



Town of Wilmington  
Massachusetts

Invitation for Bids

**ROOF REPLACEMENT PROJECT  
SHAWSHEEN ELEMENTARY SCHOOL  
WILMINGTON, MA**

**Bids Due  
Thursday, April 7, 2022  
10:00AM**

at the  
Office of the Town Manager  
121 Glen Road  
Wilmington, MA 01887

Designer:

Russo Barr Associates, Inc.  
55 Sixth Road, Suite 6  
Woburn, MA 01801  
781-273-1537

## TABLE OF CONTENTS

Number of Pages

---

### **Part A - Bidding and Contract Requirements**

Section 00020 - Invitation to Bid	2 Pages
Section 00100 - Instructions to Bidders	7 Pages
Section 00300 - Form of General Bid	5 Pages
Section 00500 - Agreement	14 Pages
Section 00610 - Performance Bond	3 Pages
Section 00620 - Payment Bond	2 Pages
Section 00700 – General Conditions	
Section 00800 - Supplemental Conditions	3 Pages
Section 00850 - Excerpts from Applicable State Law	1 Page
Attachment A – Wage Rates	

### **Part B – Technical Specifications**

#### Division 01 - General Requirements

Section 01 01 00 Summary of Work	7 Pages
Section 01 29 00 Measurement and Payment.	6 Pages
Section 01 31 00 Project Management & Coordination.	7 Pages
Section 01 32 00 Regulatory Requirements	1 Page
Section 01 33 00 Submittal Requirements.	4 Pages
Section 01 40 00 Quality Requirements	2 Pages
Section 01 50 00 Const. Facilities & Temp. Controls	8 Pages
Section 01 60 00 Product Requirements	4 Pages
Section 01 77 00 Contract Closeout	4 Pages

#### Division 02 – Existing Conditions

02 08 00 Asbestos Abatement - Roofing	Pages
02 41 00 Demolition	Pages

Division 3 (Not Used)

#### Division 04 – Masonry

04 05 00 Masonry Restoration	Pages
------------------------------	-------

Division 5 (Not Used)

#### Division 06 – Wood, Plastic and Composites

06 10 63 Carpentry	Pages
--------------------	-------

#### Division 07 – Thermal and Moisture Protection

07 22 00 Insulation	Pages
07 55 00 Roofing & Flashing	Pages
07 72 00 Roof Accessories	Pages

Division 8 Through Division 21 (Not Used)

Division 22 – Plumbing

22 00 01 Roof Drains

Pages

Division 23 – HVAC

23 00 01 Temporary Mechanical Disconnects

Pages

Division 26 – Electrical

26 00 01 Temporary Electrical Disconnects

Pages

SECTION 00020

INVITATION FOR BIDS

Sealed bids for furnishing the following item will be received at the Office of the Town Manager, 121 Glen Road, Wilmington, MA 01887, until the time specified below at which time the bids will be publicly opened and read:

ITEM

BID OPENING

Roof Replacement Project, Shawsheen Elementary School    April 7, 2022 @ 10:00 AM

Each Bid must be accompanied by a bid security consisting of a BID BOND, CASH, or, CERTIFIED CHECK issued by a responsible bank or trust company in the amount of 5% of the bid price.

Specifications and bid forms may be obtained electronically by visiting the Town of Wilmington website (<http://www.wilmingtonma.gov/purchasing-department>). Copies of the documents may be obtained from the **Russo Barr Associates, Inc., 55 Sixth Road, Suite 6, Woburn, MA 01801, 781-273-1537 x20**, for a non-refundable fee of \$100, plus \$35 for mailing (checks shall be made payable to Russo Barr Associates, Inc.).

Pre-Bid Conference and Site Visit will be held at the Shawsheen Elementary School, 298 Shawsheen Ave., Wilmington, MA on Wednesday, March 30, 2022 at 9:00 AM.

A performance bond in an amount equal to 100 percent of the total amount of the contract price with a surety company qualified to do business in the Commonwealth of Massachusetts will be required for the faithful performance of the contract, as well as a labor and materials bond in an amount equal to 100 percent of the total contract price.

All bids for this project are subject to applicable public bidding laws of Massachusetts, including G.L. c.149, § 44A through 44H, as amended.

Attention is directed to the minimum wage rates to be paid as determined by the Commissioner of Labor and Workforce Development and the weekly payroll record submittal requirements under the provisions of Massachusetts General Laws, Chapter 149, Section 26 through 27D inclusive.

Attention is further directed to the requirements of G.L. c.149, §44D requiring submission of a Division of Capital Asset Management approved Certificate of Eligibility and Update Statement with all bids. The DCAMM Prime Contractor Certification shall be **ROOFING**.

Selection of the contractor will be based upon bidder qualifications, including evidence of past performance in similar projects, and bid price. The contract will be awarded to the bidder deemed by the awarding authority to be the lowest responsible and eligible bidder.

The bidder agrees that its bid shall be good and may not be withdrawn for a period of 30 days, Saturdays, Sundays and legal holidays excluded, after the opening of the bids.

The Town reserves the right to waive any informalities, to accept or reject, in whole or in part any or all bids, or take whatever other action may be deemed to be in the best interest of the Town.

The Town of Wilmington  
By: Jeffrey Hull, Town Manager

SECTION 00100

INSTRUCTIONS TO BIDDERS

1. Receipt and Opening of Bids

The Town of Wilmington, Massachusetts, herein called the Owner or Awarding Authority, acting by and through its Town Manager, will receive sealed Bids for the project known as:

**Roof Replacement Project at Shawsheen Elementary School.**

This Project is subject to the public bidding statutes, G.L. c. 149, §§44A-44H. General bids addressed to the Town Manager and endorsed "Bid for Roof Replacement Project at Shawsheen Elementary School" will be received at the Office of the Town Manager until 10:00 a.m. prevailing time, on April 7, 2022, at which time and place said bids will be publicly opened and read aloud.

Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified will not be considered. The bidder agrees that its bid shall be good and may not be withdrawn for a period of 30 days, Saturdays, Sundays, and legal holidays excluded, after the opening of bids.

2. Location and Work to be Done

The Work consists of re-roofing of the existing low-sloped roofing systems utilizing a "tear-off" application. A new adhered EPDM roof membrane system (60-mil minimum thickness) is specified and detailed complete with a manufacturer's 20-year full system warranty. Removal of the existing adhered EPDM roof membrane system and installation of an adhered EPDM roof membrane system to include rigid board roof insulation (polyisocyanurate), flashings (membrane & sheetmetal), roof drainage replacement and repairs, vent pipe extensions, new roof hatch safety railing, new safety railings, walkway pads, repairs to deteriorated roof decking (i.e. steel and lightweight), and repairs to deteriorated wood blocking.

The location, general characteristics, and principal details of the Work are indicated on plans and specifications entitled: Roof Replacement Project, Shawsheen Elementary School, dated March 23, 2022.

Additional drawings showing details in accordance with which the Work is to be done may be furnished by addendum from time to time during the bidding period by the Owner or its Architect/Engineer, and shall then become a part of the Contract Documents.

The Contractor shall furnish all labor, services, materials, equipment, plant, machinery, apparatus, appliances, tools, supplies, and all other things necessary to do all work required for the completion of each item of the Work and as herein specified.

The Work to be done and paid for under any item shall not be limited to the exact extent mentioned or described but shall include all incidental work necessary or customarily done for the completion of that item.

3. Preparation of Bid

Each bid must be submitted on the prescribed form. All blank spaces for bid prices must be filled in, in ink or typewritten, in both words and figures.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, his address, and endorsed with the name of the project as specified in Receipt and Opening of Bids, above. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified in Receipt and Opening of Bids, above.

4. Bid Opening Procedure

The following list of requirements shall apply to each filed bid. Bids not meeting all the requirements for timeliness and security will be rejected; bids not meeting signature and addenda requirements will be rejected prior to checking of bid amounts.

Bids shall be filed at the place and before the time specified in Receipt and Opening of Bids, above.

Properly executed bid security shall be placed in a sealed envelope and shall be attached to the outside of the envelope containing the bid.

Bid signatures will be checked.

All addenda will be sent by e-mail to all prospective bidders.

The total dollar amount of each bid will be read.

5. Modification

Any bidder may modify his bid by written communication at any time prior to the scheduled closing time for receipt of bids. Any telegraphic communication must be received by the Owner prior to the closing time, and provided further, the Owner must be satisfied that a written confirmation of the telegraphic modification over the signature of the bidder was mailed prior to the closing time. If written confirmation is not received within two days from the closing time, no consideration will be given to a telegraphic communication.

The communication shall not reveal the bid price but shall provide the addition or subtraction or other modification so that the final prices or terms will not be known by the Owner until the sealed bid is opened.

6. Ability and Experience of Bidder

No award will be made to any bidder who cannot satisfy the Owner that he has sufficient ability and experience in this class of work and sufficient capital and plant to enable him to prosecute and complete the work successfully within the time named. The Owner's decision or judgment on these matters will be final, conclusive, and binding.

The Owner may make such investigations as it deems necessary, and the bidder shall furnish to the Owner, under oath if so required, all such information and data for this purpose as the Owner may request.

7. Conditions of Work

Each bidder must familiarize himself fully with the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of his obligation to furnish all material and labor necessary to carry out the provisions of his contract. Insofar as possible the Contractor, in carrying out his work, must employ such methods or means as will not cause any interruption of or interference with the work of any other Contractor.

8. Addenda and Interpretations

No interpretation of the meaning of the plans, specifications or other pre-bid documents will be made to any bidder orally. All information given to bidders other than by means of the plans, specifications, or by addenda, as described below, is given informally and shall not be used as the basis of a claim against the Owner.

Every request for such interpretation should be in writing addressed to Richard Gorham, Russo Barr Associates, Inc., 55 Sixth Rd., Suite 6, Woburn, MA 01801, and to be given consideration must be received at least seven days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, when issued, will be emailed to all prospective bidders (at the respective email address furnished by them for such purposes). Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the Contract Documents.

9. Security for Faithful Performance

Simultaneously with his delivery of the executed Contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor and materials under this contract as specified in



Section 00700, GENERAL CONDITIONS included herein. The surety on such bond or bonds shall be a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the Owner. The bonds shall remain in force for one year after final acceptance of the work by the Owner, unless the Owner, in writing, releases the Contractor from the obligation sooner.

10. Power of Attorney

Attorneys-in-fact who sign Contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

11. Laws and Regulations

The bidder's attention is directed to the fact that all applicable State laws, municipal ordinances or bylaws, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though written out in full. Attention is directed to Section 00850 and to other applicable sections of the Contract Documents.

**GOALS FOR PARTICIPATION BY MINORITY BUSINESS ENTERPRISES AND WOMEN BUSINESS ENTERPRISES (EXECUTIVE ORDER 390, M.G.L. c. 7, s. 40N)**

**The applicable goals for minority business enterprise (MBE) and woman business enterprise (WBE) participation established for this Contract are as follows:**

**MBE/WBE: Combined 10.4 % of the Contract Price.**

**A. MBE AND WBE PARTICIPATION**

1. The apparent low Bidder's compliance with the requirements of this Section is a prerequisite for receiving the Award of the Contract.
2. The MBE and WBE participation goals for this Contract are as set forth above. The Awarding Authority reserves the right to reduce or waive the MBE or WBE participation goals established for this Contract upon written request made by a general Bidder within the time frame set forth in paragraph 9 below. Such written request must demonstrate to the satisfaction of the Awarding Authority that it is not feasible for a non-MBE or non-WBE general Bidder to meet the goals established for this Contract based upon any or all of the following: (i) actual MBE/WBE availability, (ii) the geographic location of the project to the extent related to MBE/WBE availability, (iii) the scope of the work, (iv) the percentage of work available for subcontracting to MBE/WBEs and/or (v) other relevant factors, including a documented inability by the prospective Bidder to obtain commitments from MBE/WBE subcontractors sufficient to meet the MBE/WBE goals after having made a diligent, good faith effort to do so. All of the foregoing documentation shall accompany the Bidder's request for a reduction or waiver of the MBE/WBE participation goals. Such documentation shall include, at a minimum, the following:
3. A list of all items of work under the Contract that the Bidder made available for subcontracting to MBE/WBEs. The Bidder shall identify all items of work, other than work to be performed by filed sub-Bidders, that the Bidder did not make so available and shall state the reasons for not making such work available for subcontracting to

MBE/WBEs. The Bidder shall also demonstrate that, where commercially reasonable, subcontracts were divided into scopes or tasks capable of being performed by MBE/WBEs.

4. Evidence that the Bidder sent written notices soliciting Bids or proposals to perform the items of work made available by the Bidder for subcontracting to all MBE/WBEs qualified to perform such work. The Bidder shall identify (i) each MBE/WBE solicited, and (ii) each MBE/WBE listed in the Massachusetts Supplier Diversity Office ("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.
5. Evidence that the Bidder made reasonable efforts to follow up the 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.
6. 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.
7. Evidence of reasonable efforts made, if any, to assist MBE/WBEs that needed assistance in obtaining bonding or insurance, or lines of credit with suppliers if the inability of MBE/WBEs to obtain bonding, insurance, or lines of credit is the reason given for the Bidder's inability to meet the MBE/WBE goals.
8. The Bidder may also submit any other information supporting its request for a waiver or reduction in the MBE/WBE participation goals, including without limitation evidence that the 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 actions that could reasonably be expected to achieve the MBE/WBE participation goals.
9. If filed Sub-Bids are solicited for this Contract, requests from prospective general Bidders to reduce or waive the MBE/WBE participation goals for this Contract must be received by the Awarding Authority no later than five (5) working days after the list of filed sub-Bidders is mailed 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) calendar 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.** Any reduction or waiver of the MBE/WBE participation goals for this Contract will be made by written addendum mailed to all persons who have taken out plans for the project.
10. No later than five (5) working days after the opening of general Bids, the apparent low Bidder shall submit the following documents to the Awarding Authority's Affirmative Marketing Construction Officer (AMCO): (i) 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, (ii) a completed Letter of Intent in the form provided by the Awarding Authority for each MBE/WBE listed in the Schedule for Participation, and (iii) a SDO most recent 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.

11. Each Letter of Intent shall identify and describe the work to be performed by the named MBE/WBE (the "MBE/WBE Work") with enough specificity to permit the Awarding Authority to identify the particular items of contract work that the MBE/WBE will perform 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 as determined by the Awarding Authority.
12. Within five (5) working days after receipt of the Schedule for MBE/WBE Participation, Letters of Intent, and SDO most recent 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.
13. The Bidder's attention is called to the General Conditions of the Contract which requires the Contractor to submit, within thirty (30) days of the Contract Date, 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.
14. A filed sub-Bidder is not required to submit a Schedule of MBE/WBE Participation with its Bid. A filed sub-Bidder may, at its option, 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-subcontracting 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.

12. Liquidated Damages for Failure to Enter into Contract

The successful bidder, upon his failure or refusal to execute and deliver the Contract and bonds required within 10 days after presentation thereof by the Owner, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his/her bid, but the amount forfeited shall not exceed the difference between his/her bid price and the bid price of the next lowest responsible and eligible bidder. In case of death, disability, bona fide clerical or mechanical error of a substantial nature, or other similar unforeseen circumstances affecting the bidder, his/her bid deposit will be returned.

13. Obligation of Bidder

At the time of the opening of bids, each bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the Contract Documents (including all addenda). The failure or omission of any bidder to examine any form, instrument, or document shall in no way relieve any bidder from any obligation in respect of his bid.

14. Information Not Guaranteed

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

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

If it is further agreed and understood that no bidder or Contractor shall use or be entitled to use any of the information made available to him or obtained in any examination made by him in any manner as a basis of or ground for any claim or demand against the Owner or the Architect/Engineer, arising from or by reason of any variance which may exist between the information made available and the actual subsurface or other structures actually encountered during the construction work, except as may otherwise be expressly provided for in the Contract Documents.

15. Bid Security

Each bid and sub-bid must be accompanied by bid security in the form of a certified check, a bid bond, cash, or a treasurer's or cashier's check, payable to the Owner, in the amount of five (5) percent of the value of the bid. Such security of general bidders will be returned to all except the three lowest responsible and eligible bidders within five days, Saturdays, Sundays, and legal holidays excluded, after the opening of bids, and the remaining securities will be returned promptly after the Owner and the accepted bidder have executed the Contract, or if no notice of intent to award has been presented to the selected contractor within 30 days, Saturdays, Sundays and holidays excluded, after the date of the opening of bids, upon demand of the bidder at any time thereafter. Bid security of sub-bidders, except that of the sub-bidders named in the general bids of the three lowest responsible and eligible general bidders and those of the three lowest responsible and eligible sub-bidders for each sub-trade, shall be returned within five (5) days, Saturdays, Sundays and legal holidays excluded. After the opening of general bids, the bid security of the sub-bidders not returned as aforesaid, shall be returned within five (5) days, Saturdays, Sundays and legal holidays excluded, after the execution of the General Contract.

16. Right to Reject Bid

The Owner reserves the right to waive any informalities in bids and to reject any and all bids, should the Owner deem it to be in the public interest to do so.

The Owner may also reject bids which in its sole judgment are either incomplete, conditional, obscure or not responsive or which contain additions not called for, erasures not properly initialed, alterations, or similar irregularities.

17. Time for Completion

The successful general bidder must agree to commence work within ten (10) days of the date of the Notice to Proceed and to fully complete the project within the time limit stated in Section 00300, FORM OF GENERAL BID.

18. Comparison of Bids

Bids will be compared on the basis of prices set forth in the bid forms.

In the event that there is a discrepancy between the lump sum or unit prices written in words and figures, the prices written in words will govern.

19. Award of Contract

The Contract will be awarded to "the lowest responsible and eligible bidder" pursuant to General Laws Chapter 149, Section 44A(2), as amended. Such a bidder shall possess the skill, ability and integrity necessary for the faithful performance of the work, shall be able to furnish labor that can work in harmony with all other elements of labor employed, or to be employed, in the work, and shall otherwise comply with all applicable provisions of law. Contract award shall be subject to availability of an appropriation for funding.

20. Statutes Regulating Competitive Bidding

Any bid which does not comply with the provisions of Massachusetts General Laws Chapter 149, Sections 44A through 44H, as amended, need not be accepted and the Owner may reject every such bid.

21. Wage Rates

Prevailing Wage Rates as determined by the Commissioner of the Department of Labor and Workforce Development under the provision of the Massachusetts General Laws, Chapter 149, Section 26 to 27G, as amended, apply to this project. It is the responsibility of the bidder, before bid opening, to request any additional information on Prevailing Wage Rates for those tradespeople who may be employed for the proposed work under this contract.

State schedules of Prevailing wage rates are included in the Supplemental General Conditions section of the Contract Documents.

22. Contractor Records

The Contractor shall comply with the provisions of Massachusetts General Laws, Chapter 30, Section 39R concerning Contractor records.

23. Insurance

The Contractor shall carry and continuously maintain until completion of the Contract, insurance as specified in the General Conditions and in such form as shall protect him performing work covered by this Contract, and the Town of Wilmington and its employees, agents and officials, from all claims and liability for damages for bodily injury, including accidental death, and for property damage, which may arise from operations under this Contract. The City/Town shall be named as an additional insured. The Contractor covenants and agrees to hold the City/Town and its employees, agents and officials harmless from loss or damage due to claims for bodily injury or death and/or property damage arising from, or in connection with, operations under this Contract.

25. Project Manager

In addition to a project Architect/Engineer, the Owner may utilize the services of a project manager, whose duties shall be as set forth in the Agreement for Project Manager Services.

21. Certificate of Eligibility and Update Statement

In accordance with G.L. c.149, §44D, every bid and sub-bid must be accompanied by a copy of a certificate of eligibility issued by the Division of Capital Asset Management showing that the bidder or sub-bidder has the classification and capacity rating to perform the work required. An appropriate update statement must also be provided with each bid. Any bid or sub-bid submitted without an appropriate certificate of eligibility or update statement shall be invalid.

SECTION 00300

FORM OF GENERAL BID

Bid of \_\_\_\_\_ (hereinafter called "Bidder")\*

(\_\_\_\_) a corporation, organized and existing under the laws of the state of  
\_\_\_\_\_

(\_\_\_\_) a partnership

(\_\_\_\_) a joint venture

(\_\_\_\_) an individual  
doing business as \_\_\_\_\_

To the Town of Wilmington, Massachusetts (hereinafter called "Owner").

Gentlemen:

A) The undersigned Bidder, in compliance with your invitation for bids for the project known as Roof Replacement Project at Shawsheen Elementary School, having examined the plans and specifications and related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the contract documents and the plans and specifications within the time set forth below, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the contract documents, of which this bid is a part.

The Bidder hereby agrees to commence work on or before the date to be specified in written "Notice to Proceed" of the Owner, and to substantially complete the project by August 1, 2022. The Bidder further agrees to pay as liquidated damages the sum of One thousand (\$1,000) Dollars for each consecutive calendar day thereafter that the work is not complete as provided in Section 00700 GENERAL CONDITIONS.

\_\_\_\_\_  
\*Specify corporation, partnership or individual as applicable.

B) Bidder acknowledges receipt of, and this bid includes the following addenda:

No. \_\_\_\_\_ Dated: \_\_\_\_\_

No. \_\_\_\_\_ Dated: \_\_\_\_\_

No. \_\_\_\_\_ Dated: \_\_\_\_\_

No. \_\_\_\_\_ Dated: \_\_\_\_\_

C) BASE BID: The Bidder agrees to perform the work described in the specifications and shown on the plans for the following contract price: \$ \_\_\_\_\_  
\_\_\_\_\_ ( \_\_\_\_\_ ).

The undersigned agrees that, if he is selected as general contractor, he will within five days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the awarding authority, execute a contract in accordance with the terms of this bid and furnish a performance bond and also a labor and materials or payment bond, each of a surety company qualified to do business under the laws of the commonwealth and satisfactory to the awarding authority and each in the sum of the contract price, the premiums for which are to be paid by the general contractor and are included in the contract price; provided, however, that if there is more than one 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 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 understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

The Bidder agrees that this bid shall be good and may not be withdrawn for a period of 30 days, Saturdays, Sundays and legal holidays excluded, after the opening of bids.

Bid security is attached in the sum of five percent (5%) of the total bid in accordance with the conditions of Section 00100 INSTRUCTIONS TO BIDDERS. The bid security may become the property of the Owner in the event the contract and bonds are not executed within the time set forth above.

The selected Contractor shall furnish a performance bond and a payment bond in an amount at least equal to one hundred percent (100%) of the contract price in accordance with Section 00610 PERFORMANCE BOND, Section 00620 PAYMENT BOND, and as stipulated in the contract.

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

1. Have been in business under present name for \_\_\_\_ years.
2. The names and addresses of all persons interested in the bid (if made by a partnership or corporation) as principals, are as follows:

---

---

---

---

---

---

---

(attach supplementary list if necessary)

3. The bidder is requested to state below what work of a similar character to that included in the proposed contract he has done, and give references that will enable the Owner to judge his experience, skill and business standing (add supplementary page if necessary).

<u>Completion Date</u>	<u>Project Name</u>	<u>Contract Amount</u>	<u>Design Architect</u>	<u>Reference Name</u>	<u>Telephone No.</u>
----------------------------	-------------------------	----------------------------	-----------------------------	---------------------------	--------------------------

a. \_\_\_\_\_

\_\_\_\_\_

b. \_\_\_\_\_

\_\_\_\_\_

c. \_\_\_\_\_

\_\_\_\_\_

d. \_\_\_\_\_

\_\_\_\_\_

e. \_\_\_\_\_

\_\_\_\_\_

f. \_\_\_\_\_

\_\_\_\_\_

Pursuant to M.G.L. CH. 62C, Sec. 49A, I certify hereby in writing, under penalties of perjury, that the within named Bidder/Contractor has complied with all laws of the commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting of child support.

The undersigned Bidder hereby certifies under penalties of perjury, as follows: (1) that he/she is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (2) that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and (3) that all employees to be employed in the work subject to this 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 10 hours in duration.

The undersigned certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this paragraph the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

The undersigned bidder hereby certifies, under pains and penalties of perjury, that the foregoing bid is based upon the payment to laborers to be employed on the project of wages in an amount no less than the applicable prevailing wage rates established for the project by the Massachusetts Department of Labor and Workforce Development. The undersigned bidder agrees to indemnify the awarding authority for, from and against any loss, expense, damages, actions or claims, including any expense incurred in connection with any delay or stoppage of the project work arising out of or as a result of (1) the failure of the said bid to be based upon the payment of the said applicable prevailing wage rates or (2) the failure of the bidder, if selected as the contractor, to pay laborers employed on the project the said applicable prevailing wage rates.

Respectfully submitted:

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

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

(Signature)

\_\_\_\_\_  
(Type Name of Bidder)

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

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

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

\_\_\_\_\_  
(Telephone Number)

SECTION 00500

AGREEMENT

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

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

1. Scope of Work

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

2. Contract Price

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

3. Commencement and Completion of Work and Liquidated Damages

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

A. Definition of Term: The Term "Substantial completion" shall mean the date certified by the Owner when construction is sufficiently complete, in accordance with the Contract Documents, so the Owner may occupy the project, or designated portion(s) thereof, for the use for which it is intended.

B. Time as Essential Condition: It is understood and agreed that the commencement of and substantial completion of the work are essential conditions of this Agreement. It is further agreed that time is of the essence for each and every portion of the Contract Documents wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract Documents any additional time is

allowed for the completion of any work, the new time fixed by such extension shall be of the essence of this Agreement. It is understood and agreed that the times for the completion of the work are reasonable, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

- C. Progress and Completion: Contractor shall commence work promptly upon execution of this Agreement and shall prosecute and complete the work regularly, diligently and uninterruptedly at such a rate of progress as will insure Substantial Completion within the stipulated number of calendar days.
- D. Liquidated Damages: It is expressly agreed between the Contractor and the Owner that the Contractor will be responsible for all damages which may arise due to the Contractor's failure to substantially complete the work within the above specified time. If the Contractor shall neglect, fail or refuse to complete the work within the specified number of days, or any extension thereof authorized by the Owner, Contractor agrees, as a part of the consideration for the execution of this Contract by the Owner, to pay the Owner the amount specified herein, not as a penalty, but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day, excluding Saturdays, Sundays and legal Holidays, that the Contractor shall be in default of Substantial completion after the date specified in the Agreement. Due to the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, said amount is agreed to be the amount of damages which the Owner would sustain, and said amount shall be retained from time to time by the Owner from current periodic estimates. The amount of liquidated damages shall be \_\_\_\_\_ per day.

4. Performance of the Work

- A. Direction of the Work: The Contractor shall supervise and direct the Work, using his best skills and attention which shall not be less than such state of skill and attention generally rendered by the contracting profession for projects similar to the Project in scope, difficulty and location. The Contractor shall maintain adequate supervisory personnel at the project site during the performance of the Work. He shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Agreement.
- B. Responsibility for the Work: (1) The Contractor shall be responsible to the Owner for the acts and omissions of his employees, Subcontractors and their agents and employees, and other persons performing any of the Work under a contract with the Contractor. This obligation shall also extend to the presence on the Site of suppliers of materials or equipment, their employees, contractors, and agents engaged in the work.  
  
(2) The Contractor shall not be relieved from his obligations to perform the Work in accordance with the Contract Documents either by the activities or duties of the Owner in its administration of the Agreement, or by inspections, tests or approvals required or performed by persons other than the Contractor.

- C. Permits and Fees: Unless otherwise expressly provided, the Contractor shall secure and pay for all permits and fees, licenses and inspections necessary for the proper execution and completion of the Work which are customarily secured after execution of the Agreement and which are legally required at the time the bids are received, and the same shall at all times be the property of the Owner and shall be delivered to the Owner upon completion of the Project.
- D. Notices, Compliance With Laws: (1) The Contractor shall give all notices and comply with all federal, state and local laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the performance of the Work. The Contractor shall provide the Owner with reproductions of all permits, licenses and receipts for any fees paid. The Owner represents that it has disclosed to the Contractor all orders and requirements known to the Owner of any public authority particular to this Agreement.
- (2) If the Contractor observes that any of the Contract Documents are at variance with applicable laws, statutes, codes and regulations in any respect, he shall promptly notify the Owner in writing, and any necessary changes shall be accomplished by appropriate modification.
- (3) If the Contractor performs any Work which he knows or should know is contrary to such laws, ordinances, rules and regulations, and without such notice to the Owner, he shall assume full responsibility therefor and shall bear all costs attributable thereto.
- (4) In the performance of the Work, the Contractor shall comply with all applicable federal, state and local laws and regulations including those relating to workplace and employee safety. The Contractor shall notify the Owner immediately of any conditions at the place of the work which violate said laws and regulations and shall take prompt action to correct and eliminate any such violations.
- E. Project Superintendent: The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site at all times during the progress of the Work. The superintendent shall represent the Contractor and all communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be so confirmed on written request in each case.
- F. Progress Schedule: The Contractor, immediately after being awarded the Contract, shall prepare and submit for the Owner's information an estimated progress schedule for the Work. The progress schedule shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.
- G. Drawings, Specifications and Submittals:
- (1) The Contractor shall maintain at the site for the Owner one record copy of all Drawings, Specifications, Addenda, Change Orders and other Modifications, and "As-Built" Drawings and Specifications in good order and marked currently to record all changes made during construction, and approved Shop Drawings,

Product Data and Samples. These shall be delivered to the Owner upon completion of the Work.

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

(3) The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Owner's approval of Shop Drawings, Product Data or Samples unless the Contractor has specifically informed the Owner in writing of such deviation at the time of submission and the Owner has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility for errors or omissions in the Shop Drawings, Product Data or Samples by the Owner's approval thereof.

(4) The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data or Samples, to revisions other than those requested by the Owner on previous submittals.

(5) No portion of the Work requiring submission of a Shop Drawing, Product Data or Sample shall be commenced until the submittal has been approved by the Owner. All such portions of the Work shall be in accordance with approved submittals.

- H. Protection of the Work and Owner's Property: The Contractor shall at all times safely guard the Owner's property from injury or loss in connection with this Agreement. He shall at all times safely guard and protect his own work, and that of adjacent property from damage. The Contractor shall replace or make good any such damage, loss or injury. The Contractor shall clean the work area and restore it to its original condition upon completion of the work.
- I. Quality of the Work: The Contractor shall perform the work in a good, workmanlike manner. The Contractor hereby guarantees that the entire work constructed by him under the Agreement will meet fully all requirements thereof as to quality of workmanship and materials. The Contractor hereby agrees to make at his own expense any repairs or replacements made necessary by defects in materials or workmanship supplied to him that become evident within one (1) year after the date of the final payment, and to restore to full compliance with the requirements set forth herein any part of the work constructed hereunder, which during said one (1) year period is found to be deficient with respect to any provisions of the Contract Documents. The Contractor also agrees to hold the Owner harmless from claims of any kind arising from damage due to said defects. The Contractor shall make all repairs and replacements promptly upon receipt of written orders for same from the Owner. If the Contractor fails to make the repairs and replacements promptly, the Owner may do the work and the Contractor shall be liable to the Owner for the cost thereof.

J. Warranty: The Contractor guarantees to Owner that all materials incorporated into the work will be new unless otherwise specified or agreed. Prior to final payment, the Contractor shall deliver to the Owner all manufacturers' warranties, together with such endorsements or assignments as are necessary to ensure to the Owner the full rights and benefits of such warranties.

5. Affirmative Action/Equal Employment Opportunity

The Contractor is directed to comply with all applicable State Laws, Ordinances, Bylaws, and rules and regulations regarding affirmative action/equal employment opportunity requirements. Failure of the Contractor to comply with any such law, rule or regulation shall constitute grounds for the Owner to terminate the Agreement.

6. Site Information Not Guaranteed; Contractor's Investigation

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

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

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

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

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



7. Project Architect or Engineer

There \_\_\_ is \_\_\_ is not a project architect-engineer for this project who is \_\_\_\_\_ . Except as otherwise indicated in the Contract Documents, the Architect/Engineer shall be a representative of the Owner and the Contractor shall direct all communications, questions and comments on the work and the performance thereof to the Architect/Engineer. Except as otherwise provided, the Architect/Engineer shall have all the authority of the Owner set forth in the Contract Documents. In general, the Architect/Engineer shall have the authority to review the performance of the work, reject work which is defective or otherwise does not comply with the Contract Documents and to order the Contractor to remedy defective work and take such actions which are necessary to make the work conform to the Contract Documents.

8. Wage Rates

Prevailing Wage Rates as determined by the Commissioner of the Department of Labor and Workforce Development under the provisions of Massachusetts General Laws, Chapter 149, Section 26 to 27G, as amended, apply to this project. It is the responsibility of the Contractor to provide the Town with certified payrolls and to comply with all requirements of the above-cited statutes.

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

9. Payments to the Contractor

Within fifteen (15) days after receipt from the Contractor of a proper and satisfactory periodic estimate requesting payment of the amount due for the preceding month, the Owner shall have fifteen (15) days to make payment for:

- A. The work performed during the preceding month.
- B. The materials not incorporated in the Work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the Contractor has title, or to which a Subcontractor has title and has authorized the Contractor to transfer title to the Owner.
- C. Less the following retention items:
  - 1. A retention based on an estimate of the fair value of the Owner's claims against the Contractor.
  - 2. A retention for direct payments to Subcontractors, if any, based on demands for same in accordance with the provisions of Section 39F of Chapter 30 of the General Laws.
  - 3. A retention not exceeding five percent (5%) of the approved amount of the periodic payment.

- D. After the receipt of a periodic estimate requesting final payment and within sixty-five (65) days after the Contractor fully completes the Work, or substantially completes the Work so that the value of the Work remaining to be done is, on the estimate of the Owner, less than 1% of the original Contract Price, or substantially completes the Work and the Owner takes possession or occupancy, whichever occurs first, the Owner shall pay the Contractor the entire balance due on the Contract less:
1. A retention based on an estimate of the fair value of the Owner's claims against the Contractor and of the cost of completing the incomplete and unsatisfactory items of work.
  2. A retention for direct payments to Subcontractors, if any, based on demands of same in accordance with the provisions of Section 39F of Chapter 30 of the General Laws, or based on the record of payments by the Contractor to the Subcontractors under this Contract if such record of payment indicates that the Contractor has not paid Subcontractors as provided in Section 39F of Chapter 30 of the General Laws.

If the Owner fails to make payment as herein provided, there shall be added to each such payment, daily interest at the rate of 3 percentage points above the rediscount rate than charged by the Federal Reserve Bank of Boston, commencing on the first day after said payment is due, and continuing until the payment is delivered or mailed to the Contractor; provided that no interest shall be due, in any event, on the amount of a periodic estimate for final payment until fifteen (15) days after receipt of such a periodic estimate by the Owner as provided in the first paragraph of this Article. The Contractor agrees to pay to each subcontractor a portion of any such interest paid in accordance with the amount due each subcontractor.

The Owner 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, and such changes and any requirements for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made, as provided herein; provided further, that the Owner may, within seven (7) days after receipt, return to the Contractor for correction, any periodic estimate which is not in acceptable 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.

- E. Changes in the Work: No changes in the work covered by the approved Contract Documents shall be made without prior written approval of the Owner. Charges or credits for the work covered by the approved change shall be determined by one or more, or a combination of the following methods:
- (a) Unit bid prices previously approved.
  - (b) An agreed lump sum.

- (c) The actual cost of:
  - (1) Labor.
  - (2) Materials entering permanently into the work.
  - (3) The ownership or rental cost of construction equipment during the time of use on the extra work.
  - (4) Power and consumable supplies for the operation of power equipment.
  - (5) Wages to be paid.

To the cost under (c) there shall be added a fixed fee to be agreed upon but not to exceed fifteen percent (15%) of the actual cost of work. The fee shall be compensation to cover the cost of supervision, overhead, bond, profit and any other general expenses.

- F. Claims for Additional Costs: If the Contractor wishes to make a claim for an increase in the Contract Sum, he shall give the Owner written notice thereof within twenty days after the occurrence of the event giving rise to such claim. This notice shall be given by the Contractor before proceeding to execute the Work, except in an emergency endangering life or property. No such claim shall be valid unless so made. Any change in the Contract Sum resulting from such claim shall be authorized by Change Order.

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

10. Final Payment, Effect

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

11. Contract Documents

The Contract Documents consist of the following, together with this Agreement:

Invitation to Bid  
Instructions to Bidders  
This Contract Form  
Bid Form

Performance Bond  
Labor & Materials Payment Bond  
Non-Collusion Certificate  
Tax Compliance Certificate  
Clerk's Certificate of Corporate Vote  
Certificate of Insurance  
General Conditions  
Supplementary General Conditions  
General Requirements  
Specifications and Addenda  
Contract Drawings  
Schedule of Prevailing Wages  
(Strike out any inapplicable item)

12. Terms Required By Law

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

13. Indemnification

The Contractor shall indemnify and hold harmless the Owner from and against any and all claims, damages, losses, and expenses, including attorney's fees, arising out of the performance of this Agreement when such claims, damages, losses, and expenses are caused, in whole or in part, by the acts, errors, or omissions of the Contractor or his employees, agents, subcontractors or representatives.

14. Insurance

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

- .1 claims under workers' or workmen's compensation, disability benefit and other applicable employee benefit acts;
- .2 claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
- .3 claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
- .4 claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or (2) by any other person;

- .5 claims for damages, including damages to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom; and
- .6 claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- .7 claims involving contractual liability applicable to the Contractor's obligations under Article 13.

The limits of liability for coverage required under the preceding paragraph shall be as Specified in the Supplemental Conditions.

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

15. Notice

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

16. Termination

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

17. Miscellaneous

- A. Royalties and Patents: The Contractor shall pay all royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall save the Owner

harmless from loss on account thereof, except that the Owner shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer or manufacturers is specified; but if the Contractor believes or has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Owner, and thereafter the Owner insists on the use of the design, process or products specified.

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

[Remainder of page intentionally blank.]

AGREED:

**TOWN OF \_\_\_\_\_, MASSACHUSETTS**  
(Owner)

By its \_\_\_\_\_

\_\_\_\_\_

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

By \_\_\_\_\_

\_\_\_\_\_

(Name)

\_\_\_\_\_

(Title)

\_\_\_\_\_

(Address)

\_\_\_\_\_

(City and State)

Approved as to Form:

By \_\_\_\_\_

(Owner's Counsel)

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

By \_\_\_\_\_

(Owner's Accountant)

\_\_\_\_\_

(Name)

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

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

and acting Secretary of \_\_\_\_\_ and I further certify that a meeting of the  
(Name of Corporation)

Directors of said Company, duly called and held on \_\_\_\_\_, at which  
(Date of Meeting)

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

VOTED: To authorize and empower

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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

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

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

A True Copy:

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

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



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

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

**TAX COMPLIANCE**

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

---

**NON-COLLUSION**

The undersigned certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

---

**PUBLIC CONTRACTOR DEBARMENT**

The undersigned certifies under penalty of perjury that the below named contractor is not presently debarred from doing public construction work in the commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

---

**OSHA TRAINING**

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

- (1) Contractor is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work;
- (2) All employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and they shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and
- (3) All employees to be employed in the work subject to this contract have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration.

**COMPLETE AND SIGN BELOW:**

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

\_\_\_\_\_  
Date

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

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

SECTION 00610

PERFORMANCE BOND

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

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

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

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

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

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

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

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

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

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

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

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

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



SECTION 00620

PAYMENT BOND

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

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

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

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

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

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

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

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

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

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

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

ATTEST:

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

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

**SECTION 00800**

**SUPPLEMENTAL CONDITIONS**

	<u>Page</u>
1. Introduction	2
2. Insurance Requirements	2

SECTION 00850 - Incorporation of Applicable Provisions of the Massachusetts General Laws

Attachment A - Wage Rates and Certificate  
of Compliance

**§ SC 1.1 INTRODUCTION**

The following provisions modify, change, delete from or add to Section 00500 Agreement. Where any Subsection of the Agreement is modified or any Article Paragraph, Subparagraph or Clause thereof is modified or deleted by these Supplemental Conditions, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in effect.

**§ SC 2.1 PREVAILING WAGE**

In accordance with General Laws Chapter 149, Section 26 through 27D, the Contractor is obligated to comply with the prevailing wage rates established by the Commissioner of the Department of Labor and Workforce Development for mechanics, apprentices, chauffeurs, teamsters and laborers employed on the Project. The schedule of applicable prevailing wage rates for the Project, together with a Certificate of Compliance therewith, are set forth in Attachment A herein.

**§ SC 3.1 CONTRACTOR'S LIABILITY INSURANCE**

In no case shall the limits of liability be less than the following:

1. Contractor's Liability Insurance
  - a. Workers' Compensation:
    1. State: Statutory
    2. Employer Liability:
      - \$ \_\_\_\_\_ Bodily Injury by Accident
      - \$ \_\_\_\_\_ Bodily Injury by Disease - policy limit
    3. \$ \_\_\_\_\_ Bodily Injury by Disease - each  
\$ \_\_\_\_\_ Umbrella Liability - all limits
  - b. Comprehensive General Liability (including Premises-Operations; Independent Contractor's Protective; Products and Completed Operations; Broad Form Property Damage):
    1. Bodily Injury:  
\$ \_\_\_\_\_ Each Occurrence  
\$ \_\_\_\_\_ Aggregate
    2. Products and Completed Operations  
\$ \_\_\_\_\_ Each Occurrence (bodily injury and property damage)  
\$ \_\_\_\_\_ Aggregate  
  
Products and Completed  
\$ \_\_\_\_\_ Operations
    3. Property Damage Liability (including coverage for XCU hazards).  
\$ \_\_\_\_\_ Each Occurrence  
\$ \_\_\_\_\_ Aggregate
    4. Products and Completed Operations insurance shall be maintained for a minimum period of 2 years after final payment and Contractor shall continue to provide evidence of such coverage to Owner on an annual basis during the aforementioned.
    5. Contractual Liability (Hold Harmless Coverage):



\$\_\_\_\_\_ Bodily Injury Each Occurrence  
\$\_\_\_\_\_ Property Damage Each Occurrence  
\$\_\_\_\_\_ Property Damage Aggregate

6. Personal Injury, with Employment Exclusion deleted:  
\$\_\_\_\_\_ All Limits

c. Comprehensive Automobile Liability (owned, non-owned, hired):

1. Bodily Injury  
\$\_\_\_\_\_ Each Person  
\$\_\_\_\_\_ Each Accident

2. Property Damage  
\$\_\_\_\_\_ Each Accident

d. Property Insurance / Builders Risk: the full Contact sum

e. Umbrella Liability Coverage  
\$\_\_\_\_\_ All Limits

## **SECTION 00850**

### Incorporation of Applicable Provisions of the Massachusetts General Laws

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

"ATTACHMENT A"  
[Wage Rates]



CHARLES D. BAKER  
Governor

KARYN E. POLITO  
Lt. Governor

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

Prevailing Wage Rates

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

ROSALIN ACOSTA  
Secretary  
MICHAEL FLANAGAN  
Director

**Awarding Authority:** Town of Wilmington  
**Contract Number:** **City/Town:** WILMINGTON  
**Description of Work:** Project includes the removal and replacement of the existing built-up roof with a new adhered EPDM roof system. Work also includes removal and replacement of the existing roof drains.  
**Job Location:** 298 Shawsheen Elementary School

---

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
<b>Construction</b>						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$35.95	\$13.41	\$16.01	\$0.00	\$65.37
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.02	\$13.41	\$16.01	\$0.00	\$65.44
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.14	\$13.41	\$16.01	\$0.00	\$65.56
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2021	\$36.16	\$9.10	\$16.64	\$0.00	\$61.90
	06/01/2022	\$37.06	\$9.10	\$16.64	\$0.00	\$62.80
	12/01/2022	\$37.91	\$9.10	\$16.64	\$0.00	\$63.65
	06/01/2023	\$38.81	\$9.10	\$16.64	\$0.00	\$64.55
	12/01/2023	\$39.71	\$9.10	\$16.64	\$0.00	\$65.45
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$36.16	\$9.10	\$16.64	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i>	12/01/2020	\$38.10	\$12.80	\$9.45	\$0.00	\$60.35
ASPHALT RAKER <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 2</i>	12/01/2021	\$36.16	\$9.10	\$16.64	\$0.00	\$61.90
	06/01/2022	\$37.06	\$9.10	\$16.64	\$0.00	\$62.80
	12/01/2022	\$37.91	\$9.10	\$16.64	\$0.00	\$63.65
	06/01/2023	\$38.81	\$9.10	\$16.64	\$0.00	\$64.55
	12/01/2023	\$39.71	\$9.10	\$16.64	\$0.00	\$65.45
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i> For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"	12/01/2021	\$36.16	\$9.10	\$16.64	\$0.00	\$61.90
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2020	\$46.10	\$7.07	\$17.98	\$0.00	\$71.15

**Apprentice - BOILERMAKER - Local 29**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$29.97	\$7.07	\$11.69	\$0.00	\$48.73
2	65	\$29.97	\$7.07	\$11.69	\$0.00	\$48.73
3	70	\$32.27	\$7.07	\$12.59	\$0.00	\$51.93
4	75	\$34.58	\$7.07	\$13.49	\$0.00	\$55.14
5	80	\$36.88	\$7.07	\$14.38	\$0.00	\$58.33
6	85	\$39.19	\$7.07	\$15.29	\$0.00	\$61.55
7	90	\$41.49	\$7.07	\$16.18	\$0.00	\$64.74
8	95	\$43.80	\$7.07	\$17.09	\$0.00	\$67.96

**Notes:**

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

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (LOWELL)</i>	02/01/2022	\$55.01	\$11.39	\$21.65	\$0.00	\$88.05
---	------------	---------	---------	---------	--------	---------

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

**Effective Date - 02/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.51	\$11.39	\$21.65	\$0.00	\$60.55
2	60	\$33.01	\$11.39	\$21.65	\$0.00	\$66.05
3	70	\$38.51	\$11.39	\$21.65	\$0.00	\$71.55
4	80	\$44.01	\$11.39	\$21.65	\$0.00	\$77.05
5	90	\$49.51	\$11.39	\$21.65	\$0.00	\$82.55

**Notes:**

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

BULLDOZER/GRADER/SCRAPER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
--	------------	---------	---------	---------	--------	---------

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$42.33	\$9.10	\$17.72	\$0.00	\$69.15
--	------------	---------	--------	---------	--------	---------

For apprentice rates see "Apprentice- LABORER"

CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$41.18	\$9.10	\$17.72	\$0.00	\$68.00
---	------------	---------	--------	---------	--------	---------

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$41.18	\$9.10	\$17.72	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	03/01/2022	\$44.78	\$8.58	\$19.82	\$0.00	\$73.18
	09/01/2022	\$45.43	\$8.58	\$19.82	\$0.00	\$73.83
	03/01/2023	\$46.03	\$8.58	\$19.82	\$0.00	\$74.43

**Apprentice - CARPENTER - Zone 2 Eastern MA**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.39	\$8.58	\$1.70	\$0.00	\$32.67
2	60	\$26.87	\$8.58	\$1.70	\$0.00	\$37.15
3	70	\$31.35	\$8.58	\$14.63	\$0.00	\$54.56
4	75	\$33.59	\$8.58	\$14.63	\$0.00	\$56.80
5	80	\$35.82	\$8.58	\$16.36	\$0.00	\$60.76
6	80	\$35.82	\$8.58	\$16.36	\$0.00	\$60.76
7	90	\$40.30	\$8.58	\$18.09	\$0.00	\$66.97
8	90	\$40.30	\$8.58	\$18.09	\$0.00	\$66.97

**Notes:**

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80  
Step 1&2 \$30.19/ 3&4 \$36.28/ 5&6 \$55.87/ 7&8 \$62.01

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

CARPENTER WOOD FRAME <i>CARPENTERS-ZONE 3 (Wood Frame)</i>	04/01/2021	\$23.16	\$7.21	\$4.80	\$0.00	\$35.17
	04/01/2022	\$23.66	\$7.21	\$4.80	\$0.00	\$35.67
	04/01/2023	\$24.16	\$7.21	\$4.80	\$0.00	\$36.17

All Aspects of New Wood Frame Work

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - CARPENTER (Wood Frame) - Zone 3**

**Effective Date - 04/01/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$13.90	\$7.21	\$0.00	\$0.00	\$21.11
2	60	\$13.90	\$7.21	\$0.00	\$0.00	\$21.11
3	65	\$15.05	\$7.21	\$0.00	\$0.00	\$22.26
4	70	\$16.21	\$7.21	\$0.00	\$0.00	\$23.42
5	75	\$17.37	\$7.21	\$3.80	\$0.00	\$28.38
6	80	\$18.53	\$7.21	\$3.80	\$0.00	\$29.54
7	85	\$19.69	\$7.21	\$3.80	\$0.00	\$30.70
8	90	\$20.84	\$7.21	\$3.80	\$0.00	\$31.85

**Effective Date - 04/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$14.20	\$7.21	\$0.00	\$0.00	\$21.41
2	60	\$14.20	\$7.21	\$0.00	\$0.00	\$21.41
3	65	\$15.38	\$7.21	\$0.00	\$0.00	\$22.59
4	70	\$16.56	\$7.21	\$0.00	\$0.00	\$23.77
5	75	\$17.75	\$7.21	\$3.80	\$0.00	\$28.76
6	80	\$18.93	\$7.21	\$3.80	\$0.00	\$29.94
7	85	\$20.11	\$7.21	\$3.80	\$0.00	\$31.12
8	90	\$21.29	\$7.21	\$3.80	\$0.00	\$32.30

**Notes:**

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80  
 Step 1&2 \$17.63/ 3&4 \$19.95/ 5&6 \$27.22/ 7&8 \$29.54

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

CEMENT MASONRY/PLASTERING BRICKLAYERS LOCAL 3 (LOWELL)	01/01/2020	\$45.23	\$12.75	\$22.41	\$0.62	\$81.01
---	------------	---------	---------	---------	--------	---------

**Apprentice - CEMENT MASONRY/PLASTERING - Lowell**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.62	\$12.75	\$15.41	\$0.00	\$50.78
2	60	\$27.14	\$12.75	\$17.41	\$0.62	\$57.92
3	65	\$29.40	\$12.75	\$18.41	\$0.62	\$61.18
4	70	\$31.66	\$12.75	\$19.41	\$0.62	\$64.44
5	75	\$33.92	\$12.75	\$20.41	\$0.62	\$67.70
6	80	\$36.18	\$12.75	\$21.41	\$0.62	\$70.96
7	90	\$40.71	\$12.75	\$22.41	\$0.62	\$76.49

**Notes:**

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

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



<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
<b>CHAIN SAW OPERATOR</b> <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
<b>CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES</b> <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$52.38	\$14.00	\$16.05	\$0.00	\$82.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>COMPRESSOR OPERATOR</b> <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$33.69	\$14.00	\$16.05	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>DELEADER (BRIDGE)</b> <i>PAINTERS LOCAL 35 - ZONE 2</i>	01/01/2022	\$53.66	\$8.65	\$23.05	\$0.00	\$85.36
	07/01/2022	\$54.86	\$8.65	\$23.05	\$0.00	\$86.56
	01/01/2023	\$56.06	\$8.65	\$23.05	\$0.00	\$87.76
	07/01/2023	\$57.26	\$8.65	\$23.05	\$0.00	\$88.96
	01/01/2024	\$58.46	\$8.65	\$23.05	\$0.00	\$90.16
	07/01/2024	\$59.66	\$8.65	\$23.05	\$0.00	\$91.36
	01/01/2025	\$60.86	\$8.65	\$23.05	\$0.00	\$92.56

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

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

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.83	\$8.65	\$0.00	\$0.00	\$35.48
2	55	\$29.51	\$8.65	\$6.27	\$0.00	\$44.43
3	60	\$32.20	\$8.65	\$6.84	\$0.00	\$47.69
4	65	\$34.88	\$8.65	\$7.41	\$0.00	\$50.94
5	70	\$37.56	\$8.65	\$19.63	\$0.00	\$65.84
6	75	\$40.25	\$8.65	\$20.20	\$0.00	\$69.10
7	80	\$42.93	\$8.65	\$20.77	\$0.00	\$72.35
8	90	\$48.29	\$8.65	\$21.91	\$0.00	\$78.85

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.43	\$8.65	\$0.00	\$0.00	\$36.08
2	55	\$30.17	\$8.65	\$6.27	\$0.00	\$45.09
3	60	\$32.92	\$8.65	\$6.84	\$0.00	\$48.41
4	65	\$35.66	\$8.65	\$7.41	\$0.00	\$51.72
5	70	\$38.40	\$8.65	\$19.63	\$0.00	\$66.68
6	75	\$41.15	\$8.65	\$20.20	\$0.00	\$70.00
7	80	\$43.89	\$8.65	\$20.77	\$0.00	\$73.31
8	90	\$49.37	\$8.65	\$21.91	\$0.00	\$79.93

**Notes:**

Steps are 750 hrs.

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

DEMO: ADZEMAN LABORERS - ZONE 2	12/01/2021	\$41.33	\$9.10	\$17.57	\$0.00	\$68.00
	06/01/2022	\$42.33	\$9.10	\$17.57	\$0.00	\$69.00
	12/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
	06/01/2023	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	12/01/2023	\$45.58	\$9.10	\$17.57	\$0.00	\$72.25

For apprentice rates see "Apprentice- LABORER"

DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS - ZONE 2	12/01/2021	\$42.33	\$9.10	\$17.57	\$0.00	\$69.00
	06/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
	12/01/2022	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	06/01/2023	\$45.33	\$9.10	\$17.57	\$0.00	\$72.00
	12/01/2023	\$46.58	\$9.10	\$17.57	\$0.00	\$73.25

For apprentice rates see "Apprentice- LABORER"

DEMO: BURNERS LABORERS - ZONE 2	12/01/2021	\$42.08	\$9.10	\$17.57	\$0.00	\$68.75
	06/01/2022	\$43.08	\$9.10	\$17.57	\$0.00	\$69.75
	12/01/2022	\$44.08	\$9.10	\$17.57	\$0.00	\$70.75
	06/01/2023	\$45.08	\$9.10	\$17.57	\$0.00	\$71.75
	12/01/2023	\$46.33	\$9.10	\$17.57	\$0.00	\$73.00

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 2</i>	12/01/2021	\$42.33	\$9.10	\$17.57	\$0.00	\$69.00
	06/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
	12/01/2022	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	06/01/2023	\$45.33	\$9.10	\$17.57	\$0.00	\$72.00
	12/01/2023	\$46.58	\$9.10	\$17.57	\$0.00	\$73.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2021	\$42.08	\$9.10	\$17.57	\$0.00	\$68.75
	06/01/2022	\$43.08	\$9.10	\$17.57	\$0.00	\$69.75
	12/01/2022	\$44.08	\$9.10	\$17.57	\$0.00	\$70.75
	06/01/2023	\$45.08	\$9.10	\$17.57	\$0.00	\$71.75
	12/01/2023	\$46.33	\$9.10	\$17.57	\$0.00	\$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 2</i>	12/01/2021	\$41.33	\$9.10	\$17.57	\$0.00	\$68.00
	06/01/2022	\$42.33	\$9.10	\$17.57	\$0.00	\$69.00
	12/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
	06/01/2023	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	12/01/2023	\$45.58	\$9.10	\$17.57	\$0.00	\$72.25
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$68.70	\$9.40	\$23.12	\$0.00	\$101.22
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$73.60	\$9.40	\$23.12	\$0.00	\$106.12
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>DRAWBRIDGE - SEIU LOCAL 888</i>	07/01/2020	\$26.77	\$6.67	\$3.93	\$0.16	\$37.53
ELECTRICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2022	\$57.32	\$13.00	\$20.82	\$0.00	\$91.14
	09/01/2022	\$58.76	\$13.00	\$20.86	\$0.00	\$92.62
	03/01/2023	\$60.43	\$13.00	\$20.91	\$0.00	\$94.34

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - ELECTRICIAN - Local 103**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$22.93	\$13.00	\$0.69	\$0.00	\$36.62
2	40	\$22.93	\$13.00	\$0.69	\$0.00	\$36.62
3	45	\$25.79	\$13.00	\$15.62	\$0.00	\$54.41
4	45	\$25.79	\$13.00	\$15.62	\$0.00	\$54.41
5	50	\$28.66	\$13.00	\$16.10	\$0.00	\$57.76
6	55	\$31.53	\$13.00	\$16.58	\$0.00	\$61.11
7	60	\$34.39	\$13.00	\$17.04	\$0.00	\$64.43
8	65	\$37.26	\$13.00	\$17.52	\$0.00	\$67.78
9	70	\$40.12	\$13.00	\$17.98	\$0.00	\$71.10
10	75	\$42.99	\$13.00	\$18.46	\$0.00	\$74.45

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$23.50	\$13.00	\$0.71	\$0.00	\$37.21
2	40	\$23.50	\$13.00	\$0.71	\$0.00	\$37.21
3	45	\$26.44	\$13.00	\$15.64	\$0.00	\$55.08
4	45	\$26.44	\$13.00	\$15.64	\$0.00	\$55.08
5	50	\$29.38	\$13.00	\$16.12	\$0.00	\$58.50
6	55	\$32.32	\$13.00	\$16.60	\$0.00	\$61.92
7	60	\$35.26	\$13.00	\$17.07	\$0.00	\$65.33
8	65	\$38.19	\$13.00	\$17.55	\$0.00	\$68.74
9	70	\$41.13	\$13.00	\$18.01	\$0.00	\$72.14
10	75	\$44.07	\$13.00	\$18.49	\$0.00	\$75.56

**Notes :**  
 App Prior 1/1/03; 30/35/40/45/50/55/65/70/75/80

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

ELEVATOR CONSTRUCTOR ELEVATOR CONSTRUCTORS LOCAL 4	01/01/2022	\$65.62	\$16.03	\$20.21	\$0.00	\$101.86
---	------------	---------	---------	---------	--------	----------

**Apprentice - ELEVATOR CONSTRUCTOR - Local 4**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$32.81	\$16.03	\$0.00	\$0.00	\$48.84
2	55	\$36.09	\$16.03	\$20.21	\$0.00	\$72.33
3	65	\$42.65	\$16.03	\$20.21	\$0.00	\$78.89
4	70	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
5	80	\$52.50	\$16.03	\$20.21	\$0.00	\$88.74

**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>	01/01/2022	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2021	\$46.53	\$13.75	\$15.80	\$0.00	\$76.08
	05/01/2022	\$47.86	\$13.75	\$15.80	\$0.00	\$77.41
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2021	\$48.06	\$13.75	\$15.80	\$0.00	\$77.61
	05/01/2022	\$49.22	\$13.75	\$15.80	\$0.00	\$78.77
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2021	\$23.16	\$13.75	\$15.80	\$0.00	\$52.71
	05/01/2022	\$23.83	\$13.75	\$15.80	\$0.00	\$53.38
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	03/01/2022	\$57.32	\$13.00	\$20.82	\$0.00	\$91.14
	09/01/2022	\$58.76	\$13.00	\$20.86	\$0.00	\$92.62
	03/01/2023	\$60.43	\$13.00	\$20.91	\$0.00	\$94.34
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS LOCAL 103</i>	03/01/2022	\$44.71	\$13.00	\$18.74	\$0.00	\$76.45
	09/01/2022	\$46.42	\$13.00	\$18.87	\$0.00	\$78.29
	03/01/2023	\$48.34	\$13.00	\$19.01	\$0.00	\$80.35
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$41.76	\$14.00	\$16.05	\$0.00	\$71.81
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$24.50	\$9.10	\$16.64	\$0.00	\$50.24
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE 1</i>	03/01/2022	\$50.18	\$8.58	\$20.12	\$0.00	\$78.88

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - FLOORCOVERER - Local 2168 Zone I**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.09	\$8.58	\$1.79	\$0.00	\$35.46
2	55	\$27.60	\$8.58	\$1.79	\$0.00	\$37.97
3	60	\$30.11	\$8.58	\$14.75	\$0.00	\$53.44
4	65	\$32.62	\$8.58	\$14.75	\$0.00	\$55.95
5	70	\$35.13	\$8.58	\$16.54	\$0.00	\$60.25
6	75	\$37.64	\$8.58	\$16.54	\$0.00	\$62.76
7	80	\$40.14	\$8.58	\$18.33	\$0.00	\$67.05
8	85	\$42.65	\$8.58	\$18.33	\$0.00	\$69.56

**Notes:** Steps are 750 hrs.  
 % After 10/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)  
 Step 1&2 \$32.59/ 3&4 \$39.26/ 5&6 \$59.69/ 7&8 \$66.41

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

FORK LIFT/CHERRY PICKER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$33.69	\$14.00	\$16.05	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 35 (ZONE 2)</i>	01/01/2022	\$43.16	\$8.65	\$23.05	\$0.00	\$74.86
	07/01/2022	\$44.36	\$8.65	\$23.05	\$0.00	\$76.06
	01/01/2023	\$45.56	\$8.65	\$23.05	\$0.00	\$77.26
	07/01/2023	\$46.76	\$8.65	\$23.05	\$0.00	\$78.46
	01/01/2024	\$47.96	\$8.65	\$23.05	\$0.00	\$79.66
	07/01/2024	\$49.16	\$8.65	\$23.05	\$0.00	\$80.86
	01/01/2025	\$50.36	\$8.65	\$23.05	\$0.00	\$82.06

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - GLAZIER - Local 35 Zone 2**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.58	\$8.65	\$0.00	\$0.00	\$30.23
2	55	\$23.74	\$8.65	\$6.27	\$0.00	\$38.66
3	60	\$25.90	\$8.65	\$6.84	\$0.00	\$41.39
4	65	\$28.05	\$8.65	\$7.41	\$0.00	\$44.11
5	70	\$30.21	\$8.65	\$19.63	\$0.00	\$58.49
6	75	\$32.37	\$8.65	\$20.20	\$0.00	\$61.22
7	80	\$34.53	\$8.65	\$20.77	\$0.00	\$63.95
8	90	\$38.84	\$8.65	\$21.91	\$0.00	\$69.40

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.18	\$8.65	\$0.00	\$0.00	\$30.83
2	55	\$24.40	\$8.65	\$6.27	\$0.00	\$39.32
3	60	\$26.62	\$8.65	\$6.84	\$0.00	\$42.11
4	65	\$28.83	\$8.65	\$7.41	\$0.00	\$44.89
5	70	\$31.05	\$8.65	\$19.63	\$0.00	\$59.33
6	75	\$33.27	\$8.65	\$20.20	\$0.00	\$62.12
7	80	\$35.49	\$8.65	\$20.77	\$0.00	\$64.91
8	90	\$39.92	\$8.65	\$21.91	\$0.00	\$70.48

**Notes:**

Steps are 750 hrs.

