

Town of Wareham



Invitation for Bids (IFB)

REPLACEMENT OF TWO SINGLE-PLY ROOFS AND SLATE ROOF REPLACEMENT AND RESTORATION ON MEMORIAL TOWN HALL

Your participation is invited with regard to the above referenced bid. In order for your submission to be considered responsive this original document must be delivered prior to the time and at the place indicated herein. The Town of Wareham assumes no liability for bids mistakenly opened due to improperly labeled envelopes and will return same to the bidder without notice. (It is strongly suggested that bid documents sent via carriers other than first class mail should be placed in properly labeled and sealed envelopes prior to being placed in the carrier packaging in order to avoid premature opening.

TOWN OF WAREHAM

Legal Notice to Bidders

INVITATION TO BID

SEALED BIDS for the **Replacement of Two Single-Ply Roofs and Slate Roof Replacement and Restoration on Memorial Town Hall**, 54 Marion Road, Wareham, MA 02571 shall be received at the Town Administrator's office, 54 Marion Road, MA 02571 until 10:00 a.m. September 28, 2016, at which time and place will be publicly opened and read. Phone calls, telegrams, postmarks, etc. shall not be considered. Bids not submitted on original bid forms shall be deemed non-responsive. **Bid submissions must be made in a sealed envelope clearly marked, "Replacement of Two Single-Ply Roofs and Slate Roof Replacement and Restoration on Memorial Town Hall - September 28, 2016."** The Town of Wareham assumes no liability for bids mistakenly opened due to improperly labeled envelopes and will return same to bidder without notice.

Specifications may be obtained from the Town Administrator's Office, 54 Marion Road, Wareham, MA on or after 10:00 A.M. September 7, 2016 or on the Town's website at www.wareham.ma.us under Bid Notices. Wages are subject to minimum wage rates as per M.G.L. Chapter 149, Sections 26 to 27D, inclusive. Certification of OSHA training by the Bidder is required.

A 5% bid deposit is required with all bid submissions and the successful bidder will be required to submit a 100% bid bond and performance bond.

A mandatory on-site pre-construction meeting at the Memorial Town Hall, 54 Marion Road, Wareham MA will be conducted at 1:00 p.m. on September 14, 2016.

The Town of Wareham reserves the right to reject any and all bids, in whole or in part, or waive minor informalities and to make awards in a manner deemed in the best interest of the Town as provided by M.G.L. The Town of Wareham is an Equal Opportunity Employer. Bids from Woman/Minority Business Enterprises are strongly encouraged.

I. SUBMISSION REQUIREMENTS

- A. The bid must be submitted on the original bid form (one duplicate copy is requested).
- 1.) The bid may be withdrawn or amended without prejudice between the time of submission and the time of opening.
 - 2.) All bid amounts will be considered firm and may not be withdrawn for a period of no less than sixty (60) days from the date of opening, unless stated otherwise.
- B. **Bid submissions shall be made in a sealed envelope clearly marked “Replacement of Two Single-Ply Roofs and Slate Roof Replacement and Restoration on Memorial Town Hall - September 28, 2016.”** In the event that Memorial Town Hall is closed due to any reason, including but not limited to inclement weather, this bid will be opened at the same time and place on the next week day that the Wareham Town Hall is in operation. The Town of Wareham assumes no liability for bids mistakenly opened due to improperly labeled envelopes and will return same to bidder without notice.
- C. In an effort to promote greater use of recycled and environmentally preferable products and minimize waste, it is suggested that all bids submitted comply with the following guidelines:
- 1.) All copies should be printed double sided.
 - 2.) All submittals and copies should be printed on recycled paper with a minimum of 20% post-consumer content.
 - 3.) All proposals and copies should minimize or eliminate the use of non-recyclable, or re-usable materials, such as plastic report covers, plastic dividers, vinyl sleeves and GBC binding. Three ringed binders, glued materials, paper clips and staples are acceptable.
 - 4.) Vendors should submit materials in a format that allows for easy removal and recycling of paper materials.
 - 5.) Vendors are encouraged to use other products that contain reduced content in their bid documents. Such products may include, but are not limited to, folders, binders, paper clips, diskettes, envelopes, boxes, etc.
 - 6.) Unnecessary samples, attachments or documents not specifically requested should not be submitted. Bidders should avoid superfluous use of paper, such as separate title sheets or chapter dividers.
- D. Where the word "signed" appears, it refers to the hand written signature of the individual authorized to execute the contract. Bids "signed" by any way other than described here will be considered non-responsive.
- E. Certificates of insurance must be submitted by the apparent low bidder within ten (10) business days of the request from the Town (Also see Section VII, “Insurance”).
- F. A bid deposit or bid bond in the amount of 5% of the bid is required and must be submitted in the sealed bid envelope unless otherwise stated.
- G. The successful bidder shall provide a 100% bid bond and performance bond. The successful bidder shall submit said bond within ten (10) days of the request from the Town.
- H. Signed (and sealed when applicable) certification that the bidder has not colluded with any other party in the preparation and submission of his/her bid.

- I. Bidder's certification regarding payment of prevailing wages (attached).
- J. Signed (and sealed when applicable) certificate of indemnification to save harmless the Town of Wareham for all damages to life and property due to his/her negligence or that of his/her subcontractors, etc. during the term of this contract (use form attached).
- K. Signed (and sealed when applicable) certification that the bidder has paid all State taxes due (use form attached).
- L. Signed and sealed certification of vote (for use by Corporations). Bidders may submit their own certificate of corporate vote.
- M. Certification of OSHA training by bidder.
- N. Construction Safety Plan

II. CONTRACT DOCUMENT

The contract documents will consist of all bid forms as attached hereto. In addition, the following documents will be included:

- 1. All submissions required by Sect. I 'Submissions'
- 2. Any IFB addendum
- 3. Notification of Award
- 4. Contract
- 5. Any other documents by mutual agreement of the Town and successful bidder
- 6. All requirements of the General Laws applicable to this contract.

III. TERM OF CONTRACT

- A. TIME IS OF THE ESSENCE.
- B. It is anticipated that this bid will be awarded within 30 days after the bid opening.
- C. The Contractor agrees to commence work on the project within seven (7) calendar days after receipt of Notice to Proceed and further agrees to complete the project within ninety (90) calendar days after being awarded.
 - 1. All work will be completed during normal working hours of 7:30 am to 3:30 pm, Monday through Friday, excluding Town of Wareham recognized holidays.
- D. To assure adequate planning and execution of the Work, the Contractor shall submit a Construction Schedule within seven (7) calendar days after receipt of Notice to Proceed.
 - 1. The Construction Schedule shall be reviewed and approved at the Pre-Construction Meeting which will be scheduled to be held within 15 calendar

days after the Owner has issued the Notice to Proceed.

- i. The Construction Schedule as approved by the Engineer will be an integral part of the Contract and will establish interim completion dates for the various activities under the Contract.
- ii. Should any activity not be completed within 15 calendar days after the stated scheduled date, the Engineer may request the reason for the delay in schedule from the Contractor. The Contractor shall supply the requested information and the steps which he/she intends to take to get back on schedule.

2. The Contractor shall provide updates to the Construction Schedule during the weekly onsite project meetings.

D. One bid shall be awarded.

E. All bids for this project are subject to applicable public bidding laws of Massachusetts, including G.L. Chapter 149, §44A-H.

F. The successful bidder agrees to execute a contract with the Town of Wareham and provide insurance documents and any bonds required within ten (10) days after notification of award, unless stated otherwise. Failure or refusal to comply with this requirement may result in withdrawal of the bid award. In the event of bid award withdrawal, the Town reserves the right to issue a new Invitation to Bid or award to the second low responsive and responsible bidder.

G. It is the intention of this Public Agency not to award a contract for this work under this or any other bid if the bidder cannot furnish satisfactory evidence that he has the ability and experience to perform this class of work and that he has sufficient capital and equipment to enable him to perform this class of work and that he has sufficient capital and equipment to enable him to prosecute the work successfully and to complete it within the time named in the contract; and the Public Agency reserves the right to reject this or any other bid or to award the contract as is deemed to be in the best interest of the Public Agency.

IV. EVALUATION CRITERIA

The successful bid will be the bid providing the "best price" (see "Price Evaluation" below) chosen from all bids considered to be responsive and responsible. The Town retains the right to waive minor informalities.

