on hinge jamb, and at corresponding heights on strike jamb. Provide floor anchors at the base of each jamb, minimum 18 gage.
- B. Doors
 - 1. Install as per SDI and manufacturer's recommendations.
- C. Pre-finished paint Touch-up
 - 1. Immediately after erection, sand smooth any rusted or damaged areas of primer coat and apply touch-up of manufacturer supplied matching paint.

End of Section 08 10 00

SECTION 08 14 00**WOOD AND PLASTIC DOORS****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(Not Applicable)**1.03 SCOPE OF WORK**

A. Work consists of :

1. Supply wood PREHUNG doors and frames
2. NON – PREHUNG solid core wood doors, pocket door installation
3. a. Hardboard faced interior solid core doors, primed.
b. Blocking for hardware and attachments.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. Section 06 20 00 Finish Carpentry: Installation of wood doors and hardware.
2. Section 08 70 00 Hardware
3. Section 09 90 00 Painting

1.05 ALTERNATES

N/A

1.06 SUBMITTALS

- A. Attention is directed to Section 01300 regarding required procedures for Submittals.
- B. Submittals are required for the following:
 - (SD = Shop Drawing)
 - (FS = Field Sample)
 - (OS = Samples)
 - (PD = Printed Data)
- 1. Wood Doors: SD, PD
- C. PD information shall pertain to data of fabrication, cutouts, etc.
- D. SD information shall refer to Door Schedule door identification system.

1.07 QUALITY ASSURANCE

- A. Quality Standards: Comply with the following standards:
 - 1. NWWDA Quality Standard: I.S.I. "Industry Standard for Wood Flush Doors" of National Wood Window and Door Association.
 - 2. AWI Quality Standards for Panel Door Construction.
- B. Mark each door with stamp certifying compliance with specified standards.

1.08 PROJECT CONDITIONS

- A. Do not deliver or install doors until conditions for temperature and relative humidity have been stabilized and will be maintained in storage and installation areas during remainder of construction period.
 - 1. Refer to AWI quality standard including Section 100-S-3 "Moisture Content".

1.09 DELIVERY AND STORAGE

- A. Protect doors during transit, storage and handling to prevent damage, soiling and deterioration. Comply with the requirements of referenced standards and recommendations of NWWDA pamphlet, "How to Store, Handle, Finish, Install and Maintain Wood Doors", as well as with manufacturer's instructions. Store, protect and handle materials as per guidelines outlined in ANSI/SDI 100.

1.10 SEQUENCING AND SCHEDULING

A. Order and install in coordination with general construction scheduling and phasing requirements established in Division 01.

1.11 WARRANTY

A. Extended two year warranty shall cover replacement of defective doors which have warped, telegraphing of core construction, or do not conform to tolerances of referenced standards.

1. Warranty shall commence at the time of substantial completion.

B. Contractor shall replace or refinish doors where contractor's work contributed to rejection or to voiding of manufacturer's warranty.

PART 2 - PRODUCTS AND MATERIALS

2.01 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with requirements, provide products from one of the following manufacturers offering wood doors.

Flush Hardboard Construction

1. Masonite / Mohawk Corp. or equal.

2.02 Doors

A. 1- $\frac{3}{4}$ " Thick doors

1. Faces: Hardboard; white primer.
2. Edge: Machinable kiln-dried pine, primed to match face. Rails suitable to accommodate glazing and hardware installation.
3. Core: Wood Stave
4. Hardware – by others.

2.03 FABRICATION

A. Fabricate wood doors to produce doors complying with the following requirements.

1. Factory prefit and premachine doors.
 - a. Comply with tolerance requirements of AWI for pre-fitting.
 - b. Comply with final hardware schedule and with hardware templates.

- c. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with factory pre-machining.
- B. Shop Priming
 - 1. For Opaque finish doors, shop prime, as per requirements of Section 09 90 00.
- C. Frame Fabrication (prehung products)
 - 1. Comply with AWI rating for door
- D. Prehung Hardware
 - 1. As specified in Section 08 70 00 (supplied by Section 08 14 00)

PART 3 - EXECUTION

3.01 INSPECTION / JOB CONDITIONS

- A. Openings
 - 1. Examine installed frames and rough openings prior to hanging door.
 - 2. Reject doors with defects.

3.02 INSTALLATION

- A. Hardware
 - 1. See Section 08 70 00.
- B. Install wood doors to comply with manufacturer's instructions and with referenced AWI standards. Modify doors to fit exiting frames. If width adjustment is needed, trim equal amounts from each jamb.
- C. Adjust to provide free swing and operation.
- D. Protect doors to assure that wood doors will be without damage or deterioration at time of Substantial Completion.

End of Section 08 14 00

SECTION 08 53 00**VINYL WINDOWS****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(not applicable)**1.03 SCOPE OF WORK**

A. Perform all work required to complete the work of this Section as indicated on the drawings and/or as specified herein. All window products shall be Energy Star certified.

B. The work of this Section consists of all windows and related items, including, but not limited to, the following:

1. Field measurement and verification of all window sizes and window types.
 - a. Shop drawings of installation; schedules.
2. Furnish and install windows, with all required trim, exterior cladding, accessories, locks, screens and necessary adjustment. This shall include all head and sill extensions required for fit into openings. Coordinate installation with the continuity of the building weather barrier.
3. Work includes, but is not limited to, the installation of new products at all existing window and louver opening at the project site. Included in this work is:
 - a. Single-hung (SH), Projected and Fixed solid vinyl new construction windows, AAMA rated at R-40, min.
 - b. Tempered glazing at selected openings where required by code.
 - c. Aluminum mesh screens at all operable windows (1/2 Screen at Single Hung Windows)
4. Furnish and install complete all new windows as shown on the Drawings. Windows shall be fabricated in sizes, configurations and profiles shown. Windows shall include all trim, flashing, locks and accessories required for a complete installation.
5. Installation shall include:

- a. Shop Drawings
 - b. Factory Muller connections at windows ganged together, with metal reinforcing at connections.
 - c. Expanding foam insulation, between window frames and adjacent construction, and in the interior cavities of head expanders.
 - d. Sealing of all perimeter joints, at interior and exterior surfaces.
 - e. Field coordination with other trades.
 - f. Preparation of window opening, involving the patching of areas with gaps that would not permit sealing of vinyl - wood joint.
 6. Provide four additional balances.
 7. Provide 2 additional sash locks for SH units.
- C. Performance Requirements.
1. Energy Star rated products are required, including Energy Star 6.0 glazing.
 2. Meet applicable Energy Code requirements.
 3. Impact resistant glazing
 4. Upper sash of single hung windows shall have "tilt-in" feature for cleaning.
 5. All windows shall be from a single manufacturer.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. Section 06 10 00, Carpentry:
 - a. Blocking
 - b. Framing of openings
3. Section 06 20 00, Finish Carpentry
 - a. Exterior Trim at window locations.
 - b. Installation of window treatment
4. Section 07 92 00, Joint Sealers
 - a. Specification of perimeter sealants (installation by Section 08 53 00)

1.05 ALTERNATES (not applicable)

1.06 SUBMITTALS

A. Attention is directed to Section 01 30 00, Submittals, regarding required procedures for Submittals.

B. Submittals are required for the following:

(SD = Shop Drawing)
 (FS = Field Sample)
 (OS = Samples)
 (PD = Printed Data)

- | | | |
|----|----------------------|--------|
| 1. | Windows | PD, OS |
| 2. | Schedule | SD |
| 3. | Finish / Hardware | OS |
| 4. | Installation details | SD, FS |

C. Specific Requirements:

1. Product Data: Include certified test reports as necessary to show compliance to specification requirements. Include information regarding sealed glass units. Show recommended installation methods.
2. Shop Drawings: Show full-size details of installation methods, including location of fasteners and anchors, positions of head and sill extenders.
3. Office samples shall be full-unit, showing fabrication and operation of all components.
 - a. Office sample shall include mulling detail
4. Field sample shall be in location selected by architect, and shall be used to verify suitability of installation methods.

1.07 APPLICABLE PUBLICATIONS

A APPLICABLE PUBLICATIONS: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in text by basic designation only.

- 1 Federal Specifications:
 SS-G-45-1D Glass, Float or Plate, Sheet
- 2 American Architectural Manufacturers Association (AAMA);
 AAMA 101 IS2/A440-05

 Voluntary Specification for Aluminum, PVC, and Wood Windows and Glass Doors

 Test method for rate of Air Leakage through Exterior windows, Curtain walls and doors (ASTM E283)

 Test method for Structural Performance of Exterior Windows, Curtain

walls and doors (ASTM E330)

Test method for Water Penetration of Exterior windows, Curtain walls and doors by Uniform Static Air Pressure Difference (ASTM E547)

Specifications for Sealed Insulating Glass Units (ASTM E774)

AAMA 1503-98

Voluntary test method for Condensation Resistance of Windows, Doors, and Glazed wall sections

AAMA 615-02

Voluntary Specification, Performance Requirements, and Test Procedures for Superior Performing Organic Coatings on Plastic Profiles

NFRC 100-2004

Procedure for Determining Fenestration Product U-factors

NFRC 200-2004

Procedure for Determining Fenestration Product Solar Heat Gain Coefficients

NFRC 400-2004

Procedure for Determining Fenestration Product Air Leakage

1.08 QUALITY ASSURANCE

A. The Contractor shall provide copies of the independent laboratory tests which certify that the proposed window product meets or exceeds the specified American Architectural Manufacturers Association (AAMA) window rating, as determined by compliance to requirements of AAMA 101- IS2/A440-05, the National Fenestration Rating Council (NFRC) 100-204 standards and applicable American Society for Testing Materials (ASTM) standards.

1. Where required by the Massachusetts Building Code, window products shall have labels affixed to verify compliance to NFRC requirements.

B. Except as otherwise indicated, comply with air infiltration tests, water resistance tests and applicable load test specified in ANSI/AAMA 101 for type and classification of window units. Except as otherwise indicated, comply with thermal properties as specified by NFRC 100-2004 testing.

C. Material Uniformity:

1. All windows shall be the product of one manufacturer for the entire project.

D. Additional Testing: The owner reserves the right to test window products in laboratory or field settings to verify performance. The contractor shall correct all non-conforming installations.

E. Specific Performance Requirements

1. Air Infiltration Test:
With the sash in a closed and locked position, the window shall be subjected to an air infiltration test in accordance with ASTM E383-91. Air infiltration shall not exceed 0.34 cubic feet per minute per foot of crack length when tested at a pressure of 25 mph.
2. Operating Force:
The sash shall have been adjusted to operate in either direction with a force not exceeding 35 pounds after the sash is in motion.
3. Water Resistance Test:
The glazed unit shall be mounted in its vertical position continuously supported around the perimeter, and the sash placed in the fully closed and locked position. The window unit shall be subjected to a water resistance test in accordance with ASTM E331. When a static pressure of 9.00 pounds per square foot has been stabilized, five gallons of water per square foot of window area shall be applied to the exterior face of the unit for a period of 15 minutes. No water shall pass the interior face of the window frame, and there shall be no leakage as defined in the test method.
4. Uniform Structural Load Test:
A minimum exterior and interior uniform load of 75 pounds per square foot shall be applied to the entire outside surface of the test unit. This test load shall be applied to the entire outside surface of the test unit. This test load shall be maintained for a period of 10 seconds. At the conclusion of tests, there shall be no glass breakage, permanent damage of fasteners, hardware parts, support arms, actuating mechanisms, nor any damage causing the window to be inoperable. There shall be no permanent deformation of any frame in excess of 0.4 percent of its span.
5. Condensation Resistance Factor:
The window unit shall be tested in accordance with AAMA 1502 standards and tests of thermal performance, and shall have a condensation resistance factor of no less than 44.
6. Energy Rating Factor:
The window unit shall be tested in accordance with NFRC 100-91 for non-solar heat flow through the window assembly, and shall have a unit U-factor of less than 0.30
7. Sealed Insulating Glass Units:
The window unit shall be tested in accordance with ASTM E773 and

ASTM E774 for unit construction, and shall have a Class CBA rating.

- a. All sealed glass units shall be certification stamped.
- b. Glazing shall be Impact Resistant Glazing
 - 1" IGU, or 3/4" as to fit window
 - Glazing Configuration: Dual-pane.
 - Tint: None
 - Seal and Spacer Type: Dual sealed insulating glass units with - polyisobutylene primary seal, silicone secondary seal and stainless steel spacers.
 - Glass Type: 1/4" Laminated exterior; annealed glass ASTM C1036 interior)
 - Opacity: None.

F. Installing mechanics shall have documented experience in the installation of vinyl window products, of not less than one year.

1.09 DELIVERY AND STORAGE

- A. Store and handle windows, mullions, panels, hardware, louvers and all appurtenant items in strict compliance with manufacturer's instructions.
- B. Protect units adequately against damage from the elements, construction activities, and other hazards before, during and after installation.

1.10 SEQUENCING AND SCHEDULING

- A. Coordinate delivery and installation with Contractor's schedule.

1.11 RECORD DRAWINGS

- A. Supply updated window schedule, at end of project, that gives record of all window unit, sash and balance sizes used in the project. This information shall be bound into the operation and maintenance manual.

1.12 OPERATION AND MAINTENANCE / WARRANTY MANUALS

- A. Supply three copies of manufacturer's operation and maintenance information, including final version of shop drawings, maintenance information spare parts information and warranty information.

1.13 INSTRUCTION OF OWNER'S PERSONNEL

- A. Provide, at a scheduled project meeting, instruction regarding the operation and maintenance of the window products.

1.14 SPECIAL PROJECT WARRANTIES

- A. Windows shall be fully warranted against any defects in material or workmanship under normal use and service for a period of 20 years from date of acceptance on this projects. 5 years factory labor included.
- B. PVC finish shall be warranted against chipping, peeling, cracking, or blistering for a period of 20 years from date of acceptance.
- C. Insulated Glass Units shall be fully warranted against visual obstruction resulting from film formation or moisture collection between the interior glass surface, excluding breakage, for a period of 20 years from date of acceptance on this project. 5 years factory labor included.
- D. Contractor shall provide a written service warranty that clearly spells out how requests for service shall be handled, by whom, under whose responsibility and shall include the time frame for handling these service requests. A labor warranty providing service on the windows shall cover a period of not less than 10 years, and shall be provided in writing. A copy of the product and labor warranty must accompany other applicable warranties and be presented with bid.

1.15 REGULATORY REQUIREMENTS

- A. Conform to all applicable codes regarding glazing and egress requirements.

1.16 ATTIC STOCK

- A. Not required.

PART 2 - PRODUCTS AND MATERIALS

2.01 ACCEPTABLE MANUFACTURERS

- A. The following manufacturers and series are acceptable manufacturers of window

products. The identified manufacturers are intended to illustrate an acceptable level of quality, and not to exclude products from other manufacturers.

Design is based on Paradigm Windows (Portland, Maine), 8300 Series, Low E, Argon.

Provide optional color finish

No Grilles.

Provide integral casing with vinyl siding receptors.

Provide Interior "receiver trim" for dry wall returns.

Single Hung Windows - with tilt-in sash operation for both sashes.

Sizes to fit existing openings.

Equal by other manufacturers is acceptable, if of comparable quality and available in equivalent sizes and factory mulling configurations.

2.02 MATERIALS

A. All vinyl extrusions shall be 100% virgin polyvinyl chloride (PVC) and shall have a minimum nominal wall thickness of 0.065 inches.

B. Fasteners shall be aluminum, stainless steel or other materials as warranted by manufacturer to be non-corrosive and compatible with window members, trim, hardware, anchors and other components of window units. Window units shall not have exposed fasteners except where unavoidable for application of hardware.

2.03 FABRICATION AND ACCESSORIES

A. General: Provide manufacturer's standard fabrication and accessories which comply with specifications indicated and as tested, except to extent more specific or more stringent requirements are indicated. Include complete system for assembly of components and anchorage of window units. Provide factory glazed units.

B. Window Members:

1. All members shall be 100% virgin PVC.
2. Extruded PVC components produced from commercial quality virgin PVC (unplasticised polyvinyl chloride), conforms to AAMA 303 from sections in one piece, straight, true and smooth. Provide multi-chambered PVC extruded frames and sash in accordance with the manufacturers standard

practice. Make fusion welded frame joints strong enough to develop full strength of members, with an external wall thickness of .070 ". Head and jamb members shall have integral screen stops. Make interior horizontal top surfaces of both meeting rails flat and in the same plane. Meeting rails have an integral interlock with two lines of pile weatherstrip provided. Upper and lower sash shall have the same glass size. Sash shall have fusion welded mitered corners with an external wall thickness of .070".

3. Color:
 - a. From full range of optional colors.
4. Windows shall be "Sloped Sill" construction. "Box Sill" construction is not an acceptable fabrication design.

C. Hardware, including cam locks and tilt latches, shall have component parts of aluminum, stainless steel or other non-corrosive materials compatible with aluminum. Cadmium, or zinc-plated steel, where used, must be in accordance with ASTM Specification A165 or A164. Provide two locks at DH meeting rail if window unit is wider than 30 inches. Provide two tilt latches in the top of each sash for tilting in sash for cleaning. The tilt latches shall be integrally mortised into the sash top rails for a clean appearance.

D. Balance Mechanism (DH / SH): Provide two 3/4" stainless steel, silicone pre-treated, constant force coil spring balances for each sash. Enclose balance springs in rustproof cases, with jamb liner covers, from the top of the bottom sash to the head of the window unit. Balance covers shall be finished to match window frame finish and easily removable for field service. Balances shall also have an interlocking pivot bar, for integral frame alignment with sash for keeping window frames straight and true during installation.

E. Glazing: Impact resistant thermal glazing.

F. Weather Protection:

1. Provide means of drainage in the form of weeps for water and condensation which may accumulate in members of window units.
2. Weather stripping: Provide sliding and compression type weather stripping for hung sash, and compression type for projected windows. All sash units shall be triple weather-stripped where the sash meet the jamb using silicone treated pile with a mylar center fin bonded to backing. Provide for ventilating sections of all windows to insure a weathertight seal meeting the infiltration tests specified herein. Use easily replaceable factory applied weather-stripping of manufacturer's stock type, as specified above. Use EPDM covered open cell foam weatherstrip for compression contact between the sill and the sash. For sliding surfaces, use silicone treated pile, with a mylar center fin bonded to a plastic-backing strip.

- G. Screens shall be supplied for all operating windows. Provide half screens for hung windows. Screen frames are to extruded aluminum sections with corners mitered and crimped with corner gussets. Screening fabric shall be aluminum mesh, charcoal colored, retained in frames with vinyl splines that permit replacement. Frame color shall match color of vinyl window.
- H. Drips and Weep Holes: Provided as required to return water to the outside.
- I. Fasteners: All fasteners are to be stainless steel type, corrosion resistance. Use flathead, cross-recessed type, exposed head screws with standard threads on windows, trim, and accessories. Screw heads shall finish flush with adjoining surfaces. Self-tapping sheet metal screws are not acceptable for material more than 1/16 inch in thickness. All sheetmetal screw fasteners shall penetrate into a screw boss consisting of at least three layers of PVC profile for secure fastening and reduce pull out.
- J. Factory Mulls: Factory mulls to be fully reinforced with extruded aluminum I-beam reinforcement of 6005-T5 alloy and assembled utilizing interior and exterior “U” channels and proprietary sealant application patterns. Reinforcement to be further attached to window frames with .080” x 1.375” x 12” stainless steel straps and appropriate stainless steel fasteners.
- K. Use nailing fin attachment for windows in new construction.
- L. Accessories: Provide windows complete with necessary hardware, fastenings, clips, fins, anchors, glazing beads, and other appurtenances necessary for complete installation and proper operation.
- M. Aluminum Coil Stock
1. 0.019 aluminum, site fabricated, white polyester finish.

PART 3 - EXECUTION

3.01 GENERAL

- A. Inspect opening prior to commencing installation for plumbness of blocking, and fit of window into opening.
- B. Perform all other operations as necessary to provide proper installation and operation of window units.

3.02 DISPOSAL

- A. Remove all associated debris from the site.

3.03 INSTALLATION

- A. Comply with manufacturer's specifications and recommendations for installation of window components, and as modified by shop drawings. Install self adhering flashing membrane to make complete, air tight, water shedding installation.
- B. Set units plumb, level and true to line, without warp or crack of frames or sash. Anchor securely in place.
- C. Foam seal window perimeter with low expansion foam. Review with Energy Star program representative.
- D. Seal units to provide weather tight system, using materials and methods specified in Section 07 92 00, Joint Sealers, and as detailed on the Drawings.

3.04 ADJUST AND CLEAN

- A. Adjust operating sash and hardware to provide tight fit at contact points and at weatherstripping, for smooth operation and weather tight closure. Verify that operating force complies with specified limits.
- B. Clean vinyl surfaces promptly after installation of windows, exercising care to avoid damage to finish. Remove excess glazing and sealant components, dirt, and other substances. Lubricate hardware and other moving parts.
- C. Clean glass promptly after the installation of windows. Remove glazing and sealant compounds, dirt and other contaminants.
- D. Initiate all protection and other precautions to ensure that window units will be without damage or deterioration (other than normal weathering) at time of acceptance.

End of Section 08 53 00

SECTION 08 70 00**FINISH HARDWARE****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(not applicable)**1.03 SCOPE OF WORK**

- A. Scope includes
1. Hardware Finishes
 2. Fasteners
 3. Hardware Items - Supply
 4. Mounting Heights
 5. Thresholds and Weather stripping at exterior metal doors
 6. Panic Hardware
 7. Accessible Mounting Heights
 8. Keying

1.04 RELATED WORK SPECIFIED ELSEWHERE

- A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:
1. Section 06 20 00, Finish Carpentry: Installation of Hardware
 2. Section 09 91 00, Painting of doors and frames
 3. Section 08 11 00, Metal Doors and Frames
 4. Section 08 14 00, Wood and Plastic Doors
- B. This Section 08 70 00 establishes the level of quality for the pre-hung hardware supplied by Section 08 11 00.

1.05 ALTERNATES
(not applicable)

1.06 SUBMITTALS

A. Attention is directed to Section 01300, regarding required procedures for Submittals.

B. Submittals are required for the following:

(SD = Shop Drawing)

(FS = Field Sample)

(OS = Samples)

(PD = Printed Data)

- | | | |
|----|--------------------|------------|
| 1. | Templates | SD |
| 2. | Hardware | PD, OS |
| 3. | Finish | OS |
| 4. | Schedules | PD |
| 5. | Weather stripping, | OS, PD |
| 6. | Thresholds | OS, PD, SD |

C. Supply full SD scale details of threshold installation, showing substrate conditions.

D. Coordinate submittals with door operator and door release systems provided and installed by others.

1.07 QUALITY ASSURANCE

A. Supplier of hardware shall be, or shall have in his employ, a qualified hardware consultant with experience of not less than 5 years. The correct scheduling of all hardware, including the degree of swing of doors with closers and other code and safety issues, shall be the responsibility of this individual.

B. Supplier of hardware shall be required to have an established place of business offering "builder's hardware", with telephone service and regular working hours, as well as a reasonable supply of replacement parts for the specified hardware.

C. The hardware supplier shall agree to provide adequate service to the scheduling of corrective work during installation and adjustment during the guarantee period.

D. Special Requirements:

1. Hardware supplier shall determine conditions and materials of all doors and frames for proper application of hardware. Supplier shall verify

compatibility of all doorway components to allow full operation as per design intent.

2. Hardware supplier (or consultant thereto) shall visit site prior to and during the application of the hardware, and confirm with superintendent regarding proper installation, location, adjustment, special tools and instruction. Costs of such visits and service shall be in the Contract Price.
 3. Contractor shall have supplier inspect and approve in writing the hardware installation. All rejected installations shall be repaired or replaced.
- E. Material Uniformity:
1. All locksets and lockset trim shall be the product of one manufacturer for the entire project.
 2. All butts shall be the product of one manufacturer for the entire project.

1.08 REFERENCE STANDARDS

- A. Material shall conform to the following quality standards:
1. ANSI 156.1 - Butts and hinges
 2. ANSI 156.2 - Locks and lock trim
 3. ANSI 156.3 - Mortise locks and exit devices
 4. ANSI 156.7 - Template hinges
 5. ANSI 156.8 - Door controls (overhead holders)
- B. Underwriters Laboratories (UL) testing, for fire rating standards.

1.09 DELIVERY AND STORAGE

- A. All packages shall be legibly labeled, indicating manufacturer's numbers, types, sizes and hardware schedule reference number.
- B. All hardware shall be wrapped in paper and shall be packed in the same package as all screws, bolts and fastenings necessary for proper installation.

1.10 SEQUENCING AND SCHEDULING

- A. Coordinate delivery and installation with Contractor's schedule.

1.11 RECORD DRAWINGS (not applicable)

1.12 OPERATION AND MAINTENANCE / WARRANTY MANUALS

A. Refer to Section 01 78 23 for the Operating and Maintenance Manual requirements for this Contract.

1. Delivery of the Manuals and items listed below shall be a condition precedent to final payment.
 - a. Manufacturer's part list and maintenance instructions for each type of hardware supplied
 - b. One copy of the final hardware schedule.
 - c. Tools and wrenchs required for proper maintenance and operation of hardware.

1.13 INSTRUCTION OF OWNER'S PERSONNEL

A. Panic Hardware equipment shall be included in the overall instruction of owner's personnel.

1.14 GUARANTEE AND SERVICE

A. All changes made in conjunction with the replacement of defective hardware shall be borne by the hardware supplier, in accordance with the one year guarantee period.

1.15 REGULATORY REQUIREMENTS

A. Conform to all applicable codes. Provide all throws, projections, coatings, knurling, opening and closing forces and other special functions as required by State and Local building codes, and in conformance to applicable handicap accessibility regulations.

B. Conform to fire rating requirement for entire door assembly, as defined on the schedule.

PART 2 - PRODUCTS AND MATERIALS

2.01 ACCEPTABLE MANUFACTURERS

A. The following manufacturers and series are acceptable for the various hardware types. Where model numbers have not given, conform to standards defined by model numbers give.

1. Exterior Butt Hinges (4.5 inch x 4.5 inch, full mortise; NRP)
 - a. Stanley - FBB 191 (five knuckle)
 - b. Hager

- c. McKinney
- 2. Interior Butt Hinges, wood or metal doors (4 x 4, full mortise)
 - a. Stanley - 1960 series (three knuckle)
 - b. Hager
 - c. McKinney
- 3. Interior Butt Hinges – Prehung Doors – equal to Stanley RD741FP
- 4. Locksets - mechanical / storage / kitchen
 - a. Schlage “D” series, “Rhodes” lever handle, brushed chrome finish;
Extra Heavy Duty Residential quality, equal to ANSI A156.2, 1989, Series 4000, Grade 1.
 - b. Equal by Best , Corbin, Russwin or Sargent
- 5. Panic Devices
 - a. von Duprin Series 55
 - b. 5575 Mortise Lock Device for Active Leaf
5575 NL / 550DT Exterior Trim at Active Leaf
 - c. 5547 Concealed Vertical Rod Exist Device at Inactive Leaf
No Exterior Trim
 - d. Supply Mortise cylinder at exterior doors locking doors – Schlage 20-001)
 - e. Provide strikes for all devices, including concealed rods.
 - f. Finish: US 26.
- 6. Locksets – Interior doors
 - a. Mortise style lock, Schlage “L” series, with 06 lever handle,
L standard cylinder escutcheon
- 7. Pocket Door – with privacy function
Comply with accessibility requirements for “no pinch” / “no grasp”
 - a. Accurate 9100SDL, Class Room Dead lock function (Stamford CT). 2-1/2” backset to maximize clear opening.
Fixed lever at outside, operable lever at inside releases dead
- 8. Door stops (wall or floor)
 - a. Glynn-Johnson WB 50XT or FB 13X
 - b. Ives 407-1/2 or 436B
 - c. Rockwood 409 or 440
- 9. Kick Plates 10" x (Door width minus 2 inches), 16 ga. metal, countersunk mounting holes.
 - a. Glynn-Johnson

- b. Ives
 - c. Rockwood
10. Weatherstripping (at metal exterior doors heads and jambs)
- a. Reese Enterprises 755DUR; mount closer and strike on weather strip.
 - b. National Guard 700NDkB
 - c. Equal by Pemko
 - d. Equal by Zero
11. Door Bottoms (Sweeps) at metal exterior doors.
- a. Hager 8015 (Nylon Fiber sweep types)
(Match other hardware finish.)
 - b. Equal by Reese
 - c. Equal by Pemko
 - d. Equal by Zero
11. Lock Cylinders and Keying
- a. Manufacturer's 5 pin tumbler cylinder, with construction master key feature. Comply with owner's instructions for master keying. If not otherwise indicated, supply two change keys for locks not designated to be keyed alike with a group of related locks.
12. Thresholds
- Type "A" – Entrance Doors, accessible
Hager 448S (accessible), with non-slip abrasive coating. Supply countersunk mounting holes.
Equal by Reese or Pemko
Width 10", or as indicated on details
13. Closers (none)
14. Pocket Door Track – 42" door
Johnson Hardware, 1500 Series, for 1-3/4" thick door.
15. Astragal at paired exterior door
Pemko 303 Silicone Split Astragal Seal Set, Dark Bronze
Equal by Ives or CR Laurence.
16. Door Holder
Ives WS44526D – Aluminum (supply one additional rubber tip)

2.02 FINISH

- A. All locks, closers, bolts, hinges, knobs, roses, pulls, stops shall be satin chrome, US26D.
- B. Kick Plates, push plates shall be satin chrome.