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

HOISTING ENGINEER/CRANES/GRADALLS OPERATING ENGINEERS LOCAL 4	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
--	------------	---------	---------	---------	--------	---------

**Apprentice - OPERATING ENGINEERS - Local 4**

**Effective Date - 12/01/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$28.26	\$14.00	\$0.00	\$0.00	\$42.26
2	60	\$30.83	\$14.00	\$16.05	\$0.00	\$60.88
3	65	\$33.40	\$14.00	\$16.05	\$0.00	\$63.45
4	70	\$35.97	\$14.00	\$16.05	\$0.00	\$66.02
5	75	\$38.54	\$14.00	\$16.05	\$0.00	\$68.59
6	80	\$41.10	\$14.00	\$16.05	\$0.00	\$71.15
7	85	\$43.67	\$14.00	\$16.05	\$0.00	\$73.72
8	90	\$46.24	\$14.00	\$16.05	\$0.00	\$76.29

**Notes:**

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

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 - A	02/01/2022	\$53.70	\$13.80	\$25.60	\$2.79	\$95.89
--	------------	---------	---------	---------	--------	---------

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 103	03/01/2022	\$57.32	\$13.00	\$20.82	\$0.00	\$91.14
	09/01/2022	\$58.76	\$13.00	\$20.86	\$0.00	\$92.62
	03/01/2023	\$60.43	\$13.00	\$20.91	\$0.00	\$94.34

For apprentice rates see "Apprentice- ELECTRICIAN"

HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 17 - A	02/01/2022	\$53.70	\$13.80	\$25.60	\$2.79	\$95.89
---	------------	---------	---------	---------	--------	---------

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (TESTING AND BALANCING -WATER) PIPEFITTERS LOCAL 537	03/01/2021	\$57.94	\$11.70	\$20.24	\$0.00	\$89.88
--	------------	---------	---------	---------	--------	---------

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

HVAC MECHANIC PIPEFITTERS LOCAL 537	03/01/2021	\$57.94	\$11.70	\$20.24	\$0.00	\$89.88
--	------------	---------	---------	---------	--------	---------

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

HYDRAULIC DRILLS LABORERS - ZONE 2	12/01/2021	\$36.16	\$9.10	\$16.64	\$0.00	\$61.90
	06/01/2022	\$37.06	\$9.10	\$16.64	\$0.00	\$62.80
	12/01/2022	\$37.91	\$9.10	\$16.64	\$0.00	\$63.65
	06/01/2023	\$38.81	\$9.10	\$16.64	\$0.00	\$64.55
	12/01/2023	\$39.71	\$9.10	\$16.64	\$0.00	\$65.45

For apprentice rates see "Apprentice- LABORER"

HYDRAULIC DRILLS (HEAVY & HIGHWAY) LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2021	\$36.16	\$9.10	\$16.64	\$0.00	\$61.90
---	------------	---------	--------	---------	--------	---------

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

INSULATOR (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 (BOSTON)	09/01/2021	\$51.40	\$13.80	\$17.14	\$0.00	\$82.34
	09/01/2022	\$53.85	\$13.80	\$17.14	\$0.00	\$84.79



**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

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

**Effective Date - 09/01/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.70	\$13.80	\$12.42	\$0.00	\$51.92
2	60	\$30.84	\$13.80	\$13.36	\$0.00	\$58.00
3	70	\$35.98	\$13.80	\$14.31	\$0.00	\$64.09
4	80	\$41.12	\$13.80	\$15.25	\$0.00	\$70.17

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.93	\$13.80	\$12.42	\$0.00	\$53.15
2	60	\$32.31	\$13.80	\$13.36	\$0.00	\$59.47
3	70	\$37.70	\$13.80	\$14.31	\$0.00	\$65.81
4	80	\$43.08	\$13.80	\$15.25	\$0.00	\$72.13

**Notes:**

Steps are 1 year

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

IRONWORKER/WELDER	09/16/2021	\$45.72	\$8.15	\$25.80	\$0.00	\$79.67
IRONWORKERS LOCAL 7 (LAWRENCE AREA)	03/16/2022	\$46.19	\$8.20	\$26.50	\$0.00	\$80.89

**Apprentice - IRONWORKER - Local 7 Lawrence**

**Effective Date - 09/16/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$27.43	\$8.15	\$25.80	\$0.00	\$61.38
2	70	\$32.00	\$8.15	\$25.80	\$0.00	\$65.95
3	75	\$34.29	\$8.15	\$25.80	\$0.00	\$68.24
4	80	\$36.58	\$8.15	\$25.80	\$0.00	\$70.53
5	85	\$38.86	\$8.15	\$25.80	\$0.00	\$72.81
6	90	\$41.15	\$8.15	\$25.80	\$0.00	\$75.10

**Effective Date - 03/16/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$27.71	\$8.20	\$26.50	\$0.00	\$62.41
2	70	\$32.33	\$8.20	\$26.50	\$0.00	\$67.03
3	75	\$34.64	\$8.20	\$26.50	\$0.00	\$69.34
4	80	\$36.95	\$8.20	\$26.50	\$0.00	\$71.65
5	85	\$39.26	\$8.20	\$26.50	\$0.00	\$73.96
6	90	\$41.57	\$8.20	\$26.50	\$0.00	\$76.27

**Notes:**

Structural 1:6; Ornamental 1:4

**Apprentice to Journeyworker Ratio:**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
JACKHAMMER & PAVING BREAKER OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95

For apprentice rates see "Apprentice- LABORER"

LABORER <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.41	\$9.10	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.31	\$9.10	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
	12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70

**Apprentice - LABORER - Zone 2**

**Effective Date -** 12/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.25	\$9.10	\$16.64	\$0.00	\$46.99
2	70	\$24.79	\$9.10	\$16.64	\$0.00	\$50.53
3	80	\$28.33	\$9.10	\$16.64	\$0.00	\$54.07
4	90	\$31.87	\$9.10	\$16.64	\$0.00	\$57.61

**Effective Date -** 06/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.79	\$9.10	\$16.64	\$0.00	\$47.53
2	70	\$25.42	\$9.10	\$16.64	\$0.00	\$51.16
3	80	\$29.05	\$9.10	\$16.64	\$0.00	\$54.79
4	90	\$32.68	\$9.10	\$16.64	\$0.00	\$58.42

**Notes:**

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

LABORER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.41	\$9.10	\$16.64	\$0.00	\$61.15
---	------------	---------	--------	---------	--------	---------

**Apprentice - LABORER (Heavy & Highway) - Zone 2**

**Effective Date -** 12/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.25	\$9.10	\$16.64	\$0.00	\$46.99
2	70	\$24.79	\$9.10	\$16.64	\$0.00	\$50.53
3	80	\$28.33	\$9.10	\$16.64	\$0.00	\$54.07
4	90	\$31.87	\$9.10	\$16.64	\$0.00	\$57.61

**Notes:**

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: CARPENTER TENDER <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.41	\$9.10	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.31	\$9.10	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
	12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.41	\$9.10	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.31	\$9.10	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
	12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.50	\$9.10	\$16.70	\$0.00	\$61.30
	06/01/2022	\$36.40	\$9.10	\$16.70	\$0.00	\$62.20
	12/01/2022	\$37.25	\$9.10	\$16.70	\$0.00	\$63.05
	06/01/2023	\$38.15	\$9.10	\$16.70	\$0.00	\$63.95
	12/01/2023	\$39.05	\$9.10	\$16.70	\$0.00	\$64.85
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.41	\$9.10	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.31	\$9.10	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
	12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.41	\$9.10	\$16.64	\$0.00	\$61.15
	06/01/2022	\$36.31	\$9.10	\$16.64	\$0.00	\$62.05
	12/01/2022	\$37.16	\$9.10	\$16.64	\$0.00	\$62.90
	06/01/2023	\$38.06	\$9.10	\$16.64	\$0.00	\$63.80
	12/01/2023	\$38.96	\$9.10	\$16.64	\$0.00	\$64.70
This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	02/01/2022	\$43.69	\$11.39	\$20.37	\$0.00	\$75.45

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

**Effective Date - 02/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.85	\$11.39	\$20.37	\$0.00	\$53.61
2	60	\$26.21	\$11.39	\$20.37	\$0.00	\$57.97
3	70	\$30.58	\$11.39	\$20.37	\$0.00	\$62.34
4	80	\$34.95	\$11.39	\$20.37	\$0.00	\$66.71
5	90	\$39.32	\$11.39	\$20.37	\$0.00	\$71.08

Notes:

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

MARBLE MASONS, TILELAYERS & TERRAZZO MECH <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	02/01/2022	\$57.17	\$11.39	\$22.31	\$0.00	\$90.87
---	------------	---------	---------	---------	--------	---------

**Apprentice - MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile**

**Effective Date - 02/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.59	\$11.39	\$22.31	\$0.00	\$62.29
2	60	\$34.30	\$11.39	\$22.31	\$0.00	\$68.00
3	70	\$40.02	\$11.39	\$22.31	\$0.00	\$73.72
4	80	\$45.74	\$11.39	\$22.31	\$0.00	\$79.44
5	90	\$51.45	\$11.39	\$22.31	\$0.00	\$85.15

Notes:

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

MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
--	------------	---------	---------	---------	--------	---------

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
---	------------	---------	---------	---------	--------	---------

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 2) <i>MILLWRIGHTS LOCAL 1121 - Zone 2</i>	01/03/2022	\$40.67	\$8.58	\$21.57	\$0.00	\$70.82
	01/02/2023	\$41.92	\$8.58	\$21.57	\$0.00	\$72.07

**Apprentice - MILLWRIGHT - Local 1121 Zone 2**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.37	\$8.58	\$5.72	\$0.00	\$36.67
2	65	\$26.44	\$8.58	\$17.93	\$0.00	\$52.95
3	75	\$30.50	\$8.58	\$18.98	\$0.00	\$58.06
4	85	\$34.57	\$8.58	\$20.01	\$0.00	\$63.16

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$23.06	\$8.58	\$5.72	\$0.00	\$37.36
2	65	\$27.25	\$8.58	\$17.93	\$0.00	\$53.76
3	75	\$31.44	\$8.58	\$18.98	\$0.00	\$59.00
4	85	\$35.63	\$8.58	\$20.01	\$0.00	\$64.22

**Notes:** Step 1&2 Appr. indentured after 1/6/2020 receive no pension, but do receive annuity. (Step 1 \$5.72, Step 2 \$6.66)  
Steps are 2,000 hours

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

MORTAR MIXER LABORERS - ZONE 2	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95

For apprentice rates see "Apprentice- LABORER"

OILER (OTHER THAN TRUCK CRANES,GRADALLS) OPERATING ENGINEERS LOCAL 4	12/01/2021	\$23.48	\$14.00	\$16.05	\$0.00	\$53.53
---	------------	---------	---------	---------	--------	---------

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OILER (TRUCK CRANES, GRADALLS) OPERATING ENGINEERS LOCAL 4	12/01/2021	\$28.44	\$14.00	\$16.05	\$0.00	\$58.49
---	------------	---------	---------	---------	--------	---------

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OTHER POWER DRIVEN EQUIPMENT - CLASS II OPERATING ENGINEERS LOCAL 4	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
--	------------	---------	---------	---------	--------	---------

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

PAINTER (BRIDGES/TANKS) PAINTERS LOCAL 35 - ZONE 2	01/01/2022	\$53.66	\$8.65	\$23.05	\$0.00	\$85.36
	07/01/2022	\$54.86	\$8.65	\$23.05	\$0.00	\$86.56
	01/01/2023	\$56.06	\$8.65	\$23.05	\$0.00	\$87.76
	07/01/2023	\$57.26	\$8.65	\$23.05	\$0.00	\$88.96
	01/01/2024	\$58.46	\$8.65	\$23.05	\$0.00	\$90.16
	07/01/2024	\$59.66	\$8.65	\$23.05	\$0.00	\$91.36
	01/01/2025	\$60.86	\$8.65	\$23.05	\$0.00	\$92.56

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

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

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.83	\$8.65	\$0.00	\$0.00	\$35.48
2	55	\$29.51	\$8.65	\$6.27	\$0.00	\$44.43
3	60	\$32.20	\$8.65	\$6.84	\$0.00	\$47.69
4	65	\$34.88	\$8.65	\$7.41	\$0.00	\$50.94
5	70	\$37.56	\$8.65	\$19.63	\$0.00	\$65.84
6	75	\$40.25	\$8.65	\$20.20	\$0.00	\$69.10
7	80	\$42.93	\$8.65	\$20.77	\$0.00	\$72.35
8	90	\$48.29	\$8.65	\$21.91	\$0.00	\$78.85

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.43	\$8.65	\$0.00	\$0.00	\$36.08
2	55	\$30.17	\$8.65	\$6.27	\$0.00	\$45.09
3	60	\$32.92	\$8.65	\$6.84	\$0.00	\$48.41
4	65	\$35.66	\$8.65	\$7.41	\$0.00	\$51.72
5	70	\$38.40	\$8.65	\$19.63	\$0.00	\$66.68
6	75	\$41.15	\$8.65	\$20.20	\$0.00	\$70.00
7	80	\$43.89	\$8.65	\$20.77	\$0.00	\$73.31
8	90	\$49.37	\$8.65	\$21.91	\$0.00	\$79.93

**Notes:**

Steps are 750 hrs.

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

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2022	\$44.56	\$8.65	\$23.05	\$0.00	\$76.26
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	07/01/2022	\$45.76	\$8.65	\$23.05	\$0.00	\$77.46
	01/01/2023	\$46.96	\$8.65	\$23.05	\$0.00	\$78.66
	07/01/2023	\$48.16	\$8.65	\$23.05	\$0.00	\$79.86
	01/01/2024	\$49.36	\$8.65	\$23.05	\$0.00	\$81.06
	07/01/2024	\$50.56	\$8.65	\$23.05	\$0.00	\$82.26
	01/01/2025	\$51.76	\$8.65	\$23.05	\$0.00	\$83.46

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - New**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.28	\$8.65	\$0.00	\$0.00	\$30.93
2	55	\$24.51	\$8.65	\$6.27	\$0.00	\$39.43
3	60	\$26.74	\$8.65	\$6.84	\$0.00	\$42.23
4	65	\$28.96	\$8.65	\$7.41	\$0.00	\$45.02
5	70	\$31.19	\$8.65	\$19.63	\$0.00	\$59.47
6	75	\$33.42	\$8.65	\$20.20	\$0.00	\$62.27
7	80	\$35.65	\$8.65	\$20.77	\$0.00	\$65.07
8	90	\$40.10	\$8.65	\$21.91	\$0.00	\$70.66

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.88	\$8.65	\$0.00	\$0.00	\$31.53
2	55	\$25.17	\$8.65	\$6.27	\$0.00	\$40.09
3	60	\$27.46	\$8.65	\$6.84	\$0.00	\$42.95
4	65	\$29.74	\$8.65	\$7.41	\$0.00	\$45.80
5	70	\$32.03	\$8.65	\$19.63	\$0.00	\$60.31
6	75	\$34.32	\$8.65	\$20.20	\$0.00	\$63.17
7	80	\$36.61	\$8.65	\$20.77	\$0.00	\$66.03
8	90	\$41.18	\$8.65	\$21.91	\$0.00	\$71.74

**Notes:**  
Steps are 750 hrs.

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

PAINTER (SPRAY OR SANDBLAST, REPAINT)	01/01/2022	\$42.62	\$8.65	\$23.05	\$0.00	\$74.32
PAINTERS LOCAL 35 - ZONE 2	07/01/2022	\$43.82	\$8.65	\$23.05	\$0.00	\$75.52
	01/01/2023	\$45.02	\$8.65	\$23.05	\$0.00	\$76.72
	07/01/2023	\$46.22	\$8.65	\$23.05	\$0.00	\$77.92
	01/01/2024	\$47.42	\$8.65	\$23.05	\$0.00	\$79.12
	07/01/2024	\$48.62	\$8.65	\$23.05	\$0.00	\$80.32
	01/01/2025	\$49.82	\$8.65	\$23.05	\$0.00	\$81.52

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.31	\$8.65	\$0.00	\$0.00	\$29.96
2	55	\$23.44	\$8.65	\$6.27	\$0.00	\$38.36
3	60	\$25.57	\$8.65	\$6.84	\$0.00	\$41.06
4	65	\$27.70	\$8.65	\$7.41	\$0.00	\$43.76
5	70	\$29.83	\$8.65	\$19.63	\$0.00	\$58.11
6	75	\$31.97	\$8.65	\$20.20	\$0.00	\$60.82
7	80	\$34.10	\$8.65	\$20.77	\$0.00	\$63.52
8	90	\$38.36	\$8.65	\$21.91	\$0.00	\$68.92

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.91	\$8.65	\$0.00	\$0.00	\$30.56
2	55	\$24.10	\$8.65	\$6.27	\$0.00	\$39.02
3	60	\$26.29	\$8.65	\$6.84	\$0.00	\$41.78
4	65	\$28.48	\$8.65	\$7.41	\$0.00	\$44.54
5	70	\$30.67	\$8.65	\$19.63	\$0.00	\$58.95
6	75	\$32.87	\$8.65	\$20.20	\$0.00	\$61.72
7	80	\$35.06	\$8.65	\$20.77	\$0.00	\$64.48
8	90	\$39.44	\$8.65	\$21.91	\$0.00	\$70.00

**Notes:**  
Steps are 750 hrs.

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

PAINTER / TAPER (BRUSH, NEW) *	01/01/2022	\$43.16	\$8.65	\$23.05	\$0.00	\$74.86
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	07/01/2022	\$44.36	\$8.65	\$23.05	\$0.00	\$76.06
	01/01/2023	\$45.56	\$8.65	\$23.05	\$0.00	\$77.26
	07/01/2023	\$46.76	\$8.65	\$23.05	\$0.00	\$78.46
	01/01/2024	\$47.96	\$8.65	\$23.05	\$0.00	\$79.66
	07/01/2024	\$49.16	\$8.65	\$23.05	\$0.00	\$80.86
	01/01/2025	\$50.36	\$8.65	\$23.05	\$0.00	\$82.06



**Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.58	\$8.65	\$0.00	\$0.00	\$30.23
2	55	\$23.74	\$8.65	\$6.27	\$0.00	\$38.66
3	60	\$25.90	\$8.65	\$6.84	\$0.00	\$41.39
4	65	\$28.05	\$8.65	\$7.41	\$0.00	\$44.11
5	70	\$30.21	\$8.65	\$19.63	\$0.00	\$58.49
6	75	\$32.37	\$8.65	\$20.20	\$0.00	\$61.22
7	80	\$34.53	\$8.65	\$20.77	\$0.00	\$63.95
8	90	\$38.84	\$8.65	\$21.91	\$0.00	\$69.40

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.18	\$8.65	\$0.00	\$0.00	\$30.83
2	55	\$24.40	\$8.65	\$6.27	\$0.00	\$39.32
3	60	\$26.62	\$8.65	\$6.84	\$0.00	\$42.11
4	65	\$28.83	\$8.65	\$7.41	\$0.00	\$44.89
5	70	\$31.05	\$8.65	\$19.63	\$0.00	\$59.33
6	75	\$33.27	\$8.65	\$20.20	\$0.00	\$62.12
7	80	\$35.49	\$8.65	\$20.77	\$0.00	\$64.91
8	90	\$39.92	\$8.65	\$21.91	\$0.00	\$70.48

**Notes:**

Steps are 750 hrs.

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

PAINTER / TAPER (BRUSH, REPAINT)	01/01/2022	\$41.22	\$8.65	\$23.05	\$0.00	\$72.92
PAINTERS LOCAL 35 - ZONE 2	07/01/2022	\$42.42	\$8.65	\$23.05	\$0.00	\$74.12
	01/01/2023	\$43.62	\$8.65	\$23.05	\$0.00	\$75.32
	07/01/2023	\$44.82	\$8.65	\$23.05	\$0.00	\$76.52
	01/01/2024	\$46.02	\$8.65	\$23.05	\$0.00	\$77.72
	07/01/2024	\$47.22	\$8.65	\$23.05	\$0.00	\$78.92
	01/01/2025	\$48.42	\$8.65	\$23.05	\$0.00	\$80.12

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.61	\$8.65	\$0.00	\$0.00	\$29.26
2	55	\$22.67	\$8.65	\$6.27	\$0.00	\$37.59
3	60	\$24.73	\$8.65	\$6.84	\$0.00	\$40.22
4	65	\$26.79	\$8.65	\$7.41	\$0.00	\$42.85
5	70	\$28.85	\$8.65	\$19.63	\$0.00	\$57.13
6	75	\$30.92	\$8.65	\$20.20	\$0.00	\$59.77
7	80	\$32.98	\$8.65	\$20.77	\$0.00	\$62.40
8	90	\$37.10	\$8.65	\$21.91	\$0.00	\$67.66

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.21	\$8.65	\$0.00	\$0.00	\$29.86
2	55	\$23.33	\$8.65	\$6.27	\$0.00	\$38.25
3	60	\$25.45	\$8.65	\$6.84	\$0.00	\$40.94
4	65	\$27.57	\$8.65	\$7.41	\$0.00	\$43.63
5	70	\$29.69	\$8.65	\$19.63	\$0.00	\$57.97
6	75	\$31.82	\$8.65	\$20.20	\$0.00	\$60.67
7	80	\$33.94	\$8.65	\$20.77	\$0.00	\$63.36
8	90	\$38.18	\$8.65	\$21.91	\$0.00	\$68.74

**Notes:**  
Steps are 750 hrs.

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

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) LABORERS - ZONE 2 (HEAVY & HIGHWAY) For apprentice rates see "Apprentice- LABORER (Heavy and Highway)	12/01/2021	\$35.41	\$9.10	\$16.64	\$0.00	\$61.15
PANEL & PICKUP TRUCKS DRIVER TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/01/2021	\$35.78	\$13.41	\$16.01	\$0.00	\$65.20
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) PILE DRIVER LOCAL 56 (ZONE 1) For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
PILE DRIVER PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - PILE DRIVER - Local 56 Zone 1**

**Effective Date - 08/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.54	\$9.40	\$23.12	\$0.00	\$57.06
2	60	\$29.44	\$9.40	\$23.12	\$0.00	\$61.96
3	70	\$34.35	\$9.40	\$23.12	\$0.00	\$66.87
4	75	\$36.80	\$9.40	\$23.12	\$0.00	\$69.32
5	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
6	80	\$39.26	\$9.40	\$23.12	\$0.00	\$71.78
7	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68
8	90	\$44.16	\$9.40	\$23.12	\$0.00	\$76.68

**Notes:**

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80  
 Step 1&2 \$34.01/ 3&4 \$41.46/ 5&6 \$62.80/ 7&8 \$69.25

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

PIPEFITTER & STEAMFITTER PIPEFITTERS LOCAL 537	03/01/2021	\$57.94	\$11.70	\$20.24	\$0.00	\$89.88
---	------------	---------	---------	---------	--------	---------

**Apprentice - PIPEFITTER - Local 537**

**Effective Date - 03/01/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$23.18	\$11.70	\$8.25	\$0.00	\$43.13
2	45	\$26.07	\$11.70	\$20.24	\$0.00	\$58.01
3	60	\$34.76	\$11.70	\$20.24	\$0.00	\$66.70
4	70	\$40.56	\$11.70	\$20.24	\$0.00	\$72.50
5	80	\$46.35	\$11.70	\$20.24	\$0.00	\$78.29

**Notes:**

\*\* 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.  
 Refrig/AC Mechanic \*\*1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)

**Apprentice to Journeyworker Ratio:\*\***

PIPELAYER LABORERS - ZONE 2	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95

For apprentice rates see "Apprentice- LABORER"

PIPELAYER (HEAVY & HIGHWAY) LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
--	------------	---------	--------	---------	--------	---------

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PLUMBERS & GASFITTERS <i>PLUMBERS &amp; GASFITTERS LOCAL 12</i>	03/01/2022	\$61.79	\$14.07	\$18.36	\$0.00	\$94.22
	09/04/2022	\$63.49	\$14.07	\$18.36	\$0.00	\$95.92
	02/26/2023	\$65.19	\$14.07	\$18.36	\$0.00	\$97.62
	09/03/2023	\$66.94	\$14.07	\$18.36	\$0.00	\$99.37
	03/03/2024	\$68.74	\$14.07	\$18.36	\$0.00	\$101.17
	09/01/2024	\$70.54	\$14.07	\$18.36	\$0.00	\$102.97
	03/02/2025	\$72.34	\$14.07	\$18.36	\$0.00	\$104.77

**Apprentice - PLUMBER/GASFITTER - Local 12**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$21.63	\$14.07	\$6.63	\$0.00	\$42.33
2	40	\$24.72	\$14.07	\$7.52	\$0.00	\$46.31
3	55	\$33.98	\$14.07	\$10.24	\$0.00	\$58.29
4	65	\$40.16	\$14.07	\$12.04	\$0.00	\$66.27
5	75	\$46.34	\$14.07	\$13.85	\$0.00	\$74.26

**Effective Date - 09/04/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$22.22	\$14.07	\$6.63	\$0.00	\$42.92
2	40	\$25.40	\$14.07	\$7.52	\$0.00	\$46.99
3	55	\$34.92	\$14.07	\$10.24	\$0.00	\$59.23
4	65	\$41.27	\$14.07	\$12.04	\$0.00	\$67.38
5	75	\$47.62	\$14.07	\$13.85	\$0.00	\$75.54

**Notes:**

\*\* 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr  
Step4 with lic\$69.00, Step5 with lic\$76.87

**Apprentice to Journeyworker Ratio:\*\***

PNEUMATIC CONTROLS (TEMP.) <i>PIPEFITTERS LOCAL 537</i>	03/01/2021	\$57.94	\$11.70	\$20.24	\$0.00	\$89.88
--	------------	---------	---------	---------	--------	---------

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

PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95

For apprentice rates see "Apprentice- LABORER"

PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
---	------------	---------	--------	---------	--------	---------

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

POWDERMAN & BLASTER <i>LABORERS - ZONE 2</i>	12/01/2021	\$36.41	\$9.10	\$16.64	\$0.00	\$62.15
	06/01/2022	\$37.31	\$9.10	\$16.64	\$0.00	\$63.05
	12/01/2022	\$38.16	\$9.10	\$16.64	\$0.00	\$63.90
	06/01/2023	\$39.06	\$9.10	\$16.64	\$0.00	\$64.80
	12/01/2023	\$39.96	\$9.10	\$16.64	\$0.00	\$65.70

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY) LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/01/2021	\$36.41	\$9.10	\$16.64	\$0.00	\$62.15
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE OPERATING ENGINEERS LOCAL 4	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) OPERATING ENGINEERS LOCAL 4	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) OPERATING ENGINEERS LOCAL 4	12/01/2021	\$33.69	\$14.00	\$16.05	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER TEAMSTERS 170 - J.G. MacLellan (Lowell)	01/01/2022	\$25.50	\$10.37	\$6.35	\$0.00	\$42.22
	05/01/2022	\$25.85	\$10.37	\$6.35	\$0.00	\$42.57
	01/01/2023	\$25.85	\$10.77	\$6.35	\$0.00	\$42.97
RECLAIMERS OPERATING ENGINEERS LOCAL 4	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR LABORERS - ZONE 2	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE OPERATING ENGINEERS LOCAL 4	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofers Waterproofing &Roofers Damproofg) ROOFERS LOCAL 33	02/01/2022	\$47.03	\$12.28	\$19.45	\$0.00	\$78.76

**Apprentice - ROOFER - Local 33**

**Effective Date - 02/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.52	\$12.28	\$5.21	\$0.00	\$41.01
2	60	\$28.22	\$12.28	\$19.45	\$0.00	\$59.95
3	65	\$30.57	\$12.28	\$19.45	\$0.00	\$62.30
4	75	\$35.27	\$12.28	\$19.45	\$0.00	\$67.00
5	85	\$39.98	\$12.28	\$19.45	\$0.00	\$71.71

**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 ROOFERS LOCAL 33	02/01/2022	\$47.28	\$12.28	\$19.45	\$0.00	\$79.01
For apprentice rates see "Apprentice- ROOFER"						
SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 17 - A	02/01/2022	\$53.70	\$13.80	\$25.60	\$2.79	\$95.89

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - SHEET METAL WORKER - Local 17-A**

**Effective Date - 02/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	\$22.55	\$13.80	\$6.01	\$0.00	\$42.36
2	42	\$22.55	\$13.80	\$6.01	\$0.00	\$42.36
3	47	\$25.24	\$13.80	\$11.26	\$1.51	\$51.81
4	47	\$25.24	\$13.80	\$11.26	\$1.51	\$51.81
5	52	\$27.92	\$13.80	\$12.23	\$1.62	\$55.57
6	52	\$27.92	\$13.80	\$12.48	\$1.63	\$55.83
7	60	\$32.22	\$13.80	\$13.87	\$1.80	\$61.69
8	65	\$34.91	\$13.80	\$14.84	\$1.91	\$65.46
9	75	\$40.28	\$13.80	\$16.77	\$2.13	\$72.98
10	85	\$45.65	\$13.80	\$18.20	\$2.33	\$79.98

**Notes:**  
Steps are 6 mos.

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

SPECIALIZED EARTH MOVING EQUIP < 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.24	\$13.41	\$16.01	\$0.00	\$65.66
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.53	\$13.41	\$16.01	\$0.00	\$65.95
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1</i>	03/01/2022	\$64.36	\$10.44	\$22.10	\$0.00	\$96.90
	10/01/2022	\$66.06	\$10.44	\$22.10	\$0.00	\$98.60
	03/01/2023	\$67.76	\$10.44	\$22.10	\$0.00	\$100.30
	10/01/2023	\$69.51	\$10.44	\$22.10	\$0.00	\$102.05
	03/01/2024	\$71.31	\$10.44	\$22.10	\$0.00	\$103.85
	10/01/2024	\$73.11	\$10.44	\$22.10	\$0.00	\$105.65
	03/01/2025	\$74.91	\$10.44	\$22.10	\$0.00	\$107.45

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

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

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$22.53	\$10.44	\$12.35	\$0.00	\$45.32
2	40	\$25.74	\$10.44	\$13.10	\$0.00	\$49.28
3	45	\$28.96	\$10.44	\$13.85	\$0.00	\$53.25
4	50	\$32.18	\$10.44	\$14.60	\$0.00	\$57.22
5	55	\$35.40	\$10.44	\$15.35	\$0.00	\$61.19
6	60	\$38.62	\$10.44	\$16.10	\$0.00	\$65.16
7	65	\$41.83	\$10.44	\$16.85	\$0.00	\$69.12
8	70	\$45.05	\$10.44	\$17.60	\$0.00	\$73.09
9	75	\$48.27	\$10.44	\$18.35	\$0.00	\$77.06
10	80	\$51.49	\$10.44	\$19.10	\$0.00	\$81.03

**Effective Date - 10/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$23.12	\$10.44	\$12.35	\$0.00	\$45.91
2	40	\$26.42	\$10.44	\$13.10	\$0.00	\$49.96
3	45	\$29.73	\$10.44	\$13.85	\$0.00	\$54.02
4	50	\$33.03	\$10.44	\$14.60	\$0.00	\$58.07
5	55	\$36.33	\$10.44	\$15.35	\$0.00	\$62.12
6	60	\$39.64	\$10.44	\$16.10	\$0.00	\$66.18
7	65	\$42.94	\$10.44	\$16.85	\$0.00	\$70.23
8	70	\$46.24	\$10.44	\$17.60	\$0.00	\$74.28
9	75	\$49.55	\$10.44	\$18.35	\$0.00	\$78.34
10	80	\$52.85	\$10.44	\$19.10	\$0.00	\$82.39

**Notes:** Apprentice entered prior 9/30/10:  
40/45/50/55/60/65/70/75/80/85  
Steps are 850 hours

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

STEAM BOILER OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2022	\$44.71	\$13.00	\$18.74	\$0.00	\$76.45
	09/01/2022	\$46.42	\$13.00	\$18.87	\$0.00	\$78.29
	03/01/2023	\$48.34	\$13.00	\$19.01	\$0.00	\$80.35

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$20.12	\$13.00	\$0.60	\$0.00	\$33.72
2	45	\$20.12	\$13.00	\$0.60	\$0.00	\$33.72
3	50	\$22.36	\$13.00	\$15.06	\$0.00	\$50.42
4	50	\$22.36	\$13.00	\$15.06	\$0.00	\$50.42
5	55	\$24.59	\$13.00	\$15.43	\$0.00	\$53.02
6	60	\$26.83	\$13.00	\$15.79	\$0.00	\$55.62
7	65	\$29.06	\$13.00	\$16.16	\$0.00	\$58.22
8	70	\$31.30	\$13.00	\$16.53	\$0.00	\$60.83
9	75	\$33.53	\$13.00	\$16.91	\$0.00	\$63.44
10	80	\$35.77	\$13.00	\$17.27	\$0.00	\$66.04

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$20.89	\$13.00	\$0.63	\$0.00	\$34.52
2	45	\$20.89	\$13.00	\$0.63	\$0.00	\$34.52
3	50	\$23.21	\$13.00	\$15.13	\$0.00	\$51.34
4	50	\$23.21	\$13.00	\$15.13	\$0.00	\$51.34
5	55	\$25.53	\$13.00	\$15.51	\$0.00	\$54.04
6	60	\$27.85	\$13.00	\$15.88	\$0.00	\$56.73
7	65	\$30.17	\$13.00	\$16.26	\$0.00	\$59.43
8	70	\$32.49	\$13.00	\$16.62	\$0.00	\$62.11
9	75	\$34.82	\$13.00	\$17.00	\$0.00	\$64.82
10	80	\$37.14	\$13.00	\$17.37	\$0.00	\$67.51

**Notes:**

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

TERRAZZO FINISHERS BRICKLAYERS LOCAL 3 - MARBLE & TILE	02/01/2022	\$56.09	\$11.39	\$22.34	\$0.00	\$89.82
---	------------	---------	---------	---------	--------	---------



**Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile**

**Effective Date - 02/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.05	\$11.39	\$22.34	\$0.00	\$61.78
2	60	\$33.65	\$11.39	\$22.34	\$0.00	\$67.38
3	70	\$39.26	\$11.39	\$22.34	\$0.00	\$72.99
4	80	\$44.87	\$11.39	\$22.34	\$0.00	\$78.60
5	90	\$50.48	\$11.39	\$22.34	\$0.00	\$84.21

**Notes:**

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

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$42.58	\$9.10	\$17.72	\$0.00	\$69.40
--	------------	---------	--------	---------	--------	---------

For apprentice rates see "Apprentice- LABORER"

TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$41.30	\$9.10	\$17.72	\$0.00	\$68.12
---	------------	---------	--------	---------	--------	---------

For apprentice rates see "Apprentice- LABORER"

TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2021	\$41.18	\$9.10	\$17.72	\$0.00	\$68.00
--	------------	---------	--------	---------	--------	---------

For apprentice rates see "Apprentice- LABORER"

TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$50.83	\$14.00	\$16.05	\$0.00	\$80.88
--	------------	---------	---------	---------	--------	---------

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.82	\$13.41	\$16.01	\$0.00	\$66.24
---	------------	---------	---------	---------	--------	---------

TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	12/01/2021	\$53.41	\$9.10	\$18.17	\$0.00	\$80.68
--	------------	---------	--------	---------	--------	---------

For apprentice rates see "Apprentice- LABORER"

TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	12/01/2021	\$55.41	\$9.10	\$18.17	\$0.00	\$82.68
---	------------	---------	--------	---------	--------	---------

For apprentice rates see "Apprentice- LABORER"

TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2021	\$45.48	\$9.10	\$18.17	\$0.00	\$72.75
---	------------	---------	--------	---------	--------	---------

For apprentice rates see "Apprentice- LABORER"

TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2021	\$47.48	\$9.10	\$18.17	\$0.00	\$74.75
--	------------	---------	--------	---------	--------	---------

For apprentice rates see "Apprentice- LABORER"

VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.24	\$13.41	\$16.01	\$0.00	\$65.66
--	------------	---------	---------	---------	--------	---------

WAGON DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
--	------------	---------	--------	---------	--------	---------

	06/01/2022	\$36.56	\$9.10	\$16.64	\$0.00	\$62.30
--	------------	---------	--------	---------	--------	---------

	12/01/2022	\$37.41	\$9.10	\$16.64	\$0.00	\$63.15
--	------------	---------	--------	---------	--------	---------

	06/01/2023	\$38.31	\$9.10	\$16.64	\$0.00	\$64.05
--	------------	---------	--------	---------	--------	---------

	12/01/2023	\$39.21	\$9.10	\$16.64	\$0.00	\$64.95
--	------------	---------	--------	---------	--------	---------

For apprentice rates see "Apprentice- LABORER"

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 2 (HEAVY &amp; HIGHWAY)</i>	12/01/2021	\$35.66	\$9.10	\$16.64	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2021	\$51.38	\$14.00	\$16.05	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS &amp; GASFITTERS LOCAL 12</i>	03/01/2022	\$63.39	\$13.57	\$17.26	\$0.00	\$94.22
	09/04/2022	\$63.49	\$14.07	\$18.36	\$0.00	\$95.92
	02/26/2023	\$65.19	\$14.07	\$18.36	\$0.00	\$97.62
	09/03/2023	\$66.94	\$14.07	\$18.36	\$0.00	\$99.37
	03/03/2024	\$68.74	\$14.07	\$18.36	\$0.00	\$101.17
	09/01/2024	\$70.54	\$14.07	\$18.36	\$0.00	\$102.97
	03/02/2025	\$72.34	\$14.07	\$18.36	\$0.00	\$104.77
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
<b>Outside Electrical - East</b>						
CABLE TECHNICIAN (Power Zone) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$29.67	\$9.25	\$1.89	\$0.00	\$40.81
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$42.03	\$9.25	\$10.27	\$0.00	\$61.55
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$34.62	\$9.25	\$10.07	\$0.00	\$53.94
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$27.20	\$9.25	\$1.82	\$0.00	\$38.27
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class A CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$42.03	\$9.25	\$14.35	\$0.00	\$65.63
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class B CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$37.09	\$9.25	\$10.87	\$0.00	\$57.21
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$27.20	\$9.25	\$1.82	\$0.00	\$38.27
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN -Inexperienced (<2000 Hrs.) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$22.25	\$9.25	\$1.82	\$0.00	\$33.32
For apprentice rates see "Apprentice- LINEMAN"						
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2020	\$49.45	\$9.25	\$17.48	\$0.00	\$76.18

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - LINEMAN (Outside Electrical) - East Local 104**

**Effective Date - 08/30/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$29.67	\$9.25	\$3.39	\$0.00	\$42.31
2	65	\$32.14	\$9.25	\$3.46	\$0.00	\$44.85
3	70	\$34.62	\$9.25	\$3.54	\$0.00	\$47.41
4	75	\$37.09	\$9.25	\$5.11	\$0.00	\$51.45
5	80	\$39.56	\$9.25	\$5.19	\$0.00	\$54.00
6	85	\$42.03	\$9.25	\$5.26	\$0.00	\$56.54
7	90	\$44.51	\$9.25	\$7.34	\$0.00	\$61.10

**Notes:**

**Apprentice to Journeyworker Ratio:1:2**

TELEDATA CABLE SPLICER <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/04/2019	\$30.73	\$4.70	\$3.17	\$0.00	\$38.60
TELEDATA LINEMAN/EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/04/2019	\$28.93	\$4.70	\$3.14	\$0.00	\$36.77
TELEDATA WIREMAN/INSTALLER/TECHNICIAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	02/04/2019	\$28.93	\$4.70	\$3.14	\$0.00	\$36.77

**Additional Apprentice Information:**

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

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

All steps are six months (1000 hours.)

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

- \*\* Multiple ratios are listed in the comment field.
- \*\*\* APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.
- \*\*\*\* APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

## SECTION 01 01 00

### SUMMARY OF WORK

#### PART 1 – GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.

##### 1.02 SECTION INCLUDES

- A. The work of this section consists of ***Scope of Work, Codes/Standards & Permits, Contractor's Use of Premises, Examination of Site, Discovery, Authority to Stop Work, Owner Occupancy.***

##### 1.03 SCOPE OF WORK

- A. The work contemplated by the Contract Documents includes the Work of all trades required and all labor, equipment, materials and supervision necessary and incidental to the Work indicated. The work of this contract includes selective demolition and renovations of existing construction. The work required by the Contract Documents includes the Work of all trades required and all labor, equipment, materials, and supervision necessary and incidental to the Work indicated. The following descriptions of the Work represent a brief summary of the Project. For additional and more complete information refer to the Project Manual and Drawings. The Drawings indicate and show limits of construction for this Project. The Drawings and Project Manual are complementary to each other and both shall be followed to complete the Work.
- B. General Bidders are to be DCAMM certified in Roofing. The Roofing Contractor shall be the General Contractor. The project scope consists of roof replacement and associated repairs. The general scope of the construction work is briefly described as follows:
  - 1. Re-roofing of the existing low-sloped roofing systems utilizing a "tear-off" application. A new adhered EPDM roof membrane system (60-mil minimum thickness) is specified and detailed complete with a manufacturer's 20-year full system warranty. Removal of the existing adhered EPDM roof membrane system and installation of an adhered EPDM roof membrane system to include rigid board roof insulation (polyisocyanurate), flashings (membrane & sheetmetal), roof drainage replacement and repairs, vent pipe extensions, new roof hatch safety railing, new safety railings, walkway pads, repairs to deteriorated roof decking (i.e. steel and lightweight), and repairs to deteriorated wood blocking.

- C. The Owner is concerned that the Roof Replacement work be completed in a timely fashion and in strict accordance with the approved construction schedule. To accomplish this the Contractor is required to properly staff the project, including providing a **full-time Project Superintendent**. The Contractor shall also note that during the construction period the facility will be open for business daily and fully occupied. Coordination with the occupants and with any other Contractors that may be on-site under separate contracts will be required. The Contractor will be allowed to work during normal business hours. The project milestone schedule is as follows:

ANTICIPATED PROJECT MILESTONE SCHEDULE

Project out to bid .....March 23, 2022  
On-site Pre-Bid Meeting .....March 30, 2022 at 9:00 am  
General Bids Due .....April 7, 2022 at 10:00 am

A contract is expected to be promptly awarded to the lowest responsible and eligible bidder. The Contractor will be allowed to commence the construction work on June 27, 2022, substantial completion by August 1, 2022, and final completion shall occur on or before August 8, 2022. In case the Work embraced in this Contract shall not have been completed due to failure of the Contractor to complete the work or any part of the work within the time specified, the Awarding Authority may recover as liquidated damages **\$1,000** per day for every day beyond the final completion date or revised completion date as extended in accordance with any change orders. The work hours shall be as follows:  
Monday through Saturday 7:00 am to 8:00 pm.

1.04 CODES, STANDARDS AND PERMITS

- A. All work under this Contract shall conform to all codes and standards in effect as of the date of receipt of Bids, which are applicable to this Project. All work shall further conform to specific requirements and interpretations of local authorities having jurisdiction over the Project. These codes, standards and authorities are referred to collectively as "the governing codes and authorities", and similar terms, throughout the Specifications. Determination of applicable codes and standards, and authorities having jurisdiction, shall be the responsibility of the General Contractor, as shall be the analysis of all such codes and standards in regard to their applicability to the Project for the purposes of determining necessary construction to conform to such code requirements, securing all approvals and permits necessary to proceed with construction, and to obtain all permits necessary for the Owner to occupy the facilities for their intended use. In the case of conflicts between the requirements of different codes and standards, the most restrictive or stringent requirements shall be met.

The General Contractor shall maintain at the site, for the duration of the

construction operations at the site, two (2) copies of all relevant codes and standards listed herein or determined to be applicable to the work. One copy of such codes shall be for the exclusive use of the Owner and Engineer and its consultants and shall be kept in the Construction Manager's site office.

- B. Code Enforcement and Approvals: The General Contractor shall secure the general building permit for the work, and the General Contractor shall conform to all conditions and requirements of the permit and code enforcement authority. The General Contractor shall provide names and license numbers of its responsible representatives to complete application for permit and shall receive permit and promptly distribute copies thereof to Owner and Engineer.
- C. The General Contractor shall identify all permits (other than general building permit) required from authorities having jurisdiction over the Project for the construction and occupancy of the work, shall prepare the necessary applications and submit required plans and documents to obtain such permits in a timely manner, and shall pay all fees and charges in connection therewith.
  - 1. Permit fees are waived.
  - 2. The General Contractor shall display all permit cards as required by the authorities and shall deliver photocopies of all permits to the Owner and Engineer promptly upon receipt.
  - 3. The General Contractor shall arrange for all inspections, testing and approvals required for all permits, and shall notify the Engineer and Owner of such inspections at least three business days in advance, so they may arrange to observe.
  - 4. The General Contractor shall comply with all conditions and provide all notices required by all permits.
  - 5. The General Contractor shall perform and/or arrange for and pay for all testing and inspections required by governing codes and authorities, other than those provided by the Owner, and shall notify Engineer and Owner of such inspections at least three business days in advance of all such testing or inspection, so they may arrange to observe.
  - 6. Where inspecting authorities require corrective work in conjunction with applicable codes and authorities, the General Contractor shall promptly comply with such requirements, except in cases in which requirements clearly exceed the requirements of the Contract Documents in which case the Contractors shall proceed in accordance with the procedures for modifications or changes in the work established in the Contract Documents, as amended.

#### 1.05 CONTRACTOR'S USE OF PREMISES

- A. The existing building and site will be occupied for the entire construction period.

At all times during the demolition, construction, and alterations, the General Contractor shall provide adequate and safe means of egress for all work forces in the building and at the same time provide security of the building. "Means of Egress" also includes safe and adequate paths on the site.

- B. Prior to beginning work of the Contract, the General Contractor shall meet with the Owner and the Engineer to determine procedures regarding access to and use of site, exterior staging, parking, and storage areas, tree protection, special site conditions, and any other restrictions regarding the use of the site areas surrounding the construction.
- C. Where work on public roads or walks, or other work on municipal property or easements is done, all such work shall conform to applicable portions of this Specification and the rules, regulations, and specifications of the public agencies having jurisdiction. Wherever work on or obstruction to a public street is done, a Town special duty police officer must be present arranged and paid for by the General Contractor at no change in contract price. All permits and fees in relation to such off-site work shall be obtained and paid for by the General Contractor.
- D. The General Contractor shall keep all public and private access roads and walks clear of debris caused by their work during the entire term of the Contract. They shall repair all public and private streets, drives, curbs, walks, and other improvements where disturbed by work of, or related to, building operations, leaving them in as good condition after completion of the work as before operations started, in accordance with rules, regulations, and specifications of the public agencies having jurisdiction.
- E. Access roads and fire-lanes on and about the site shall be kept open and free at all times.
- F. A reasonable sum (cost of equivalent replacement) will be deducted from the Contract Sum for any permanent damage to existing trees or plantings, which are outside the construction site area but on the Owner's property or are within the construction site area and are designated to be protected. Damage to trees and plants off the Owner's property shall be fully the responsibility of the General Contractor.
- G. The General Contractor shall endeavor at all times to maintain as low a level of construction noise as practicable in order not to create a disturbance in the neighborhood. The General Contractor shall provide and maintain portable noise barriers for compressors and generators. Compressors and generators shall be located to prevent fumes from entering occupied space (including abutter properties).
  - 1. All workers on the project are required to conduct themselves in a professional manner. Abusive or obscene language will not be tolerated. No obscene gestures, whistles, or cat-calls will be allowed. No soliciting or harassing of neighborhood residents for any reason will be permitted.

The Owner reserves the right to have any worker barred from the construction site.

2. Use of alcohol or drugs on the property is prohibited.
  3. Workers shall wear shirts at all times.
  4. Smoking is prohibited on the property.
- H. The intent of the specifications is that required work shall be performed with a minimum of interference with the public and the Owner's operations. To achieve this end, the General Contractor shall prosecute the work to its completion as soon as possible with full crews of workers during regular working hours, with multiple shift work or overtime hours as indicated in their Progress Schedule as approved. All work at other than regular hours shall be subject to prior approval by Owner.
- I. The General Contractor shall confine his apparatus, storage of materials, and operations of his workers to areas as required by the Owner and shall not unreasonably encumber the premises with his materials. The General shall keep corridors and exits clear of debris, stored materials, etc. At all times, to provide for normal and fire egress from the building. The premises shall be maintained in a safe, orderly condition at all times.
- J. Site Cleaning and Maintenance:
1. Before the start of any work it is required that an inspection is made to determine the existing conditions of the site around the work areas, including areas outside of the Site boundaries in which operations of the Contractors may occur. This should be performed jointly by representatives of each Contractor and Engineer.
  2. Unless otherwise specified in the various technical specification Sections, the General Contractor shall take all necessary precautions to prevent the spreading of dirt and dust throughout the area of the work. During demolition and other work, the General Contractor shall take all measures necessary to contain dust and other debris from the work within the limits of the site under their control. The General Contractor shall be responsible for promptly cleaning up all dirt, dust and debris escaping from the work areas or dropped from vehicles traveling to and from the work. All vehicles used for removal of material from the site shall be equipped with covers, in good condition, adequate to contain dust and debris within lawful and acceptable limits. The General Contractor shall provide all facilities for preventing spread of objectionable matter outside of the site areas through washing of vehicles and vehicle wheels, decontamination of vehicles transporting hazardous waste containing materials including asbestos, lead, or other matter, and all other means necessary.
  3. Prior to final completion of the Contract, The General Contractor shall



remove all spots, stains, dirt and dust from all surfaces, including areas within other buildings and any portion of property of others, which were the result of the work of this Project to the satisfaction of the Owner.

4. Any damage to the present quarters or equipment of the Owner caused by the General Contractor or their Subcontractors shall be corrected, as directed by the Engineer, at the expense of the Contractors.
- K. As a condition of Engineer's certification for Final Completion, restore site areas and areas off the site damaged by work under this Contract to their condition existing at the start of the work unless otherwise directed by the Owner.

#### 1.06 EXAMINATION OF SITE

- A. Prior to bidding the General Contractor shall carefully examine the site and the Contract Documents to ensure their knowledge of conditions and requirements affecting the work. No claim for extra compensation or extension of time will be allowed for by the Contractor's failure to comply with this requirement nor will any condition at the site, whether or not in agreement with conditions shown or called for on the Contract Documents, be allowed as a basis or such claims, except as otherwise specifically provided for.

#### 1.07 DISCOVERY

- A. If during the demolition, excavation, disposal, or other work, articles of unusual value, or of historical or archaeological significance are encountered the ownership of such articles is retained by the Owner, and information regarding their discovery shall be immediately furnished to the Engineer. If the nature of the article is such that the work cannot proceed without danger of damaging same, work in that area shall be immediately discontinued until the Engineer has decided the proper procedure to be followed. Any time lost thereby shall be a condition for which the time of the Contract may be extended. All costs incurred after discovery in the salvaging of such articles shall be borne by the Owner.

#### 1.08 AUTHORITY TO STOP WORK

- A. The Engineer, the Owner, or their authorized representatives shall retain the right to stop work on the project when, in their judgment, the specifications, the manufacturer's requirements, drawings or similar requirements and conditions are not being fully complied with by the General Contractor or subcontractors.
- B. The Engineer, the Owner, or their authorized representatives shall retain the right to stop work on the project when, in their judgment, unforeseen conditions require field changes. The General Contractor shall make watertight the area in construction and the Engineer shall develop the necessary modifications to the design.
- C. No claims by the General Contractor for additional compensation or extension of contract schedules shall be allowed due to a suspension of the work ordered by

the Owner or Engineer because of the Contractor's failure to comply with the Contract Documents or due to unforeseen conditions that require field changes.

- D. If work is suspended on the project due to the Contractor's failure to comply with the Contract Documents, the Contractor shall immediately take whatever measures are necessary to bring his work on the project into compliance and to resume work.
- E. If the Contractor neglects or refuses to bring his work into full compliance with the Contract Documents, the Owner shall retain the right to terminate the Contract.

#### 1.09 OWNER OCCUPANCY

- A. The Owner intends to occupy the building during the project. Contractors (under separate contracts) may also be on site during the construction period. The work sequence must be coordinated and approved with the Owner and others working on-site. The General Contractor is to cooperate with the Owner to minimize conflict and to facilitate the Owner's operations.

#### **PART 2 – PRODUCTS (NOT USED)**

#### **PART 3 – EXECUTION (NOT USED)**

**END OF SECTION**

## SECTION 01 02 50

### MEASUREMENT AND PAYMENT

#### PART 1 – GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.

##### 1.02 SECTION INCLUDES

- A. The work of this section consists of ***Project Pricing, Lump Sum Prices, Unit Prices, Alternate Work Prices, Unit Price Quantity Measurement, Schedule of Values, Application for Payment, Waivers of Mechanics Liens.***

##### 1.03 PROJECT PRICING

- A. Bidder shall complete the Form for General Bid including all requested information.
- B. Project pricing is lump sum. Estimated quantities relative to repairs of anticipated deteriorated conditions are included in the lump sum price. Unit prices are requested for any adds or deducts to these estimated quantities.

##### 1.04 LUMP SUM PRICES

- A. Lump Sum Prices shall include all costs to provide and install the Work including, but not limited to labor, materials, equipment, supervision, overhead, profit.

##### 1.05 UNIT PRICES

- A. Unit Prices shall include all costs to provide and install the Work including, but not limited to labor, materials, equipment, supervision, overhead, profit.
- B. Estimated quantities relative to repairs of anticipated deteriorated conditions are included in the lump sum price (refer to the Form for General Bid and Technical Specifications). Unit Prices are requested (refer to Form for General Bid) for any adds or deducts to these estimated quantities. Should the quantities of certain classes be increased or decreased from those, on which the Lump Sum Price is based, the unit prices will be the basis of payment or credit for such addition, increase or decrease in the work. Unit Prices given shall represent the exact net amount per unit to be added to the Price inclusive of General Conditions (in the case of additions or increases) or to be refunded to the Owner (in the case of decreases). The owner shall have the right to reject any or all proposed Unit prices at any time prior to signing the agreement for performance of the work.

#### 1.06 ALTERNATE WORK PRICES

- A. Alternate Work Prices shall include all costs to provide and install the Work including, but not limited to labor, materials, equipment, supervision, overhead, profit.
- B. Bidders shall submit their price for each alternate work item identified in the technical specifications. The amount of each alternate work price shall be stipulated in the space provided in the Form for General Bid.
- C. The Awarding Authority reserves the right to select or reject the alternate work, based on the prices received. The alternates are ranked numerically in order of priority.

#### 1.07 UNIT PRICE QUANTITY MEASUREMENT

- A. Owner reserves the right to reject the Contractor's measurement of work-in-place that involves use of estimated quantities and established unit prices, and to have this Work measured and/or verified by an independent qualified engineer acceptable to the Contractor at the Owner's expense.
- B. The Contractor shall perform unit price work only when approved by the Engineer. Quantity measurements shall be performed as described in the technical specifications or as shown on the drawings. The Contractor shall properly document that the work has been completed. Proper documentation shall include photos and locations shown on the roof plan. Quantity tabulation shall be done on a daily basis by the contractor and reported at the construction meetings, or more often as requested by the engineer.
- C. Contractor shall maintain drawing sepias locating all unit price repairs performed. Contractor shall submit copy of sepia identifying current quantities with each payment request. Work being invoiced must be properly identified. These sepias shall be incorporated into the As-Built Drawings set required by Section 01700.
- D. If unit prices are stated in the Contract Documents or subsequently agreed upon, and 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.

#### 1.08 SCHEDULE OF VALUES

- A. The Contractor shall prepare a Schedule of Values for the Work as required by the General Conditions. Use the Form for General Bid as a guide to establish the format for the Schedule of Values.

- B. Submit the Schedule of Values to the Engineer at the earliest feasible date, but in no case later than seven days before the date scheduled for submittal of the Applications for Payment.
- C. Update and resubmit the Schedule of Values when change orders result in a change in the contract sum.

#### 1.09 APPLICATION FOR PAYMENT

- A. On or before the last day of each calendar month, the Contractor shall submit to the Engineer an itemized Application for Payment showing value of all work completed and material or equipment for inclusion in the work delivered to the site during the previous month.

- 1. Application for Payment: Contractor shall submit to the Engineer the Contractor's Application for Payment which shall state the amount to which each subcontractor, supplier of materials and workman is then entitled and which shall incorporate the following documents:
  - a. An Affidavit in the form of Exhibit "A" (Application for Payment).
  - b. Waivers of Lien in the form of Exhibit "B" (Discharge of Lien by Subcontractor) from each material supplier and subcontractor to whom payment has been made, according to the affidavit.
  - c. Waiver of Lien by the Contractor in the form of Exhibit "C" (Discharge of Lien by Contractor).
  - d. Satisfactory bills of sale for all materials and equipment, etc. for which payment is requested and which have not yet been incorporated in the work; said bills of sale to evidence ownership of such material to the Owner.

Application for payment shall not be accepted unless all information requested by the Engineer is provided. Contractor shall use only forms provided by the Engineer. Other forms, invoices, waivers, etc. shall not be acceptable (see Supplements to Contract Forms).

- 2. Any amount paid to the Contractor by the Owner pursuant to such Application for Payment shall be made to the Contractor for each purpose, in the first instance, and before any other use of such amount by the Contractor, of enabling the Contractor to pay any subcontractor, supplier of materials or workman who has not there-to-fore been paid the amount to which he is entitled to as shown in said application, and the Contractor shall forthwith upon receipt of such amount from the Owner shall make all such payments. The Contractor agrees that he shall, with respect to the entire amount so paid to him, be a Trustee, for the benefit of the Owner, each unpaid subcontractor, supplier of materials and/or workman, subject to all the obligations customarily imposed upon

Trustees by the Law of that State in which the work is to be performed and in addition to such obligations, the Contractor, as Trustee, shall make such payment to such subcontractors, supplier of materials and workmen, shall furnish to the Owner such releases or waivers of lien and such indication of title as the Owner may reasonably require.