A. A **RESPONSIVE** bid meets all of the following criteria:

1. Answers all questions as required by this bid document
2. Includes all forms and certifications required by Sect. I "Submission Requirements"

B. A **RESPONSIBLE** bidder meets all of the following criteria:

1. Has been in the business of professional under the current name for no less than five (5) years
2. Provides five references for similar single-ply roof projects within the past

- three years
- 3. Provides five references for similar slate roof projects within the past three years
- 4. Provides five references for similar copper roof projects within the past three years.
- 4. Demonstrates the ability to work within the term of the contract as described in Section III. Above.

V. PRICE EVALUATION

- A. Quoted prices are guaranteed to be fixed for the term of this contract
- B. Discounts based on time of payment shall not be considered
- C. No additional cost shall be added for delivery
- D. 'Best Price' will be based on the lowest total price offered by a responsive and responsible bidder.

VI. PRE-BID CONFERENCE

There will be a mandatory on-site pre-bid conference to be held at 1:00 p.m. on September 14, 2016 at 54 Marion Road, Wareham, Massachusetts. Any prospective proposer requesting a change in or interpretation of existing specifications or terms and conditions must deliver said request for change or interpretation in writing no later than 1:00 p.m. on September 21, 2016 to:

David Menard, Director of Municipal Maintenance
95 Charge Pond Road, Wareham, MA 02571
(508) 295-5300 fax (508)-295-6391
Or via email to: dmenard@wareham.ma.us

VII. INSURANCE

- A. Commercial General Liability Insurance - Contractor is to maintain Casualty Insurance as follows:

Commercial General Liability Insurance with an insurance company qualified to do business in the Commonwealth of Massachusetts and acceptable to the Town, providing a limit of liability of not less than \$2,000,000 per occurrence and general aggregate. Such insurance is to include the following extension of coverage.

- 1.) Contractual Liability - \$2,000,000 per occurrence
 - 2.) Premises Operation Liability - \$1,000,000 per occurrence
 - 3.) Independent Contractors Liability - \$1,000.00 per occurrence
 - 4.) Explosion, Collapse and Underground Property Damage - \$1,000,000 per occurrence
 - 5.) Personal Liability - \$1,000,000 per occurrence
 - 6.) Products Liability - \$1,000,000 per occurrence
- B. Automobile Liability Insurance with an Insurance Company qualified to do business

in the Commonwealth of Massachusetts and acceptable to the Town providing a limit of liability not less than those specified below. Such insurance is to include claims arising out of vehicles owned by contractor, hired by contractor, or owned by others acting on behalf of or under the direction of the contractor.

- 1.) Bodily Injury Liability of not less than \$500,000 per accident, bodily injury and property damage combined
- C. Workers' Compensation Insurance - The contractor shall furnish the Town with certificates of insurance showing that all his/her employees who shall be connected with this work are protected under Workers' Compensation Insurance Policies.
- 1.) Coverage A - Massachusetts
 - 2.) Coverage B - \$500,000 per insuring agreement
- D. Prior to the commencement of the work, contractor will cause to be delivered to the Town of Wareham Procurement Office Certificates of Insurance (COIs) evidencing the foregoing. The COIs are to provide that the Town of Wareham in care of its Procurement Officer shall be given at least 30 days advance notice of cancellation, intent not to renew, or material change in coverage.
- E. Bidder hereby agrees to save and hold the Town of Wareham, its agents, servants, and employees, Harmless from any and all claims arising out of the activities of contractor, its agents, servants, employees, and invitee or subcontractors.

VIII. AFFIRMATIVE ACTION

It is understood and agreed that it shall be a material breach of any contract resulting from this bid for the contractor to engage in any practice which shall violate any provision of Massachusetts General Laws, Chapter 151B, relative to discrimination in hiring, discharge, compensation, or terms, conditions or privileges of employment because of race, color, religion, sex, national origin, ancestry, age, sexual orientation or disability

IX. PREVAILING WAGES

- A. Bids for any contract requiring labor such as, but not limited to, construction, repair or installation **shall be made on the basis of the Minimum Wage Schedule, as determined by the Prevailing Wage Program of the Massachusetts Department of Labor Standards pursuant to the provisions of Chapter 149, Section 26 27D inclusive, of the General Laws, as amended.**
- B. In accordance with the requirements of G.L. c. 149, §27B, the Contractor shall submit, and shall require all of its subcontractors required to keep a record of hours and wages paid to laborers employed on the project to the awarding authority to submit, on a weekly basis, copies of such records. All such weekly submissions shall be accompanied by the following certification:

The undersigned contractor hereby certifies, under the pains and penalties of perjury, that the foregoing payroll records are true and accurate records of the wages paid to

laborers employed on the project for the period stated and said wages are in an amount no less than the prevailing wage rates established for the project by the Prevailing Wage Program of the Massachusetts Department of Labor Standards. The undersigned contractor 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 contractor's failure to pay laborers employed on the project the said applicable prevailing wage rates; (2) the failure of the foregoing payroll records to accurately state the said applicable prevailing wage rates; or (3) the failure of the foregoing payroll records to accurately represent the wages actually paid to laborers employed on the project.

DATE: _____

CONTRACTOR: _____

NAME: _____

TITLE: _____

X. SUBSTITUTION

- A. All specifications provided are considered to be minimum quality and/or quantity acceptable.
- B. In the event that a proprietary specification is used, the intent is to clearly and best describe a minimum acceptable standard of quality and in no way reduce the competitiveness of the bid. Where proprietary specifications are used, alternate items of "equal to or better than" standard may be substituted unless stated otherwise.
- C. When a substitution is made, the burden of proof shall be on the bidder to demonstrate that the substitute is in fact equal to or better than the standard used. The bidder shall submit such proof as part of the bid document. Bids not containing said documentation may be considered non-responsive at the sole discretion of the Town.

XI. ASSIGNMENT OF CONTRACT

The contractor shall not be permitted to either assign or underlet the contract, or assign either legally or equitable any monies hereunder, or its claim thereto without the previous written consent of the Town.

XII. SPECIFICATIONS:

Replacement of Two Single-Ply Roofs on Memorial Town Hall - See Appendix A

Slate Roof Restoration – See Appendix B

Slate Roof Replacement – See Appendix C

Copper Roof Installation – See Appendix D

Copper Roof, PVC Roof and Slate Roof Details – See Appendix E

CERTIFICATE OF NON-COLLUSION

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 section the word 'person' shall mean any natural person, joint venture, partnership, corporation, or other business or legal entity.

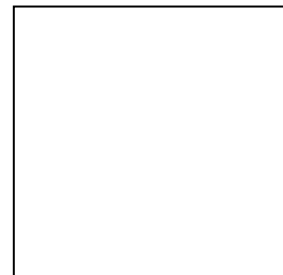
Authorized Signature

Date

Social Security Number or Federal
Identification Number

Legal Name of Business Entity (Please Print or Type)

Address: _____



Corporate Seal

All bids shall be accompanied by the Bidder's certification regarding payment of prevailing wage rates in the form set forth below.

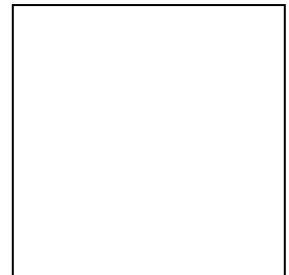
BIDDER'S CERTIFICATION REGARDING PAYMENT OF PREVAILING WAGES

The undersigned bidder hereby certifies, under the 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 our 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.

Date

Signature of Authorized Representative

Name and Title (Print or Type)



Corporate Seal

**STANDARD HOLD HARMLESS AND INDEMNITY CLAUSE
FOR USE IN
LEASES, USE AGREEMENTS, PROCUREMENT CONTRACTS, ETC.**

_____, its officers and members all,
Legal Name of Bidder's Business Entity

through the signing of this document by an authorized party or agent, indemnify, hold harmless and defend the Town of Wareham and its agents and employees from all suits and actions, including attorneys' fees and all costs of litigations and judgment of every name and description brought against the Town as a result of loss, damage or injury to person or property by reason of any act by _____, its agents, servants or employees.