PART 3 - EXECUTION

3.01 GENERAL

- A. If the hardware for any particular location is not described herein, it shall be furnished in comparable quality and function to that specified for similar locations so far as is practicable.
- B. Where the finished shape or size of member taking hardware is such as to preclude or render unsuitable the use of the exact types specified, suitable types shall be provided having nearly as practicable, the same operation and quality as the types specified.
- C. All sizes shall be ample for the service indicated.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's recommendations and applicable standards.
 - 1. Install thresholds in bed of sealant, over prepared substrate. Use fasteners supplied by manufacturer, to match pre-drilled holes and countersunk profile. Scribe threshold to match frame profile.

3.03 HARDWARE SETS

- A. The following listing of hardware sets indicates hardware required for typical conditions. It shall not be construed as a complete listing of all hardware required.

HARDWARE Group Schedule

1A.	<u>Exterior Entrance Door - Paired</u>
3	Pair Butts
2	Panic Devices

- 2 Door Hold Opens
- 1 Perimeter Weather Stripping
- 1 Door Bottom Sweep
- 1 Threshold (Full width)
- 1 Astragal
- 2 Kick Plates
- 2 Door Holders

- 1B. Exterior Entrance Door
 - 1.5 Pair Butts
 - 1 Panic Devices
 - 1 Door Hold Open
 - 1 Perimeter Weather Stripping
 - 1 Door Bottom Sweep
 - 1 Threshold
 - 1 Kick Plate
 - 1 Door Holders

- 2. Nurse Room
 - 1.5 Pair butt hinge
 - 1 Mortise Lockset , Lever handle,

- 3 Kitchen
 - 1 Pocket Door Track – 42” door
 - 1 Mortise lock for Pocket Door; strike plate

- 4 Mechanical / Janitor
 - 1.5 Pair hinges
 - 1 Mortise lock with knurled lever handle – F07 function

- 5 Restroom
 - 1.5 Pair Butts
 - 1 Mortise Lockset, lever handle
 - 1 Kick Plate

- 6 Storage
 - 1.5 Pair Butts
 - 1 Mortise Lockset, Office function, Lever Handle – Storeroom Function (interior unlocked)
 - 1 Kick Plate

NOTE: SUPPLY DOOR STOPS AT ALL INTERIOR DOORS NOT EQUIPPED WITH DOOR CLOSERS

End of Section 08 70 00

SECTION 08 80 00**GLAZING****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(Not Applicable)**1.03 SCOPE OF WORK**

- A. Work consists of:
1. Supply and install glazing at HM doors and sidelights.
 2. Field measurements.
 3. Compliance with energy requirements for door / glass assemblies.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. Section 08 11 00 Metal Doors and Frames
2. Section 08 14 00 Wood Doors
3. Section 09 90 00 Painting of doors prior to glazing installation.

1.05 ALTERNATES
(not applicable)**1.06 SUBMITTALS**

A. Attention is directed to Section 01 30 00 regarding required procedures for Submittals.

B. Submittals are required for the following:
(SD = Shop Drawing)

(FS = Field Sample)
(OS = Samples)
(PD = Printed Data)

1. Glazing: SD, PD, OS
- C. SD information shall indicate full size details of construction and installation..
- D. OS shall be minimum 8" x 8" sample of sealed insulated glass unit and wired glass.

1.07 QUALITY ASSURANCE

- A. Quality Standards: Comply with the following standards:
1. ANSI Z97.1 - Safety Performance Specifications and Methods of Test for Safety Glazing Used in Buildings.
 2. ASTM C669 - Glazing Compounds for Back Bedding and Face Glazing of Metal Sash.
 3. ASTM C804 - Use of Solvent-Release Type Sealants.
 4. ASTM C864 - Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
 5. ASTM C920 - Elastomeric Joint Sealants.
 6. ASTM C1036 - Flat Glass.
 7. ASTM C1048 - Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass.
 8. ASTM C1172 - Laminated Architectural Safety Glass.
 9. ASTM E283 - Test Method For Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors.
 10. ASTM E330 - Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
 11. ASTM E546 - Test Method For Frost Point of Sealed Insulating Glass Units.
 12. ASTM E576 - Test Method For Dew/Frost Point of Sealed Insulating Glass Units in Vertical Position.

13. ASTM E773 - Test Method for Seal Durability of Sealed Insulating Glass Units.
14. ASTM E774 - Sealed Insulating Glass Units.
15. FGMA - Glazing Manual.
16. FGMA - Sealant Manual.
17. Laminators Safety Glass Association - Standards Manual.
18. SIGMA - Sealed Insulated Glass Manufacturers Association.

B. Perform Work in accordance with FGMA Glazing Manual, FGMA Sealant Manual , SIGMA and Laminators Safety Glass Association - Standards Manual for glazing installation methods. Glazing units shall bear the name of the manufacturer and the SIGMA membership seal.

C. Installer Qualifications: Company specializing in performing the work of this section with minimum 3 years documented experience.

1.08 PROJECT CONDITIONS

A. Do not deliver or install glazing until conditions for temperature and relative humidity have been stabilized and will be maintained in storage and installation areas during remainder of construction period.

- 3 Refer to SIGMA quality standards.

1.09 DELIVERY AND STORAGE

A. Protect glazing materials during transit, storage and handling to prevent damage, soiling and deterioration.

1.10 SEQUENCING AND SCHEDULING

A. Order and install in coordination with general construction scheduling and phasing requirements established in Division 01.

1.11 WARRANTIES

A. Provide a ten (10) year warranty to include coverage for sealed glass units from seal failure, interpane dusting or misting, and replacement of same.

- B. Provide a ten (10) year warranty to include coverage for delamination of laminated glass and replacement of same.

PART 2 - PRODUCTS AND MATERIALS

3.5 ACCEPTABLE MANUFACTURERS

- A. Glazing unit manufacturer shall be a Member of SIGMA.

3.5 GLASS FABRICATION

- A. Safety Glass (Type FG-B): Clear laminated with plastic interlayer to ASTM C1172, thickness as determined by code requirements for door way applications.

3.5 INSULATED GLASS UNITS

- A. Insulated Glass Units (Type SG-A): ASTM E774 and E773; double pane of clear laminated safety glass with "WARM EDGE" glazing technology edge seal. Unit thickness: 1 inch (glass at ¼ inch, with ½ inch air space).

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Coordination and Meetings: Verification of existing conditions before starting work
- B. Verify that openings for glazing are correctly sized and within tolerance.
- C. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

3.02 PREPARATION

- A. Clean contact surfaces with solvent and wipe dry.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant.

- D. Perform installation in accordance with ASTM C804 for solvent release sealants.

3.03 INSTALLATION - EXTERIOR DRY METHOD (TAPE AND GASKET SPLINE GLAZING)

- A. Cut glazing tape or spline to length; install on glazing unit. Seal corners by butting tape and sealing junctions with butyl sealant (sealant shall be compatible with insulated glazing units).
- B. Place setting blocks at 1/4 points with edge block no more than 2 inches from corners
- C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.
- D. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.
- E. Trim protruding tape edge.

3.04 CLEANING

- A. Section 01700 - Contract Closeout: Cleaning installed work.
- B. Remove glazing materials from finish surfaces.
- C. Remove labels after Work is complete.
- D. Clean glass and adjacent surfaces.

3.5 PROTECTION OF FINISHED WORK

- A. Section 01 70 00 - Contract Closeout: Protecting installed work.

3.06 SCHEDULE

- A. Exterior Entrances: Laminated Safety glass in SG-A insulated units, exterior tape / spline method.

End of Section 08 80 00

SECTION 09 20 00**GYPSUM BOARD ASSEMBLIES****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 SCOPE OF WORK

A. This Section includes the following:

1. Abuse resistant Gypsum Board
2. Normal Gypsum board assemblies attached to wood framing.
3. Coordination with the installations of other trades.
4. Sound Walls

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. Section 07 20 00 – acoustic insulation.
2. Section 06 10 00 Wood Framing, including engineered lumber – coordinate gypsum assemblies with the wood framing products.

**1.04 ALTERNATES
(not applicable)****1.05 DEFINITIONS**

A. Gypsum Board Construction Terminology: Refer to ASTM C 11 and GA-505 for definitions of terms related to gypsum board assemblies not defined in this Section or in other referenced standards.

1.06 ASSEMBLY PERFORMANCE REQUIREMENTS

- A. Sound Transmission Characteristics: For gypsum board assemblies indicated to have STC ratings, provide materials and construction identical to those of assemblies whose STC ratings were determined per ASTM E 90 and classified per ASTM E 413 by a qualified independent testing agency.

1.07 SUBMITTALS

- A. Provide submittals to form defined in Section 01 30 00, Submittals.

- B. Submittals are required for the following:

(SD = Shop Drawing)

(FS = Field Sample)

(OS = Samples)

(PD = Printed Data)

PD All materials

1. Product Data for each type of product specified.
2. Product certificates signed by manufacturer of gypsum board assembly components, certifying that their products comply with specified requirements.
3. Provide verification of system performance, relative to required fire and sound design.

1.09 QUALITY ASSURANCE AND REFERENCE STANDARDS

- A. Fire-Test-Response Characteristics: Where fire-rated gypsum board assemblies are indicated, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

1. Fire Resistance Ratings: As indicated by reference to design designations in UL "Fire Resistance Directory" or in the listing of another testing and inspecting agency acceptable to authorities having jurisdiction.

2. Note: Building is un-rated construction.

- B. Single-Source Responsibility for Finishing Materials: Obtain finishing materials from either the same manufacturer that supplies gypsum and other panel products or from a manufacturer acceptable to gypsum board manufacturer.

- C. Field Samples: On actual gypsum board assemblies, prepare field samples of at least 100 sq. ft. in surface area for the following applications. Simulate finished lighting conditions for review of in-place unit of Work.

1. Wall surfaces indicated to receive paint finishes.
 - a. Include both normal and abuse resistant.
2. Ceiling surfaces indicated to receive paint finishes.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Neatly stack gypsum panels flat to prevent sagging.
- C. Handle gypsum board to prevent damage to edges, ends, and surfaces. Do not bend or otherwise damage metal corner beads and trim.

1.09 PROJECT CONDITIONS

- A. Environmental Conditions, General: Establish and maintain environmental conditions for applying and finishing gypsum board to comply with ASTM C 840 and with gypsum board manufacturer's recommendations.
- B. Room Temperatures: For non-adhesive attachment of gypsum board to framing, maintain not less than 40 deg F (4 deg C.) For adhesive attachment and finishing of gypsum board, maintain not less than 50 deg F (10 deg C) for 48 hours prior to application and continuously after until dry. Do not exceed 95 deg F (35 deg C) when using temporary heat sources.
- C. Ventilation: Ventilate building spaces, as required, for drying joint treatment materials. Avoid drafts during hot dry weather to prevent finishing materials from drying too rapidly.

PART 2 - PRODUCTS AND MATERIALS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Steel Framing and Furring:
 - a. Clack Steel Framing.
 - b. Consolidated Systems, Inc.
 - c. Dale Industries, Inc.

- d. Dietrich Industries, Inc.
- e. Marino Industries Corp.
- f. Gold Bond Building Products Div., National Gypsum Co.
- g. Unimast Inc.
- 2. Grid Suspension Assemblies:
 - a. Chicago Metallic Corp.
 - b. National Rolling Mills Co.
 - c. USG Interiors, Inc.
- 3. Gypsum Board and Related Products:
 - a. Domtar Gypsum.
 - b. Georgia-Pacific Corp.
 - c. Gold Bond Building Products Div., National Gypsum Co.
 - d. United States Gypsum Co.

2.02 STEEL FRAMING COMPONENTS

- A. General: Provide components of sizes indicated but not less than that required to comply with ASTM C 754 for conditions indicated.
- B. “Z” channels: Basis-of-Design Product: Subject to compliance with requirements, provide ClarkDietrich Building Systems; Z-Furring Channel or a comparable product from one of the members of the SFIA:
 - 1. Nonslotted web, face flange of 1-1/4 inches (32 mm), wall attachment flange of 3/4 inch (19 mm), minimum uncoated-steel thickness of 0.0179 inch (0.45 mm), and depth required to fit detail as indicated.
- E. Steel Resilient Furring Channels: Manufacturer’s standard product designed to reduce sound transmission, fabricated from steel sheet complying with ASTM A 525 or ASTM A 568 to form 1/2 –inch-deep channel of the following configuration:
 - 1. Single-Leg Configuration (Resilient Channel, RC-1) : Asymmetric-shaped channel with face connected to a single flange by a single slotted leg (web).
 - 2. Double-Leg Configuration: Hat-shaped channel, with 1-1/2-inch-wide face connected to flanges by double slotted or expanded metal legs (webs).
 - 3. Configuration: As shown on drawings or as required by specific rated assembly.

2.03 GYPSUM BOARD PRODUCTS

- A. General: Provide gypsum board of types indicated in maximum lengths available to minimize end-to-end butt joints.

1. Thickness: Provide gypsum board in thicknesses indicated, or, if not otherwise indicated, 1/2-inch thicknesses to comply with ASTM C 840 for application system and support spacing indicated.
- B. Gypsum Wallboard: ASTM C 36 and as follows:
1. Type: Regular for vertical surfaces, unless otherwise indicated.
 2. Type: Type X or C where required for fire-resistive-rated assemblies.
 3. Type: Sag-resistant type for ceiling surfaces.
 4. Type: Propriety type as required for specific fire-resistive-rated assemblies.
 5. Edges: Tapered.
 6. Thickness: 1/2 -inch unless otherwise indicated.
 7. Available products: Subject to compliance with requirements, products that may be incorporated in the Work where proprietary gypsum wallboard in indicated include, but are not limited to the following:
 - a. Gyprock Fireguard C Gypsum Board, Domtar Gypsum.
 - b. Firestop Type C, Georgia-Pacific Corp.
 - c. Fire-Shield G, Gold Bond Building Products Div., NationalGypsum Co.
 - d. SHEETROCK Brand Gypsum Panels, FIRECODE C Core, United States Gypsum Co.
- C. Gypsum Board for single layer applications: ASTM C 840, with manufacturer's standard edges of type and thickness indicated below:
1. Type: Regular, unless otherwise indicated.
 2. Type: Type X where required for fire-resistive-rated assemblies.
 3. Edges: Tapered.
 4. Thickness: as indicated
- D. Abuse Resistant Gypsum Board
1. USG FIBEROCK Brand AR interior panels, 1/2" thick.

2.05 TRIM ACCESSORIES

- A. Accessories for Interior Installation: Corner beads, edge trim, and control joints complying with ASTM C 1047 and requirements indicated below:
1. Material: Formed metal, plastic, or metal combined with paper, with metal complying with the following requirement:
 - a. Sheet steel coated with zinc by hot-dip or electrolytic processes, or with aluminum or rolled zinc.
 2. Shapes indicated below by reference to Fig. 1 designations in ASTM C 1047:
 - a. Cornerbead on outside corners, unless otherwise indicated.

- b. LC-bead with both face and back flanges; face flange formed to receive joint compound. Use LC-beads for edge unless otherwise indicated.
- c. L-bead with face flange only; face flange formed to receive joint compound. Use L-bead where indicated.
- d. One-piece control joint formed with V-shaped slot, with removable strip covering slot opening.

2.06 JOINT TREATMENT MATERIALS

A. General: Provide joint treatment materials complying with ASTM C 475 and the recommendations of both the manufacturers of sheet products and of joint treatment materials for each application indicated.

B. Joint Tape for Gypsum Board: Paper reinforcing tape, unless other indicated.

- 1. Use pressure-sensitive or staple-attached open-weave glass-fiber reinforcing tape with compatible joint compound where recommended by manufacturer of gypsum board and joint treatment materials for application indicated.

C. Joint Tape for Cementitious Backer Units: Polymer-coated, open glass-fiber mesh. (Not applicable to this project)

D. Setting-Type Joint Compounds for Gypsum Board: Factory-packaged, job-mixed, chemical-hardening powder products formulated for uses indicated.

- 1. Where setting-type joint compounds are indicated as a taping compound only or for taping and filling only, use formulation that is compatible with other joint compounds applied over it.
- 2. For prefilling gypsum board joints, use formulation recommended by gypsum board manufacturer for this purpose.
- 3. For topping compound, use sandable formulation.
- 4. DO NOT fill joints or fastener heads in cement tile backer board. All treatment shall be with thin set cement under Section 09 30 00 "TILE".

E. Drying-Type Joint Compounds for Gypsum Board: Factory-packaged vinyl-based products complying with the following requirements for formulation and intended use:

- 1. Read-Mixed Formulation: Factory-mixed product.
- 2. Taping compound formulated for embedding tape and for first coat over fasteners and face flanges of trim accessories.
- 3. Topping compound formulated for fill (second) and finish (third) coats.
- 4. All-purpose compound formulated for both taping and topping compounds.

2.07 ACOUSTICAL SEALANT

- A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C 834 and the following requirements:
 - 1. Product is effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies per ASTM E 90.
 - 2. Product has flame-spread and smoke-developed ratings of less than 25 per ASTM E 84.
- B. Acoustical Sealant for Concealed Joints: Manufacturer's standard nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.
- C. Available Products: Subject to compliance with requirements, acoustical sealants that may be incorporated in the Work include, but are not limited to, the following:
- D. Products: Subject to compliance with requirements, provide one of the following:
 - 1. Acoustical Sealant:
 - a. AC-20 FTR Acoustical and Insulation Sealant, Pecora Corp.
 - b. SHEETROCK Acoustical Sealant, United States Gypsum Co.

2.08 MISCELLANEOUS MATERIALS

- A. General: Provide auxiliary materials for gypsum board construction that comply with referenced standards and recommendations of gypsum board manufacturer.
- B. Laminating Adhesive: Special adhesive or joint compound recommended for laminating gypsum panels.
- C. Spot Grout: ASTM C 475, setting-type joint compound recommended for spot grouting hollow metal door frames.
- D. Steel drill screws complying with ASTM C 1002 for the following applications:
 - 1. Fastening gypsum board to steel members less than 0.03 inch thick.
 - 2. Fastening gypsum board to gypsum board.
- E. Steel drill screws complying with ASTM C 954 for fastening gypsum board to steel members from 0.033 to 0.112 inch thick

- F. Corrosion-resistant-coated steel drill screws of size and type recommended by board manufacturer for fastening cementitious backer units.
- G. Sound Attenuation Blankets: Unfaced glass fiber blanket insulation, fabricated for friction fit between steel studs, thickness as indicated on the drawings.
- H. Polyethylene Vapor Retarder: ASTM D 4397, thickness and maximum permeance rating as follows
 - 1. 4.0 mils, 0.19 perms.
- I. Vapor Retarder Tape: Pressure-sensitive tape of type recommended by vapor retarder manufacturer for sealing joints and penetrations in vapor retarder.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates to which gypsum board assemblies attach or abut, installed hollow metal frames, cast-in-anchors, and structural framing with Installer present for compliance with requirements for installation tolerances and other conditions affecting performance of assemblies specified in this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 GYPSUM BOARD APPLICATION METHODS

- A. Single-Layer Application: Install gypsum wallboard panels as follows:
 - 1. On ceilings, apply gypsum panels prior to wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.
 - 2. On partitions/walls, apply gypsum panels vertically (parallel to framing), unless otherwise indicated, and provide panel lengths that will minimize end joints.
- B. Double-Layer Application: Install gypsum backing board for base layers and gypsum wallboard for face layers.
 - 1. On partitions/walls, apply base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring members and face layer joints offset at least one stud or furring member with base layer joints. Stagger joints on opposite sides of partitions.
 - 2. On ceilings, comply with requirements of fire rated assembly.
- C. Single-Layer Fastening Methods: Apply gypsum panels to supports as follows:
 - 1. Fasten with screws.

- D. Double-layer Fastening Methods: Apply base layer of gypsum panels and face layer to base layer as follows:
1. Fasten both base layers and face layers separately to supports with screws.
- E. Exterior Soffits and Ceilings: Apply exterior gypsum soffit board panels perpendicular to supports, with end joints staggered over supports. Install with ¼-inch open space where panels abut other construction or structural penetrations.
1. Fasten with corrosion-resistant screws.
- F. Sound Walls: At walls on the floor plan indicated with acoustic insulation, apply a double layer of gypsum board on one side of the wall.

3.07 INSTALLING TRIM ACCESSORIES

- A. General: For trim accessories with back flanges, fasten to framing with the same fasteners used to fasten gypsum board. Otherwise, fasten trim accessories according to accessory manufacturer's directions for type, length, and spacing of fasteners.
- B. Install corner beads at external corners with screws, crimping of bead not acceptable.
- C. Install edge trim where edge of gypsum panes would otherwise be exposed or semi-exposed. Provide edge trim type with face flange formed to receive joint compound except where other types are indicated.
1. Install LC-bead where gypsum panels are tightly abutted to other construction and back flange can be attached to framing or supporting substrate.
 2. Install L-bead where edge trims can only be installed after gypsum panels are installed.
- D. Install control joints at locations indicated, and where not indicated according to ASTM C 840, and in locations approved by Architect for visual effect.

3.08 FINISHING GYPSUM BOARD ASSEMBLIES

- A. General: Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim, and control joints; penetrations; fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration and levels of gypsum board finish indicated.
- B. Pre-fill open joints, rounded or beveled edges, and damaged areas using setting-type joints compound.

C. Apply joint tape over gypsum board joints except those with trim accessories having concealed face flanges not requiring taping to prevent cracks from developing in joint treatment at flange edges.

D. Apply joint tape over gypsum board joints and to trim accessories with concealed face flanges as recommended by trim accessory manufacturer and as required to prevent cracks from developing in joint compound at flange edges.

E. Levels of Gypsum Board Finish: Provide the following levels of gypsum board finish per GA-214.

1. Level 1 for ceiling plenum areas, concealed areas, mechanical rooms and where indicated, unless a higher level of finish is required for fire-resistive-rated assemblies and sound-rated assemblies.
2. Level 2 where water-resistant gypsum backing board panels for substrates for tile, and where indicated.
3. Level 4 for exposed gypsum board surfaces, typical.
4. Level 5 for Abuse Resistant gyp applications.

F. Where level 5 gypsum board finish is indicated, apply joint compound combination specified for level 4 plus a thin, uniform skim coat of joint compound over entire surface. Use joint compound specified for the finish (third coat) or a product specially formulated for this purpose and acceptable to gypsum board manufacturer. Produce surfaces free of tool marks and ridges ready for decoration of type indicated.

G. Where level 2 gypsum board finish is indicated, apply joint specified for first coat in addition to embedding coat.

H. Where level 1 gypsum board finish is indicated, apply joint compound specified for embedding coat.

I. Finish exterior gypsum soffit board using setting-type joint compounds to prefill joints and embed tape, and for first, fill (second) and finish (third) coats, with the last coat being a sandable product. Smooth each coat before joint compound hardens to minimize need for sanding. Sand between coats and after finish coat.

1. Painting exterior gypsum soffit board after finish coat has dried is specified in Division 9 Section "Painting."

J. Provide no finish at cementitious backer units, except where it abuts gypsum board, then comply with unit manufacturer's directions.

K. Install acoustic sealant at all sound rated walls and at all walls where there is a sound wall. (Bathroom walls).

3.09 CLEANING AND PROTECTION

A. Promptly remove any residual joint compound from adjacent surfaces.

B. Provide final protection and maintain conditions, in a manner suitable to Installer, that ensures gypsum board assemblies remain with damage or deterioration at time of Substantial Completion.

C. Report any damaged or unsuitable areas to the Architect and/or owner.

End of Section 09 20 00

SECTION 09 65 00**RESILIENT FLOORING****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(not applicable)**1.03 SCOPE OF WORK**

A. Furnish and install the following items:

1. Rubber Base

B. Compliance with low VOC requirement.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. SS 99 96 56, High Performance Epoxy Coatings

1.05 ALTERNATES
N/A**1.06 SUBMITTALS**

A. Attention is directed to Section 01 30 00 regarding required procedures for Submittals.

B. Submittals are required for the following:
(SD = Shop Drawing)
(FS = Field Sample)
(OS = Samples)
(PD = Printed Data)

Base for color selection

OS (two sets), PD

1.07 QUALITY ASSURANCE

- A. Installer shall be approved by manufacturer.

1.08 DELIVERY AND STORAGE

- A. Deliver all materials to job in unopened containers with manufacturer's brand name clearly marked thereon.
- B. Store all materials to protect them from moisture and extremes of heat and cold.

1.09 OPERATION AND MAINTENANCE / WARRANTY MANUALS

- A. Refer to Section 01 70 00 for the Operating and Maintenance Manual requirements for this Contract.
1. Delivery of the Manuals listed below shall be a condition precedent to final payment.
- B. Provide four sets of cleaning and care instructions for each type of resilient tile.

PART 2 - PRODUCTS AND MATERIALS

2.01 RUBBER BASE

- A. Rubber base by Roppe. Typical 4" or 6" 700 series, normal toe; or equal by:
1. Armstrong
 2. Kentile
 3. Johnson Rubber
- B. Use preformed internal and external corners; field formed are permissible only if installer demonstrates sufficient competence in fabrication and installation, in comparison to preformed products.

2.2 ADHESIVES AND MASTICS

- A. Adhesives shall be type and brand recommended by the manufacturer for each type of the various conditions and flooring materials. Where the manufacturer lists more than one recommended adhesive, the manufacturer's "preferred choice" shall be used. Low VOC products shall be used.
- B. Mastic underlayments for use at wood floors shall be latex type recommended by flooring manufacturer, such as:
1. Armstrong "S-105"

2. Flintkote "Latex Underlayment"
3. Allied "Lev-L-Lastic"

2.03 MAINTENANCE SUPPLY

A. Furnish to the owner additional cartons equal to 5% of each different color type and pattern of tile, bases, feature strips and reducing strips used on the project. At completion of work, deliver to site and place in storage areas designated by the owner, in properly labeled cartons, receipt of which shall be acknowledged in writing by an authorized representative of the owner.

PART 3 - EXECUTION

3.01 INSPECTION / JOB CONDITIONS

A. Do not begin installation work until work of other trades, including painting, has been substantially completed.

B. Allow slabs and underlayment to dry adequately before applying materials. At the direction of the Architect, perform simple calcium chloride treatment to insure concrete surfaces are free of contained moisture.

1. Perform moisture testing to confirm concrete curing.

3.04 INSTALLATION

A. Bases, included formed internal and external corners, shall be firmly cemented to the vertical surfaces and finished with fill, providing continuous and firm contact with the floor surfacing. Minimum length of base shall be 6 inches. Joints greater than 1/32 inch shall be rejected. If field forming of corners is approved by architect, form in the following manner:

1. Use 24 inch length.
2. Apply heat.
3. Bend at mid point, immerse in cold water.
4. Clip cove lip at internal corners bend point.