3. Failure of the Engineer in any particular instance to require full compliance with the provisions of the first paragraph of this Article shall not constitute a waiver of Contractor's obligations to comply in full in any other instance, and Contractor's acceptance of any payment for which application has not been made in the manner described above shall constitute (i) a warranty and representation by Contractor that all workmen have been paid for the work so done by them which is covered by such payments and that all subcontractors and suppliers of materials have been paid, or shall forthwith be paid, out of the proceeds of such payment to the Contractor, and (ii) a binding agreement by the Contractor to hold and apply such payment subject to and upon all of the terms and conditions set forth in the next preceding paragraph of this Article.
  4. Owner reserves the right, to be exercised in Owner's sole and absolute discretion, to make the whole or any part of any payment required hereunder directly to any subcontractor or material man entitled to payment for any work done or materials or equipment supplied for the completion of the contract or to make payments jointly to Contractor and any subcontractor or material man, and any payment so made by Owner shall be credited toward any amount payable by Owner to Contractor.
  5. Contractor shall have one separate item for the group of general conditions, overhead and profit and shall prorate this on monthly and final requisitions in an equitable fashion. He shall show only true subcontracted costs, and in the event of dispute shall show signed subcontracts and invoices to Engineer.
- B. Upon receipt of each complete and properly filled out Application for Payment, the Engineer will verify quantities of labor, material and equipment and the amount therefore and shall certify for payment that portion of total amount of application that he finds to be due.
1. The properly filled in certificate for payments will be approved and submitted to the Owner by the Engineer within seven days of receipt by him of same.
  2. Contractor shall be responsible for the submission of complete information, including waivers of lien, on the forms provided by the Engineer. Neither Engineer nor Owner shall be responsible for delay in payments due to the Contractor's failure to comply with the Contract Documents.

- C. Within thirty days after the approval by the Engineer of the Contractor's Application for Payment, the Owner shall make payment to the Contractor of such sum as together with previous amount paid to him shall equal 90% of the amount of said applications approved for payments. The monies retained by the Owner hereunder shall not be due the Contractor until final completion of the Project.
1. Payments by the Owner shall not constitute acceptance of the work nor waivers or rights or redress against the Contractors for any failure to comply with contract documents.
  2. Payments may be withheld by the Owner on account of a) defective work not remedied; b) claims or liens filed; or c) unsatisfactory prosecution of the Work by the Contractor.

#### 1.10 WAIVERS OF MECHANICS LIENS

- A. With each Application for Payment submit waivers of mechanics liens from subcontractors or sub-subcontractors and suppliers for the construction period covered by the previous application.
- B. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item.
- C. When an application shows completion of an item, submit final or full waivers.
- D. The Owner reserves the right to designate which entities involved in the Work must submit waivers.
- E. Submit waivers of lien on forms and executed in a manner acceptable to the Owner.

#### **PART 2 – PRODUCTS (NOT USED)**

#### **PART 3 – EXECUTION (NOT USED)**

**END OF SECTION**

## SECTION 01 04 00

### COORDINATION AND MEETINGS

#### PART 1 – GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.

##### 1.02 SECTION INCLUDES

- A. The work of this section consists of ***Project Coordination, Project Superintendence, Project Meetings and Project Progress Schedules.***

##### 1.03 PROJECT COORDINATION

- A. The Project Coordination Administrator shall be the Engineer as employed and directed by the Owner. The Contractor shall cooperate fully with the Administrator in allocation of mobilization areas, protection, field offices, storage sheds/areas, traffic, and parking facilities.
- B. Contractor shall coordinate all aspects of the work (including his and any of his subcontractors), including but not limited to: scheduling, submittals, shop drawings, and permitting so as to ensure efficient and orderly sequencing of the construction.
- C. Contractor shall verify that utility requirements of all project related required machinery and equipment are compatible with the building's utilities. Contractor shall coordinate for installing, connecting to, and placing in service, all such required machinery and equipment.
- D. Contractor shall coordinate completion and clean-up of work on a daily basis, including maintaining water-tightness for project duration.

##### 1.04 PROJECT SUPERINTENDENCE

- A. The Contractor shall provide and maintain proper supervision of the labor force for project duration. To this end, the Contractor shall provide, for project duration, a competent full-time, ***Project Superintendent*** who shall remain on site, full-time every workday. The Project Superintendent shall be responsible for providing full-time supervision of the labor force, including but not limited to his employees, his subcontractors, his material suppliers, and his equipment suppliers. His responsibilities shall also include general coordination and management of the job and his attendance is required at all project meetings. He



shall not work as a foreman, mechanic, laborer, or tradesman, except with the written permission of the Engineer.

- B. Prior to the pre-construction meeting, the Contractor shall provide the Project Superintendent's resume to the Engineer for approval. The Engineer shall have the right, by written notice sent to the Contractor at any time to disapprove such Project Superintendent. The Contractor shall then appoint a new and approved Project Superintendent within one (1) day of receipt of notice. The Contractor shall not remove the Project Superintendent without the Engineer's written approval.
- C. The Contractor shall provide appropriate and adequate labor for this project and such labor will work in harmony with all other elements of labor employed or groups taking part in or concerned with this facility. The Contractor shall promptly remove from work on this project any employee who, in the opinion of the Engineer, is incompetent, unskillful, disruptive, or disorderly. Any such person so removed from the work shall not be re-employed on this project without the Engineer's written approval.

#### 1.05 PROJECT PROGRESS MEETINGS

- A. Project Progress Meetings will be held on-site for project duration. The Engineer will schedule them in advance. Representatives directly concerned with the work shall be in attendance, including but not limited to, Owner, Engineer, Contractor (including Project Superintendent), Manufacturer's representative, test agencies, governing authorities, and Owner's insurers. The Engineer will maintain a record of the meetings and shall distribute a copy of this record to all participants.
- B. Prior to the commencement of the work, a *pre-construction meeting* will be held with the above-mentioned representatives in attendance. The Engineer will maintain a record of the meeting and shall distribute a copy of this record to all participants. A copy of this record shall be incorporated into the Contract Documents. The objectives and agenda of the pre-construction meeting shall include:
  - 1. The execution and distribution of Contract Documents.
  - 2. The execution and distribution of required bonds and insurance certificates.
  - 3. The execution and distribution of required permits.
  - 4. Review the required submittals and shop drawings, including but not limited to: product lists, subcontractors list, schedule of values and construction schedule.
  - 5. Review project assigned personnel, including emergency phone numbers.

6. Review procedures related to permits, submittals, shop drawings, field changes, product substitutions, applications for payments, change orders and contract closeout procedures.
7. Review construction progress schedule including sequencing of events and hours of operation, verify the availability of materials, installer's personnel, and the equipment and facilities needed to make progress and avoid delays.
8. Review Owner's requirements, his occupancy and use of premises (by both Owner and Contractor); including accessing the work areas, locations of dumpsters and set-up areas, the use of electrical power supplied by the Owner and toilet facilities.
9. Review the technical specifications and drawings, the application requirements, construction facilities, utilities, security, protection, material storage, and housekeeping procedures.
10. Review procedures for all required inspections, testing, certifying, and material usage accounting procedures, including maintaining record documents and as-built drawings.
11. Tour representative areas of construction, inspect and discuss the condition of the facility and the Contractor's project approach.
12. Review the notification procedures for weather or non-working days, including procedures for coping with unfavorable conditions and maintaining watertightness on a daily basis.

#### 1.06 PROJECT PROGRESS SCHEDULES

- A. Contractor shall prepare and provide his Project Progress Schedule, prior to the preconstruction meeting, to the Engineer for review. The schedule shall show the complete sequence of construction by activity, with dates for beginning and completion of each element of construction. Identify each item by specification Section number. Provide sub-schedules to define critical portions of the entire schedule. Coordinate content with Schedule of Values.
- B. The Project Progress Schedule will be reviewed at the preconstruction meeting and will be updated at each construction meeting, or more often as needed. Contractor shall update the schedule after each meeting, identifying changes since previous version, and submit to all parties in advance of the next scheduled construction meeting, or as directed by the Engineer.
- C. The Project Progress Schedule shall utilize one of the following acceptable formats: a horizontal bar chart or a computer generated network analysis diagram using the critical path method, generally as outlined in Associated General Contractors of America publication "The Use of CPM in Construction - A Manual for General Contractors and Construction Industry".

- D. Contractor shall also provide a separate schedule of submittal dates for shop drawings, product data, and samples, prior to the preconstruction meeting, to the Engineer for review. The schedule shall indicate dates reviewed submittals will be required from Engineer and anticipated delivery dates for products.
- E. The above referenced schedules shall indicate revisions as they occur including projected completion date of each activity, activities modified since previous submittal, major changes in scope, and other identifiable changes. The schedules shall provide narrative reports to define problem areas, anticipated delays, and impact on schedule. Report corrective action taken, or proposed, and its effect including the effect of changes on schedules of separate contractors.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION (NOT USED)**

**END OF SECTION**

## SECTION 01 06 00

### REGULATORY REQUIREMENTS

#### PART 1 – GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.
- B. Statutory Regulations for Public Construction Contracts:

**M.G.L. c.30, '39I:** Deviations from plans and specifications.

Every contractor having a contract for the construction, alteration, maintenance, repair or demolition of, or addition to, any public building or public works for the commonwealth, or of any political subdivision thereof, shall perform all the work required by such contract in conformity with the plans and specifications contained therein. No willful and substantial deviation from said plans and specifications shall be made unless authorized in writing by the awarding authority or by the engineer or architect in charge of the work who is duly authorized by the awarding authority to approve such deviations. In order to avoid delays in the prosecution of the work required by such contract such deviation from the plans or specifications may be authorized by a written order of the awarding authority or such engineer or architect so authorized to approve such deviation. Within thirty days thereafter, such written order shall be confirmed by a certificate of the awarding authority stating: (1) if such deviation involves any substitution or elimination of materials, fixtures or equipment, the reasons why such materials, fixtures or equipment were included in the first instance and the reasons for substitution or elimination, and, if the deviation is of any other nature, the reasons for such deviation, giving justification therefor; (2) that the specified deviation does not materially injure the project as a whole; (3) that either the work substituted for the work specified is of the same cost and quality, or that an equitable adjustment has been agreed upon between the contracting agency and the contractor and the amount in dollars of said adjustment; and (4) that the deviation is in the best interest of the contracting authority. Such certificate shall be signed under the penalties of perjury and shall be a permanent part of the file record of the work contracted for. Whoever violates any provision of this section willfully and with intent to defraud shall be punished by a fine of not more than five thousand dollars or by imprisonment for not more than six months, or both.

**M.G.L. c.30, '39J:** Public construction contracts; effect of decisions of contracting body or administrative board. Notwithstanding any contrary provision of any contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building or public works by the commonwealth, or by any county, city, town, district, board, commission or other public body, when the amount of

the contract is more than five thousand dollars in the case of the Commonwealth and more than two thousand dollars in the case of any county, city, town, district, board, commission or other public body, a decision, by the contracting body or by any administrative board, official or agency, or by any architect or engineer, on a dispute, whether of fact or of law, arising under said contract shall not be final or conclusive if such decision is made in bad faith, fraudulently, capriciously, or arbitrarily is unsupported by substantial evidence, or is based upon error of law.

**M.G.L. c.30, '39O:** Contracts for construction and materials; suspension, delay or interruption due to order of awarding authority; adjustment in contract price; written claim. Every contract subject to the provisions of M.G.L. c.30, '39M or subject to M.G.L. c.149, '44A shall contain the following provisions (a) and (b) in their entirety and, in the event a suspension, delay, interruption or failure to act of the awarding authority increases the cost of performance to any subcontractor, that subcontractor shall have the same rights against the general contractor for payment for an increase in the cost of his performance as provisions (a) and (b) give the general contractor against the awarding authority, but nothing in provisions (a) and (b) shall in any way change, modify or alter any other rights which the general contractor or the subcontractor may have against each other.

(a) The awarding authority may order the general contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the awarding authority; provided however, that if there is a suspension, delay or interruption for fifteen days or more or due to a failure of the awarding authority to act within the time specified in this contract, the awarding authority shall make an adjustment in the contract price for any increase in the cost of performance of this contract but shall not include any profit to the general contractor on such increase; and provided further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

(b) The general contractor must submit the amount of a claim under provision (a) to the awarding authority in writing as soon as practicable after the end of the suspension, delay, interruption or failure to act and, in any event, not later than the date of final payment under this contract and, except for costs due to a suspension order, the awarding authority shall not approve any costs in the claim incurred more than twenty days before the general contractor notified the awarding authority in writing of the act or failure to act involved in the claim.

**M.G.L. c.30, '39P:** Contracts for construction and materials; awarding authority's decisions on interpretation of specifications, etc.; time limit; notice. Every contract subject to M.G.L. c.30, '39M or M.G.L. c.149, '44A

which requires the awarding authority, any official, its architect or engineer to make a decision on interpretation of the specifications, approval of equipment, material or any other approval, or progress of the work, shall require that the decision be made promptly and, in any event, no later than 30 days after the written submission for decision; but if such decision requires extended investigation and study, the awarding authority, the official, architect or engineer shall, within 30 days after the receipt of the submission, give the party making the submission written notice of the reasons why the decision cannot be made within the 30 day period and the date by which the decision will be made.

#### 1.02 SECTION INCLUDES

- A. The work of this section consists of ***Project Authorizations, and Sales Tax.***

#### 1.04 PROJECT AUTHORIZATIONS

- A. The Contractor shall obtain all necessary authorizations, including but not limited to permits, licenses, and easements, for permanent structures and changes, give all necessary notices, pay all legal fees, and comply with all regulations of all authorities having jurisdiction, including, State, County, and City Building and

Sanitary Laws, Rules, Ordinances, or Regulations, relating to the building or preservation of public health. The Contractor shall pay all fees and costs as required including filing, inspection, and re-inspection costs. No work shall begin until all required project authorizations are obtained and a copy of the building permit, provided by the building department, shall be posted on-site, in view and protected from the weather, for project duration. The Town shall waive all General, Mechanical, Plumbing and Electrical Permit fees. Contractor shall be responsible for any re-inspection fees.

#### 1.05 SALES TAX

- A. Sales Tax shall be not included in the cost for any and all materials used on this project. The Contractor shall not include the cost of any or all taxes in his bid for all materials to be used for this project.
- B. Contractors employed by the Town of Wilmington, shall be exempt from state sales tax and will be provided with the tax-exempt number or certificate.

#### **PART 2 – PRODUCTS (NOT USED)**

#### **PART 3 – EXECUTION (NOT USED)**

**END OF SECTION**

## SECTION 01 33 00

### SUBMITTALS

#### PART 1 – GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.
- B. Work on the project, which requires submittals, shall not commence and materials shall not be ordered until all necessary submittals including shop drawings, product data, and samples are reviewed and approved in writing by the Engineer.

##### 1.02 SECTION INCLUDES

- A. The work of this section consists of ***Schedule, Procedures and Product Data, Shop Drawings, Samples, Contractor's Responsibilities, Submission Requirements, and Engineer's Responsibilities.***

##### 1.03 SCHEDULE

- A. Contractor shall provide a schedule of submittal dates for shop drawings, product data, and samples, prior to the preconstruction meeting, to the Engineer for review. The schedule shall indicate dates reviewed submittals will be required from Engineer and anticipated delivery dates for products.
- B. The above referenced schedule shall indicate revisions as they occur including projected completion date of each activity, activities modified since previous submittal, major changes in scope, and other identifiable changes. The schedule shall provide narrative reports to define problem areas, anticipated delays, and impact on schedule. Report corrective action taken, or proposed, and its effect including the effect of changes on schedules of separate contractors.
- C. Refer to Section 01 04 00 - COORDINATION, 1.06 Project Progress Schedules for information pertaining to the construction sequence schedule.

##### 1.04 PROCEDURES AND PRODUCT DATA

- A. Contractor shall submit to the Engineer copies of Manufacturer's Spec and Product Data Sheets, Health and Safety Data Sheets (MSDS sheets to remain on site for project duration and additional copies to be supplied to Owner as requested), and recommended installation procedures, temperature limitations, mix designs for materials, and any other information as required by the technical specifications.

- B. Submit six (6) copies of the manufacturer's printed data all stamped with the Contractor's approval and stating its intended use to the Engineer for review. After review of the manufacturer's printed data, the Engineer will stamp one (1) copy, noting, if necessary, any further action required, and return the copy to the Contractor.

#### 1.05 SHOP DRAWINGS

- A. Contractor shall submit Shop Drawings as required by the technical sections of the Specifications. Check and approve Shop Drawings before submitting to the Engineer. Submit checked Shop Drawings stamped with the approval of the Contractor, to the Engineer for review per the accepted schedule of Shop Drawing submissions. Engineer shall review, stamp, and return Shop Drawings to the Contractor within ten (10) working days from the date of receipt of Shop Drawings at the Engineer's office.
- B. Shop Drawings shall demonstrate that the Contractor understands the intent of the design as detailed and specified in the Contract Documents and show materials (kinds, quality, shapes, and sizes), details (fabrication, construction, assembly, and installation) and all required dimensions and measurements. All Shop Drawings shall bear the Contractor's stamp of approval certifying that they have been so checked. Any Shop Drawings submitted without this stamp of approval and Shop Drawings which, in the opinion of the Engineer, are incomplete or have not been checked adequately will be returned without review by the Engineer for resubmission by the Contractor.
- C. From Suppliers receive one (1) sepia and three (3) prints of all Shop Drawings for checking and approval. Contractor shall submit one (1) sepia and two (2) prints, all stamped with the Contractor's approval, and stating its intended use to the Engineer for review. After review of the Shop Drawings, Engineer shall stamp each sepia, noting, if necessary, any further action required, and return the sepias to the Contractor. All Shop Drawings shall have final review by Engineer before materials are ordered or fabrication is begun. Contractor shall provide the Engineer with three (3) prints of the final Shop Drawings, reproduced from the corrected original, and provide as many other prints as are required to expedite the Work. Contractor shall only use unmarked final approved Shop Drawings in the field.

#### 1.06 SAMPLES

- A. Contractor shall submit samples as required by technical sections of the Specifications. Receive, check, approve and stamp all samples before submitting to the Engineer.
- B. Label each sample, giving a complete description of the material, the intended use and the name of the entity submitting the sample. Allow ample time before samples are required for the Work.



#### 1.07 CONTRACTOR'S RESPONSIBILITIES

- A. Contractor shall review Shop Drawings, Product data and Samples and affix Contractor's stamp prior to submitting to the Engineer.
- B. Contractor shall verify existing conditions, field dimensions, catalogue numbers, quantities and similar data.
- C. Contractor shall coordinate each submittal with requirements of the Work and of the Contract Documents.
- D. Contractor's responsibility for errors and omissions in submittals is not relieved by Engineer's review of submittals. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by Engineer's review of submittals unless Engineer gives written acceptance of specific deviations.
- E. Contractor shall thoroughly check all Shop Drawings for completeness, for correctness with respect to field conditions, and for compliance with the Contract Documents before submitting to the Engineer. Notify Engineer in writing, at the time of submission, of deviations in submittals from requirements of Contract Documents.

#### 1.08 SUBMISSION REQUIREMENTS

- A. Submittals shall be submitted in an orderly sequence and sufficiently in advance of construction requirements so as to allow ample time for review, resubmitting and rechecking. Accompany submittals with transmittal letter, in duplicate. Shop Drawings: one (1) reproducible transparency and three (3) blueline prints. Product Data: six (6) copies.
- B. Submittals shall include the following minimum information:
  - 1. Date and revision dates
  - 2. Project Title and Project Number
  - 3. Names of: Engineer, Contractor, Subcontractor, Supplier, Manufacturer
  - 4. Identification of product or material
  - 5. Field dimension clearly defined as such. Relation to adjacent structure or
  - 6. Materials.
  - 7. Specification Section Number.
  - 8. Applicable standards- ASTM or Federal Spec.
  - 9. Blank 3"X4" space for Engineer's stamp, located in bottom right-hand corner.
  - 10. Identification of deviations from the Contract Documents.
  - 11. Contractor's stamp signed certifying as to review of submittal, verification of existing conditions and field dimensions and compliance with Contract Documents.

- C. Contractor shall revise the initial submittal as required and resubmit as specified for the initial submittal. Clearly indicate by clouding and use of revision level number in triangular symbol, all changes which have been made including those requested by the Engineer.
- D. Contractor shall distribute copies of Product Data and Shop Drawings that carry Engineer's stamp to the following:
  - 1. Contractor's file.
  - 2. Job site file.
  - 3. Record documents file.
  - 4. Owner's representative.
  - 5. Fabricator.
  - 6. Supplier.
  - 7. Subcontractors.
  - 8. Local Building Inspector (if required).
- E. Contractor shall distribute Samples as required in the technical specifications, but at a minimum they shall be distributed to the Engineer.

#### 1.09 ENGINEER'S RESPONSIBILITIES

- A. Engineer shall review submittals and transmit to the Contractor within ten (10) working days after receipt of submittal at the Engineer's office, for Contractor distribution. Engineer shall review for design concept of Project and information provided in the Contract Documents.

#### **PART 2 – PRODUCT (NOT USED)**

#### **PART 3 – EXECUTION (NOT USED)**

**END OF SECTION**

## SECTION 01 40 00

### QUALITY CONTROL

#### PART 1 – GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.

##### 1.02 SECTION INCLUDES

- A. The work of this section consists of ***Quality Assurance, References and Standards, and Cutting and Patching.***

##### 1.03 QUALITY ASSURANCE

- A. All materials used as a component of the roofing system shall be supplied or approved in writing by the roofing system manufacturer. All materials shall be installed to serve their intended function.
- B. A licensed contractor approved by the roofing system manufacturer and employing personnel experienced and skilled in the application of the manufacturer's roofing system shall install the complete roofing and flashing system. The Contractor shall have a minimum of five (5) years experience installing the system.
- C. All work shall be applied in strict accordance with the provisions of the technical specification. No deviations shall be permitted without written consent from the Engineer. Should a conflict between this specification and the manufacturer's requirements arise, the most restrictive provision, as determined by the Engineer, shall govern.
- D. At least one week prior to construction work, a conference shall be held and attended by the Engineer, the Contractor, and the roofing system manufacturer. The purpose of this conference is to review the specifications, details, application requirements, storage area and work to be completed before construction operations begin.
- E. Upon completion of the installation, an inspection shall be made by a representative of the roofing system manufacturer to ascertain that the roofing system has been installed according to the specifications and details and will be accepted by the manufacturer and that the manufacturer will issue the specified warranty.

#### 1.04 REFERENCES AND STANDARDS

- A. Contractor shall comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- B. Contractor shall conform to the most current referenced standard and/or reference.
- C. Contractor shall obtain and maintain copies of references and standards as required by the Contract Documents. If specified standards or references conflict with Contract Documents, Contractor shall request clarification from Engineer before proceeding.

#### 1.05 CUTTING AND PATCHING

- A. All cutting, patching, and drilling shall be the responsibility of the Contractor. Contractor shall repair all cutting, patching, and drilling so as to match the existing surrounding surfaces as required by the Engineer. Contractor is responsible to ensure that the project progress will not be interrupted, and that the structural and architectural integrity of the project shall not be altered by misplaced or incorrectly sized penetrations.
- B. Contractor shall submit written request in advance of cutting or altering elements that affects the structural integrity, maintenance, efficiency, quality, or safety of such elements.
- C. Contractor shall perform cutting and patching so as to:
  - 1. Remove and replace defective and non-conforming Work.
  - 2. Remove samples of installed Work for testing.
  - 3. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- D. Contractor shall execute work by methods that will avoid damage to other Work and provide proper surfaces to receive new products and/or repairs.
- E. Contractor shall maintain integrity of building components and shall refinish surfaces to match adjacent surfaces.
- F. Contractor shall identify any hazardous substance or condition exposed during the work to the Engineer for decision or remedy.

#### **PART 2 – PRODUCTS (NOT USED)**

#### **PART 3 – EXECUTION (NOT USED)**

#### **END OF SECTION**

## SECTION 01 50 00

### CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

#### PART 1 – GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.
- B. All temporary facilities shall be installed, maintained, and removed, leaving the existing permanent facilities, utilities, and grounds in their original condition, at the expense of the Contractor. Temporary facilities shall at all times comply with all applicable regulations and shall not create or contribute to a safety, fire, health or other hazard.
- C. The Contractor must not interfere with the operations of the facility in any way including personnel, customers, and vehicles. The Contractor must fully cooperate with the Owner and Engineer.
- D. No Smoking shall be allowed at any time on the Project site.
- E. Maintain strict supervision of use of temporary services. Enforce conformance with applicable standards. Enforce safe practices. Prevent abuse of services and systems. Prevent damages to finishes. Prevent wasteful use of water. Maintain service and clean facilities.
- F. Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on the Project site.
- G. All work on the project is to be conducted from areas of the building designated by the Engineer and Owner. The Contractor shall take care not to block any travel lanes, fire lanes, access for fire apparatus, any means of egress, and any shipping/receiving areas of the facility and shall not interfere with the normal operation of the facility.
- H. Contractor shall access the project site by his own means, utilizing ladders, staging, etc. No access from the interior will be allowed except with the written permission of the Engineer. Contractor shall be allowed to enter the building during construction to perform visual surveys of his work and during emergency situations.

1.02 SECTION INCLUDES

- A. The work of this section consists of ***Temporary Utilities- Electrical, Lighting, Telephone, Water, Sanitary, and Fire Protection; Dust and Fume Control, Debris Control, Rodent and Pest Control, Noise Control, First Aid, Parking Areas, Barricades, Security, Temporary Project Offices and Enclosures, Thermometer, Existing Drawings and Construction Documents, Protection of Existing Landscaping and Pavement, Protection of Work, Project Representation, Emergency Repairs.***

1.03 TEMPORARY UTILITIES

- A. ***Electrical:*** Contractor shall provide his own generator for electrical power. Facility's electrical power is not available to the Contractor except for small tools. Owner shall provide power for small tools only at no cost to Contractor for energy, but Contractor must employ a licensed electrician satisfactory to Owner to make all connections and do all work including removal of temporary wiring. Temporary power service shall comply with OSHA Standards. Contractor shall maintain these temporary services in good order throughout the project until Work is complete. The Contractor requiring power shall provide all extension cords.
- B. ***Lighting:*** Contractor shall provide all temporary lighting for the Project. Adequate illumination shall be provided for the Work being performed; for safe movement of authorized persons through the project; for public safety and special warning lighting for hazardous conditions; and as required protecting the Project site from unauthorized entry.
- C. ***Telephone:*** Contractor shall provide the Project Superintendent with a cellular phone so that he can be reached at all times for Project duration. Engineer and Owner shall be provided with the phone number.
- D. ***Water:*** The Owner shall permit the Contractor to use the existing exterior water facilities' providing this does not interfere in any way with the normal daily operations of the facility or normal maintenance operations. If special temporary hook-ups or plumbing is required, the Contractor shall be solely responsible for the cost incurred. The Contractor shall provide drinking water for all personnel working on the project. The Contractor's use of water on the project shall comply with all federal, state, county and municipal requirements, regulations, and restrictions.
- E. ***Sanitary:*** The Contractor shall, at his own expense, provide the necessary toilet facilities for his men in a location approved by the Engineer. These facilities shall be open to the use of other Subcontractors and their employees. The toilet shall be removed upon completion of work, and the premises left in a clean and odorless condition. All temporary toilet facilities shall comply with the requirements of the State, County and City. The Contractor or his Subcontractors shall not use the toilet facilities in the facility.

- F. **Fire Protection:** Contractor shall provide adequate fire protection and fire prevention for the Project and in no case less than that is required by applicable City, County, State and Federal laws. No open flames or similar sources of ignition shall be allowed in related work or storage areas. Fire extinguishers shall be kept at all times in the immediate work area in all storage and disposal areas, and wherever flammable or combustible materials, or sources of ignition are present. All personnel on the project site shall be informed of the phone number of the local fire department and the location of the nearest telephone and shall be instructed in emergency procedures. Contractor shall instruct all personnel on the project site on the dangers of the materials being installed as well on the combustibility of the existing materials and shall insure that extreme caution is used at all times.

#### 1.04 DUST AND FUME CONTROL

- A. Contractor shall take all necessary precautions to (1) keep dust confined in the present work area and (2) prevent hazardous accumulations of dust, fumes, mists, vapors, or gases in areas occupied during construction.
- B. Contractor shall submit to the Engineer, for approval, proposed methods used to contain dust and fumes in the work area. At a minimum, Contractor shall provide adequate protection at air intake units so as to prevent dust, fumes, vapors or gases from entering the facility. Contractor shall employ an industrial hygienist to monitor air quality during application of hazardous or volatile materials.

#### 1.05 DEBRIS CONTROL

- A. Provide adequate number and size of dumpsters; refuse containers, trucks, chutes, etc. for proper execution of demolition work. All demolition removal containers shall be properly protected and maintained on a daily basis. Owner must approve locations of dumpsters/refuse containers. Contractor shall submit to the Engineer, for approval, proposed methods used to conduct demolition operations and debris control.
- B. Contractor shall remove all debris from the project site and shall legally dispose of all debris generated by the project. Debris shall be properly protected (and totally covered at the end of each work day) while on site and shall be properly secured and totally covered before it is transported. Debris shall be removed from the project site on a weekly basis or more often as required to maintain a neat clean site. Project site shall be broom swept on a daily basis.
- C. Contractor shall be responsible for any damages to the building; its contents, and any vehicles as a result of his negligence during the demolition and/or construction process.

#### 1.06 RODENT AND PEST CONTROL

- A. Contractor is responsible to provide rodent and pest control as necessary or as required preventing infestation of construction and temporary project offices and

enclosures. Employ methods and use materials that will not adversely affect conditions at the Project site or on adjacent properties. Submit copies of proposed program contractor will utilize including products to be used, manufacturer's instructions, areas to be treated, and pollution preventive measures.

#### 1.07 NOISE CONTROL

- A. All demolition and construction work that creates excessive noise shall be reviewed with the Owner as to the types of equipment that is intended for use during normal business hours and obtain Owner's approval for such use. Noise limits shall conform to the requirements of the local governing body.

#### 1.08 FIRST AID

- A. Contractor shall provide a first aid kit with adequate provisions for the materials being used on site. All Health and Safety Data Sheets for materials being used on site shall be located within the first aid kit.

#### 1.09 PARKING AREAS

- A. The Contractor is responsible to provide parking for his employees and Subcontractor's employees. On-site parking is allowed. Contractor's field trailer, parking for trucks and trailers, dumpsters, etc. shall be located by the Contractor, at the Contractor's cost.
- B. Contractor shall at all times keep fire lanes, access for fire apparatus, and fire protection and fire equipment clear and unobstructed. Contractor is responsible for the protection and safety of pedestrians and vehicles on the Project site in the areas of construction.

#### 1.10 BARRICADES

- A. The Contractor shall provide and maintain suitable barriers as required to prevent public entry, and to protect the work, existing facilities, trees, and plants from public construction operations; remove when no longer needed or at completion of Work. Barriers shall conform to city and state laws, ordinances, and permit requirements.
- B. All work areas shall be protected and well marked with fences or barriers and as required by public officials. Provide such barricades, safety and traffic control equipment, and police officer as shall be necessary to restrict traffic from work areas and protect all pedestrians, Owners, tenants, and visitors during construction. Contractor shall provide and maintain all necessary temporary barricades for safe conduct of his work, or as required by federal, state, or local laws or ordinances and in accordance with OSHA requirements and other requirements of this specification.



- C. The Contractor shall confine his apparatus, the storage of materials, parking, and the operations of his workmen to those areas designated or as directed. The Contractor shall cause the minimum possible interference with the operation of the facility, shall not bar or block off any access ways, interfere with any egress ways or exits in or around the building, or move or operate to interfere with any utility lines servicing the building, except as scheduled with and approved by the Owner in advance. During the progress of work the Contractor shall phase construction so as to provide continuous access to the facility during regular operational hours. Barriers shall be provided to limit access to all work areas during construction. Contractor shall provide protection above doorways and walks in the construction area. Parking as required to deliver materials, or otherwise shall be the minimum possible. The Contractor shall confine his operations to the immediate work areas and shall enter other areas only as specifically directed.

#### 1.11 SECURITY

- A. Contractor shall at all times comply with the security measures established by the Owner and Engineer. Contractor shall be responsible for the security of his work and equipment. The Owner is not responsible for losses due to theft.
- B. Contractor shall thoroughly familiarize himself with the security measures contemplated by the Owner before submitting his bid as no claims for additional monies due to these security measures will be allowed.
- C. Contractor and/or his employees or Subcontractors shall not enter the facility without notifying and receiving permission from the Owner's representative.
- D. The Owner, his employees and agents shall not be responsible for the protection and security of the Contractor's equipment, facilities, tools, and materials. Contractor shall provide his own security measures, if in his opinion, they are warranted. Contractor's security measures shall be approved by the Engineer and the Owner and shall not interfere or pose a hazard to the Owner, his employees, agents, visitors, customers, the facility or its contents and grounds.

#### 1.12 TEMPORARY PROJECT OFFICES AND ENCLOSURES

- A. The Contractor may provide temporary field offices and other temporary enclosures for storage, tools, employee clothes, change convenience and other activities that may be required. Coordinate location with Owner. Area is to be kept clean and must not interfere with safe pedestrian and vehicle flow.
- B. The construction office and all storage shall be in secured temporary enclosures. Provide and maintain fire-fighting equipment for all temporary buildings and enclosures. Upon completion of the Project, remove temporary buildings and enclosures from the site assuming all costs in connection with their removal and proper clean-up.

#### 1.13 THERMOMETER

- A. Install an official project outdoor thermometer in a shaded-from-the-sun, conveniently readable location, which will give reasonably accurate readings of the actual temperatures, and which can be reached easily for resetting. Thermometer shall be resettable type indicating daily maximum and minimum temperature. Contractor shall keep a permanent daily log of those readings.

#### 1.14 EXISTING DRAWINGS AND CONSTRUCTION DOCUMENTS

- A. The Owner shall provide the Contractor with three (3) sets of construction Drawings and Specifications. Additional sets will be provided upon request at cost.
- B. Contractor shall keep on the job site at all times the following items:
  - 1. The most revision of the Drawings and Specifications, including all changes made by addenda, sketches, bulletins, and change orders.
  - 2. Health and Safety Data Sheets (MSDS sheets).
  - 3. The most recent issue of approved submittals. Obsolete or unapproved submittals and Health and Safety Data Sheets shall not be kept at the job site.
  - 4. All material evaluation reports.

#### 1.15 PROTECTION OF LANDSCAPING AND PAVEMENT

- A. Contractor shall protect existing landscaping and pavement areas as necessary or as required. Do not stockpile/store construction materials or debris materials in such a manner that it will permanently harm the landscaping or the pavement. Provide temporary protection to protect landscaping and pavement.
- B. Contractor shall bring back to its original conditions (repair or replace in a manner acceptable to the Engineer and Owner) any portion of the landscaping (including lawns, trees, bushes, and plantings), parking areas and pavements or equipment that is damaged by the Contractor or his Subcontractors' operations.

#### 1.16 PROTECTION OF WORK

- A. Contractor shall protect the project site including the building, its contents, all streets, walls, underground and overhead utilities. All areas shall be left in a watertight condition in their entirety at all times. Contractor shall provide protective measures and materials to assure that each element will be without damage or deterioration throughout the entire construction period up to the date of final completion. Any defective elements shall be removed and replaced at the Contractor's expense and to the satisfaction of the Engineer and Owner. Remove protective coverings and materials at the appropriate time, but no later than final cleaning operations.

- B. No work shall take place during inclement weather. No work shall take place when moisture is present on the work area or in any of the materials. The Engineer may order the work stopped when, in his opinion, the weather conditions warrants him to do so. Contractor shall take such measures as necessary to dry out work surfaces so that the work can continue with minimum delay.
- C. Contractor shall cover and protect all walls, windows, projections, soffits, etc. where material is to be hoisted or removed from the roof deck. Contractor shall be responsible for all scrapes, stains, and damage to the walls and shall repair or replace any walls, windows, siding, etc., which are damaged by his operations, to the satisfaction of the Engineer and Owner. Any areas damaged shall be restored or cleaned, to the satisfaction of the Owner by the Contractor at no cost to the Owner.
- D. Whenever the possibility exists that debris or materials may fall causing a hazard to persons inside or outside the building, the Contractor shall post one or more of his employees to temporarily close these hazardous areas. The person in charge of the facility shall be notified prior to the commencement of work which may pose this type of hazard. Proper barricades shall be provided to prevent normal access to or around these areas.
- E. Contractor shall properly protect all areas where falling debris or dust is expected due to his operations. Contractor shall be responsible for providing adequate personnel to clean and protect these areas. Contractor shall include these costs in the bids.
- F. Contractor shall provide measures to ensure that water does not flow beneath a completed section of roof by temporarily sealing the loose edge of the new membrane over the edge of the insulation at the completion of each day's work. Protect finished sections from damage due to roofing operations.
- G. Protect the building interior, contents, Owner's employees, and customers from all hazards associated with the Contractor's operations.
- H. Any damage to the interior of the building or its contents due to the Contractor's operations or to leaks during the Contractor's operations shall be corrected at the Contractor's expense to the satisfaction of the Owner and the Engineer.
- I. Any damage to the exterior of the building or any roof top equipment due to the Contractor's operations shall be corrected at the Contractor's expense or to the satisfaction of the Owner and the Engineer.
- J. No member of the roof shall be overstressed due to construction loads.
- K. Contractor is to provide any necessary protection to the installed work prior to acceptance by the Owner and Engineer. The Contractor at no additional cost to the Owner shall correct any damage incurred during this period.

- L. Contractor is to provide any and all necessary protection to the entire roof area to maintain watertightness during the project duration, including existing roof areas not yet roofed. Any interior damages that occur as a result of the Contractor's negligence shall become the Contractor's responsibility and he shall promptly repair and/or replace the damaged items.

#### 1.17 PROJECT REPRESENTATION

- A. Contractor covenants and agrees with Owner that it will not make any use whatsoever of or cause others to make or assist others in making any use whatsoever of, any photograph, drawing or other representation of the structure which is the subject matter of this agreement and will not make any use whatsoever of the corporate or trade names, of Owner, or any portion thereof, or any of its trademarks, or any portion thereof, in connection with any advertising, promotion, publicity or other printed material. It is expressly understood and agreed that Contractor's obligation under this provision shall survive performance of the terms of this agreement, its rescission, or other termination and that this provision shall remain in full force and effect and shall be deemed severable from an independent of the other provisions of this agreement.
- B. Contractor shall not place, erect, hang or otherwise display any type of advertising or sign on the project site without the written permission of the Owner.

#### 1.18 EMERGENCY REPAIRS

- A. Contractor shall provide Owner and Engineer with the name, address, and home telephone number of the Project Superintendent and at least two tradesmen that can be called in an emergency basis, including nights and other times when the Contractor is not working on the job, to take care of leaks on an emergency basis.
- B. Such emergency work will be done at no additional cost to the Owner if such leaks are a result of the Contractor's negligence. If for any reason the Contractor's representatives cannot be reached within two hours, others will make temporary repairs and the Contractor will be backcharged for this work.

**PART 2 – PRODUCTS** (Not Used)

**PART 3 – EXECUTION** (Not Used)

**END OF SECTION**

## SECTION 01 60 00

### MATERIAL AND EQUIPMENT

#### PART 1 – GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.
- B. Work on the project, which requires submittals, shall not commence and materials shall not be ordered until all necessary submittals including shop drawings, product data, and samples are reviewed and approved in writing by the Engineer.

##### 1.02 SECTION INCLUDES

- A. The work of this section consists of ***Products, Transportation and Handling, Storage and Protection, Weather and Temperature Requirements, Substitutions.***

##### 1.03 PRODUCTS

- A. Products are defined as new material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

##### 1.04 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

##### 1.05 STORAGE AND PROTECTION

- A. Contractor shall follow the recommended storage procedures of the manufacturer of the materials being used. No storage on or within the building will be allowed without written permission from the Owner. Any materials brought to the roof for daily operations or storage shall be evenly distributed on the roof to prevent concentrated loads and shall not overload the structure.

- B. All moisture sensitive materials shall be stored in weatherproof trailers or temporary protective shelters and shall be stored at least 4 in. above the ground on stable pallets or skids and shall at all times be completely covered and secured. Tarpaulins or a similar "breathable" material shall be used to cover materials. Rubber or plastic materials shall not be acceptable. Factory applied "shrink packs" or plastic wrappings shall not be acceptable.
- C. Materials stored on the ground shall be thoroughly secured against moisture and wind. Materials and their coverings shall be tied and/or weighted to prevent uncovering or blowing of material by the wind. Contractor shall be responsible for damages caused by blowing and improperly stored material and equipment.
- D. Materials shall be handled with care and shall not be installed if they have been damaged in any way due to handling, storage, or manufacturing defects. Contractor shall promptly mark and remove from the site any damaged or improperly stored materials when so requested by the Engineer.
- E. All materials are to be stored at the recommended temperature range as specified by the manufacturer. Contractor shall provide manufacturer's information to the Engineer concerning storage and handling of flammable or volatiles materials. The "shelf life" materials shall be provided with the date of manufacturer of all perishables. Materials that becomes congealed, thick, non-uniform or otherwise unsuitable for proper application shall be removed from the project site and replaced with new properly stored and tested materials.
- F. Provisions for placement of the Contractor's equipment must be planned by the Contractor and submitted to the Owner and the Engineer for approval.
- G. Provide off-site storage and protection when site does not permit on-site storage or protection.

#### 1.06 WEATHER AND TEMPERATURE REQUIREMENTS

- A. Work shall not commence or proceed, with the exception of the completion of necessary temporary measures to make the building weathertight, when the ambient air temperature is below 32°F unless otherwise specified.
- B. Work shall not commence or proceed, with the exception of the completion of necessary temporary measures to make the building weathertight, when precipitation of any kind, or winds in excess of 20 miles per hour are present or imminent or when, in the sole judgment of the Engineer or his authorized representatives, conditions are unfavorable or detrimental to the proper installation of the systems.
- C. Work shall not commence or proceed, with the exception of the completion of necessary temporary measure to make the building weathertight, when water, ice or frost is present on or within the materials or surfaces to which materials are to be applied.

- D. Work shall not commence or proceed with the exception of the completion of necessary temporary measures to make the building weathertight when the temperature is too hot to allow proper installation, or when existing or previously installed work is being damaged by the application, or when temperature conditions present a health or safety hazard to the workers on the site.

#### 1.07 SUBSTITUTIONS

- A. Whenever the proposal of substitute material, equipment or process is permitted by the Specifications, the proposed substitute material, equipment, or process shall be submitted in accordance with the General Conditions and subject to the requirements contained herein and the construction regulations and laws of the Commonwealth of Massachusetts.
- B. After the start of construction, the proposal of substitute material, equipment or process will be considered only for one of the following reasons:
  - 1. The manufacture or production of the specified material, equipment or process has been discontinued.
  - 2. The specified material, equipment or process is not available in sufficient quantity or quantities to complete the work. Failure of the Contractor to award subcontracts in sufficient time, or failure of the Contractor and/or subcontractor to place orders for material, equipment or process so as to ensure delivery or execution without delaying the Work shall not establish cause for approval of substitutions.
  - 3. Delays beyond the control of the Contractor, such as but not limited to, strikes, lockouts, storms, fires, or earthquakes, which preclude the procurement and delivery of materials or equipment for the Project as included in Contractor's proposal.
  - 4. Advancement of the delivery date provided this advances the overall progress of the Work.
  - 5. Improvement in quality or function of the material, equipment, or process.
- C. The Contractor must submit a separate request in writing for each proposed substitution, supported with complete data with drawings, specifications, samples as appropriate, including:
  - 1. Comparison of the qualities of the proposed substitution with that specified.
  - 2. Changes required in other elements of the Work because of substitution.
  - 3. Effect on the construction schedule.
  - 4. Cost data comparing the proposed substitution with the product specified.
  - 5. Any required license fees or royalties.
  - 6. Availability of maintenance service and source of replacement materials.
- D. Any proposed substitute material, equipment or process shall be subject to the following conditions:

1. Submittal of the proposed substitute material, equipment, or process per the General Conditions.
  2. Submittal of the request for a substitute early enough to allow ample lead time for the Engineer's review, preparation of the submittals, fabrication, and delivery, without delaying the Work.
  3. Approval of substitution by the Engineer and Owner.
- E. A request for substitution constitutes a representation that the Contractor:
1. Has investigated proposed product and determined that it is equal to or superior in all respects to that specified.
  2. Will provide the same warranty for the Substitution as for the specified product.
  3. Will coordinate installation and make changes to other Work, which may be required for the Work to be complete with no additional cost to Owner.
  4. Waives claims for additional costs or time extension, which may subsequently become apparent.
  5. Will reimburse Owner for review or redesign services associated with approval.
- F. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

**PART 2 – PRODUCTS** (Not Used)

**PART 3 – EXECUTION** (Not Used)

**END OF SECTION**



## SECTION 01 70 00

### CONTRACT CLOSEOUT

#### PART 1 – GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.

##### 1.02 SECTION INCLUDES

- A. The work of this section consists of ***Final Cleaning and Closeout, Project Record Documents, Warranties and Bonds.***

##### 1.03 FINAL CLEANING AND CLOSEOUT

- A. Each Subcontractor or Contractor, in addition set forth in the General Conditions, shall at all times keep the premises free from accumulation of waste materials or rubbish caused by his employees or work.
- B. At the completion of the Project, the Contractor shall restore or replace all property damaged by his Work and shall remove all spots, paint, smears, soil, concrete, mortar, sealant, adhesives, asphalt, writing, droppings, or other foreign materials, from all Work. Remove all temporary protection from all the Work. Final cleaning shall include as a minimum:
  - 1. Clean site; sweep paved areas, rake clean landscaped surfaces.
  - 2. Remove waste and surplus materials, rubbish, and construction facilities from the site.
  - 3. The Contractor shall clean all walls, windows or other building and grounds elements that have been affected by his work.
  - 4. Repair, patch and touch-up marred surfaces to specified finish to match adjacent surfaces.
- C. Contractor shall submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is substantially complete in accordance with Contract Documents and ready for Engineer's inspection. Engineer shall issue a punchlist consisting of unacceptable Work and items. Contractor shall immediately make acceptable such punchlist items to the satisfaction of the Engineer and Owner. Contractor shall then notify, in writing, the Engineer that all such punchlist items are complete and he is ready for reinspection. Any subsequent costs relative to reinspections that are required due to the Contractor not properly correcting the punchlist items shall be paid for by the Contractor and will be deducted from his final application for payment.

- D. Contractor shall not remove crews or equipment until the project is totally completed, including punch list items, without the written permission of the Engineer.
- E. If the Contractor fails to totally complete the project by the completion date required by the Contract Documents and as modified by any change orders, the Contractor shall pay all Engineering and Observation costs incurred from this project by the Owner after Contract Completion Date. These costs will be deducted from the Contractor's Final Requisition for Payment.
- F. If the Contractor feels that he cannot properly complete the work during the given time constraints, then he shall make provisions for and submit his plans and requirements for working a double shift and/or weekends in order to complete the project by the date given in the Contract Documents.
- G. Contractor shall submit Final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- H. Contractor shall submit as-built drawings after substantial completion of the Project. The as-builts shall include, but not be limited to, the sepias of the Drawings incorporating all changes and bulletins (enclosed in clouds), location and size of unit price work, all shop drawings incorporating all changes (enclosed in clouds), and all approved submittals.
- I. Closeout submittals include, but are not limited to the following:
  - 1. Project Record Documents.
  - 2. Operation and Maintenance Data.
  - 3. Maintenance Manuals.
  - 4. As-built Drawings.
  - 5. Manufacturer's inspection reports and punchlist.
  - 6. Warranties and Guarantees.
  - 7. Evidence of payments and release of liens, including but not limited to:
    - a. Contractor's Affidavit of Payment of Debts and Claims-AIA G706.
    - b. Contractor's Affidavit of Release of Liens-AIA G706A, with Consent of Surety to Final Payment (AIA G707), and Contractor's release of waivers of lien for subcontractors, suppliers, and others with lien rights against property of Owner, together with a list of those parties.

#### 1.04 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one set of the following record documents; record actual revisions to the Work: 1. Contract Drawings; 2. Project Manual, including addenda; 3. Specifications; 4. Approved shop drawings; 5. Change Orders and other Modifications to the Contract; 6. Field change authorizations.

- B. Store Record Documents separate from documents used for construction. Maintain documents in clean, dry, legible condition; do not use record documents for construction purposes. Make documents available at all times for inspection by Engineer and Owner.
- C. Record information concurrent with construction progress.
- D. Specifications and Addenda: Legibly mark to record:
  - 1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.
  - 2. Product substitutions or alternates utilized.
  - 3. Changes made by Addenda and Modifications.
- E. Record Documents and Shop Drawings: Legibly mark the record set of Contract Documents using a red pencil for all graphic work and red ink for all written work to record actual construction:
  - 1. Field changes of dimension and detail.
  - 2. Location and extent of all repairs.
  - 3. Details not on original Contract Drawings.
  - 4. Changes not made by change order and field change authorization.
- F. Legibly mark shop drawings to record changes made after approval.
- G. Submit record documents to Engineer at completion of project.

#### 1.05 WARRANTIES AND BONDS

- A. The act of the Contractor in executing the Contract or the Work shall be considered as his acceptance of the following guarantees covering the Project:
  - 1. Any materials, workmanship or equipment furnished as part of this Project which prove defective or fail to operate properly, within two (2) years, or as otherwise specified in the Contract Documents, of the date of acceptance of the Work, shall be repaired and/or replaced by the Contractor promptly upon notification from the Owner and without cost to the Owner. Also reference Divisions 2 through 26 for additional warranties and guarantees.
  - 2. Date of acceptance will be established by the Owner and Engineer upon finding all items of this Project have achieved final completion as to quality of workmanship and materials.

**PART 2 – PRODUCTS** (Not used)

**PART 3 – PRODUCTS** (Not Used)

**END OF SECTION**

## **SECTION 02 05 00**

### **DEMOLITION**

#### **PART 1 – GENERAL**

##### **1.01 GENERAL REQUIREMENTS**

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.
- B. Maintain a copy of all applicable drawings, specifications, shop drawings, and approved submittals at the site at all times during the Work.

##### **1.02 SECTION INCLUDES**

- A. The work of this section consists of the demolition and legal disposal of materials to be removed at specified locations required to complete the Work.
- B. Demolition work shall include, but is not limited to, the following:
  - 1. The complete removal and legal disposal of the existing roofing systems and related components and penetrations that are scheduled to be abandoned, as required to accomplish the Work as specified and detailed. The demolition work shall consist of complete removal and legal disposal of the existing roofing and flashing systems, along with associated components down to the existing roof decking (“tear-off” application).
  - 2. The Contractor shall use extreme caution at all times. The Contractor is responsible for maintaining the roofing system(s) and building(s) in a watertight and weathertight condition. The Contractor is responsible for preventing any construction related material from entering the building and the roof drainage system(s).
  - 3. The complete removal and legal disposal of any deteriorated roof decking and wood blocking that may be required. The Contractor is to exercise extreme caution when removing the existing roofing systems to ensure the integrity of the existing roof decking. Any damage to the roof decking and/or building as a result of the roof removal and replacement process shall be properly repaired by the Contractor at no additional cost (quantities will not be included in the bid repair quantities). Any deteriorated roof decking as a result of previous moisture penetration, shall be properly repaired or replaced by the Contractor and only these quantities shall apply to the bid quantities.
  - 4. The Contractor shall use extreme caution during reroofing operations. The facilities are operational and contain personnel, furniture, fixtures,

and equipment. Mechanical equipment such as lighting, electrical conduits, junction boxes, ceiling attachments, ductwork, etc. may exist in the vicinity of or on the underside of the roof decking. Contractor shall take all necessary precautions so as not to cause any damages. Any damages that interrupt service and/or require repairs to the building, furniture, fixtures, or equipment shall be the responsibility of the Contractor at no additional cost to the Owner and shall be repaired immediately.

5. The Contractor shall be responsible for the removal of brick masonry or CMU to allow the installation of two (2) emergency overflow scuppers (5" diameter) in the parapet wall of Roof Area No. 4
  6. The Contractor shall be responsible for the demolition of brick masonry chimney, CMU block, chimney liner, and precast concrete cap down to the existing structural steel framing. Reference Drawing A1 for location of the chimney to be removed.
  7. The Contractor shall remove the existing roof hatch to allow the removal and replacement of the existing roofing. The existing roof hatch is to be reinstalled after removal and replacement of the roofing has been completed.
- C. The existing roofing system composition information has been compiled from a variety of sources (Reference is made to the Drawings). Plans and dimensions under which the Work is to be performed are derived from a variety of sources. The existing conditions are provided for information only. Actual conditions may vary. Contractor is required to verify existing roofing system composition, conditions, and dimensions prior to submitting his bid. No additional compensation or time extension will be made for dimensional errors or discoverable inaccuracies related to existing conditions in the contract documents.
- D. The drawings indicate and show limits of construction for this project. The specifications specify material and work requirements for this project. Both are complementary to each other, and both shall be followed to complete the work.

### 1.03 RELATED WORK

- A. Section 04 50 00 – Masonry Restoration
- B. Section 05 31 50 - Steel Deck Repairs
- C. Section 06 10 00 – Rough Carpentry
- D. Section 07 22 00 – Roof Insulation
- E. Section 07 54 00 – EPDM Roofing & Flashing
- F. Section 22 00 01 – Plumbing - Roof Drains
- G. Section 23 00 01 – Temporary Mechanical Disconnects
- H. Section 26 00 01 – Temporary Electrical Disconnects

#### 1.04 PROJECT COORDINATION

- A. The Project Administrator shall be the Owner. The Contractor shall cooperate fully with the Administrator in all aspects of the demolition, including but not limited to, the following: allocation of demolition areas, demolition equipment, dumpsters, dump trucks, chutes, protection, hours of operation, and traffic flow.
- B. It is the responsibility of the Contractor to coordinate the work of this Section with all other work on the project.
- C. The Contractor shall make all necessary arrangements to limit travel on the existing roofing systems. Where it is necessary to travel on the existing roofing systems the contractor shall provide all necessary temporary protection needed to protect the existing roofing systems so as to ensure no leaks into the facility. Any damage to the existing roofing systems caused by work of this contract shall be repaired at no cost to the Owner. The Contractor shall maintain the building in a watertight condition through the duration of the contract.
- D. Contractor shall coordinate completion and clean up of work on a daily basis, including maintaining watertightness for project duration.

#### 1.05 PROJECT PROGRESS SCHEDULES

- A. Contractor shall prepare and provide his Project Progress Schedule, prior to the preconstruction meeting, to the Engineer and the Owner's Project Manager for review. The schedule shall show the complete sequence of construction by activity, with dates for beginning and completion of each element of construction. Identify each item by specification Section number. Provide sub-schedules to define critical portions of the entire schedule. Coordinate content with Schedule of Values.
- B. The Project Progress Schedule will be reviewed at the preconstruction meeting and will be updated at each construction meeting, or more often as needed. Contractor shall update the schedule after each meeting, identifying changes since previous version, and submit to all parties in advance of the next scheduled construction meeting, or as directed by the Engineer and the Owner's Project Manager.

#### 1.06 SUBMITTALS

- A. The Contractor shall submit for approval the complete sequence of operations for demolition and show how it is coordinated with all other aspects of the job. Work shall not begin until such a schedule has been approved by the Engineer and the Owner.
- B. The Contractor shall submit a description of all procedures and equipment to be utilized to perform the demolition work, debris control and disposal. No heavy mobile equipment shall be permitted on the roof deck structures.

- C. Contractor shall submit to the Engineer, for approval, proposed methods used to contain dust and fumes in the work area.
- D. Submit copies of proposed rodent and pest control program that contractor will utilize (if it becomes necessary) including products to be used, manufacturer's instructions, areas to be treated, and pollution preventive measures.
- E. The Contractor shall perform an existing condition survey of the building, grounds, and adjacent areas prior to work commencement. The Contractor shall provide existing conditions documentation (photos and/or DVD) and a list of damaged or deteriorated elements to the Owner and Architect. The Contractor shall be responsible for repair or replacement of damaged or deteriorated items, not on that list, when the operations of the Contractor are complete, to the satisfaction of the Owner and Architect, at no change in contract price.
- F. The Contractor shall submit proposed methods and required procedures used to remove and legally dispose of any hazardous waste containing materials.

#### 1.07 HAZARDOUS MATERIALS

- A. The Contractor is hereby notified that samples of the existing built-up roofing felts, air/vapor barrier, perimeter base flashings were tested for the presence of asbestos containing material, and the results are positive for the perimeter base flashing.
- B. If any hazardous waste materials, or materials suspected to contain hazardous waste are encountered during construction, demolition, or cutting and patching the Contractor shall contact the appropriate Massachusetts State Agency and the appropriate Federal Agency concerning all questions and the latest procedures for the safe removal, disposal, or encapsulation of these materials and shall adhere to all procedures. The Contractor shall provide the Owner with these procedures prior to any demolition. The Contractor shall also provide the Owner all information related to the safe disposal of such upon project completion (i.e., dumping slips, manifestation reports, etc.).
- C. If the Contractor or Subcontractor disturbs, removes, disposes, or encapsulates these materials without written authorization and instructions from the Owner or Engineer; or disturbs, removes, disposes, or encapsulates these materials in a manner not in accordance with the authorizations and instructions, the Contractor and Subcontractor shall indemnify, defend, and hold harmless the Owner and Engineer against any loss, damage, or liability arising or resulting from such unauthorized improper acts of the Contractor and Subcontractor; and further, the Owner and Engineer shall not be responsible for any such loss, damage, or liability arising or resulting from the Contractor's or Subcontractor's acts.

#### 1.08 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall limit its use of the site for work and for storage to allow for:

1. Owner occupancy and use of the building during construction.
  2. Public use of walks, parking lots, and driveways.
- B. Do not block exits at any time. Provide protected entranceways at each entrance when working in these areas.
- C. Coordinate work on the roof, use of the site, storage areas, and staging areas with the Owner. Limit use of the site and working hours to dates, times, and locations approved by the Owner.
- D. Cooperate with the Owner's scheduling requirements for working at an occupied building. Work under this Section shall not interfere with the operation of the building or building occupants at any time.
- E. The Contractor is responsible for protecting all materials and equipment stored on the site.
- F. Smoking is not permitted on the grounds.
- G. Dispose of all trash and debris in a legal manner off-site. Do not throw debris from access equipment or staging. Conduct debris to approved containers on the ground. Locate debris containers only in locations approved by the Owner in advance.

#### 1.09 CONTRACTOR'S TEMPORARY CONTROLS

- A. The Contractor is responsible for certain temporary controls. Further reference is made to Section 01 50 00, Construction Facilities and Temporary Controls for specific information and responsibilities related to the following:

Temporary utilities and weather protection; Temporary sanitary facilities; Temporary fire protection; Temporary staging and scaffolding; Temporary hoisting of equipment and machinery; Temporary bracing and shoring; Construction cleaning and temporary trash containers; Temporary stairs, ladders, ramps and platforms; Security; Noise, dust and pollution control; Protection of new and existing construction; Temporary job signs; Temporary storage facilities; Temporary rodent and pest control; Parking facilities and control and construction deliveries.

## PART 2 – PRODUCTS

### 2.01 MATERIALS

- A. Provide adequate number and size of dumpsters, refuse containers, trucks, chutes, staging, access equipment, demolition equipment, etc. for proper execution of demolition work.



- B. All demolition removal containers shall be properly protected and maintained on a daily basis. Owner must approve locations of dumpsters/refuse containers. Contractor shall submit to the Engineer, for approval, proposed methods used to conduct demolition operations and debris control.

### **PART 3 – EXECUTION**

#### **3.01 DUST AND FUME CONTROL**

- A. Contractor shall take all necessary precautions to (1) keep dust confined in the present work area and (2) prevent hazardous accumulations of dust, fumes, mists, vapors, or gases in areas occupied during construction.
- B. Contractor shall submit to the Engineer, for approval, proposed methods used to contain dust and fumes in the work area. At a minimum, Contractor shall provide adequate protection at air intake units so as to prevent dust, fumes, vapors or gases from entering the facility. Contractor shall employ an industrial hygienist to monitor air quality during application of hazardous or volatile materials, if required.

#### **3.02 DEBRIS CONTROL**

- A. Contractor shall remove all debris from the project site and shall legally dispose of all debris generated by the project. Debris shall be properly protected (and totally covered at the end of each workday) while on site and shall be properly secured and totally covered before it is transported. Debris shall be removed from the project site on a weekly basis or more often as required to maintain a neat clean site. Project site shall be broom swept on a daily basis.
- B. Contractor shall be responsible for any damages to the building; its contents, and any vehicles as a result of his negligence during the demolition and/or construction process.

#### **3.03 RODENT AND PEST CONTROL**

- A. Contractor is responsible to provide rodent and pest control as necessary or as required preventing infestation of construction, the building, and temporary project offices, and enclosures. Employ methods and use materials that will not adversely affect conditions at the Project site or on adjacent properties.

#### **3.04 NOISE CONTROL**

- A. All demolition and construction work that creates excessive noise shall be reviewed with the Owner as to the types of equipment that is intended for use during normal business hours and obtain Owner's approval for such use. Noise limits shall conform to the requirements of the local governing body.