Legal Name of bidder's Business Entity

Authorized Signature

Name and Title (Print or Type)

Date



Corporate Seal

CERTIFICATION TO PAYMENT OF TAXES BY CONTRACTOR

Pursuant to G.L. c. 62C, §49A, I hereby certify that _____
Legal Name of Bidder's Business Entity

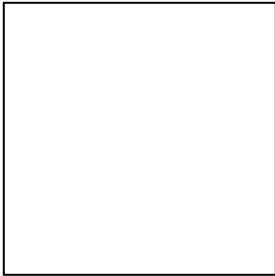
has complied with all laws of the Commonwealth of Massachusetts relating to the payment of taxes.

Signed under the penalties of perjury.

Authorized Signature

Name and Title (Print or Type)

Date



Corporate Seal

CERTIFICATE OF VOTE

(Corporations Only)

At a duly authorized meeting of the Board of Directors of the _____
(Name of Corporation)

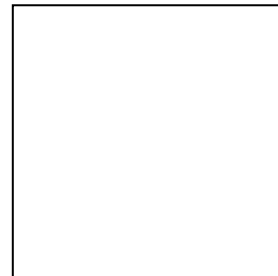
held on _____ it was voted, that _____
(Date) (Name)

_____ of this company, be and hereby is
(Officer)

authorized to execute contracts and bonds in the name and on behalf of said company, and affix its corporate seal hereto; and such execution of any contract or obligation in this company's name on its behalf by such officer under seal of the company, shall be valid and binding upon this company. I hereby certify that I am the clerk of the above named corporation and that _____ is the duly elected officer as above of said company, and that the above vote has not been amended or rescinded and remains in full force and effect as the date of this contract.

Clerk

Date



Corporate Seal

XIII. CONTRACT PRICES

The bidder above-mentioned declares and certifies:

1. That said bidder has carefully examined the instructions to bidders, schedules, and specifications prepared under the direction of the Town of Wareham Procurement Officer and will, if successful in the bid, furnish and deliver at the prices bid and within the time stated, all the materials, services or labor for which this bid is made.
2. No plead of mistake in an accepted bid shall be available to the undersigned bidder.
3. All bidders are required to answer the following survey questions. Bids not answering the following questions may be deemed non-responsive.

	Yes	No
a. Is the bidder a Minority Business Enterprise (MBE)?	[]	[]
b. Is the bidder a Women Business Enterprise (WBE)?	[]	[]
c. Does the bidder possess a business certificate in the Town of Wareham?	[]	[]
d. Has the bidder provided services or goods to the Town of Wareham at any time during the past 24 months?	[]	[]
e. Has the bidder ever forfeited a bid or performance bond relating to a bid with the Town of Wareham?	[]	[]
f. Is this bid for contracted services?	[]	[]
1. If yes, will any portion be sub-contracted?	[]	[]
2. Approximately how many people in total will work on this contract?		_____

1. Price for **Replacement of Two Single-Ply Roofs on Memorial Town Hall** specified in the IFB:

\$ _____

(Written amount in Words)

2. Price for **Restoration of Slate Roof on Memorial Town Hall** specified in the IFB:

\$ _____

(Written amount in Words)

3. Total Price for **Replacement South Side Slate Roof, including all work associated with the installation of Cooper Roofing and PVC Roofing at Slope Transition, on Memorial Town Hall** specified in the IFB:

\$ _____

(Written amount in Words)

4. Total Price for **Replacement of Two Single-Ply Roofs and Slate Roof Replacement and Restoration on Memorial Town Hall** specified in the IFB (sum of 1, 2 and 3):

\$ _____

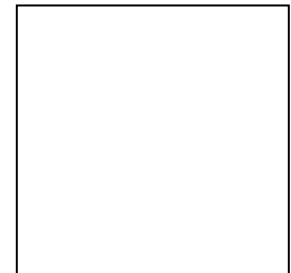
(Written amount in Words)

Authorized Signature

Name and Title (Print or Type)

Telephone Number

Fax Number



Corporate Seal

**Wareham Town Hall
East and West Single-Ply Roof Replacement
Slate Roof Replacement and Restoration**

Attachment 1

Prevailing Wage Rates



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

Prevailing Wage Rates

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

RONALD L. WALKER, II
Secretary

WILLIAM D MCKINNEY
Director

CHARLES D. BAKER
Governor

KARYN E. POLITO
Lt. Governor

Awarding Authority: Town of Wareham
Contract Number: **City/Town:** WAREHAM
Description of Work: Replacement of two single-ply PVC roofs and restoration and partial replacement of Slate and Standing Seam Copper Roofing on Memorial Town Hall.
Job Location: 54 Marion Road, Wareham, MA 02571

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	08/01/2016	\$32.15	\$10.91	\$10.08	\$0.00	\$53.14
	12/01/2016	\$32.15	\$10.91	\$10.89	\$0.00	\$53.95
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	08/01/2016	\$32.22	\$10.91	\$10.08	\$0.00	\$53.21
	12/01/2016	\$32.22	\$10.91	\$10.89	\$0.00	\$54.02
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	08/01/2016	\$32.34	\$10.91	\$10.08	\$0.00	\$53.33
	12/01/2016	\$32.34	\$10.91	\$10.89	\$0.00	\$54.14
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$88.29	\$9.80	\$19.23	\$0.00	\$117.32
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2016	\$32.40	\$7.45	\$12.65	\$0.00	\$52.50
	12/01/2016	\$33.15	\$7.45	\$12.65	\$0.00	\$53.25
For apprentice rates see "Apprentice- LABORER"						
ASBESTOS WORKER (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (SOUTHERN MASS)</i>	12/01/2015	\$34.38	\$10.40	\$5.95	\$0.00	\$50.73
ASPHALT RAKER <i>LABORERS - ZONE 2</i>	06/01/2016	\$31.90	\$7.45	\$12.65	\$0.00	\$52.00
	12/01/2016	\$32.65	\$7.45	\$12.65	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$44.23	\$10.00	\$15.15	\$0.00	\$69.38
	12/01/2016	\$45.48	\$10.00	\$15.15	\$0.00	\$70.63
	06/01/2017	\$46.48	\$10.00	\$15.15	\$0.00	\$71.63
	12/01/2017	\$47.48	\$10.00	\$15.15	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$44.23	\$10.00	\$15.15	\$0.00	\$69.38
	12/01/2016	\$45.48	\$10.00	\$15.15	\$0.00	\$70.63
	06/01/2017	\$46.48	\$10.00	\$15.15	\$0.00	\$71.63
	12/01/2017	\$47.48	\$10.00	\$15.15	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i>	06/01/2016	\$31.90	\$7.45	\$12.65	\$0.00	\$52.00
	12/01/2016	\$32.65	\$7.45	\$12.65	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 2</i>	06/01/2016	\$32.40	\$7.45	\$12.65	\$0.00	\$52.50
	12/01/2016	\$33.15	\$7.45	\$12.65	\$0.00	\$53.25
For apprentice rates see "Apprentice- LABORER"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2016	\$41.62	\$6.97	\$16.21	\$0.00	\$64.80
	01/01/2017	\$42.92	\$6.97	\$16.21	\$0.00	\$66.10

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2016

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

Effective Date - 01/01/2017

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

Notes:

Apprentice to Journeyworker Ratio:1:5

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	08/01/2016	\$50.76	\$10.18	\$19.22	\$0.00	\$80.16
BRICKLAYERS LOCAL 3 (NEW BEDFORD)	02/01/2017	\$51.33	\$10.18	\$19.22	\$0.00	\$80.73

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 New Bedford

Effective Date - 08/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.38	\$10.18	\$19.22	\$0.00	\$54.78
2	60	\$30.46	\$10.18	\$19.22	\$0.00	\$59.86
3	70	\$35.53	\$10.18	\$19.22	\$0.00	\$64.93
4	80	\$40.61	\$10.18	\$19.22	\$0.00	\$70.01
5	90	\$45.68	\$10.18	\$19.22	\$0.00	\$75.08

Effective Date - 02/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.67	\$10.18	\$19.22	\$0.00	\$55.07
2	60	\$30.80	\$10.18	\$19.22	\$0.00	\$60.20
3	70	\$35.93	\$10.18	\$19.22	\$0.00	\$65.33
4	80	\$41.06	\$10.18	\$19.22	\$0.00	\$70.46
5	90	\$46.20	\$10.18	\$19.22	\$0.00	\$75.60

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2016	\$36.95	\$7.45	\$14.00	\$0.00	\$58.40
	12/01/2016	\$37.95	\$7.45	\$14.00	\$0.00	\$59.40

For apprentice rates see "Apprentice- LABORER"

CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2016	\$35.80	\$7.45	\$14.00	\$0.00	\$57.25
	12/01/2016	\$36.80	\$7.45	\$14.00	\$0.00	\$58.25

For apprentice rates see "Apprentice- LABORER"

CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2016	\$35.80	\$7.45	\$14.00	\$0.00	\$57.25
	12/01/2016	\$36.80	\$7.45	\$14.00	\$0.00	\$58.25

For apprentice rates see "Apprentice- LABORER"

CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2016	\$31.90	\$7.45	\$12.65	\$0.00	\$52.00
	12/01/2016	\$32.65	\$7.45	\$12.65	\$0.00	\$52.75

For apprentice rates see "Apprentice- LABORER"

CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	03/01/2016	\$37.10	\$9.80	\$16.82	\$0.00	\$63.72
	09/01/2016	\$38.08	\$9.80	\$16.82	\$0.00	\$64.70
	03/01/2017	\$39.05	\$9.80	\$16.82	\$0.00	\$65.67
	09/01/2017	\$40.06	\$9.80	\$16.82	\$0.00	\$66.68
	03/01/2018	\$41.06	\$9.80	\$16.82	\$0.00	\$67.68
	09/01/2018	\$42.10	\$9.80	\$16.82	\$0.00	\$68.72
	03/01/2019	\$43.13	\$9.80	\$16.82	\$0.00	\$69.75

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER - Zone 2 Eastern MA

Effective Date - 03/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.55	\$9.80	\$1.63	\$0.00	\$29.98
2	60	\$22.26	\$9.80	\$1.63	\$0.00	\$33.69
3	70	\$25.97	\$9.80	\$11.93	\$0.00	\$47.70
4	75	\$27.83	\$9.80	\$11.93	\$0.00	\$49.56
5	80	\$29.68	\$9.80	\$13.56	\$0.00	\$53.04
6	80	\$29.68	\$9.80	\$13.56	\$0.00	\$53.04
7	90	\$33.39	\$9.80	\$15.19	\$0.00	\$58.38
8	90	\$33.39	\$9.80	\$15.19	\$0.00	\$58.38

Effective Date - 09/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.04	\$9.80	\$1.63	\$0.00	\$30.47
2	60	\$22.85	\$9.80	\$1.63	\$0.00	\$34.28
3	70	\$26.66	\$9.80	\$11.93	\$0.00	\$48.39
4	75	\$28.56	\$9.80	\$11.93	\$0.00	\$50.29
5	80	\$30.46	\$9.80	\$13.56	\$0.00	\$53.82
6	80	\$30.46	\$9.80	\$13.56	\$0.00	\$53.82
7	90	\$34.27	\$9.80	\$15.19	\$0.00	\$59.26
8	90	\$34.27	\$9.80	\$15.19	\$0.00	\$59.26

Notes:

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING BRICKLAYERS LOCAL 3 (NEW BEDFORD)	01/01/2016	\$46.44	\$10.90	\$18.71	\$1.30	\$77.35
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Apprentice - CEMENT MASONRY/PLASTERING - Eastern Mass (New Bedford)

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.22	\$10.90	\$12.21	\$0.00	\$46.33
2	60	\$27.86	\$10.90	\$13.71	\$1.30	\$53.77
3	65	\$30.19	\$10.90	\$14.71	\$1.30	\$57.10
4	70	\$32.51	\$10.90	\$15.71	\$1.30	\$60.42
5	75	\$34.83	\$10.90	\$16.71	\$1.30	\$63.74
6	80	\$37.15	\$10.90	\$17.71	\$1.30	\$67.06
7	90	\$41.80	\$10.90	\$18.71	\$1.30	\$72.71

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

Apprentice to Journeyworker Ratio:1:3

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CHAIN SAW OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2016	\$31.90	\$7.45	\$12.65	\$0.00	\$52.00
	12/01/2016	\$32.65	\$7.45	\$12.65	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$45.23	\$10.00	\$15.15	\$0.00	\$70.38
	12/01/2016	\$46.48	\$10.00	\$15.15	\$0.00	\$71.63
	06/01/2017	\$47.48	\$10.00	\$15.15	\$0.00	\$72.63
	12/01/2017	\$48.48	\$10.00	\$15.15	\$0.00	\$73.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$30.40	\$10.00	\$15.15	\$0.00	\$55.55
	12/01/2016	\$31.27	\$10.00	\$15.15	\$0.00	\$56.42
	06/01/2017	\$31.96	\$10.00	\$15.15	\$0.00	\$57.11
	12/01/2017	\$32.65	\$10.00	\$15.15	\$0.00	\$57.80
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) <i>PAINTERS LOCAL 35 - ZONE 2</i>	07/01/2016	\$50.46	\$7.85	\$16.10	\$0.00	\$74.41
	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 07/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.23	\$7.85	\$0.00	\$0.00	\$33.08
2	55	\$27.75	\$7.85	\$3.66	\$0.00	\$39.26
3	60	\$30.28	\$7.85	\$3.99	\$0.00	\$42.12
4	65	\$32.80	\$7.85	\$4.32	\$0.00	\$44.97
5	70	\$35.32	\$7.85	\$14.11	\$0.00	\$57.28
6	75	\$37.85	\$7.85	\$14.44	\$0.00	\$60.14
7	80	\$40.37	\$7.85	\$14.77	\$0.00	\$62.99
8	90	\$45.41	\$7.85	\$15.44	\$0.00	\$68.70

Effective Date - 01/01/2017

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN <i>LABORERS - ZONE 2</i>	12/01/2015	\$35.50	\$7.45	\$13.55	\$0.00	\$56.50
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: BACKHOE/LOADER/HAMMER OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2015	\$36.50	\$7.45	\$13.55	\$0.00	\$57.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS <i>LABORERS - ZONE 2</i>	12/01/2015	\$36.25	\$7.45	\$13.55	\$0.00	\$57.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 2</i>	12/01/2015	\$36.50	\$7.45	\$13.55	\$0.00	\$57.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2015	\$36.25	\$7.45	\$13.55	\$0.00	\$57.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 2</i>	12/01/2015	\$35.50	\$7.45	\$13.55	\$0.00	\$56.50
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$58.86	\$9.80	\$19.23	\$0.00	\$87.89
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$42.04	\$9.80	\$19.23	\$0.00	\$71.07
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$63.06	\$9.80	\$19.23	\$0.00	\$92.09
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$88.23	\$9.80	\$19.23	\$0.00	\$117.26
For apprentice rates see "Apprentice- PILE DRIVER"						
ELECTRICIAN <i>ELECTRICIANS LOCAL 223</i>	09/01/2015	\$38.31	\$8.40	\$11.28	\$0.00	\$57.99
	09/01/2016	\$39.21	\$8.90	\$11.51	\$0.00	\$59.62

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ELECTRICIAN - Local 223

Effective Date - 09/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$15.32	\$0.00	\$0.46	\$0.00	\$15.78
2	42	\$16.09	\$0.00	\$0.48	\$0.00	\$16.57
3	45	\$17.24	\$8.40	\$0.52	\$0.00	\$26.16
4	48	\$18.39	\$8.40	\$3.36	\$0.00	\$30.15
5	50	\$19.16	\$8.40	\$3.47	\$0.00	\$31.03
6	55	\$21.07	\$8.40	\$3.75	\$0.00	\$33.22
7	60	\$22.99	\$8.40	\$4.03	\$0.00	\$35.42
8	65	\$24.90	\$8.40	\$4.31	\$0.00	\$37.61
9	70	\$26.82	\$8.40	\$5.28	\$0.00	\$40.50
10	75	\$28.73	\$8.40	\$4.86	\$0.00	\$41.99

Effective Date - 09/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$15.68	\$0.00	\$0.47	\$0.00	\$16.15
2	42	\$16.47	\$0.00	\$0.49	\$0.00	\$16.96
3	45	\$17.64	\$8.90	\$0.53	\$0.00	\$27.07
4	48	\$18.82	\$8.90	\$3.42	\$0.00	\$31.14
5	50	\$19.61	\$8.90	\$3.55	\$0.00	\$32.06
6	55	\$21.57	\$8.90	\$3.83	\$0.00	\$34.30
7	60	\$23.53	\$8.90	\$4.12	\$0.00	\$36.55
8	65	\$25.49	\$8.90	\$4.39	\$0.00	\$38.78
9	70	\$27.45	\$8.90	\$4.68	\$0.00	\$41.03
10	75	\$29.41	\$8.90	\$4.96	\$0.00	\$43.27