B. Install base at wet areas (restrooms, Janitor, Mechanical) in accordance with manufacturer's instructions. Set bottom of cove base in silicon sealant for water containment.

3.06 ATTIC STOCK

- A. Provide Rubber Base in quantities equal to no less than 5% of each type installed.

End of Section 09 65 00

SECTION 09 90 00**PAINTING****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(not applicable)**1.03 SCOPE OF WORK**

- A. Scope of this Section includes the following:
1. Prepare surfaces which are to receive paint.
 2. Paint surfaces as indicated on the finish schedule. In general, all new and existing exposed interior surfaces shall receive paint by this section, unless otherwise excluded or indicated as pre-finished.
 3. Exterior PVC Trim where indicated as painted.
 4. Adherence to low / no VOC requirement.

1.04 RELATED WORK SPECIFIED ELSEWHERE

- A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:
1. Gypsum Board Finishes - Section 09 20 00
 2. Floor Coating – Section 09 96 56
 3. Metal Doors – Section 08 11 00
 4. Wood and Plastic Doors – Section 08 14 00
 5. Finish Carpentry – Section 06 20 00 (PVC Trim to remain white)
 6. Cement Fiber Siding / soffits / Panels – Section 07 46 00 (Prefinished)
 7. Prefinished wood windows (interior exposed wood is pre-painted)

- B. The following substrates do not require painting:
1. Non-ferrous metals.
 2. Flooring (epoxy coating by other spec section)
 3. Windows and integral exterior casing.
 4. Exterior exposed wood columns and beams.
 5. Vinyl siding.

1.05 ALTERNATES
(not applicable)

1.06 SUBMITTALS

A. Attention is directed to Section 01 30 00 regarding required procedures for Submittals.

- B. Submittals are required for the following:
(SD = Shop Drawing)
(FS = Field Sample)
(OS = Samples)
(PD = Printed Data)

Paint materials	PD
Preliminary Color selections	OS
Architect color selections	OS, 12 inch by 12 inch; FS

1.07 ENVIRONMENTAL REQUIREMENTS

A. Measure moisture content of surfaces using an electronic moisture meter, Do not apply finished unless moisture contents of surfaces are below following maximums:

1. Plaster and gypsum wall board: 12 %
3. Interior Wood: 15%
4. Exterior Wood: 15%

B. Ensure that surface temperatures and the surrounding air temperature is above 40 degrees F before applying finishes. Minimum application temperatures of latex paints for interior work is 45 degrees F. Minimum application temperature for varnish finishes is 65 degrees F.

C. Provide adequate continuous ventilation.

D. Provide lighting for minimum 25 foot candles of lighting on surfaces to be painted.

E. All materials and applications shall apply with applicable EPA regulations regarding VOC emissions.

F. Supply and post MSDS information for all materials.

1.08 DELIVERY AND STORAGE

A. Deliver paint materials under provisions of Division 01, in sealed original labeled containers, bearing manufacturer's name, type of paint, brand name, color designation and instructions for mixing or reducing.

B. Provide adequate storage facilities. Store paint materials at minimum ambient temperature of 45 degrees F in well ventilated area.

C. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.09 EXTRA STOCK

A. Leave on premises, not less than one gallon of each type of paint used. Containers shall be tightly sealed, and clearly labeled for identification.

1.10 SCAFFOLDING

A. As per Division 01 of these specifications, furnish, erect, maintain and remove all scaffolds, rigging and staging up to 8 feet in height, in compliance with all applicable codes and regulations. Scaffolding, rigging and staging over 8 feet in height will be provided by the Contractor.

1.11 COLORS AND PAINT COMPATIBILITY

- A. Primer and body coats shall be of a lighter time than the finish coat.
1. For deep tone finish colors, use Deep Base Primers recommended by manufacturer for surface.
 2. Dry Mil Thickness:
 - a. Comply with manufacturer's specifications.
 - b. If thinning of materials is performed, apply additional coats to achieve full film thickness of coats specified.
- B. Color Selections:
1. Architect shall have unlimited choice of colors, without extra cost.
 2. Color Selections:

- a. If color is not listed for any specific area or item, it does not relieve Contractor of responsibility for providing colors to be selected.
 - b. Color selection made by Architect is to determine basic color required for surface.
 - c. Colors with same designation but produced from two or more sources shall match when viewed from distance of 24 in. or more.
 - d. Final application of colors shall match prepared samples approved by Architect.
3. Main assembly room ceilings will be two color design; all other ceilings shall be the same single color.
 4. No more than 3 colors will be selected for walls.

C. Painter shall determine all issues of compatibility regarding the specified finishes and substrates, and bring all potential conflicts to the attention of the architect. Failure to do so shall be construed as acceptance of the substrate, and the painter shall correct at his own expense any defects in the work resulting from the use of incompatible materials.

1.12 QUALITY ASSURANCE

A. To allow inspection by owner, paint coats must not be applied more than one coat per day in any particular location.

PART 2 - PRODUCTS AND MATERIALS

2.01 ACCEPTABLE MANUFACTURERS

A. The following are acceptable paint manufacturers for this project:

1. California
2. PPG Industries
3. Devoe and Reynolds
4. Glidden Coatings and Resins
5. Sherwin Williams
6. Pratt and Lambert
7. Benjamin Moore

B. For purpose of designating type and quality of Work, Specifications are based on products of Benjamin Moore.

1. Low VOC paint shall be less than 150 gpl of VOC for non-flat finishes, and 50 or less gpl for flat finishes. Allowable manufacturers and products:

Benjamin Moore	Eco Spec
Pittsburgh Paints	Pure Performance
Sherwin Williams	Harmony

2.02 SCHEDULE

A. Exterior Surfaces:

1. Metal - Gloss:
 - a. Primer: 1 coat, IronClad Retardo Rust Inhibitive Paint.
 - b. Finish: 2 coats, Impervo Enamel.
2. Metal - Galvanized:
 - a. Primer: 1 coat, Iron Clad Retardo Rust Inhibitive Paint.
 - b. Finish: 2 coats, Impervo Enamel.
3. Metal - Aluminum:
 - a. Primer: 1 coat, Iron Clad Retardo Rust Inhibitive Paint.
 - b. Finish: 1 coat, Impervo Enamel.
4. Siding panels
 - a. Finish: 2 coats, Moore's Acrylic Latex House Paint.

C. Interior Surfaces:

1. Gypsum Board and Plaster - Satin:
 - a. Primer: 1 coat, Latex Quick Dry Prime Seal (tinted).
 - b. Finish: 1 coat, Regal Aquaglo.
2. Wood - Painted, Semi-Gloss:
 - a. Primer: 1 coat, Moore's Alkyd Enamel Underbody (tinted).
 - b. Finish: 1 coats, Alkyd Dulamel.
4. Interior Surfaces – Restroom, Bathrooms and Kitchens:
 - a. Primer: 1 coat, Latex Quick Dry Prime Seal (tinted).
 - b. Finish: 1 coats, Semigloss Impervo.
5. Metal - Gloss:
 - a. Primer: 1 coat, Iron Clad Retardo Rust Inhibitive Primer for ferrous metal and 1 coat, Iron Clad Galvanized Metal Primer.
 - b. Finish: 2 coats, Impervo Enamel.

PART 3 - EXECUTION

3.01 INSPECTION / JOB CONDITIONS

A. Thoroughly examine surfaces scheduled to be painted prior to commencement of work. Report in writing to architect and contractor any condition that may potentially affect proper application. Do not commence until such defects have been corrected.

B. Correct defects and deficiencies in surfaces which may adversely affect work of this section.

3.02 PREPARATION – GENERAL

A. Conduct typical preparation work at existing surfaces, according to good painting practices.

1. Remove all dirt, grease, oil, wax, rust and other foreign matter.
2. Glossy surfaces must be dulled with sandpaper or steel wool.
3. Fill all nail holes, etc., prior to application of primer or base coat.

3.02 PREPARATION – SPECIAL CONDITIONS

A. Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry completely.

B. Remove surface contamination from aluminum surfaces requiring a paint finish by steam, high pressure water, or solvent washing. Apply etching primer or acid etch. Apply paint immediately if acid etching.

C. Remove dirt, powdery residue, and foreign matter from piping, etc. Paint immediately, both sides when applicable.

D. Remove dirt, grease, and oil from canvas and cotton insulated coverings.

E. Remove surface contamination from gypsum board surfaces and prime to show defects, if any. Paint after defects have been remedied.

F. Remove surface contamination from galvanized surfaces and wash with solvent. Apply coat of acid etching type primer.

G. Remove dirt, loose mortar, scale, powder, and other foreign matter from concrete and concrete block surfaces which are to be painted or sealed. Remove oil and grease with a solution of tri-sodium phosphate, rinse well and allow to thoroughly dry.

H. Remove stains from masonry caused by weathering of corroding metals with a solution of sodium metasilicate after being thoroughly wetted with water. Allow to thoroughly dry.

I. Remove grease, rust, scale, dirt and dust from steel and iron surfaces. Where heavy coatings of scale are evident, remove by wire brushing, sandblasting or any other necessary method. Ensure that steel surfaces are satisfactory before paint finishing. Use SSPC-SP 2, hand tool cleaning or SSPC SP 3, power tool cleaning.

J. Clean unprimed steel surfaces by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts and nuts are similarly cleaned. Prime surfaces to indicate defects, if any. Paint after defects have been remedied.

K. Sand and scrape shop primed to remove loose primer and rust. Feather out edges to make touch up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.

L. Wipe off dust and grit from miscellaneous wood items and millwork prior to priming. Spot coat knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried and sand between coats. Back prime interior woodwork in wet areas.

3.03 PROTECTION

A. Adequately protect other surfaces from paint and damage. Repair damage as a result of inadequate or unsuitable protection.

B. Furnish sufficient drop cloths, shields and protective equipment to prevent spray or droppings from fouling surfaces not being painted and in particular, surfaces within storage and preparation area.

C. Place cotton waste, cloths, and material which may constitute a fire hazard in closed metal containers and remove daily from site.

D. Remove electrical plates, surface hardware, fittings, fastenings prior to painting operations. These items are to be carefully stored, cleaned and replaced on completion of work in each area. Do not use solvent to clean hardware that may remove permanent lacquer finish.

End of Section 09 90 00

SECTION 09 96 56
HIGH PERFORMANCE EPOXY COATINGS

PART 1 - GENERAL

1.01 GENERAL

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(Not Applicable)

1.03 SCOPE OF WORK

A. This Section includes the general scope of work to furnish the administration, facilities, materials, labor and equipment for the following:

1. Preparation of the existing flooring for Epoxy Floor finish.
2. Low – VOC Epoxy Floor Finish with decorative “chip” color.
3. Slip resistance 0.65 wet, 0.95 dry.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. DIV 03, Concrete Floor Patching

1.05 ALTERNATES

1. Not Applicable

1.06 SUBMITTALS

A. Attention is directed to Section 01 30 00 regarding required procedures for Submittals.

B. Submittals are required for the following:

(SD = Shop Drawing)
(FS = Field Sample)
(OS = Samples)
(PD = Printed Data)

- | | | |
|----|----------------|--------|
| 1. | Epoxy Coatings | PD |
| 2. | Color samples | PD, OS |

C. Samples for Initial Selection: Manufacturer's color charts showing full range of colors available.

1.07 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer with experience in the production of specified products.

B. Installer Qualifications: An installer with five years experience with work of similar scope and quality.

C. Obtain each specified material from same source and maintain high degree of consistency in workmanship throughout Project.

D. Notification of manufacturer's authorized representative shall be given at least 1-week before start of Work.

E. Certified Applicators:

1. Consult Manufacturer for a list of Certified Applicators in the project area.

F. Pre-installation Conference: Conduct conference at project site to review procedures and coordination requirements.

G. Installer/Applicator shall be certified by chemical manufacturer and shall provide adequate number of skilled workmen who are thoroughly trained and experienced in the necessary craft.

H. Manufacturer's Certification: Provide a letter of acknowledgement from both the equipment and chemical manufacturer stating that the installer is a trained applicator and is familiar with proper procedures and installation requirements recommended by the manufacturer.

I. Epoxy mockup or field sample – not required due to schedule constraints.

J. Environmental Limitations:

1. Comply with manufacturer's written instructions for substrate temperature and moisture content, ambient temperature and humidity, ventilation and other conditions affecting chemical performance.
2. Finish concrete area shall be closed to traffic during finish floor application and after application for the time as recommended by the manufacturer.

1.08 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM):
1. ASTM C309 "Liquid Membrane-Forming Compounds for Curing Concrete."
 2. ASTM C494 "Standard Specification for Chemical Admixtures for Concrete."

1.09 DELIVERY

- A. All chemicals: Comply with manufacturer's instructions. Deliver in original, unopened packaging. Store in dry conditions.

1.10 PRE-JOB CONFERENCE

- A. One week prior to placement of concrete a meeting will be held to discuss the Project and application materials.
- B. Architect, General Contractor, Owner's rep Subcontractor, and a Manufacturer's Representative shall be present.

1.11 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
1. Coatings shall be applied prior to cabinet installation and toilet partition installation.

PART 2 - PRODUCTS AND MATERIALS

2.01 ACCEPTABLE MANUFACTURER

- A. Laticrete Company, Manufacturer of “Spartacote” is the basis of design.
 - 1. Equal products by Surecrete, or MAPEI.

2.02 MATERIALS

- A. Spartacote Chip Pure, VOC-Free Solid Flooring System, with Chip Coloring
 - 1. Pigmented Base Coat
 - 2. Decorative Chip Broadcast
 - 3. Clear Top Coat
- B. Drytek Moisture vapor Barrier used as primer and moisture mitigation.
- C. Top Coat shall be Spartacote Flex SB Clear, with Spartacote Grip Traction Additive.
- D. System Characteristics.
 - 1. Textured for slip resistance.
 - 2. Color and pattern as selected by Architect from manufacturer’s full range.
- E. Patching and Fill Material: SPARTACOTE FAST-FIX or resinous product of or approved by resinous flooring manufacturer and recommended by manufacturer for application indicated.
- F. Joint Filler L&M JOINT-TITE 750 flexible polyurea joint filler or similar product.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Prepare floor to the level required for application of primer, including crack repair, filling of depressions. Prepare and clean substrates according to resinous flooring manufacturer's written instructions for substrate indicated. Provide clean, dry substrate for resinous flooring application.
 - 1. Test moisture content of existing slabs.

B. Concrete Substrates: Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with resinous flooring.

1. Roughen concrete substrates as follows:
 - a. Mechanically profile surfaces with an apparatus that abrades the concrete surface to a profile as specified by system application guide.
 - b. Comply with ICRI Technical Guideline No. 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair.
2. Repair damaged and deteriorated concrete according to resinous flooring manufacturers written instructions.
3. Perform all moisture testing as required or recommended by manufacturer to assure suitability of concrete floor for primer or coating application.

C. Resinous Materials: Mix components and prepare materials according to resinous flooring manufacturer's written instructions.

D. Use patching and fill material to fill holes and depressions in substrates according to manufacturer's written instructions.

E. Treat control joints and other nonmoving substrate cracks to prevent cracks from reflecting through resinous flooring according to manufacturer's written instructions.

3.02 APPLICATION

- A. General: Apply components of resinous flooring system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface of thickness indicated.
 1. Coordinate application of components to provide optimum adhesion of resinous flooring system to substrate, and optimum inter-coat adhesion.
 2. Cure resinous flooring components according to manufacturer's written instructions. Prevent contamination during application and curing processes.
 3. At substrate expansion and isolation joints, comply with resinous flooring manufacturers written instructions.
- B. Apply waterproofing membrane, where indicated, in manufacturer's recommended thickness.
- C. Integral Cove Base: (not required – base shall be vinyl cove)
- D. Apply primer and body coats in thickness indicated for flooring system.

- E. Apply topcoats and abrasive chips in number indicated for flooring system and at spreading rates recommended in writing by manufacturer.

3.03 FIELD QUALITY CONTROL

- A. Core Sampling: (not done)
- B. Material Sampling: Owner may at any time and any number of times during resinous flooring application require material samples for testing for compliance with requirements.

3.04 PROTECTION

- A. Protect resinous flooring from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by resinous flooring manufacturer.

3.05 OPERATION AND MAINTENCE

- A. Instruction owner on maintenance procedures.
- B. Include maintenance information in the O&M manual.

END OF SECTION 09 96 56

SECTION 10 11 16**MARKER BOARDS****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 01 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(Not Applicable)**1.03 SCOPE OF WORK****A. Section Includes:**

1. White Board for Projection Surface and Dry-Erase

1.04 RELATED WORK SPECIFIED ELSEWHERE**A. The following trades supplied related work, requiring coordination:**

1. Section 06 20 00, Finish Carpentry; Installation

1.05 ALTERNATES
(not applicable)**1.06 SUBMITTALS**

A. Attention is directed to Section 01 30 00 regarding procedures for submittals.

B. Submittals are required for the following:

(SD = Shop Drawing)

(FS = Field Sample)

(OS = Samples)

(PD = Printed Data)

1. White Board PD

- C. Requirements
 - 1. Provide installation details

1.07 QUALITY ASSURANCE

PART 2 - PRODUCTS AND MATERIALS

2.01 ACCEPTABLE MANUFACTURERS AND PRODUCTS

- A. Basis of Design: Epson Model V12H83100, 54.6" h x 86.6" w.
 - 1. Equal by Elite Screens "White Board Screen" Series
 - 2. Equal by Draper Scribe Write-on Fixed Projection Screen
- B. Include all mounting hardware, bracket board, four white board markers and cleaning cloth

2.03 WARRANTY

- A. Minimum of three years,

A. **PART 3 - EXECUTION**

3.01 INSTALLATION

- A. By DIV 06.

3.02 ADJUSTMENT

- A. Adjust and clean.

End of Section 10 11 16

SECTION 10 14 00**SIGNS AND IDENTIFICATION DEVICES****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 01 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(Not Applicable)**1.03 SCOPE OF WORK**

A. Section Includes:

1. Furnish and install room identification signs
2. Field Measurements.
3. Coordination with manufacturer regarding installation procedures.
4. Conformance to ADA / Mass AAB regulations for signage
5. Life Safety Signage

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. (not applicable)

1.05 ALTERNATES
(not applicable)**1.06 SUBMITTALS**

A. Attention is directed to Section 01300 regarding procedures for submittals.

B. Submittals are required for the following:
(SD = Shop Drawing)
(FS = Field Sample)
(OS = Samples)
(PD = Printed Data)

1. Signs: PD, SD
2. Color Samples: OS

PART 2 - PRODUCTS AND MATERIALS

2.01 ACCEPTABLE MANUFACTURERS

- A. Signs: ASI Sign systems, 508 581-8936

2.02 PRODUCTS

- A. Signs: ASI “In-touch” plaque with raised copy, symbols and braille.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer’s instructions. Coordinate installation with input of other trades.

- B. Sign Schedule:

<u>Location</u>	<u>Text / Description</u>	<u>Size (wxh in inches)</u>
Kitchen	KITCHEN 3/4” Text + Braille	6x3
Nurse Office	NURSE 3/4” Text + Braille	6x3
Restroom - M	Men bath Access Pictograph 3/4” Text + Braille	6x8
Restroom – F	W’Men bath Access Pictograph 3/4” Text + Braille	6x8

Janitor	CUSTODIAN 3/4" Text + Braille	6x3
Storage	Storage 3/4" Text + Braille	6x3
Mechanical	Mechanical 3/4" Text + Braille	6x3

C. Life Safety Signage

1. As required by Fire Department, in locations determined by NFD.

End of Section 10 14 00

SECTION 10 21 13**TOILET COMPARTMENTS****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(not applicable)**1.03 SCOPE OF WORK**

A. This section includes solid plastic polymer resin to be used for toilet compartments at the project restrooms.

1. Coordination with other trades, including floor coatings.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. Section 06 10 00- Rough Carpentry
2. Section 10 28 00- Toilet and Bath Accessories: for toilet paper holders, grab bars, and similar accessories.

1.05 ALTERNATES
N/A**1.06 SUBMITTALS**

A. Provide submittals to form defined in Section 01300, Submittals.

B. Submittals are required for the following:
(SD = Shop Drawing)

(FS = Field Sample)
(OS = Samples)
(PD = Printed Data)

1. Product Data: For each type and style compartment and screen specified. Include details of construction relative to materials, fabrication, and installation. Include details of anchors, hardware, and fastenings.
2. SD (see below.)
3. OS for Initial Selection: Manufacturer's color charts consisting of sections of actual units showing the full range of colors, textures, and patterns available for each type of compartment or screen indicated.
4. OS for Verification: Of each compartment or screen color and finish required, 6-inch-square samples of same thickness and material indicated for Work.

C. Shop drawings shall indicate:

1. For fabrication and installation of toilet compartment and screen assemblies. Include plans, elevations, sections, details, and attachments to other work.
 - a. Show locations of cutouts for compartment-mounted toilet accessories.

1.07 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions in areas of installation by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS AND MATERIALS

2.01 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Capital Partitions, Inc.
2. Compression Polymers Group; Comtec Industries.
3. Santana Products, Inc.
4. Misco Partitions Corp

2.02 MATERIALS

A. General: Provide materials that have been selected for surface flatness and smoothness. Exposed surfaces that exhibit pitting, seam marks, stains, discolorations, or other imperfections on finished units are unacceptable.

- B. Solid-Plastic, Polymer Resin: High-density polyethylene (HDPE) with homogenous color throughout. Provide material not less than 1 inch thick with seamless construction and eased edges in color and pattern as follows:
1. Color and Pattern: One color and pattern in each room as selected by Architect from manufacturer's full range of colors and patterns.
- C. Pilaster Shoes and Sleeves (Caps): ASTM A 666, Type 302 or 304 stainless steel, not less than 0.0312 inch thick and 3 inches high, finished to match hardware.
- D. Full-Height (Continuous) Brackets: Manufacturer's standard design for attaching panels and screens to walls and pilasters of the following material:
1. Material: Clear-anodized aluminum.
- E. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories of the following material:
1. Material: Chrome-plated, nonferrous, cast zinc alloy (zamac) or clear-anodized aluminum.
- F. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile in manufacturer's standard finish.
- G. Heat-Sink Strip: Manufacturer's standard continuous, extruded-aluminum strip in manufacturer's standard finish.
- H. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or chrome-plated steel or brass, finished to match hardware, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use hot-dip galvanized or other rust-resistant, protective-coated steel.

2.03 FABRICATION

- A. General: Provide standard doors, panels, screens, and pilasters fabricated for compartment system. Provide units with cutouts and drilled holes to receive compartment-mounted hardware, accessories, and grab bars, as indicated.
1. Comply with wall heights as per ANSI / ADA requirements for restrooms for children.
- B. Solid-Plastic, Polymer-Resin Compartments and Screens: Provide aluminum heat-sink strips at exposed bottom edges of HDPE units to prevent burning.
- C. Overhead-Braced-and-Floor-Anchored Compartments: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, fasteners, and anchors at pilasters to suit floor conditions. Make provisions for setting and securing continuous head rail at top of each pilaster. Provide shoes at pilasters to conceal supports and leveling mechanism.

D. Overhead-Braced-and-Floor-Anchored Screens: Provide pilasters and panels of same construction and finish as toilet compartments. Provide manufacturer's standard corrosion-resistant anchoring assemblies complete with threaded rods, lock washers, and leveling adjustment nuts at pilasters for structural connection to floor. Make provisions for setting securing continuous head rail at top of each pilaster. Provide shoes at pilasters to conceal anchorage.

E. Doors: Unless otherwise indicated, provide 24-inch-wide in-swinging doors for standard toilet compartments and 36-inch-wide out-swinging doors with a minimum 32-inch-wide clear opening for compartments indicated to be handicapped accessible.

1. Hinges: Manufacturer's standard self-closing type that can be adjuster to hold door open at any angle up to 90 degrees.
2. Latch and Keeper: Manufacturer's standard surface-mounted latch unit with combination rubber-faced door strike and keeper designed for emergency access. Provide units that comply with accessibility requirements of authorities having jurisdiction at compartments indicated to be handicap accessible.
3. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent door from hitting compartment-mounted accessories.
4. Door Bumper: Manufacturer's standard rubber-tipped bumpers at out-swinging doors or entrance screen doors.
5. Door Pull: Manufacturer's standard unit that complies with accessibility requirements of authorities having jurisdiction at out-swinging doors. Provide units on both sides of doors at compartment indicated to be handicapped accessible.

PART 3 - EXECUTION

3.01 INSPECTION / JOB CONDITIONS

A. Report any damaged or unsuitable areas to the Architect and/or owner.

3.02 INSTALLATION

A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, plumb, and level. Provide clearances of not more than ½ inch between pilasters and panels and not more than 1 inch between panels and walls. Secure units in positions with manufacturer's recommended anchoring devices.

1. Secure panels to walls and panels with full height continuous brackets. Locate holes for wall anchors to occur in masonry or tile joints.

B. Overhead-Braced-and-Floor-Anchored Compartments: Secure pilaster to floor and level, plumb, tighten. Secure continuous head rail to each pilaster with not less than two fasteners. Hang doors and adjust so tops of doors are parallel with overhead brace when doors are in closed position.

C. Screens: Attach with anchoring devices according to manufacturer's written instructions and to suit supporting structure. Set units level and plumb and to resist lateral impact.

3.02 ADJUSTING AND CLEANING

A. Hardware Adjustment: Adjust and lubricate hardware according to manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold open approximately 30 degrees from closed position when unlatched. Set hinges on out- swinging doors and swing doors in entrance screens to return to fully closed positions

B. Provide final protection and maintain conditions that ensure toiler compartments, changing compartments and screens are without damage or deterioration at the time of Substantial Completion.

End of Section 10 21 13

SECTION 10 28 00**TOILET AND BATH ACCESSORIES****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(not applicable)**1.03 SCOPE OF WORK**

A. Section Includes the furnishing of the following:

1. Restroom Accessories.
2. Grab Bars at public restrooms
3. Mounting heights in accordance with applicable codes.

B. Work shall conform to applicable accessibility codes.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. DIV 22, Plumbing.
2. Section 06 10 00, Rough Carpentry (blocking)

1.05 ALTERNATES
(not applicable)**1.06 SUBMITTALS**

A. Attention is directed to Section 01 30 00 regarding required procedures for Submittals.

B. Submittals are required for the following:

(SD = Shop Drawing)
 (FS = Field Sample)
 (OS = Samples)
 (PD = Printed Data)

Accessories	PD
Grab Bars	PD
Shower Doors	PD
Schedule	PD
Certificates: (Grab bar strength)	PD (by independent laboratory)

1.07 DELIVERY AND STORAGE

- A. Deliver items in manufacturer's original unopened protective packaging.
- B. Store materials in original protective packaging to prevent damage or wetting.
- C. Maintain protective covers on all units until installation is complete. Remove covers at final clean up of installation.

1.08 OPERATION AND MAINTENANCE / WARRANTY MANUALS

- A. Refer to Section 01 70 00 for the Operating and Maintenance Manual requirements for this Contract.
 - 1. Delivery of the Manuals listed below shall be a condition precedent to final payment.
- B. Maintenance data, operating instructions and keys for each type of equipment.

PART 2 - PRODUCTS AND MATERIALS

2.01 MATERIALS

- A. General:
 - 1. For purposes of designating type and quality of Work, Specifications, unless otherwise indicated, are based on products of Bobrick or Bradley.
 - 2. Products of other manufacturers shall fully match type and quality of product specified.
 - 3. Alternate Acceptable Manufacturer: A&J Washroom, American Dispenser.
- B. Toilet Room Accessories:
 - 1. Robe Hook: Bobrick B-671 (two at bath and Nurse door)

- 2. Toilet Paper Dispenser: Bradley 508 (one per stall)
- 3. Paper Towel Dispenser: Bradley 9532, stainless finish. (one per restroom)
- D. Grab Bars: 1-1/4 in. dia., peened, max. 1-1/2 in. from wall, concealed mounting: Bobrick B-5806. Size as per Mass Code requirements.
- E. Restroom Mirror: Bobrick B-290
Size as indicated on drawings.
- F. Janitor Room Mop holder and shelf: Bobrick B-239 x 24

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install toilet accessories only after completion of contiguous work as part of Work of DIV 22, Plumbing.
- B. Fasten securely with concealed fasteners to manufacturer's recommendations.