### 3.05 BARRICADES

- A. The Contractor shall provide and maintain suitable barriers as required to prevent public entry, and to protect the work, existing facilities, trees, and plants from public construction operations; remove when no longer needed or at completion of Work. Barriers shall conform to city and state laws, ordinances, and permit requirements.
- B. All work areas shall be protected and well-marked with fences or barriers and as required by public officials. Provide such barricades, safety and traffic control equipment, and police officer as shall be necessary to restrict traffic from work areas and protect all pedestrians, Owners, tenants, and visitors during construction. Contractor shall provide and maintain all necessary temporary barricades for safe conduct of his work, or as required by federal, state, or local laws or ordinances and in accordance with OSHA requirements and other requirements of this specification.

### 3.06 PROTECTION OF LANDSCAPING AND PAVEMENT

- A. Contractor shall protect existing landscaping and pavement areas as necessary or as required. Do not stockpile/store construction materials or debris materials in such a manner that it will permanently harm the landscaping or the pavement. Provide temporary protection to protect landscaping and pavement.
- B. Contractor shall bring back to its original conditions (repair or replace in a manner acceptable to the Engineer and Owner) any portion of the landscaping (including lawns, trees, bushes, and plantings), parking areas and pavements or equipment that is damaged by the Contractor or his Subcontractors' operations. Site repair shall be performed promptly after the operations have moved to a different location on the site. Site repair shall not be delayed until substantial completion of the entire project.

### 3.07 PROTECTION OF WORK

- A. Contractor shall protect the project site including the building, its contents, all streets, walls, underground and overhead utilities. All areas shall be left in a watertight condition in their entirety at all times. Contractor shall provide protective measures and materials to assure that each element will be without damage or deterioration throughout the entire construction period up to the date of final completion. Any defective elements shall be removed and replaced at the Contractor's expense and to the satisfaction of the Engineer and Owner. Remove protective coverings and materials at the appropriate time, but no later than final cleaning operations.
- B. No work shall take place during inclement weather. No work shall take place when moisture is present on the work area or in any of the materials. The Engineer may order the work stopped when, in his opinion, the weather conditions warrant him to do so. Contractor shall take such measures as

necessary to dry out work surfaces so that the work can continue with minimum delay.

- C. Contractor shall cover and protect all walls, windows, projections, soffits, etc. where material is to be hoisted or removed from the roof deck. Contractor shall be responsible for all scrapes, stains, and damage to the walls and shall repair or replace any walls, windows, siding, etc., which are damaged by his operations, to the satisfaction of the Engineer and Owner. Any areas damaged shall be restored or cleaned, to the satisfaction of the Owner by the Contractor at no cost to the Owner.
- D. Whenever the possibility exists that debris or materials may fall causing a hazard to persons inside or outside the building, the Contractor shall post one or more of his employees to temporarily close these hazardous areas. The person in charge of the facility shall be notified prior to the commencement of work that may pose this type of hazard. Proper barricades shall be provided to prevent normal access to or around these areas.
- E. Contractor shall properly protect all areas where falling debris or dust is expected due to his operations. Contractor shall be responsible for providing adequate personnel to clean and protect these areas. Contractor shall include these costs in the bids.
- F. Protect the building interior, contents, Owner's employees, and customers from all hazards associated with the Contractor's operations.
- G. Any damage to the interior of the building or its contents due to the Contractor's operations or to leaks during the Contractor's operations shall be corrected at the Contractor's expense to the satisfaction of the Owner and the Engineer.
- H. Any damage to the exterior of the building or any roof top equipment due to the Contractor's operations shall be corrected at the Contractor's expense or to the satisfaction of the Owner and the Engineer.
- I. No member of the roof shall be overstressed due to construction loads and demolition operations. The Owner assumes no responsibility for the actual condition of the structure.

### 3.08 REPAIR OF DAMAGES

- A. Damage to any portion of the building which results in disruption of or inconvenience to the Owner or his employees shall be immediately repaired or replaced by the Contractor. If such restitution is not promptly made, the Owner shall have the necessary work performed by an outside agency at the Contractor's expense.

### 3.09 CLEANING

- A. The building and adjacent areas shall be left in a broom-clean condition at the end of each day. On completion of the work of this section and after removal of

all debris, the site shall be left in a clean condition satisfactory to the Owner and to the Engineer.

- B. At the completion of the Project, the Contractor shall restore or replace all property damaged by his Work and shall remove all spots, paint, smears, soil, concrete, mortar, sealant, adhesives, asphalt, writing, droppings, or other foreign materials, from all Work. Remove all temporary protection from all the Work.
- C. Final cleaning shall include as a minimum:
  - 1. Clean site; sweep paved areas, rake clean landscaped surfaces.
  - 2. Remove waste and surplus materials, rubbish, and construction facilities from the site.
  - 3. The Contractor shall clean and repair all walls, windows or other building and grounds elements that have been affected by his work.
  - 4. Repair, patch, and touch-up marred surfaces to specified finish to match adjacent surfaces.
  - 5. The Contractor shall clean the surface of the new roof system to the satisfaction of the Engineer, Manufacturer, and Owner.

**END OF SECTION**

## SECTION 04 50 00

### MASONRY RESTORATION

#### PART 1 - GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.
- B. Maintain a copy of all applicable drawings, specifications, shop drawings, and approved submittals at the site at all times during the Work.

##### 1.02 SECTION INCLUDES

- A. The work of this Section consists of completing the work as indicated on Drawings and specified herein. This work includes, but is not limited to the following:
  - 1. Remove and replace brick masonry and associated through wall flashings as required to install new through wall flashings, at above roofline masonry walls at locations above Roof Area No. 3 (approx.: 100 LF). Reference Drawing A-1 for approximate location of through wall flashing to be removed and replaced.
- B. All work shall be performed in a first class, workmanlike manner. The Contractor shall schedule and coordinate the work with the Owner to minimize any inconvenience to the building occupants, to ensure weathertightness throughout the project duration and to prevent any disruption of the normal use of the building.
- C. All materials shall be verified by Contractor to be proper for each intended use, and the entire work of this Section shall be done in such a manner that each installation will perform its intended purpose as applicable, in the finished work.
- D. The drawings indicate and show limits of construction for this project. The specifications specify material and work requirements for this project. Both are complementary to each other, and both shall be followed to complete the work.
- E. Plans and dimensions under which the Work is to be performed are derived from a variety of sources. The existing conditions are provided for information only. Actual conditions may vary. Contractor is required to verify existing system composition, conditions, and dimensions prior to submitting his bid. No additional compensation or time extension will be made for dimensional errors or discoverable inaccuracies related to existing conditions in the contract documents.

### 1.03 RELATED WORK

- A. Section 02 41 00 – Demolition
- B. Section 05 31 50 - Steel Deck Repairs
- C. Section 06 10 63 – Rough Carpentry
- D. Section 07 22 00 – Roof Insulation
- E. Section 07 55 00 – EPDM Roofing & Flashing
- F. Section 22 00 01 – Plumbing – Roof Drains
- G. Section 23 00 01 – Temporary Mechanical Disconnects
- H. Section 26 00 01 – Temporary Electrical Disconnects

### 1.04 PROJECT COORDINATION

- A. The Project Coordination Administrator shall be the Engineer and the Owner's Project Manager (OPM) as employed and directed by the Owner. The Contractor shall cooperate fully with the Administrator and OPM in all aspects of the work.
- B. The Contractor shall make all necessary arrangements to limit travel on the existing roof. Where it is necessary to travel on the existing roof the Contractor shall provide all necessary temporary protection needed to protect the existing roofing system so as to ensure no leaks into the facility. Minimum protection at areas adjacent to masonry work shall include 10 mil poly covering the affected roof area, with 2" rigid insulation over the poly, and 1/2" plywood as a working surface. Any damage to the existing roofing system caused by Work of this contract shall be repaired by the Contractor at no cost to the Owner. The Contractor shall maintain the building in a watertight condition through the duration of the contract. Where at all possible, all work above roofs to be replaced, should be completed prior to commencing roof replacement procedures.
- C. Contractor shall coordinate completion and clean up of work on a daily basis, including maintaining weather/weather tightness for project duration.

### 1.05 SUBMITTALS

- A. Submit shop drawings and product data listed below under provisions of Section 01 33 00:
- B. Qualification Data: Submit qualification data for firm and personnel specified in "Quality Assurance" Article that demonstrates that both firm and personnel have capabilities and experience complying with requirements specified. For firm and foreman, provide a list of at least three (3) completed projects within the New England Region similar in size and scope to work required on this project. For each project list project name, address, architect, conservator, supervising preservation agency, scope of Contractor's work, and other specified information.
- C. Product Literature: Manufacturer's published technical data for each product to be used in work of this Section including requirements for application and use.

Include test reports and certificates verifying that product complies with specified requirements.

- D. Program of Work: Submit a written program.
1. Include detailed description of materials, methods, and equipment to be used for each type of work.
  2. Include written descriptions, drawings, and diagrams, outlining proposed methods and procedures for protection of personnel, the public, and the existing construction during work of this Section.
  3. If alternate methods and materials to those specified are proposed for any phase of masonry restoration, provide written description. Show evidence of successful use on comparable projects and demonstrate effectiveness for use on this project.
- E. Samples:
1. Pointing Mortar: Cured mortar samples set in 1/2 in. by 6 in. plastic or aluminum channels for approval of color and texture. Samples shall match existing mortar. Provide the following:
    - a. Mortar for brick masonry.
  2. Sand for Pointing Mortars: One-pound sample of each type of sand proposed for use in pointing mortars. Include sieve analysis.
  3. Prepare quality control panels as specified in Article "Quality Control Panels," below.
  4. Submit representative samples of (panel reinforcing), (panel anchors), (expansion strips), and (sealant).

#### 1.06 QUALITY CONTROL PANELS

- A. General: Before beginning the Work, prepare quality control panels to provide standards for work of this Section. Do not proceed with the Work until Engineer has approved relevant quality control panels.
1. Locate quality control panels as directed by Engineer.
  2. Provide 48 hours notice to Engineer prior to start of each quality control panel.
  3. Engineer will monitor quality control panels. Panels not performed in presence of Engineer will be rejected.
  4. Perform quality control panels using crew that will be executing the work and following requirements of this Section.

5. Repeat quality control panels as necessary to obtain approval of Engineer.
  6. Protect approved quality control panels to ensure that they are without damage, deterioration, or alteration at time of Substantial Completion.
  7. Approved quality control panels in undamaged condition at time of Substantial Completion may be incorporated into the Work.
  8. Approved quality control panels will represent minimum acceptable standards for masonry restoration. Subsequent masonry restoration work that does not meet standards of approved quality control panels will be rejected.
- B. Prepare the following quality control panels:
1. Joint Preparation in Brick Masonry: One (1) panel, minimum four (4) SF.
  2. Pointing of Brick Masonry: One (1) panel, minimum four (4) SF.
- C. All masonry exposed to view in the finished work, including brick materials, mortar joints, shall match the existing materials of this project in color, size, and texture, etc. The decision of the Engineer shall be final in determining whether proposed materials constitute an adequate match.

#### 1.07 QUALITY ASSURANCE

- A. A licensed Masonry Contractor employing personnel experienced and skilled in masonry restoration work shall implement the specified masonry restoration work. The Masonry Contractor shall have a minimum of five (5) years experience performing the specified masonry restoration work. Contractor shall demonstrate to Owner's satisfaction that, within previous five (5) years, he has successfully performed and completed in a timely manner at least three (3) projects similar in scope and type.
1. Foreman: A fulltime foreman with Masonry Restoration experience shall directly supervise Masonry Restoration. Foreman shall be on site daily for duration of work of this Section. Same foreman shall remain on project throughout work unless his performance is deemed unacceptable.
  2. Mechanics: Masonry Restoration shall be carried out by a steady crew of skilled mechanics who are thoroughly experienced with materials and methods specified, have a minimum of three (3) years experience with work on similar buildings, and are familiar with design requirements. Contractor shall certify that mechanics employed for work of this Section fully understand project requirements. In acceptance or rejection of work of this Section, no allowance will be made for workers' incompetence or lack of skill.



3. Subcontractors: Subcontractors are bound by same requirements as Masonry Contractor. No Subcontractors shall be employed unless approved in writing by Engineer
- B. Source of Materials: Obtain materials from a single source for each type of material required to ensure uniform quality, color, and texture.
- C. Field Supervised Construction: Notify Engineer before beginning any of the work, including, joint preparation, mortar preparation, masonry repair or repointing, through wall flashing replacement, brick replacement, sealant replacement, and cleaning.
- D. Erector: Company specializing in performing the Work of this section with minimum 5-years experience.

#### 1.09 HAZARDOUS MATERIALS

- A. If any hazardous waste materials, or materials suspected to contain hazardous waste are encountered during construction, demolition, or cutting and patching the Contractor shall contact the appropriate Massachusetts State Agency and the appropriate Federal Agency concerning all questions and the latest procedures for the safe removal, disposal, or encapsulation of these materials and shall adhere to all procedures. The Contractor shall provide the Owner with these procedures prior to any demolition. The Contractor shall also provide the Owner all information related to the safe disposal of such upon project completion (i.e., dumping slips, manifestation reports, etc.).
- B. If the Contractor or Subcontractor disturbs, removes, disposes, or encapsulates these materials without written authorization and instructions from the Owner or Engineer; or disturbs, removes, disposes, or encapsulates these materials in a manner not in accordance with the authorizations and instructions, the Contractor and Subcontractor shall indemnify, defend, and hold harmless the Owner and Architect against any loss, damage, or liability arising or resulting from such unauthorized improper acts of the Contractor and Subcontractor; and further, the Owner and Engineer shall not be responsible for any such loss, damage, or liability arising or resulting from the Contractor's or Subcontractor's acts.

#### 1.10 CODES AND STANDARDS

- A. Except as modified by the requirements of other governing codes and by this specification, the work shall conform to the provisions and recommendations of the following codes and standards:
  1. American Society for Testing and Materials (ASTM);
    - ASTM C144 - Aggregate for Masonry Purposes
    - ASTM C150 - Portland Cement
    - ASTM C207 - Hydrated Lime for Masonry Purposes
    - ASTM C270 - Mortar for Unit Masonry
    - ASTM E514 "Water Permeance of Masonry"

2. Federal Specifications (FS).
3. Occupational Safety and Health Administration (OSHA) - Construction Standards.
4. Brick Institute of America (BIA).
5. IMIAC – Recommended practices and specifications for cold weather masonry construction.
6. ACI 530 – Building code requirements for masonry structures.
7. ACI 530.1 – Specifications for masonry structures.
8. MA State Building Code, latest revision.
9. ASTM A82—Spec. for Cold Drawn Steel Wire
10. ASTM A153—Class B-2, Spec. for Zinc Coating (Hot dip) on Iron and Steel Hardware (Canada same)
11. ASTM A167, Spec. for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip
12. ASTM A580, Spec. for Stainless Steel Wire
13. ASTM C144, Spec. for Aggregate for Masonry (Canada – A179-94)
14. ASTM C150, Spec. for Portland Cement (Canada – CAN/CSA-A5-93)
15. ASTM E2010 and NFPA 257, Fire Test of Window Assemblies (equivalent to UL<sup>®</sup> 9 and CAN 4-S106-M80)
16. ASTM C207, Spec. for Hydrated Lime for Masonry Purposes (Canada same)
17. ASTM C270, Spec. for Mortar for Unit Masonry (Canada – A179-94)
18. ASTM D1187, Type II—Spec. for Asphalt-Base Emulsions (For Metal Surfaces)
19. ASTM D1227, Type III—Spec. for Emulsified Asphalt (For Porous Surfaces)

#### 1.11 PRODUCT DELIVERY, HANDLING AND STORAGE

- A. All materials shall be new and of the best quality. All materials shall be delivered to the site in the Manufacturer's unopened containers with Manufacturer's labels intact.
- B. Materials shall be delivered to the site in sufficient quantities to allow continuity of the work.
- C. All materials shall be handled and stored in strict accordance with the Manufacturer's requirements. All materials shall be stored in dry locations, protected from the weather, and elevated off the ground.
- D. All flammable materials shall be stored in a cool, dry area away from sparks and open flames. Follow precautions outlined on containers or supplied by material Manufacturer/supplier.

- E. The Contractor shall provide all storage facilities. The buildings shall not be used as storage areas.
- F. The location of all storage facilities and staging shall be coordinated with the Owner.

#### 1.12 JOB CONDITIONS

- A. Protection of Building during Cleaning: Protect all building elements and finishes from damage or deterioration caused by masonry work using all means necessary. Repair any damage to materials or finishes resulting from work of this Section to satisfaction of Engineer at no additional cost to Owner.
  - 1. Adjacent Materials: Protect adjacent materials, including but not limited to masonry, metals, glass, paint, and sealants, from cleaning solutions that might damage such materials. Repair or replace materials damaged as a result of work of this Section to Engineer's satisfaction at no additional cost to Owner.
  - 2. Spread of Cleaning Solutions: Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces. Cease cleaning operations when winds may carry chemicals, rinse water, or run-off from chemical cleaning to unprotected areas.
  - 3. Window and Door Openings and Other Penetrations in Building Skin: Use all means necessary to prevent dust, cleaning solutions, and waste products from entering behind building. Provide reversible temporary seals that will prevent dust, water, and chemicals from entering openings and that will not damage or deteriorate substrate. Remove temporary seals following cleaning. Restore substrates to same condition as before installation of temporary seal.
    - a. Infiltration: If Contractor notices that water, chemicals, or chemical fumes or odors are penetrating building skin or if Contractor is told that water, chemicals, or chemical fumes or odors are penetrating to interior of building, he shall cease operations immediately. Operations shall not proceed until cause of infiltration has been eliminated.
  - 4. Collect and dispose of runoff from cleaning operations by legal means and in manner that prevents soil erosion, undermining of paving and foundations, damage to sidewalks, water penetration into building interiors, and any harm to buildings, landscape elements, and natural bodies of water or groundwater table.
- B. Contractor shall review and confirm all building mechanical intake vents, exhaust vents and louvers at or adjacent to all work areas. Coordinate with Owner's facilities department regarding disconnect and/or temporary protective covering prior to commencement of work.

- C. Maintain materials and surrounding air temperatures to minimum 40 degrees F and rising prior to, during, and 48 hours after completion of masonry restoration work. Masonry materials shall be protected from the elements at all times. All protection to achieve this requirement shall be done in a manner approved first by the Engineer. In no case shall uncured masonry work be exposed to freezing temperatures.
- D. Do not erect masonry when air temperatures exceed 99 degrees F in the shade and relative humidity is less than 40 percent, unless work is prevented from drying out for not less than 48 hours after having been installed by a method first approved by the Engineer.
- E. Remove masonry work damaged by climatic conditions or insufficient covering or protection and reconstruct as directed by Engineer at no additional compensation. Make adequate provisions during construction to prevent damage by wind.

#### 1.13 COLLECTION AND DISPOSAL OF WASTE PRODUCTS

- A. General: Collect, contain, test, and dispose of solid and liquid wastes in accordance with applicable federal, state, and local laws and regulations.
- B. Provide gutters and troughs to collect runoff from cleaning operations for pretreatment prior to disposal. Do not allow waste materials from cleaning operations to flow or drop onto adjacent roofs, setbacks, sidewalks, plantings, soil, or structures. Direct waste materials to collection vessels for treatment.
- C. Neutralize all cleaning waste products to a pH of between 5.0 and 9.5. Propose specific methods and materials for neutralization in Waste Disposal Program submission.
- D. Dispose of cleaning run-off by legal means that prevent: erosion, undermining, damage to plant material, and water penetration into building.
  - 1. Install protection and waste collection systems before general cleaning begins.
  - 2. Test all drains and other water removal systems to ensure that they are functioning properly before cleaning operations begin. Notify Owner immediately if any drains or systems are stopped or blocked. Do not begin work of this Section until drains are in good working order.
  - 3. Provide filtration to prevent suspended solids such as masonry residue from entering drains and drain lines. Contractor shall be responsible for cleaning out any drain or drain line that becomes blocked or filled with sand or other solids as a result of work performed under this Section.
- E. Dispose of all waste products at regular intervals. Do not allow waste products to accumulate on site.

#### 1.14 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall limit its use of the site for work and for storage to allow for:
  - 1. Owner occupancy and use of the building during construction.
  - 2. Public use of walks, parking lots, and driveways.
- B. Do not block exits at any time. Provide protected entranceways at each entrance when working in these areas.
- C. Coordinate use of the site, storage areas, and staging areas with the Owner. Limit use of the site and working hours to dates, times, and locations approved by the Owner.
- D. Cooperate with the Owner's scheduling requirements for working at an occupied building. Work under this Section shall not interfere with the operation of the building or building occupants at any time.
- E. The Contractor is responsible for protecting all materials and equipment stored on the site. The Contractor shall pick-up, store and secure all tools on a daily basis.
- F. Smoking is not permitted on the grounds.
- G. Dispose of all trash and debris in a legal manner off-site. Do not throw debris from roof, access equipment, or staging. Conduct debris to approved containers on the ground. Locate debris containers only in locations approved by the Owner in advance.

#### 1.15 COORDINATION

- A. Coordinate all work of this section with other trades. Perform all work in a timely manner as not to delay other trades. The Contractor shall coordinate all work to prevent exposure of the building to inclement weather and leaks at all times.

#### 1.16 WARRANTY

- A. At project completion, Contractor shall provide a written guarantee that covers all defects in workmanship and materials for a period of two (2) years from date of acceptance. Guarantee shall stipulate that if any of his work is found to be defective, is not sound and durable, is not leak free and weathertight, or otherwise not in accordance with the contract documents within two (2) years of final completion, the Contractor shall repair and/or remove and replace the defective work at no cost to the Owner.

## PART 2 - PRODUCTS

### 2.01 BRICK MASONRY UNITS

- A. Flat and Molded Brick: Replacement face brick shall match existing face brick in hardness and weatherability, size, color, and surface texture and reflectance. Provide replacement molded brick custom made to match existing bricks as required to provide an exact match to existing units, in accordance with ASTM Standards ASTM C216, Grade SW.
- B. Owner shall select from manufacturer's select range face brick. Only brick samples that resemble very closely existing brick will be considered for use.
- C. Shipments shall include the approved percentages of the various grades, properly blended at the factory and equal in all respects to the samples approved for color range, size, texture and quality.

### 2.02 MORTAR

- A. White Portland Cement: Type 1, ASTM C 150.
- B. Portland Cement: Type I or Type II, ASTM C 150, nonstaining. Do not use masonry cement.
- C. Hydrated Lime: ASTM C 207, Type S.
- D. Sand: Clean sharp sand, free of loam, silt, soluble salts, organic matter, and other deleterious substances and graded in compliance with ASTM C 144. Where mortar is to match existing mortar, select sand or other aggregate to provide mortar matching color and texture of original mortar (with minimum addition of pigment). Mix sand and aggregates as required to provide mortar matching original mortar.
- E. Water: Clean and free of substances deleterious to mortar and masonry.
- F. No additives or admixtures other than those specified shall be used. No chlorides or aggressive corrosive chemicals shall be used.
- G. Colored Mortar Pigments:
  - a) Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes.
  - b) Use only pigments with record of satisfactory performance in masonry mortars.
  - c) Products - Subject to compliance with requirements: Solomon Grind-Chem Services Inc. Model SGS Mortar Colors, Davis Colors Model True Tone Mortar Colors, Consolidated Brick and Building Supplies Inc. Model SE-0.

### 2.03 MORTAR MIXES

- A. Mortars for Setting and Pointing Masonry: Mortars specified hereinafter shall comply with ASTM C 270, "Standard Specification for Mortar for Unit Masonry."

Type "N" Mortar strength; in general, shall be consistent with a low standard deviation, and a 28-day cube compressive strength of a minimum of 750 psi and a maximum of 1799 psi. Mortar mixes may change and may require adjustment before and during construction in accordance with preconstruction conformance testing, field testing, and evaluation thereof by Architect.

1. Type "N" Mortar for Setting and Repointing Masonry (brick & stone):
  - a. 1 part by volume white Portland cement (Type 1)
  - b. 1 part by volume hydrated lime (Type S)
  - c. 5 parts "00" sand (Selected to match sand in original mortar)
  - d. Oxide pigments as needed to match existing mortar color.

#### 2.04 MIXING OF MORTAR

- A. Measure mortar ingredients carefully so that proportions are controlled and maintained throughout all work periods.
- B. Mix mortar in an approved type of power operated batch mixer. Mix for time required to produce a homogeneous plastic mortar and not less than five minutes: approximately two minutes for mixing dry materials and not less than three minutes for mixing after water has been added.
- C. Use minimum amount of water to produce a workable consistency for mortar's intended purpose. Mortar for Pointing: As dry a consistency as will produce a mortar sufficiently plastic to be worked into joints.
- D. Where mortar or grout is required in small batches of less than one cubic yard and Architect specifically approves, mortar may be mixed by hand in clean wooden or metal boxes prepared for that purpose provided that mixing boxes and methods of mixing and transferring mortar are approved by Architect.
- E. After mixing, mortars for pointing or setting shall sit for 20 minutes prior to use to allow for initial shrinkage. Mortar shall be placed in final position within two (2) hours of mixing. Retempering of partially hardened material is not permitted.

#### 2.05 MISCELLANEOUS MASONRY ANCHORS

- A. Miscellaneous Masonry Accessories:
  1. Joint Fillers:
    - a. Pressure sensitive adhesive on one face to restrict misalignment during construction.
    - b. Closed-cell expanded neoprene, ASTM D1056, Grade RE41E1, SCE41, 12 to 35 lb. per cu. ft. density, 25 percent compression under max. 5 psi.

- c. Product - Subject to Compliance with Requirements: Williams Products Inc. Model Everlastic.
2. Weep slots shall be clear butyrate plastic 3/8" x 1-1/2" x 3-1/2".

## 2.06 MASONRY CLEANING MATERIALS

- A. General Brick Cleaning: General Purpose cleaner shall be SURE KLEAN-600 Detergent as manufactured by ProSoCo, Inc., Diedrich #202 as manufactured by Diedrich Technologies Inc., iCleen as manufactured by Chemical Products Industries, Inc., or approved equal.

## 2.07 FLASHING MATERIALS

- A. Through wall flashing shall be constructed of self-adhering bituminous membrane such as Permabarrier by W R Grace; CCW-705 by Carlisle Coatings & Waterproofing Inc.; TW Flashing Membrane by Tamko Building Products, Inc.; or approved equal.
- B. Termination bar shall be 1/8" x 1" copper with pre-punched holes at 6" on center.
- C. Throughwall flashing pan shall be formed of 20 oz. copper.

## 2.08 TOOLS

- A. Hand Tools: Chisels, hammers, and mallets.
  1. Thickness of Chisels: Chisels used to remove mortar from and to otherwise prepare joints shall have a maximum thickness of 5/8 times joint width extending back from tip of chisel a minimum of two (2) times depth at which chisel will be inserted into joint.
  2. Special Tools: Provide special knives or special thin cutter blades for use in joints less than 1/8 in. wide.
- B. Power Tools: Small, hand-held electric grinders with diamond or abrasive blades no greater than 3/32 in. thick and a maximum of 4-1/2 in. in diameter may be used to cut joints. Masonry cutting saws shall have a vacuum attachment for collecting dust or a constant water spray attachment for limiting dust generation. It is a primary concern to limit dust generation to the greatest extent practicable.
- C. Brushes: Stiff, natural bristle brushes.
- D. Trowels for Pointing: Long, thin pointing trowels that are narrower than joints being pointed. Fabricate special trowels for pointing if necessary to provide for proper insertion and compaction of mortar.

## 2.09 SEALANT

- A. Sealant for use at masonry to masonry, masonry to metal, and wood to masonry shall be a single-component, moisture curing, gun grade polyurethane sealant



such as Dymonic as manufactured by Tremco, Inc., Beechwood, OH, or Sonolastic NP-1 as manufactured by Sonnoborn, 889 Valley Park Drive, Shakopee, MN 55379 or Sikaflex –1a, NS as manufactured by Sika Corporation, 201 Polito Avenue, Lyndhurst, NJ 07071 or approved equal. Color shall match the surrounding materials to the satisfaction of the Owner and be chosen by the Owner.

- B. Backer rod shall be closed cell polyethylene foam backer rod of proper size to provide 25 % compression when installed. Backer rod shall be Ethafoam SB Brand sealant backer rod as manufactured by Dow Chemical or approved equal.
- C. Bond breaker tape shall be one-sided adhesive tape for use in joints with inadequate depth or configuration for use of backer rod. Bond breaker tape shall be 470 Tape as manufactured by 3M company or approved equal.
- D. All accessories for sealant materials shall be same manufacturer or approved by the manufacturer, and shall include the following: primer, solvents, cleaners, and masking materials.

## **PART 3 – EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Verify items provided by other sections of work are properly sized and located.
- C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

### **3.02 DEMOLITION AT THROUGHWALL FLASHING REPLACEMENT AREAS**

- A. Carefully remove existing brick masonry as required to perform the work without damaging building components to remain.
- B. Provide and install temporary shoring as required to prevent settlement of masonry above.
- C. Remove existing throughwall flashings, counterflashings, and sealants as required to perform the work.
- D. Contractor shall provide adequate protection of ALL existing roof areas adjacent to the work area, and to be trafficked to complete the work. This protection shall include a layer of 10 mil polyethylene, 1/2" minimum compressible rigid insulation and 1/2" OSB sheathing.
- E. Provide protection at all times during construction to maintain watertightness.
- F. Contractor shall properly protect all areas where falling debris or dust is expected

due to his operations. Contractor shall be responsible for providing adequate personnel to clean and protect these areas. Contractor shall include these costs in the bids.

- G. Protect the building interior, contents, Owner's employees, and customers from all hazards associated with the Contractor's operations.
- H. Any damage to the interior of the building or its contents due to the Contractor's operations or to leaks during the Contractor's operations shall be corrected at the Contractor's expense to the satisfaction of the Owner and the Engineer.
- I. Any damage to the exterior of the building, roof membrane, or any roof top equipment due to the Contractor's operations shall be corrected at the Contractor's expense to the satisfaction of the Owner and the Engineer.

### 3.03 MASONRY PREPARATION

- A. Clean dirt, debris, oil, grease, and other foreign substances that would affect bond of mortar, from all surfaces to receive mortar.
- B. Lay-out brick courses to establish accurate spacing of bond pattern and ensure uniform joint widths. Arrange units in manner that will result in few or no units to be cut.
- C. Wet brick having absorption rates in excess of 0.025 ounces per square inch per minute, when tested in accordance with ASTM C67, so that rate of absorption does not exceed that rate when brick is installed.
- D. Ensure that each brick, immediately before installed, has moisture levels in accordance with ASTM C67, but with dry surfaces.
- E. Verify that field conditions are acceptable and are ready to receive work. Verify that built in items are in proper location and ready for roughing into masonry work.
- F. Beginning of installation means installer accepts existing conditions.
- G. Bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

### 3.04 THROUGHWALL FLASHING

- A. Finish work to be free from water leakage under all weather conditions.
- B. Throughwall flashing shall be installed as specified and detailed. Place metal flashing pan to extend across wall cavity. Install self-adhering flashing over flashing pan and extend up wall. End dams shall be formed at the ends of all flashing runs extending past the roof below by 12" by folding and not cutting the flashing to form a 2" tall end dam. End dam shall extend out of the masonry and shall be cut flush once the masonry has cured.

- C. Throughwall flashing shall extend out of the wall construction by 1/2" and shall be cut off even with the face of masonry only after approval by the Engineer.
- D. Tops of throughwall flashing shall be adhered to the back-up wall. Height of rear leg to be 8" minimum. The tops of flashings shall be terminated with a continuous termination bar assembly, sealed along the top edge and counterflashed with existing flashing, where it presently exists.

### 3.05 REPOINTING MORTAR APPLICATION

- A. Wetting: Thoroughly wet masonry 24 hours prior to and again immediately before pointing. Let surfaces dry slightly. At time of pointing, surfaces should be damp, so that they do not rapidly absorb moisture, but free of standing water.
- B. Pointing: Point joints as follows:
  - 1. Using a long, thin pointing trowel, tightly pack mortar into joints in layers not exceeding 1/4 in. thick to fill joint to match original sound joints.
  - 2. Begin by filling areas from which mortar is missing to a depth greater than 3/4 in. in 1/4-in.-thick layers to within 3/4 in. of wall surface to provide a uniform substrate for final pointing. Fill final 3/4-in. depth continuously and uniformly in 1/4-in.-thick layers.
  - 3. Firmly iron each layer to compact mortar to ensure a full bond between mortar and masonry and a firm, solid joint.
  - 4. Allow each layer to reach thumbprint hardness before applying succeeding layer. Do not let previous layer dry out before applying succeeding layer. Construct uniform joints.
  - 5. Do not spread mortar over edges onto exposed surfaces of masonry units. Do not featheredge mortar.
  - 6. When stopping work at end of each day or for other reasons, stagger layers of mortar so that there will be no through joints in pointing. Stagger joints in layers so that they are at least 3 in. from each other.
  - 7. Where one day's work joins that of the previous day, dampen previous work to ensure a good bond.

### 3.06 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement. Match coursing of existing walls whenever new wall abuts existing wall.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

- C. Masonry joints shall be tooled to match existing to give a smooth joint (to match existing profile) of uniform width. Joints shall be concave and shall not be raked. Mortar shall "set-up" enough to have no surface liquid showing, but still be in somewhat plastic state when tooled.

### 3.07 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work. All brick shall be laid in such a manner that joints are completely filled with mortar. End joints must be filled by shoving the unit into place with sufficient mortar to squeeze out on both sides. "Slushing" end joints after unit is in place is not acceptable. The bed joint must also be completely filled.
- B. Lay hollow masonry units with face shell bedding on head and bed joints.
- C. Buttering corners of joints or excessive furrowing of mortar joints are not permitted.
- D. Remove excess mortar as work progresses.
- E. At corners interlock courses leaving no vertical joints.
- F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar, and replace.
- G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- H. Stagger alternate courses.
- I. Build-in related items as the masonry work progresses.
- J. Masonry ties between veneer brick and backup shall be spaced no more than 16" on center vertical and 24" on center horizontally. Tie spacing may be adjusted to meet existing conditions with the approval of the Engineer, provided there is at least one tie for each 3.6 square feet of wall area.
- K. Weep slots shall be installed in head joints of masonry course immediately above flashing level, every 24" on center, max.

### 3.08 TOLERANCES

- A. Maximum Variation from Alignment of Columns: 1/4 inch.
- B. Maximum Variation from Unit to Adjacent Unit: 1/16 inch.
- C. Maximum Variation from Plane of Wall: 3/16 inch in 10 ft.
- D. Maximum Variation from Plumb: 1/4 inch. in 10 ft.

- E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft. (and 1/4 inch in 10 ft.).
- F. Maximum Variation of Joint Thickness: 1/8 inch in 3 ft.
- G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

### 3.09 MORTAR JOINT TOOLING

- A. Tooling: After final layer of mortar is "leather hard," tool joints with a flat rule jointer, or as directed by Architect.
- B. Profile: Tool joints to match original joint profiles. Solidly compress mortar so that it adheres well to masonry on both sides and forms a dense surface. Premature or late tooling will result in unacceptable finishes that will be rejected.
- C. Duplicate existing finish on adjacent historic joints by brushing newly pointed joints with a nonmetallic natural fiber bristle brush to produce a slight texture.

### 3.10 MASONRY CURING

- A. Keep newly pointed joints damp for at least 48 hours after mortar has been inserted. Do not apply a direct stream of water to joints for at least 24 hours after mortar has been placed.
- B. Ensure masonry temperature remains as required by specifications until mortar is thoroughly cured.

### 3.11 MASONRY WALL CLEANING

- A. The Contractor is to clean all masonry wall areas of throughwall flashing replacement with the specified General Purpose Cleaner. The Contractor is to follow recommendations of the cleaning material manufacturer as to the cleaning procedures required in cleaning the exterior masonry components with each of the materials specified. Any dilution of cleaning materials shall be with clean water according to the instructions on the manufacturer's printed label (container label).
- B. Surfaces shall be cleaned of all mortar droppings, stains, and foreign substances with general purpose masonry cleaner specified. Marred, cracked, scratched, or chipped surfaces will not be accepted. Water run-off during saw-cutting and masonry cleaning shall not be permitted to stain existing building, roofs, sidewalks, curbs, etc.
- C. Non-masonry surfaces shall be protected from contact with the cleaning solution. Wooden and/or painted surfaces shall be protected with sheets of polyethylene, or other proven protective materials, firmly fixed and sealed to the surface. Non-masonry surfaces, which are not protected, shall be kept running-wet with clean water throughout the cleaning process of adjacent masonry.
- D. Pressure applications of the general cleaning materials is not allowed.

This practice may drive the cleaning compounds deep into the masonry surface making it impossible to rinse treated surfaces free of all cleaning residues. High pressure spray application of cleaning materials may result in scumming, efflorescence, burning, and severe metallic staining. If spray application of the cleaning solution is desired, apply cleaning agents with low pressure (50 PSI maximum) spray equipment.

- E. Removal of excess mortar and job dirt shall be performed in the following manner unless otherwise indicated by testing.
1. Scrape off excess mortar deposits with sections of brick, wooden scrapers, or other non-metallic scraping devices.
  2. Thoroughly pre-wet a large area of the masonry surface to be cleaned.
  3. Using a densely packed, soft fibered masonry washing brush and low-pressure water spray, clean the newly installed brick surface of all excess mortar and job dirt.
  4. Rinse treated surfaces thoroughly with fresh water employing full city water pressure or pressure washing equipment, removing all dirt, mortar, etc. from masonry surfaces.
  5. Repeat as necessary.
- F. Clean masonry prior to final setting of mortar. Remove mortar and stains from face of brickwork with dry, stiff-bristle brushes. Additional cleaning procedures may be required by Engineer if masonry staining occurs. Keep walls clean as work progresses. After mortar has cured, perform final cleaning, using clean water only and stiff fiber brushes.
- G. Water Washing: Wash pointed masonry with clean filtered water and nonabrasive hand tools to remove mortar debris from masonry surfaces.
1. Wash within 48 hours following completion of pointing.
  2. Use blunt-edged wood scrapers, stiff natural bristle brushes, and rough towels along with water to remove mortar debris. Do not use wire brushes.
- H. Repair of Pointed Joints: As cleaning progresses, examine joints to locate cracks, holes, and other defects. Carefully point up and fill such defects with mortar. Where necessary in opinion of Engineer, cut out joints and refill with pointing mortar exercising extreme care to ensure that color matches that of original pointing work. Exposed joint surfaces shall be free from protruding mortar, holes, pits, depressions, and other defects.

### 3.12 SEALANT PREPARATION

- A. Existing sealant shall be removed in its entirety at all joints indicated. The level of preparation at sealant joint substrate areas shall be reviewed by both the technical representative of the sealant Manufacturer and the Engineer. Sealant pulls tests shall be performed at each specific type of substrate/sealant joint included in the project. Sealant pull tests shall be performed by the sealant Manufacturer in the presence of the Engineer. No sealant installation work shall commence until all joint preparation and sealant pull tests are approved by the Engineer. Please note that sealant primer may be required to obtain the required bond to pass the sealant pull tests.
- B. All joints to receive caulking or sealant shall be dry and free of loose particles, oil or grease, or other material that would prevent or interfere with full adhesion of the caulk or sealant.

### 3.13 SEALANT INSTALLATION

- A. Do not apply caulking when the ambient air temperature or the temperature of surface to be caulked or sealed is below 50°F or above 100°F. Do not apply caulking or sealant during rain or snow.
- B. Mask off the edges of joints to prevent staining unless it can be demonstrated that the quality of workmanship is high enough so that this protection is not needed.
- C. Backer rod shall be installed at all joints and elsewhere as indicated on the drawings. Install backer rod carefully with approximately 30% compression avoiding tearing, twisting, or stretching. Splices shall be butted tightly. Install backer rod to provide a depth-to-width ratio for the sealant joint of 1:2.
- D. Bond Breaker Tape: Where backer rod is not practical, and where approved by the Engineer, install bond breaker tape to the back of the sealant joints neatly, such that sealant will adhere only to sides of the joint when installed.
- E. Force sealant tightly into the joint, forcing out all air pockets and filling the void completely. Nozzle size shall be of the proper size to the particular joint.
- F. Sealant shall be dry-tooled immediately after application to provide a smooth, uniform surface of the recommended profile.
- G. All surfaces stained, soiled, or discolored during caulking or sealing shall be cleaned or restored.
- H. Smears and excess caulking and sealant shall be removed with a cleaning agent as recommended by the sealant manufacturer.

### 3.14 FIELD INSPECTION

- A. The Engineer and the Owner's Project Manager will be on site periodically to observe the work progress and to monitor contract compliance. Any items observed not in compliance with the contract documents shall be identified and promptly corrected by the Contractor.
- B. Prior to the final project completion, inspections shall be made by representatives of the Engineer, and Owner's Project Manager. A punch list will be developed by each, and copies will be forwarded to the Contractor. Contractor shall immediately correct all punch list items. Deviations from the specifications and/or details must be corrected immediately. Warranty shall be issued upon final acceptance of the work.
- C. Contractor is to provide any and all necessary protection to maintain watertightness during the project duration. Any interior damages that occur as a result of the Contractor's negligence shall become the Contractor's responsibility and he shall promptly repair and/or replace all damaged items to the satisfaction of the Engineer and Owner.

### 3.15 CLEANING

- A. The building and adjacent areas shall be left in a broom-clean condition at the end of each day. On completion of the work of this section and after removal of all debris, the site shall be left in a clean condition satisfactory to the Owner and to the Engineer.
- B. At the completion of the Project, the Contractor shall restore or replace all property damaged by his Work and shall remove all spots, paint, smears, soil, concrete, mortar, sealant, adhesives, asphalt, writing, droppings, and other foreign materials, from all Work. Remove all temporary protection from all the Work. Final cleaning shall include as a minimum:
  - 1. Clean site; sweep paved areas, rake clean landscaped surfaces.
  - 2. Remove waste and surplus materials, rubbish, and construction facilities from the site.
  - 3. The Contractor shall clean all walls, windows, roofs, and other building and grounds elements that have been affected by his work.
  - 4. Repair, patch and touch-up marred surfaces to specified finish to match adjacent surfaces.

**END OF SECTION**



## **SECTION 05 31 50**

### **STEEL DECK REPAIR**

#### **PART 1 – GENERAL**

##### **1.01 GENERAL REQUIREMENTS**

- A. The General Conditions of the Contract for Construction and the General Requirements (Division 01) are hereby made part of this specification.
- B. Maintain a copy of all applicable drawings, specifications, shop drawings, and approved submittals at the site at all times during the Work.

##### **1.02 SECTION INCLUDES**

- A. The work of this Section consists of furnishing and installing all steel roof deck repair and replacement products and related items as indicated on the Drawings and specified herein, required to complete the work.
- B. The Contractor shall include in the Bid his price for random repairs to deteriorated steel roof decking. Reference paragraph 1.07- Unit Prices for bid quantities. Provide unit prices for changes in the bid quantities for the specified work listed in this section on the Form for General Bid.
- C. The Contractor shall be responsible for infilling the opening in the existing roof after removal of the chimney. New steel decking shall span three 3 bar joists minimum. This quantity is not part of the unit prices.
- D. In an effort to ensure that the existing steel roof decking is properly secured to the existing structural framing system, the Contractor shall install any necessary fasteners. Provide unit prices for the specified work listed in this section on the Form for General Bid.
- E. All materials shall be verified by Contractor to be proper for each intended use, and the entire work of this Section shall be done in such a manner that each installation will perform its intended purpose as applicable, in the finished work.
- F. The drawings indicate and show limits of construction for this project. The specifications specify material and work requirements for this project. Both are complementary to each other, and both shall be followed to complete the work.
- G. Plans and dimensions under which the Work is to be performed are derived from a variety of sources. The existing conditions are provided for information only. Actual conditions may vary. Contractor is required to verify existing roofing system and associated building envelope system composition and information, conditions, and dimensions prior to submitting his bid. No additional

compensation or time extension will be made for dimensional errors or discoverable inaccuracies related to existing conditions in the contract documents.

#### 1.03 RELATED WORK

- A. Section 02 05 00 – Demolition
- B. Section 04 50 00 – Masonry Restoration
- C. Section 06 10 63 – Rough Carpentry
- D. Section 07 22 00 – Roof Insulation
- E. Section 07 54 00 – PVC Roofing & Flashing
- F. Section 22 00 01 – Plumbing-Roof Drains
- G. Section 23 00 01 – Temporary Mechanical Disconnects
- H. Section 26 00 01 – Temporary Electrical Disconnects

#### 1.04 DESIGN REQUIREMENTS

- A. Design steel decking in accordance with AISI publication, "Specification" for the Design of Cold-formed Steel Structural Members" except as otherwise shown or specified.

#### 1.05 SUBMITTALS

- A. Submit the following under the provisions of Section 01 33 00:
  - 1. Manufacturer's literature and data sheets for of each type of fasteners used for steel deck repair identified with brand type, size, finish, and other descriptive information.
  - 2. One piece of steel deck proposed for use in repair of existing steel deck (if requested by the Engineer).
  - 3. Manufacturer's literature and data sheets on steel deck replacement and repair products.
  - 4. Manufacturer's literature and data sheets on Spray Applied Fireproofing (Sprayed Fire-Resistive Material (SFRM)) products.
  - 5. Certificates: Certificates from testing laboratory attesting fireproofing material and application methods meet the fire ratings requirements. List thickness and density of material required to meet hourly fire rating requirements, accompanied by test report and test record.

#### 1.06 REFERENCES

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.

- B. American Society for Testing and Materials (ASTM): A446/a446M-93 Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality A525-93 General Requirements for Steel Sheet, Zinc Coated (Galvanized) by the Hot-Dip Process. A611-94 Steel, Sheet, Carbon, Cold-Rolled, Structural Quality
- C. American Welding Society (AWS):  
D1.3-89 Structural Welding Code - Sheet Steel
- D. Military Specifications (Mil. Spec.):  
MIL-P-21035B Paint, High Zinc Dust Content, Galvanizing Repair
- E. American Iron and Steel Institute (AISI) Publication:  
Specification for the Design of Cold-Formed Steel Structural Members (1986)
- F. Conform to applicable local building code requirements.
- G. American Society for Testing and Materials (ASTM):
  - 1. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
  - 2. ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials.
  - 3. ASTM E605 Standard Test Methods for Thickness and Density of Sprayed Fire-Resistive Material Applied to Structural Members.
  - 4. ASTM E736 Standard Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members.
  - 5. ASTM E759 Standard Test Method for Effect of Deflection on Sprayed Fire-Resistive Material Applied to Structural Members.
  - 6. ASTM E760 Standard Test Method for Effect of Impact on Bonding of Sprayed Fire-Resistive Material Applied to Structural Members.
  - 7. ASTM E761 Standard Test Method for Compressive Strength of Sprayed Fire-Resistive Material Applied to Structural Members.
  - 8. ASTM E859 Standard Test Method for Air Erosion of Sprayed Fire-Resistive Materials Applied to Structural Members.
  - 9. ASTM E937 Standard Test Method for Corrosion of Steel by Sprayed Fire-Resistive Material Applied to Structural Members.
  - 10. ASTM G21 Standard Test Method to Evaluate Resistance of Synthetic Polymer Materials to Fungi.
- H. Underwriters Laboratories, Inc. (UL).

- I. AWCI Technical Manual 12-A: Standard Practice for the Testing and Inspection of Field Applied Sprayed Fire-Resistive Materials, Third Edition.
- J. AWCI Technical Manual 12: Design Selection Utilizing Spray Applied Fire-Resistive Materials.
- K. American Society for Testing and Materials (ASTM): A 239 Locating the Thinnest Spot in a Zinc (Galvanized) Coating in Iron or Steel Articles by the Preece Test (Copper Sulfate Dip); A 780 Repair of Damaged Hot-Dip Galvanizing; B 117 Salt Spray (Fog) Testing; D 520 Type III Specification for Zinc Dust (Metallic Zinc Powder); E 376 Measuring Coating Thickness by Magnetic-Field or Eddy Current (electromagnetic) Test Methods.
- L. Steel Structures Painting Council (SSPC) All contents © 2005, ZRC Worldwide. All rights Reserved. 05030 METAL FINISHES/09800 SPECIAL COATINGS SSPC-PS 12.00 Guide to Zinc-Rich Coating Systems. SSPC Paint 20 Zinc-Rich Primers, Type II, Organic. SSPC-SP1 Surface Preparation Specification No. 1, Solvent Cleaning. SSPC-5P3 Surface Preparation Specification No. 3, Power Tool Cleaning. SSPC-5P6 Surface Preparation Specification No. 6, Commercial Blast Cleaning. SSPC-SP10 Surface Preparation Specification No. 10, Near White Blast Cleaning.

#### 1.07 UNIT PRICES

- A. Provide unit prices for changes in the Contract Quantities for the specified work listed in this section on the Form for General Bid. The Contractor shall include in all lump sum bids (contract price) his price for the following:
  - 1. Random removal and replacement of existing rusted or deteriorated steel roof deck. Quantities shall be determined by calculation of actual square footage installed with no allowance for waste. The Contractor shall include 700 square feet (SF) as the Bid quantity.
  - 2. Random wire brushing and painting of existing rusted steel roof deck. Quantities shall be determined by calculation of actual square footage installed with no allowance for waste. The Contractor shall include 700 square feet (SF) as the Bid quantity.
  - 3. Random installation of galvanized steel sheet over existing steel roof deck. Quantities shall be determined by calculation of actual square footage installed with no allowance for waste. The Contractor shall include 700 square feet (SF) as the Bid quantity.
  - 4. Random installation of necessary fasteners for proper steel roof deck securement. Quantities shall be determined by actual fasteners used. Reference paragraph 3.03 for fastening requirements.

- B. The Contractor shall notify the Engineer immediately upon uncovering existing steel deck showing signs of deterioration, including rust, pinholes, or excessive deflection.
- C. The Contractor shall perform unit price work only when approved by the Engineer. The Contractor shall properly document that the work has been completed. Proper documentation shall include photos and locations shown on the roof plan. Quantity tabulation shall be done on a daily basis by the contractor and reported at the construction meetings, or more often as requested by the Engineer.

#### 1.08 CONTRACTORS USE OF PREMISES

- A. Contractor shall limit its use of the site for work and for storage to allow for:
  - 1. Owner occupancy and use of the building during construction.
  - 2. Public use of walks, parking lots, and driveways.
- B. Do not block exits at any time. Provide protected entranceways at each entrance at all times.
- C. Coordinate work on the roof, use of the site, storage areas, and staging areas with the Owner. Limit use of the site and working hours to dates, times, and locations approved by the Owner.
- D. Cooperate with the Owner's scheduling requirements for working at an occupied building. Work under this Section shall not interfere with the operation of the building or building occupants at any time.
- E. The Contractor is responsible for protecting all materials and equipment stored on the site.
- F. Smoking and vaping is not permitted on the grounds.
- G. Dispose of all trash and debris in a legal manner off-site. Do not throw debris from access equipment or staging. Conduct debris to approved containers on the ground. Locate debris containers only in locations approved by the Owner in advance.

### **PART 2 – PRODUCTS**

#### 2.01 STEEL DECKING

- A. Steel Decking: ASTM A446, Grade A, to match existing deck in profile, dimension, and thickness.
- B. Galvanizing: ASTM A525, G90; ASTM A653/A653M.

## 2.02 FASTENERS

- A. Sidelap or Steel Sheet Fasteners: For new or existing steel deck shall be #12 x 3/4 zinc-plated hex-washer head self-drilling sheet metal screw with the following minimum properties:

Min. Tensile Strength (installed in 1/8" steel)..... 1,575 pounds failure  
Min. Torsional Strength..... 80 in. lbs.  
Min. Shear Strength (20 ga.)..... 1,200 pounds  
Acceptable for Average Pullout Strength..... 450 pounds

Approvals:     Factory Mutual  
                  Steel Deck Institute

- B. Endlap Fasteners: For new or existing steel deck shall be #12 x 1-1/4" zinc-plated hex-washer head self-drilling sheet metal screw designed for fastening to structural steel with the following minimum physical properties:

Min. Tensile Strength (installed in 1/8" steel)..... 1,575 pounds failure  
Min. Torsional Strength..... 80 in. lbs.  
Min. Shear Strength (20 ga.)..... 900 pounds  
Min. Pullover Strength (20 ga.)..... 1,200 pounds  
Average Pullout Strength ..... 1,000 - 2,000 pounds (min.)

Approvals:     Factory Mutual  
                  Steel Deck Institute

## 2.03 REQUIREMENTS

- A. Steel decking shall be 20 ga., 1-1/2 in. deep, wide ribbed roof deck, with minimum effective section properties as follows:

Moment of Inertia ..... 0.20 in<sup>4</sup>/ft  
Section Modulus ..... 0.25 in<sup>3</sup>/ft

- B. Effective section properties shall be calculated in accordance with AISI publication, "Specification for the Design of Cold-formed Steel Structural Members"

## 2.04 REPAIR COATING

- A. Rusted steel decking repair coating shall be a metallic zinc coating, containing 95% zinc in the dried film, that imparts cathodic protection to ferrous and nonferrous metals through its galvanic action and is recognized by Underwriter's Laboratories, Inc. as an equivalent to commercial hot-dip galvanizing. The coating, in its dry form, shall be non-toxic and essentially free of heavy metals as lead, cadmium, barium, antimony, arsenic, chromium, copper, mercury, molybdenum, selenium, silver and tellurium.

- B. Rusted steel decking repair coating shall be Organic Zinc-Rich Coating containing a maximum of 221 gms/L VOC, as supplied, and at least 92% metallic zinc (ASTM D520, Type III), by weight, in the dried film, exhibiting galvanic, anti-corrosion protection to iron and steel, and conforming to Society for Protective Coatings Specification SSPC Paint 20, Type II, Level 1, Zinc Rich Coating and American Society for Testing and Materials Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings, ASTM A 780-01, and meeting the performance requirements of Specification SSPC Paint 29, Type II, Level 1, Zinc Dust Sacrificial Primer Performance-Based, Military Specification MIL-P-21035B, Paint High Zinc Dust Content, Galvanizing Repair (Metric) and Military Specification MIL-PRF-26915D, Primer Coating, For Steel Surfaces.

### **PART 3 – EXECUTION**

#### **3.01 PROTECTION**

- A. The Contractor shall use extreme caution during steel roof deck repair and replacement operations. The facility is operational and contains personnel, furniture, fixtures and equipment.
1. Contractor shall properly protect all areas from falling materials, debris, or dust due to his operations. Contractor shall be responsible for providing adequate personnel to protect, barricade, clean and protect these areas. Contractor shall provide all required ceiling tile removal and replacement to all staging to access the Work. The library stacks are to remain in place.
  2. Protect the building interior, contents, Owner's employees and customers from all hazards associated with the Contractor's operations.
  3. Equipment and materials such as lighting, electrical conduits, junction boxes, fireproofing, ceiling tiles and associated attachment components may exist in the vicinity of or on the underside of the roof decking. Contractor shall take all necessary precautions so as not to cause any damages. Any damages that interrupt service and/or require repairs to the building furniture, fixtures, materials, or equipment shall be the responsibility of the Contractor at no additional cost to the Owner and shall be repaired immediately.
  4. During steel roof deck repair and replacement operations, the Contractor shall post one or more of his employees inside the facility to temporarily close the affected areas. The person in charge of the facility shall be notified by the Contractor prior to the commencement of this work. Proper barricades shall be provided by the Contractor to prevent normal access to or around these areas.

- B. Any damage to the interior of the building or its contents due to the Contractor's operations or to leaks during the Contractor's operations shall be corrected at the Contractor's expense to the satisfaction of the Owner and the Engineer.

3.02 STEEL DECK REPLACEMENT

- A. Sections of existing steel roof deck to be replaced and sections of new steel roof deck to be installed shall be cut out square and neat. Cut ends of deck at bearing supports. At underside of steel decking install Sprayed Fire – Resitive Material (SFRM) material.
- B. New sections of steel roof deck shall span at least three supports.
- C. Fasten roof deck as specified.
- D. Where deck replacement is required at a roof drain, coordinate with roof drainage requirements as specified.
  - 1. After decking is secured, cut to receive the drain sump pan being careful not to oversize the cut. Cutting shall be done with a portable, hand-held, reciprocating jigsaw provided with a sharp blade. No burning will be permitted.
  - 2. Install the sump pan using not less than 12 fasteners located 3 to each side.

3.03 FASTENING OF NEW OR EXISTING STEEL DECK

- A. Sections of new steel decking to be installed shall be cut square and neat. Contractor shall note the location of all conduits, light supports, etc., prior to installation of new steel decking.
- B. Place steel decking units at right angles to supporting members. End laps of sheets shall be a minimum of 2 inches and shall occur over supports.
- C. Roof deck shall be fastened to adjacent panels and to supports by mechanical fasteners in accordance with the following:
  - Panel Ends .....6" o.c. and at end ribs
  - End Laps .....6" o.c. and at end ribs
  - Intermediate Supports.....12" o.c. and at end ribs
  - Longitudinal Edges Between Supports.....3'-0" o.c. max.

3.04 INSTALLATION OF STEEL SHEET

- A. Sheet steel shall lap the area requiring reinforcing by a minimum of 12 in. in all directions.
- B. Fasten steel sheet at 6 inches on center at the perimeter and 12 inches on center in the field of the sheet.



### 3.05 PAINTING OF RUSTED DECK

- A. Thoroughly clean the deck of all debris, loose material, grease, oil, or other deleterious materials. Surfaces to be coated shall be clean and devoid of grease, oil, mill scale, oxidation, loosely adherent rust, and paint.
- B. Surface preparation to be as follows:
  - 1. Grease and Oils – Solvent clean to SSPC-SPI;
  - 2. Rust scale and easy to remove paint – Power tool clean to SSPC-SP3;
  - 3. Mill scale and firmly adhered paint – Sandblast to SSPC-SP<sup>^</sup> (commercial).
- C. Do not apply coating when deck has surface moisture or frost. Surface temperature of the decking shall be 5° F above the dew point to avoid possible condensation. Humidity shall be less than 85% RH.
- D. Contents of containers shall be stirred well upon opening and during application to ensure homogeneous mix. Continuous agitation (by means of an in-pot power mixer) is strongly recommended to ensure the continuous application of a completely homogeneous material at all times.
- E. Apply coating in accordance with the manufacturer's written instructions. The coating shall be applied at sufficient wet film thickness to achieve a minimum dry film build of 2.5 - 3.5 mils, using manufacturer's recoat time directions. Dry time - (Set to touch) when ambient air dried, 20-30 minutes (ASTM D-1640).

**END OF SECTION**

## **SECTION 06 10 00**

### **ROUGH CARPENTRY**

#### **PART 1 – GENERAL**

##### **1.01 GENERAL REQUIREMENTS**

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.
- B. Maintain a copy of all applicable drawings, specifications, shop drawings, and approved submittals at the site at all times during the Work.

##### **1.02 SECTION INCLUDES**

- A. The work of this Section consists of furnishing and installing all rough carpentry and related items as indicated on the Drawings and specified herein, required to complete the roofing replacement and repair work, including but not limited to the following:
  - 1. New wood blocking shall be installed as required to accomplish the work as specified and detailed. The Contractor shall refasten all existing and new wood blocking in accordance with Factory Mutual Data Sheet 1-49.
  - 2. New plywood shall be installed at vertical surfaces where called for in the details as an acceptable substrate for flashing materials, required to accomplish the work as specified and detailed.
  - 3. Existing plywood to remain where shown on the drawings to remain shall be resecured with approved fasteners.
- B. All materials shall be verified by Contractor to be proper for each intended use, and the entire work of this Section shall be done in such a manner that each installation will perform its intended purpose as applicable, in the finished work.
- C. The drawings indicate and show limits of construction for this project. The specifications specify material and work requirements for this project. Both are complementary to each other, and both shall be followed to complete the work.
- D. Plans and dimensions under which the Work is to be performed are derived from a variety of sources. The existing conditions are provided for information only. Actual conditions may vary. Contractor is required to verify existing roofing system composition, conditions, and dimensions prior to submitting his bid. No additional compensation or time extension will be made for dimensional errors or discoverable inaccuracies related to existing conditions in the contract documents.