Notes:
Steps are 750 hours

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR	01/01/2016	\$54.53	\$14.43	\$14.96	\$0.00	\$83.92
ELEVATOR CONSTRUCTORS LOCAL 4	01/01/2017	\$55.86	\$15.28	\$15.71	\$0.00	\$86.85

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ELEVATOR CONSTRUCTOR - Local 4

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.27	\$14.43	\$0.00	\$0.00	\$41.70
2	55	\$29.99	\$14.43	\$14.96	\$0.00	\$59.38
3	65	\$35.44	\$14.43	\$14.96	\$0.00	\$64.83
4	70	\$38.17	\$14.43	\$14.96	\$0.00	\$67.56
5	80	\$43.62	\$14.43	\$14.96	\$0.00	\$73.01

Effective Date - 01/01/2017

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

Notes:

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

Apprentice to Journeyworker Ratio:1:1

ELEVATOR CONSTRUCTOR HELPER <i>ELEVATOR CONSTRUCTORS LOCAL 4</i>	01/01/2016	\$38.17	\$14.43	\$14.96	\$0.00	\$67.56
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	01/01/2017	\$39.10	\$15.28	\$15.71	\$0.00	\$70.09
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For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

FENCE & GUARD RAIL ERECTOR <i>LABORERS - ZONE 2</i>	06/01/2016	\$31.90	\$7.45	\$12.65	\$0.00	\$52.00
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	12/01/2016	\$32.65	\$7.45	\$12.65	\$0.00	\$52.75
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For apprentice rates see "Apprentice- LABORER"

FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2016	\$41.03	\$10.00	\$14.90	\$0.00	\$65.93
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	11/01/2016	\$41.62	\$10.00	\$14.90	\$0.00	\$66.52
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	05/01/2017	\$42.50	\$10.00	\$14.90	\$0.00	\$67.40
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	11/01/2017	\$43.23	\$10.00	\$14.90	\$0.00	\$68.13
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	05/01/2018	\$43.94	\$10.00	\$14.90	\$0.00	\$68.84
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2016	\$42.47	\$10.00	\$14.90	\$0.00	\$67.37
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	11/01/2016	\$43.07	\$10.00	\$14.90	\$0.00	\$67.97
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	05/01/2017	\$43.96	\$10.00	\$14.90	\$0.00	\$68.86
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	11/01/2017	\$44.69	\$10.00	\$14.90	\$0.00	\$69.59
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	05/01/2018	\$45.41	\$10.00	\$14.90	\$0.00	\$70.31
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	05/01/2016	\$21.88	\$10.00	\$14.90	\$0.00	\$46.78
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	11/01/2016	\$22.23	\$10.00	\$14.90	\$0.00	\$47.13
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	05/01/2017	\$22.76	\$10.00	\$14.90	\$0.00	\$47.66
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	11/01/2017	\$23.18	\$10.00	\$14.90	\$0.00	\$48.08
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	05/01/2018	\$23.61	\$10.00	\$14.90	\$0.00	\$48.51
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 223</i>	09/01/2015	\$38.31	\$8.40	\$11.28	\$0.00	\$57.99
	09/01/2016	\$39.21	\$8.90	\$11.51	\$0.00	\$59.62
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE <i>LOCAL 223</i> <i>/ COMMISSIONINGELECTRICIANS</i>	09/01/2015	\$32.56	\$8.40	\$9.59	\$0.00	\$50.55
	09/01/2016	\$33.33	\$8.90	\$9.78	\$0.00	\$52.01
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$36.71	\$10.00	\$15.15	\$0.00	\$61.86
	12/01/2016	\$37.75	\$10.00	\$15.15	\$0.00	\$62.90
	06/01/2017	\$38.59	\$10.00	\$15.15	\$0.00	\$63.74
	12/01/2017	\$39.42	\$10.00	\$15.15	\$0.00	\$64.57
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER <i>LABORERS - ZONE 2</i>	06/01/2016	\$20.50	\$7.45	\$12.65	\$0.00	\$40.60
	12/01/2016	\$20.50	\$7.45	\$12.65	\$0.00	\$40.60
For apprentice rates see "Apprentice- LABORER"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE 1</i>	03/01/2016	\$42.13	\$9.80	\$17.62	\$0.00	\$69.55

Apprentice - FLOORCOVERER - Local 2168 Zone 1

Effective Date - 03/01/2016

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$44.23	\$10.00	\$15.15	\$0.00	\$69.38
	12/01/2016	\$45.48	\$10.00	\$15.15	\$0.00	\$70.63
	06/01/2017	\$46.48	\$10.00	\$15.15	\$0.00	\$71.63
	12/01/2017	\$47.48	\$10.00	\$15.15	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$30.40	\$10.00	\$15.15	\$0.00	\$55.55
	12/01/2016	\$31.27	\$10.00	\$15.15	\$0.00	\$56.42
	06/01/2017	\$31.96	\$10.00	\$15.15	\$0.00	\$57.11
	12/01/2017	\$32.65	\$10.00	\$15.15	\$0.00	\$57.80
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 1333</i>	06/01/2016	\$35.58	\$10.70	\$8.25	\$0.00	\$54.53

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - GLAZIER - Local 1333

Effective Date - 06/01/2016

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

Notes:

Apprentice to Journeyworker Ratio:1:3

HOISTING ENGINEER/CRANES/GRADALLS	06/01/2016	\$44.23	\$10.00	\$15.15	\$0.00	\$69.38
OPERATING ENGINEERS LOCAL 4	12/01/2016	\$45.48	\$10.00	\$15.15	\$0.00	\$70.63
	06/01/2017	\$46.48	\$10.00	\$15.15	\$0.00	\$71.63
	12/01/2017	\$47.48	\$10.00	\$15.15	\$0.00	\$72.63

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - OPERATING ENGINEERS - Local 4

Effective Date - 06/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$24.33	\$10.00	\$0.00	\$0.00	\$34.33
2	60	\$26.54	\$10.00	\$15.15	\$0.00	\$51.69
3	65	\$28.75	\$10.00	\$15.15	\$0.00	\$53.90
4	70	\$30.96	\$10.00	\$15.15	\$0.00	\$56.11
5	75	\$33.17	\$10.00	\$15.15	\$0.00	\$58.32
6	80	\$35.38	\$10.00	\$15.15	\$0.00	\$60.53
7	85	\$37.60	\$10.00	\$15.15	\$0.00	\$62.75
8	90	\$39.81	\$10.00	\$15.15	\$0.00	\$64.96

Effective Date - 12/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$25.01	\$10.00	\$0.00	\$0.00	\$35.01
2	60	\$27.29	\$10.00	\$15.15	\$0.00	\$52.44
3	65	\$29.56	\$10.00	\$15.15	\$0.00	\$54.71
4	70	\$31.84	\$10.00	\$15.15	\$0.00	\$56.99
5	75	\$34.11	\$10.00	\$15.15	\$0.00	\$59.26
6	80	\$36.38	\$10.00	\$15.15	\$0.00	\$61.53
7	85	\$38.66	\$10.00	\$15.15	\$0.00	\$63.81
8	90	\$40.93	\$10.00	\$15.15	\$0.00	\$66.08

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) 04/01/2016 \$35.60 \$10.70 \$14.79 \$1.83 \$62.92
 SHEETMETAL WORKERS LOCAL 17 - B

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) 09/01/2015 \$38.31 \$8.40 \$11.28 \$0.00 \$57.99
 ELECTRICIANS LOCAL 223

09/01/2016 \$39.21 \$8.90 \$11.51 \$0.00 \$59.62

For apprentice rates see "Apprentice- ELECTRICIAN"

HVAC (TESTING AND BALANCING - AIR) 04/01/2016 \$35.60 \$10.70 \$14.79 \$1.83 \$62.92
 SHEETMETAL WORKERS LOCAL 17 - B

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (TESTING AND BALANCING - WATER) 03/01/2016 \$37.38 \$11.00 \$16.10 \$0.00 \$64.48
 PLUMBERS & PIPEFITTERS LOCAL 51