END OF SECTION 10 28 00

SECTION 10 44 00**FIRE SPECIALTIES****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 01 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(Not Applicable)**1.03 SCOPE OF WORK****A. Section Includes:**

1. Furnish and Install Fire Specialties
 - a. Knox Box.
 - b. Fire Extinguisher Cabinets.
 - c. Fire Extinguishers.
2. Field Measurements.
3. Coordination with manufacturer regarding installation procedures.
4. Coordination with local fire department.
5. Conformance to ADA and Mass AAB regulations regarding mounting height and projection.

1.04 RELATED WORK SPECIFIED ELSEWHERE**A. The following trades supplied related work, requiring coordination:**

1. Section 09 20 00, Gypsum Board Systems:
2. Section 06 10 00, Carpentry - blocking

1.05 ALTERNATES
(not applicable)**1.06 SUBMITTALS**

A. Attention is directed to Section 01 30 00 regarding procedures for submittals.

B. Submittals are required for the following:

(SD = Shop Drawing)

(FS = Field Sample)

(OS = Samples)

(PD = Printed Data)

1. Knox Box: PD
2. Fire Extinguisher Cabinets: PD
3. Fire Extinguishers PD

C. Provide copies for fire department review.

PART 2 - PRODUCTS AND MATERIALS

2.01 ACCEPTABLE MANUFACTURERS

A. Extinguishers / Cabinets: Larsen's Manufacturing Company, or equal by J. L. Industries or Samson Metal Products.

B. Knox Box – Knox Company

2.02 PRODUCTS

A. Cabinets: Larsen Architectural Series:

1. Solid Steel Door – white finish.
2. No glazing.
3. Vertical lettering.
4. 3.5" projection, with recessed handle.
5. Rolled edge trim
6. Non-fire rated.

B. Extinguisher: MP Series extinguisher and coordinated bracket.

C. Knox Box – Model 3200; recessed installation – One Location

A. **PART 3 - EXECUTION**

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions. Coordinate installation with input of Fire department.

B. Schedule:

Fire extinguisher and cabinet: Near Main Entrance

Fire extinguisher and bracket mount: Kitchen Area

Knox Box Main Entrance

End of Section 10 44 00

SECTION 10 51 13**METAL LOCKERS****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(not applicable)**1.03 SCOPE OF WORK**

- A. Work of this section includes the furnishing of the following:
1. Prefinished Metal Lockers, as indicated on drawings.
 2. Sloped tops and base enclosure accessories.

1.04 RELATED WORK SPECIFIED ELSEWHERE

- A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:
1. Installation by Finish Carpentry, Section 06 20 00

1.05 ALTERNATES
(not applicable)**1.06 SUBMITTALS**

- A. Attention is directed to Section 01 30 00 regarding required procedures for Submittals.
- B. Submittals are required for the following:

(SD = Shop Drawing)
(FS = Field Sample)
(OS = Samples)
(PD = Printed Data)

Lockers SD, PD

Include actual color sample chips with the PD

SD shall indicate dimensions, plans, elevations and sections, as well as specific information for the “rough opening” dimensions.

PD shall include certification regarding VOC content of finish.

1.07 DELIVERY AND STORAGE

A. Package separately labeled as to item enclosed. Store products in manufacturer’s unopened packaging until ready for installation to protect the locker finish and adjacent surfaces. Include all necessary items for installation, including instructions.

1.08 REFERENCES

- A. ADAAG – Americans with Disabilities Act Accessibility Guidelines
- B. Mass 521 CMR

PART 2 - PRODUCTS AND MATERIALS

2.01 PRODUCTS

A. General:

1. For purposes of designating types sizes and quality of Work, Specifications are based on products of Penco Products, Inc.
2. Products of other manufacturers shall fully match type, size, accessibility features and quality of product specified. Only American fabricated lockers will be acceptable.
3. Alternative Manufacturers:
 - a. Hallowell
 - b. Lyon
3. Lockers shall be GREENGUARD Gold Certified.

2.02 MATERIALS

- A. Lockers shall be constructed with prime grade mild cold rolled steel, free from surface imperfection meeting ASTM A1008, and capable of taking a high grade enamel powder coat finish.
- B. Forged steel coat hooks with balled ends, zinc coated.
- C. Truss Fin head bolts and hex nuts, zinc coated.

2.03 LOCKER FABRICATION

- A. Lockers shall be “knock down”, with tops, bottoms, backs, sides and shelves fabricated from 24 gauge sheet steel. Locker doors less than 12” shall be 18 Gauge, all others shall be 16 gauge.
 - 1. Provide 6” legs.
 - 2. Provide sloped hood and front base enclosure pieces.
 - 3. Provide number plates, number sequentially.
- B. Door Frame shall be channel shape, not less than 16 gauge steel. Provide vertical door frame members with additional 3/8 inch flange as a continuous door strike. Provide intermediate cross members, as standard per number of tiers.
 - 1. For “Box Lockers”, one piece sheet steel with channel formations on lock and hinge side, right angle flanges on top and bottom; pre-punch doors for padlock latch and friction catch.
 - a. 18 gauge combination door pull, staple and lock hole cover plate with integral friction catch.
- C. Ventilation shall be by louvers in doors in manufacturer’s standard pattern.
- D. Hinges shall be two inch high, double spun, full loop, tight pin, projection welded to door frame and securely fastened to the door with steel rivets. Provide three 2-inch five knuckle hinges on doors over 48” high and two 2-inch high five knuckle hinges on all other doors.

2.03 LOCKERS

- A. 6 Tier, Model Vanguard 6367V, 12” wide, 15” deep, 72” tall.
Box Locker with Friction Catch Pull Handles.
 - 1. Note integration of accessible 24” tall units at three “hybrid” units.
 - a. Accessible units have accessible locking hardware.

2.04 FABRICATION

- A. Fabrication shall be on the unit principle, each locker with individual door and frame, individual top, bottom, back and shelves, with common intermediate divisions separating components.

2.04 FINISH

- A. Finish shall be high quality powder coat paint applied in strict adherence to paint manufacturer's specifications to provide optimum appearance and performance.
1. Finishes releasing VOC's are not permitted.
 2. 1 mil DFT minimum.
 3. Color as selected from full range of manufacturer's colors.
 4. All locker body components shall match color of door and frame.

PART 3 - EXECUTION

3.01 PREPARATION AND EXAMINATION

- A. Do not begin installation until substrates and bases have been property prepared, including wall and floor finishes. Notify Architect of unsatisfactory conditions needing correction.

3.02 INSTALLATION

- A. Install lockers and accessories at locations shown in accordance with manufacturer's instructions. Coordinate with Rough Carpentry partition layout to assure adequate clear dimensions.
- B. Install lockers plumb, level and square.
- C. Anchor lockers to floor and wall at intervals recommended by the manufacturer.
- D. Bolt adjoining locker units together to provide rigid installation.

3.03 ADJUSTING

- A. Adjust doors and latches to operate without binding.
- B. Verify that latches are operating satisfactorly.
- C. Adjust built-in locks to prevent binding of dial or key and ensure smooth operation prior to substantial completion.
- D. Touch up with factory supplied paint and replace or repair damaged components.

3.04 PROTECTION

- A. Protect installed products until acceptance of project.

End of Section 10 51 13

SECTION 11 45 00**RESIDENTIAL EQUIPMENT****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(not applicable)**1.03 SCOPE OF WORK**

A. Work of this section includes the furnishing of the following:

1. (reserved)
2. Electric Cook Tops
3. Hood – Microwave Combination.

B. Energy Star compliance for refrigerators and freezers

C. Compliance with regulatory requirements

1. NFPA – all appliances shall be listed and labeled.
2. UL and NEMA – Provide electrical components that are listed and labeled by UL and and that comply with the applicable NEMA standards.
3. NAECA: Comply with NAECA standards.

D. Accessibility Requirements:

1. Controls shall be within the zone of accessible reach, and not require tight grasping, pinching or twisting of the wrist and that operate with a force of not more than 5 lb.
2. Cook Top shall not require reaching across burners.

1.04 RELATED WORK SPECIFIED ELSEWHERE

- A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:
1. Electrical power by Div 26.
 2. Cabinets and countertops, Section 12 35 30
- B. Coordinate appliance sizes with Section 12 35 30, Cabinets, for layout. Note that critical accessibility dimensions are affected by appliance size.
- 1.05 ALTERNATES
(not applicable)
- 1.06 SUBMITTALS
- A. Attention is directed to Section 01 30 00 regarding required procedures for Submittals.
- B. Submittals are required for the following:
(SD = Shop Drawing)
(FS = Field Sample)
(OS = Samples)
(PD = Printed Data)

Residential Equipment

SD, PD

1.07 DELIVERY AND STORAGE

- A. Package separately labeled as to item enclosed. Include all necessary items for installation, including instructions.

PART 2 - PRODUCTS AND MATERIALS

2.01 PRODUCTS

- A. General:
1. For purposes of designating types sizes and quality of Work, Specifications are based on products of GE
 2. Products of other manufacturers shall fully match type, size, accessibility features and quality of product specified.
 3. Alternate Acceptable Manufacturers: Whirlpool, Kitchenaid, Frigidaire
- B. All appliances shall have Energy Star compliance except undercounter refrigerator,

2.02 REFRIGERATORS / FREEZERS – For reference only – NOT IN CONTRACT

- A. Freezer shall be Frigidaire Model “Gallery” 19 CF, FGFU19F6QF. With ice maker.
H: 71-3/8”
W: 32”
D: 26-1/2” (28-1/4 with handles)
- B. Refrigerator shall be Frigidaire Model FGRU19F6QF – 19 CF
H: 71-3/8”
W: 32”
D: 26-1/2”
- C. Under Counter refrigerator shall be: 4.5 CF Under counter, Frigidaire Model FFPE4522QM - Size to fit under 36” counter.
W: 21-1/4”
H: 33-7/8”
D: 23”

2.03 MICROWAVE / HOOD COMBO

- A. Over the range Microwave shall be Frigidaire Model FPBM307NTF with 36” Filler Panel Kit (stainless steel) Item # MWFILKTSS
W: 29-7/8”
H: 17-9/16”
D: 16-1/16”

2.04 COOK TOP

- B. CookTop
Two Burner – Black
GE #JP201CBSS
W: 21-1/4”
H: 3”
D: 16-15/8”

PART 3 - EXECUTION**3.01 PREPARATION**

- A. Inspect adjoining surface and insure that all work has been completed before placement of equipment.
- B. Insure that rough-in work meets requirements identified as part of shop drawings.

3.02 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations.
- B. Coordinate final hook up to electrical and mechanical fittings and equipment.
- C. Install all cook-tops so as to preclude contact with hot surfaces in any open knee space below the cook-tops.

3.03 FIELD QUALITY CONTROL

- A. Test all equipment in presence of Owner's Representative before final acceptance to demonstrate proper operation of equipment.
- B. Replace or repair any malfunctioning or damaged equipment.

3.04 ADJUSTING AND CLEANING

- A. Clean all surfaces at time of installation and before final acceptance by Owner.

End of Section 11 45 00

SECTION 12 20 00
WINDOW TREATMENTS

PART 1 - GENERAL

1.01 GENERAL

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 01 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 FILING OF SUB-BIDS
(Not Applicable)

1.03 SCOPE OF WORK

A. Section Includes:

1. Furnish and install Horizontal Louver Blinds at all windows in Meeting Room and Nurse Room.
2. Field Measurements.
3. All mounting hardware.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. Section 08 52 13, Windows

1.05 ALTERNATES
(not applicable)

1.06 SUBMITTALS

A. Attention is directed to Section 01 30 00 regarding procedures for submittals.

B. Submittals are required for the following:
(SD = Shop Drawing)
(FS = Field Sample)

(OS = Samples)
(PD = Printed Data)

1. Blinds: OS, PD, FS, SD
 2. Mounting Hardware: OS, PD
- C. Shop drawings shall show mounting approach.
- D. Install field sample for review of each type of blind.

1.07 QUALITY ASSURANCE

- A. Install mock-up at sample window installation.
1. Adjust, remove or re-install as required to obtain architect's approval.
 2. Approved sample shall remain as standard for installation of entire project.

PART 2 - PRODUCTS AND MATERIALS

2.01 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with requirements, provide products from one of the following manufacturers.
1. Levelor Contract
 2. Hunter Douglas Window Fashions
 3. Bali

2.02 Louver Blinds

- A. Horizontal Products shall be based on Levelor "Riviera" contract model
1. Slats:
 - a. ½" aluminum
 - b. Standard color range
 2. Head:
 - a. Painted galvanized steel.
 3. Brackets:
 - a. Painted galvanized steel
 4. Fasteners shall be 18-8 stainless steel.

PART 3 - EXECUTION

3.01 INSPECTION / JOB CONDITIONS

A. Existing Openings

1. Verify dimensions. Request correction of all conditions that will compromise proper operation of shades.

3.02 INSTALLATION

A. General

1. Install equipment to manufacturer's instructions, after painting of area by Section 09 90 00.
2. Demonstrate operation of louvers to be smooth and faultless.
3. Clean all materials after installation.
4. Remove all related debris from site.

End of Section 12 20 00

SECTION 12 33 30**CASEWORK AND COUNTERTOPS****PART 1 - GENERAL****1.01 GENERAL**

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

**1.02 FILING OF SUB-BIDS
(not applicable)****1.03 SCOPE OF WORK**

A. Field measurement, fabrication, delivery to site and installation of kitchen, cabinets and countertops; Bathroom countertops and splash. In the event of need of non-standard cabinet sizes, cabinet manufacturer will supply custom sizes.

1. Includes P.LAM countertops at restroom lav counters and kitchen countertops.

B. Kitchen design intent is for contrasting finish at base and wall cabinets.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. Plumbing, DIV 22
 - a. Including installation of restroom Lavs and kitchen sinks
2. Electrical, DIV 26
3. Appliances, Section 11 45 00

B. Coordination is required with the installation of new appliances.

1.05 ALTERNATES
(not applicable)

1.06 SUBMITTALS

A. Attention is directed to Section 01 30 00 regarding required procedures for Submittals.

B. Submittals are required for the following:

(SD = Shop Drawing)

(FS = Field Sample)

(OS = Samples)

(PD = Printed Data)

Layout	SD
Cabinets	PD, OS
Countertops	PD, OS

1. Product Data: Submit manufacturer's technical product data and installation instructions indicating materials, hardware, and finishes used in fabrication of kitchen cabinets.
2. Shop Drawings:
 - a. Submit shop drawings showing location and size of each type of cabinet and countertops, accessories, materials, finishes, hardware types and locations, fillers.
 - b. Include fully dimensioned plans and elevations and indicate details of anchorage to countertop and to walls.
3. Samples:
 - a. Submit fully finished samples of following items required for kitchen cabinets:
 - b. Solid Wood with Transparent Finish: 3 finished samples, 3/4 in. x 6 in. x 18 in., for each species.
 - c. Veneered Plywood with Transparent Finish: 3 finished samples, 12 in. sq. square, for each species and cut.
 - d. Plywood or Particleboard with laminated vinyl and melanine: 3 finished samples, 12 in. sq., for each type of finish and color.
 - f. Hardware, including drawer and tray slides: One unit of each type and finish.
 - g. Countertop color samples, and construction types.

1.07 QUALITY ASSURANCE

A. Cabinets shall be by a manufacturer of pre-manufactured cabinets that is a member of the Kitchen Cabinet Manufacturer's Association, certified to meet or exceed standards outlined in ANSI/KCMA A161.1 – 1995. Millwork shops that are certified members of the AWI are also eligible.

1.08 REFERENCE STANDARDS

A. Definitions:

1. Exposed Portions of Cabinets:
 - a. Include all surfaces including edges visible when doors and drawers are closed, including bottoms of wall cabinets.
 - b. Include visible surfaces and visible edges of shelves in open cabinets or behind glass doors and underside of bottoms of cabinets over 48 in. A.F.F.
 - c. Provide finished ends at end of cabinet facing refrigerator and range.
2. Semi-Exposed Portions:
 - a. Include surfaces behind opaque doors and drawer fronts including shelves, dividers, interior faces of cabinet ends, backs, tops and bottoms, drawer sides, backs and bottoms, and back face of doors.
3. Concealed Portions of Cabinets:
 - a. Include sleepers, web frames, dust panels and other surfaces not normally visible after installation.
 - b. Include underside of bottoms of cabinets max. 2 ft.0 in. above floor.

1.09 DELIVERY AND STORAGE

A. Protect wood cabinets and countertops during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

B. Handling:

1. Do not deliver wood cabinets and countertops until painting, wet work, grinding and similar operations, which could be performed before installation of kitchen cabinets, have been completed in installation areas.
2. Store kitchen cabinets and countertop in installation areas or, if impracticable, in areas with similar ambient conditions.

1.10 JOB CONDITIONS

A. Environmental Requirements:

1. Conditioning:
 - a. Comply with cabinet manufacturer's recommendations for temperature and humidity requirements in cabinet installation areas.
 - b. Do not install cabinets and countertops until required temperature and relative humidity have been stabilized and will be maintained in installation areas.
2. Maintain temperature and humidity in installation areas as required to maintain moisture content of installed cabinet work tolerance range of optimum moisture content acceptable to cabinet manufacturer, from date of installation through remainder of construction period.

1.11 ENVIRONMENTAL SAFETY

- A. Conform to HUD rules and ASTM E 1330-90 requirements regarding formaldehyde emission levels in residential applications.
- B. Conform to ANSI E 162.90 (Fire Resistance) requirements.

PART 2 - PRODUCTS AND MATERIALS

2.01 MATERIALS

- A. Countertop Substrate
 2. Substrate at P. Lam countertop shall be exterior grade (Marine) plywood.
- C. Hardwood Plywood: PS 51, Grade 1 or better, of thickness, species, cut, and core construction indicated. All plywood shall be exterior grade.
- D. Hardwood Lumber: Clear, dry, sound, and free of defects selected from First Grade lumber (NHLA), of species indicated.
- E. Hardboard: ANSI A135.4, Class 1, tempered.
- F. Particle Board: ANSI A208.2, industrial grade, of thickness and density indicated.
- G. Plastic Laminate:
 1. NEMA LD3, of thickness, type and grade designation indicated.
 2. Color, Pattern, and Finish: As selected from manufacturer's standard selections. Four laminate colors will be used in the project.

2.02 CABINETS AND COUNTERTOPS

- A. Wood Kitchen Cabinets:
 - 1. Cabinets shall be “Extreme Series” by Advanta. Trevant Style door cabinetry, recessed shaker style panel. Wood finish at base, enamel painted at wall cabinets.
 - a. Provide PT toe board.
 - b. Provide “Soft Close” drawer and cabinet door hinges.
 - 2. Semi-Exposed Materials:
 - a. Solid Lumber: Dry, sound, selected to eliminate appearance defects, of any species of hardwood or softwood with color and grade to match.
- B. Cabinet Hardware:
 - 1. Kitchen:
 - a. Advanta “Contemporary” style, Satin Nickel, 1x6SN style
Bar Pulls – 178SN Drawer
Bar Pulls - 242SN cabinet door
- C. Countertop Brackets
 - 1. Floating Surface Adjustable Bracket, by Steel Design Solutions.
 - a. Alternate – CFLAT18 (2.0), by CounterBalance.

2.03 FABRICATION

- A. General:
 - 1. At accessible (Group 2A) units, provide pull out shelves at base cabinets.
- B. Shop Cut Openings:
 - 1. Use templates supplied by DIV 22.
 - 2. Smooth edges of cutouts and seal edges with water resistant coating suitable for exterior applications.
- D. Countertops and back splash – High Density Plastic Laminate:
 - 1. Exposed Surfacing Material: High pressure plastic laminate, 0.050 in. thick, General Purpose Type GP50 on exposed face and all exposed edges.
 - 2. Substrate for Exposed Surfacing Material: Marine Plywood or high density particle board (exterior rated.).
 - 3. Countertop Configuration: Square front edge and splash. Rounded outside Corners at eating tables – 2” radius

4. Countertop Thickness: Min. 1-1/2 in. front edge, unless otherwise indicated, with substrate min. 3/4 in. thick.
5. Laminate shall cover underside of all overhangs within 24" of sink or DW.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General:

1. Install cabinets plumb, level, true and straight with no distortions.
2. Shim as required using concealed shims.
3. Where wood kitchen cabinets abut other work, scribe and cut for accurate fit.
4. Provide filler strips, scribe strips and moldings as indicated or required, and in finish to match cabinet face.
5. Fasten cabinets together with screws into predrilled pilot holes.
6. Drill holes for pipes and wires as small and tight as possible, and seal with plywood escutcheons and sealant.

B. Attaching:

1. Anchor cabinets securely in place with concealed fasteners.
2. Anchor into structural support members of wall construction.
3. Comply with manufacturer's instructions for support of units.
4. Install Countertop overhang brackets 3" from end of overhang, and then 16" o.c.

C. Countertops:

1. Attach securely to base units.
2. Fabricate joints and supports as per manufacturer's recommendations.
3. Provide cutouts for fixtures and appliances as indicated.
5. Ease all edges.
6. Attach backsplash to countertop, as recommended by manufacturer in recessed joint; seal with sealant.
7. Use silicone sanitary sealant to seal all joints and items set in countertop.
8. Comply with manufacturer's recommendations.

D. Complete hardware installation and adjust doors and drawers for proper operation.

3.02 FIELD QUALITY CONTROL

- A. Tolerances:
1. Plumb and Level: 1/8 in. in 8 ft.
 2. Offset in Surface Alignment: Max. 1/16 in.
 3. Offset in Revealed Adjoining Surfaces: Max. 1/8 in.
 4. Joint at Backsplash and Wall: Max. 1/16 in.

3.03 CLEANING AND PROTECTION:

- A. Cleaning:
1. Repair or remove and replace defective work as directed upon completion of installation.
 2. Clean exposed and semiexposed surfaces, touch up finish as required.
 3. Remove and refinish damage or soiled areas.
- B. Protection:
1. Advise Contractor of final protection and maintained conditions necessary to ensure that work will be without damage or deterioration at time of acceptance.
 2. Cover completed work with 4 mil polyethylene protective enclosure.
 3. Applied in manner to allow easy removal without damaging cabinets or adjoining work.
 4. Remove cover immediately before time of final acceptance.

END OF SECTION 12 35 30

SECTION 220001

PLUMBING

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A Mechanical, civil, electrical and all other drawings as well as the specifications are a part of the contract documents. Drawings and specifications are to be considered as supplementing each other. Work specified but not shown, or shown but not specified, shall be performed or provided as though mentioned in both specifications and drawings.

Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Domestic cold water system connecting to each and every fixture and piece of equipment requiring domestic cold water in each unit.
2. Domestic hot water connecting to each and every fixture and piece of equipment requiring domestic hot water in each unit.
3. Plumbing Fixtures and Accessories.
4. Sanitary waste and vent system to each and every fixture and piece of equipment requiring sanitary drainage
5. Pressure Reducing Valve, Backflow preventer, Water meter.
6. Valves.
7. Floor drains.
8. Insulation.
9. Hangers, supports and attachments.
10. Cleaning and Disinfection of water piping. (total 18 tests)
11. Fire Stopping for plumbing pipe penetration in fire rated construction.
12. Coordination drawings and record drawings and similar requirements.

1.02 QUALITY ASSURANCE

- A. Comply with rules, regulations of state, county, and city authorities having jurisdiction over the premises, including safety requirements of OSHA.

1.03 REFERENCES

- A. Comply with applicable provisions of latest editions of following national standards: State Plumbing and Sanitary Code 248 CMR; NFPA; pressure piping and mechanical refrigeration systems and equipment; ASTM; American Welding Society Code; national pressure vessel code; national electric code; NFPA life safety code and standards.

1.04 SUBMITTALS

- A. Prepare 5 copies of shop drawings and product data for equipment with adequate details and scales as necessary to clearly show construction.

1.05 LOCAL CONDITIONS

- A. Visit site, become familiar with conditions affecting this work. No additional payment will be made on claims that arise from lack of knowledge of existing conditions.

PLUMBING

1.06 GUARANTEE AND WARRANTIES

- B. Warrant that equipment and all work is installed in accordance with good engineering practice and that all equipment will meet requirements specified. Any equipment failing to perform or function as specified shall be replaced with complying equipment, without cost to the owner.
- C. Guarantee against defects in workmanship and materials; make good, repair or replace any defective work, material or equipment within one year from date of acceptance.

PART 2 - PRODUCTS

2.00 PIPE, FITTINGS AND JOINTS

A. General

- 1. Pipe and fittings shall conform to the latest ANSI, ASTM, NFPA and AWWA Standards including latest amendments.
- 2. Each length of pipe, each pipe fitting, trap, material and/or device used in the respective system shall have cast, stamped or indelibly marked on it, the maker's name or mark, weight and quality of the product when such marking is required by the approved standard that applies.
- 3. Piping and fittings shall be factory coated.

2.01 PIPING, FITTING AND JOINTS

A. Sanitary Drainage Piping Above Floor (Soil, Waste and Vent)

- 1. Piping 2" and larger shall be no-hub service weight cast iron soil pipe except at urinals and cleanouts and joints just prior to exiting the building which shall be service weight hub and spigot with lead and oakum joints. The pipe shall be legibly marked on the barrel with the manufacturer's name and/or trademark.
- 2. All cast iron soil pipe and fittings shall conform to the requirements of CISPI Standard 301, ASTM A 888 or ASTM A 74 for all pipe and fittings. Pipe and fittings shall be marked with the collective trademark of the CastIron Soil Pipe Institute or receive prior approval of the engineer. Latest issue of each standard shall apply.
- 3. Sanitary piping 2" and smaller shall be type "L" copper.
- 4. Couplings for joining no-hub cast iron soil pipe: Couplings shall have a shield constructed of corrugated 304 stainless steel and provide a shield thickness of 0.16 inches or greater. Shield shall be a minimum width of 3 inches for pipe sizes 1-1/2 inch through 4 inch, and a minimum width of 4 inches for pipe sizes 5 inch through 10 inches. Couplings with at least 4 sealing bands shall require 80 inch pounds of torque per band. Tightening screws shall be 3/8 inch hexagon head. Couplings with only 2 sealing bands on sizes 1-1/2 inch through 4 inches shall require 125 inch pound of torque per band. Gaskets shall be neoprene rubber conforming to ASTM C-564.

5. Joints in copper tubing except as otherwise specified herein shall be made according to manufacturer's specifications using sweat fitting and lead free solder and non-corrosive flux.
 6. Connections between earthenware of any fixture and flanges in soil and waste piping shall be made absolutely gas and watertight with closet setting compounds and gaskets which must be absolutely gas and fireproof, watertight, stain proof, containing neither oil nor asphaltum and which will not rot, harden or dry under any extreme climatic change, and must adhere on wet surfaces.
- B. Sanitary Drainage Piping Below Floor (Soil, Waste, Vent)
1. Piping below floor shall be service weight cast iron hub and spigot.
 2. Joints in cast iron soil piping below ground shall be code approved compression type, made with rubber gaskets conforming to ASTM Specification C564. Joints in cast iron soil pipe and fittings using a double seal, compression type molded neoprene gasket shall be provided with a modified hub as required to provide a positive seal. No-hub pipe will not be allowed below ground. (Adhesive type lubricant shall be used with the resilient gaskets on pipes 5" and larger).
- C. Water Piping (For Domestic Cold and Hot water)
1. Buried Water Piping
 - a. Under-building-slab and exterior buried piping shall be copper tube, Type K with wrought-copper solder-joint fittings; and brazed joints.
 2. Above Ground
 - a. 2-1/2 inches and smaller shall be hard drawn Type L copper with wrought or cast copper fittings.
 - b. Joints in copper tubing except as otherwise specified herein shall be made according to manufacturer's specifications using sweat fitting and lead free solder and non-corrosive flux.
 - c. Provide galvanized malleable iron unions, with bronze facings conforming to ANSI B16.39 for sizes 2 inch and smaller.
 - d. Provide copper flanges conforming to ANSI B16.5, standard or welding neck pattern.