### 1.03 RELATED WORK

- A. Section 02 05 00 – Demolition
- B. Section 04 50 00 – Masonry Restoration
- C. Section 05 31 50 – Steel Deck Repairs
- D. Section 07 22 00 – Roof Insulation
- E. Section 07 54 00 – EPDM Roofing & Flashing
- F. Section 22 00 01 – Plumbing - Roof Drains
- G. Section 23 00 01 – Temporary Mechanical Disconnects
- H. Section 26 00 01 – Temporary Electrical Disconnects

### 1.04 SUBMITTALS

- A. Submit the following under the provisions of Section 01 33 00:
  - 1. Manufacturer's or applicator's specification for wood preservative treatment and treatment procedure to be sure that a satisfactory treatment will be obtained.
  - 2. Manufacturer's specification data sheets for all fasteners to be used, clearly identifying such as their intended use.
  - 3. Material Certificates: (1) For lumber specified to comply with minimum allowable unit stresses, indicate species and grade selected for each use and design values approved by ALSC's Board of review; (2) For preservative-treated wood products, indicate type of preservative used and net amount of preservative retained; (3) For products receiving a waterborne treatment, include statement that the moisture content of treated materials was reduced to levels specified before shipment to Project site.
  - 4. Certificates of Inspections: Issued by lumber-grading agency for exposed wood products not marked with grade stamp.
  - 5. Shop drawings of all blocking and other wood assemblies, including anchorage to existing structure. Coordinate Shop Drawings with all relevant work of other trades specified in other Sections. Show compliance with FM Global Loss Prevention Data Sheets 1-29 and 1-49 for all wood nailers at roof edges.

### 1.05 CODES AND STANDARDS

- A. Except as modified by the requirements of other governing codes and by this specification plywood sheathing, wood decking, wood blocking and its installation shall conform to the provisions and recommendations of the following codes and standards:
  - 1. Factory Mutual Loss Prevention Data Bulletins 1-29 and 1-49.
  - 2. APA: American Plywood Association.

3. American Softwood Lumber Standard P.S. 20-70
4. AWWPA: (American Wood Preservers Association) C1-A11 Timber Products Preservation Treatment by Pressure Process.
5. Conform to applicable local building code requirements.
6. Wood Blocking shall not be less than 2"x6" nominal (1 1/2"x5 1/2").
7. ANSI/SPRI/FM 4435/ES-1; Wind Design Standard for Edge Systems Used with Low-Slope Roofing Systems.
8. NRCA Roofing & Waterproofing Manual.
9. SPIB: Southern Pine Inspection Bureau.
10. NELMA: Northeastern Lumber Grading Association.
11. NLGA: National Lumber Grading Association.
12. NDS: National Design Specification for Wood Construction

#### 1.06 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall limit its use of the site for work and for storage to allow for:
  1. Owner occupancy and use of the building during construction.
  2. Public use of walks, parking lots, and driveways.
- B. Do not block exits at any time. Provide protected entranceways at each entrance when working in these areas.
- C. Coordinate work on the roof, use of the site, storage areas, and staging areas with the Owner. Limit use of the site and working hours to dates, times, and locations approved by the Owner.
- D. Cooperate with the Owner's scheduling requirements for working at an occupied building. Work under this Section shall not interfere with the operation of the building or building occupants at any time.
- E. The Contractor is responsible for protecting all materials and equipment stored on the site.
- F. Smoking is not permitted on the grounds.
- G. Dispose of all trash and debris in a legal manner off-site. Do not throw debris from access equipment or staging. Conduct debris to approved containers on the ground. Locate debris containers only in locations approved by the Owner in advance.

#### 1.07 UNIT PRICES

- A. Provide unit prices for changes in the Contract Quantities for the specified work listed in this section on the Form for General Bid. The Contractor shall include in all lump sum bids (contract price) his price for the following:

1. Random removal and replacement of existing deteriorated wood blocking. Quantities shall be determined by calculation of actual board footage installed with no allowance for waste. Deteriorated wood roof blocking shall be replaced with new wood blocking. The Contractor shall include 500 board feet (BF) as the Bid quantity.
- B. The Contractor shall notify the Engineer immediately upon uncovering existing wood blocking, wood decking and plywood showing signs of deterioration, including water damage, rot, warping or excessive deflection.
- C. The Contractor shall perform unit price work only when approved by the Engineer. The Contractor shall properly document that the work has been completed. Proper documentation shall include photos and locations shown on the roof plan. Quantity tabulation shall be done on a daily basis by the Contractor and reported at the construction meetings, or more often as requested by the Engineer.

#### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. Protect the existing building and its contents; the premises, including access drives and parking areas; interior finishes; and all site work (landscaping) during all demolition, removal, and repair operations against all risks associated with this work. Replace damaged components at no charge to the Owner and to the satisfaction of the Owner using mechanics skilled in the appropriate trade including all site work.
- B. Do not damage existing materials scheduled to remain. Provide adequate protection of the window glass to prevent breakage, scratches, staining, etching, and any other damage during work associated with this Section.
- C. Schedule and execute all work to avoid exposing the building and its contents to inclement weather. Prevent water intrusion through the temporary protection.
- D. Check all specified items upon Contract signing, and order early so the work is not delayed. Certain materials may require considerable lead-time for delivery.
- E. Coordinate with the Owner's representative regarding roof access and hoist or crane locations.
- F. Season all wood prior to use by neatly stacking on dunnage in a manner to avoid distortion of wood. Cover with breathable, waterproof, and flame-retardant canvas tarpaulins (not polyethylene) arranged to allow air movement beneath the covers. Do not use any stock with excessive twist or bow. Moisture content shall not exceed 19% at time of installation; 17% for plywood. Store in a secure area assigned by the Owner's representative.
- G. Avoid traffic over completed roofing surfaces. Do not use new roof surfaces for storage or work areas. Protect new and existing roof surfaces with smooth 5/8 in. thick (minimum) plywood runways where access is required and ensure full

protection of new and existing roofing surfaces against mechanical damage. Notify the Engineer immediately, and in writing, if anyone abuses or damages roofing or flashing components.

- H. Promptly remove from the site all materials or incomplete waterproofing work exposed to any moisture anywhere, at any time, during transportation, storage, handling and installation, or rejected by the Owner.

#### 1.08 WARRANTY

- A. The Contractor shall supply the Owner with a minimum two-year workmanship and leak-free warranty. In the event any work related to this section is found to be defective, is not watertight, or otherwise not in accordance with the contract documents within two (2) years of final completion, the Contractor shall repair and/or remove and replace at no cost to the Owner.

### **PART 2 – PRODUCTS**

#### 2.01 DIMENSIONAL LUMBER

- A. Materials shall be of sound stock, new, straight, of consistent size, free of stains and mildew.
- B. Materials shall be kiln dried to a moisture content of not more than 19%. Pressure treated lumber shall be kiln dried a second time after treatment.
- C. Materials shall be surfaced four sides and shall bear the grade and trademark of the association under whose rules it is produced, and a mark of mill identification. Materials shall be construction grade Douglas Fir, Hem-Fir, West Coast Hemlock, West Coast Fir, or Southern Yellow Pine.
- D. Materials shall be furnished in the longest practicable lengths with respect to each intended use - at least twelve feet unless shorter lengths are required and/or are specified. Single length pieces shall be used whenever possible.
- E. All new wood blocking, nailers, and fencing materials shall be pressure-treated with waterborne salt preservatives that will have no deleterious effect on the roofing materials. Treatment shall be 0.40 lbs. per cubic foot of retention. Treatment shall leave a noticeable tint to wood so that treated wood can be visually differentiated from untreated wood. No oil-based pentachlorophenol or creosote treatments shall be permitted.

#### 2.02 PLYWOOD

- A. Plywood shall be 1/2" thick at vertical surfaces scheduled to be flashed. All plywood shall be exterior grade of Group 1 or 2 species, Type CDX or better. All plywood shall have an APA stamp on it and shall meet the requirements of Product Standard PS 1-95 for Construction and Industrial Plywood.

- B. All plywood shall have a maximum moisture content of 15% by weight on a dry basis. Unless kiln dried after treatment, wolmanized plywood is not acceptable due to moisture content requirements herein.
- C. Nailers 10" wide and narrower that are indicated as plywood may be a single piece of dimensional lumber as specified in Paragraph 2.01 of this section. Those over 10" in width shall be plywood.

## 2.03 FASTENERS

- A. All fasteners and anchors shall be stainless steel unless otherwise noted.
  - 1. For attaching lumber to masonry: 3/8 in. dia. Stainless steel threaded rods set in a two-component adhesive into grouted CMU cells or solid masonry, 5 in. minimum embedment into backup material. Adhesive may be the following or approved equal:
    - a. AC100+gold by Powers Fasteners, Inc.
    - b. HIT-HY 70 injectable mortar by Hilti, with screen tube for support
  - 2. For attaching plywood to masonry: 5/8 in. dia. concrete/masonry screw, length as required to provide 2-1/2 in. minimum embedment into backup material. Fastener may be the following or approved equal:
    - a. Wedge-bolt+ by Powers Fasteners, Inc.
    - b. Kwik-Con 2 by Hilti
  - 3. For attaching plywood to concrete: 1/4 in. diameter, with countersunk (flat) head, length to provide manufacturer's standard embedment into concrete.
  - 4. For wood-to-wood: Hot dipped galvanized, annular ring nails, 11 ga or in gauges as detailed or required, with length to provide a minimum of 2-1/2 in. embedment into the final piece receiving the nail points, except full depth into plywood.
  - 5. For attaching plywood to wood blocking and all other wood-to-wood connections: No. 10 steel screws with tapered Phillips head, length to provide 2-1/2 in. minimum embedment.
  - 6. If required, any existing fastener for wood blocking and plywood that are found to be deteriorated shall be replaced with new fasteners of equal or better quality and capacity.
  - 7. Nails: Galvanized steel. Sizes as required by Massachusetts State Building Code, Appendix C, for the intended use, unless otherwise noted in the drawings or these specifications.

8. Screws: No. 10 flat head galvanized wood screws, length sufficient to penetrate substrate (stud, joist or blocking) by at least 1", unless greater penetration required as indicated on the drawings.

## **PART 3 – EXECUTION**

### **3.01 GENERAL**

- A. Construct all rough carpentry work called for on the drawings plumb, level, and true with tight, close-fitting joints. Carpentry shall be securely attached and braced to surrounding construction and executed in a first-class workmanship manner. Runs of blocking shall be built up plumb, straight and in-line with exterior masonry walls.
- B. Blocking shall be built to the same thickness as the insulation to the maximum extent possible, within 1/16" plus or minus. Blocking shall extend at least 2" beyond edge of metal flashing.
- C. At continuous blocking runs longer than two (2) feet, the minimum length of blocking shall be two (2) feet.
- D. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
  1. ANSI/SPRI/FM 4435/ES-1 – Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems and FM Global Loss Prevention Data Sheets 1-29 and 1-49.
  2. Countersink fasteners into wood only to depth for fastener heads to be flush.

### **3.02 EXAMINATION**

- A. The Contractor is to exercise extreme caution when removing the existing roofing system to ensure the integrity.
- B. Examine surfaces scheduled to receive repair material for unevenness, irregularities, and dampness that would affect quality and execution of work. Do not proceed with work until unsatisfactory conditions have been corrected.
- C. Contractor is responsible for verification of all dimensions and existing conditions. Contractor shall provide adequate amounts of rough carpentry products on site daily so as to ensure that the repairs are completed in a timely fashion. Delays and/or temporary roofing due to inadequate amounts of repair product will not be allowed.



### 3.03 PROTECTION

- A. The Contractor shall use extreme caution during wood blocking and wood decking replacement operations. The facility is operational and contains personnel, furniture, fixtures, and equipment.
1. Contractor shall properly protect all areas from falling materials, debris, or dust due to his operations. Contractor shall be responsible for providing adequate personnel to protect, barricade, clean and protect these areas.
  2. Protect the building interior, contents, and occupants from all hazards associated with the Contractor's operations.
  3. Equipment such as lighting, electrical conduits, junction boxes, ceiling tiles and associated attachment components may exist in the vicinity of or on the underside of the roof decking. Contractor shall take all necessary precautions so as not to cause any damages. Any damages that interrupt service and/or require repairs to the building furniture, fixtures or equipment shall be the responsibility of the Contractor at no additional cost to the Owner and shall be repaired immediately.
  4. During wood blocking replacement operations, the Contractor shall post one or more of his employees inside the facility to temporarily close the affected areas. The person in charge of the facility shall be notified by the Contractor prior to the commencement of this work. Proper barricades shall be provided by the Contractor to prevent normal access to or around these areas.
- B. Any damage to the interior of the building or its contents due to the Contractor's operations or to leaks during the Contractor's operations shall be corrected at the Contractor's expense to the satisfaction of the Owner and the Architect.

### 3.04 FASTENING

- A. All blocking and plywood shall be fastened to meet or exceed Factory Mutual's requirements and/or recommendations.
- B. Contractor to inspect and verify that the existing base layer of wood blocking is properly secured to the perimeter edge of the building. Contractor is required to secure any wood blocking that is scheduled to remain and any new wood blocking in accordance with Factory Mutual's requirements and/or recommendations (reference is made to FM Loss Prevention Data Bulletin 1-49).
1. When fastening wood blocking (base layer) to a masonry wall, a 1/2" anchor bolt shall be placed 48" on center at an 8" minimum depth (12" minimum depth when masonry wall is comprised of lightweight aggregate or cinder). Each anchor bolt shall be positioned (staggered if the wood nailer is wider than 6 inches) in a block core or air space and tightly filled

with concrete (or approved substitute product) to the depth of the bolt. Cores or voids in the top course of concrete masonry units – fill the entire top course. At outside corners, the fastening density must be increased within the first 5 feet in each direction by positioning anchor bolts 24” on center.

2. Fasteners shall be galvanized steel metal screws (No. 10) and galvanized steel washers (minimum 5/8” outside diameter) under screw heads. Wood nailers shall be attached with 2 rows staggered, spacing of fasteners in each row shall not exceed 24 inches. The staggered fastening pattern shall be increased within 8 feet from outside corners (doubled, max. 12” on center in each row). If the perimeter nailer is secured to a steel angle, 3/4” anchor bolts must be positioned at 48” on center, and at 8-foot corners the fastening shall be doubled (24” max.).
  3. Fasteners used when securing additional wood nailers layers to the wood nailer base layer shall penetrate into the bottom nailer by 1-1/2” using a staggered fastening pattern in two rows at 12” on center. The staggered fastening pattern shall be increased within 8 feet from outside corners to 6” on center. Smaller pieces of blocking, such as penetrations, shall have a minimum of four fasteners per piece. A fastener shall be located no more than four inches from the end of each piece of blocking. Two fasteners are required at the ends of all blocking.
- C. Counterbore at all bolt heads, nuts, and washers as may be required to provide a flush surface for installation of roofing membrane materials.
- D. Plywood used at vertical flashing areas shall be securely fastened to the substrate at the top, middle and bottom with the approved fastener at 6” on center. When used in layers, each layer of plywood shall be secured equally, with fastener spacing as specified herein.
- E. Plywood at existing wood roof deck replacement locations shall be installed such that the face grain is oriented perpendicular to the existing wood framing members. Plywood shall be fastened to the existing wood framing members every 6” on center.

**END OF SECTION**

## **SECTION 07 22 00**

### **ROOF INSULATION**

#### **PART 1 – GENERAL**

##### **1.01 GENERAL REQUIREMENTS**

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.
- B. Maintain a copy of all applicable drawings, specifications, shop drawings, and approved submittals at the site at all times during the Work.

##### **1.02 SECTION INCLUDES**

- A. The work of this Section consists of furnishing and installing all roofing insulation, and related items as indicated on the Drawing and specified herein, required to complete the roofing replacement and repair work.
- B. The roofing insulation shall be as indicated in the roof composition located on the Drawings, and is further explained as follows:
  - 1. Flat polyisocyanurate rigid board roof insulation is specified for use. Compressive strength shall be 20 psi Typical.
  - 2. A 1/2" high density polyisocyanurate rigid board roof insulation is specified for use as a cover board. Boards shall be installed over the polyisocyanurate insulation; compressive strength shall be 110 psi Typical.
  - 3. 8' by 8' sumps are to be installed at all roof drains on all roof areas. Tapered polyisocyanurate insulation shall be installed around the drains to provide a smooth transition from the roof surface to the drain. Slope into the drain shall be minimum 1/4" in 12".
  - 4. Tapered polyisocyanurate insulation shall be installed behind rooftop equipment and between drains to provide positive slope to roof drains. Slope towards the drain shall be minimum 1/4" in 12" or 1/2" in 12" as indicated on the drawings.
- C. All materials shall be verified by Contractor to be proper for each intended use, and the entire work of this Section shall be done in such a manner that each installation will perform its intended purpose as applicable, in the finished work.
- D. The drawings indicate and show limits of construction for this project. The specifications specify material and work requirements for this project. Both are complementary to each other, and both shall be followed to complete the work.

- E. Plans and dimensions under which the Work is to be performed are derived from a variety of sources. The existing conditions are provided for information only. Actual conditions may vary. Contractor is required to verify existing roofing system composition, conditions, and dimensions prior to submitting his bid. No additional compensation or time extension will be made for dimensional errors or discoverable inaccuracies related to existing conditions in the contract documents.

### 1.03 QUALITY ASSURANCE

- A. All materials used as a component of the roofing system shall be supplied or approved in writing by the roofing system manufacturer. All materials shall be installed to serve their intended function.
- B. The roofing system manufacturer's technical representative (not a salesperson) shall certify in writing the materials and fastening specified are proper for their particular application. Submission of this letter shall be acceptance of the technical specification, details, and the specified guarantee.
- C. The roofing system manufacturer's technical representative (not a salesperson) shall visit the site at the initial application of his product and as often as required by the Contractor, Engineer, Owner, and Owner's Project Manager to ensure the specifications, details, requirements, and recommendations are followed. At various intervals during the work, inspections shall be made by the technical representative to ascertain that the insulation board has been installed according to the specifications and details and will be accepted by the roofing system manufacturer.
- D. All work shall be applied in strict accordance with the provisions of the technical specification and details. No deviations shall be permitted without written consent from the Engineer. Should a conflict between this specification (and the associated details) and the manufacturer's requirements arise, the most restrictive provision, as determined by the Engineer, shall govern.
- E. Fastener and Adhesive Pull Tests: Arrange with the fastener and adhesive manufacturer(s) to perform pull tests on site on the fasteners and adhesive proposed for use on this project. Perform the tests in representative sample areas of the roof deck prior to roofing installation (during the submittal phase) and again during the installation phase. The Contractor is required to make and repair all sample roof openings required to expose the roof deck and perform the pull tests. Prepare and submit test reports to the Engineer and Owner's Project Manager summarizing all test results, test data, test conditions, calculations, and roof plan showing the locations of each test. Perform a sufficient number of tests in a sufficient number of areas to meet the manufacturer's requirements.
  - 1. Fasteners: In accordance with ANSI/SPRI Fastener Pullout Standard, perform static tests and cyclic tests in each structural deck type for each of fastener specified for testing. The design pullout value shall be the lower of one-quarter of the average static pullout value or of the average

cyclic load. Load each fastener in the cyclic test to the average static pullout value, and then load fastener to failure. Record test data including loads, location, depth of embedment, and fastener type. The manufacturer to design fastener location and spacing shall use results of these tests. Testing shall be in accordance with ANSI/SPRI FX-1, 2016 Standard.

2. Adhesives: Perform static tests for the adhesive using the spacing specified and/or proposed, in accordance with ANSI/SPRI IA-1, 2015 Standard.

#### 1.04 RELATED WORK

- A. Section 02 05 00 – Demolition
- B. Section 04 50 00 – Masonry Restoration
- C. Section 05 31 50 – Steel Deck Repairs
- D. Section 06 10 00 – Rough Carpentry
- E. Section 07 54 00 – EPDM Roofing & Flashing
- F. Section 22 00 01 – Plumbing - Roof Drains
- G. Section 23 00 01 – Temporary Mechanical Disconnects
- H. Section 26 00 01 – Temporary Electrical Disconnects

#### 1.05 SUBMITTALS

- A. Submit the following under the provisions of Section 01 33 00.
  1. An approval letter from the roofing system manufacturer stating that the materials specified for this project are acceptable (accepting the technical specification and details); stating that the specified guarantee will be issued; and stating that a technical representative will be on site as often as required by the Contractor, Engineer, Owner, and Owner's Project Manager and as stipulated in this specification.
  2. Manufacturer data sheet for insulation and insulation adhesive.
  3. Manufacturer provided shop drawings for insulation attachment shall be submitted for review and approval. Insulation attachment rates shall be provided. The drawings shall indicate complete layout, insulation attachment pattern (including the field, perimeters, and corners).

Attachment of components to meet or exceed a Factory Mutual fastening rate and pattern.
  4. Manufacturer's Material Safety Data Sheets for all products specified in this Section.
  5. Manufacturer's uplift resistance pull-test results for fasteners and insulation adhesive (Reference Paragraphs 1.03 E & 3.03 D).

## 1.06 CODES

- A. Except as modified by the requirements of other governing codes and by this specification, overlay board and its installation shall conform to the provisions and recommendations of the following codes and standards:
1. Insulation board shall have Factory Mutual Class I approval.
  2. Attachment of insulation board and shall meet or exceed Factory Mutual's latest wind uplift requirements and recommendations for an adhered EPDM roof membrane application over steel or lightweight concrete decking decking, for a (FM 1-120 in the field of the roof, FM 1-165 at roof perimeters, FM 1-210 at roof corners) of Roof Area Nos. 1 & 2, (FM 1-105 in the field of the roof, FM 1-135 at roof perimeters, FM 1-180 at roof corners) of Roof Area No. 3, (FM 1-120 in the field of the roof, FM 1-195 at roof perimeters, FM 1-255 at roof corners) of Roof Area No. 4, and (FM 1-90 in the field of the roof, FM 1-120 at roof perimeters, FM 1-165 at roof corners) of Roof Area No. 6.
  - 3.. Insulation adhesive shall have Factory Mutual approval for the system specified.
  4. Insulation fastener and distribution plates shall have Factory Mutual approval for the system specified.
  5. Insulation shall carry Underwriters Laboratory (Class A) approval for fire resistance.
  6. Local and applicable building codes.
  7. ASTM C 1289, – Standard specification for faced rigid cellular polyisocyanurate insulation board.
  8. LTTR – Long Term Thermal Resistance, using techniques from CAN/ULC S770 based on ASTM C1303.

## 1.07 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

#### 1.08 STORAGE AND PROTECTION

- A. Contractor shall follow the recommended storage procedures of the manufacturer of the materials being used. No storage on or within the building will be allowed without written permission from the Owner. Any materials brought to the roof for daily operations or storage shall be evenly distributed on the roof to prevent concentrated loads and shall not overload the structure.
- B. All moisture sensitive materials shall be stored in weatherproof trailers or temporary protective shelters and shall be stored at least 4 inches above the ground on stable pallets or skids and shall at all times be completely covered and secured. Tarpaulins or a similar "breathable" material shall be used to cover materials. Rubber or plastic materials shall not be acceptable. Factory applied "shrink packs" or plastic wrappings shall not be acceptable. Careful control of humidity shall be performed to prevent greater than 10% moisture within composition insulations and overlay boards.
- C. Materials stored on the ground shall be thoroughly secured against moisture and wind. Materials and their coverings shall be tied and/or weighted to prevent uncovering or blowing of material by the wind. Contractor shall be responsible for damages caused by blowing and improperly stored material and equipment.
- D. Materials shall be handled with care and shall not be installed if they have been damaged in any way due to handling, storage, or manufacturing defects. Contractor shall promptly mark and remove from the site any damaged or improperly stored materials when so requested by the Engineer.
- E. All materials are to be stored at the recommended temperature range as specified by the manufacturer. Contractor shall provide manufacturer's information to the Engineer concerning storage and handling of flammable or volatiles materials. The "shelf life" materials shall be provided with the date of manufacturer of all perishables. Materials that become congealed, thick, non-uniform or otherwise unsuitable for proper application shall be removed from the project site and replaced with new properly stored and tested materials.
- F. Provisions for placement of the Contractor's equipment must be planned by the Contractor and submitted to the Owner and the Engineer for approval.
- G. Provide off-site storage and protection when site does not permit on-site storage or protection.

#### 1.09 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall limit its use of the site for work and for storage to allow for:
  - 1. Owner occupancy and use of the building during construction.
  - 2. Public use of walks, parking lots, and driveways.

- B. Do not block exits at any time. Provide protected entranceways at each entrance when working in these areas.
- C. Coordinate work on the roof, use of the site, storage areas, and staging areas with the Owner. Limit use of the site and working hours to dates, times, and locations approved by the Owner.
- D. Cooperate with the Owner's scheduling requirements for working at an occupied building. Work under this Section shall not interfere with the operation of the building or building occupants at any time.
- E. The Contractor is responsible for protecting all materials and equipment stored on the site. The Contractor shall pick-up, store and secure all tools on a daily basis.
- F. Smoking is not permitted on the grounds.
- G. Dispose of all trash and debris in a legal manner off-site. Do not throw debris from roof, access equipment, or staging. Conduct debris to approved containers on the ground. Locate debris containers only in locations approved by the Owner in advance.

#### 1.10 WEATHER AND TEMPERATURE REQUIREMENTS

- A. Work shall not commence or proceed, with the exception of the completion of necessary temporary measures to make the building weathertight, when the ambient air temperature is below 32°F unless otherwise specified.
- B. Work shall not commence or proceed, with the exception of the completion of necessary temporary measures to make the building weathertight, when precipitation of any kind, or winds in excess of 20 miles per hour are present or imminent or when, in the sole judgment of the Engineer or his authorized representatives, conditions are unfavorable or detrimental to the proper installation of the systems.
- C. Work shall not commence or proceed, with the exception of the completion of necessary temporary measure to make the building weathertight, when water, ice or frost is present on or within the materials or surfaces to which materials are to be applied.
- D. Work shall not commence or proceed with the exception of the completion of necessary temporary measures to make the building weathertight when the temperature is too hot to allow proper installation, or when existing or previously installed work is being damaged by the application, or when temperature conditions present a health or safety hazard to the workers on the site.



1.11 WARRANTY

- A. The roofing contractor shall supply the Owner with a two (2) year workmanship guarantee covering all areas in the Contract. In the event that any work performed by the Contractor or materials supplied by the Contractor are found defective or otherwise not in accordance with the Contract Documents within two (2) years of acceptance of the work by the Owner, the roofing contractor shall remove and replace at no cost to the Owner.
- B. Insulation, cover board, adhesive, and self-adhered air/vapor barrier shall be included in the roof membrane manufacturer's 20-year labor and materials warranty. During this period, manufacturer shall make good at his own expense any faults or imperfections that may arise due to defects in the materials as well as from defects in the workmanship involved in their installation. Such repairs shall be made as promptly after observation as weather and site conditions permit.

**PART 2 – PRODUCTS**

2.01 INSULATION

- A. Approved polyisocyanurate insulation boards to be supplied by the roofing membrane manufacturer, shall be rigid closed-cell CFC and HCFC free polyisocyanurate foam core insulation, bonded during the manufacturing process to premium performance coated glass facers (CGF).
- B. Codes and Compliances - Insulation shall meet: (1) UL Standard 790, 263 and 1256: Component of Class A Roof Systems; (2) FM Standards 4450/4470: Class 1 approval for steel roof deck constructions; (3) Third-party certification with PIMA Quality Mark for Long-Term Thermal Resistance (LTTR) values; (4) CAN/ULC S704, Type 2, Class 2; (5) ASTM C1289, Type II, Class 2, Grade 2 (20psi), Grade 3 (25 psi); and (6) International Building Code (IBC) Section 2603;
- C. Insulation shall adhere to the following Typical Physical Properties and Characteristics:

PROPERTY	TEST METHOD	VALUE
Thermal Performance	ASTM C518	As shown on drwgs.
Water Absorption	ASTM C209	<1% volume
Dimensional Stability	ASTM D2126	2% linear change (7 days)
Compressive Strength	ASTM D1621	20-psi min.

Moisture Vapor Transmission                      ASTM E96                      <1 perm

- D. Tapered insulation panels (sumps) are to be installed at all roof drains as indicated on the drawings. Slope into the roof drain shall be minimum 1/4" in 12". Install tapered insulation around the drain to provide a smooth transition from the roof surface to the drain.
- E. Tapered insulation panels are to be installed at certain roof areas as indicated on the drawings.
- F. Clap board where specified shall be 6 in. wide and is to be installed at the perimeter of all crickets and all transitions.

2.02 COVER BOARD

- A. Cover Board shall be rigid, roof insulation panel composed of a high density, closed cell polyisocyanurate foam core laminated to a premium performance, coated glass fiber mat facer specifically designed for use a cover board, meeting the requirements of ASTM C1289, Type II, Class 4, Grade 2. The cover board shall have a minimum compressive strength of 110 psi. Cover Board shall adhere to the following typical physical properties:

PROPERTY	TEST METHOD	VALUE
Water Absorption % Volume Max	ASTM C 209	<1% volume
Dimensional Stability	ASTM D 2126	<0.6% linear change
Compressive Strength	ASTM D 1621	110-psi minimum
Mold Resistance	ASTM D 3273	Pass
Moisture Air/vapor Transmission	ASTM E 96	<1.5 perm
Flame Spread	ASTM E-84	25 – 50

2.03 INSULATION ADHESIVE

- A. Insulation adhesive shall be two-component polyurethane roof insulation adhesive designed to attach rigid board polyisocyanurate roof insulation boards to each other and to air/vapor barrier. Contractor shall arrange for the insulation manufacturer to perform a proper amount of insulation adhesive uplift resistance tests for the proposed insulation adhesive product; submittal of the results is required for approval prior to installation (reference paragraphs 1.03 E and 1.05 A).
- B. Insulation adhesive shall be supplied by the roof membrane manufacturer or as required by the roof membrane manufacturer so as to obtain the specified wind

uplift requirements and roof membrane manufacturer's 20-year full systems warranty. Acceptable products and manufacturers are as follows: (1) OlyBond 500 Adhesive Fastener (Winter Grade) manufactured by OMG Roofing Products, Agawam, MA; (2) FAST Adhesive manufactured by Carlisle SynTec Systems, Carlisle, PA.; (3) JM Two-Part Urethane Insulation Adhesive manufactured by Johns-Manville, Inc., Denver, CO.

## 2.04 INSULATION FASTENERS

A. Fasteners and distribution plates shall be designed to attach the polyisocyanurate insulation board to the roof decking. Contractor shall arrange for the insulation manufacturer to perform a proper amount of fastener uplift resistance tests for each proposed fastener; submittal of the results is required for approval prior to installation. Fasteners and distribution plates shall be supplied by the roof membrane manufacturer or as required by the roof membrane manufacturer so as to obtain the specified wind uplift requirements and roof membrane manufacturer's 20-year warranty, and shall adhere to the following:

1. All fasteners shall meet all published requirements of corrosion resistance by roofing materials manufacturers. The fastener must be Factory Mutual approved and made in America. The fastener shall be coated with CR-10 corrosion resistant coating. When subjected to 30 Kesternich cycles (DIN 50018), the fastener must show less than 15% red dust and surpass Factory Mutual Research Approval Standard #4470.

Fasteners for use over steel roof decks shall be Heavy Duty Roofing Fastener type with a shank diameter of .190, a minimum diameter thread of .245, Head Diameter of .435, and a #3 Phillips Truss Head Style. The fastener must have 10 threads per inch and have a 30° spade point. The fastener shall be of sufficient length to penetrate the roof decking by 1". Fasteners that are too long shall be removed and replaced.

2. Fasteners shall include a corrosion resistant Factory Mutual approved low-profile pressure plate, steel hot-dipped galvanized (AZ -55) plate fabricated of SAE 1010 steel (3-inch diameter).

## 2.05 AIR/VAPOR BARRIER

A. Air/vapor barrier shall be self-adhering membrane supplied by the EPDM or PVC roof membrane manufacturer. Acceptable products and manufacturers are as follows: Sal; Firestone V-Force Self Adhered Vapor Barrier as manufactured by Firestone Building Products; Carlisle 725TR Self-Adhering Air/vapor Barrier as manufactured by Carlisle SynTec; Johns Manville Self Adhered Air/vapor Barrier. Air/vapor barrier primer (solvent based) shall be supplied by the EPDM roof membrane manufacturer.

## **PART 3 – EXECUTION**

### **3.01 PREPARATION**

- A. Surface on which the system is to be applied shall be clean, smooth, dry, and free of fins, sharp edges, loose/foreign materials, oil, and grease. Before beginning work, a technical representative of the self-adhering rubberized asphaltic membrane and the insulation board manufacturer shall examine the surfaces in order to ensure that the substrate is acceptable. Prior to starting the work, the Contractor shall notify the Engineer that the substrate is ready for insulation attachment.
- B. Material with imperfections such as pinholes, cracks, handling damage, incorrect thickness (less than specified), etc. shall be rejected and removed immediately from job site.
- C. No work shall take place when moisture is present on the roof or in any of the materials. The Engineer may order the work to stop when, in his opinion, the weather conditions warrant him to do so. Contractor shall take such measures as the work can continue with minimum delay, so the exposure of building and its contents is minimum.
- D. Fumes from adhesive products shall not be allowed to enter into the building during installation. The Contractor must take appropriate measures, to assure that fumes are not drawn into the building through air intakes or through any other openings.
- E. No more insulation board and cover board shall be installed than can be completely covered with the finished roofing system on the same working day.
- F. All installed insulation board must be fully protected from precipitation and condensation damage at all times. Any wet thermal barrier board, insulation board and cover board shall be marked, removed from the site and replaced prior to installation of new membrane.
- G. The insulation board shall be neatly cut to fit around roof penetrations and projections. Insulation board are to be laid in parallel courses with transverse joints staggered with joints in adjoining courses. Wherever possible, the stagger shall be half the panel dimension, but not less than 16" in any case. All joints shall be tight.
- H. Insulation boards shall be installed without gaps or voids and with smooth transitions and tightly fitting joint. No piece of insulation board shall be cut to fit less than two square feet unless size of opening dictates. The top surface of the cover board shall be flush with the top surface of the wood blocking within a tolerance of + 0 in. and - 1/16 in. with respect to the blocking.

- I. Verify that all rooftop penetrations (drains, curbs, nailers, equipment supports, vents, etc.) and other roof accessories are secured properly and installed in conformance with the specifications and drawings.
- J. The Contractor shall use extreme caution during reroofing operations. The facility is operational and contains personnel, furniture, fixtures and equipment. Mechanical equipment such as lighting, electrical conduits, junction boxes, etc. may exist in the vicinity of or on the underside of the roof decking. Contractor shall take all necessary precautions so as not to cause any damages. Any damages that interrupt service and/or require repairs to the building furniture, fixtures or equipment shall be the responsibility of the Contractor at no additional cost to the Owner and shall be repaired immediately.

### 3.02 INSTALLATION – AIR/VAPOR BARRIER

- A. Refer to manufacturer's literature for requirements for preparation of substrates. Surfaces shall be structurally sound and free of voids, spalled areas, loose aggregate and sharp protrusions. Remove contaminants such as grease, asphalt, coal tar pitch, oil and wax from exposed surfaces. Remove dust, dirt, loose stone and debris.
- B. Do not proceed with installation until roof decking is dry. Apply products only in dry weather. Do not apply until surface and ambient temperature is 40° F or above.
- C. Apply primer by spray, brush or with a long nap roller in accordance with manufacturer's written requirements. Re-prime any areas that become wet or dirty.
- D. Apply adhered air/vapor barrier membrane from low to high points, in a shingle fashion, so that the laps will shed water. Overlap each preceding sheet by a minimum of 3 inches lengthwise and by a minimum of 6 inches at each end. Stagger end laps by at least 12 inches all edges. Overlap joints shall be firmly rolled. Turn up membrane at least 6 inches on the vertical surface at all rooftop penetrations, curbs, and basewalls. Carry membrane up and completely over blocking at all roof edges and completely over all wood blocking at expansion joints and control joints, or as shown on the drawings. Position membrane carefully to avoid fish-mouths and wrinkles. Roll the membrane immediately after installation with a 100-150-pound roller wrapped in a resilient material.
- E. Protect completed adhered air/vapor barrier membrane from subsequent construction activities prior to the installation of the roof insulation board.

### 3.03 INSTALLATION – ADHESIVE

- A. Install specified insulation using approved adhesive and fasteners in accordance with the specifications, details, manufacturer's latest written requirements, and as required by governing codes and standards.

- B. Application rate and pattern shall be done in accordance with the approved shop drawing.
- C. Apply insulation adhesive directly to approved substrate using continuous ribbons of adhesive beads. Place insulation boards into position onto adhesive beads after allowing adhesive to rise 3/4" to 1". Insulation boards shall be stepped in and/or weighted for a proper timeframe to ensure the adhesive has adequately secured the components (roof overlay board to roof insulation).
- D. The Contractor shall provide for technical representation by the insulation adhesive manufacturer at all times when the adhesive is being applied for the first three days of use and once every three days thereafter to ensure that proper adhesion is obtained. Simulated uplift resistance field-tests (in accordance with ANSI/SPRI IA-1, 2015 Standard) shall be performed by the insulation adhesive manufacturer representative on completed work areas to ensure that the insulation adhesive is being installed as specified. Field-tests shall be done in various locations as recommended by the manufacturer (a minimum of 2 tests are required). The Contractor shall provide to the Owner and Engineer a report documenting the results of the tests.

The Contractor is required to correct all roof areas that fail the uplift resistance test. Correction may include removal and replacement of the area or may simply include augmentation with mechanical fasteners where practical.

### 3.04 INSTALLATION – MECHANICAL ATTACHMENT

- A. Install specified products (base layers of insulation) using approved mechanical fasteners in accordance with the specifications, details, manufacturer's latest written requirements, and as required by governing codes and standards.
- B. Use fastener tools with a depth locator as recommended or supplied by the fastener manufacturer to ensure proper installation. Install the fastener using manufacturer-approved screwshooter. Drive the fastener until a slight depression is seen around the plate. Proper length fasteners are critical and excessive lengths will not be allowed. The fasteners shall be of sufficient length to penetrate the steel roof decking by 1".
- C. Care must be taken not to overdrive the fastener and fracture the skin of the thermal barrier board. Fastener must be tight enough so that the plate does not turn. Any overdriven fasteners and/or damaged thermal barrier board shall be the responsibility of the Contractor and shall be replaced immediately at no additional cost to the Owner.
- D. Mechanical attachment of rigid board polyisocyanurate roof insulation and cover board, shall meet or exceed Factory Mutual's latest wind uplift fastening rate and pattern for an adhered EPDM roof membrane application over steel roof decking in accordance with the specified FM rating. Any additional attachment

requirements that may be required by the roof membrane manufacturer, pertaining to the specified mph wind speed warranty, shall be adhered to.

### 3.05 FIELD INSPECTION

- A. The Roofing Materials Manufacturer and the Insulation Materials Manufacturer shall provide observation/inspection services during the roof insulation installation. The technical representative shall provide field surveillance of the installation and shall monitor and report installation procedures, unacceptable conditions, etc. The insulation installation will be subject to observation and inspection by the Engineer, Owner, Roofing Material Manufacturer's Representative, and Insulation Material Manufacturer's Representative. All costs incurred by the Contractor due to Field Quality Control inspections shall be the sole responsibility of the Contractor and will not be considered grounds for or justification of an increase in the original contract price.
- B. The Engineer and the Owner's Project Manager will be on site periodically to observe the work progress and to monitor contract compliance. Any items observed not in compliance with the contract documents shall be identified and promptly corrected by the Contractor.
- C. Contractor is to provide any and all necessary protection to the entire roof area to maintain watertightness during the project duration, including existing roof areas not yet roofed. Any interior damages to the building or to the contents of the building (furniture, fixtures & equipment) that occur as a result of the Contractor's negligence shall become the Contractor's responsibility and he shall promptly repair and/or replace all damaged items to the satisfaction of the Engineer and Owner.

**END OF SECTION**

## SECTION 07 54 00

### EPDM ROOFING AND FLASHING

#### PART 1 – GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.
- B. Maintain a copy of all applicable drawings, specifications, shop drawings, and approved submittals at the site at all times during the Work.

##### 1.02 SECTION INCLUDES

- A. The work of this Section consists of furnishing and installing all roofing and flashing system components as indicated on the Drawing and specified herein, required to complete the work.
  - 1. An adhered 60-mil EPDM roof membrane system (“tear-off” application) is specified and detailed, complete with a manufacturer’s 20-year labor and materials warranty. The system shall meet or exceed the minimum requirements of a (FM 1-120 in the field of the roof, FM 1-165 at roof perimeters, FM 1-210 at roof corners) of Roof Area Nos. 1 & 2, (FM 1-105 in the field of the roof, FM 1-135 at roof perimeters, FM 1-180 at roof corners) of Roof Area No. 3, (FM 1-120 in the field of the roof, FM 1-195 at roof perimeters, FM 1-255 at roof corners) of Roof Area No. 4, and (FM 1-90 in the field of the roof, FM 1-120 at roof perimeters, FM 1-165 at roof corners) of Roof Area No. 6.
  - 2. One (1) hurricane bar shall be installed, continuous around the entire perimeter of each roof area, located along the centerline of the first insulation board. Fasteners shall be the specified Heavy-Duty roofing fasteners. Hurricane Bars shall be stripped in with the specified 6” wide field seaming material. Any additional attachment requirements that may be required by the roof membrane manufacturer, pertaining to the specified 99 mph wind speed warranty, shall be adhered to.
  - 3. The Roofing Contractor shall be responsible for the installation of drain markers at all roof and emergency overflow drain locations.
  - 4. The Roofing Contractor shall be responsible for the removal and replacement of the existing roof hatch.
  - 5. The Roofing Contractor shall be responsible for the installation of a safety railing around the existing roof hatch location.



6. The Contractor shall be responsible for the installation of new safety railings at certain locations. Reference Drawing A1 for location of new safety railings.
  7. The Contractor shall be responsible for the installation of two (2) pipe enclosure boxes as indicated on Drawing A1.
  8. The Contractor shall be responsible for installing new rubberized sleepers under all gas and electrical conduit lines as indicated in Drawing A1.
- B. All materials shall be verified by Contractor to be proper for each intended use, and the entire work of this Section shall be done in such a manner that each installation will perform its intended purpose as applicable, in the finished work.
- C. The drawings indicate and show limits of construction for this project. The specifications specify material and work requirements for this project. Both are complementary to each other, and both shall be followed to complete the work.
- D. Plans and dimensions under which the Work is to be performed are derived from a variety of sources. The existing conditions are provided for information only. Actual conditions may vary. Contractor is required to verify existing roofing system composition, conditions, and dimensions prior to submitting his bid. No additional compensation or time extension will be made for dimensional errors or discoverable inaccuracies related to existing conditions in the contract documents.

#### 1.03 RELATED WORK

- A. Section 02 05 00 – Demolition
- B. Section 04 50 00 – Masonry Restoration
- C. Section 05 31 50 – Steel Deck Repairs
- D. Section 06 10 00 – Rough Carpentry
- E. Section 07 22 00 – Roof Insulation
- F. Section 22 00 01 – Plumbing - Roof Drains
- G. Section 23 00 01 – Temporary Mechanical Disconnects
- H. Section 26 00 01 – Temporary Electrical Disconnects

#### 1.04 QUALITY ASSURANCE

- A. All materials used as a component of the roofing system shall be supplied or approved in writing by the roofing system manufacturer. All materials shall be installed to serve their intended function. All materials used in the EPDM roof membrane system shall be manufactured and supplied by one system manufacturer.
- B. A licensed contractor approved and certified by the EPDM roof membrane system manufacturer and employing personnel experienced and skilled in the application of the manufacturer's roofing system shall install the complete roofing

and flashing system. The Roofing Contractor shall be experienced in the installation of warranted, EPDM roof membrane systems. Minimum required experience involves at least 5-years experience installing EPDM roof membrane systems and the successful installation of at least five (5) projects of similar scope, size and complexity, located in Massachusetts, where the Roofing Contractor has installed a EPDM roof membrane system. All such references must be provided with the Contractor's submittals and shall include the following:

(1) Name and address of project indicating size and roofing membrane system type and manufacturer, for each of the five (5) referenced projects.

(2) Name and phone number of contact person (Owner and/or Designer), for each of the five (5) referenced projects.

(3) Written letter of "Certification" or "Approval" from the Roofing System Manufacturer showing that the Roofing Contractor has been "Certified" or "Approved" by the Roofing System Manufacturer for a minimum of five (5) years.

- C. All work shall be applied in strict accordance with the provisions of the technical specification and details. No deviations shall be permitted without written consent from the Engineer. Should a conflict between this specification (and the associated details) and the manufacturer's requirements arise, the most restrictive provision, as determined by the Engineer, shall govern.
- D. At least one week prior to commencement of the construction work, a conference (preconstruction meeting) shall be held and attended by the Engineer, Contractor, Owner, Owner's Project Manager and a technical representative of the EPDM roof membrane system manufacturer. The purpose of this conference is to review the specifications, details, application requirements, fume control, and schedule before construction operations begin.
- E. All materials used as a component of the roofing system shall be supplied or approved in writing by the roofing system manufacturer. All materials shall be installed to serve their intended function.
- F. No member of the roof shall be overstressed due to construction loads.
- G. Contractor is to provide any necessary protection to the installed work prior to acceptance by the Owner and Engineer. The Contractor at no additional cost to the Owner shall correct any damage incurred during this period.
- H. Contractor is to provide any and all necessary protection to the entire roof area to maintain watertightness during the project duration, including existing roof areas not yet roofed. Any interior damages that occur as a result of the Contractor's negligence shall become the Contractor's responsibility and he shall promptly repair and/or replace the damaged items.
- I. The roof membrane manufacturer's technical representative (not a salesperson) shall visit the site during the bidding period and certify in writing the materials

specified are proper for their particular application. Submission of this letter shall be acceptance of the technical specification, details, and this guarantee.

- J. The Roofing System Manufacturer shall provide a qualified experienced inspector to inspect the work at appropriate intervals to ensure that the work is proceeding in accordance with the requirements of the Manufacturer. At a minimum the inspector shall visit the project site a least once a week during the construction period to perform a detailed inspection of the work. As often as requested by the Engineer, Owner, or Owner's Project Manager, the EPDM roof membrane manufacturer's technical representative shall provide field surveillance of the installation. Any items observed not in compliance with the contract documents shall be identified and promptly corrected by the Contractor. The Contractor is responsible for all costs associated with the field surveillance work performed by the EPDM roof membrane manufacturer's technical representative.
- K. The Engineer and the Owner's Project Manager will be on site periodically to observe the work progress and to monitor contract compliance. Any items observed not in compliance with the contract documents shall be identified and promptly corrected by the Contractor.
- L. Prior to the final project completion, inspections shall be made by representatives of the EPDM roof membrane manufacturer's technical representative, Engineer, and Owner's Project Manager in order to ascertain that the roofing system has been installed properly. A punch list will be developed by each, and copies will be forwarded to the Contractor. Contractor shall immediately correct all punch list items. Deviations from the specifications and/or details must be corrected immediately. Warranty shall be issued upon final acceptance of the work.
- M. At the completion of the job, the Contractor and manufacturer shall each submit their guarantees to the Owner. Additionally, they shall submit an Inspection and Maintenance Schedule to the Owner.
- N. Prior to the commencement of work, the Contractor shall inspect all roof surfaces to ensure their compliance with the provisions of this specification and the manufacturer's published literature.
- O. All surfaces shall be smooth, dry, clean, free of fins or sharp edges, loose, or foreign materials, oil, or grease.
- P. Commencement of work shall be considered acceptance by the Contractor of the area to be roofed as a suitable and properly prepared substrate.
- Q. No work shall proceed when moisture is present on the roof or in the materials. The Engineer may stop work when, in his opinion, the job conditions warrant him to do so.

- R. All personnel concerned with the shop fabrication and field installation of sheet metal work must be qualified sheet metal journeymen who may be assisted by sheet metal apprentices qualifying for their journeyman status. The foreman of the crew must have at least five years experience in roofing sheet metal work.
- S. The Contractor shall conduct a quality control program that includes, but is not limited to, the following:
  - 1. Provide a copy of the Specifications, Drawings, and details on the site during the work of this Section.
  - 2. Inspect all materials to ensure conformity with Contract requirements, and that all materials are new and undamaged.
  - 3. Provide inspection and technical assistance by the membrane manufacturer on a regular basis. Provide written reports from the representative to the Engineer.
  - 4. Inspect all surface preparation prior to roofing application.
  - 5. Inspect work in progress to ensure that work is being done in accordance with established procedures, manufacturer's instructions, and specific Engineer instructions and that no water leaks into the building.

#### 1.05 SUBMITTALS

- A. Submit shop drawings and product data listed below under provisions of Section 01 33 00:
  - 1. An Approval Assembly Letter from the Roof Membrane Manufacturer that includes the following items:
    - a. Accepting the technical specification and details;
    - b. Stating that the specified 20-year warranty will be issued;
    - c. Stating that a technical representative (inspector) will be on site weekly at a minimum (provide inspector resume for review);
    - d. Listing the assembly products with application rates (for membrane adhesive and insulation attachment) indicating a a (FM 1-120 in the field of the roof, FM 1-165 at roof perimeters, FM 1-210 at roof corners) of Roof Area Nos. 1 & 2, (FM 1-105 in the field of the roof, FM 1-135 at roof perimeters, FM 1-180 at roof corners) of Roof Area No. 3, (FM 1-120 in the field of the roof, FM 1-195 at roof perimeters, FM 1-255 at roof corners) of Roof Area No. 4, and (FM 1-90 in the field of the roof, FM 1-120 at roof perimeters, FM 1-165 at roof corners) of Roof Area No. 6.
  - 2. Manufacturer's literature and data sheets on all specified products.

3. Material Safety Data Sheets of all specified products.
  4. Shop drawings detailing special joint or termination conditions and conditions of interface with other materials. Shop Drawings – Details: Provide roofing and flashing details (including downspouts) for all conditions and details encountered on this project including all transitions and terminations. Show layout, joining, profiles, terminations, and anchorages of wood blocking, sheet metal, and membrane flashing. Provide written confirmation that all the shop drawings have been approved by the manufacturer of the roofing system for this specific project.
  5. Construction schedule and work area plan indicating work sequence and duration of the roofing work in each area; indicate methods and duration of temporary waterproofing, EPDM membrane, and flashing work. Provide adequate detail showing all staging and storage areas and any effect of the work at each building access. Coordinate schedule and site access with the other trades.
  6. Maintenance Requirements and Recommendations: For roofing system to include in maintenance manuals.
  7. Manufacturer's Inspection Reports: Copy of roofing system manufacturer's inspection reports, punch list reports, and of completed roofing installation.
  8. Applicator's Quality Assurance: Submit list of a minimum of 5 completed projects of similar size and complexity to this Work. Include for each project: Project name, location, description of the work, and dates when project occurred; Owner; Contractor; Architect; EPDM Roofing product.
- B. All details relating to the installation of the system shall be approved by the roof membrane manufacturer and installed in such a manner that the manufacturer will furnish the specified warranty for the installation. Engineer will retain right of final acceptance of details and installation.

#### 1.06 MOCKUPS

- A. At least two weeks prior to the start of each type of flashing work, provide samples of flashing on the building where directed by the Engineer, as described below. Notify the Engineer at least seven days before construction of the sample so that the Engineer may have a representative present during the construction of the sample. Do not start work until the Engineer has approved the mockup.
  1. Construct mockups of each type of roofing work, including typical roof system, and EPDM membrane flashing details, for review and approval by the Engineer and Owner.
- B. Coordinate with related work to construct a complete mockup of each condition.

- C. In general, field mockups may become a permanent part of the work, after approval. The Contractor is responsible for reconstructing any mockups that are not approved along with any associated construction.

#### 1.07 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

#### 1.08 STORAGE AND PROTECTION

- A. Contractor shall follow the recommended storage procedures of the manufacturer of the materials being used. No storage on or within the building will be allowed without written permission from the Owner. Any materials brought to the roof for daily operations or storage shall be evenly distributed on the roof to prevent concentrated loads and shall not overload the structure.
- B. All moisture sensitive materials shall be stored in weatherproof trailers or temporary protective shelters and shall be stored at least 4 inches above the ground on stable pallets or skids and shall at all times be completely covered and secured. Tarpaulins or a similar "breathable" material shall be used to cover materials. Rubber or plastic materials shall not be acceptable. Factory applied "shrink packs" or plastic wrappings shall not be acceptable.
- C. Materials stored on the ground and on the roof shall be thoroughly secured against moisture and wind. Materials and their coverings shall be tied and/or weighted to prevent uncovering or blowing of material by the wind. Contractor shall be responsible for any and all damages caused by blowing and improperly stored material and equipment.
- D. Materials shall be handled with care and shall not be installed if they have been damaged in any way due to handling, storage or manufacturing defects. Contractor shall promptly mark and remove from the site any damaged or improperly stored materials.
- E. All materials are to be stored at the recommended temperature range as specified by the manufacturer. Contractor shall provide manufacturer's information to the Engineer concerning storage and handling of flammable or volatiles materials. The "shelf life" materials shall be provided with the date of manufacturer of all perishables. Materials that become congealed, thick, non-uniform or otherwise unsuitable for proper application shall be removed from the project site and replaced with new properly stored and tested materials.

- F. Provisions for placement of the Contractor's equipment must be planned by the Contractor and submitted to the Owner and the Engineer for approval.
- G. Provide off-site storage and protection when site does not permit on-site storage or protection.

#### 1.09 WEATHER AND TEMPERATURE REQUIREMENTS

- A. Work shall not commence or proceed, with the exception of the completion of necessary temporary measures to make the building weathertight, when the ambient air temperature is below 40°F unless otherwise specified.
- B. Work shall not commence or proceed, with the exception of the completion of necessary temporary measures to make the building weathertight, when precipitation of any kind, or winds in excess of 20 miles per hour are present or imminent or when, in the sole judgment of the Engineer or his authorized representatives, conditions are unfavorable or detrimental to the proper installation of the systems.
- C. Work shall not commence or proceed, with the exception of the completion of necessary temporary measure to make the building weathertight, when water, ice or frost is present on or within the materials or surfaces to which materials are to be applied.
- D. Work shall not commence or proceed with the exception of the completion of necessary temporary measures to make the building weathertight when the temperature is too hot to allow proper installation, or when existing or previously installed work is being damaged by the application, or when temperature conditions present a health or safety hazard to the workers on the site.

#### 1.10 WARRANTY

- A. **Roofing Contractor's Warranty:** The Roofing Contractor shall supply the Owner with a minimum two-year workmanship and leak-free warranty. In the event any work related to roofing, flashings, or metalwork is found to be defective, is not watertight, or otherwise not in accordance with the contract documents within two (2) years of final completion, the Roofing Contractor shall repair and/or remove and replace at no cost to the Owner. The Contractor's warranty obligation shall run directly to the Owner, and a copy shall be sent to the Manufacturer.
- B. **Manufacturer's Warranty:** The manufacturer shall provide a labor and materials warranty (no dollar limit) that guarantees all the roofing to be in a watertight condition for a period of twenty (20) years from the date of acceptance (final completion date). The warranty shall include coverage for windstorms up to **99 miles per hour**. During these periods, manufacturer shall make good at his own expense any faults or imperfections that may arise due to defects in all components of the systems supplied by the EPDM membrane manufacturer to

include membrane, insulation, insulation adhesive, cover board, fasteners, edge metal, walkway pad and all related accessories as well as from defects in the workmanship involved in their installation. Such repairs shall be made as promptly after observation as weather and site conditions permit.

## 1.11 CODES AND REGULATORY REQUIREMENTS

- A. Except as modified by the requirements of other governing codes and by this specification, conform to the provisions and recommendations of the following codes and standards:
1. Conform to Massachusetts State Building Code, latest revision and any applicable local building code requirements.
  2. Underwriters Laboratories, Inc. (UL): Fire Hazard Classification.
  3. Factory Mutual Research Engineering Corporation (FM): FM Construction Bulletins 1-28, 1-29 and 1-49. Attachment of roofing system components to meet or exceed a Factory Mutual fastening rate and pattern a (FM 1-120 in the field of the roof, FM 1-165 at roof perimeters, FM 1-210 at roof corners) of Roof Area Nos. 1 & 2, (FM 1-105 in the field of the roof, FM 1-135 at roof perimeters, FM 1-180 at roof corners) of Roof Area No. 3, (FM 1-120 in the field of the roof, FM 1-195 at roof perimeters, FM 1-255 at roof corners) of Roof Area No. 4, and (FM 1-90 in the field of the roof, FM 1-120 at roof perimeters, FM 1-165 at roof corners) of Roof Area No. 6.
  4. Roofing and Waterproofing Manual (current edition) published by the National Roofing Contractors Association (NRCA), 10255 W. Higgins Road, Suite 600, Rosemont, Ill. 60018-5607.
  5. Copper & Common Sense Sheet Copper Design Principles and Construction Techniques published by Revere Copper Products, Inc., One Revere Park, Rome, NY 13440-5661 (7<sup>th</sup> edition).
  6. Architectural Sheet Metal Manual published by the Sheet Metal and Air Conditioning Contractors' National Association, Inc. (SMACNA), 4201 Lafayette Center Drive, Chantilly, VA 20151-1209 (current edition).
  7. ASTM B32 – Standard Specification for Solder Metal.
  8. ASTM B209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  9. ASTM B370 – Standard Specification for Copper Sheet and Strip for Building Construction.
  10. Flashing: Provide metal flashings, EPDM membrane flashings, manufacturer's specialty edge flashing details, and associated materials



that comply with requirements of ANSI/SPRI ES-1 and the requirements and recommendations in FM Global 1-49 Property Loss Prevention Data Sheet for Perimeter Flashings, FM Global 1-29 Property Loss Prevention Data Sheet for Roof Deck Securement and Above Deck Roof Components, and Construction Details, as applicable.

11. Fire-Test-Response Characteristics: Roofing materials shall comply with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
- B. Exterior Fire-Test Exposure: Class [A] ASTM E 108, for application and roof slopes indicated.
- C. Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.
- D. Material Safety Data Sheets of all specified products of this section shall be kept on site daily for project duration.

#### 1.12 PROJECT PROGRESS SCHEDULE

- A. Contractor shall prepare and provide his Project Progress Schedule, prior to the preconstruction meeting, to the Engineer and Owner for review. The schedule shall show the complete sequence of construction by activity, with dates and times for beginning and completion of each element of construction. Provide sub-schedules to define critical portions of the entire schedule. Coordinate content with Schedule of Values.
- B. The Project Progress Schedule will be reviewed at the preconstruction meeting and will be updated daily by the Contractor and presented to the Owner and Engineer daily. Contractor shall update the schedule daily, identifying changes since previous version. A review of the schedule will be conducted at each construction meeting, or more often as needed.

#### 1.13 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall limit its use of the site for work and for storage to allow for:
  1. Owner occupancy and use of the building during construction.
  2. Public use of walks, parking lots, and driveways.
- B. Do not block exits at any time. Provide protected entranceways at each entrance when working in these areas.

- C. Coordinate work on the roof, use of the site, storage areas, and staging areas with the Owner. Limit use of the site and working hours to dates, times, and locations approved by the Owner.
- D. Cooperate with the Owner's scheduling requirements for working at an occupied building. Work under this Section shall not interfere with the operation of the building or building occupants at any time.
- E. The Contractor is responsible for protecting all materials and equipment stored on the site.
- F. Smoking is not permitted on the grounds.
- G. Dispose of all trash and debris in a legal manner off-site. Do not throw debris from access equipment or staging. Conduct debris to approved containers on the ground. Locate debris containers only in locations approved by the Owner in advance.

#### 1.14 PROJECT COORDINATION

- A. The Project Administrator shall be the Owner. The Contractor shall cooperate fully with the Administrator in all aspects of the roofing installation. The Contractor is responsible for, but not limited to, the following: allocation of demolition areas, demolition equipment, dumpsters, dump trucks, chutes, protection; hours of operation, traffic flow, roofing components installation, sheet metal components installation, sealants and caulking components installation, masonry components installation, roof drainage components installation.
- B. It is the responsibility of the Contractor to coordinate the work of this Section with all other work on the project.
- C. The Contractor shall make all necessary arrangements to limit travel on the existing and new roof system. Where it is necessary to travel on the existing roofing system the contractor shall provide all necessary temporary protection needed to protect the existing roofing system so as to ensure no leaks into the facility occur. Any damage to the existing roofing system caused by work of this contract shall be repaired at no cost to the owner.
- D. Contractor shall coordinate completion and cleanup of work on a daily basis, including maintaining weather-tightness for project duration.
- E. Coordinate all work of this section with other trades. Perform all roofing and flashing work in a timely manner as not to delay other trades. The Contractor shall coordinate all work with the other trades, to prevent exposure of the building to inclement weather and leaks, at all times.

## **PART 2 – PRODUCTS**

### **2.01 MANUFACTURER**

- A. All materials used in the elastomeric sheet roofing system (EPDM) shall be manufactured and supplied by the following acceptable roof membrane manufacturers: (1) Johns Manville; (2) Carlisle SynTec; or Versico, Inc.