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

HVAC MECHANIC 03/01/2016 \$37.38 \$11.00 \$16.10 \$0.00 \$64.48
 PLUMBERS & PIPEFITTERS LOCAL 51

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

HYDRAULIC DRILLS 06/01/2016 \$32.40 \$7.45 \$12.65 \$0.00 \$52.50
 LABORERS - ZONE 2

12/01/2016 \$33.15 \$7.45 \$12.65 \$0.00 \$53.25

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (SOUTHERN MASS)</i>	09/01/2015	\$39.43	\$11.50	\$13.80	\$0.00	\$64.73
	09/01/2016	\$41.23	\$11.50	\$13.80	\$0.00	\$66.53
	09/01/2017	\$43.03	\$11.50	\$13.80	\$0.00	\$68.33
	09/01/2018	\$45.05	\$11.50	\$13.80	\$0.00	\$70.35
	09/01/2019	\$47.30	\$11.50	\$13.80	\$0.00	\$72.60

Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Southern MA

Effective Date - 09/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.72	\$11.50	\$10.70	\$0.00	\$41.92
2	60	\$23.66	\$11.50	\$11.32	\$0.00	\$46.48
3	70	\$27.60	\$11.50	\$11.94	\$0.00	\$51.04
4	80	\$31.54	\$11.50	\$12.56	\$0.00	\$55.60

Effective Date - 09/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.62	\$11.50	\$10.70	\$0.00	\$42.82
2	60	\$24.74	\$11.50	\$11.32	\$0.00	\$47.56
3	70	\$28.86	\$11.50	\$11.94	\$0.00	\$52.30
4	80	\$32.98	\$11.50	\$12.56	\$0.00	\$57.04

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER <i>IRONWORKERS LOCAL 37</i>	03/16/2016	\$34.71	\$7.70	\$16.00	\$0.00	\$58.41
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Apprentice - IRONWORKER - Local 37

Effective Date - 03/16/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	70	\$24.30	\$7.70	\$16.00	\$0.00	\$48.00
2	75	\$26.03	\$7.70	\$16.00	\$0.00	\$49.73
3	80	\$27.77	\$7.70	\$16.00	\$0.00	\$51.47
4	85	\$29.50	\$7.70	\$16.00	\$0.00	\$53.20
5	90	\$31.24	\$7.70	\$16.00	\$0.00	\$54.94
6	95	\$32.97	\$7.70	\$16.00	\$0.00	\$56.67

Notes:

Apprentice to Journeyworker Ratio:1:4

JACKHAMMER & PAVING BREAKER OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2016	\$31.90	\$7.45	\$12.65	\$0.00	\$52.00
	12/01/2016	\$32.65	\$7.45	\$12.65	\$0.00	\$52.75

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER LABORERS - ZONE 2	06/01/2016	\$31.65	\$7.45	\$12.65	\$0.00	\$51.75
	12/01/2016	\$32.40	\$7.45	\$12.65	\$0.00	\$52.50

Apprentice - LABORER - Zone 2

Effective Date - 06/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$18.99	\$7.45	\$12.65	\$0.00	\$39.09
2	70	\$22.16	\$7.45	\$12.65	\$0.00	\$42.26
3	80	\$25.32	\$7.45	\$12.65	\$0.00	\$45.42
4	90	\$28.49	\$7.45	\$12.65	\$0.00	\$48.59

Effective Date - 12/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$19.44	\$7.45	\$12.65	\$0.00	\$39.54
2	70	\$22.68	\$7.45	\$12.65	\$0.00	\$42.78
3	80	\$25.92	\$7.45	\$12.65	\$0.00	\$46.02
4	90	\$29.16	\$7.45	\$12.65	\$0.00	\$49.26

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER LABORERS - ZONE 2	06/01/2016	\$31.65	\$7.45	\$12.65	\$0.00	\$51.75
	12/01/2016	\$32.40	\$7.45	\$12.65	\$0.00	\$52.50
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER LABORERS - ZONE 2	06/01/2016	\$31.65	\$7.45	\$12.65	\$0.00	\$51.75
	12/01/2016	\$32.40	\$7.45	\$12.65	\$0.00	\$52.50
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS - ZONE 2	12/01/2015	\$31.35	\$7.45	\$12.60	\$0.00	\$51.40
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER LABORERS - ZONE 2	06/01/2016	\$31.90	\$7.45	\$12.65	\$0.00	\$52.00
	12/01/2016	\$32.65	\$7.45	\$12.65	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
LABORER: MULTI-TRADE TENDER LABORERS - ZONE 2	06/01/2016	\$31.65	\$7.45	\$12.65	\$0.00	\$51.75
	12/01/2016	\$32.40	\$7.45	\$12.65	\$0.00	\$52.50
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER LABORERS - ZONE 2	06/01/2016	\$31.65	\$7.45	\$12.65	\$0.00	\$51.75
	12/01/2016	\$32.40	\$7.45	\$12.65	\$0.00	\$52.50
This classification applies to all tree work associated with the removal of standing trees, and trimming and removal of branches and limbs when the work is not done for a utility company for the purpose of operation, maintenance or repair of utility company equipment. For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR LABORERS - ZONE 2	06/01/2016	\$31.90	\$7.45	\$12.65	\$0.00	\$52.00
	12/01/2016	\$32.65	\$7.45	\$12.65	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
MARBLE & TILE FINISHERS BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2016	\$38.78	\$10.18	\$17.78	\$0.00	\$66.74
	02/01/2017	\$39.24	\$10.18	\$17.78	\$0.00	\$67.20

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 08/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.39	\$10.18	\$17.78	\$0.00	\$47.35
2	60	\$23.27	\$10.18	\$17.78	\$0.00	\$51.23
3	70	\$27.15	\$10.18	\$17.78	\$0.00	\$55.11
4	80	\$31.02	\$10.18	\$17.78	\$0.00	\$58.98
5	90	\$34.90	\$10.18	\$17.78	\$0.00	\$62.86

Effective Date - 02/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.62	\$10.18	\$17.78	\$0.00	\$47.58
2	60	\$23.54	\$10.18	\$17.78	\$0.00	\$51.50
3	70	\$27.47	\$10.18	\$17.78	\$0.00	\$55.43
4	80	\$31.39	\$10.18	\$17.78	\$0.00	\$59.35
5	90	\$35.32	\$10.18	\$17.78	\$0.00	\$63.28

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS, TILELAYERS & TERRAZZO MECH	08/01/2016	\$50.80	\$10.18	\$19.22	\$0.00	\$80.20
BRICKLAYERS LOCAL 3 - MARBLE & TILE	02/01/2017	\$51.37	\$10.18	\$19.22	\$0.00	\$80.77

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

Effective Date - 08/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.40	\$10.18	\$19.22	\$0.00	\$54.80
2	60	\$30.48	\$10.18	\$19.22	\$0.00	\$59.88
3	70	\$35.56	\$10.18	\$19.22	\$0.00	\$64.96
4	80	\$40.64	\$10.18	\$19.22	\$0.00	\$70.04
5	90	\$45.72	\$10.18	\$19.22	\$0.00	\$75.12

Effective Date - 02/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.69	\$10.18	\$19.22	\$0.00	\$55.09
2	60	\$30.82	\$10.18	\$19.22	\$0.00	\$60.22
3	70	\$35.96	\$10.18	\$19.22	\$0.00	\$65.36
4	80	\$41.10	\$10.18	\$19.22	\$0.00	\$70.50
5	90	\$46.23	\$10.18	\$19.22	\$0.00	\$75.63

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 2) <i>MILLWRIGHTS LOCAL 1121 - Zone 2</i>	04/01/2015	\$34.69	\$9.80	\$16.21	\$0.00	\$60.70
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Apprentice - MILLWRIGHT - Local 1121 Zone 2

Effective Date - 04/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$19.08	\$9.80	\$4.48	\$0.00	\$33.36
2	65	\$22.55	\$9.80	\$13.36	\$0.00	\$45.71
3	75	\$26.02	\$9.80	\$14.18	\$0.00	\$50.00
4	85	\$29.49	\$9.80	\$14.99	\$0.00	\$54.28

Notes:

Steps are 2,000 hours

Apprentice to Journeyworker Ratio:1:5

MORTAR MIXER <i>LABORERS - ZONE 2</i>	06/01/2016	\$31.90	\$7.45	\$12.65	\$0.00	\$52.00
	12/01/2016	\$32.65	\$7.45	\$12.65	\$0.00	\$52.75

For apprentice rates see "Apprentice- LABORER"