2.02 VALVES AND SUNDRIES

- A. General
1. Manufacturer: Subject to compliance with requirements, provide products from one of the manufacturers listed. Upnor, Nibco, Watts, Apollo or approved equal.

- B. Valves in the interior domestic water piping systems (cold water, hot water) system:
 - a. Ball Valves, 1 Inch and Smaller: Rated for 400 psi WOG pressure; two piece construction; with bronze body conforming to ASTM B 62, standard (or regular) port, chrome-plated brass ball, replaceable "Teflon" or "TFE" seats and seals, blowout-proof stem, and vinyl covered steel handle. Provide solder ends for domestic hot and cold water service.
- C. Sundries
 - 1. Acceptable Manufacturers: Chicago Faucet, Watts, T & S Brass and Bronze Works, Inc., Speakman Co., Josam Manufacturing, Jay R. Smith, Precision Plumbing Products or approved equal.
 - 2. Vacuum breakers shall be full size of line feed. All hose bibbs shall be supplied with vacuum breakers attached to hose thread portion of hose bibb unless they are integral to fixture.
 - 3. Hose bibbs shall be Frost Proof Wall Recessed Hydrants equal to watts HY 725
 - 4. Combined Pressure Temperature Relief Valves: Bronze body, test lever, thermostat, complying with ANSI Z21.22 listing requirements for temperature discharge capacity. Provide temperature relief at 210 deg F, and pressure relief at 150 psi.
 - 5. Pressure Regulating Valves: Single seated, direct operated type; having bronze body with integral strainer, and complying with requirements of ASSE Standard 1003. Select proper size for maximum flow rate and inlet and outlet pressures indicated.
 - 6. Relief Valves: Provide proper size for relief valve, in accordance with ASME Boiler and Pressure Vessel Codes, for indicated capacity of the appliance for which installed.

2.03 BACKFLOW PREVENTION DEVICES

- A. Acceptable Manufacturers
 - 1. All units shall be lead free and shall meet the approval of all Local and State Authorities and be approved by the Department of Environmental Protection. Provide product of Watts, Ames Co, or Febco Regulator.

2.04 FLOOR DRAINS

- A. General
 - 1. Floor shall be Jay R. Smith, Josam, MIFAB, or approved equal. Manufacturer's catalog numbers specified herein for drains are intended only as a guide for the type and quality to be furnished under this Section of the Specifications.
 - a. Floor Drain (FD1- Finished Areas) shall be equal to Jay R. Smith Figure #2005-A-P.

2.05 HANGERS AND ACCESSORIES

- A. General
 - 1. Provide pipe stands, supports, hangers and other supporting appliances as necessary to support work required by Contract Documents.

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2. Manufacturers: Subject to compliance with requirements, provide hangers and supports of Carpenter and Patterson, Inc, ITT Grinnel Corp., Elecen Metal Products or approved equal.

2.06 PIPE COVERING (INSULATION)

A. General

1. The pipe covering specified herein for piping system shall be provided to strict accordance with the manufacturer's printed instructions, the best practice of the trade and to the full intent of this Specification. Provide products of Johns Manville "Micro-Lok HP", Knauf Fiber-Glass, Owens Corning or approved equal.
2. Flame/Smoke Ratings: Provide complete fibrous glass pipe insulation (insulation, jackets, coverings, sealers, mastics and adhesives) with flame spread index of 25 or less, and smoke developed index of 50 or less, as tested by ASTM E 84 (NFPA 255) method.
3. Manufacturer: Subject to compliance with requirements, Insulation and vapor barrier on piping which passes through walls or partitions shall pass continuously through sleeve, except that piping between floors and through fire walls or smoke partitions shall have space allowed for application of approved packing between sleeves and piping, to provide fire stop as required by NFPA. Seal ends to provide continuous vapor barrier where insulation is interrupted.

B. Interior Cold, and Hot Water Recirculation pipe insulation:

1. 1" insulation for all pipe sizes.
 - a. ASTM E-547, Class I
2. Fire retardant foil face jackets for piping insulation: ASTM C-921, Type I for piping with temperatures below ambient, Type II for piping with temperatures above ambient. Type I may be used for all piping at installation option.
3. Encase piping fittings insulation with one piece premolded PVC fitting covers, fastened as per manufacturer's recommendations.
4. Encase exterior piping insulation with aluminum jacket with weatherproof construction.
5. Staples, Bands, Wires, and Cement: As recommended by insulation manufacturer for applications indicated.

2.07 CLEANOUTS

- A. Cleanouts shall be Jay R. Smith, Josam, MIFAB or approved equal.
- B. Floor cleanouts shall be as follows:
 1. General purpose flush finished floor cleanout with adjustable top shall be equal to Jay R. Smith Series 4026.

2.08 PLUMBING FIXTURES

A. Fixtures and Trim

PLUMBING

1. Acceptable Manufacturers: Submit manufacturers not listed below for review and approval as specified for substitutions in this Section.
 - a. Vitreous China: Eljer, American Standard, Crane, Kohler or equal.
 - b. Faucets: Chicago Faucet Co., Kohler or T & S Brass or equal.
 - c. Stainless Steel Sinks: Elkay, Just Manufacturing, Metcraft Inc or equal.
 - d. Mop Service Basins: Crane, Fiat, Stern Williams or equal.
 - e. Carriers and Supports: Jay R. Smith, Wade, or equal.
 - f. Thermostatic Mixing Valves: Leonard Valve Co., Powers Process Controls, Symmons or equal.
 - g. Pressure Regulating Mixing Valves: Lawler Manufacturing, Leonard Valve Co Symmons or equal.
 - h. Stops and Supplies: Chicago Faucet Co., Kohler or McGuire.
 - i. P-Traps: McGuire, Sanitary-Dash, or Jameco.
2. Fixture Trim and Accessories: Provide fixtures complete with floor mounted fixture carrier supports; faucets, flushometers; drain outlets, tailpieces, P-traps and stops and supplies.
 - a. Drain Outlets:
 - 1) Provide 1-1/4 inch tailpiece on lavatories.
 - 2) Provide 1-1/2 inch tailpiece on sinks.
 - 3) Provide offset drain outlets on handicapped use lavatories and sinks.
3. P-Traps: Cast brass adjustable P-trap with cleanout plug, ground joint and 17 gage minimum weight extension with escutcheon.
 - a. Provide McGuire No. 8090 1-1/4 inch by 1-1/2 inch on lavatories.
 - b. Provide McGuire No. 8089 1-1/2 inch by 1-1/2 inch on sinks.
4. Stops and Supplies: Provide stops and supplies of the same manufacturer as the fixture or faucet trim, or provide McGuire Model 170-LK loose key angle stop with 5 inch long 2 inch nominal copper sweat extension, bell escutcheon, and 3/8 inch O.D. by 12 inch flexible riser.

B. Fixture Description

1. P-1 Water Closet : The water closet shall be Vitreous china, floor mounted elongated front bowl, Two piece design with high profile tank with chrome trip lever, Dual Flush 1.28GPF / .9GPF. Toilet shall be equal to TOTO Motel CST494CEMFG. Provide open front with cover, elongated, injection molded solid plastic soft close toilet seat. Coordinate Rough in dimension in field.
2. P-2 Oval Lavatory
 The orbital design undermount equal to TOTO Dartmouth LT641. The bowl shall be ADA compliant with 4" center faucet hole. Faucet shall be Delta Model 525LF-MPU single handle deck faucet. Provide chrome plated grid strainer w/ 1 1/4 outlet tube & flexible braided stainless steel hose connector.

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3. P-3 Urinal: Wall hung, 0.5 gpf vitreous china urinal with concealed integral trap, Top spud. Urinal equal to TOTO UT447E, Flush valve shall be self-powered hydroelectric, sensor activated, 0.5 gpf flush valve with over button. Equal to TOTO TEU1LA#CP. 3/4" I.P.S top spud inlet, Stainless Steel Urinal Drain Cover
4. P-4 Sink:
Stainless Steel Sink: Elkay Manufacturing Co. Model GECCR221814, 22" x 18" x 8.5" deep, top mounted, 20 gauge, type 304 18-8 stainless steel. Interior and top surfaces polished to polished finish, sound deadened with self-rimming feature. The sink drain shall be seamlessly welded for stainless steel collar and supplied with Rinsing basket LKRB1520 and LKERBSS. Provide sink faucet with soap dispenser. The faucet shall be high neck with pull out spray head equal to Delta Model 400-DST-L Coordinate sink holes with faucet and dispenser.
5. P-5 Floor Service Sink: Mop Receptor Fiat precast terrazzo mop basin, 24" x 24" x 12" with 6" drop front, stainless steel threshold, flange on wall sides. Fiat Model TSB-3010. Chicago 897 wall mounted service sink faucet w/ vacuum breaker spout. Wall hook, 24" long mop hanger with 3 spring clips.
Provide 6' stainless steel braided water supply hose with pressure bleeder device and dual vented check valve (ASSE1055B approved) for secondary back flow preventer to soap dispenser connection. Installation shall be as per the plumbing code requirement. Provide check valve in hot and cold water pipe near connection point.
6. P-6 Sink:
Stainless Steel Sink: Elkay Manufacturing Co. Model GECCR25214, 25" x 21" x 5" deep, top mounted, 20 gauge, type 304 18-8 stainless steel. Interior and top surfaces polished to polished finish, sound deadened with self-rimming feature. The sink drain shall be seamlessly welded for stainless steel collar. Provide sink faucet two handle prep faucet 2171LF-WBHDF
7. P-6A Sink:
Stainless Steel Sink: Elkay Manufacturing Co. Model GECCR181614, 18" x 16" x 5" deep, top mounted, 20 gauge, type 304 18-8 stainless steel. Interior and top surfaces polished to polished finish, sound deadened with self-rimming feature. The sink drain shall be seamlessly welded for stainless steel collar. Provide sink faucet with soap dispenser. The faucet shall be two handle equal to Delta Model B28910LF.
8. P-7 Water Cooler and Bottle Filler: Barrier-free, wall mounted drinking water fountain with bottle filling station. The water station shall be equal to Halsey Taylor model HTHBWF-OVLEBP-I, with face mounted fountains and bottle filling station. The Drinking Fountain shall be 14 gauge type 304 high polished stainless steel finish. The fountain shall be 100% lead free waterways, push button operated stainless steel valves with front accessible cartridge and flow adjustment, polished chrome-plated brass vandal resistant bubbler heads with integral laminar anti-squirt flow, chrome plated brass vandal resistant waste strainers, vandal resistant bottom plates, high polished stainless steel finish back and access panels allowing for front access of P-trap and stop, in-wall mounting frame, high and low fountain mounting levels, and 1.25" O.D waste

PLUMBING

pipes. The water fountain shall be U.L listed and be certified to lead free compliance including NSF/ ANSI 61. Provide drain with 1 1/2 P-trap and mounting bracket. The bottle filling station shall be sensor activate, quick fill rate at 1.1 gpm and shall provide laminar flow for clean fill and minimal splash. The key plastic components shall be integrated with silver ion anti-microbial protection from mold and mildew growth. Refer to architectural drawings for mounting heights.

2.09 TRAP PRIMERS

- A. General
 - 1. The trap primer shall be as manufactured by Precision Plumbing Products, Inc., Jay R. Smith, MIFAB or approved equal.
- B. Furnish and install trap primer units to serve one or two drains. Provide trap primers to all floor drains as required by 248 CMR Plumbing code.

2.10 VALVE TAGS

- A. Valve tags on plumbing systems may be engraved laminated plastic tags color-coded to match the pipe identification marks.

2.11 PIPING IDENTIFICATION

- A. Provide matching flow arrows to indicate direction of flow. Markers shall be equal to Seton Setmark.
 - 1. Color coding and size of legend letters shall comply with the standards of ANSI A13.1.

2.12 ELECTRIC WATER HEATER (EWH-1):

- A. Water Heaters shall be as indicated on the drawing. The water heater shall comply with IECC 2012 for energy factor requirement.
- B. Water heater shall have UL seal of certification and be factory equipped with AGA/ASME rated temperature and pressure relief valve.
- C. Tank shall have double coating of high temperature porcelain enamel and furnished with magnesium anode rods rigidly supported. Water heater shall meet or exceed the standby loss requirements of ASHRAE.
- D.
- E. Water heater shall be provided with internal power circuit fusing, control circuit fusing, magnetic contactors, 240 volt single phase, control circuit transformer and surface mounted thermostat with manual reset high limit control. 1.5" inlet and outlet connections will be provided. Water heater shall be covered by three year limited warranty against tank leaks.
- F. Manufacturers to be Rheem-Ruud, A.O Smith, State or equal

PART 3 - EXECUTION

3.01 DISINFECTION, CLEANING AND ADJUSTING

A. Disinfection

1. Each potable water system (cold and hot water) shall be cleaned and disinfected by this Contractor. Cleaning and disinfection shall be performed after all pipes, valves, fixtures and other components of the systems are installed, tested and ready for operation.
2. All hot and cold water piping shall be thoroughly flushed with clean potable water, prior to disinfection, to remove dirt and other contaminants. Screens of faucets shall be removed before flushing and re-installed after completion of disinfection.
3. Provide chlorination total tests on six location and 3 test each. (total 18 tests)

B. Cleaning and Adjusting

1. At the completion of the work, all parts of the installation shall be thoroughly cleaned. All equipment, pipe, valves and fittings shall be cleaned of grease, metal cuttings and sludge which may have accumulated by operation of the system for testing.

3.02 SYSTEMS

A. Sanitary Waste and Storm Drainage System

1. The Plumbing subcontractor shall be responsible for checking each pipe for alignment, center line elevation and invert grade for underground installations.
2. The sanitary (soil, waste and vent), storm drainage piping three inches and smaller in diameter shall pitch a minimum of 1/4 inch per foot. Piping four inches and larger in diameter shall pitch a minimum of 1/8 inch per foot.
3. The soil, waste and vent stacks shall be connected as shown and extended through the roof a minimum of 18 inches.
4. Every fixture shall be separately trapped and the traps must be vented unless an approved battery vented system is being installed. Floor drains shall be considered as a fixture.
5. Cleanouts shall be provided in drainage piping at changes in directions, at foot of stacks or other required points accessible for cleaning or rodding out.

B. Cold and Hot Water Piping

1. Vacuum breakers shall be installed on supplies to each piece of equipment to prevent back-siphonage.
2. Provide shock absorbers at special equipment, tops of the risers, at each individual or each group of fixtures.

PLUMBING

3. Water piping shall be run parallel and graded evenly to the drainage points. There shall be a 2 inch drain valve provided for each low point in the piping so that all parts of each water system can be drawn off.

3.03 GENERAL INSTALLATION REQUIREMENTS

- A. Pipe Covering Installation
 1. Before pipe covering is applied, all pressure tests shall have been performed and approved by the Local Plumbing Inspector.
 2. Pipe covering shall be applied over clean, dry surfaces.
 3. Pipe covering shall be continuous and shall be carefully fitted with side and end joints butted firmly and tightly together and finished as specified herein.
- B. Installation of Sleeves, Inserts and Escutcheons
 1. Escutcheons shall be installed around all exposed insulated or bare pipe, except water closet starts or bends passing through a finished floor, wall or ceiling. Escutcheons shall fit snugly around the bare pipe or insulated pipe.
- C. Floor Drain Installation
 1. Install floor drains in accordance with manufacturers written instructions and in locations indicated.
- D. Installation of Plumbing Fixtures
 1. General:
 - a. Refer to Architectural Drawings for locations and mounting heights of all plumbing fixtures, counter-sinks, water fountains and showers.
 - b. Provide with all plumbing fixtures, all trim, supports, fittings, connections and all incidentals necessary to make a complete installation in accordance with plumbing codes, manufacturers instruction and the Contract Documents.
 - c. All visible hanger nuts and all escutcheons shall likewise be chrome-plated over nickel plate.

3.04 INSPECTION AND TESTS

- A. Storm and Sanitary Piping Systems:
 - a. Before the installation of fixtures, equipment and insulation, each system including vents shall have all necessary openings plugged to permit the entire system to be tested in accordance with the State Plumbing Code..
- B. Cold and Hot Water Piping System:
 - a. Upon completion of the roughing-in and before setting fixtures and final connections to all equipment, all water piping systems shall be tested to a hydrostatic pressure of 150 pounds per square inch.
 - b. Each systems test shall be maintained for eight hours without a drop in pressure. These tests to be witnessed by Local Plumbing Inspector and Project Manager.

3.05 ELECTROLYSIS CONTROL

PLUMBING

- A. Connections between ferrous and copper piping shall be with dielectric fittings.

SECTION 230001

HEATING, VENTILATING AND AIR CONDITIONING

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A Part A and Division 1 of Part B are hereby made a part of this Specification Section.

B GENERAL PROVISIONS

1 Part A and Division 1 of Part B are hereby made a part of this Specification Section.

2 Examine all Drawings and all Sections of the Specifications and requirements and provisions affecting the work of this Section.

1.02 SCOPE OF WORK

A The work under this Section shall include the furnishing of all materials, labor, equipment and supplies and the performance of all operations to provide complete working systems, in general, to include the following items:

1. Piping and Fittings (all types)
2. Refrigerant Piping
3. Condensate Piping
4. Sleeves
5. Refrigerant Valves and Accessories
6. Indoor Evaporator Units
7. Outdoor Condensing Unit
8. Electric Finned Tube
9. Ductwork
10. Exhaust Fans
11. Temperature Control Systems
12. Fire stopping of penetrations made by/for this contractor.
13. Furnish and maintain safe and adequate conditions, all staging and scaffolding that is required for the work of this section.
14. Testing and balancing

B Provide any other component or related system (whether or not listed) which is part of the overall design and basic equipment and deemed necessary for its completion, thoroughness and readiness for operation in perfect condition.

C. The HVAC Subcontractor shall, at all times, have a foreman or superintendent on the project authorized to make decisions and receive instructions as if the HVAC Subcontractor himself were present. The foreman or superintendent shall not be removed or replaced without the express approval of the Architect-Engineer after construction work begins. The HVAC Subcontractor shall employ only competent and experienced workmen at a regular schedule in harmony with the other tradesmen on the job. The HVAC Subcontractor shall also exercise care and supervision of his employees in regard to proper and expeditious layout of his work.

1.03 RELATED WORK

- A. Examine all other sections of the Specifications and all drawings for the relationship of the work under this Section and the work of other trades. Cooperate with all trades and coordinate all work under this section therewith.
- B. The following related items are included under sections listed below:
 - 1. Concrete bases housekeeping pads and filling inertia pads for HVAC equipment. SECTION 03.30.00 – CAST IN PLACE CONCRETE.
 - 2. Section 07 92 00- Joint Sealer.
 - 3. Except as specified herein, cutting shall be the responsibility of the General Contractor and patching shall be performed by the respective trades. Refer to the respective sections.
 - 4. In general, all wiring required for equipment provided by the HVAC Contractor that requires Automatic Controls and all interlock wiring for this HVAC equipment that is not shown or indicated on the Electrical Drawings of SECTION 260001 ELECTRICAL, shall be provided under SECTION 230001, HVAC.

1.04 PRODUCTS FURNISHED, BUT NOT INSTALLED UNDER THIS SECTION

- A. Furnish pipe sleeves for placement into formwork by the General Contractor.

1.05 PRODUCTS INSTALLED, BUT NOT FURNISHED UNDER THIS SECTION

- A. None

1.06 REFERENCES

- A. For products or workmanship specified by association, trade, or federal standards, comply with the requirements of the standard, except when more rigid requirements are herein specified or are required by applicable codes.

1.07 DEFINITIONS

- A. As used in this Section, the following terms shall be understood to have the following meaning:
 - 1. Work: all labor, materials, equipment, apparatus, controls, accessories and all other items required for a proper and complete installation.
 - 2. "Furnish" shall mean purchase and deliver to the project site, complete with every necessary appearance and support.
 - 3. "Install" shall mean unload at the delivery point at the site and perform all work necessary to establish secure mounting, proper location and operation in the project.
 - 4. "Provide" shall mean furnish and install.
 - 5. "Coordinate" shall mean all work provided under this Section of the specification shall be in compliance with work of other trades.
 - 6. "ATC" shall mean Automatic Temperature Controls, and shall be interchangeable with HVAC Control Systems.

1.08 CODES, ORDINANCES AND PERMITS

- A. Unless otherwise specified or indicated, materials, workmanship and equipment performance shall conform with the latest governing edition of the following standards, codes, specifications, requirements, and regulations, but not limited to:
 - 1. All Applicable NFPA Standards
 - 2. State and Local Building Mechanical and Energy Codes
 - 3. Occupational Safety and Health Administration
- B. Any other local codes or authorities having jurisdiction including any other standards specifically indicated in other paragraphs of this specification.
- C. All equipment shall meet the more efficient requirement:
 - 1. As shown on bid documents, or
 - 2. Minimum efficiencies stated in the Massachusetts 780 CMR 13 energy code.
- D. This Contractor shall give all notices, file all plans, obtain all permits and licenses, and obtain all necessary approvals from authorities having jurisdiction. Deliver all certificates of inspection to the authorities having jurisdiction. No work shall be covered before examination and approval by Architect, inspectors, and authorities having jurisdiction.

1.09 SUBMITTALS

- A. Conform to the requirements of Section 013300-Submittals, for schedule and form of all submittals. Coordinate this submittal with submittals for all other finishes. Submit plans with location of pipe penetration in structural slabs.
- B. Product Data: Submit complete manufacturer's product description and technical information including:
 - 1. Piping and Fittings (all types)
 - a. Refrigerant Piping
 - b. Condensate Piping
 - 2. Refrigerant Valves and Accessories
 - 3. Electric Finned Tube
 - 4. Ductwork
 - 5. Duct AC Unit
 - 6. Exhaust Fans
 - 7. Insulation

1.10 OPERATION AND MAINTENANCE (O&M) DATA

- A. Refer to SECTION 01.78.00 – PROJECT RECORD DRAWINGS
- B. Prepare and submit Operating and Maintenance manuals at least two (2) months prior to the date of Substantial Completion of the Project. Submit six complete sets of operation and maintenance data complete with at least the following.

1.11 MATERIAL AND EQUIPMENT STANDARD

- A. Where equipment or materials are specified with the name of a manufacturer, such specification shall be deemed to be used for the purpose of establishing a standard for that particular item. No equipment or material shall be used unless previously approved by the Architect.
- B. Substitutions may be offered for review provided the material, equipment or process offered for consideration is equal in every respect to that indicated or specified. The

Request for each substitution must be accompanied by complete specifications together with drawings or samples to properly appraise the materials, equipment or process.

1.12 ELECTRICAL WORK

- A. All electrical apparatus and controls furnished as a part of the work of this Section, but which are not integral with the equipment served, will be mounted by the Electrical Subcontractor and all wiring will be done under SECTION 260001 ELECTRICAL .
- B. Except for electrical apparatus specifically called for as part of this Section, all switches and controllers required will be provided under Section 260001- Electrical.
- C. All electrical apparatus and controls furnished as a part of the HVAC work shall conform to applicable requirements under SECTION 260001-ELECTRICAL.

1.13 RECORD DRAWINGS

- A. SECTION 01.78.00 – PROJECT CLOSEOUT.
- B. All costs for Record Drawings shall be borne by the HVAC Subcontractor.

1.14 WARRANTIES

- A. Submit manufacturer's standard replacement warranties for material and equipment furnished under this Section. Such warranties shall be in addition to and not in lieu of all liabilities, which the manufacturer and the HVAC Subcontractor may have by law or by provisions of the Contract Documents. All refrigeration compressors such as Condensing unit shall have the manufacturer's extended replacement warranty for a total of five years.

1.15 COORDINATION

- A. The work shall be so performed that the progress of the entire building construction, including all other trades, shall not be delayed nor interfered with. Materials and apparatus shall be installed as fast as conditions of the building will permit and must be installed promptly when and as required.

1.16 INTERPRETATION OF DRAWINGS AND SPECIFICATIONS

- A. It is the intention of the Specifications and Drawings to call for complete, finished work, tested and ready for continuous operation. Any apparatus, appliance, material or work not shown on the Drawings, but mentioned in the Specifications or vice versa, or any incidental accessories necessary to make the work complete in all respects and ready for operation, even if not particularly specified, shall be provided by the HVAC Subcontractor or his/her Sub-subcontractors, without additional expense to the Owner.
- B. The Drawings are generally diagrammatic. The locations of all items that are not definitely fixed by dimensions are approximate only. The exact locations must be determined at the site and shall have the approval of the Architect before being installed. The HVAC Subcontractor shall follow Drawings, including shop drawings, in laying out work and shall check the Drawings of other trades to verify spaces in which work will be installed. Maintain maximum headroom and space conditions. Where space conditions appear inadequate, notify the Architect before proceeding with the installation. The HVAC Subcontractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.

- C. Refer to the Architectural, Structural, Plumbing and Electrical Drawings and coordinate location and requirements of all HVAC equipment.
- 1.17 DELIVERY, STORAGE AND HANDLING
- A. Protect materials against dampness. Store off floors, under cover, and adequately protected from damage.
- 1.18 PROTECTION OF WORK AND PROPERTY
- A. This Contractor shall be responsible for the care and protection of all work included under this Section until the completion and final acceptance of this Contract.
 - B. Protect all equipment and materials from damage from all causes including, but not limited to, fire, vandalism and theft. All materials and equipment damaged or stolen shall be repaired or replaced with equal material or equipment at no additional cost to the Owner.
 - C. Protect all equipment, outlets and openings with temporary plugs, caps and covers. Protect work and materials of other trades from damage that might be caused by work or workmen under this Section and make good damage thus caused.
 - D. Damaged materials are to be removed from the site; no site storage of damaged materials will be allowed.
- 1.19 SAFETY PRECAUTIONS
- A. Life safety shall be a primary consideration. Provide all required and prudent material, labor and equipment to comply with applicable safety regulations. Further, Provide all material, labor and equipment to comply with reasonable or generally accepted safety precautions as directed by the Owner or the Architect.
 - B. Comply with all of the safety requirements of OSHA throughout the entire construction period of the project.
- 1.20 SCHEDULE
- A. Construct work in sequence under provisions of General Conditions.
- 1.21 SEALING
- A. All penetrations through the structure shall be sealed air and water tight where required for acoustical reason or where penetrating a fire rated element must be firestopped. This contractor shall coordinate all penetrations of the floors and ceiling with G.C. Fire Stopping requirements is under section 078400.
- 1.22 SLEEVES, INSERTS AND ANCHOR BOLTS
- A. Coordinate with other trades the location of and maintaining in proper positions, sleeves, inserts and anchor bolts to be supplied and/or set in place under this Section of the specifications. In the event of incorrectly located preset sleeves, inserts and anchor bolts, etc., all required cutting and patching of finished work shall be done under this Section of the specifications.
- 1.23 SUPPLEMENTARY STEEL, CHANNELS AND SUPPORTS
- A. Provide all supplementary steel, factory fabricated channels and supports required for proper installation, mounting and support of all equipment and systems provided under this Section of the specification.

- B. Supplementary steel and factory fabricated channels shall be firmly connected to building construction in a manner approved by the General Contractor, as shown on the drawings, or hereinafter specified.
- C. The type and size of the supporting channels and supplementary steel provided under this Section of the specifications shall accommodate all deflections in conformance with the manufacturer's requirements for the specific loading on the system installed therein.