### **2.02 EPDM PRODUCTS**

- A. Elastomeric sheet roofing and flashing membrane shall be Adhered .060” Standard Ethylene Propylene Diene Monomer (EPDM), non-reinforced, cured, synthetic single-ply membrane.
- B. Related materials shall be supplied by the roof membrane manufacturer or as required by the roof membrane manufacturer so as to obtain the specified roof membrane manufacturer’s 20-year full systems warranty. Related materials shall include, but not be limited to, the following: Bonding Adhesive, Adhesive Primer, Splice Cleaner, Splicing Cement, In-Seam Sealant, Lap Sealant, Primer, Cured EPDM Flashing, Pressure-Sensitive Flashing, Pressure Sensitive Inside/Outside Corners, Uncured Elastoform Flashing, Cured EPDM Flashing, Seam Fastening Plates, Perimeter Metal, Insulation and Underlayment Board Fasteners and Distribution Plates, Insulation Board Adhesive, Termination Bars, Walkway Pads, Pre-Molded Pipe Seals, Pipe Seals, Pourable Sealer Pockets, Seam Tape, Peel and Stick Tape, Batten Covers.
- C. Flashing for perimeter metal: A semi-cured 45 mil EPDM membrane laminated to 35 mil EPDM tape adhesive.
- D. Elastomeric Uncured Flashing (nominal thickness 60 mil) shall be a non-reinforced, self-curing, synthetic, single-ply flashing composed of Ethylene Propylene Diene Terpolymer (EPDM) conforming to physical properties as indicated by ASTM D4811-90 standard specification for Non-vulcanized rubber sheet used as roof flashing.
- E. Factory Inseam Tape: 4-inch wide minimum, butyl splice tape with release film.
- F. Field Seaming Material: Manufacturer’s 6-inch wide minimum, butyl splice tape with release film.
- G. Primer Material: Manufacturer’s standard synthetic-rubber polymer primer.
- H. Batten Covers: a cured 60 mil EPDM membrane laminated to 35 mil EPDM tape adhesive.
- I. Pourable Sealer: 2-Part urethane, 2-color for reliable mixing.
- J. Seam Plates, Batten Strips and Insulation Plates: Steel with a Galvalume® coating with a corrosion-resistant to meet FM-4470 criteria.

- K. Termination Bar: manufacturer's standard predrilled stainless-steel bar with anchors and integral caulk ledge.
- L. Roof Walkway Pads: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads sourced from membrane roofing system manufacturer.
- M. Water cut-off mastic shall be a low viscosity compound furnished by membrane manufacturer compounded and designed to be used as a sealing agent between membranes and most substrates for the isolation of waterproof areas, and as a sealant in conjunction with non-exposed compression seals, i.e. drains and termination bars.
- N. Night seal shall be fluid applied elastomer furnished by the membrane manufacturer for the purpose of temporarily sealing the loose edge of the membrane against water infiltration.
- O. Sponge tubing required for expansion joint and or control joint conditions shall be as recommended by the membrane manufacturer to suit the conditions as detailed or required.
- P. Prefabricated pipe flashing shall be prefabricated .060" thick EPDM furnished by membrane manufacturer designed for pipe flashing at roof penetrations, accommodating 1" o.d. pipe to 18" o.d. pipe. Include stainless steel clamping rings for compression.
- Q. Fasteners for securing membrane to wood blocking shall be 1" long galvanized barbed shank roofing nails with 3/8" head.

## 2.03 FLASHINGS

- A. Vertical Flashing Membrane: EPDM roof membrane (a minimum of 60-mils).
- B. Brake metal shall be .040-inch aluminum with a Fluoropolymer Kynar 500 finish configured as shown in drawings. The metal flashing color for sleeper caps, blind nailer, pitch pockets, edge metal, and fascia extender pieces shall be dark bronze.
- C. Brake metal shall be .050-inch aluminum with a Fluoropolymer Kynar 500 configured as shown in drawings. The metal flashing color for continuous cleats shall be mill finished. The metal flashing color for surface mounted counterflashing at gooseneck curb shall be white. The metal flashing color for through wall scupper flashing shall match the color of the edge metal.
- D. 24-gauge stainless steel for rain collar, tall cone flashing, and hose clamp.
- E. 20 oz. copper for vent pipe caps and clip on counterflashing.

- F. 20 oz. copper for dutch clips.

2.04 FASTENERS FOR ATTACHING SHEET METAL

- A. For attaching sheet metal to masonry, use 3/16" diameter with mushroom head and carbon steel nail.
- B. For attaching sheet metal to wood, use 3/8" diameter head, 12 ga. annular ring of sufficient length to provide 1" embedment into the substrate or the membrane manufacturer's approved fastener.
- C. For attaching termination bar to masonry, use 3/16" x 2" zinc plated flat head screw type masonry fastener. Termination bar shall be 1/8" thick, 1" wide aluminum bar in minimum 8'-0" lengths with factory drilled countersunk holes at 12" o.c. and sealant receiver.
- D. To prevent corrosion, the indicated fastener materials shall be used with the following sheet metals:

<b>Sheet Metal</b>	<b>Nails</b>	<b>Screws</b>	<b>Rivets</b>
Aluminum	Aluminum or Zinc	Aluminum or Zinc	Aluminum or Zinc
Copper	Copper	Bronze	Copper
Lead Coated Copper	Copper	Bronze	Bronze
Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
Galvanized	Galvanized	Galvanized	Galvanized

- E. Fasteners: Nails used for fastening copper shall be copper or hardware bronze of Stronghold type, or equal, with large flat head. They shall not be smaller than No. 12 Stubs guage (0.109") and of sufficient length to penetrate roof decking not less than 3/4". Rivets shall be of hard copper, brass, or bronze. Screws and bolts used for fastening copper shall be copper, bronze or stainless steel (passive). Expansion inserts shall be lead, nylon, or suitable plastic.

2.05 ADHESIVE COMPONENTS

- A. Adhesive: EPDM roof membrane adhesive designed for bonding EPDM roof membranes to approved substrates, as supplied by the EPDM roof membrane manufacturer.
  - 1. Solvent Based EPDM roof membrane bonding adhesive shall be used to adhere the EPDM roof membrane (horizontal application) and flashing sheet (vertical application). Coverage rates will vary depending on type of substrate and climatic conditions. Contractor shall adhere to manufacturer's application rate requirements. Do not store at temperatures below 40°F or apply if temperatures have fallen below 40°F for a 24-hour period. Apply in conditions of 60°F to 80°F.

2. Water-Based EPDM roof membrane bonding adhesive shall be used to adhere the EPDM roof membrane (horizontal application). Coverage rates will vary depending on type of substrate and climatic conditions. Contractor shall adhere to manufacturer's application rate requirements. Do not store at temperatures below 40°F or apply if temperatures have fallen below 40°F for a 24-hour period. Apply in conditions of 60°F to 80°F.

## 2.06 MISCELLANEOUS ACCESSORIES

- A. Sealing Tape Strip: Compressible foam with pressure-sensitive adhesive on one side. Used with metal flashings as a preventive measure against air and windblown moisture entry.
- B. All fasteners, anchors, nails, straps, bars, shall be post-galvanized steel, aluminum or stainless steel. Mixing metal types and methods of contact shall be assembled in such a manner as to avoid galvanic corrosion. Fasteners for attachment of metal to masonry shall be expansion type fasteners with stainless steel pins. All concrete fasteners and anchors shall have a minimum embedment of 1.25 inch and shall be approved for such use by the fastener manufacturer. All miscellaneous wood fasteners and anchors used for flashings shall have a minimum embedment of 1 inch and shall be approved for such use by the fastener manufacturer.
- D. Metal separation membrane, where required, shall be self-adhesive, self-sealing, 40 mil minimum thickness, (bituthene) with minimum tensile strength of 250 psi.

## 2.07 SEALANTS

- A. Sealant use shall be in conformance with manufacturer's instructions. Sealant for terminations per details shall be as accepted by the roof membrane manufacturer based on chemical compatibility.
- B. Butyl sealants shall be those conforming with Federal Specification TT-S-001657.
- C. One-part polysulfide sealants shall be those conforming with Federal Specification TT-S-00230C, Type II, Class A.
- D. One-part polyurethane sealants shall be those conforming with Federal Specification TT-S-00230C, Type II, Class B.
- E. Silicone sealants shall be those conforming to Federal Specification TT-S-00230C, Type II, Class A.
- F. Butyl or foam tape shall be of a type produced and recommended by a reputable manufacturer for architectural applications.

## 2.08 ROOF DRAIN MARKERS

- A. Roof Drain Marker: Drain dome-mounted vertical fiberglass flag marker secured in aluminum socket in turn secured with a pre-punched aluminum bracket which is configured for through-bolting to the roof drain strainer.
1. Basis of Design Product: Subject to compliance with requirements, provide products by the following, or equal:
    - a. Roof Drain Marker Company, Inc.
  2. Flag Marker: Pultruded fiber-reinforced polymer red, ½" inch diameter by 48-inch long, with reflective dual-colored reversible ends enabling marking of selected drains.
    - a. Flexural Strength, minimum, ASTM D 790, 700,000 psi.
    - b. Impact Strength, minimum, ASTM D 256: 40 ft-lb/in.
  3. Marker Base: 1 by 1 by 4-inch extruded aluminum bar, ASTM B 209, with milled flag receiver, threaded flag set screw retainer, and threaded base.
  4. Flag Bracket: 1 by 11 by 0.063-inch aluminum plate bracket, ASTM B 221.
  5. Fasteners: Alloy Group 2 (A4) stainless steel bolts, ASTM F 593, and nuts, ASTM F 594.

## 2.09 ROOF HATCH & COMPONENTS

- A. Roof Hatches
1. Bilco Company - Roof Scuttles: Type "L-50TB" (size to match opening as closely as possible) or equal.
  2. Unit: Single leaf type.
  3. Performance characteristics:
    - a. Curb shall be thermally broken to prevent heat transfer between interior and exterior surfaces.
    - b. Cover shall be reinforced to support a minimum live load of 40 psf with a maximum deflection of 1/150th of the span or 20 psf wind uplift.
    - c. Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.
    - d. Operation of the cover shall not be affected by temperature. Entire hatch shall be weather tight with fully welded corner joints on cover and curb.

4. Cover: Aluminum extrusion with built in drainage channel and polycarbonate dome. Cover shall have a heavy extruded EPDM rubber gasket bonded to the cover interior to assure a continuous seal when compressed to the top surface of the curb.
5. Curb: Shall be 12" n height and of 11-gauge aluminum. Interior and exterior surfaces shall be thermally broken to minimize heat transfer and to resist condensation. The curb shall be formed with a 5-1/2" flange with 7/16" holes provided for securing to the roof deck. The curb shall be equipped with an integral metal cap flashing of the same gauge and material as the curb, fully welded at the corners, that features the Bil-Clip® flashing system, including stamped tabs, 6" on center, to be bent inward to hold single ply roofing membrane securely in place.
6. Curb insulation: Shall be 3" thick polyisocyanurate with an R-value = 20.3.
7. Lifting mechanisms: Manufacturer shall provide compression spring operators enclosed in telescopic tubes to provide, smooth, easy, and controlled cover operation throughout the entire arc of opening and closing. The upper tube shall be the outer tube to prevent accumulation of moisture, grit, and debris inside the lower tube assembly. The lower tube shall interlock with a flanged support shoe welded to the curb assembly.
8. Hardware
  - a. Heavy stainless steel pintle hinges shall be provided.
  - b. Cover shall be equipped with a spring latch with interior and exterior turn handles.
  - c. Roof hatch shall be equipped with interior and exterior padlock hasps.
  - d. The latch strike shall be a stamped component bolted to the curb assembly.
  - e. Cover shall automatically lock in the open position with a rigid hold open arm equipped with a 1" (25mm) diameter red vinyl grip handle to permit easy release for closing.
  - f. Compression spring tubes shall be an anti-corrosive composite material and all other hardware shall be zinc plated and chromate sealed. [For installation in highly corrosive environments or when prolonged exposure to hot water or steam is anticipated, specify Type 316 stainless steel hardware].
  - g. Cover hardware shall be bolted into heavy gauge channel reinforcing welded to the underside of the cover and concealed within the insulation space.
9. Finishes: Factory finish shall be mill finish aluminum.



B. Roof Hatch Railing System

1. Bilco Company - Roof Hatch Railing System: Model RL2-L "S" (size to fit around roof hatch) or an approved equal product.

2.10 PIPE SUPPORTS

- A. Pipe supports with strut used to support roof mounted electrical conduits and mechanical piping shall be manufactured by MIRO Industries, Inc. or approved equal products. The pipe support base shall be made of polycarbonate resin, and all metal parts including the strut system shall be made of hot-dip galvanized steel. Conduit and pipes shall be attached to the strut with typical pipe clamps or clips. The total weight per support shall not exceed the recommended weight limit. Pipe supports to be sized properly for each condition.

2.11 SAFETY RAILINGS

A. Safety Railings

1. Acceptable Manufacturer: Garlock Safety Systems, which is located at: 2601 Niagara Ln.; Plymouth, MN 55447; Toll Free Tel: 877-791-4446; Tel: 763-694-2614; Email: request info (sales@garlockequip.com); Web: www.railguard.net Or approved equal product.
2. Railing Sections:
  - a. Rails: 1-5/8 inch O.D. by 0.065 inch wall HREW tubing.
  - b. Length: 7 feet 6 inches.
  - c. Height: 42 inches.
  - d. Mid-rail: weld to posts at 21 inches below top rail.
  - e. Finish: Epoxy powder coated safety yellow.
3. Base Plates:
  - a. Material: cast iron class 20B. 90 lbs weight
  - b. Size: 1 foot 9-1/2 inches by 1 foot 9-1/2 inches.
  - c. Carrying handles: built in with a center carrying hook for base transporter.
  - d. Toeboard receptacles: four, built in.
  - e. Capacity: Up to four railing sections intersecting rails on the same base.
  - f. Spacing between railing uprights not to exceed 3.25"
  - g. Holes: Holes for permanent mounting and round holes for pins securing base to rail.
  - h. Center of base must be open profile to reduce rocking on uneven surfaces.
  - i. Base plate must provide no less than 4 inches of leading edge substrate contact as concentrated load is applied to base.
  - j. Finish: Epoxy powder coated safety yellow.
  - k. Four adhesive pads with directional non-skid resistant ridge pattern and minimum 26 sq. inches of substrate contact each:

shall be adhered to the bottom of base plate to resist slippage on hard surfaces.

4. Securing Pins:
  - a. Style: Double wire lock pin.
  - b. Lock: Lynch pin 3/8" diameter.
  - c. Finish: Zinc plated bake finish.
  
5. Speed Boards:
  - a. Material: 4 inches wide, zinc plated steel.
  - b. Attachment: Boards shall telescope to fit into toe board brackets on base plate and pinned to the base toe board brackets.

## 2.12 ROOF & WALL PENETRATION HOUSING

- A. Manufacturer's Representatives: Fiskio, Inc. which is located at: 370 Paramount Drive, Unit #1; Raynham, MA 02767; Toll Free Tel: 800-288-6816; Tel: 50-823-4044
  
- B. RPH Model No. AL121010 – Designed for electrical outlet, refrigeration, solar line penetrations. Accommodates up to 1-5/8" OD pipes/conduit/telecommunication cables.

## PART 3 – EXECUTION

### 3.01 PREPARATION

- A. On a daily basis the Contractor shall completely replace, with new roofing, all areas that the existing roofing has been removed from. Each day only remove an area of roofing that can be replaced in one day. All flashings shall be installed permanently and concurrently with the roof membrane in order to maintain a watertight condition as the work progresses. Temporary flashings are not allowed. Daily tie-ins are required.
  
- B. Surface on which the EPDM roof membrane is to be applied shall be clean, smooth, dry, free of fins, sharp edges, loose and foreign materials, oil and grease. Before beginning work, a technical representative of the EPDM roof membrane manufacturer shall examine the surfaces in order to ensure that the deck, insulation, curbs, nailers, blocking, and accessories are acceptable and properly secured. Material with imperfections such as pinholes, cracks, incorrect thickness (less than specified), etc. shall be rejected and removed immediately from job site.
  
- C. No work shall take place when moisture is present on the roof or in any of the materials. The Engineer may order the work to stop when, in his opinion, the weather conditions warrant him to do so. Contractor shall take such measures

as the work can continue with minimum delay, so the exposure of building and its contents is minimum.

- C. After the rigid board roof insulation attachment is complete and is accepted by the technical representative, and after the substrate is dry, Contractor shall inspect the surface to determine that it is smooth and uniform and ready to receive the EPDM roof membrane. Prior to starting the membrane installation work Contractor shall notify the Engineer that the surface is ready for the membrane installation work to begin.
- D. Fumes from adhesive products shall not be allowed to enter into the building during installation. Appropriate measures must be taken by the Contractor, to assure that fumes are not drawn into the building through air intakes or through any other openings.
- E. Raise curbs all rooftop units, skylights, and other equipment supported by curbs to conform with the following (disconnect and re-connect of units shall be performed by licensed mechanic or craftsmen, as necessary):
  - 1. Modify curbs as required to provide a minimum 8" base flashing height measured from the surface of the new membrane to the top of the flashing membrane.
  - 2. Secure top of flashing and install new metal counterflashing prior to re-installation of unit.
  - 3. Perimeter nailers must be elevated to match elevation of new roof insulation.
  - 4. To ensure watertight and weathertight connection, membrane flashing shall extend fully up and over top of curb, and installation of sealant and closed cell urethane compression tape (1-sided; adhered to flange of skylight or unit) is required. Width of tape shall be minimum 1-1/2".

### 3.02 MEMBRANE APPLICATION

- A. Insulation substrates, where applicable, shall have been installed in strict accordance with this specification and membrane roofing manufacturer's printed recommendation. Beginning of work constitutes acceptance of substrate.
- B. All components of the roofing system shall be installed the same day. This shall include all rigid board roof insulation, flashings, sheet metal, and related accessory work. New sections of work shall not be started until previous day's work is totally completed. Contractor shall take care to assure that all materials and supplies necessary to finish the roofing system daily are available on the site prior to beginning the day's work.

- C. After surface preparation, roof deck repairs, wood blocking installation, plywood installation, and rigid board roof insulation installation work has been completed, Contractor shall install the EPDM roof membrane system.
- D. EPDM roof membrane is to be adhered and attached in accordance with this specification and the manufacturer's recommendations. Membrane overlaps shall be shingled with the flow of water.
- E. Do not restrict the flow of water on finished roofing areas and on existing (not yet re-roofed) areas. If a drain and related plumbing are not installed, temporary drainage must be provided.
- F. Beginning at the low point of the roof, place the EPDM membrane without stretching over the acceptable substrate and allow relaxing a minimum of 30 minutes before attachment or splicing.
- G. After making sure the sheet is placed in its final position, fold it back evenly onto itself so as to expose the underside.
- H. Sweep the mating surface of the membrane with a stiff broom to remove excess dusting agent (if any) or other contaminants from the mating surface
- I. Beginning at the low point of the roof, place the EPDM membrane without stretching over the acceptable substrate and allow relaxing a minimum of 30 minutes before attachment or splicing.
- J. After making sure the sheet is placed in its final position, fold it back evenly onto itself so as to expose the underside.
- K. Sweep the mating surface of the membrane with a stiff broom to remove excess dusting agent (if any) or other contaminants from the mating surface
- L. Apply Bonding Adhesive at about the same time to both the exposed underside of the sheet and the substrate to which it will be adhered so as to allow approximately the same drying time. Apply Bonding Adhesive so to provide an even and uniform film thickness. Do not apply bonding adhesive to areas that will be subsequently spliced.
- M. Allow Bonding Adhesive to flash off until tacky. Touch the Bonding Adhesive surface with a clean, dry finger to be certain that the adhesive does not stick or string. As you are touching the adhesive, pushing straight down to check for stringing, also push forward on the adhesive at an angle to ensure that the adhesive is ready throughout its thickness. If either motion exposes wet or stringy adhesive when the finger is lifted, then it is not ready for mating.
- N. Starting at the fold, roll the previously coated portion of the sheet into the coated substrate slowly and evenly so as to minimize wrinkles.
- O. Compress the bonded half of the sheet to the substrate with a stiff push broom.

- P. Fold the unadhered half of the membrane sheet back onto itself and repeat the bonding procedure to complete the bonding of the sheet.
- Q. In addition, one (1) hurricane bar shall be installed, continuous around the entire perimeter of each roof area, located along the centerline of the first insulation board. Fasteners shall be the specified Heavy-Duty roofing fasteners. Hurricane Bars shall be stripped in with the specified 6" wide field seaming material. Any additional attachment requirements that may be required by the roof membrane manufacturer, pertaining to the specified 99 mph wind speed warranty, shall be adhered to.

### 3.03 MEMBRANE LAP SPLICING

- A. EPDM panels shall be installed so the seams are not against the flow of water off the roof.
- B. Position the sheet at the splice area by overlapping membrane 5 inches. Once the membrane is in place, mark the bottom sheet 1/2" to 3/4" from the edge of the top sheet every 4 to 6 feet. Tack the sheet back with manufacturer's Adhesive Primer at 5' centers and at factory splices or as necessary to hold back the membrane at the splicing area.
- C. Remove excess amounts of dusting agent on the sheet and at factory splices using a stiff push broom. Mix manufacturer's Adhesive Primer thoroughly before and during use. Apply the manufacturer's Adhesive Primer using long back and forth type strokes with pressure along the length of the splicing area until surfaces become a dark gray in color. Apply manufacturer's Adhesive Primer to both surfaces at the same time to allow the same flash off time. Change the scrub pad each 100 feet of 6-inch field splice, or when the pad will no longer hold the proper amount of manufacturer's Adhesive Primer. Additional scrubbing is required at areas that may have become contaminated or have excess amounts of dusting agent, and at all factory splices.
- D. Position the manufacturer's Lap Splice Tape on the bottom sheet, aligning the edge of the release paper with the markings. Immediately roll the splice tape with a 3"-4" wide silicone or silicone sleeved steel hand roller or a short nap 3" paint roller.
- E. When the manufacturer's Lap Splice Tape has been installed for the entire splice length allow the top sheet to rest on top of the tape's paper backing. Trim the top sheet as necessary to assure that 1/8"-1/2" of the manufacturer's Lap Splice Tape will be exposed on the finished splice.
- F. To remove the paper backing from the tape, first roll back the membrane sheet, then peel the paper backing off the manufacturer's Lap Splice Tape by pulling against the weight of the bottom sheet at approximately a 45-degree angle to the tape and parallel with the roof surface. Allow the top sheet to fall freely onto the exposed manufacturer's Lap Splice Tape. Broom the entire length of the splice as the release paper is being removed.

- G. Roll the splice using a 1-1/2"-2" wide silicone or silicone sleeved steel hand roller, first across the splice, and then along the entire length of the splice.
- H. It is preferred that there be no lapping of the seam tape. When possible, use single continuous pieces of seam tape for the length of the entire seam. When the seam is longer than the roll of seam tape, the tape must be overlapped by a minimum of 1".
- I. Strip in all field seams. Install the 6" wide pressure sensitive EPDM flashing tape over the field seam in accordance with the roof membrane manufacturer's installation instructions.
- J. Field Fabricated Tape to Tape Seam Installation:

**Factory Applied:** Position the roll at the approximate application point and unroll. If the membrane is wider than 16'8", unfold the membrane to its fullest width. Move the membrane into place without stretching. Allow a minimum of 30 minutes before fastening or splicing so that the membrane can relax and release any tension induced by packaging and handling. After unrolling the first sheet position adjoining sheets in the same manner, lapping the edges a maximum of 4" for 4" FIT sheets and 6" for 6" FIT sheets. Sheets should be laid out in an offset pattern, with a minimum of 3' between adjacent end laps. Laps should be constructed with the upslope sheet overlapping the adjoining sheet in a shingle manner to avoid any laps opposing natural drainage. **FIT Seaming Note:** On hotter days over 85 degrees F or in cases where the sheets are aligned while still cool, but seaming will take place at a later time, overlap the sheets a maximum of 3" for 4" FIT applications and 5" for 6" FIT applications.

**Field Applied:** Clean and prime both faces of splice areas, apply 6" splice tape to each sheet, and firmly roll side and end laps of overlapping roofing membranes according to manufacturer's written instructions to ensure a watertight seam installation. The splice area must be completely free of all dust, debris and other contaminants. Fold back the top sheet and hold the membrane away from the seam area using the "tack back" primer method or other acceptable means. Using a scrub pad apply primer to both the folded EPDM membrane and bottom sheet in an area wider than the lap to ensure bonding to a primed surface. Allow the primer to flash off to a tacky state. Once dry, roll the top sheet back into place forming the lap. Starting at one end of the lap, remove the release liner from the EPDM Seam Tape by peeling it back parallel to the roof surface and away from the splice at a 45° angle. Hand roll using an appropriate roller first diagonally across the entire splice toward the outside edge, and then along the length of the splice. Provide sufficient pressure to ensure a good seal but avoid excessive pressure that could stretch or deform the tape. EPDM Seam Tape splices must be overlapped a minimum of 2" (50 mm) to ensure a continuous tape surface. When there is a splice in the seam tape that location must be stripped in with either 6" minimum Peel & Stick Flashing or a T-Joint patch. Apply lap sealant and seal exposed edges of roofing membrane terminations.

### 3.04 MEMBRANE SECUREMENT

- A. Perimeter fixation of the membrane shall be provided according to the drawings and this specification. All EPDM panels shall be mechanically secured using an approved termination bars or 2" plates and approved fasteners at all roof penetrations and perimeter details as indicated on drawings. Fasteners shall be spaced as shown on the details and as required by the manufacturer. At no time shall the fastener spacing for the securement of the EPDM roof panels exceed 12 inches.
- B. Secure membrane at all locations where the membrane terminates or goes through an angle change greater than 2" in 12" except for round pipe penetrations less than 18" in diameter and square penetrations less than 4" square.
- C. Mechanically fasten Reinforced Perimeter Fastening Strips per Manufacturer's recommendations.

### 3.05 PERIMETER METAL (METAL DRIP EDGES & CONTINUOUS CLEATS)

- A. Apply Manufacturer's Adhesive Primer to the metal edging and membrane. Place the roll of Manufacturer's Perimeter Flashing on the roof a few feet ahead of the application starting point, positioned so that it unrolls from the top of the roll. Remove approximately 2'-3' of release paper and apply to the metal flange and membrane. Lap adjacent rolls of Manufacturer's Perimeter Flashing a minimum of one inch.
- B. With a 2"-3" wide silicone or silicone sleeved steel hand roller, roll the Manufacturer's Perimeter Flashing ensure proper adhesion. Additional attention must be given to factory splice intersections and to any change in plane.
- C. Apply 6" length of Manufacturer's Perimeter Flashing, a Manufacturer's Perimeter Joint Cover, or 6"x6" EPDM FormFlash to the inside edge of the Manufacturer's Perimeter Flashing at all overlaps.
- D. Apply 6" length of Manufacturer's Perimeter Flashing, a Manufacturer's Perimeter Joint Cover, or 6"x6" EPDM FormFlash at all intersections between the Manufacturer's Perimeter Flashing and field fabricated splices.
- E. Where Manufacturer's Perimeter Flashing will not completely cover the metal flange, an additional piece of Manufacturer's Perimeter Flashing must be applied to the metal edge laps. Apply Seam Edge Treatment at the intersections of the flashing sections.
- F. If the roof edge includes a gravel stop and sealant is not applied between the laps in the metal edging, an additional piece of Manufacturer's Perimeter Flashing shall be applied over the metal lap to the top of the gravel stop, after the initial application of Manufacturer's Perimeter Flashing. Seam Edge Treatment shall be applied at the intersections of the two flashing sections.

- G. When the roof slope is greater than 1 in 12, apply Seam Edge Treatment along the back edge of the Manufacturer's Perimeter Flashing.

### 3.06 FLASHING INSTALLATION

- A. Perimeter flashing and flashing around vents, curbs, etc, shall be done with manufacturer's cured EPDM using uninterrupted full height pieces. The use of uncured flashing shall be limited to areas that are unusually shaped or factory fabricated cured EPDM flashings are not available. The splice between the flashing and the main roof sheet shall be completed before bonding the flashing to the vertical surface. This splice must be sealed at least three inches beyond the fasteners, which attached the horizontal membrane to the nailer.
- B. Bonding adhesive shall be applied to both the membrane and the surface to which it is being bonded. After the bonding adhesive has dried to the point where it does not string or stick to dry finger touch, roll the flashing into the adhesive. Care must be taken to ensure that the flashing is not bridging where there is a change of direction of the flashing (e.g., where a wall meets the roof deck). The manufacturer's specified sealant is required on all horizontal and vertical splices between adjoining sections of cured flashing membrane.
- C. Flash all projections (pipes, conduits, etc.) passing through the membrane. The contractor shall use factory fabricated cured EPDM flashings to the greatest extent possible. All flashings and terminations shall be done in accordance with the project drawings. Where details are not specifically shown on the plans, they shall be provided according to the manufacturer's specification.
- D. Install water cut-off mastic between membrane and substrates in accordance with manufacturer's written specifications and details.
- E. Pitch pockets shall be used to seal roof penetrations that are of unusual size, shape or cannot be disconnected to allow installation of conventional flashing materials. All penetrations within a pitch pocket shall be a minimum of one inch from each other and the side of the pitch pocket. The roof systems manufacture's two-part pourable sealer shall be used to fill all pitch pockets. All pitch pockets shall be filled so as to promote positive drainage of water off the top of the filler and away from the penetrations. Ponding water on top of the filler material is cause for rejection of the flashing detail and it shall be repaired or reflashed at no additional cost to the owner.
- F. Pipe Clusters and Unusual Shaped Penetrations
  1. Fabricate penetration pockets to allow a minimum clearance of 1" between the penetration and all sides.
  2. Secure penetration pockets per details.
  3. Fill penetration pockets with Pourable Sealer, so as to shed water. Pourable Sealer shall be a minimum of 2" deep.



G. Hot Pipes

1. Protect the rubber components from direct contact with steam or heat sources when the in-service temperature is in excess of 180° F. In all such cases flash to an intermediate insulated "cool" sleeve.

H. Flexible Penetrations

1. Provide a weathertight gooseneck set in Water Block Seal and secured to the deck.
2. Flash in accordance with details.

3.07 METAL FLASHING APPLICATION

A. Workmanship for sheet metal shall be as follows:

1. Surfaces to be covered with sheet metal shall be free from defects of every description and clean of dirt and other foreign matter before sheet metal work is started.
2. Lines, arises and angles shall be sharp and true. Plane surfaces shall be free from waves and buckles. Joints and seams in plain surfaces shall be avoided as far as possible. Metal joints shall be watertight.
3. Sheet metal work exposed to the weather shall be permanently watertight and weather tight, with suitable provisions made for free expansion and contraction without causing leaks. Metal shall be installed to provide adequate resistance to bending to allow for normal thermal expansion and contraction.
4. Exposed edges shall be doubled back 1/2 inch in such a manner as to conceal them and provide stiffness.
5. No nails shall be exposed on the face of the finished work except as approved by the Engineer or except as directed herein.

B. The Contractor agrees to guarantee all metal flashings permitted to be reused, the same as new construction under the Contract.

C. Install electrolytic insulation materials between dissimilar metals. Avoid to the greatest extent practical, using dissimilar metals in contact with each other.

D. All sheet metal work shall be cleaned at completion of installation. Grease and oil films, handling marks, contamination from steel wool, fitting and drilling debris shall be removed, and the work scrubbed clean. All new exposed metal surfaces shall be free of dents, creases, waves, scratch marks, and solder or weld marks. Daily cleanup and removal from the site of all shavings, clippings, shearing,

rivets, fasteners, and whatever other debris resulting from these operations are required.

- E. Proceed with flashing work concurrently to EPDM roof membrane installation to prevent water intrusion into the roof assembly and facility. Complete all metal work in conjunction with roofing and flashings so that a watertight condition exists daily. If any moisture is allowed to enter under the newly completed roofing due to incomplete flashings, the affected area shall be removed and replaced at the Contractor's expense.
- F. Fasteners exposed to weather shall utilize neoprene washers between the fastener head and the metal flashing.
- G. Counter flashings shall overlap base flashings at least 4 inches.
- H. Airtight/Watertight and continuous metal hook strips are required behind metal fascias and edge metal. Hook strips are to be fastened 12 inches on center into the wood nailer or masonry wall. Hook strips shall extend past wood nailers over wall surfaces by 1-1/2-inch minimum and shall be securely sealed from air and water entry. The contractor shall install a sealing tape strip between the continuous cleat and wall as a preventive measure against air and windblown moisture entry.
- I. Perimeter or metal drip edges shall be set and secured to the wood blocking at the roof edges and fastened directly to the blocking at 4" on center staggered at all locations. 6" wide cover plates shall be installed at all butt joints in conjunction with installation of the perimeter edge metal. End joints between edge metal sections shall have 1/2" minimum space for linear expansion. Back seal all edge metal butt joints to backer plates with bead of sealant. Edge metal shall be fabricated and installed in two pieces as necessary and as detailed.
- J. Maximum length of edge metal, either side of corners, shall be five feet. Outside corners shall be formed from single length of metal with mitered flange.
- K. Fasteners shall penetrate the wood nailer a minimum of 1-1/2" inches.
- L. Adjacent sections of edge metal shall be spaced 1/4" apart to allow for movement in edge metal. At roofing, leave 1/2" gap between edge metal sections; all joints shall be covered with formed joint cover plate and installed prior to stripping.

### 3.08 ROOFTOP SUPPORT INSTALLATION

- A. Install in accordance with manufacturer's instructions and recommendations.
- B. Walkpads shall be installed in accordance with the EPDM roof membrane manufacturer's requirements in order to obtain the specified warranty. The Walkpad shall be adhered the EPDM roof membrane

- C. Rooftop supports shall be spaced at no more than 5'-0" o.c.
- D. Use properly sized clamps to suit pipe size.

### 3.09 WALK PAD INSTALLATION

- A. Walk pads shall be installed under all wood sleepers, completely around serviceable rooftop units, at all rooftop points of egress, and as shown on the drawings. Walk pads shall be installed in accordance with the manufacturer's requirements in order to obtain the specified warranty.
- B. Walkway pads shall be installed so as not to impede drainage of the roof.
- C. Walkway pads shall not be installed over field fabricated seams.
- D. Layout walkway pads so that the flat surface is over the completed EPDM membrane, spacing each pad a minimum of 1" and a maximum of 3" from each other to allow for drainage. Walkway pads may not be used within 10' of any roof edge or perimeter (unless underneath concrete pavers).
- E. If the installation of walkway pads over field fabricated splices or within 6" of a splice edge cannot be avoided, flash in the splice using flashing prior to installing the walkway pad. The flashing shall extend beyond the walkway pad a minimum of 6" on either side.
- F. Remove the release paper. Turn the walk pad over and place it in the manufacturer's adhesive primer.
- G. Walk on the pad to press in place assuring proper adhesion.

### 3.10 TIE-IN

- A. All flashings shall be installed concurrently with the roof membrane in order to maintain a watertight condition as the work progresses (no temporary flashings). When a break in the day's work occurs, a temporary waterstop shall be constructed to provide a 100% watertight seal. When the work on the new system is suspended, the stagger of the insulation joints shall be maintained by installing partial fillers. The partial fillers shall be butted up to the existing insulation completely. No voids should exist. The new membrane shall be carried into the waterstop. The waterstop shall be sealed to the deck and/or substrate so that water will not be allowed to travel under the new or existing roofing. When work is resumed, the contaminated EPDM membrane shall be cut out. All sealant, contaminated membrane, insulation fillers, etc. shall be removed from the work area and disposed of off-site. None of these materials shall be used in the new work.
- B. If inclement weather occurs while temporary water stop is in place, the Contractor shall provide the labor necessary to monitor the situation to maintain a watertight condition.

- C. If any water, debris or any other foreign material is allowed to enter the newly completed roofing, the affected area shall be removed and replaced at the Contractor's expense.
- D. Any interior damages that occur, as a result of a failure or breach of the tie-in, shall become the Contractor's responsibility and he shall promptly repair and/or replace all damaged it

### 3.11 PENETRATIONS

- A. Clean the penetration to allow for a tight seal. The flashing seal must be made directly to a watertight penetration.
- B. Flash penetrations with the manufacturer's premolded pipe flashing boots wherever possible. Do not cut or patch premolded flashing to assist in their installation. Verify that the premolded flashings will provide the specified flashing height.
- C. Construct field-fabricated flashings where manufacturer's premolded pipe flashings are not available in the correct geometry or do not provide specified flashing height. Pitch pockets are not acceptable.
- D. Seal top edge of the pipe flashing with sealant and a stainless-steel hose clamp.
- E. Flexible penetrations such as wires, flexible conduit, or plastic tubing must be routed through a rigid metal gooseneck that is fully soldered or welded watertight, and rigidly anchored to the deck or wall. Flash the gooseneck as described for pipe penetrations above.

### 3.12 GUTTER AND DOWNSPOUTS

- A. Gutters shall be installed where currently existing and shall run continuously. Gutters shall slope at 1/8 inch per foot towards existing downspouts to be reused. Install gutter hangers at 12" on center. All joints shall be sealed watertight.
- B. Downspouts shall be installed where currently existing. Downspouts of 10'-0" or less shall have three straps of support, and longer downspouts shall be supported at 5'-0" intervals. The Contractor shall install an elbow or offset where downspouts intersect a water table or sill so as to provide a smooth transition over the wall surface.

### 3.13 DRAIN BOWL FLASHING

- A. Coordinate flashing of drain bowls with new clamping ring, hardware, and strainer installation (installation is described in Section 220001 Plumbing). Allow any repair mortar to cure and dry before flashing drains.

- B. Solidly coat drain bowl ring with sealant. Fasten the drain clamping ring, set in a solid bed of sealant, over the sealant/membrane assembly. Trim the EPDM flush with the interior edge of the clamping ring taking care not to cut the membrane behind the clamping ring bolts. Lap the deck sheet onto the drain flashing sheet a minimum of 6 in.
- C. Install strainer at all drains.

### 3.14 ROOF DRAIN MARKER INSTALLATION

- A. Examine roof drain strainer conditions to verify secure attachment to drain base and compatible alignment with roof drain strainer mounting bracket.
- B. Install roof drain markers on each roof drain strainer in roof area indicated. Install in accordance with manufacturer's instructions.
  - 1. Attach bracket to drain strainer using manufacturer furnished corrosion resistant fasteners, securely tightened.
  - 2. Thread marker base to threaded stud on marker bracket and tighten securely.
  - 3. Inset flag marker into marker base and secure using set screw.

### 3.15 ROOF HATCH SAFETY RAILING INSTALLATION

- A. For each of the four (4) corners of the roof hatch, drill the mounting holes by clamping a corner bracket with locking pliers on the face of the capflashing with the pivot sleeve projecting upward. (Caution: Do not penetrate the flashing membrane or inner wall of the curb when drilling). Fasten each corner bracket to the capflashing using hardware provided.
- B. Attach two pivot brackets to each corner bracket sleeve using 3/8"-16 x 4-3/4" HHCS, 3/8" washers and 3/8-16 hex locking nuts. Hand tighten so that pivot brackets are allowed to rotate.
- C. Slide rail panels into pivot brackets. Using power drill and 5/16" nut driver bit, secure posts using #10 x 1" self-drilling drive screws on both sides of post. (IMPORTANT: Top rail must be 42" above the finished roof level to meet OSHA requirements. To simplify installation, measure and cut 2 x 4 block spacers and position them under the pivot brackets until rail panels are secured.). Once all rail panels are in place, securely tighten all pivot bracket connections by wrench. Note: One of the rail panels (or gate post) with the gate hinge brackets attached. Locate rail panel or post with hinge brackets.
- D. Attach gate by aligning hinge brackets with gate hinge brackets on top and secure with hinge pins, nylon washers, and cotter pins. Adjust hinges to align gate with rail and install #10 x 1" drive screws. To hinge the gate on the right side, remove

the hinge assemblies from the gate and side piece. Reverse top and bottom hinges and remount to the gate and side piece. The loop end of the torsion rod will now be at the bottom hinge connection.

- E. Insert bent end of torsion rod into the hole in the bottom hinge bracket. Insert hooked end in center notch of upper hinge bracket by pressing rod into recess (Use pliers if necessary). Gate tension may be adjusted by repositioning rod into other notches in the bracket. Apply neoprene pads to gate where gate contacts post.
- F. Install gate latch per instructions supplied in the gate latch kit

### 3.16 SAFETY RAILING INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- C. Before installation, inspect all parts to ensure no damaged parts are used.
- D. Railing must be secured to base with securing pins.
- E. Where there is a danger of falling materials onto someone below insert a steel Speed Board into the toe board bracket on the base plate and secure with securing pins to base.
- F. Use a Railguard 200 outrigger at any interruption in continuous railing sections. Outrigger assembly consists of a 5-foot railing (1.52 m) with base plate pinned to railing and placed 90 degrees away from danger side of continuous railing.

### 3.17 FIELD INSPECTION

- A. The EPDM roof membrane manufacturer's technical representative shall provide field surveillance of the installation as necessary to ensure that the Contractor is performing the work in accordance with the contract documents. As often as requested by the Engineer, Owner, or Owner's Project Manager, the EPDM roof membrane manufacturer's technical representative shall provide field surveillance of the installation. Any items observed not in compliance with the contract documents shall be identified and promptly corrected by the Contractor. The Contractor is responsible for all costs associated with the field surveillance work performed by the EPDM roof membrane manufacturer's technical representative.
- B. The Engineer and the Owner's Project Manager will be on site periodically to observe the work progress and to monitor contract compliance. Any items observed not in compliance with the contract documents shall be identified and promptly corrected by the Contractor.
- C. Prior to the final project completion, inspections shall be made by representatives of the EPDM roof membrane manufacturer's technical representative, Engineer,

and Owner's Project Manager in order to ascertain that the roofing system has been installed properly. A punch list will be developed by each, and copies will be forwarded to the Contractor. Contractor shall immediately correct all punch list items. Deviations from the specifications and/or details must be corrected immediately. Warranty shall be issued upon final acceptance of the work.

- D. Contractor is to provide any and all necessary protection to the entire roof area to maintain watertightness during the project duration, including existing roof areas not yet roofed. Any interior damages that occur as a result of the Contractor's negligence shall become the Contractor's responsibility and he shall promptly repair and/or replace all damaged items to the satisfaction of the Engineer and Owner.

### 3.18 PROTECTION OF WORK

- A. Contractor shall protect the project site including the building, its contents, all streets, walls, underground and overhead utilities. All areas shall be left in a watertight and weather tight condition in their entirety at all times. Contractor shall provide protective measures and materials to assure that each element will be without damage or deterioration throughout the entire construction period up to the date of final completion. Any defective elements shall be removed and replaced at the Contractor's expense and to the satisfaction of the Engineer and Owner. Remove protective coverings and materials at the appropriate time, but no later than final cleaning operations.
- B. No work shall take place during inclement weather. No work shall take place when moisture is present on the work area or in any of the materials. The Engineer may order the work stopped when, in his opinion, the weather conditions warrants him to do so. Contractor shall take such measures as necessary to dry out work surfaces so that the work can continue with minimum delay.
- C. Contractor shall cover and protect all walls, windows, projections, soffits, etc. where material is to be hoisted or removed from the roof deck. Contractor shall be responsible for all scrapes, stains, and damage to the walls and shall repair or replace any walls, windows, siding, etc., which are damaged by his operations, to the satisfaction of the Engineer and Owner. Any areas damaged shall be restored or cleaned, to the satisfaction of the Owner by the Contractor at no cost to the Owner.
- D. Whenever the possibility exists that debris or materials may fall causing a hazard to persons inside or outside the building, the Contractor shall post one or more of his employees to temporarily close these hazardous areas. The person in charge of the facility shall be notified prior to the commencement of work that may pose this type of hazard. Proper barricades shall be provided to prevent normal access to or around these areas.

- E. Contractor shall properly protect all areas where falling debris or dust is expected due to his operations. Contractor shall be responsible for providing adequate personnel to clean and protect these areas. Contractor shall include these costs in their bid.
- F. Protect the building interior, contents, Owner's employees, and customers from all hazards associated with the Contractor's operations.
- G. Any damage to the interior of the building or its contents due to the Contractor's operations or to leaks during the Contractor's operations shall be corrected at the Contractor's expense to the satisfaction of the Owner and the Engineer.
- H. Any damage to the exterior of the building or any rooftop equipment due to the Contractor's operations shall be corrected at the Contractor's expense or to the satisfaction of the Owner and the Engineer.
- I. No member of the roof shall be overstressed due to construction loads and demolition operations. The Owner assumes no responsibility for the actual condition of the structure.
- J. Damage to any portion of the building which results in disruption of or inconvenience to the Owner or his employees shall be immediately repaired or replaced by the Contractor. If such restitution is not promptly made, the Owner shall have the necessary work performed by an outside agency at the Contractor's expense.

### 3.19 CLEANING

- A. The building and adjacent areas shall be left in a broom-clean condition at the end of each day. On completion of the work and after removal of all debris, the site shall be left in a clean condition satisfactory to the Owner and to the Engineer.
- B. At the completion of the Project, the Contractor shall restore or replace all property damaged by his Work and shall remove all spots, paint, smears, soil, concrete, mortar, sealant, adhesives, asphalt, writing, droppings, or other foreign materials, from all Work. Remove all temporary protection from all the Work. Final cleaning shall include as a minimum:
  - 1. Clean site; sweep paved areas, rake clean landscaped surfaces.
  - 2. Remove waste and surplus materials, rubbish, and construction facilities from the site.
  - 3. The Contractor shall clean all walls, windows or other building and grounds elements that have been affected by his work.
  - 4. Repair, patch and touch-up marred surfaces to specified finish to match adjacent surfaces.



5. The Contractor shall clean the roof membrane to the satisfaction of the Owner and Engineer.

### 3.20 COMPLETION OF WORK

- A. Prior to demobilization from the site, the completed project/work shall be reviewed by the Engineer, the EPDM roof membrane manufacturers' technical representative, Owner's Project Manager, and the Contractor. All defects and items in non-compliance with the specifications, manufacturers' recommendations and the manufacturers' warranty requirements shall be itemized on a punch list. These items shall be corrected to the satisfaction of the Engineer, the EPDM roof membrane manufacturers' technical representative, Owner's Project Manager, by the Contractor prior to demobilization.
- B. All warranties referenced in this specification shall have been submitted and accepted the Engineer and Owner. Fully executed warranty documentation shall be submitted to the Engineer and Owner as soon as possible for review and approval. At the completion of the job, the Contractor and manufacturer shall each submit their guarantees to the Owner. Additionally, they shall submit an Inspection and Maintenance Schedule to the Owner.

**END OF SECTION**

## SECTION 22 00 01

### PLUMBING-ROOF DRAINS

#### PART 1 – GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.
- B. Maintain a copy of all applicable drawings, specifications, shop drawings, and approved submittals at the site at all times during the Work.

##### 1.02 SECTION INCLUDES

- A. The work of this Section consists of furnishing and installing all plumbing for roof drainage and related items as indicated on the Drawing and specified herein, required to complete the work.
- B. The Contractor shall replace the existing cast iron roof drains; to include new cast iron drain bowls, clamping rings, drain strainers, anchors, insulation, bolts, lead lining connections, no-hub connections, and under deck clamps, as specified and detailed. The Contractor shall be responsible for increasing the height at which the drain sits by adding an elevator extension or wood blocking at all roof drains. The Contractor shall include a minimum of 5 LF of leader pipe replacement per drain location. Contractor shall install plumbing vent extensions as required to conform to the MSBC and as specified herein. Contractor is responsible for providing all connections and alterations to accommodate the new work.
- C. Prior to the start of work, Contractor shall inspect and verify the proper functioning of all roof drains and shall identify those that are slow flowing or clogged. In an effort to ensure a free-flowing roof drainage system, **Contractor shall water jet free all drains at the start of the project and snake all drains again at the project's completion for a minimum distance of 100 feet starting from the roof level.**
- D. All roof drainage systems for the existing building shall not be made ineffective due to this work. Lines shall be run in a workmanlike manner, and as straight as possible.
- E. All materials shall be verified by Contractor to be proper for each intended use, and the entire work of this Section shall be done in such a manner that each installation will perform its intended purpose as applicable, in the finished work.
- F. Contractor shall properly protect all areas where falling debris or dust is expected due to his operations. Contractor shall be responsible for providing adequate personnel to clean and protect these areas. Provide protection at all times during construction to maintain watertightness and weathertightness.

- G. Protect the building interior, contents, Owner's employees, and tenants from all hazards associated with the Contractor's operations.
- H. Any damage to the interior of the building or its contents due to the Contractor's operations or to leaks during the Contractor's operations shall be corrected at the Contractor's expense to the satisfaction of the Owner and the Engineer.
- J. Any damage to the exterior of the building, roof membrane, or any roof top equipment or skylights due to the Contractor's operations shall be corrected at the Contractor's expense to the satisfaction of the Owner and the Engineer.
- I. The drawings indicate and show limits of construction for this project. The specifications specify material and work requirements for this project. Both are complementary to each other, and both shall be followed to complete the work
- J. Plans and dimensions under which the Work is to be performed are derived from a variety of sources. The existing conditions are provided for information only. Actual conditions may vary. Contractor is required to verify existing roof drainage plumbing system composition, conditions, and dimensions prior to submitting his bid. No additional compensation or time extension will be made for dimensional errors or discoverable inaccuracies related to existing conditions in the contract documents.

#### 1.03 RELATED WORK

- A. Section 02 05 00 – Demolition
- B. Section 04 50 00 – Masonry Restoration
- C. Section 05 31 50 – Steel Deck Repairs
- D. Section 06 10 63 – Rough Carpentry
- E. Section 07 22 00 – Roof Insulation
- F. Section 07 54 00 – EPDM Roofing & Flashing
- G. Section 23 00 01 – Temporary Mechanical Disconnects
- H. Section 26 00 01 – Temporary Electrical Disconnects

#### 1.04 SUBMITTALS

- A. Submit manufacturer's descriptive literature and data sheets listed below under provisions of Section 01 33 00:
  - 1. Roof drain assembly including insert drains, drain bowls, clamping ring assemblies, drain strainers, anchors, bolts, under deck clamps, leader pipes, hangers, lead and oakum, and insulation.
- B. Submit Contractor Quality Assurance supporting documentation as stipulated in Paragraph 1.06.

#### 1.05 DELIVERY, HANDLING AND STORAGE

- A. Contractor shall comply with all recommendations of the pipe manufacturer and of applicable Technical Reports of the Cast Iron Soil Pipe Institute for handling and installation.
- B. All work, and materials shall be protected at all times. The Contractor shall make good all damage caused by his workmen either directly or indirectly. All pipe openings shall be closed with caps or plugs during installation. Equipment shall be tightly covered and protected against dirt, water, chemical or mechanical injury.
- C. The Contractor shall do all carting, handling and hoisting for his materials and equipment in a safe and satisfactory manner. Any damage resulting there from shall be repaired or paid for by this Contractor to the satisfaction of the parties concerned, at no additional cost to the Owner.

#### 1.06 QUALITY ASSURANCE

- A. All materials shall be installed to serve their intended function.
- B. All work shall be performed by a licensed plumber that regularly performs commercial roof drain replacement work. The work shall adhere to the local building codes, regulations, industry standards, and best practices of the trade. The Contractor shall have a minimum of five (5) years experience installing warranted commercial roof drainage systems. Minimum required experience involves the successful installation of at least ten (10) similar projects located in Massachusetts. Contractor shall provide the following supporting documentation:
  - (1) Name and address of project indicating project name, project date, and number of drains replaced, for each of the ten (10) referenced projects.
  - (2) Name and phone number of contact person (Owner, Designer, and Roofing Contractor), for each of the ten (10) referenced projects.
  - (3) Written evidence of plumbing contracting license.
- C. All work shall be applied in strict accordance with the provisions of the technical specification and details. No deviations shall be permitted without written consent from the Architect. Should a conflict between this specification (and the associated details) and the manufacturer's requirements arise, the most restrictive provision, as determined by the Architect, shall govern.

#### 1.07 COORDINATION

- A. Coordinate all work of this section with other trades. Perform all plumbing work in a timely manner as not to delay other trades. The Plumbing Contractor shall

coordinate all work with the roofing and waterproofing trades, to prevent exposure of the building to inclement weather and leaks, at all times.

#### 1.08 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall limit its use of the site for work and for storage to allow for:
  - 1. Owner occupancy and use of the building during construction.
  - 2. Public use of walks, parking lots, and driveways.
- B. Do not block exits at any time. Provide protected entranceways at each entrance when working in these areas.
- C. Coordinate work on the roof, use of the site, storage areas, and staging areas with the Owner. Limit use of the site and working hours to dates, times, and locations approved by the Owner.
- D. Cooperate with the Owner's scheduling requirements for working at an occupied building. Work under this Section shall not interfere with the operation of the building or building occupants at any time.
- E. The Contractor is responsible for protecting all materials and equipment stored on the site.
- F. Smoking is not permitted on the grounds.
- G. Dispose of all trash and debris in a legal manner off-site. Do not throw debris from access equipment or staging. Conduct debris to approved containers on the ground. Locate debris containers only in locations approved by the Owner in advance.

#### 1.09 WARRANTY

- A. **Plumbing Contractor's Warranty:** The Plumbing Contractor shall supply the Owner with a minimum two-year workmanship and leak-free warranty. In the event any work related to plumbing is found to be defective, is not watertight, or otherwise not in accordance with the contract documents within two (2) years of final completion, the Plumbing Contractor shall repair and/or remove and replace at no cost to the Owner. The Contractor's warranty obligation shall run directly to the Owner.

## **PART 2 – PRODUCTS**

#### 2.01 MATERIALS

- A. All materials shall be selected so as to conform to all applicable local state and federal codes.

- B. **Roof Drains:** Roof Drains as manufactured by Zurn Industries, Inc., J.R. Smith Mfg. Co., Inc., Josam Co., Inc. Roof drain to be sized so as to match existing diameters; Roof Drain shall be Dura-Coated cast iron body with combination membrane flashing clamp/gravel guard and low silhouette vandal proof cast iron dome. Provide all necessary accessories, including, but not limited to the following: under deck clamps (two-piece clamp made of Dura-Coated cast iron that secures drain to deck), static extension, roof sump receiver, and bronze mesh screen over dome to prevent debris from entering drain.
- Note:** The Contractor shall be responsible for installing additional support (i.e. wood blocking) under Zurn Industries, Inc. (Model Z100-C-EA) roof drain and Josam Co. (Model 21500-AER) roof drain if either of these drains are selected.
- C. **Drain piping:** Cast iron soil pipe of Service weight cast iron with no hub joints or bell and spigot joints or as required to comply with current applicable local, state and federal codes. All pipes shall be supplied in the longest lengths possible so as to minimize pipe joints. Use Dielectric connections or other approved means when connecting pipes of dissimilar material.
- D. **Pipe joint:** at roof drain bowl to leader pipe connection shall be sealed with lead and oakum.
- E. **Insulation:** Furnish and install the following type of pipe covering and insulation as manufactured by Owens Corning, Knauf, Certaineed, or approved equal product. Fiberglass insulation ("K" value of 0.23 at 75° , non-combustible) with fire retardant jacket on all pipings. Laps sealed with Insul-Coustic IC-102 or approved equal. Thickness to be 1". Fittings, flanges and valves to be insulated with either Zeston pre-molded PVC insulation fittings or with molded or mitered fiberglass finished with glass cloth and Insul-Coustic IC-102 or approved equal. All insulation shall have a composite fire hazard rating as tested by ASTM E-E4, NFPA 255, or UL273, not to exceed 25 flame spread and 50 smoke developed. All accessories shall have same component ratings.
- F. **Stainless Steel Coupling:** shall be used to extend the height of existing vent pipe penetrations that do not extend a minimum of 18" of the finished roof. Couplings shall conform to ASTM C1540, CSA B 602, & FM 1680 Class 1. Couplings shall consist of a Type 304 stainless steel shield, clamp assembly and a high-quality elastomeric gasket conforming to ASTM C 564. Transition couplings conform to ASTM C 1460. Stainless steel couplings shall be SD 4000 stainless steel coupling manufactured by Anaco, or an approved equal product.
- G. **No-Hub Coupling:** shall be used to replace the no-hub connection between the existing drain leader piping and drain bowl connection. Couplings shall conform to CISPI 301 and/or ASTM A 888. Couplings shall consist of a Type 301 stainless steel shield, clamp assembly and a high-quality neoprene gasket conforming to ASTM C 564. Screw shall be Type 301 AISI stainless steel 5/16". No-hub couplings shall be manufactured by Anaco-Huskey, or an approved equal product.

- H. **Hangers:** All piping will be rigidly supported from the building structure by means of approved hangers and supports. Pipes shall be supported by hangers to maintain required grading and pitching of lines to prevent vibration and to secure piping in place, and will be arranged so as to provide for proper expansion and contraction of pipe. All horizontal piping will be hung with approved adjustable clevis type wrought iron or malleable iron pipe hangers with extension rods to structure, and spaced not over 5'-0" on center. Vertical piping shall be supported at 10' intervals. Hangers shall be insulated to prevent galvanic action. Hangers shall be Carpenter-Patterson, Grinnell Co., Calco Steel Products or approved equal product.
- I. **Cleanouts:** Cleanouts shall be provided at change in directions and as required by inspecting authorities. Cleanouts shall be installed so that cleanout opens in direction of flow of drainage line served or at right angles thereto. Cleanout plug shall be kept free of dirt and construction material and shall not be covered with cement, plaster or other permanent finishing materials.

### **PART 3 – EXECUTION**

#### **3.01 CLEANING AND TESTING**

- A. Contractor shall snake clear and clean all referenced drains at **the start of the project and again at the project's completion** for a minimum distance of 100 feet starting from the roof level.
- B. Upon completion of work all parts of installation shall be thoroughly cleaned of all foreign material including roofing products, grease, metal cuttings, dirt, etc.
- C. All roof drains and piping shall be water tested in, accordance with applicable plumbing code, to verify proper operation and adequately sealed joints and flashing. All testing work shall be performed in the presence of the Engineer or Owner's representative. Leaks developing subsequent to these tests shall not be repaired by mastic or other temporary means. All leaks shall be repaired by removal of the valve, fitting, joints, or other sections that are leaking and reinstalling new material.

The contractor will be required to test 100% of the roof drains at the facility by performing a flood test. The contractor shall plug the drain and flood an approximate 100 square foot area with water for a period of 24 hours minimum. The plug shall then be removed and a visual inspection at the underside of the roof drain for signs of leakage. The contractor shall be responsible for the removal and replacement of any EPDM roofing that is found to be wet.

#### **3.02 DRAIN INSTALLATION**

- A. Install new drain bowl and new drain leader connection in all drains prior to roof replacement. Install new roof drains in accordance with manufacturer's recommendations ensuring flange is flush with the existing deck, in a receiver

pan if necessary and that all lead and oakum seal connections are proper to create a positive watertight connection with the new drain leader pipe including:

1. Flash in flange up to and around vertical drain body bosses.
  2. Install clamping ring over raised bosses and tighten clamping ring against flashing until secure. Refer to Section 07 55 00 – EPDM Roofing & Flashing for membrane and flashing termination requirements.
  3. Install strainer basket onto clamping ring and lock into place.
- B. Insulation: Insulation shall be installed in a workmanlike manner by workman regularly engaged in this type of work. Insulate all new drains. Insulate all existing drain piping to the point where it enters the ceiling level below. Insulation to be installed after all surfaces are clean and dry. Insulation on pipe fittings and pipe joints shall not be insulated before the piping is tested and approved. A complete moisture and vapor seal shall be provided over insulation on cold surfaces where vapor barrier jackets, facings, or coatings are required. Anchors, hangers, and other projections shall be insulated, and vapor sealed to prevent condensation. All openings, punctures, and staples shall be sealed with vapor barrier compound. Jackets and facings shall be securely and neatly applied to the insulation. Jackets and facings shall be drawn tight, and all joints shall have laps or butt strips of material identical with jackets or facings, secured with factory or field applied adhesives or with staples. Jackets on pipe insulation shall have not less than 1-1/2" lap joints at longitudinal joints and not less than 3" wide butt strips at end joints. Insulate all horizontal storm drainage piping.

### 3.03 EXTENSION OF VENT PIPE PENETRATIONS

- A. The plumbing contractor shall conduct a survey of the existing vent pipes on the roof to determine which vent pipes must be extended. This survey will be coordinated by the roofing contractor. Vent pipe penetrations must extend a minimum of 18" above the finished roof system.
- B. Vent pipes that are being extended shall be cleaned of all foreign material including roofing products, grease, metal cuttings, dirt, etc. The plumbing contractor shall verify that the vent pipe is not broken, cracked, or has any sharp corners that will damage the stainless-steel coupling. The contractor will cut any pipe that exhibits these conditions prior to the installation of the new coupling.
- C. The plumbing contractor shall slide the stainless-steel coupling down over the existing vent pipe penetration. Install new cast iron pipe into the stainless-steel coupling. The stainless-steel sealing clamps shall be torqued to 80-inch pounds.
- D. The roofing contractor shall flash the vent pipe penetration in accordance with the EPDM flashing details.