OILER (OTHER THAN TRUCK CRANES,GRADALLS) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$22.41	\$10.00	\$15.15	\$0.00	\$47.56
	12/01/2016	\$23.06	\$10.00	\$15.15	\$0.00	\$48.21
	06/01/2017	\$23.57	\$10.00	\$15.15	\$0.00	\$48.72
	12/01/2017	\$24.09	\$10.00	\$15.15	\$0.00	\$49.24

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OILER (TRUCK CRANES, GRADALLS) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$26.29	\$10.00	\$15.15	\$0.00	\$51.44
	12/01/2016	\$27.04	\$10.00	\$15.15	\$0.00	\$52.19
	06/01/2017	\$27.64	\$10.00	\$15.15	\$0.00	\$52.79
	12/01/2017	\$28.25	\$10.00	\$15.15	\$0.00	\$53.40

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OTHER POWER DRIVEN EQUIPMENT - CLASS II <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

PAINTER (BRIDGES/TANKS) <i>PAINTERS LOCAL 35 - ZONE 2</i>	07/01/2016	\$50.46	\$7.85	\$16.10	\$0.00	\$74.41
	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 07/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.23	\$7.85	\$0.00	\$0.00	\$33.08
2	55	\$27.75	\$7.85	\$3.66	\$0.00	\$39.26
3	60	\$30.28	\$7.85	\$3.99	\$0.00	\$42.12
4	65	\$32.80	\$7.85	\$4.32	\$0.00	\$44.97
5	70	\$35.32	\$7.85	\$14.11	\$0.00	\$57.28
6	75	\$37.85	\$7.85	\$14.44	\$0.00	\$60.14
7	80	\$40.37	\$7.85	\$14.77	\$0.00	\$62.99
8	90	\$45.41	\$7.85	\$15.44	\$0.00	\$68.70

Effective Date - 01/01/2017

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

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	07/01/2016	\$41.36	\$7.85	\$16.10	\$0.00	\$65.31
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	01/01/2017	\$42.31	\$7.85	\$16.10	\$0.00	\$66.26

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

Effective Date - 07/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.68	\$7.85	\$0.00	\$0.00	\$28.53
2	55	\$22.75	\$7.85	\$3.66	\$0.00	\$34.26
3	60	\$24.82	\$7.85	\$3.99	\$0.00	\$36.66
4	65	\$26.88	\$7.85	\$4.32	\$0.00	\$39.05
5	70	\$28.95	\$7.85	\$14.11	\$0.00	\$50.91
6	75	\$31.02	\$7.85	\$14.44	\$0.00	\$53.31
7	80	\$33.09	\$7.85	\$14.77	\$0.00	\$55.71
8	90	\$37.22	\$7.85	\$15.44	\$0.00	\$60.51

Effective Date - 01/01/2017

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	07/01/2016	\$39.42	\$7.85	\$16.10	\$0.00	\$63.37
PAINTERS LOCAL 35 - ZONE 2	01/01/2017	\$40.37	\$7.85	\$16.10	\$0.00	\$64.32

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

Effective Date - 07/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.71	\$7.85	\$0.00	\$0.00	\$27.56
2	55	\$21.68	\$7.85	\$3.66	\$0.00	\$33.19
3	60	\$23.65	\$7.85	\$3.99	\$0.00	\$35.49
4	65	\$25.62	\$7.85	\$4.32	\$0.00	\$37.79
5	70	\$27.59	\$7.85	\$14.11	\$0.00	\$49.55
6	75	\$29.57	\$7.85	\$14.44	\$0.00	\$51.86
7	80	\$31.54	\$7.85	\$14.77	\$0.00	\$54.16
8	90	\$35.48	\$7.85	\$15.44	\$0.00	\$58.77

Effective Date - 01/01/2017

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

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (TRAFFIC MARKINGS)	06/01/2016	\$31.65	\$7.45	\$12.65	\$0.00	\$51.75
LABORERS - ZONE 2	12/01/2016	\$32.40	\$7.45	\$12.65	\$0.00	\$52.50

For Apprentice rates see "Apprentice- LABORER"

PAINTER / TAPER (BRUSH, NEW) *	07/01/2016	\$39.96	\$7.85	\$16.10	\$0.00	\$63.91
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* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	01/01/2017	\$40.91	\$7.85	\$16.10	\$0.00	\$64.86
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW

Effective Date - 07/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.98	\$7.85	\$0.00	\$0.00	\$27.83
2	55	\$21.98	\$7.85	\$3.66	\$0.00	\$33.49
3	60	\$23.98	\$7.85	\$3.99	\$0.00	\$35.82
4	65	\$25.97	\$7.85	\$4.32	\$0.00	\$38.14
5	70	\$27.97	\$7.85	\$14.11	\$0.00	\$49.93
6	75	\$29.97	\$7.85	\$14.44	\$0.00	\$52.26
7	80	\$31.97	\$7.85	\$14.77	\$0.00	\$54.59
8	90	\$35.96	\$7.85	\$15.44	\$0.00	\$59.25

Effective Date - 01/01/2017

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

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT)	07/01/2016	\$38.02	\$7.85	\$16.10	\$0.00	\$61.97
PAINTERS LOCAL 35 - ZONE 2	01/01/2017	\$38.97	\$7.85	\$16.10	\$0.00	\$62.92

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 07/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.01	\$7.85	\$0.00	\$0.00	\$26.86
2	55	\$20.91	\$7.85	\$3.66	\$0.00	\$32.42
3	60	\$22.81	\$7.85	\$3.99	\$0.00	\$34.65
4	65	\$24.71	\$7.85	\$4.32	\$0.00	\$36.88
5	70	\$26.61	\$7.85	\$14.11	\$0.00	\$48.57
6	75	\$28.52	\$7.85	\$14.44	\$0.00	\$50.81
7	80	\$30.42	\$7.85	\$14.77	\$0.00	\$53.04
8	90	\$34.22	\$7.85	\$15.44	\$0.00	\$57.51

Effective Date - 01/01/2017

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PANEL & PICKUP TRUCKS DRIVER <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2012	\$30.28	\$9.07	\$8.00	\$0.00	\$47.35
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i> For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2015	\$42.04	\$9.80	\$19.23	\$0.00	\$71.07
PILE DRIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$42.04	\$9.80	\$19.23	\$0.00	\$71.07

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PILE DRIVER - Local 56 Zone 1

Effective Date - 08/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.02	\$9.80	\$19.23	\$0.00	\$50.05
2	60	\$25.22	\$9.80	\$19.23	\$0.00	\$54.25
3	70	\$29.43	\$9.80	\$19.23	\$0.00	\$58.46
4	75	\$31.53	\$9.80	\$19.23	\$0.00	\$60.56
5	80	\$33.63	\$9.80	\$19.23	\$0.00	\$62.66
6	80	\$33.63	\$9.80	\$19.23	\$0.00	\$62.66
7	90	\$37.84	\$9.80	\$19.23	\$0.00	\$66.87
8	90	\$37.84	\$9.80	\$19.23	\$0.00	\$66.87

Notes:

Apprentice to Journeyworker Ratio:1:3

PIPELAYER LABORERS - ZONE 2	06/01/2016	\$31.90	\$7.45	\$12.65	\$0.00	\$52.00
	12/01/2016	\$32.65	\$7.45	\$12.65	\$0.00	\$52.75

For apprentice rates see "Apprentice- LABORER"

PLUMBER & PIPEFITTER PLUMBERS & PIPEFITTERS LOCAL 51	03/01/2016	\$37.38	\$11.00	\$16.10	\$0.00	\$64.48
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Apprentice - PLUMBER/PIPEFITTER - Local 51

Effective Date - 03/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$14.95	\$11.00	\$1.50	\$0.00	\$27.45
2	50	\$18.69	\$11.00	\$1.50	\$0.00	\$31.19
3	60	\$22.43	\$11.00	\$7.85	\$0.00	\$41.28
4	70	\$26.17	\$11.00	\$11.66	\$0.00	\$48.83
5	80	\$29.90	\$11.00	\$14.20	\$0.00	\$55.10

Notes:
Steps 2000hrs. Prior 9/1/05; 40/40/45/50/55/60/65/75/80/85

Apprentice to Journeyworker Ratio:1:3

PNEUMATIC CONTROLS (TEMP.) PLUMBERS & PIPEFITTERS LOCAL 51	03/01/2016	\$37.38	\$11.00	\$16.10	\$0.00	\$64.48
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For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