PART 2 - PART 2 PRODUCTS

2.01 INSULATION

- A. Materials shall be compatible and shall not contribute to corrosion, soften, or otherwise attack surfaces to which applied in either the wet or dry state. Materials to be used on stainless steel surfaces shall meet ASTM C 795 requirements. Materials shall be asbestos free and conform to the following:
 - 1. General: The fire hazard rating of all insulation related materials shall not exceed 25 for flame spread and 50 for fuel contributed and smoke developed as determined by UL723 "Test for surface burning characteristics of building materials", NFPA 225 or ASTM E84.
- B. Pipe Insulation
 - 1. Refrigerant vapor (suction, and evaporating liquid) piping shall be insulated with .375" thick closed cell pipe insulation as manufactured by Armorcell or equal with seams and joints cemented vapor tight. All insulation exposed to the exterior of the building shall be painted with 2 coats of U.V. resistant paint as supplied by the insulation manufacturer.

2.02 PIPING AND FITTINGS

- A. General
 - 1. Refrigerant Piping
 - a. Dimensions and material requirements for pipe, pipe fittings and components shall conform to ASHRAE 15 and ASME/ANSI B31.5 and shall be compatible with fluids used and capable of withstanding the pressures and temperatures of the service. Pipe, tubing, and components used for refrigerant service shall be cleaned, sealed, capped, or plugged prior to shipment from the manufacturer's plant.
 - b. Copper Pipe and Fittings: Seamless copper tubing, hard drawn, Type K for underground or unexposed use, Type L for exposed aboveground use, ASTM B 88M (ASTM B 88). Fittings for copper tubing shall be wrought copper, brazing, or solder-joint type, ASME/ANSI B16.22. Flared, soft copper tubing shall be annealed ASTM B 280 and may be used only in nominal sizes smaller than one-inch for connection to equipment and no larger than 1-3/8-inches outside diameter for other connections. Flanges shall be of bronze, ANSI B16.24.

2.03 PIPE HANGERS AND SUPPORTS

- A. Horizontal copper tubing shall have a maximum hanger spacing of 5' for tubing up to 1-1/4" and 10' for 1 1/2" and larger. .
- B. At all copper piping, provide pipe supports with copper finish to eliminate the possibility of galvanic action.
- C. Furnish additional hangers or supports at vertical or horizontal changes of direction and at locations of concentrated loads due to valves, fittings, strainers, and accessories.
- D. Hangers and supports shall provide for 2" of vertical adjustments.
- E. Hanger rods shall be steel, threaded and furnished with two removable nuts at each end of positioning rod and hanger and locking each in place.

2.04 SLEEVES

- A. Piping sleeves shall be according to the following:
 - 1. Through interior non-masonry walls, use 18-gauge rolled and tack welded galvanized steel sleeves, set flush with finished surfaces on both sides.
 - 2. Through interior masonry walls, exterior walls above grade and roofs, use machine cut and reamed standard weight steel piping, set flush with finished surfaces on inside and to suit flashing on outside.
 - 3. Cover pipe sleeves in walls and ceilings of finished areas other than equipment rooms with satin finish stainless steel, or satin finish chrome or nickel-plated brass escutcheons, with non-ferrous setscrews. Do not use stamped steel split plates. Split cast plates with screw locks may be used.
 - 4. In non-rated walls, escutcheon plates shall be of adequate size to allow for piping with full insulation to pass through the wall uninterrupted. The interior diameter of the plate shall fit snugly around the outside diameter of the insulation.
- B. Cover exposed duct sleeves in finished areas with 18-gauge galvanized steel plates in the form of duct collars. Fix in position with non-ferrous metal screws.

2.05 ELECTRIC BASEBOARD

- A. Provide electric fin tube radiation having the capacities as scheduled on the drawings.
- B. Assembly shall UL listed and labelled with terminal box and cover, and built-in controls.
- C. Heating Elements shall be in enclosed copper tube, aluminum finned element of coiled nickel-chrome resistance wire centered in tubes and embedded in refractory material.
- D. Enclosure shall be minimum 20 gauge steel with back and top of one piece; front panel, end panel, end caps, corners, and joiner pieces to snap together, and front panel easily removable. Provide full length damper.
- E. Control shall be Built-in bi-metal heating thermostat, factory wired.

2.06 DUCTWORK

A. Metal Ductwork

All aspects of metal ductwork construction, including all fittings and components, shall comply with THE SMACNA HVAC DUCT CONSTRUCTION STANDARDS, 2ND ED., 1995 unless otherwise specified. Rectangular ductwork schedules:

Duct Diameter (inches)	0.0" to +10.0" WG				
	Galvanized		Galvanized		
	Ductwork	Fittings	Ductwork	Fittings	Ductwork
3-8	26	22	24	20	24
9-14	26	22	22	18	22

2.07 SPLIT SYSTEM DIRECT EXPANSION AIR CONDITIONING

- A. Provide complete DX system for split type air conditioning units of types, sizes and capacities shown on schedules. System shall consist of indoor fan evaporating unit, matching air cooled condensing units, compressors, piping, suction riser, controls, wiring and other accessories and appurtenances necessary to provide fully automatically functioning system.
- B. The indoor unit shall be wall mounted as shown on the schedule. It shall be fully factory assembled, wired and run tested prior to shipment. Contained within the indoor unit shall be all factory wiring, piping, control circuit board, fan, and fan motor.
- C. The indoor unit coil shall be of nonferrous construction with smooth plate fins on copper tubing. The refrigerant tubing shall have inner grooves for high efficiency heat exchange. All tube joints shall be brazed with phoscopper or silver alloy. A condensate pan and drain shall be provided under the coil. Provide condensate pump if gravity drain is not achievable.
- D. Outdoor condenser coil shall be aluminum plate fins, mechanically bonded to seamless copper tubes. Provide propeller fans arranged for vertical discharge. Condenser fan motors shall have inherent protection and shall be permanently-lubricated and resiliently-mounted. Fans shall have safety guards. Provide controls for cycling fans.
- E. Provide factory-wired controls in separate enclosure. Safety devices shall consist of high and low pressure switching and compressor overload devices. Wiring shall incorporate positive acting timer to prevent short cycling of compressor if power is interrupted. Time shall prevent compressor from restarting for approximately 5 minutes after shutoff. Units shall have transformer control circuit.

2.08 EXHAUST FANS

- A. Ceiling Exhaust Fans: Low Noise, suspended cabinet-type ceiling exhaust fans shall be energy star rated and certified by UL safety standard. Motor / Blower shall be totally enclosed DC brushless motor type with thermal cut-off fuse control. Fan shall be variable speed with efficiency rating of no less than 12 cfm/watt. The DC motor

shall allow fan to run continuously at a pre-set lower level and elevates to maximum level of operation when the motion sensor is activated. Fan shall be Integral with backdraft damper and shall be provided with mounting flange for hanging unit from above. Fans shall be UL listed.

2.09 AUTOMATIC CONDENSATE REMOVAL UNITS

- A. Furnish and install automatic condensation removal units where shown and scheduled on the plans and as detailed herein. Units shall be UL and CSA listed. Units to be similar or equal in all respects to Little Giant Pump Company.
- B. Wire safety switches to shut down air-handling units in the event of a failure of the condensation removal unit.

2.10 AUTOMATIC TEMPERATURE CONTROL SYSTEM

- A. Furnish and install all control components necessary to obtain a fully functional control system as described herein. The contractor is responsible for providing all controls, relays, etc. necessary to accomplish the Sequence of Operations and performance specified, whether or not the items are specifically identified herein. Contractor shall hire the project electrician to provide additional power supplies to support the control devices as required.
 - 1. Thermostats
 - a. Electronic Room Thermostats: Low voltage with electronic programmable controller, wall mounted with integral sensor with setback/setup temperature control for heating.
 - 2. Voltage Transformers.
 - a. AC voltage transformers shall be UL/CSA recognized, 600 Vac rated, and shall have built-in fuse protection.
 - b. Transformers shall be suitable for ambient temperatures of 4°C-55°C (40°F-131°F) and shall provide $\pm 0.5\%$ accuracy at 24 Vac and 5 VA load.
 - c. Windings (except for terminals) shall be completely enclosed with metal or plastic.

PART 3 - EXECUTION

3.00 GENERAL

- A. Install all items specified under PART 2 - PRODUCTS, according to the applicable manufacturer's recommendations and shop drawings, the details shown on the drawings and as specified under this Section. Provide all required hangers and supports.

3.01 MISCELLANEOUS

- A. Unload materials and equipment delivered to site. Pay costs for rigging, hoisting, lowering and moving electrical equipment on and around site, in building or on roof.

3.02 ACCESS AND ACCESS PANELS

- A. Access panels are generally not shown on the drawings, but they are required to be provided by this Contractor.

3.03 INSULATION

- A. All refrigerant and condensate piping systems shall be carefully insulated throughout for thermal control and to prevent condensation. All insulated equipment which requires servicing shall be insulated with removable sections.

3.04 SHEET METAL WORK

- A. All of the sheet metal work shall be done by contractors regularly engaged in this type of work.

3.05 AUTOMATIC TEMPERATURE CONTROL

A. General Workmanship

1. Install equipment in readily accessible locations as defined by National Electrical Code (NEC) Verify wiring integrity to ensure continuity and freedom from shorts and ground faults.
2. Equipment, installation, and wiring shall comply with industry specifications and standards and local codes for performance, reliability, and compatibility.
3. Wire and program thermostat according to the manufacturer's instruction.

B. Wiring

1. Control and interlock wiring and installation shall comply with national and local electrical codes, Division 26, and manufacturer's recommendations. Where the requirements of Section 23 00 01 differ from Division 26, Section 25 00 01 shall take precedence.
2. NEC Class 1 (line voltage) wiring shall be UL listed in approved raceway as specified by NEC and Division 26.
3. Low-voltage wiring shall meet NEC Class 2 requirements. Subfuse low-voltage power circuits as required to meet Class 2 current limit.
4. NEC Class 2 (current-limited) wires not in raceway but in concealed and accessible locations such as return air plenums shall be UL listed for the intended application.
5. Install wiring in raceway where subject to mechanical damage and at levels below 3 m (10ft) in mechanical, electrical, or service rooms.

3.06 TRAINING

- A. Conduct a training course for the maintenance and operating staff. The training period of 4 hours normal working time shall start after the system is functionally complete but before final acceptance tests.

END OF SECTION 230001

SECTION 260000 – ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All of the Contract Documents, including General Conditions, Modifications, and Division 1 General Requirements, apply to the work of this section.

1.2 SCOPE OF WORK

- A. The scope of work consists of the installation of all materials to be furnished under this Section, and without limiting the generality thereof, includes all equipment, labor, and services required for the furnishing, delivering, and installing the principal items of work hereinafter and all items incidental thereto as specified herein and as shown on the drawings.
- B. The itemization of work hereinafter specified does not in any way limit the responsibility to perform all work and furnish all the equipment, labor, and materials necessary for completion and satisfaction of operation of the installations described in the Specifications and shown on the Contract Drawings. In addition to the principal and miscellaneous items of work specifically mentioned and/or indicated, to be responsible for furnishing and installing all incidental and collateral materials such as supporting hardware for panelboards, conduit hangers, fastening devices, insulating tape and the like, which constitute essential components of the grade of Electrical Trade Practices and Workmanship acceptable to the Architect.

- 1. Grounding.
- 2. Emergency batteries and lighting fixtures.
- 3. Distribution feeders and panelboards
- 4. Raceways.
- 5. Branch circuit wiring.
- 6. Lighting fixture.
- 7. Motor wiring.
- 8. Wiring and connection of electrical equipment supplied by Owner and other Subcontractors.
- 9. Building telephone/data system outlet boxes, extension rings, and associated strings.
- 10. Fire alarm system and communicator.
- 11. Installation and wiring of electric heaters.
- 12. Fireproof seals.
- 13. Core drilling and cutting.
- 14. Wiring devices.
- 15. Nameplates.
- 16. Cutting and patching.
- 17. Outlet boxes.
- 18. Junction boxes and pull boxes.
- 19. Backcharges by Natick Fire Department.
- 20. Temporary lighting during construction.
- 21. Lighting contactors.
- 22. Nameplates and labels.
- 23. Disconnect switches.

1.3 RELATED WORK

- A. The following work is not included in this Section and is to be performed under the designated Sections:
 - 1. All temperature control wiring shall be furnished and installed by the HVAC Contractor.
 - 2. Charges for current consumed by the temporary light and power system for construction will be paid by the General 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. Mechanical system starters furnished by the mechanical and plumbing contractor, installed, and wired by the Electrical Contractor.
6. Backcharges by Verizon shall be paid by the Owner.
7. Electric heaters shall be furnished by the HVAC Contractor.

1.4 BREAKDOWN

- A. This Subcontractor must submit a breakdown of his contract price to aid the Architect in determining the value of work installed as the job progresses.
- B. No requisition will be paid to this Subcontractor until after the breakdown is delivered to the Architect.
- C. Breakdown shall consist of, not less than the following items. The figure for each item shall include costs of material, labor, markup, and all other costs applicable to the item.
 1. Panelboards.
 2. Branch circuit wiring.
 3. Lighting fixtures.
 4. Wiring devices.
 5. Backcharges by the Natick Fire Department.
 6. Building telephone/data outlet systems.
 7. Fire alarm system and communicator.
 8. Temporary light and power.
 9. Cutting, patching, and fireproof seals.
 10. Nameplates.
 11. Feeders.
 12. Panelboards.

1.5 PRODUCT DATA SHEETS

- A. Prepare and submit five (5) copies of product data sheets of all equipment, labels, tags, and nameplates supplied under this Section of the Specifications to the General Contractor for approval, as specified under General Conditions and Supplementary Conditions. No work shall be done until product data sheets have been approved.
- B. Shop drawings shall show plans, details, layouts and job conditions and relationship to other work.

1.6 RECORD DRAWINGS

- A. This Contractor shall furnish and keep on 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 changes, revisions and additions to the work. Wherever work is installed otherwise than as shown on the Contract Drawings, such changes shall be noted.
- B. Indicate daily progress on these prints by coloring in the various conduits, fixtures, apparatus, and associated appurtenances as they are erected.
- C. No approval of requisition for payment for work installed will be given unless supported by record prints as required above.
- D. At the conclusion of work, prepare Record Drawings in accordance with the requirements of the GENERAL CONDITIONS.

1.7 OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS

- A. This Subcontractor shall 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 in accordance with provisions under "Special Conditions" operating and maintenance manuals and forward same to the Architect. The Subcontractor shall provide three (3) sets of Maintenance Manuals.
- C. The operating instructions shall be specific for each system and shall include copies of posted specific instructions.
- D. For maintenance purposes, provide shop drawings, parts lists, specifications, and manufacturer's maintenance bulletins for each piece of equipment. Provide name, address, and telephone number of the manufacturer's representative and service company, for each piece of equipment so that service or spare parts can be readily obtained.

1.8 SAMPLES

- A. Submit samples as requested by the Architect of all materials specified herein in accordance with General Condition and Supplementary Conditions, and before ordering materials obtain approval from the Architect.

1.9 LAWS, ORDINANCES, CODES, AND PERMITS

- A. The Electrical Subcontractor 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 Subcontractor shall include in the work, without extra cost to the Owner, any labor, materials, services, apparatus, 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.
- C. All materials furnished and all work installed shall comply with the rules and recommendations of the National Electrical Code as amended by the Massachusetts Electrical Code, the National Board of Fire Underwriters', all requirements of the local utility company, recommendations from the fire insurance rating organizations having jurisdiction, and with the requirements of all state, local, town, city, or county departments having jurisdiction.

1.10 DEFINITIONS

- A. "This Contractor" or "This Subcontractor" means specifically the Electrical Subcontractor working under this Section of the Specifications.
- B. "Furnish and Install or "Provide" means to supply, erect, install and connect up, complete for regular operation, the particular work referred to unless otherwise specified. "Piping" includes in addition to pipe, all fittings, boxes, hangers and other accessories relating to such piping. "Concealed" means hidden from sight as in trenches, chases, furred spaces, shafts, hung ceilings, embedded into construction, ground or concealed as defined above.

1.11 INSPECTION AND TEST

- A. All work will be subject to the inspection of the Architect and such other inspections as may have jurisdiction.
- B. As the various part of the works are installed and/or revised, insulation resistance test shall be made to insure that the new systems are free from short circuits and grounds and that all connections, switches, controls and equipment are in proper operating condition.
- C. The installation resistance between conductors and between conductors and grounds, for the distribution systems shall be not less than the requirements of the National Electrical Code.
- D. All testing equipment necessary shall be provided. The tests shall incur no additional expense to the Owner.

- E. Failure or defects in workmanship or materials revealed by tests shall be corrected promptly and retested. Defective materials furnished under this contract shall be replaced at no additional expense to the Owner.

1.12 REFERENCES

- A. Installation shall comply in all details with the National Electrical Code with its latest revisions and all prevailing local, Federal, and State regulations.
- B. 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. American Society for Testing and Material (ASTM).
 - 2. Underwriters' Laboratories, Inc. (U.L.)
 - 3. Insulated Power Cable Engineers Association (IPCEA).
 - 4. National Electrical Manufacturers Association (NEMA).
 - 5. Institute of Electrical and Electronic Engineers (IEEE).
 - 6. American National Standards Institute (ANSI).
 - 7. National Fire Protection Association (NFPA).
 - 8. National Electrical Code (NEC) .
- 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. Make all reasonable tests required by the Architect to provide the integrity of the electrical installation and leave the entire installation properly adjusted and in operating condition. After connections are made test the insulation resistance of all parts of the electrical work except that which is not furnished under this Specification. All wiring shall be so installed that when completed the system will be free from short circuits and from unintentional grounds.
- G. 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.
- H. Copies of NEMA, NFPA, and NEC shall be made available by the Electrical Subcontractor at the job site.

1.13 EXAMINATION OF SITE AND CONTRACT DOCUMENTS

- A. Before submitting prices or beginning work, thoroughly make an examination of the site and the Contract Documents.
- B. No claim for extra compensation will be recognized if difficulties are encountered which an examination of site conditions and Contract Documents prior to executing contract would have revealed.
- C. The drawings showing layout of the electrical systems indicate the approximate location of outlets, apparatus, and equipment. The runs of feeders and branch circuits as shown on the drawings are schematic only, and are not intended to show the exact routing of the wire; the final determination as to the routing of the wire shall be governed by structural conditions and other obstructions. This shall not be construed to mean that the design of the system may change; it merely refers to the exact run of a raceway between given points.
- D. The right to make any reasonable change in the location of outlets, apparatus, and equipment up to the

time of roughing-in is reserved by the Owner without involving any additional expense to the Owner.

- E. The Drawings and these specifications are complementary with one another, any labor, or materials called for by either, whether or not by both, or necessary for the successful operation of any of the particular types of equipment furnished under this contract, shall be furnished and installed.
- F. Before installing any work, see that it does not interfere with the clearance required for finished columns, pilasters, partitions or walls, as shown on the contract Architectural drawings and details.
- G. 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 must be stored in a clean dry place to preserve the quality of materials being used. Equipment and/or materials damaged during the construction period shall be replaced at no additional cost to the Owner.
- H. All materials and equipment required by this Electrical Specification shall be new, clean, and free of defects at the time of installation. The manufacturer's and Underwriter's label shall be on all materials and equipment unless otherwise approved, in writing, by the Architect.

1.14 SUBSTITUTION OF MATERIALS OR EQUIPMENT

- A. If the Electrical Subcontractor 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, he shall submit the proposed substitution in accordance with the requirements of the GENERAL CONDITIONS, supported by sufficient proof of equality, the successful subcontractor will be required to furnish the specifically named items designated under the base bid.
- B. 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 Subcontractor shall assume the cost and the entire responsibility thereto.
- C. The Architect's permission to make such substitutions shall not relieve the Electrical Subcontractor from full responsibility for the work.

1.15 DAMAGE TO OTHER WORK

- A. This 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 Subcontractor who installed the work, and so directed by the Architect.

1.16 COORDINATION OF TRADES

- A. This Contractor shall give cooperation to other trades and shall furnish (in writing, with copies to the Architect) any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay. Where the work of this Subcontractor will be installed in close proximity to work of other trade, or where there is evidence that the work of this Subcontractor will interfere with work of other trades, he shall assist in working out space conditions to make a satisfactory adjustment. If so directed by the Architect, this Subcontractor shall prepare composite working drawings and sections, in conjunction with other trades at a suitable scale not less than 1/4" - 1"-0", clearly showing the installation of his work in relation to the work of other trades. If this Subcontractor installs his work before coordinating with other trades, or so as to cause interference with work of other trades, he shall make necessary changes in his work to correct the conditions without extra charge. All cutting, patching, excavation, and backfilling, except for primary electrical service, shall be done by the General Contractor. This Subcontractor shall inform the General Contractor well in advance as to his requirements, and if, in the Architect's judgment, he is negligent in this respect, this Subcontractor shall bear all expenses flowing from his negligence with respect thereof.

1.17 PROCEDURE

- A. This Subcontractor shall provide all labor and materials necessary for the complete and substantial execution of the work, including all transportation, scaffolding, apparatus, utensils, tools, etc., requisite for the faithful performance of the work to the true intent and meaning of the Specifications, Drawings, and Instructions. All workmanship and materials shall be of the best of their respective kinds.
- B. This Subcontractor shall store his material and equipment prior to installation only where designated by the Owner. He shall be responsible for all his property stored on the premises and shall hold the Owner free from liability for loss by theft or carelessness of employees of the Owner, or of other Contractors. This Subcontractor must take particular care to protect any finished work from injury caused thereto by his operations. After completion of the work, this Subcontractor shall remove all waste, rubbish and other materials left as a result of his operations and leave the premises in clean condition.

1.18 FIELD MEASUREMENTS

- A. This Subcontractor shall verify in the field all measurements necessary for his work and shall assume responsibility for their accuracy.

1.19 CLEANING AND PROTECTION

- A. All materials and equipment shall be carefully protected during shipment and protected during installation and properly handled and stored at the job site so as to prevent damage. This Subcontractor shall assume full responsibility for protection of work until its completion and final acceptance.
- B. Upon completion of this work, this Subcontractor shall clean all fixtures and equipment and replace damaged parts. Upon failure of this Subcontractor to fulfill his obligation, this work will be taken care of at his expense.

1.20 GUARANTEE

- A. All materials, items of equipment and workmanship furnished under this Section shall carry the standard warranty against all defects in materials and workmanship for a period of not less than one (1) year from the date of final acceptance of the work.

1.21 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 being 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 re-painted by the Electrical Contractor.
- C. At the end of each work day, the Electrical Contractor shall remove all waste, rubbish and other materials left as a result of his operation and leave the premises in clean condition.

1.22 CONFLICT BETWEEN PLANS AND SPECIFICATIONS

- A. In case of a conflict between contract plans and the specification the Architect will decide which takes precedence.

1.23 SUPERINTENDENCE OF WORK

- A. This Subcontractor shall give his personal superintendence to the work and shall retain at the job site during the period of construction, a competent foreman, satisfactory to the Architect, who shall be in full charge of the work under this Section.

1.24 SITE VISITATION

- A. The Electrical Contractor shall be required to visit the site and to have examined the existing conditions which may affect his work under this Contract. Failure to do so shall be his responsibility and no claims for extra compensation or extension of time shall be allowed because of lack of compliance herewith.

1.25 COOPERATION AND WORK PROGRESS

- A. The electrical wiring 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 Architect 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 the project.
- B. The Electrical Contractor shall coordinate his work with the progress of the building and other trades so that he shall complete his work as soon as conditions permit. Any overtime hours worked or additional costs incurred due to lack of or improper coordination with other trades of the Owner by the Electrical Contractor shall be assumed by the Electrical Contractor without any additional cost to the Owner.
- C. 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. Particular attention shall be given in the field to such group installations. If it is questionable that insufficient space or conflict with the work of other contractors, or Architectural or structural obstructions will result in an arrangement which will prevent proper access, operation or maintenance of the indicated equipment, the Electrical Contractor shall immediately notify the Architect and not proceed with this part of the contract work until definite instructions have been given to him by the Architect.
- D. 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; but he also shall make sure such equipment is not delivered too far in advance of such required installation, to assure that possible damage and deterioration of such equipment will not occur. Such equipment stored for an excessively long period of time (as determined in the opinion of the Architect) on the project site prior to installation may be subject to rejection by the Architect.

PART 2 - PRODUCTS

2.1 RIGID STEEL CONDUIT:

- A. All rigid steel conduit shall be standard IPS, galvanized or sheradized, threaded conduit equal to Pittsburgh Standard, J & L or Youngstown.
- B. Changes in direction of conduit, where concealed, shall be made by means of standard radius bends, and where exposed, or by means of galvanized, or sheradized threaded condulets as manufactured by Crouse-Hinds or equal.
- C. Conduits shall be continuous from outlet, and from outlets to cabinets, junction or pull boxes and shall enter and be secured to all boxes in such a manner that each system shall be electrically continuous from service to all outlets. Terminals of all conduits shall be furnished with double lock nuts and grounding bushings.

2.2 ELECTRICAL METALLIC TUBING

- A. Electrical metallic tubing may be used for main feeders to light and power panels.
- B. Tubing shall be continuous between outlets, making a continuous electrical system for bonding.
- C. Connector and couplings shall be set screw type.

2.3 FLEXIBLE METALLIC CONDUIT

- A. Flexible metallic conduit may be used for short connections to recessed fixtures and motors, except in wet areas. In wet areas liquid tight flexible metallic conduit shall be used.

2.4 WIRES AND CABLES

- A. All conductor wire and cable shall consist of thoroughly tinned 98% conductivity copper, with 600 volt insulation, manufactured in strict accordance with the requirements of the Board of Underwriters' and AIEE.
- B. No wires smaller than No. 12 shall be used for any branch circuit unless noted on plans for special system circuits. Larger sizes shall be used where so indicated on the Drawings.
- C. All 600 volt wire and cables shall be single conductor suitable for use in wet areas and dry locations; shall have an insulation that is moisture and heat resistant cross linked thermosetting polyethylene without an outer jacket, shall be type "THHN" as manufactured by General Electric, Okonite, or Rome Cable. Wire sized No. 12 and No. 10 AWG shall be solid. Sizes 8 and larger shall be stranded.

2.5 ARMORED CABLE (Type "MC")

- A. For all armored cable branch circuits as called for elsewhere in these specifications and noted on the plans, furnish and install the indicated sizes with copper conductors, with green insulated grounding conductor as manufactured by the Boston Insulated Wire Company or approved equal as manufactured by American or Collyer. Armored cable shall be type "MC".

2.6 OUTLET BOXES

- A. Furnish and install all required outlet boxes as manufactured by Appleton, National, or Steel City.
- B. All outlet boxes for concealed work shall be galvanized, stamped steel; those for fixtures, furnished with a fixture stud.
- C. 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 required.
- D. Wall outlets shall be 4" sq. x 1-1/2" deep with plaster covers to suit, or Standard "new work" wall case boxes. Wall boxes shall be designed for rigid metallic conduit and shall be the best type for the wall construction involved.
- E. Install blank plates on all outlet boxes, in which no apparatus is installed, which do not integrally provide a cover for the box.
- F. Special care shall be taken to set all boxes correctly square and true with the building finish. As far as possible, all wall and switch outlets shall be erected in advance of furring and fireproofing, and shall be secured to the building structure or steel by adjustable strap iron supports, which shall be buried in.
- G. The exact location of all outlets and switches in finished rooms shall be obtained from the Architect and from the Scale Drawings of interior details and finish. Final correct readjustment shall be made to the outlets if necessary to give proper centering.
- H. In centering of outlets and location of outlet boxes, allow for overhead pipes, and thickness of fireproofing and plastering; also for window trim, paneling, hung ceilings, and the like. Any inaccuracy resulting from failure to do so must be corrected under this Section of the Specifications without expense to the Owner. Confer with the Architect and other Subcontractors and find out where hung ceilings occur and piping and ductwork run before signing the Contract and include in proposal what ever costs of the electrical work these conditions necessitate.
- I. The locations given or designated on the Drawings for the outlets are subject to modification. In the case of local wall switches established by the swing of the door. In all cases, the switch shall be on the side of the door opposite the hinges.