### 3.04 DRAIN PIPING INSTALLATION

- A. Piping shall be installed in practical alignment at uniform grade of 1/4" per foot. Piping shall be installed without undue strains and stresses, and provisions shall be made for expansion and contraction and structural settlement. Protect piping against breakage when passing under or through walls by means of pipe sleeves.
- B. Properly connect new pipe to existing roof drain bowl and underground piping. All piping and materials of dissimilar materials shall be separated by dielectric unions.
- C. Joints and connections shall be watertight. Jointing shall be types specified for service indicated. All transitions between different piping materials shall be made using approved adapters. Adapters for transitions between two types of piping materials shall be manufactured for purpose intended.
- D. No-Hub Joints: The pipe and fittings shall be designed for No-Hub system of joining cast iron waste pipe. The joint shall consist of a neoprene gasket and a stainless steel or cast-iron compression clamp. The pipe shall be inserted full depth of the gasket and the clamp tightened to the amount of torque-pounds recommended by the joint manufacturer.
- E. Bell and Spigot Joints: The cast iron pipe shall have bell and spigot cast iron fittings of the same weight as the pipe. Pipe and fittings shall have hubs specifically cast to receive a neoprene gasket and spigot ends shall be without bead. The neoprene gasket shall be inserted into the hub and the spigot shall be pulled into the gasket with a tool made for this purpose. Lubricant as recommended by the gasket manufacturer shall be used on the spigot to insure proper seating. Lead and Oakum joints shall be used as required for support of off-sets and special piping conditions.
- F. Piping Supports: All pipe shall be supported. Structure in a neat and workmanlike manner and whenever possible, parallel runs of horizontal piping shall be grouped together on trapeze type hangers. Vertical risers shall be supported with steel pipe clamps. The use of wire or preformed metal to support pipes will not be permitted. Hanging pipes from other pipes will not be permitted. Vertical and horizontal pipes subject to sway in either direction shall have snubber to prevent lateral movement. Pipes that have movement due to water hammer shall be restrained with snubber brackets or standoff brackets.
- G. Insulation: Insulation shall be installed in a workmanlike manner by workman regularly engaged in this type of work. Insulation to be installed after all surfaces are clean and dry. Insulation on pipe fittings, valves, and pipe joints shall not be insulated before the piping is tested and approved. A complete moisture and vapor seal shall be provided over insulation on cold surfaces where vapor barrier jackets, facings, or coatings are required. Anchors, hangers, and other projections shall be insulated, and vapor sealed to prevent condensation. All openings, punctures, and staples shall be sealed with vapor barrier compound.

Jackets and facings shall be securely and neatly applied to the insulation. Jackets and facings shall be drawn tight, and all joints shall have laps or butt strips of material identical with jackets or facings, secured with factory or field applied adhesives or with staples. Jackets on pipe insulation shall have not less than 1-1/2" lap joints at longitudinal joints and not less than 3" wide butt strips at end joints.

### 3.05 FIELD INSPECTION

- A. The Engineer and the Owner's Project Manager will be on site periodically to observe the work progress and to monitor contract compliance. Any items observed not in compliance with the contract documents shall be identified and promptly corrected by the Contractor.
- B. Prior to the final project completion, inspections shall be made by representatives of the Engineer and Owner's Project Manager in order to ascertain that the work detailed and specified in this section has been installed properly. A punch list will be developed by each, and copies will be forwarded to the Contractor. Contractor shall immediately correct all punch list items. Deviations from the specifications and/or details must be corrected immediately. Warranty shall be issued upon final acceptance of the work.
- C. Contractor is to provide any and all necessary protection to the roof area to maintain watertightness during the project duration. Any interior damages that occur as a result of the Contractor's negligence shall become the Contractor's responsibility and he shall promptly repair and/or replace all damaged items to the satisfaction of the Engineer and Owner.

### 3.06 CLEANING

- A. The building and adjacent areas shall be left in a broom-clean condition at the end of each day. On completion of the work and after removal of all debris, the site shall be left in a clean condition satisfactory to the Owner and to the Engineer.
- B. At the completion of the Project, the Contractor shall restore or replace all property damaged by his Work and shall remove all spots, paint, smears, soil, concrete, mortar, sealant, adhesives, asphalt, writing, droppings, or other foreign materials, from all Work. Remove all temporary protection from all the Work. Final cleaning shall include as a minimum:
  - 1. Clean site; sweep paved areas, rake clean landscaped surfaces.
  - 2. Remove waste and surplus materials, rubbish, and construction facilities from the site.
  - 3. The Contractor shall clean all walls, windows or other building and grounds elements that have been affected by his work.

4. Repair, patch and touch-up marred surfaces to specified finish to match adjacent surfaces.
5. The Contractor shall clean the roof membrane to the satisfaction of the Owner and Engineer.

### 3.07 COMPLETION OF WORK

- A. Prior to demobilization from the site, the completed project/work shall be reviewed by the Engineer and the Owner's Project Manager, and the Contractor. All defects and items in non-compliance with the specifications, manufacturers' recommendations and the manufacturers' warranty requirements shall be itemized on a punch list. These items shall be corrected to the satisfaction of the Engineer and , Owner's Project Manager, by the Contractor prior to demobilization.
- B. All warranties referenced in this specification shall have been submitted and accepted the Engineer and Owner. Fully executed warranty documentation shall be submitted to the Engineer and Owner as soon as possible for review and approval. At the completion of the job, the Contractor and manufacturer shall each submit their guarantees to the Owner. Additionally, they shall submit an Inspection and Maintenance Schedule to the Owner.

**END OF SECTION**

## SECTION 23 00 01

### TEMPORARY MECHANICAL DISCONNECTS

#### PART 1 – GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.
- B. Maintain a copy of all applicable drawings, specifications, shop drawings, and approved submittals at the site at all times during the Work.

##### 1.02 SECTION INCLUDES

- A. The work of this Section consists of conducting all temporary mechanical disconnects and/or modifications of any rooftop mechanical equipment required to complete the roofing replacement and repair work.
- B. The work includes performing all necessary and required modifications to the existing rooftop mechanical units. Various rooftop mechanical unit modification work may be required so as to increase the flashing height, and/or allow for proper roofing and flashing installation.
- C. The Contractor is responsible to ensure the rooftop mechanical units remain operational as required by the user of the facility and Owner. Any damages that occur to the existing rooftop mechanical units as a result of the Contractor's operations shall be immediately corrected by the Contractor at no additional expense. Contractor shall notify the user of the facility and the Owner a minimum of 48 hours in advance of any rooftop mechanical unit work.
- D. All materials shall be verified by Contractor to be proper for each intended use, and the entire work of this Section shall be done in such a manner that each installation will perform its intended purpose as applicable, in the finished work.
- E. The drawings indicate and show limits of construction for this project. The specifications specify material and work requirements for this project. Both are complementary to each other, and both shall be followed to complete the work.
- F. Plans and dimensions under which the Work is to be performed are derived from a variety of sources. The existing conditions are provided for information only. Actual conditions may vary. Contractor is required to verify existing system composition, conditions, and dimensions prior to submitting his bid. No additional compensation or time extension will be made for dimensional errors or discoverable inaccuracies related to existing conditions in the contract documents.

### 1.03 RELATED WORK

- A. Section 02 05 00 – Demolition
- B. Section 04 50 00 – Masonry Restoration
- C. Section 05 31 50 – Steel Deck Repairs
- D. Section 06 10 00 – Rough Carpentry
- E. Section 07 22 00 – Roof Insulation
- F. Section 07 54 00 – EPDM Roofing & Flashing
- G. Section 22 00 01 – Plumbing - Roof Drains
- H. Section 26 00 01 – Temporary Electrical Disconnects

### 1.04 QUALITY ASSURANCE

- A. All materials shall be installed to serve their intended function.
- B. All work shall be performed by a licensed mechanical contractor that regularly performs commercial rooftop unit repair or replacement work. The work shall adhere to the local building codes, regulations, industry standards, and best practices of the trade. The Contractor shall have a minimum of five (5) years experience installing and/or repairing warranted commercial rooftop unit systems. Minimum required experience involves at least ten (10) similar successful projects located in Massachusetts. Contractor shall provide the following supporting documentation:
  - (1) Name and address of project indicating project name and project date for each of the ten (10) referenced projects.
  - (2) Name and phone number of contact person (Owner, Designer, and General Contractor), for each of the ten (10) referenced projects.
  - (3) Written evidence of mechanical contractor license.
- C. All work shall be applied in strict accordance with the provisions of the technical specification and details. No deviations shall be permitted without written consent from the Architect. Should a conflict between this specification (and the associated details) and the manufacturer's requirements arise, the most restrictive provision, as determined by the Architect, shall govern.
- D. The Contractor shall disconnect mechanical equipment when performing work as needed to install roofing, to obtain flashing heights, and to control fumes.
- E. Each unit shall be fully operational immediately after reinstallation. Shutdown time for each unit shall be limited to an eight-hour period unless otherwise agreed in writing by the Owner.
- F. Prior to commencing any disconnects, the Owner shall be given 48 hour's notice.

#### 1.05 TESTING

- A. Prior to commencing roofing removal and replacement work, the Contractor shall verify that all rooftop mechanical units are in working order. The Contractor shall provide a written report to the Owner and Architect documenting that all rooftop mechanical units are in working order. The written report (initial report) shall note if any rooftop mechanical units are not operational, and shall note any and all deficiencies in operation including unusual noises, vibrations, odors, leaks, etc.
- B. Upon completion of the work (roofing installation work and any rooftop mechanical unit modification work), the Contractor shall verify in writing to the Owner and Architect that all rooftop mechanical units are in working order.
- C. Any deficiencies, which were not noted in the initial report, shall be corrected by the Contractor at his expense.

#### 1.06 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall limit its use of the site for work and for storage to allow for:
  - 1. Owner occupancy and use of the building during construction.
  - 2. Public use of walks, parking lots, and driveways.
- B. Do not block exits at any time. Provide protected entranceways at each entrance when working in these areas.
- C. Coordinate work on the roof, use of the site, storage areas, and staging areas with the Owner. Limit use of the site and working hours to dates, times, and locations approved by the Owner.
- D. Cooperate with the Owner's scheduling requirements for working at an occupied building. Work under this Section shall not interfere with the operation of the building or building occupants at any time.
- E. The Contractor is responsible for protecting all materials and equipment stored on the site.
- F. Smoking is not permitted on the grounds.
- G. Dispose of all trash and debris in a legal manner off-site. Do not throw debris from access equipment or staging. Conduct debris to approved containers on the ground. Locate debris containers only in locations approved by the Owner in advance.

#### 1.07 WARRANTY

- A. Contractor's Warranty: The Contractor shall supply the Owner with a minimum two-year workmanship warranty for the work of this section

1.08 SUBMITTALS

- A. Submit manufacturer's descriptive literature and data sheets for any specified and/or required products listed in this specification section, under the provisions of Section 01 30 00.
- B. Submit Contractor Quality Assurance supporting documentation as stipulated in Paragraph 1.04.

**PART 2 – PRODUCTS**

2.01 REPLACEMENT PARTS

- A. Any replacement parts or additional materials needed due to rooftop mechanical unit modifications, and/or changes in curb or sleeper heights shall be as recommended by the manufacturer of the mechanical unit or as required by governing codes.

**PART 3 – EXECUTION**

3.01 GENERAL

- A. Perform all work to meet the requirements of the Massachusetts Building Code.
- B. After disconnection, move units a sufficient distance to permit the installation of any necessary and/or required modifications, new roofing, and new flashing materials.
- C. Units shall be moved onto existing roofing to the maximum extent possible. Provide plywood bases to rest disconnected units on.
- D. Provide plywood traffic ways for moving units. If mechanical contrivances of wheeled "A" frame-type hoists are used, plywood shall be placed under the equipment for its full route of movement. Plywood shall be minimum of 5/8" thick.
- E. Reinstall rooftop mechanical units and verify units are functioning properly (Refer to paragraph 1.05 Testing).

**END OF SECTION**

## SECTION 26 00 01

### TEMPORARY ELECTRICAL DISCONNECTS

#### PART 1 – GENERAL

##### 1.01 GENERAL REQUIREMENTS

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.
- B. Maintain a copy of all applicable drawings, specifications, shop drawings, and approved submittals at the site at all times during the Work.

##### 1.02 SECTION INCLUDES

- A. The work of this Section consists of conducting all temporary electrical disconnects and/or required modifications of any building equipment required to complete the work. The Contractor is responsible for all disconnection and reinstallation work that may be required. Contractor shall notify the user of the facility and the Owner a minimum of 48 hours in advance of any electrical work.
  - 1. The Contractor shall be responsible for temporarily disconnecting the existing electrical conduits and control wiring to allow removal and replacement of roofing and flashing at the rooftop units
- B. The Contractor is responsible to ensure the electrical service does not become interrupted as a result of his operations. Any damages that occur to the existing electrical service and/or lightning protection system as a result of the Contractor's operations shall be immediately corrected by the contractor at no additional expense.
- C. All materials shall be verified by Contractor to be proper for each intended use, and the entire work of this Section shall be done in such a manner that each installation will perform its intended purpose as applicable, in the finished work.
- D. The drawings indicate and show limits of construction for this project. The specifications specify material and work requirements for this project. Both are complementary to each other, and both shall be followed to complete the work.
- E. Plans and dimensions under which the Work is to be performed are derived from a variety of sources. The existing conditions are provided for information only. Actual conditions may vary. Contractor is required to verify existing roofing system composition, conditions, and dimensions prior to submitting his bid. No additional compensation or time extension will be made for dimensional errors or discoverable inaccuracies related to existing conditions in the contract documents.



## 1.02 RELATED WORK

- A. Section 02 05 00 – Demolition
- B. Section 04 50 00 – Masonry Restoration
- C. Section 05 31 50 – Steel Deck Repairs
- D. Section 06 10 00 – Rough Carpentry
- E. Section 07 22 00 – Roof Insulation
- F. Section 07 54 00 – EPDM Roofing & Flashing
- G. Section 22 00 01 – Plumbing - Roof Drains
- H. Section 23 00 01 – Temporary Mechanical Disconnects

## 1.04 QUALITY ASSURANCE

- A. All materials shall be installed to serve their intended function.
- B. All work shall be performed by a licensed electrician. The work shall adhere to the local building codes, regulations, industry standards, and best practices of the trade. The Contractor shall have a minimum of five (5) years experience. Contractor shall provide written evidence of electrical contracting license.
- C. The Contractor shall disconnect electrical equipment or feeds when performing work as needed to install roofing, to obtain flashing heights and to control fumes.
- D. Each feed or unit shall be fully operational immediately after reinstallation. Shutdown time for each unit shall be limited to an eight-hour period unless otherwise agreed in writing by tenant.

## 1.05 SUBMITTALS

- A. Submit manufacturer's descriptive literature and data sheets for any specified and/or required products listed in this specification section, under the provisions of Section 01 33 00.
- B. Submit Contractor Quality Assurance supporting documentation as stipulated in Paragraph 1.04.

## 1.06 CONTRACTOR'S USE OF PREMISES

- A. Contractor shall limit its use of the site for work and for storage to allow for:
  - 1. Owner occupancy and use of the building during construction.
  - 2. Public use of walks, parking lots, and driveways.
- B. Do not block exits at any time. Provide protected entranceways at each entrance when working in these areas.
- C. Coordinate work on the roof, use of the site, storage areas, and staging areas with the Owner. Limit use of the site and working hours to dates, times, and locations approved by the Owner.

- D. Cooperate with the Owner's scheduling requirements for working at an occupied building. Work under this Section shall not interfere with the operation of the building or building occupants at any time.
- E. The Contractor is responsible for protecting all materials and equipment stored on the site.
- F. Smoking is not permitted on the grounds.
- G. Dispose of all trash and debris in a legal manner off-site. Do not throw debris from access equipment or staging. Conduct debris to approved containers on the ground. Locate debris containers only in locations approved by the Owner in advance.

## **PART 2 – PRODUCTS**

- A. Any replacement parts or additional materials needed due to modifications shall be as recommended by the manufacturer of the affected building component or as required by governing codes. All materials shall be selected so as to conform to all applicable local state and federal codes.

## **PART 3 – EXECUTION**

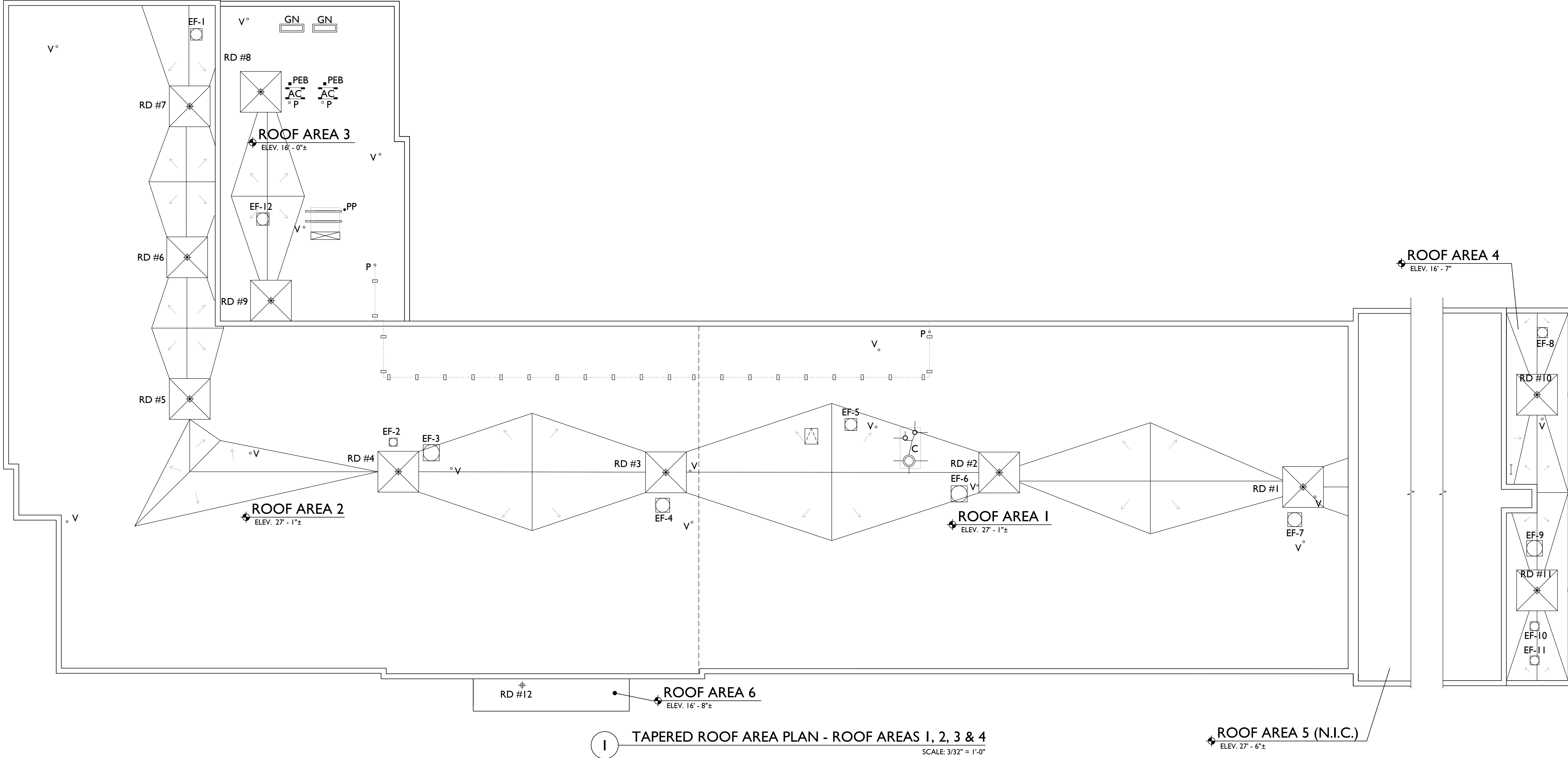
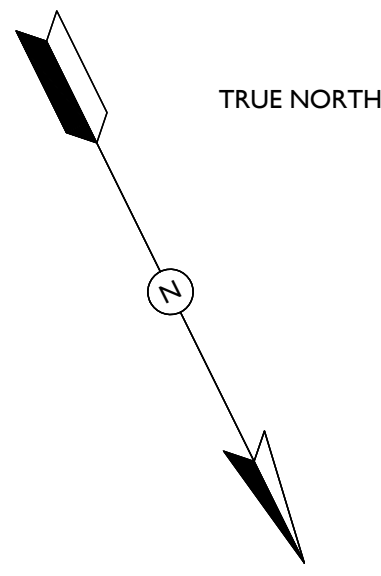
- A. Perform all work to meet the requirements of the Massachusetts Building Code.
- B. Upon completion of the work the Contractor shall verify in writing to the Owner and Engineer that all modifications are complete and the affected units are in working order.
- C. Any deficiencies shall be corrected by the Contractor at his expense.

**END OF SECTION**





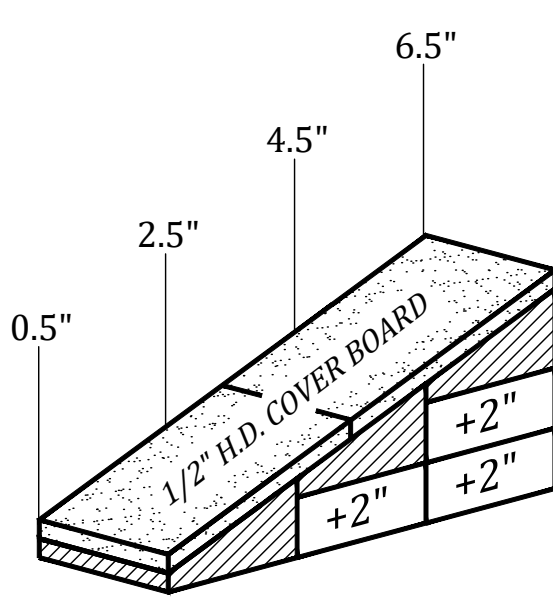




1 TAPERED ROOF AREA PLAN - ROOF AREAS 1, 2, 3 & 4  
SCALE: 3/32" = 1'-0"

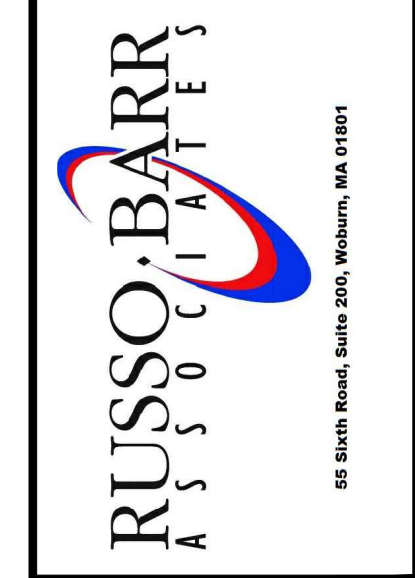
**GENERAL TAPERED INSULATION NOTES**

1. PROVIDE TAPERED INSULATION CRICKETS (1/2" PER FOOT) WHERE INDICATED.
2. PROVIDE MANUFACTURERS TAPERED SHOP DRAWINGS FOR REVIEW AND APPROVAL.
3. TAPERED INSULATION PANELS (SUMPS) ARE TO BE INSTALLED AT ALL ROOF DRAINS AS INDICATED. SLOPE INTO ROOF DRAIN SHALL BE MINIMUM 1/4" PER FOOT.
4. INSTALL CLAP BOARD OR TAPERED EDGE STRIP INSULATION SHALL BE MECHANICALLY FASTENED AT THE PERIMETER OF ALL CRICKETS.



1/2" /FT TAPERED ISO PROFILE  
NOTE: STAGGER ALL JOINTS

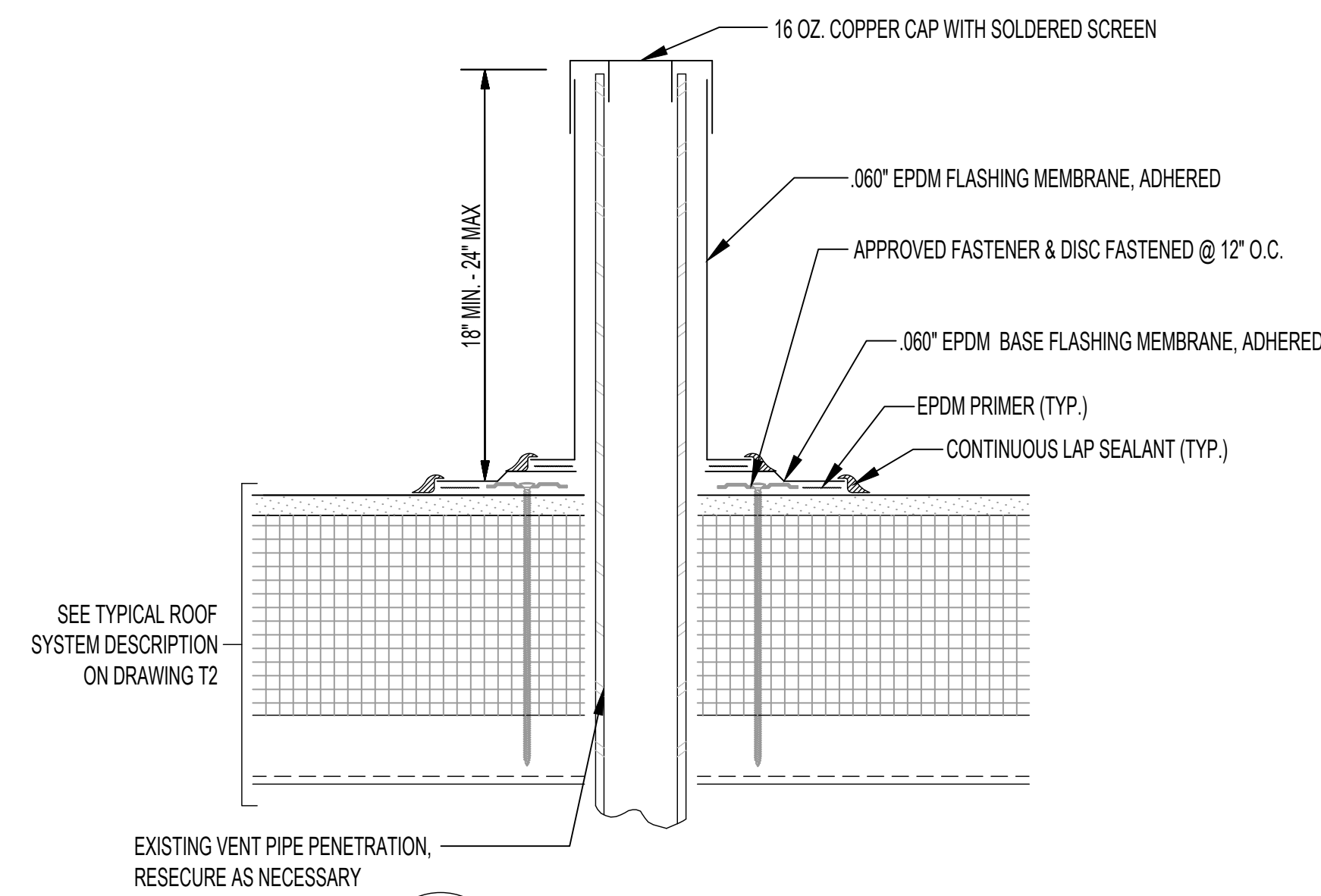
NO.	DATE	BY	DESCRIPTION



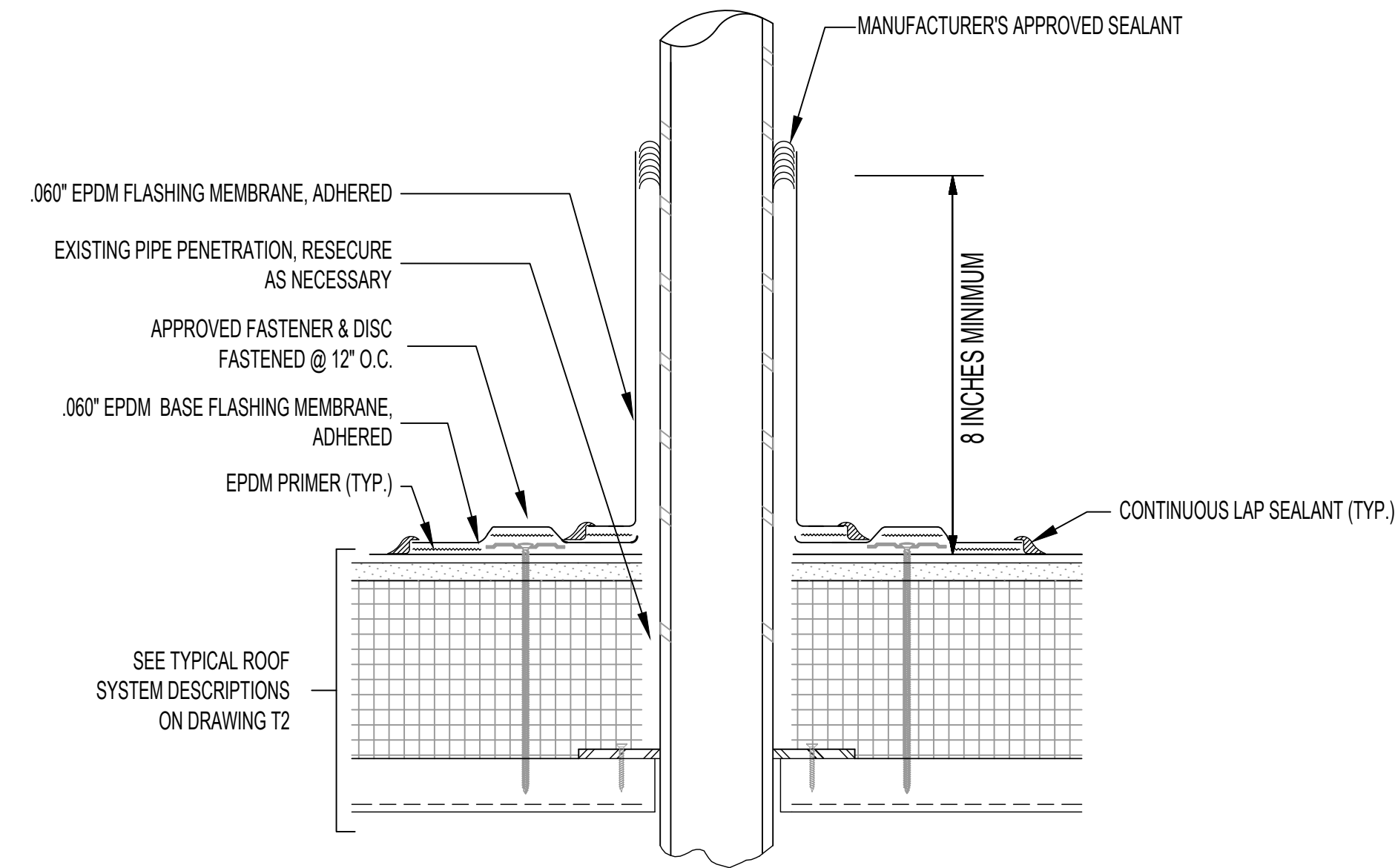
**ROOF REPLACEMENT PROJECT**  
 SHAWSHEEN ELEMENTARY SCHOOL  
 298 SHAWSHEEN AVENUE  
 WILMINGTON, MASSACHUSETTS  
 TAPERED INSULATION PLAN

DATE	03.23.22
SCALE	AS NOTED
DRAWN BY / CHECKED BY	CRL / RJG
PROJECT NO.	2021068
DRAWING NO.	A2

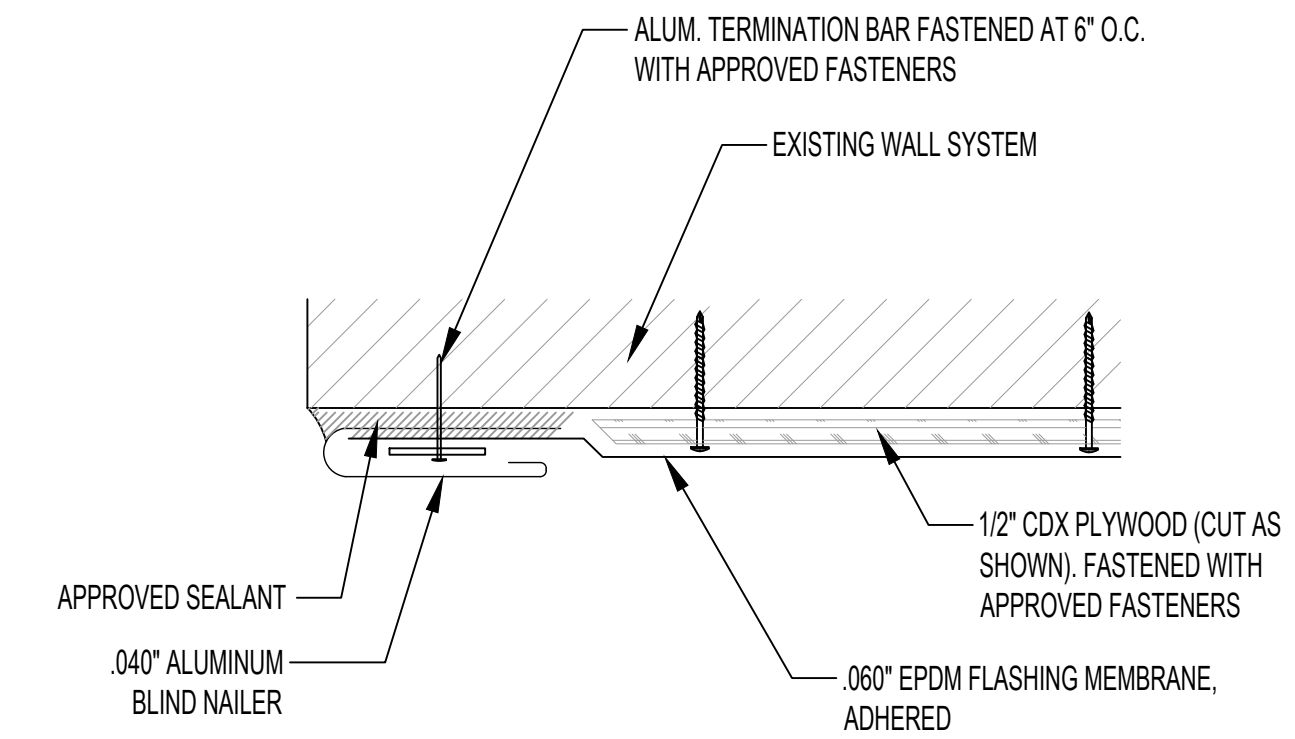
**A2**



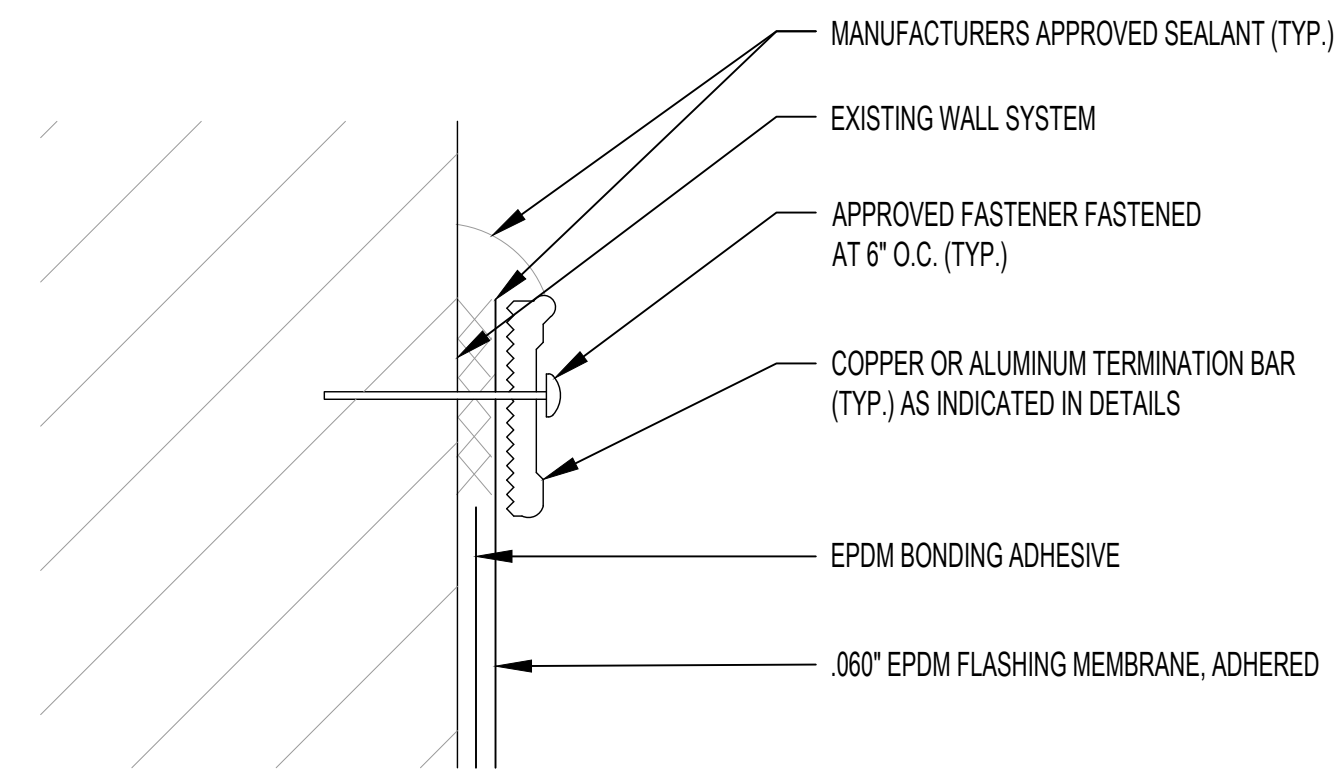
**1**  
A3  
**VENT PIPE FLASHING DETAIL**  
SCALE: 3"=1'-0"



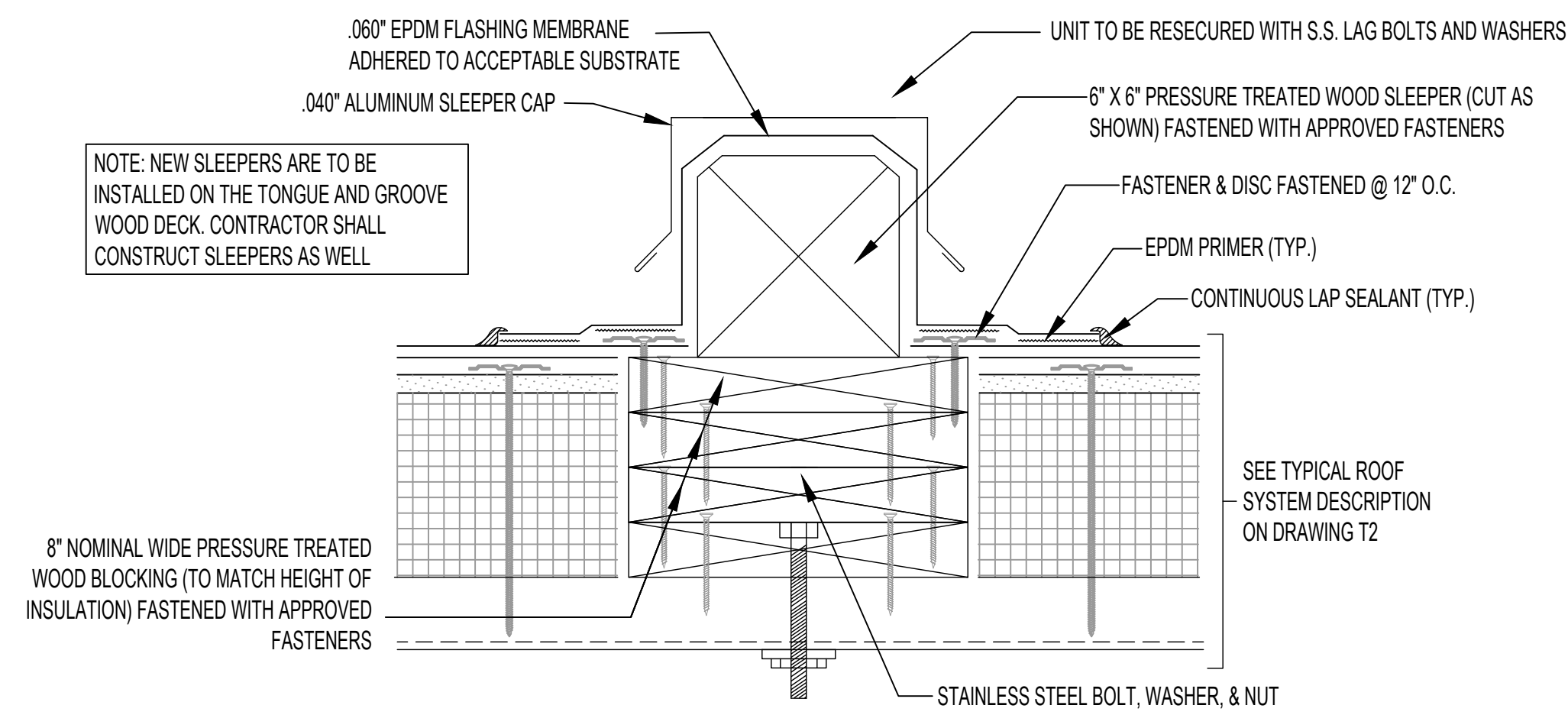
**2**  
A3  
**PIPE PENETRATION DETAIL**  
SCALE: 3"=1'-0"



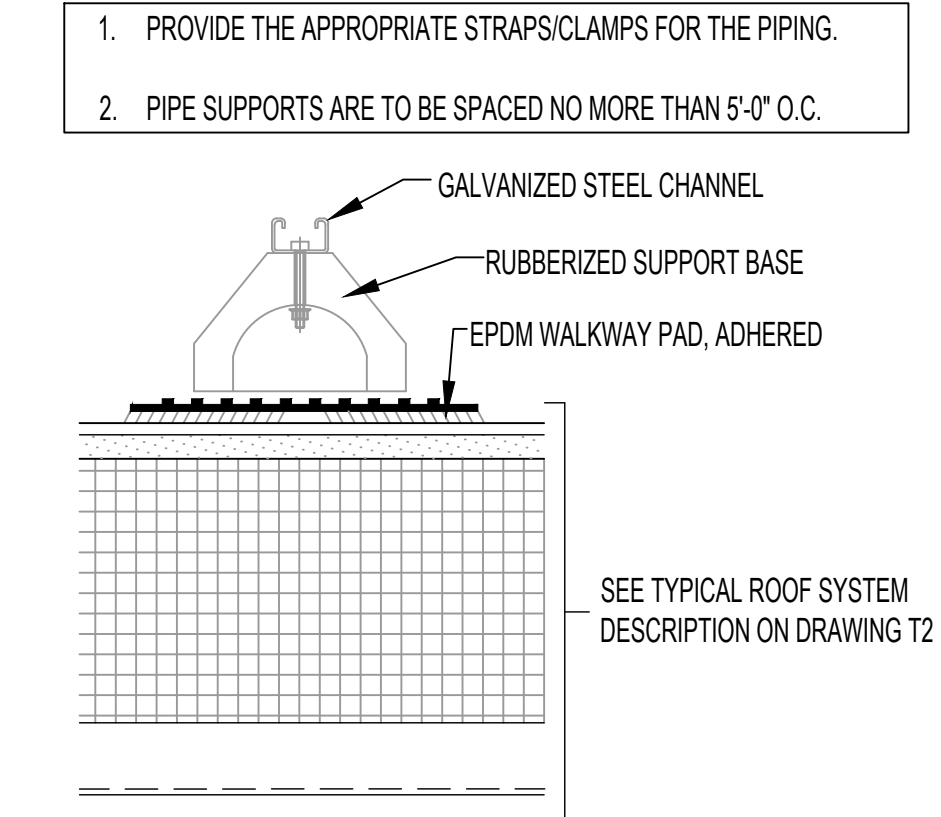
**3**  
A3  
**BLIND NAILER FLASHING DETAIL**  
SCALE: 3"=1'-0"



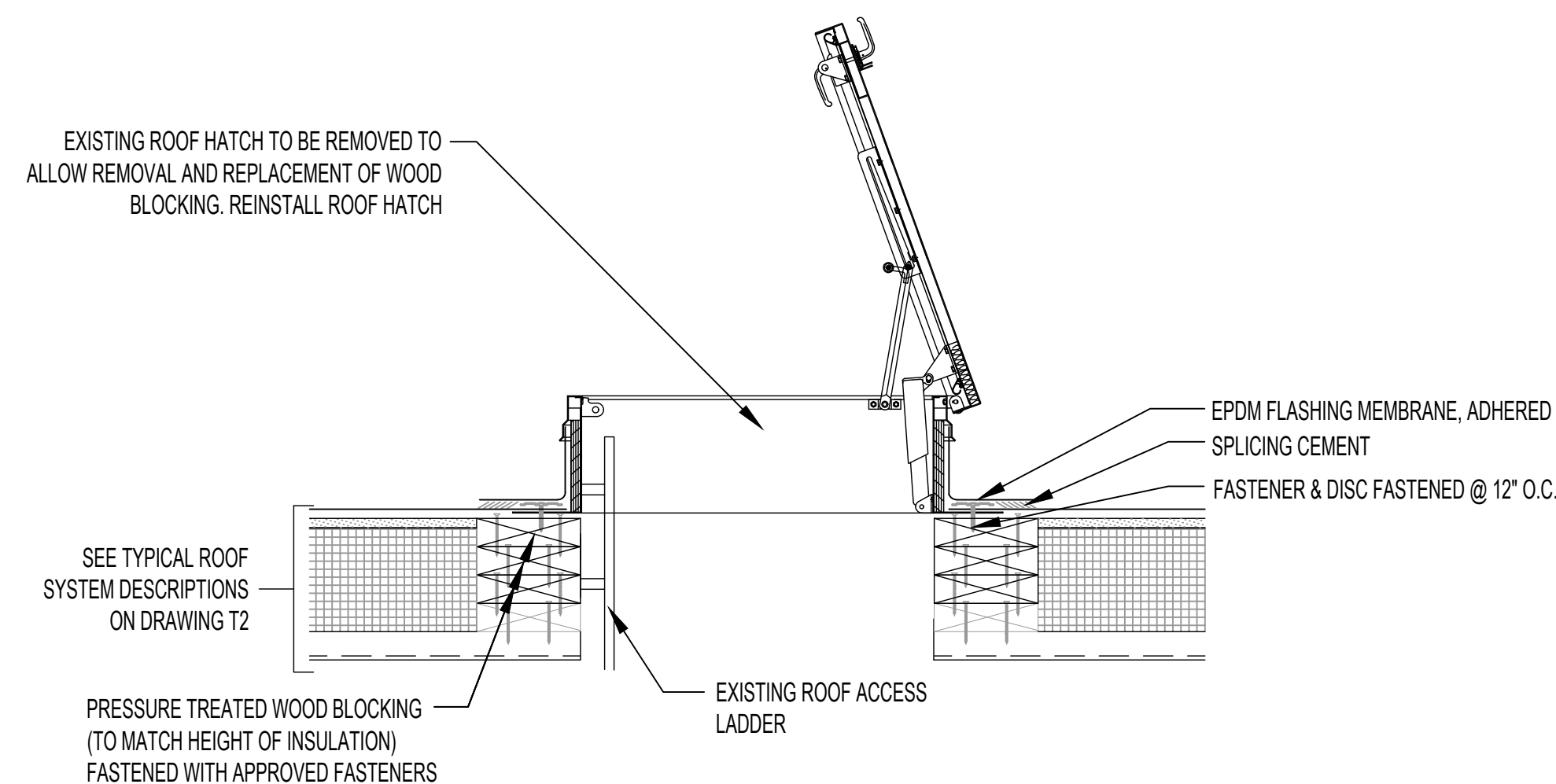
**4**  
A3  
**TERMINATION BAR DETAIL**  
SCALE: NTS



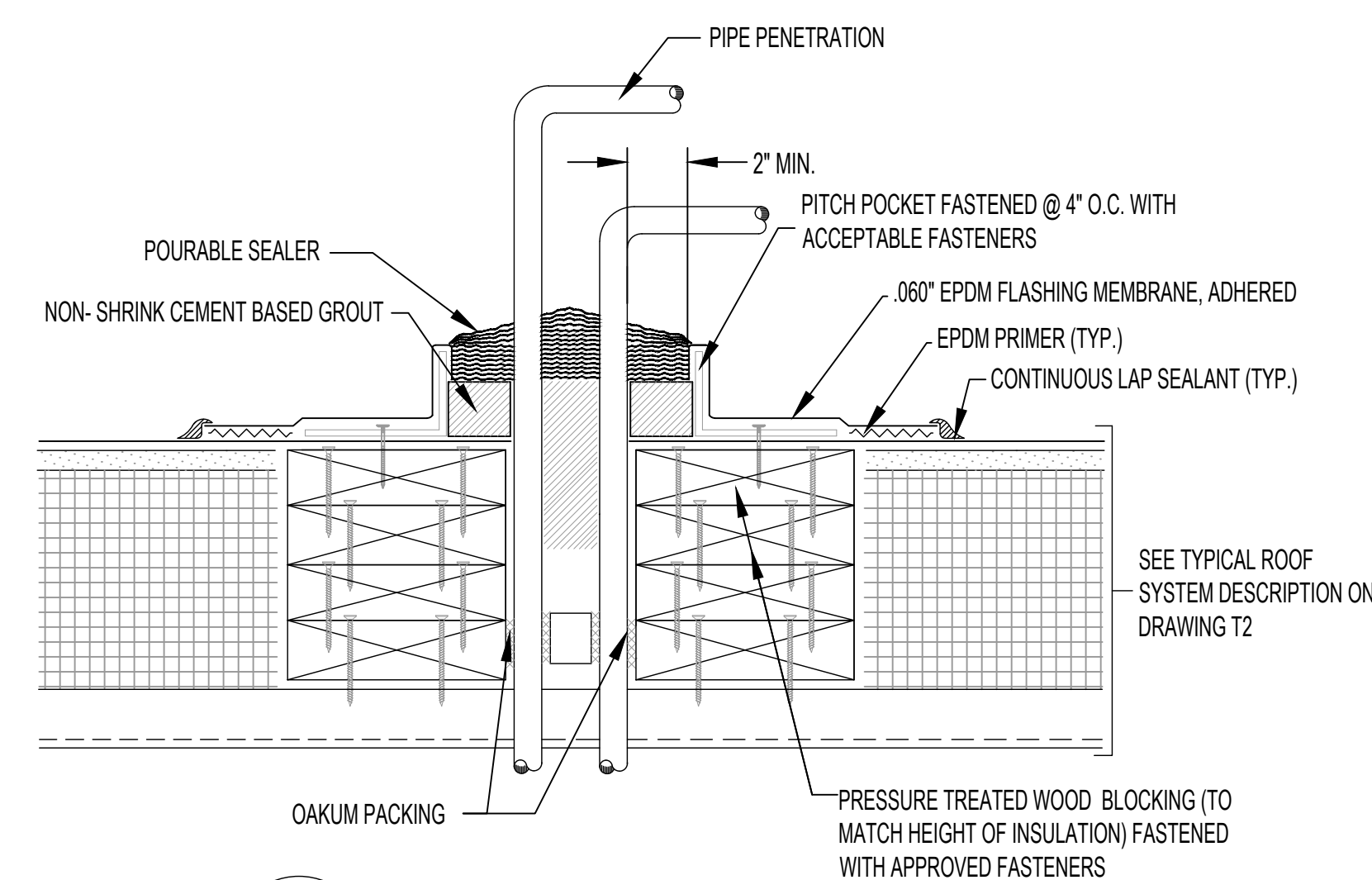
**5**  
A3  
**FLASHED SLEEPER DETAIL**  
SCALE: 3"=1'-0"



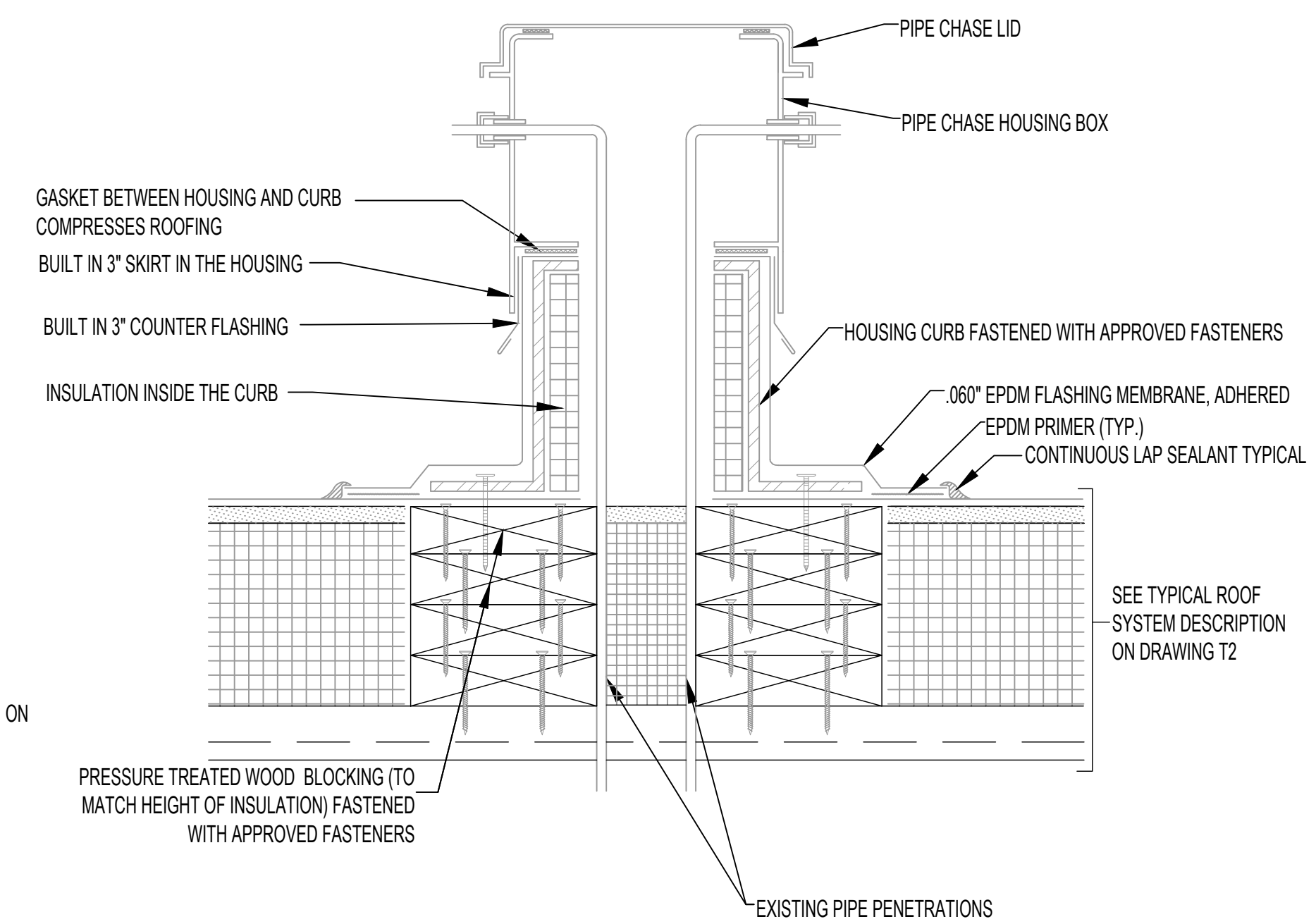
**6**  
A3  
**PIPE SUPPORT DETAIL**  
SCALE: 3"=1'-0"



**7**  
A3  
**ROOF HATCH DETAIL**  
SCALE: 1-1/2"=1'-0"

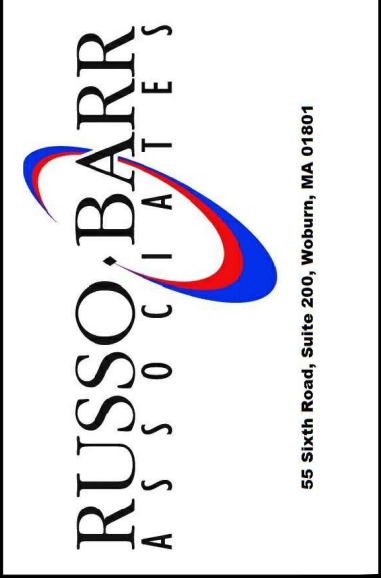


**8**  
A3  
**PITCH POCKET DETAIL**  
SCALE: 3"=1'-0"



**9**  
A3  
**PIPE ENCLOSURE BOX**  
SCALE: 3"=1'-0"

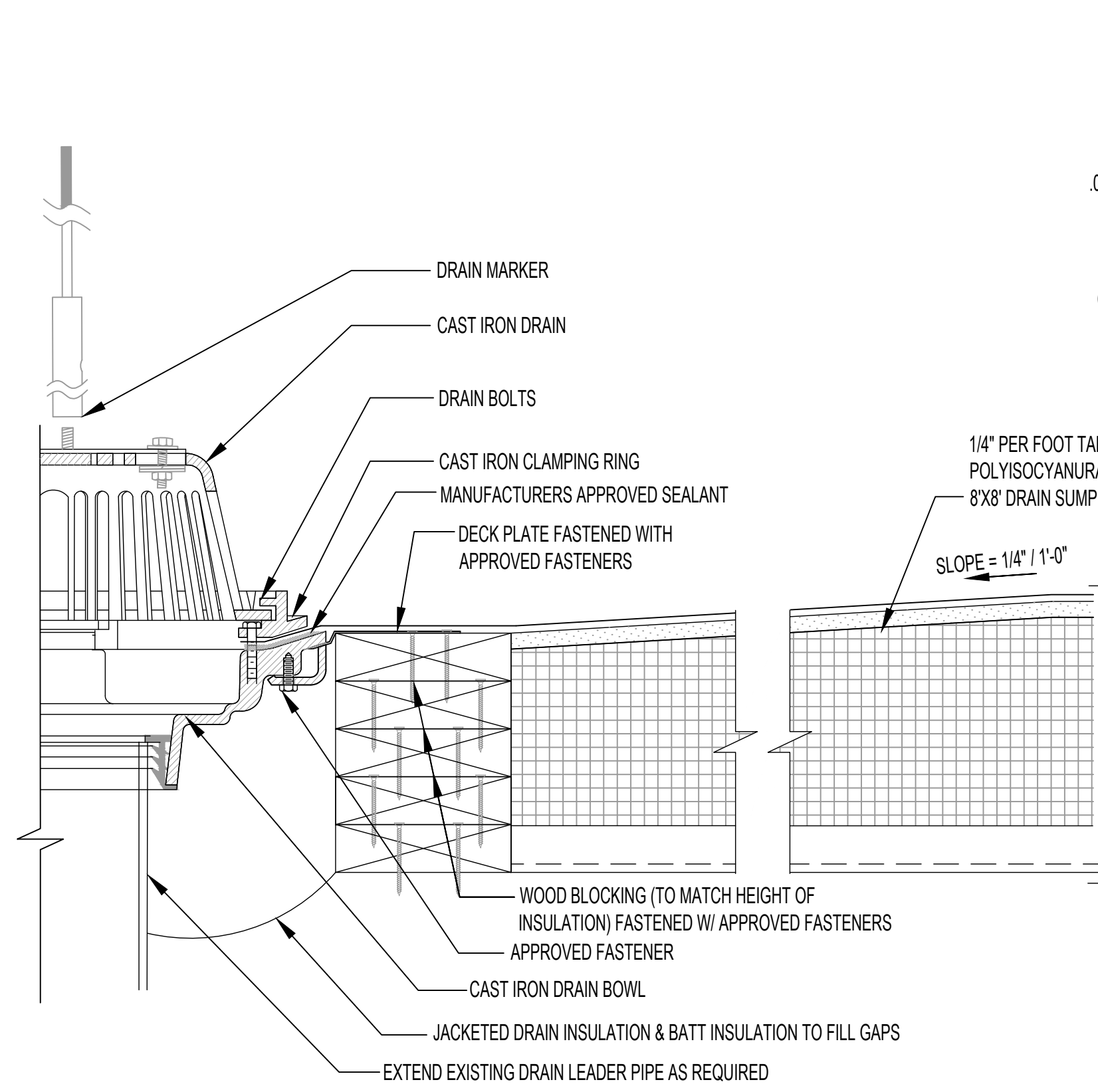
NO.	DATE	BY	DESCRIPTION



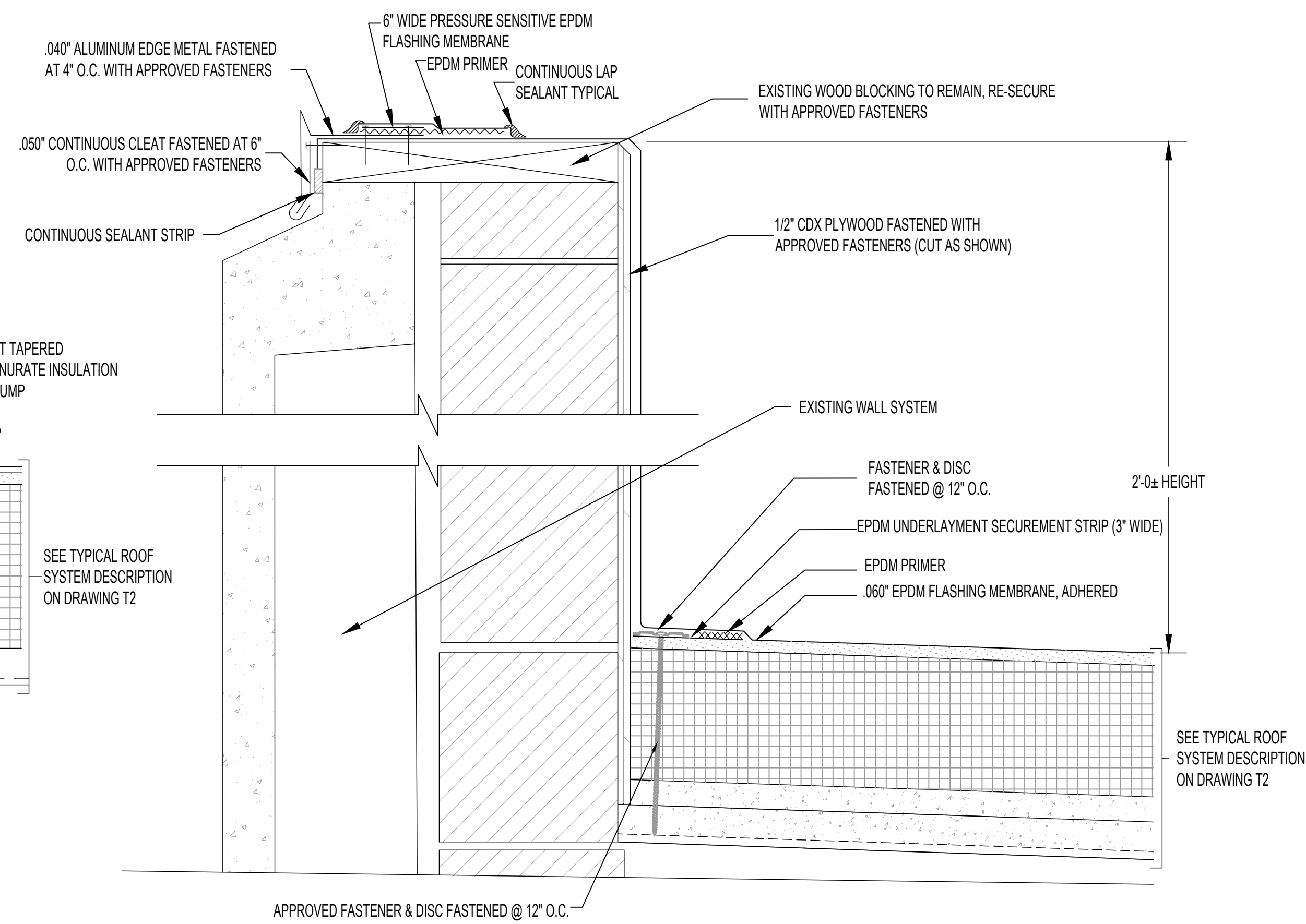
**ROOF REPLACEMENT PROJECT**  
**SHAWSHEEN ELEMENTARY SCHOOL**  
 298 SHAWSHEEN AVENUE  
 WILMINGTON, MASSACHUSETTS  
 DETAILS