2.7 JUNCTION AND PULL BOXES

- A. Junction or pull boxes shall be furnished and installed under this Section of the Specifications where indicated on the Drawings and wherever else such a box may be deemed necessary to facilitate the pulling or splicing of wires or cables.
- B. All such boxes must be made accessible and shall be built only from approved detail Working Drawings. Conduits shall enter these boxes through tight fitting clearance holes.
- C. The covers of the boxes shall be designed for quick removal. Where junction boxes are required for a splicing box for special recessed fixtures, consult the Architect before installing boxes for these fixtures and determine the exact location of the boxes.
- D. Each feeder passing through a pull box shall be tagged or designated in some other approved manner. If tags are used, they shall be of fireproof material.
- E. Locations of junction boxes and pull boxes shall meet the approval of the Architect. Generally, junction boxes and pull boxes shall not be exposed in finished spaces; where necessary re-route conduits or make other arrangements to meet the approval of the Architect.

2.8 LIGHTING FIXTURES

- A. This Subcontractor shall furnish and install the lighting fixtures, complete for each and every light outlet in the type, quality, and size of fixture indicated on the Drawings in the fixture schedule unless called specifically to be omitted herein. It shall be the responsibility of this Subcontractor to check the Drawings with the schedule for completeness, as the schedule is made up for the convenience of the bidders. In the schedule, catalog numbers are used and size of fixture that will be required.
- B. This Subcontractor shall include all fixtures, wiring, hanging, uncrating, connecting up and making ready for operation. This Subcontractor shall include the cost of furnishing and installing all lamps for all fixtures under this Contract throughout. All lamps for all fixtures shall be furnished in Type A, PS, PAS, and B, or silvered as specified. All tubes for rapid-start fixtures shall be Phillips or equal as manufactured by Osram or General Electric, as called for under each fixture type. All fluorescent lamps to be warm white energy savings type. All fluorescent ballasts shall be as described under paragraph "Fluorescent Ballast".
- C. This Subcontractor shall check structural and architectural details of all locations where fixtures are to be installed so that he can properly provide for installation of the fixture.

2.9 LIGHT SWITCHES

- A. All local wall switches shall be of the flush tumbler type, single-pole, double-pole, 3-way, or 4-way as required, as manufactured by Hubbell, P & S, or Bryant.
- B. Local switches shall be installed in such a position that they shall bear evenly and true and be secured on the axis of the supporting members.
- C. Under no circumstances are wooden wedges, shims, or blocks to be used in truing up local switches. Should the outlet box, in any case, come too far back of the finished surface, recess boxes and screws of the proper length to reach the box shall be used of such a size as to form a shoulder at exactly the proper point to retain the switch in position.
- D. Single-pole switches shall be Hubbell #1221WH or equal as manufactured by Arrow Hart, P & S, or Bryant.
- E. Three-way switches shall be Hubbell #1223WH and 4-way switches shall be Hubbell #1224WH.
- F. Switch and pilot shall be 1221-PL.

2.10 RECEPTACLES

- A. All convenience outlets shall be of the single or duplex type, back, or side-wired. T-slot or polarized slot type, grounded as required, as manufactured by Hubbell, Arrow Hart, or Leviton.

- B. In general, convenience outlet circuits shall be independent of light circuits and shall not be controlled by light circuit breaker switches or light switches.
- C. Duplex receptacles shall be equal to Hubbell 5252-WH.
- D. Single receptacles rated at 20A-250V shall be Hubbell 5451-WH.
- E. Single receptacles rated at 30A-250V 1 phase shall be Hubbell 2620A.
- F. Single receptacles rated at 50A-250V 1 phase shall be Hubbell CS8269.
- G. Single receptacles rated at 20A-250V 3 phase shall be Hubbell 2420A.
- H. Single receptacles rated at 30A-250V 3 phase shall be Hubbell 272
- I. Single receptacles rated at 50A-250V 3 phase shall be Hubbell 3769.
- J. Single receptacles rated at 20A-125/250V 1 phase shall be Hubbell 7310B.
- K. Single receptacles rated at 30A-125/250V 1 phase shall be Arrow Hart 5744.
- L. Single receptacles rated at 50A-125/250V 1 phase shall be Arrow Hart 5754.
- M. Floor outlets shall be Steel City AFM-4GRY with mounting flange and divider accessories.
- N. Isolated ground receptacles rated at 20A - 125V - 1 phase shall be Hubbell IG8310.
- O. Ground fault receptacles shall be Leviton 8899WH

2.11 DEVICE PLATES

- A. All plates used on switch and plug receptacles in finished spaces where wiring is concealed shall be .030 stainless steel.
- B. Gang plates shall be used where multiple switches and/or receptacles occur at one location.
- C. Plates shall be of the same manufacturer as the wiring devices.

2.12 PANELBOARDS (120/208 Volt)

- A. Panels shall be type "NQOD" bolted as manufactured by Siemens, Square "D", Cutler Hammer, or General Electric.
- B. The panelboard schedule indicates the details as to size, voltage, capacity, and number of circuits necessary, including spares.
- C. The panelboard shall conform to the requirements of the Underwriters label.
- D. The panelboard shall be designed for operation at 120/208 volts 3 phase 4 wire.
- E. Circuit breakers 1, 2, and 3-pole for 120/208 volts application shall be type "QOB" switch rated with interrupting capacity as indicated on drawings. Circuit breakers shall be bolt-on type.
- F. Furnish 10 circuit breaker locks for branch circuit locking control.
- G. All locks of all panels shall be operated by a common master key.
- H. Furnish and install on the inside cover of all light and power panels, a neatly typed index, giving the circuit number; and opposite each number the area of equipment which that particular circuit serves or controls.
- I. In connecting branch circuits to panels, care shall be taken to insure balance; and circuit numbering shown on plans shall be changed to prevent same circuits on same phase being connected to a common neutral.
- J. Panelboards shall be furnished with hinged trim with door and door covers to provide easy access to the panelboard interior, without removing the panelboard cover.

- K. Panelboard bussing shall be copper and shall meet the requirements of the Owner.

2.13 NAMEPLATES

- A. Nameplates consisting of black mica with white center, lettering to be 1/4" high engraved through to white layer and properly fastened with brass screws shall be provided for the following equipment:
1. Panelboards.
 2. Contactors.
 3. Disconnect switches.
- B. Receptacle plate identification shall be as follows:
1. Panel/circuit/voltage and shall be engraved on each receptacle plate. (See details on the electrical drawings).
- C. Fire alarm control panel.
- D. Junction boxes.
- E. Electrical Contractor shall note branch circuit number terminated at each disconnect switch servicing mechanical system terminal box.

2.14 DISCONNECT SWITCH

- A. Furnish and install safety switches as required by plans and specifications. All safety switches shall be NEMA Heavy Duty Type HD and Underwriters' Laboratories listed. Square D Class 3110 or approved equal as manufactured by Siemens or General Electric.
- B. All switches shall have switch blades which are fully visible in the OFF position with the door open. All current-carrying parts shall be plated through electrolytic processes to resist corrosion and promote cool operation.
- C. Switches shall be quick-make and quick-break such that, during normal operation of the switch, the operation of the contacts shall be not capable of being restrained by the operating handle after the closing or opening action of the contacts has started. The handle and mechanism shall be an integral part of the box, not the cover, with positive padlocking provisions in the OFF position.
- D. Switches shall be furnished in NEMA 1 general purpose enclosures unless NEMA 3R (raintight) in indicated on the plans. Enclosures shall be of code gauge (UL 98) sheet steel (NEMA 1) or code gauge (UL 98) galvanized steel (NEMA 3R) with a rust-inhibiting phosphate treatment and gray baked enamel finish.
- E. Switches shall be horsepower rated for 600 volts ac.

2.15 SLEEVES, INSERTS, AND SUPPORTS

- A. The Electrical Subcontractor shall lay-out and install his work in advance of the pouring of concrete floors.
- B. Furnish and install all inserts, conduit hangers, anchors, and steel supports necessary for the support and installation of all electrical equipment.
- C. Where openings are required in walls and floors for the passing of raceways the Electrical Subcontractor shall furnish the General Contractor with the necessary information regarding dimensions and locations so that he may install suitable concrete stops to provide these openings. Such openings shall be by the General Contractor in such a manner so as not to interfere with the fireproof integrity of the building.
- D. This Subcontractor will be held responsible for the location of and maintaining in proper position, sleeves, inserts, and anchor bolts supplied and/or set in place by him. In the event that failure to do such required cutting and patching of finished work, such work shall be done at this Subcontractor's expense

by the General Contractor.

2.16 ACCESS PANELS

- A. Furnish for installation by the appropriate trades, all metal access panels, if required, for access to services provided under this Section.
- B. Panels shall be of the type described under section "Miscellaneous Specialties".
- C. The exact locations and sizes of all access panels shall be coordinated with the General Contractor.

2.17 FIRE ALARM SYSTEM

- A. The Contractor shall furnish and install an addressable fire alarm system for each building as indicated on the drawings and as herein described. The equipment and installation shall comply with the current applicable provisions of the following standards:

- 1. NFPA 70 National Electrical Code
- 2. NFPA 71 Central Station Signaling Systems-Protected Premises Unit.
- 3. NFPA 72 National Fire Alarm Code
- 4. State building codes.
- 5. All requirements of the Local Authority Having Jurisdiction.
- 6. Underwriters Laboratories, Inc.

- B. The system and all components shall be listed by Underwriters Laboratories, Inc. for use in Fire Protective Signaling Systems under the following standards as applicable:

- 1. UL864 Control Units for Fire Protective Signaling Systems.
- 2. UL268 Smoke Detectors for Fire Protective Signaling Systems.
- 3. UL 268A Smoke Detectors for Duct Applications.
- 4. UL 217 Smoke Detectors, Single and Multiple Station.
- 5. UL 521 Heat Detectors for Fire Protective Signaling Systems.
- 6. UL 228 Door Closers-Holders for Fire Protective Signaling Systems.
- 7. UL 464 Audible Signaling Appliances.
- 8. UL 1638 Visual Signaling Appliances.
- 9. UL 38 Manually Actuated Signaling Boxes.
- 10. UL 1481 Power supplies for Fire Protective Signaling Systems.
- 11. Town of Natick Fire Alarm Regulations.

- C. General Requirements

1. Submittals

- a. The contractor shall submit complete documentation for the Fire Alarm/Life Safety System showing the Model Number, type, rating, size, style, Manufacturer's Names, and Manufacturer's Catalog Data Sheets for all items to ensure compliance with these specifications.
- b. Upon Contract Bid approval, and prior to the start of system installation, the Contractor shall submit a complete riser diagram and layout of the entire Fire Alarm/Life Safety System, showing all interconnect wiring and equipment. The riser diagram shall be project specific with actual wiring indicated for fire alarm equipment to be utilized on this project. General wiring diagrams shall not be considered for approval.
- c. All substitute equipment proposed as equal to the equipment specified herein, shall meet or

exceed the fire alarm equipment standards. For equipment other than that specified, the contractor shall supply proof that such substitute equipment does in fact equal or exceed the features, functions, performance, and quality of the specified equipment. The Contractor must submit this information for approval by the engineer at least ten (10) days prior to bid.

2. Equipment Manufacturers

- a. All references to manufacturer or supplier's model numbers and other pertinent information herein is intended to establish minimum standards of performance, function and quality. Equipment from other manufactures listed must meet all of the operating characteristics required herein.
 - b. The model numbers used are those of Firelite and constitute the quality and performance of the equipment and system to be furnished.
3. All equipment and components shall be new, and the manufacturer's current model. The materials, appliances, equipment and devices shall be tested and listed by a nationally recognized approvals agency for use as part of a protective signaling system, meeting the National Fire Alarm Code.
 4. All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation.
 5. All Equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place (e.g., detectors shall not be supported solely by suspended ceilings). Fasteners and supports shall be adequate to support the required load.

D. Main Fire Alarm Control Panel:

1. The FACP shall be Fire-Lite Alarms Model MS-9200 and shall contain a microprocessor based Central Processing Unit (CPU). The CPU shall communicate with and control the following types of equipment used to make up the system: intelligent detectors, addressable modules, printer, annunciators, and other system controlled devices.
2. System Capacity and General Operation
 - a. The control panel shall provide, or be capable of expansion to 198 intelligent/addressable devices.
 - b. The system shall include Form-C alarm, Form-C trouble, and Form-A supervisory relays rated at a minimum of 2.0 amps @ 30 VDC. It shall also include four Class B (NFPA Style Y) programmable Notification Appliance Circuits.
 - c. The Fire Alarm Control Panel shall include a full featured operator interface control and annunciation panel that shall include a backlit Liquid Crystal Display, individual, color coded system status LEDs, and an alphanumeric keypad for the field programming and control of the fire alarm system.
 - d. All programming or editing of the existing program in the system shall be achieved without special equipment and without interrupting the alarm monitoring functions of the Fire Alarm Control Panel.
 - e. The FACP shall provide the following features:
 1. Maintenance Alert to warn of excessive smoke detector dirt or dust accumulation.
 2. System Status Reports to display or printer.
 3. Alarm Verification.
 4. Rapid Manual Station Reporting (under 2 seconds).
 5. Periodic Detector Test, conducted automatically by software.
 6. Pre-alarm for advanced fire warning.
 7. Walk Test.
 - f. The FACP shall be capable of coding Notification circuits in March Time (120 PPM), Temporal, and California Code.

3. Central Microprocessor
 - a. The Microprocessor shall communicate with, monitor, and control all external interfaces with the control panel. It shall include EPROM for system program storage, non-volatile memory for building-specific program storage, and a "watch dog" timer circuit to detect and report microprocessor failure.
 - b. The Microprocessor shall contain and execute all programming for specific action to be taken if an alarm condition is detected by the system. Such programming shall be held in non-volatile programmable memory and shall not be lost if both the system primary and secondary power failure occurs.
 - c. The Microprocessor Unit shall also provide a Real- Time Clock for time annotation of system displays, printer, and history file.
4. Display
 - a. The Display shall provide all the controls and indicators used by the system operator and may also be used to program all system operational parameters.
 - b. The Display shall include status information and custom alphanumeric labels for all Addressable Detectors, Addressable Modules and Software zones.
 - c. The display shall provide an 40-character back-lit alphanumeric Liquid Crystal Display (LCD). It shall also provide 5 Light-Emitting-Diodes (LEDs), that will indicate the status of the following system parameters: AC POWER, FIRE ALARM, SYSTEM TROUBLE, ALARM SILENCED, SUPERVISORY, and PRE-ALARM.
 - d. The Display shall provide a 21-key touch key-pad with control capability to command all system functions, entry of alphabetic or numeric information, and field programming. Two different password levels shall be provided to prevent unauthorized system control or programming.
 - e. The Display shall include the following operator functions: ALARM SILENCE, RESET, DRILL, and ACKNOWLEDGE.
5. Signaling Line Circuit (SLC)
 - a. The SLC interface shall provide power to and communicate with up to 99 addressable detectors (Ionization, Photoelectric, or Thermal) and 99 addressable modules (monitor or control) for a system capacity of 198 devices. This shall be accomplished over a single SLC loop and shall be capable of NFPA 72 Style 4, Style 6, or Style 7 wiring.
6. Serial Interfaces
 - a. An EIA-232 interface between the Fire Alarm Control Panel and UL Listed Electronic Data Processing (EDP) peripherals shall be provided.
 - b. The EIA-232 interface shall allow the use of printers, CRT monitors, and PC compatible computers.
 - c. An EIA-485 interface shall be available for the serial connection of remote annunciators and LCD displays.
7. Enclosures:
 - a. The control panel shall be housed in a UL listed cabinet suitable for surface or semi-flush mounting. Cabinet and front shall be corrosion protected, given a rust-resistant prime coat, and manufacturer's standard finish.
 - b. The door shall provide a key lock and shall include a glass or other transparent opening for viewing of all indicators.
8. All interfaces and associated equipment are to be protected so that they will not be affected by voltage surges or line transients, consistent with UL standard 864.
9. Optional plug-in modules shall be provided for by NFPA 72-1993 for Auxiliary and Remote Station requirements.
10. Digital Alarm Communicator Transmitter (DACT). The DACT is an interface for communicating digital information between a fire alarm control panel and a UL-Listed central station.
 - a. The DACT shall be compact in size, mounting in a standard module position of the fire alarm control cabinet. Optionally, the UDACT shall have the ability for remote mounting, up to 6,000 feet (1828.8 m) from the fire alarm control panel. The wire connections between the UDACT and the control panel shall be supervised with one pair for power and one pair for multiplexed communication of overall system status. Systems that utilize relay contact closures are not acceptable.

- b. The DACT shall include connections for dual telephone lines (with voltage detect), per UL/NFPA/FCC requirements. It shall include the ability for split reporting of panel events up to three different telephone numbers.
 - c. The DACT shall be completely field programmable from a built-in keypad and 4 character red, seven segment display.
 - d. The DACT shall be capable of transmitting events in at least 15 different formats. This ensures compatibility with existing and future transmission formats.
 - e. Communication shall include vital system status such as:
 - Independent Zone (Alarm, trouble, non-alarm, supervisory)
 - Independent Addressable Device Status
 - AC (Mains) Power Loss
 - Low Battery and Earth Fault
 - System Off Normal
 - 12 and 24 Hour Test Signal
 - Abnormal Test Signal (per UL requirements)
 - EIA-485 Communications Failure
 - Phone Line Failure
 - f. The DACT shall support independent zone/point reporting when used in the Contact ID format. In this format the UDACT shall support transmission of up to 2,040 points. This enables the central station to have exact details concerning the origin of the fire or response emergency.
11. Power Supply:
- a. The Power Supply shall operate on 120 VAC, 60 Hz, and shall provide all necessary power for the FACP.
 - b. It shall provide 3.0 amps of usable Notification appliance power, using a switching 24 VDC regulator. A 3.0 amp Notification expansion power supply shall be available for the demanding requirements of UL 1971 and ADA devices, for a total system capacity of 6 amps.
 - c. It shall provide a battery charger capable of charging batteries up to 17 amp hours.
 - d. It shall provide a very low frequency sweep earth detect circuit, capable of detecting earth faults.
 - e. It shall be power-limited per 1995 UL864 standards.
12. Field Charging Power Supply: The FCPS is a device designed for use as either a remote 24 volt power supply or used to power Notification Appliances.
- a. The FCPS shall offer up to 6.0 amps (4.0 amps continuous) of regulated 24 volt power. It shall include an integral charger designed to charge 7.0 amp hour batteries and to support 60 hour standby.
 - b. The Field Charging Power Supply shall have two input triggers. The input trigger shall be a Notification Appliance Circuit (from the fire alarm control panel) or a relay. Four outputs (two Style Y or Z and two style Y) shall be available for connection to the Notification devices.
 - c. The FCPS shall include an attractive surface mount backbox.
 - d. The Field Charging Power Supply shall include the ability to delay the AC fail delay per 1993 NFPA requirements.
 - e. The FCPS include power limited circuitry, per 1995 UL standards.
13. Field Wiring Terminal Blocks
- Terminal blocks shall have sufficient capacity for 18 to 12 AWG wire.
14. Operators Controls
- a. Acknowledge Switch:
 - 1. Activation of the control panel Acknowledge switch in response to new alarms and/or troubles shall silence the local panel piezo electric signal and change the alarm and trouble LEDs from flashing mode to steady-ON mode. If multiple alarm or trouble conditions exist, depression of this switch shall advance the 40-character LCD display to the next alarm or trouble condition.
 - 2. Depression of the Acknowledge switch shall also silence all remote annunciator piezo sounders.
 - b. Alarm Silence Switch:

Activation of the Signal silence switch shall cause all programmed alarm notification appliances and relays to return to the normal condition after an alarm condition. The selection of notification circuits and relays that are silenceable by this switch shall be fully field programmable within the

confines of all applicable standards. The FACP software shall include silence inhibit and auto-silence timers.

c. System Reset Switch:

The system reset switch shall cause all electronically-latched initiating devices, appliances or software zones, as well as all associated output devices and circuits, to return to their normal condition.

Holding the system RESET switch shall perform a lamp test function.

d. Drill (Evacuate) Switch:

The drill switch shall activate all notification appliance circuits. The drill function shall latch until the panel is silenced or reset.

15. Field Programming

- a. The system shall be programmable, configurable and expandable in the field without the need for special tools or electronic equipment and shall not require field replacement of electronic integrated circuits.
- b. All programming may be accomplished through the standard FACP keypad.
- c. All field defined programs shall be stored in non-volatile memory.
- d. The programming function shall be enabled with a password that may be defined specifically for the system when it is installed. Two levels of password protection shall be provided in addition to a key-lock cabinet. One level is used for status level changes such as zone disable or manual on/off commands. A second (higher-level) is used for actual change of program information.
- e. A special program check function shall be provided to detect common operator errors.
- f. An Auto-Program (self-learn) function shall be provided to quickly install initial functions and make the system operational.
- g. For flexibility, an off-line programming function, with batch upload/download, shall also be available.

16. Specific System Operations

- a. Alarm Verification: Each intelligent addressable smoke detector in the system shall be independently selected and enabled to be alarm verified. The alarm verification delay shall be programmable from 5 to 30 seconds. The FACP shall keep a count of the number of times that each detector has entered the verification cycle. These counters may be displayed and reset by the proper operator commands.
- b. Point Disable: Any device in the system may be enabled or disabled through the system keypad.
- c. Read Status: The system shall be able to display the following status functions:
 - a. Device status.
 - b. Zone status.
 - c. Notification appliance circuit status.
 - d. System parameters.
- d. System Status Reports: Upon command from an operator of the system, a status report will be generated and printed, listing system status.
- e. System History Recording and Reporting: The Fire Alarm Control Panel shall contain a History Buffer that will be capable of storing up to 500 system alarms/troubles/operator actions. Each of these activations will be stored and time and date stamped with the actual time of the activation.
- f. Automatic Detector Maintenance Alert: The Fire Alarm Control Panel shall automatically interrogate each intelligent smoke detector and shall analyze the detector responses over a period of time.
- g. Software Zones: The FACP shall provide 56 software zones. All addressable devices may be field programmed to be grouped into software zones for control activation and annunciation purposes.

E. System Components:

1. Programmable Electronic Sounders:

- a. Electronic sounders shall operate on 24 VDC nominal.
- b. Electronic sounders shall be field programmable without the use of special tools, to provide slow whoop, continuous, or interrupted tones with an output sound level of at least 90 dBA measured at 10 feet from the device.
- c. Shall be flush or surface mounted as show on plans.

2. Strobe lights shall meet the requirements of the ADA, UL Standard 1971 and shall meet the following criteria:
 - a. The maximum pulse duration shall be 2/10 of one second.
 - b. Strobe intensity shall meet the requirements of UL 1971.
 - c. The flash rate shall meet the requirements of UL 1971.
3. Audible/Visual Combination Devices:
 - a. Shall meet the applicable requirements of Section A listed above for audibility.
 - b. Shall meet the requirements of Section B listed above for visibility.
4. Manual Fire Alarm Stations
 - a. Manual fire alarm stations shall be non-code, non-break glass type, equipped with key lock so that they may be tested without operating the handle.
 - b. Stations must be designed such that after an actual activation, they cannot be restored to normal except by key reset.
 - c. An operated station shall automatically condition itself so as to be visually detected, as operated, at a minimum distance of 100 feet (30.5 m) front or side.
 - d. Manual stations shall be constructed of high impact Lexan, with operating instructions provided on the cover. The word FIRE shall appear on the manual station in letters one half inch (12.7 mm) in size or larger.
5. Conventional Photoelectric Area Smoke Detectors
 - a. Photoelectric smoke detectors shall be a 24 VDC, two wire, ceiling-mounted, light scattering type using an LED light source.
 - b. Each detector shall contain a remote LED output and a built-in test switch.
 - c. It shall be possible to perform a calibrated sensitivity and performance test on the detector without the need for the generation of smoke. The test method shall test all detector circuits.
 - d. A visual indication of an alarm shall be provided by latching Light Emitting Diodes (LEDs). These LEDs shall flash every 10 seconds, indicating that power is applied to the detector.
 - e. The detector shall not go into alarm when exposed to air velocities of up to 3000 feet (914.4 m) per minute.
6. Conventional Ionization Type Area Smoke Detectors
 - a. Ionization type smoke detectors shall be a two wire, 24 VDC type using a dual unipolar chamber.
 - b. Each detector shall contain a remote LED output and a built-in test switch.
 - c. It shall be possible to perform a calibration sensitivity and performance test on the detector without the need for the generation of smoke.
 - d. A visual indication of an alarm shall be provided latching Light Emitting Diodes (LEDs). This LED shall flash every 10 seconds, indicating that power is applied to the detector.
 - e. The detector shall not alarm when exposed to air velocities of up to 1,200 feet (365.76 m) per minute. The detector screen and cover assembly shall be easily removable for field cleaning of the detector chamber.
7. Duct Smoke Detectors
 - a. Duct smoke detectors shall be a 24 VDC type with visual alarm and power indicators, and a reset switch. Each detector shall be installed upon the composite supply/return air ducts(s), with properly sized air sampling tubes.
8. Automatic Conventional Heat Detectors
 - a. Automatic heat detectors shall have a combination rate of rise and fixed temperature rated at 135 degrees Fahrenheit (57.2 Celsius) for areas where ambient temperatures do not exceed 100 degrees (37.7 Celsius), and 200 degrees (93.33 Celsius) for areas where the temperature does not exceed 150 degrees (65.5 Celsius).
 - b. Automatic heat detectors shall be a low profile, ceiling mount type with positive indication of activation.
 - c. The rate of rise element shall consist of an air chamber, a flexible metal diaphragm, and a factory calibrated, moisture-proof, trouble free vent, and shall operate when the rate of temperature rise exceeds 15 degrees F(9.4 degrees C) per minute.
 - d. The fixed temperature element shall consist of a fusible alloy retainer and actuator shaft.
 - e. Automatic heat detectors shall have a smooth ceiling rating of 2500 square feet (762 square meters).

9. Addressable Devices - General
 - a. Addressable Devices shall use simple to install and maintain decade (numbered 0 to 9) type address switches. Devices which use a binary address setting method, such as a dip switch, are not an allowable substitute.
10. Addressable Pull Box (manual station)
 - a. Addressable pull boxes shall, on command from the control panel, send data to the panel representing the state of the manual switch and the addressable communication module status. They shall use a key operated test reset lock, and shall be designed so that after actual emergency operation, they cannot be restored to normal use except by the use of a key.
 - b. All operated stations shall have a positive, visual indication of operation and utilize a key type reset.
 - c. Manual stations shall be constructed of Lexan with clearly visible operating instructions provided on the cover. The word FIRE shall appear on the front of the stations in raised letters, 1.75 inches (44 mm) or larger.
11. Addressable Photoelectric Smoke Detector
 - a. The detectors shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density.
12. Addressable Ionization Smoke Detector
 - a. The detectors shall use the dual-chamber ionization principal to measure products of combustion and shall, on command from the control panel, send data to the panel representing the analog level of products of combustion.
13. Intelligent Thermal Detectors
 - a. Thermal detectors shall be intelligent addressable devices rated at 135 degrees Fahrenheit (58 degrees Celsius) and have a rate-of-rise element rated at 15 degrees F (9.4 degrees C) per minute. It shall connect via two wires to the fire alarm control panel signaling line circuit.
14. Intelligent Duct Smoke Detector
 - a. The in-duct smoke detector housing shall accommodate either an intelligent ionization detector or an intelligent photoelectric detector, of that provides continuous analog monitoring and alarm verification from the panel.
 - b. When sufficient smoke is sensed, an alarm signal is initiated at the FACP, and appropriate action taken to change over air handling systems to help prevent the rapid distribution of toxic smoke and fire gases throughout the areas served by the duct system.
15. Addressable Dry Contact Monitor Module
 - a. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional alarm initiating devices (any N.O. dry contact device) to one of the fire alarm control panel SLCs.
 - b. The monitor module shall mount in a 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box.
 - c. The IDC zone shall be suitable for Style D or Style B operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.
 - d. For difficult to reach areas, the monitor module shall be available in a miniature package and shall be no larger than 2-3/4 inch (70 mm) x 1-1/4 inch (31.7 mm) x 1/2 inch (12.7 mm). This version need not include Style D or an LED.
16. Two Wire Detector Monitor Module
 - a. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional 2-wire smoke detectors or alarm initiating devices (any N.O. dry contact device).
 - b. The two-wire monitor module shall mount in a 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box or with an optional surface backbox.
 - c. The IDC zone may be wired for Class A or B (Style D or Style B) operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.
17. Addressable Control Module

- a. Addressable control modules shall be provided to supervise and control the operation of one conventional NACs of compatible, 24 VDC powered, polarized audio/visual notification appliances. For fan shutdown and other auxiliary control functions, the control module may be set to operate as a dry contract relay.
- b. The control module shall mount in a standard 4-inch square (101.6 mm square), 2-1/8 inch (54 mm) deep electrical box, or to a surface mounted backbox.
- c. The control module NAC may be wired for Style Z or Style Y (Class A/B) with up to 1 amp of inductive A/V signal, or 2 amps of resistive A/V signal operation, or as a dry contact (Form-C) relay. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary relay or NACs may be energized at the same time on the same pair of wires.
- d. Audio/visual power shall be provided by a separate supervised power circuit from the main fire alarm control panel or from a supervised, UL listed remote power supply.
- e. The control module shall be suitable for pilot duty applications and rated for a minimum of 0.6 amps at 30 VDC.