DATE	03.23.22
SCALE	AS NOTED
DRAWN BY / CHECKED BY	CRL / RJG
PROJECT NO	2021068
DRAWING NO	A3

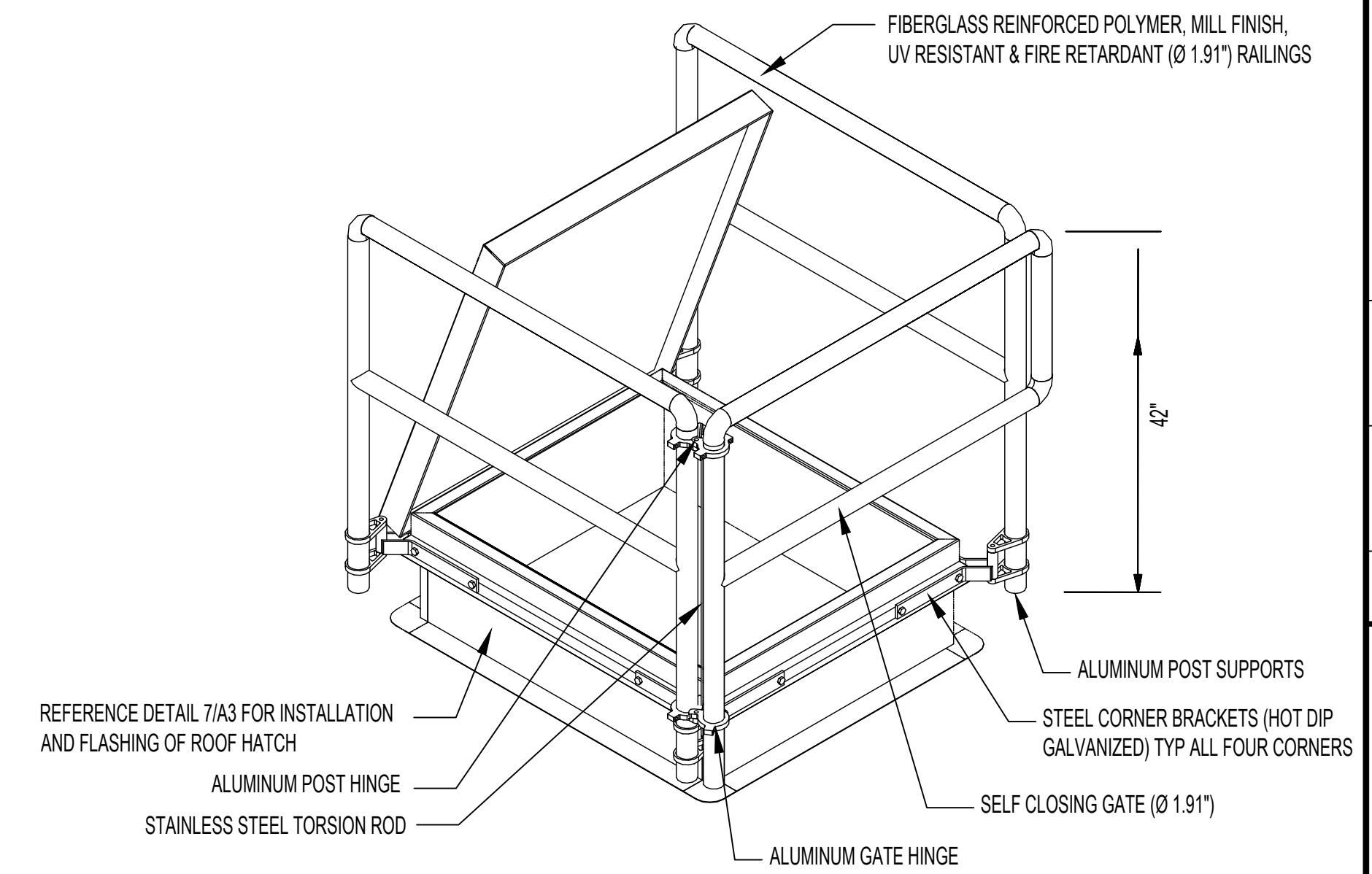
**A3**



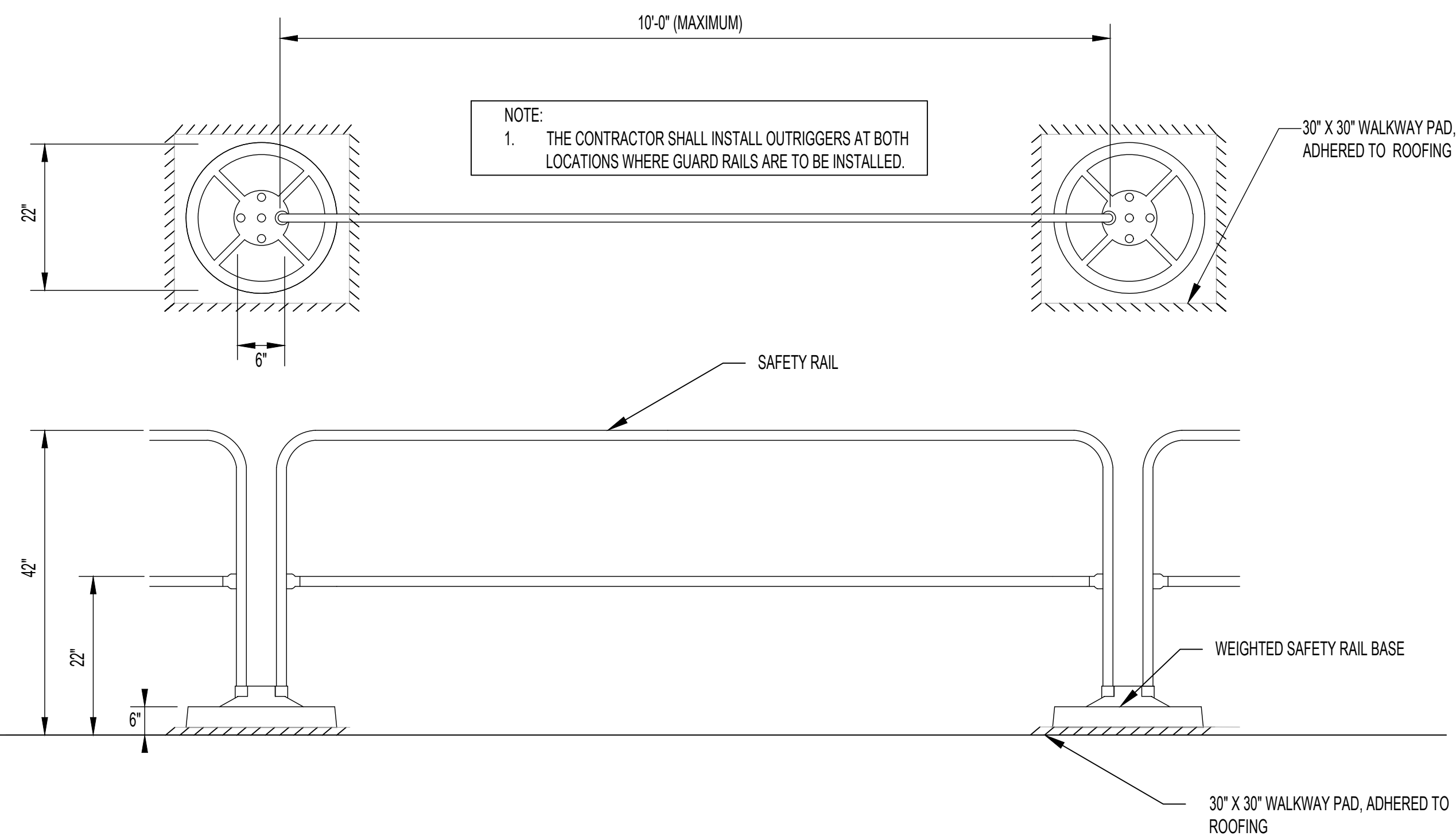
**1** ROOF DRAIN DETAIL  
A4 SCALE: 3"-1'-0"



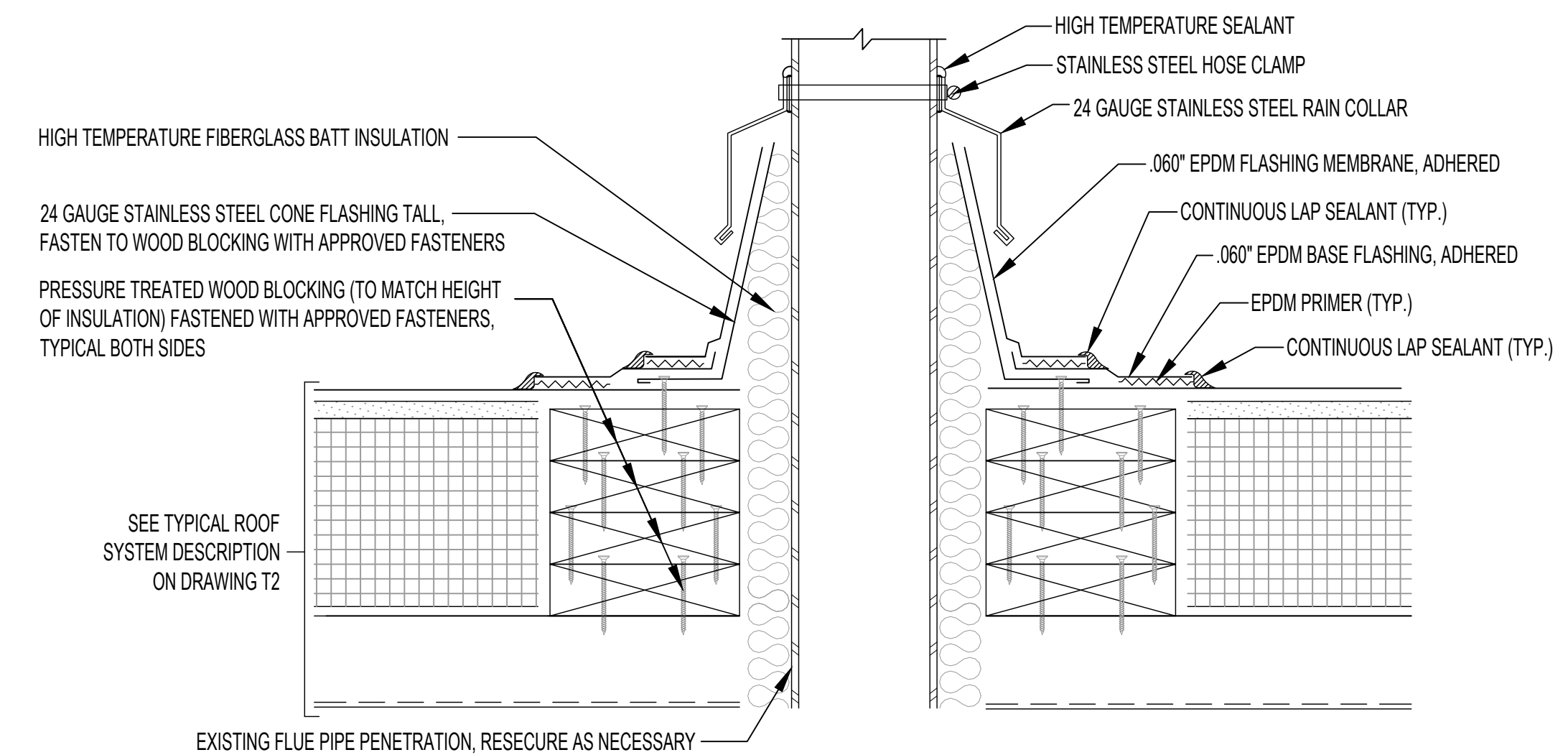
**2** PARAPET WALL FLASHING DETAIL (LOWER GYM)  
A4 SCALE: 1-1/2" = 1'-0"



**3** ROOF HATCH SAFETY RAILING DETAIL  
A4 SCALE: NTS



**4** SAFETY RAILING DETAIL  
A4 SCALE: N.T.S.



**5** FLUE PIPE FLASHING DETAIL  
A4 SCALE: 3"-1'-0"

NO.	DATE	BY	DESCRIPTION

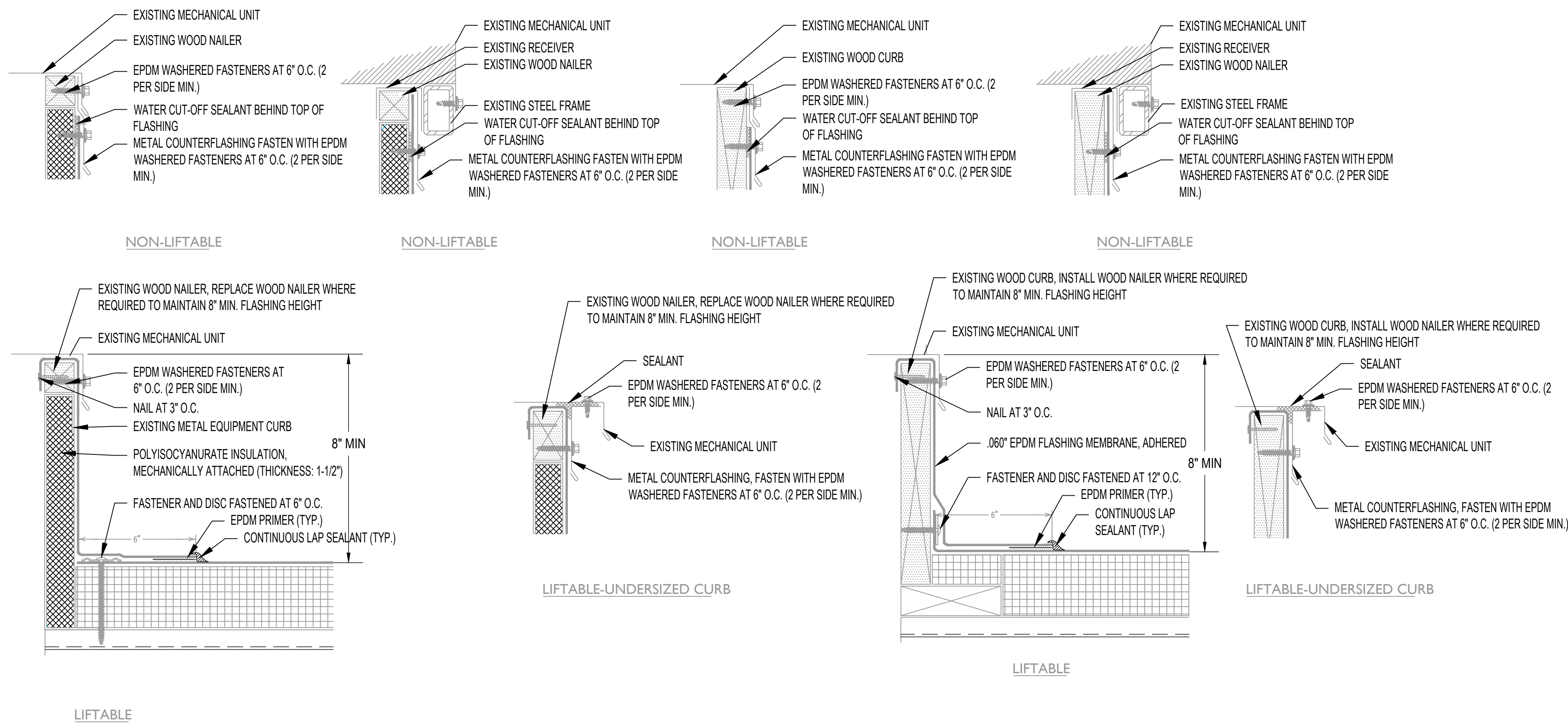
**RUSSO BARR ASSOCIATES**  
95 Birch Street, Suite 200, Woburn, MA 01891

**ROOF REPLACEMENT PROJECT**  
SHAWSHEEN ELEMENTARY SCHOOL  
298 SHAWSHEEN AVENUE  
WILMINGTON, MASSACHUSETTS  
DETAILS

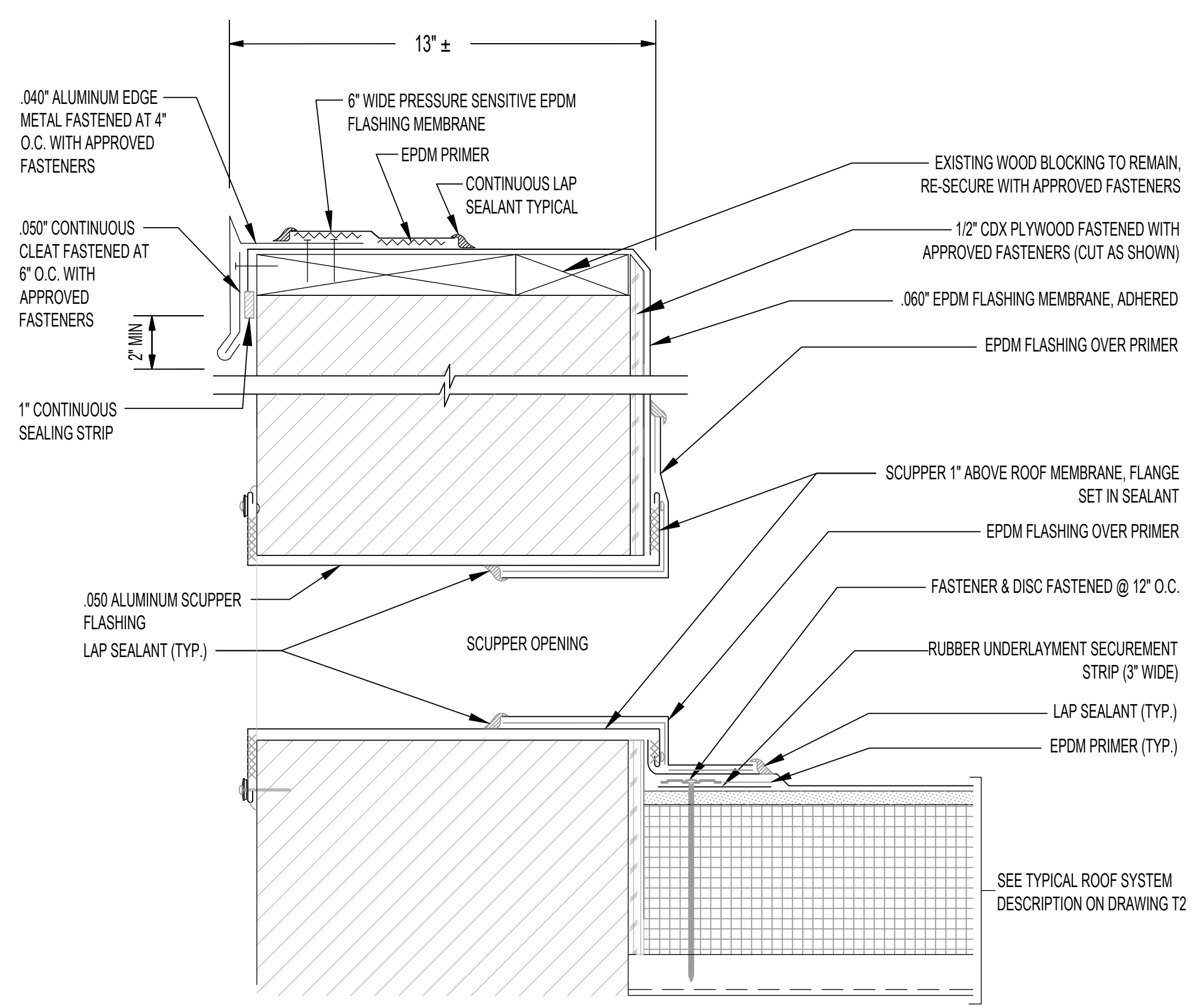
DATE	03.23.22
SCALE	AS NOTED
DRAWN BY / CHECKED BY	CRL / RJG
PROJECT NO	2021068
DRAWING NO	

**A4**

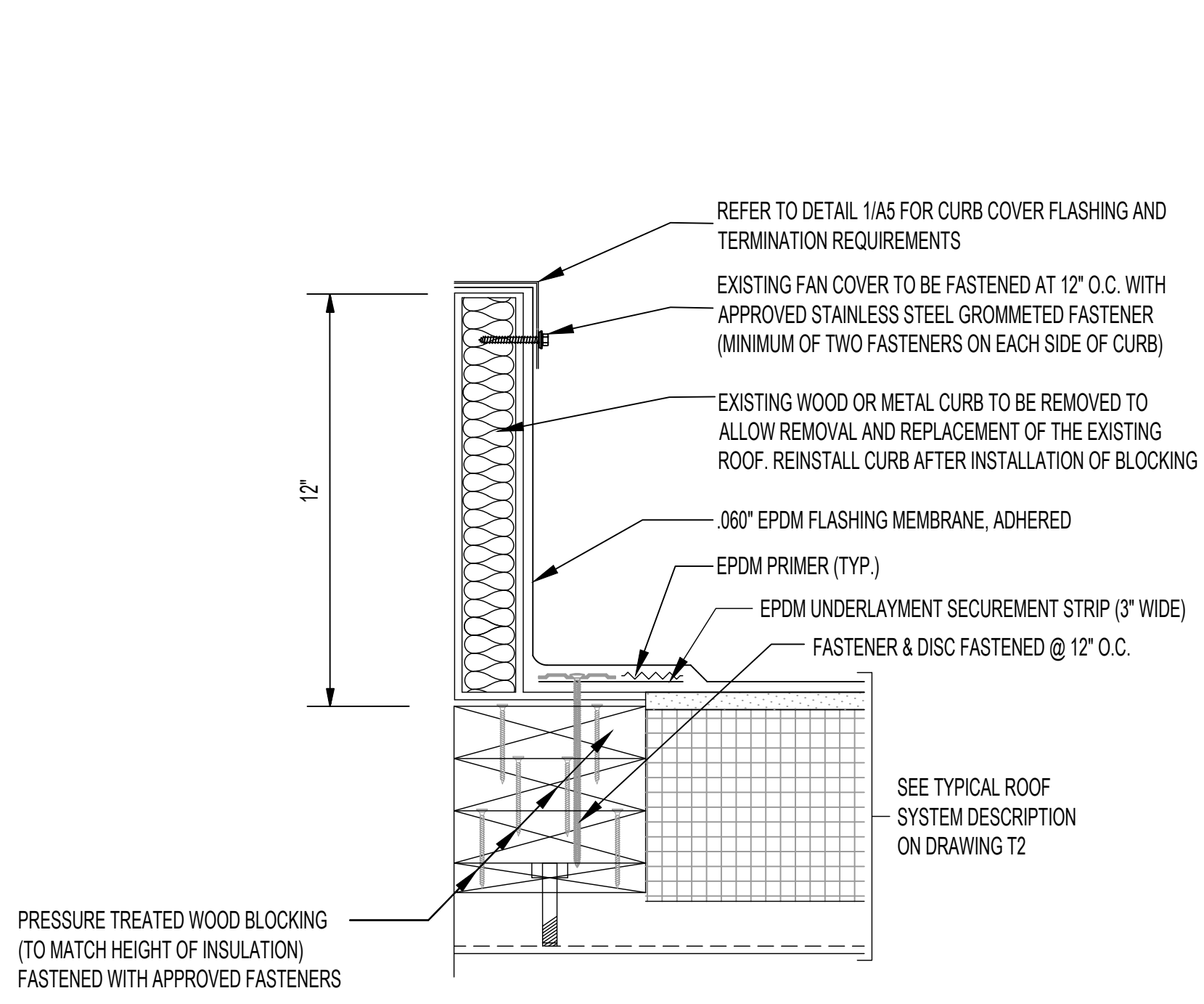




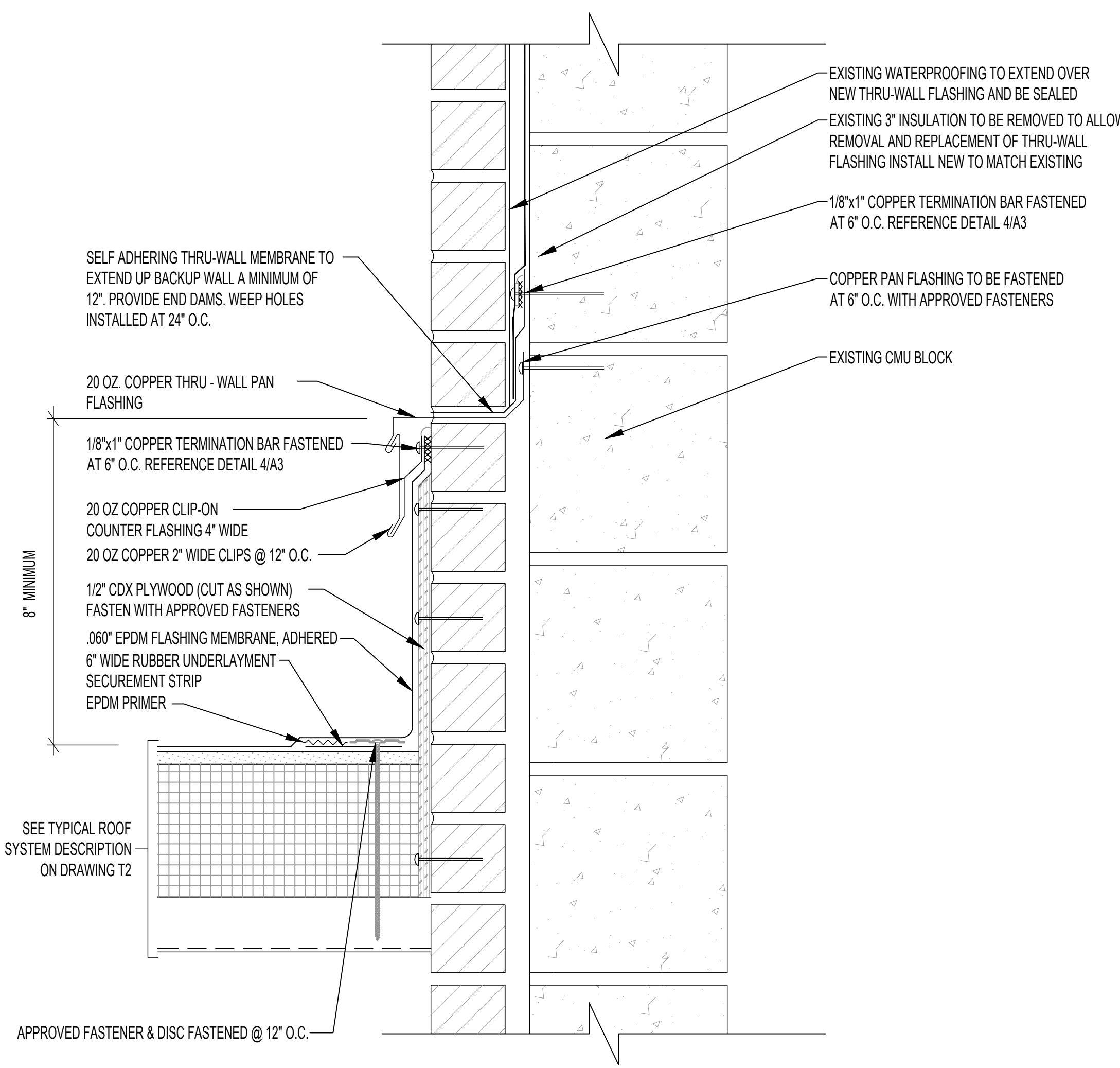
**1** TYPICAL METAL AND WOOD CURB FLASHING DETAILS  
**A5** SCALE: NTS



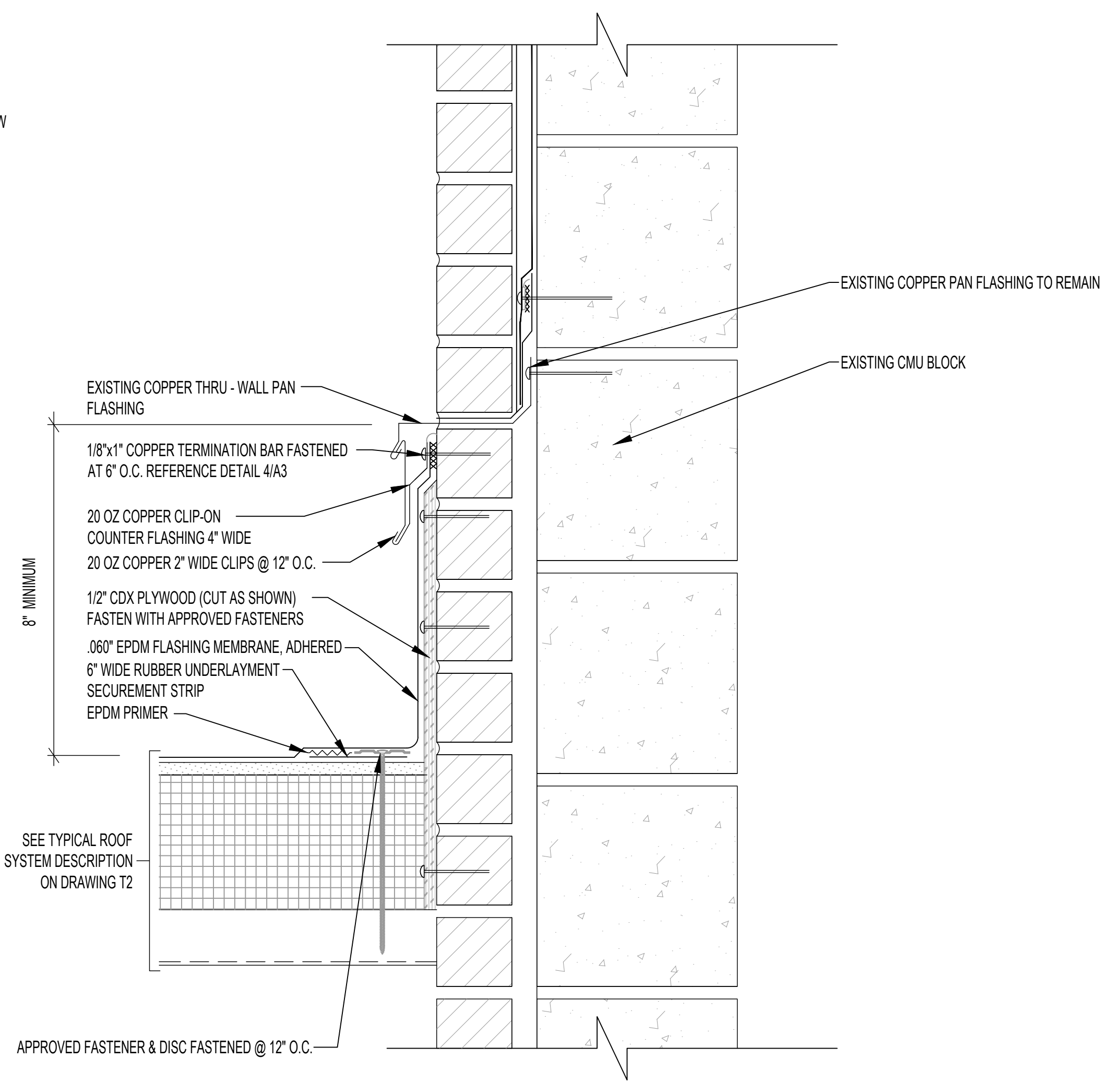
**2** OVERFLOW SCUPPER FLASHING  
**A5** SCALE: 3\"/>



**3** REMOVABLE CURB FLASHING DETAIL  
**A5** SCALE: 3\"/>

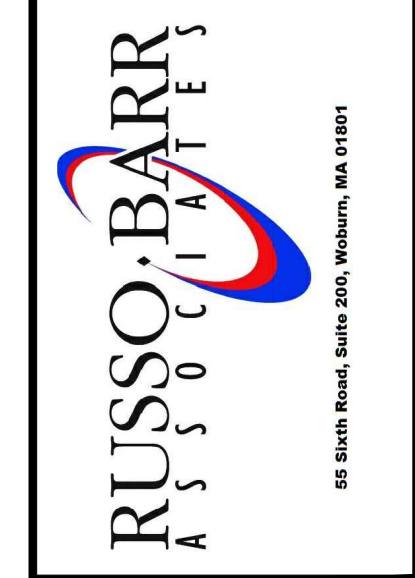


**4** THRU-WALL FLASHING DETAIL  
**A5** SCALE: 3\"/>



**5** THRU-WALL FLASHING DETAIL 2  
**A5** SCALE: 3\"/>

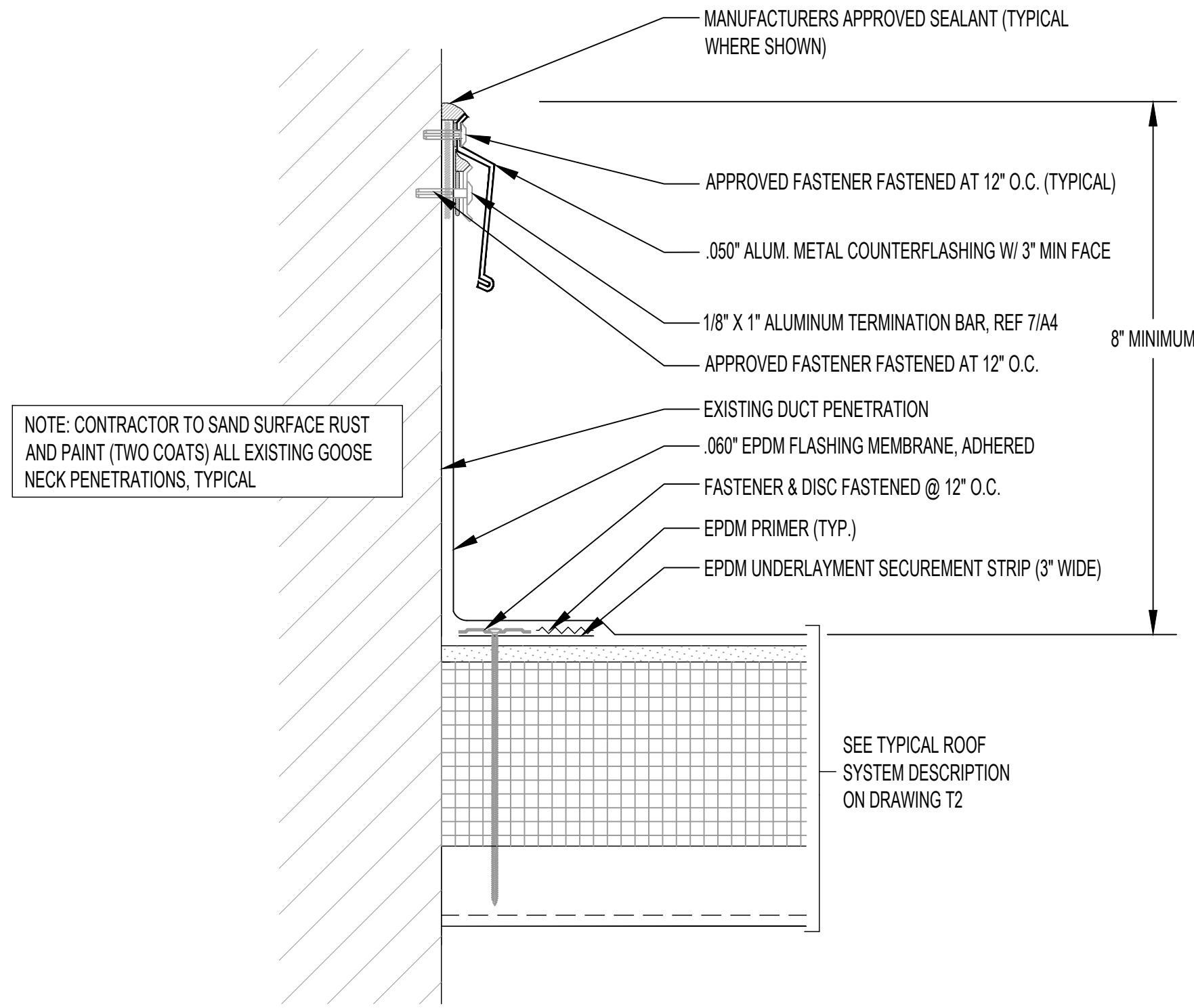
NO.	DATE	BY	DESCRIPTION



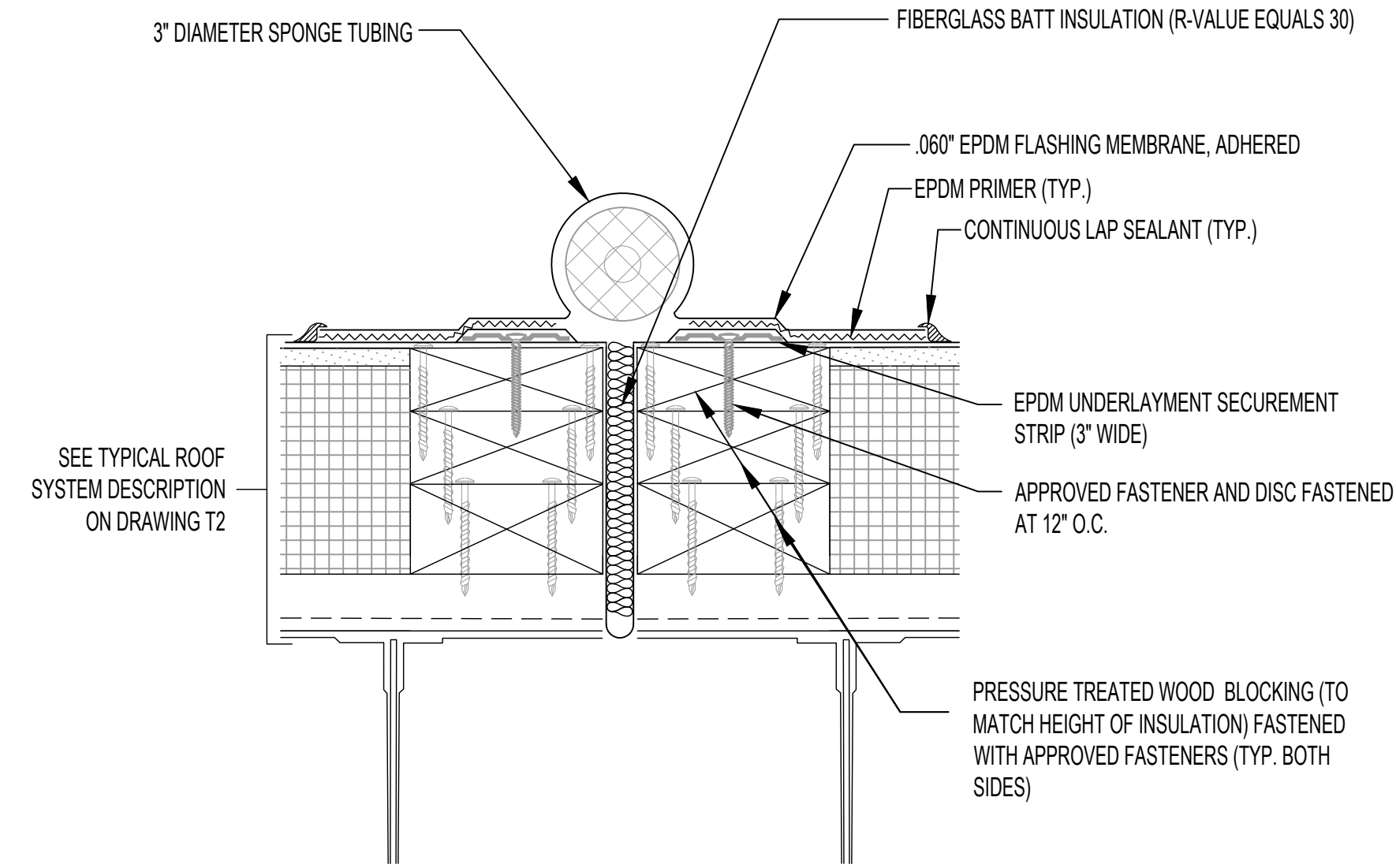
**ROOF REPLACEMENT PROJECT**  
**SHAWSHEEN ELEMENTARY SCHOOL**  
**298 SHAWSHEEN AVENUE**  
**WILMINGTON, MASSACHUSETTS**  
**DETAILS**

DATE	03.23.22
SCALE	AS NOTED
DRAWN BY / CHECKED BY	CRL / RJG
PROJECT NO	2021068

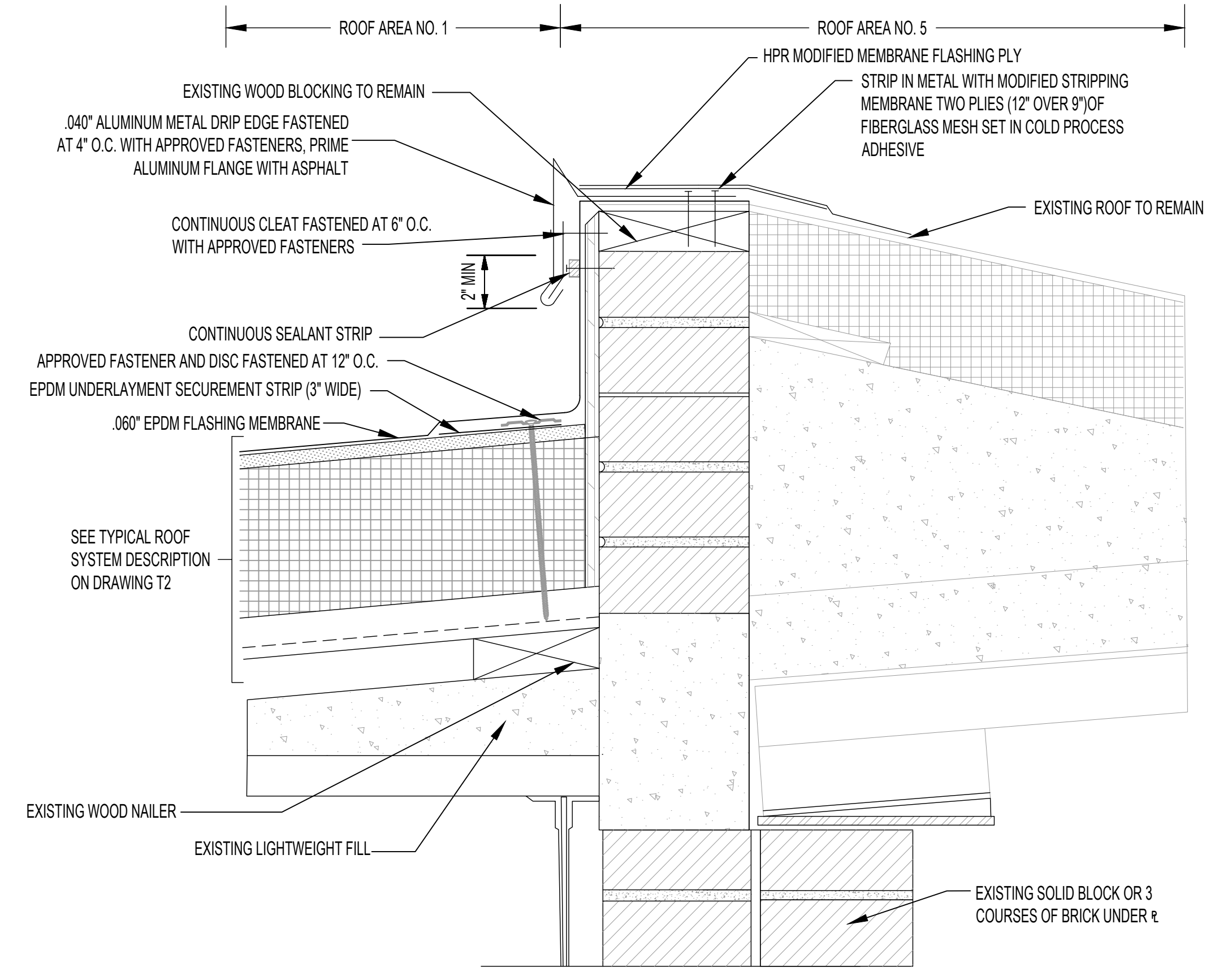
**A5**



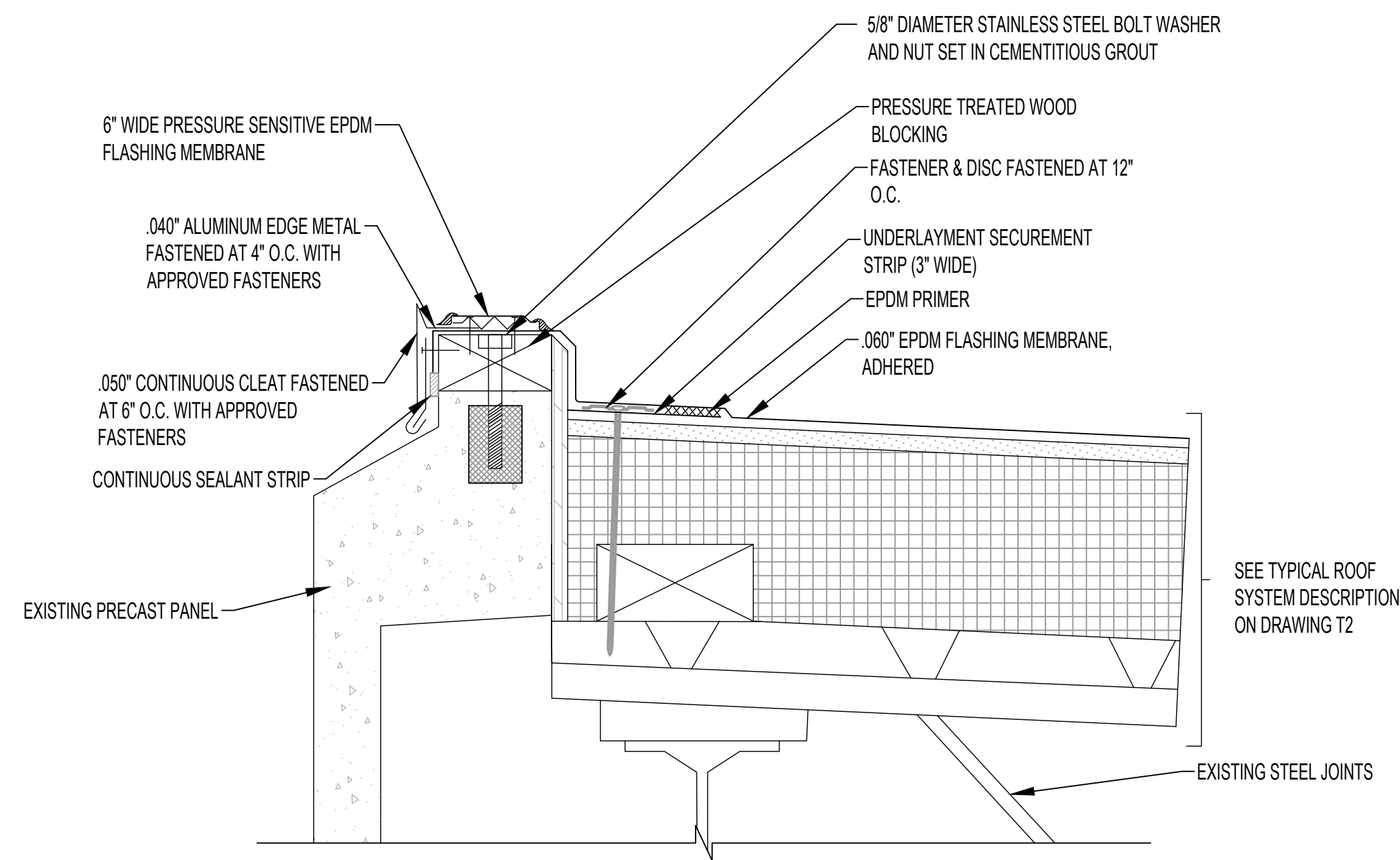
**1**  
A6 DUCT CURB FLASHING DETAIL  
SCALE: 3" = 1'-0"



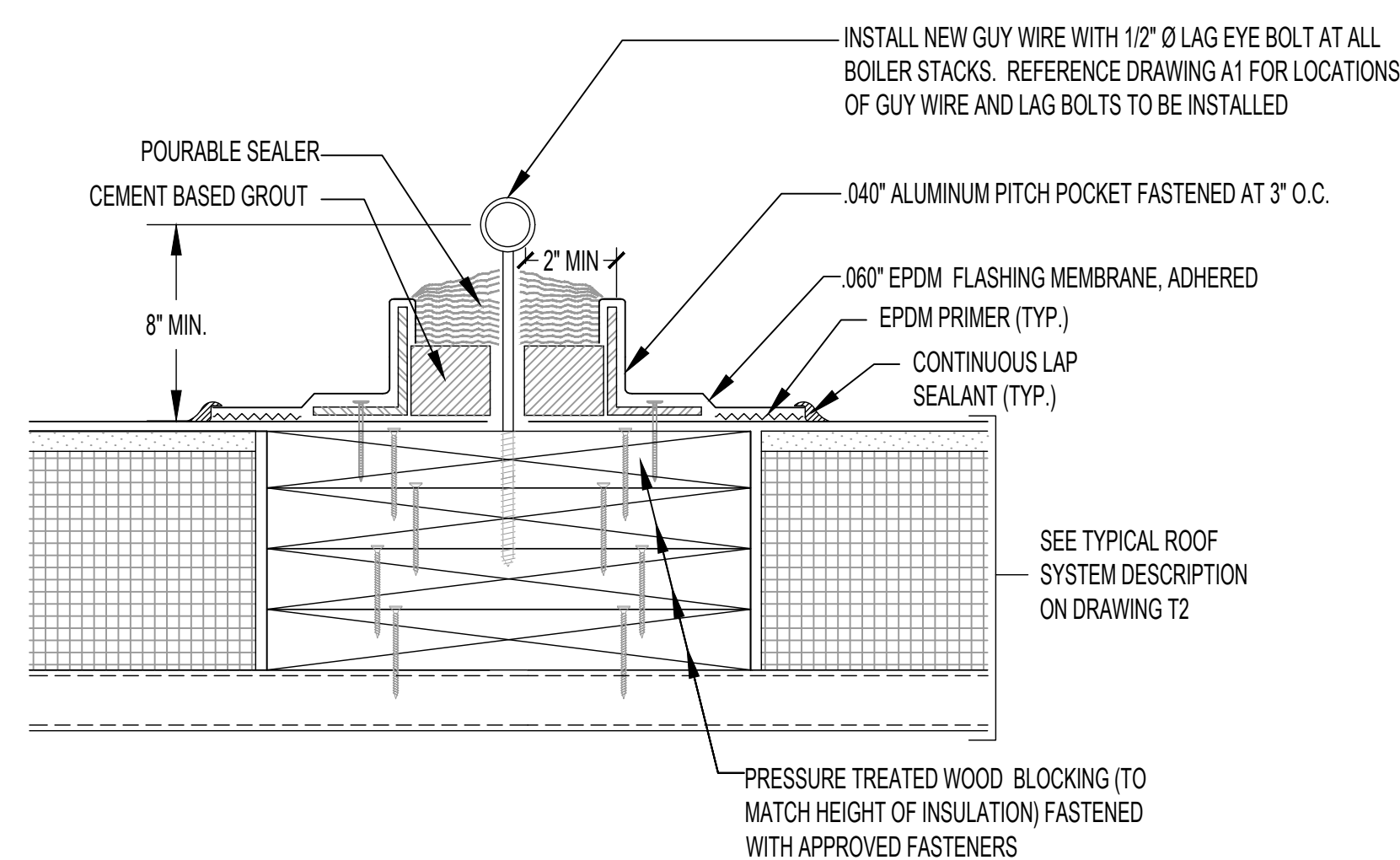
**2**  
A6 ROOF TO ROOF EXPANSION JOINT  
SCALE: 3" = 1'-0"



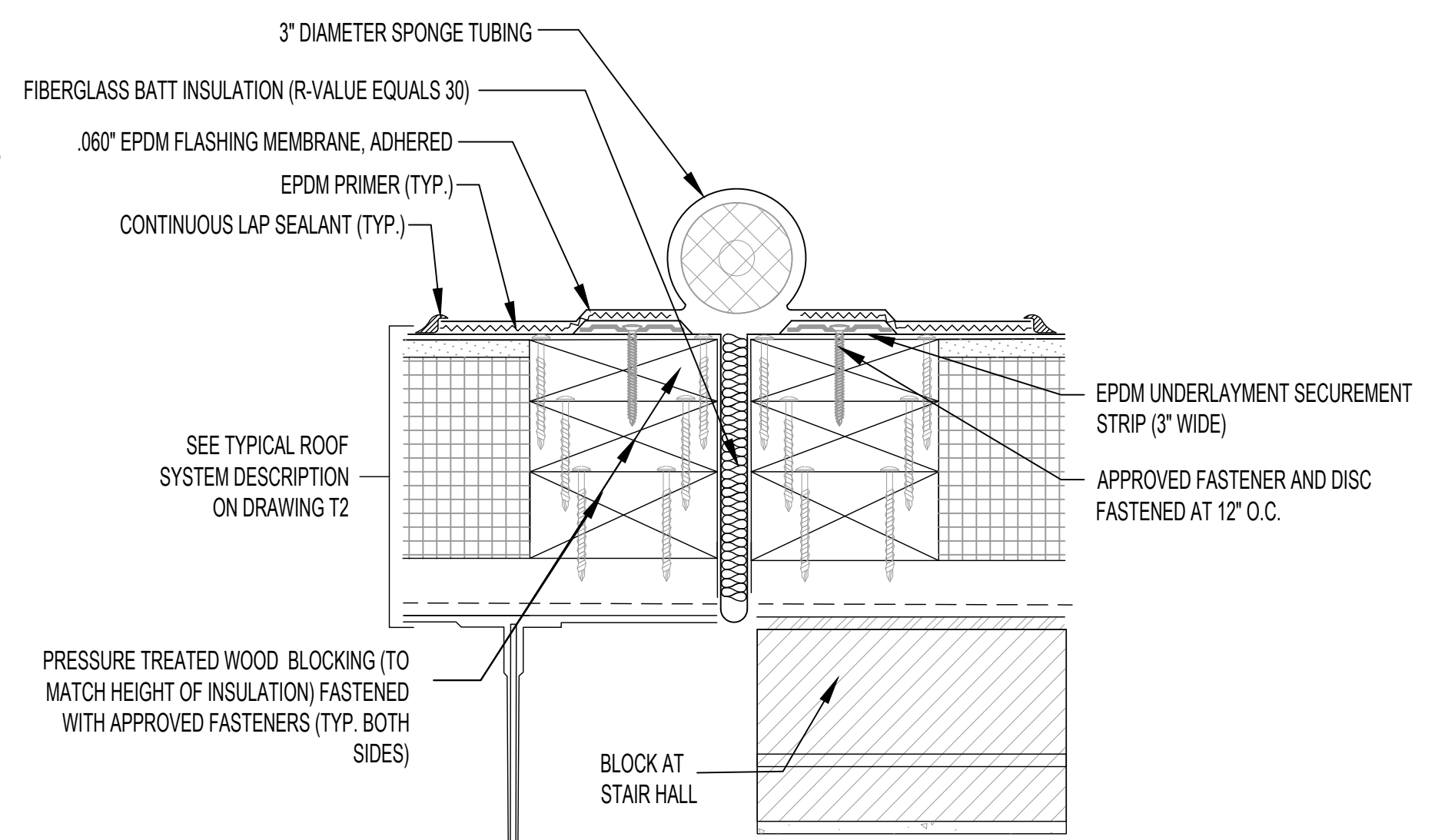
**3**  
A6 ROOF TO WALL FLASHING DETAIL  
SCALE: 3" = 1'-0"



**4**  
A6 LOW RISE WALL FLASHING DETAIL (MAIN ROOF EDGE)  
SCALE: 3" = 1'-0"



**5**  
A6 PITCH POCKET AT GUY WIRE ATTACHMENT  
SCALE: 3" = 1'-0"



**6**  
A6 ROOF TO ROOF EXPANSION JOINT  
SCALE: 3" = 1'-0"

NO.	DATE	BY	DESCRIPTION



**ROOF REPLACEMENT PROJECT**  
**SHAWSHEEN ELEMENTARY SCHOOL**  
 298 SHAWSHEEN AVENUE  
 WILMINGTON, MASSACHUSETTS  
 DETAILS

DATE	03.23.22
SCALE	AS NOTED
DRAWN BY / CHECKED BY	CRL / RJG
PROJECT NO	2021068
DRAWING NO	

**A6**