18. Isolator Module

- a. Isolator modules shall be provided to automatically isolate wire-to-wire short circuits on an SLC Class A or Class B branch. The isolator module shall limit the number of modules or detectors that may be rendered inoperative by a short circuit fault on the SLC loop segment or branch. At least one isolator module shall be provided for each floor or protected zone of the building.
- b. If a wire-to-wire short occurs, the isolator module shall automatically open-circuit (disconnect) the SLC. When the short circuit condition is corrected, the isolator module shall automatically reconnect the isolated section.
- c. The isolator module shall not require any address-setting, and its operations shall be totally automatic. It shall not be necessary to replace or reset an isolator module after its normal operation.
- d. The isolator module shall mount in a standard 4-inch (101.6 mm) deep electrical box or in a surface mounted backbox. It shall provide a single LED that shall flash to indicate that the isolator is operational and shall illuminate steadily to indicate that a short circuit condition has been detected and isolated.

F. Batteries:

1. Shall be 12 volt, Gell-Cell type (two required).
2. Battery shall have sufficient capacity to power the fire alarm system for not less than twenty-four hours plus 5 minutes of alarm upon a normal AC power failure.
3. The batteries are to be completely maintenance free.

G. Installation:

1. Installation shall be in accordance with the NEC, NFPA 72, local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.
2. All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas. Smoke detectors shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.
3. All fire detection and alarm system devices, control panels and remote annunciators shall be flush mounted when located in finished areas and may be surface mounted when located in unfinished areas.

H. Test:

1. Provide the service of a competent, factory-trained engineer or technician authorized by the manufacturer of the fire alarm equipment to technically supervise and participate during all of the adjustments and tests for the system. All testing shall be in accordance with NFPA 72, Chapter 7.
 - a. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.
 - b. Close each sprinkler system flow valve and verify proper supervisory alarm at the FACP.

- c. Verify activation of all flow switches.
- d. Open initiating device circuits and verify that the trouble signal actuates.
- e. Open and short signaling line circuits and verify that the trouble signal actuates.
- f. Open and short Notification Appliance Circuits and verify that trouble signal actuates.
- g. Ground all circuits and verify response of trouble signals.
- h. Check presence and audibility of tone at all alarm notification devices.
- i. Check installation, supervision, and operation of all intelligent smoke detectors using the Walk Test.
- j. Each of the alarm conditions that the system is required to detect should be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.
- k. When the system is equipped with optional features, the manufacturer's manual should be consulted to determine the proper testing procedures. This is intended to address such items as verifying controls performed by individually addressed or grouped devices, sensitivity monitoring, verification functionality and similar.

I. Final Inspection:

- 1. At the final inspection a authorized representative of the manufacturer of the major equipment shall demonstrate that the systems function properly in every respect.

J. Instruction:

- 1. Provide instruction as required for operating the system. Hands-on demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.
- 2. The Contractor and/or the Systems Manufacturer's authorized representatives shall provide a typewritten "Sequence of Operation."

2.18 TELEPHONE/DATA SYSTEM:

- A. This Contractor shall furnish and install all telephone and data system outlet boxes and wiring.
- B. The Contractor shall furnish telephone/data conduits as indicated on the plans. Telephone/Data cables shall be Cat.5e.

2.19 LIGHTING CONTACTORS:

- A. This Contractor shall furnish and install lighting contactors as herein described and indicated in the contactor schedule on the plans. Contactors shall be an Asco type 917 or approved equal as manufactured by Square D or General Electric.
- B. 20 Ampere rating Asco 917
 - 1. The remote control switch shall be electrically operated by a dual-acting, single-solenoid mechanism that is inherently interlocked and mechanically held in both the open and closed positions. The main contact shall be power driven in both directions. Positive locking of contact positions shall not be dependent on gravity, hooks, latches or semi-permanent magnets.
 - 2. The remote control switch shall be capable of operating in any position. Provisions shall be incorporated for manual operation during inspection and maintenance.
 - 3. The remote control switch shall be Underwriters' Laboratories listed under U 508. Main contacts shall be double-break, continuous-duty rated 20 amperes to 600 volts, AC, 60 Hz (30 amperes to 600 volts ACm 60 Hz, for general-purpose loads), and be marked for ballast lighting (electric discharge lamps), tungsten and general-purpose loads. Lighting contactors requiring derating when used in an enclosure or with tungsten lamp loads shall not be acceptable.
 - 4. The remote control switches shall be provided with clamp-type, self-rising terminal plates for solderless connection of line, load and control conductors. Terminals shall accept a wire range of #18 AWG to #10 AWG CU.

5. The number of poles, up to a maximum of 12, on a single remote control lighting contactor shall be provided as indicated on the plans.
6. The remote control switches shall be U listed for the following short-circuit withstand current ratings when coordinated with a U-listed molded case circuit breaker rated 30 amperes:

22,000 amps rms symmetrical, 250 volts, 60 Hz

7. The operating coil and main contacts shall be replaceable from the front without major disassembly and visual indication shall be provided for each contact.
8. Provisions shall be included to permit remote pilot lamp-type visual indications without the necessity for auxiliary contacts or additional wiring.
9. Each remote control switch shall be furnished with an owner's manual providing installation and operation instruction.
10. Provide accessory No. 48 three wire control interface module. Interface module shall allow the building solid state energy management system to control contactors.

2.20 OCCUPANCY SENSOR (WALL)

- A. This Contactor shall furnish and install wall mounted infrared occupancy sensors (WS Series) as manufactured by Watt Stopper of approved equal.
- B. The wall mounted occupancy sensors shall meet the following requirements:
 1. Coverage of 180 degrees, maximum 900 sq. ft.; 300 sq. ft. for desktop activity.
 2. Dual 120/277 voltage.
 3. The Watt Stopper's ASIC technology reduces components and enhances reliability.
 4. Pulse count processing eliminates false offs without reducing sensitivity.
 5. Detection Signature Analysis eliminates false triggers; provides immunity to RFI and EMI.
 6. Utilizes the Watt Stopper's exclusive Zero Crossing Circuitry – Patented.
 7. Digital time delay adjustable from 30 seconds up to 30 minutes.
 8. Adjustable unit sensitivity from 20% to 100%.
 9. Integrated light level sensor – works from 2 to 200 footcandles.
 10. LED for sensitivity calibration.
 11. Small size: 2.7: x 1.8: x 2.2: (60mm x 45mm x 56mm) L x W x D.
 12. Compatible with all electronic ballasts and PL amp ballasts.
 13. Voltage drop protection – Patented.
 14. For safety, there is no leakage to load in off mode; Sensor is safety grounded for UL and CUL listed Five year warranty.
 15. Single relay types shall be Watt Stopper Model DW100.
 16. Dual relay types shall be Watt Stopper Model DW200.

2.21 OCCUPANCY SENSORS (CEILING)

- A. This Contractor shall furnish and install ceiling mounted infrared occupancy sensor (CI-200 Series) as manufactured by Watt Stopper or approved equal.
- B. The system shall be complete with power packs and slave power packs as indicated on the drawings.
- C. Ceiling Mounted Occupancy Sensors
 1. The ultrasonic occupancy sensors shall be capable of detecting presence in the floor area to be controlled by detecting doppler shifts in transmitted ultrasound.
 2. Ultrasonic sensing shall be volumetric in coverage with a frequency of 32.768 kHz at $\pm 0.002\%$. They shall utilize Advanced Signal Processing which automatically adjusts the detection threshold dynamically to compensate for constantly changing levels of activity and air flow throughout controlled areas.
 3. Sensors of varying frequencies shall not be allowed so as to prevent sensors from interfering with

- each other and to assure compatibility in the event more sensors are added.
4. Sensors shall have temperature and humidity resistant, 32 kHz tuned ultrasonic receivers. Receivers shall have less than a 6dB shift in the humidity range of 10% to 90% and less than a 10dB shift in the temperature range of -20° to 60° C.
 5. Detection shall be maintained when a person of average size and weight moves only within or a maximum distance of twelve inches either in a horizontal or vertical manner at the approximate speed of 12 inches per second. The sum of this distance, volume and speed represent the average condition ultrasonic sensors must meet in order for the lights to not go off when a person is reading or writing while seated at a desk.
 6. Sensors shall have a DIP switch override-ON function for use in the event of failure. The LED is maintained ON so as to be visible from the floor as a constant reminder that the automatic function has been by-passed.
 7. Sensors shall incorporate an output disable feature for easy troubleshooting.
 8. Sensors shall be ceiling mounted and shall not protrude more than 1.50 inches to blend in aesthetically with the ceiling. The sensors shall offer two mounting options.
 9. The WT-600, WT-1100, and WT-2200 shall have an additional single-pole, double-throw isolated relay with normally open, normally closed, and common outputs rated at 1 Amp for 24 VDC. The isolated relay is available for use with HVAC control, data logging, and other control options.
 10. For accuracy, sensors shall have a DIP switch controlled, digital time delay that shall be adjustable from 15 seconds to 30 minutes.
 11. Sensors shall have user-adjustable sensitivity setting.
 12. Sensors shall cover 360° and up to 600 square feet for WT-605 and WT-600, 1100 square feet for WT-1005 and WT-1100, and 2200 square feet for WT-2200.
 13. Sensitivity and timer controls shall be accessible from the front of the sensor and shall be concealed by a hinged cover.
 14. To ensure quality and reliability, sensor shall be manufactured by an ISO 9002 certified manufacturing facility and shall have a defect rate of less than 1/3 of 1%.
 15. Ultrasonic occupancy sensors shall be UL and CUL listed.
 16. Sensors shall have a standard 5 year warranty.

D. Power and Slave Packs

1. Power pack shall be a self contained transformer and relay module measuring 1.75" x 2.75" x 1.5".
2. For ease and speed of installation, power and slave pack shall have 1/2" snap-in nipple for 1/2" knockouts and mounting on outside of enclosure
3. Power and slave packs shall have dry contacts capable of switching 20 amp ballast load, 13 amp incandescent, 1 hp @ 120 VAC, 60Hz; 20 amp ballast @ 277 VAC, 60 Hz; 15 amp ballast @ 347 VAC, 60Hz; 15 amp ballast, 1 hp @ 220-240 VAC, 60 Hz; and 20 amp ballast, 13 amp incandescent, 1 hp @ 220-240 VAC, 50 Hz.
4. Power packs shall provide a 24 VDC, 150 mA output.
5. Power packs shall be capable of parallel wiring without regard to AC phases on primary.
6. Slave packs shall be identical in physical size of power packs and contain no transformer power supply and shall switch 120VAC, 277 VAC, 347 VAC or low voltage.
7. Power pack can be used as a stand alone, low voltage switch, or can be wired to sensor for auto control.
8. Power and slave packs shall have low voltage teflon coated leads, rated for 300 volts, suitable for use in plenum applications.
9. To ensure quality and reliability, power and slave packs shall be manufactured by an ISO 9002 certified manufacturing facility and shall have a defect rate of less than 1/3 of 1%.
10. Power and slave packs shall have a 5 year warranty.
11. Power and slave packs shall be UL and CUL listed.

E. Acceptable Manufacturers

1. The Watt Stopper, or Pre-Approved Equal: For pre-approval, provide all the information listed

- under section 1.04A and 1.04D a minimum of ten (10) working days prior to initial bid date.
2. The listing of any manufacturer as "acceptable" does not imply automatic approval. It is the sole responsibility of the electrical contractor to ensure that any price quotations received and submittals made are for sensors which meet or exceed the specifications included herein.

PART 3 - EXECUTION

3.1 DRAWINGS

- A. The drawings are generally diagrammatic and are intended to convey the scope of work and indicate general arrangements of equipment, ducts, conduits 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. The exact location necessary to secure the best conditions and results must be determined at the project and shall have the approval of the Architect before being installed. This Subcontractor shall follow drawings in laying out work and checking drawings of other trades to verify spaces in laying out work to be installed.
- B. Maintain maximum headroom and space conditions are all points. Where headroom or space conditions appear inadequate, Architect shall be notified before proceeding with the installation. If directed by the Architect, this Subcontractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work. The Architect shall be the sole judge of what a "reasonable modification" in the layout is.

3.2 WORKMANSHIP

- A. The entire work provided in this Specification shall be constructed and finished in every respect in a workmanlike and substantial manner. It is not intended that the drawings shall show every pipe, fitting and appliance, but Subcontractor shall furnish and install all such parts as may be necessary to complete the systems in accordance with the best trade practice and satisfaction of the Architect.

3.3 INSTALLATION OF WIRING AND CONDUIT

- A. In general, all conduits shall be run concealed unless otherwise indicated to be run exposed.
- B. 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 Architect 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.
- C. In no place shall a conduit be run 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.
- D. Conduits shall be supported on approved type if 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, matching screws on metal surfaces and wood screws on wood construction. No nails shall be used as a means of fastening boxes or conduits.
- E. In general, no splices or joints will be permitted in either feeder or branches except at outlets or accessible junction boxes.
- F. All splices in wire #8 AWG and smaller shall be standard pigtail, made mechanically tight, soldered and insulated with proper thickness of insulating tape. Wire splicing nuts as manufactured by Minnesota Mining Company (Scotch Lock) or Ideal wire nuts may be used, subject to the local wire inspector.
- G. 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 enclosure all strands of the conductors and securely fastened.

3.4 CUTTING, PATCHING AND DRILLING

- A. It shall be the duty of the General Contractor to provide all cutting, patching, and drilling necessary for the electrical installation.

3.5 GROUNDING

- A. This Subcontractor shall furnish all fittings, clamps, conduits and wire of proper size to make ground connections between all apparatus and conduit and the water piping as required by the latest edition of the National Electrical Code and as indicated on the Drawings. Any ground wires shall be run in conduit of size required by the National Electrical Code.

3.6 QUIET OPERATION

- A. All equipment and material furnished by this Subcontractor shall operate under all conditions of load without objectionable noises or vibrations, which, in the opinion of the Architect, is objectionable. Where sound or vibration conditions arise which are considered objectionable by the Architect, this Subcontractor shall eliminate same in a manner approved by the Architect.

3.7 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, and repeat the tests until no defects are disclosed. Leave the equipment clean and ready for use.

3.8 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 outlined in the National Electrical Code. Provide testing equipment necessary and conduct test in presence of the Owner's authorized representative.

3.9 GUARANTEE

- A. All materials, items of equipment and workmanship furnished under this Section shall carry the standard warranty against all defects in materials and workmanship for a period of not less than one (1) year from the date of final acceptance of the work.

3.10 SLEEVES AND OPENINGS

- A. Sleeves and openings for piping through walls, floors and other parts of the structure shall be provided at all points shown on the Contract Drawings and where indicated by the Architect. The conduit shall go through the sleeve consisting of the next size conduit that will provide clearance. Sleeve ends shall be flush with surfaces.

3.11 WIRING METHODS

- A. Secondary electric service (telephone service and cable television system service) shall be installed overhead and in rigid steel conduit to associated equipment.
- B. Electrical metallic tubing may be utilized for branch circuit wiring where branch circuit wiring is installed exposed.
- C. Armored cable type "MC" may be used for branch circuit wiring in hung ceilings and partitions of the building unless otherwise herein described or indicated on the plans.
- D. Fire alarm system wiring shall be installed in electrical metallic tubing.

- E. Telephone system wiring shall be installed in electrical metallic tubing.

3.12 SUPERINTENDENCE OF WORK

- A. The Electrical Subcontractor shall give his personnel superintendence to the work and shall retain at the job tie during the period of construction, a competent foreman, satisfactory to the Architect, who shall be in full charge of the work under this Section.

3.13 PROTECTION

- A. The Electrical Subcontractor shall be responsible for his work and equipment until finally inspected, tested and accepted; careful storage of materials and equipment which are not immediately installed after delivery to site; and closure of open ends of work with temporary covers or plugs during construction to prevent entry of obstructing material.

3.14 SPECIAL COORDINATION INSTRUCTIONS:

- A. Coordination with the work of other trades is referred to within various parts of this Section of the Specifications. The following special instructions shall also be carefully noted:
 - 1. This Subcontractor shall obtain from the Heating, ventilating and Air Conditioning Contractor copies of all shop drawing prints showing the ductwork installation as it will be put in place on the project. These drawings shall be thoroughly checked by this Subcontractor, and the routing of all conduits and installation of all outlets and electrical equipment shall be coordinated with the ductwork so as to prevent any installation conflict. Such coordination shall be done prior to roughing-in conduits, outlets and electrical equipment.
 - 2. Locations of all wall outlets shall be verified with the Architect prior to roughing-in conduits or cables. Refer to details and wall elevations on the architectural drawings; mounting heights indicated on these architectural drawings and/or specific dimensional information given to this Subcontractor by the Architect shall take precedence over such information indicated on the electrical drawings.
 - 3. Refer to all other drawings associated with this project. Locations of lighting fixtures shall conform to the architectural reflected ceiling plans where applicable.
 - 4. If any discrepancy is found to exist between the electrical plans and any other drawings associated with the project, notify the Architect at once and have location verified before work is installed. Any reasonable change in location of outlets and equipment prior to installation shall not involve additional expense to the Owner. The term "reasonable" shall be interpreted at moving outlets or equipment locations a maximum of ten (10) feet in any direction from the location indicated on the Drawings.
 - 5. All feeder, branch circuit or auxiliary system wiring passing through pull boxes and/or being made up in panelboards shall be properly grouped, bound and tied together in a neat and orderly manner, in keeping with the highest standards of the trade, with plastic cable ties. Loose ends of the cable ties shall be properly trimmed after making up same. Cable ties shall be TY-Raps as manufactured by Thomas & Betts, or Holub Industries, Inc., Quick-Wrap, or Burndy Unirap, or equal.
 - 6. Branch circuits and auxiliary system wiring shall be peeled out of the wiring gutters of the terminal cabinets and panels at 90 degrees to circuit breakers and terminal lugs for connecting to same.
 - 7. 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.
 - 8. Reflected ceiling plans for any and all areas prepared by the Architect showing the location of lighting fixtures shall take precedence over the locations of same shown on the lighting plans of this contract set of Drawings. The Electrical Subcontractor shall install the lighting fixtures in any given area to agree with the Architect's reflected ceiling plans.
 - 9. At all points where steel support channels are cut and the unprotected steel is epoxied, two (2)

- coats of any approved rust preventative paint shall be applied to the bare surfaces, after proper cleaning. This requirement shall also apply to exposed job-cut threads of rigid steel conduit.
10. Color and type of rust preventative paint shall be as directed by the Architect. In general, the paint for metals which are galvanized shall be aluminum paint and others will be of a zinc chromate type, or as otherwise approved.
 11. 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.
 12. 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. This shall also include protection from moisture and all foreign matter. The Subcontractor shall also be responsible for damage which he causes to be done to the work of other trades and shall remedy any such injury at his own expense.
 13. The Electrical Subcontractor 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 Architect. The determination of whether or not such special live parts shall be insulated shall rest exclusively with the Architect.
 14. Specific reference is made to Article 380-8 of the National Electrical Code, relating to accessibility and mounting heights of switches and circuit breakers used as switches. It shall be herein understood that this article shall also apply to the mounting heights of switches and/or circuit breakers in panelboards. Switches and/or circuit breakers in panelboards shall be located so that they may be operated from a readily accessible place and shall be so installed that the center of the grip of the operating handle of the switch or circuit breaker, when in its highest position, will not be more than 6-1/2 (six and one-half) feet above the finished floor or working platform. It shall also be herein understood that this requirement shall take precedence over any contradictory notes, dimensions or details which may be indicated on the Contract Drawings. All panelboards shall be mounted at a height to conform to this requirement.

3.15 SECONDARY ELECTRICAL SERVICE:

- A. The existing building utilization voltage is 120/240 volts, 1-phase, 3-wire, originating at as new pad mounted transformer.
- B. Eversource will furnish and install meters, current transformers, and test switches for installation by this Contractor.
- C. The Contractor shall make final connection at the pad mounted transformer.
- D. Contractor shall pay all backcharges assessed by the utility company.

3.16 AS BUILT DRAWINGS

- A. Operating and instruction manuals shall be submitted prior to testing of the system, four (4) complete sets of operating and instruction manuals shall be delivered to the Owner upon completion.
- B. A complete set of reproducible Mylar as-builts, showing installed wiring and color coding and wire tag notations, exact locations of all installed equipment, specific interconnections between all equipment and internal wiring of the equipment shall be delivered to the Owner upon completion of the system.
- C. Complete, simple comprehensive, step-by-step, testing instructions giving recommended and required testing frequency of all equipment, methods for testing each individual piece of equipment, and a complete trouble shooting manual explaining what might be wrong if a certain malfunction occurs and explaining how to tests the primary internal part of each piece of equipment, shall be delivered to the Owner upon completion of the system.
- D. Maintenance instructions shall be complete, easy to read, understandable, and shall provide the following information:

**CAMP ARROWHEAD
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1. Instruction on replacing any components of the system, including internal parts.
2. Instructions on periodic cleaning and adjustment of equipment with a schedule of these functions.
3. A complete list of all equipment and components with information as to the address and phone number of both the manufacturer and local supplier of each item.

END OF SECTION

April 4, 2018

Electrical Supplemental Specification
Restoration of Camp Arrowhead
Natick, MA

ITEM 1
Bath House Electrical

The Bath House, shown on Drawing G1, is powered off of the Main 200A Panel in the building. The scope of this project shall include the reconnection of the Bath House circuit to the new 200A panel, re-using existing conductors and conduit. Bidders shall assume that no other upgrades are required for the existing electrical systems in the existing Bath House.

ITEM 2
Septic Pump Station Power and Controls

In Specification Section 26 00 00, Insert the following subsection:

3.17 Septic Pump Station Power and Controls

A. The existing Pump Control Box, located on the east wall of the existing mechanical room will be preserved by the demo contractor (separate contract) for re-use in this project.

B. Due to space planning modifications, the location of the existing Pump Control Box (indicated on Drawing Sheet X-1) will be modified.

C. Bidders shall assume that the Pump Control Box is in full working condition. The existing Pump Control Box shall be relocated and re-used, wall mounted over sufficient blocking, in Storage 106 in an area close to the existing location.

D. The Electrician shall connect a new power circuit to the Pump Control Box, and reconnect all control wiring, alarm circuits, etc. to establish a fully functioning system. Extend existing wiring as needed by the new location. Verify that all system components, including grounding, are functioning.

**SECTION 31 33 00
EARTHWORK FOR BUILDING**

PART 1 - GENERAL

1.01 GENERAL

A. Attention is directed to general provisions of the CONTRACT, including GENERAL and SUPPLEMENTARY CONDITIONS, and all sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications as if fully repeated herein.

B. Coordinate work with that of all other trades affecting, or affected by the work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

**1.02 FILING OF SUB-BIDS
(Not Applicable)**

1.03 SCOPE OF WORK

A. This Section includes the general scope of work to furnish the administration, facilities, materials, labor and equipment for the following:

1. Earthwork at footings for entrance canopy structure
2. Earthwork at concrete Slab on Grade Patching

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:

1. Section 03 30 00, Cast in place concrete
2. DIV 32, Portland Cement Concrete Paving (exterior)

**1.05 ALTERNATES
(N.A.)**

1.06 SUBMITTALS

A. Attention is directed to Section 01 30 00 regarding required procedures for Submittals.

B. Submittals are required for the following:
(SD = Shop Drawing)
(FS = Field Sample)

(OS = Samples)
(PD = Printed Data)

1. Laboratory Test Reports

PD

- C. Submit sieve analysis and moisture density curve for each material and each source to be used.

PART 2 - PRODUCTS AND MATERIALS

2.01 MATERIALS

- A. General Fill Material: Soil materials free of clay, rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation and other deleterious matter.
- B. Structure Backfill: Sand and Gravel which are sound, durable and free of organic and other deleterious materials conforming to the following limits of gradation:
- C. Subbase Material: Sand and gravel which are sound, durable and free of organic and other deleterious materials conforming to the following limits of gradation:
- D. D. Suitable Native Soil: On site sand or gravel reasonably free of loam, silt, clay or organic matter. Maximum 15% by weight passing No. 200 sieve.

PART 3 - EXECUTION

3.01 INSPECTION / JOB CONDITIONS

- A. Notify Architect/Engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.

3.02 EXCAVATION

- A. Remove groundwater by pumping to keep excavations dry.
- B. Excavate subsoil required for building foundations. Hand Trim Excavations. Remove loose material.
- C. Notify Engineer a minimum of 48 hours prior to excavating to schedule a review of native soil conditions. Footings have been designed for a minimum soil bearing capacity of {xxxx} psf.
- D. Compact disturbed load bearing soil in direct contact with footings to original bearing capacity.
- E. Place a minimum of 6" of crushed stone beneath footings if standing water or clay soils are encountered in excavations.
- F. Correct unauthorized excavation at no cost to Owner.
- G. Fill over-excavated areas under structure bearing surfaces with suitable well-drained material, approved by Engineer, in 6" lifts. Compact to 98% standard proctor.

3.03 BACKFILLING AND COMPACTION

- A. Coordinate placement of Vapor Retarder with Architect, Geotechnical Engineer and Division 7 Specifications.
- B. Do not place fill materials on surfaces that are muddy, frozen or contain frost or ice.
- C. Use unfrozen and unsaturated materials.
- E. Backfill systematically, as early as possible, to allow maximum time for natural settlement.
- F. Place fill material in equal continuous layers not exceeding 8" of compacted depth for hand held compaction equipment and a maximum of 12" compacted depth for vibratory rollers. Compact in accordance with Backfill Requirements and Testing at the end of this section.
- G. Employ placement method so not to disturb or damage foundations or foundation perimeter drain.
- H. Maintain optimum moisture content of backfill materials to attain required compaction density.
- I. Backfill against supported foundation walls. Do not backfill walls with fill on one side only until concrete has achieved a minimum of 70 percent of its design strength.
- J. Backfill simultaneously on each side of foundation walls not designed for retainage of soil on one side.
- K. Perform laboratory material test in accordance with ASTM D1557.
- L. Perform in place compaction tests in accordance with ASTM D2922.

3.03 BACKFILL REQUIREMENTS

A. Fill within building envelope:

1. Material: Structure Backfill
2. Compaction: 95% Modified Proctor
3. Testing: Every other lift, every 1000 square feet.

B. Backfill along exterior of building at frost walls:

1. Material: Suitable Native Soil
2. Compaction: 90% Modified Proctor

C. Backfill behind retaining and/or basement walls, outside of building envelope:

1. Material: Structure Backfill
2. Compaction: 90% Modified Proctor
3. Testing: Every other lift, every 1000 square feet.

D. Gravel below slabs:

1. Material: Structure Backfill, Crushed Gravel
2. Compaction: 95% Modified Proctor
3. Testing: Every 1000 square feet.

END OF SECTION 31 33 00