PNEUMATIC DRILL/TOOL OPERATOR LABORERS - ZONE 2	06/01/2016	\$31.90	\$7.45	\$12.65	\$0.00	\$52.00
	12/01/2016	\$32.65	\$7.45	\$12.65	\$0.00	\$52.75

For apprentice rates see "Apprentice- LABORER"

POWDERMAN & BLASTER LABORERS - ZONE 2	06/01/2016	\$32.65	\$7.45	\$12.65	\$0.00	\$52.75
	12/01/2016	\$33.40	\$7.45	\$12.65	\$0.00	\$53.50

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$44.23	\$10.00	\$15.15	\$0.00	\$69.38
	12/01/2016	\$45.48	\$10.00	\$15.15	\$0.00	\$70.63
	06/01/2017	\$46.48	\$10.00	\$15.15	\$0.00	\$71.63
	12/01/2017	\$47.48	\$10.00	\$15.15	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$44.23	\$10.00	\$15.15	\$0.00	\$69.38
	12/01/2016	\$45.48	\$10.00	\$15.15	\$0.00	\$70.63
	06/01/2017	\$46.48	\$10.00	\$15.15	\$0.00	\$71.63
	12/01/2017	\$47.48	\$10.00	\$15.15	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$30.40	\$10.00	\$15.15	\$0.00	\$55.55
	12/01/2016	\$31.27	\$10.00	\$15.15	\$0.00	\$56.42
	06/01/2017	\$31.96	\$10.00	\$15.15	\$0.00	\$57.11
	12/01/2017	\$32.65	\$10.00	\$15.15	\$0.00	\$57.80
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS LOCAL 59</i>	06/01/2008	\$19.00	\$5.10	\$4.21	\$0.00	\$28.31
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RESIDENTIAL WOOD FRAME (All Other Work) <i>CARPENTERS -ZONE 2 (Residential Wood)</i>	04/01/2011	\$24.24	\$8.67	\$15.51	\$0.00	\$48.42
RESIDENTIAL WOOD FRAME CARPENTER ** ** The Residential Wood Frame Carpenter classification applies only to the construction of new, wood frame residences that do not exceed four stories including the basement. <i>CARPENTERS -ZONE 2 (Residential Wood)</i> As of 9/1/09 Carpentry work on wood-frame residential WEATHERIZATION projects shall be paid the RESIDENTIAL WOOD FRAME CARPENTER rate.	05/01/2011	\$24.24	\$6.34	\$6.23	\$0.00	\$36.81

Apprentice - CARPENTER (Residential Wood Frame) - Zone 2

Effective Date - 05/01/2011

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$14.54	\$6.34	\$0.00	\$0.00	\$20.88
2	60	\$14.54	\$6.34	\$6.23	\$0.00	\$27.11
3	65	\$15.76	\$6.34	\$6.23	\$0.00	\$28.33
4	70	\$16.97	\$6.34	\$6.23	\$0.00	\$29.54
5	75	\$18.18	\$6.34	\$6.23	\$0.00	\$30.75
6	80	\$19.39	\$6.34	\$6.23	\$0.00	\$31.96
7	85	\$20.60	\$6.34	\$6.23	\$0.00	\$33.17
8	90	\$21.82	\$6.34	\$6.23	\$0.00	\$34.39

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2016	\$31.90	\$7.45	\$12.65	\$0.00	\$52.00
	12/01/2016	\$32.65	\$7.45	\$12.65	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofeer Waterproofing &Roofeer Damproofg) <i>ROOFERS LOCAL 33</i>	08/01/2016	\$41.11	\$11.00	\$13.00	\$0.00	\$65.11
	02/01/2017	\$42.26	\$11.00	\$13.00	\$0.00	\$66.26
	08/01/2017	\$43.36	\$11.00	\$13.00	\$0.00	\$67.36
	02/01/2018	\$44.51	\$11.00	\$13.00	\$0.00	\$68.51
	08/01/2018	\$45.61	\$11.00	\$13.00	\$0.00	\$69.61
	02/01/2019	\$46.76	\$11.00	\$13.00	\$0.00	\$70.76

Apprentice - ROOFER - Local 33

Effective Date - 08/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.56	\$11.00	\$3.44	\$0.00	\$35.00
2	60	\$24.67	\$11.00	\$13.00	\$0.00	\$48.67
3	65	\$26.72	\$11.00	\$13.00	\$0.00	\$50.72
4	75	\$30.83	\$11.00	\$13.00	\$0.00	\$54.83
5	85	\$34.94	\$11.00	\$13.00	\$0.00	\$58.94

Effective Date - 02/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.13	\$11.00	\$3.44	\$0.00	\$35.57
2	60	\$25.36	\$11.00	\$13.00	\$0.00	\$49.36
3	65	\$27.47	\$11.00	\$13.00	\$0.00	\$51.47
4	75	\$31.70	\$11.00	\$13.00	\$0.00	\$55.70
5	85	\$35.92	\$11.00	\$13.00	\$0.00	\$59.92

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.

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE <i>ROOFERS LOCAL 33</i>	08/01/2016	\$41.36	\$11.00	\$13.00	\$0.00	\$65.36
	02/01/2017	\$42.51	\$11.00	\$13.00	\$0.00	\$66.51
	08/01/2017	\$43.61	\$11.00	\$13.00	\$0.00	\$67.61
	02/01/2018	\$44.76	\$11.00	\$13.00	\$0.00	\$68.76
	08/01/2018	\$45.86	\$11.00	\$13.00	\$0.00	\$69.86
	02/01/2019	\$47.01	\$11.00	\$13.00	\$0.00	\$71.01
For apprentice rates see "Apprentice- ROOFER"						

SHEETMETAL WORKER <i>SHEETMETAL WORKERS LOCAL 17 - B</i>	04/01/2016	\$35.60	\$10.70	\$14.79	\$1.83	\$62.92
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SHEET METAL WORKER - Local 17-B

Effective Date - 04/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$14.24	\$10.70	\$3.51	\$0.87	\$29.32
2	45	\$16.02	\$10.70	\$3.95	\$0.94	\$31.61
3	50	\$17.80	\$10.70	\$9.33	\$1.15	\$38.98
4	55	\$19.58	\$10.70	\$9.33	\$1.21	\$40.82
5	60	\$21.36	\$10.70	\$12.08	\$1.32	\$45.46
6	65	\$23.14	\$10.70	\$12.31	\$1.38	\$47.53
7	70	\$24.92	\$10.70	\$12.54	\$1.44	\$49.60
8	75	\$26.70	\$10.70	\$12.77	\$1.51	\$51.68
9	80	\$28.48	\$10.70	\$12.99	\$1.57	\$53.74
10	85	\$30.26	\$10.70	\$13.22	\$1.63	\$55.81

Notes:

Apprentice to Journeyworker Ratio:1:3

SIGN ERECTOR PAINTERS LOCAL 35 - ZONE 2	06/01/2013	\$25.81	\$7.07	\$7.05	\$0.00	\$39.93
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Apprentice - SIGN ERECTOR - Local 35 Zone 2

Effective Date - 06/01/2013

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

Notes:
Steps are 4 mos.

Apprentice to Journeyworker Ratio:1:1

SPECIALIZED EARTH MOVING EQUIP < 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	08/01/2016	\$32.44	\$10.91	\$10.08	\$0.00	\$53.43
	12/01/2016	\$32.44	\$10.91	\$10.89	\$0.00	\$54.24
SPECIALIZED EARTH MOVING EQUIP > 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	08/01/2016	\$32.73	\$10.91	\$10.08	\$0.00	\$53.72
	12/01/2016	\$32.73	\$10.91	\$10.89	\$0.00	\$54.53

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1</i>	03/01/2016	\$54.43	\$8.67	\$16.80	\$0.00	\$79.90
	10/01/2016	\$55.53	\$8.67	\$16.80	\$0.00	\$81.00
	03/01/2017	\$56.53	\$8.67	\$16.80	\$0.00	\$82.00

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

Effective Date - 03/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$19.05	\$8.67	\$8.55	\$0.00	\$36.27
2	40	\$21.77	\$8.67	\$8.55	\$0.00	\$38.99
3	45	\$24.49	\$8.67	\$8.55	\$0.00	\$41.71
4	50	\$27.22	\$8.67	\$8.55	\$0.00	\$44.44
5	55	\$29.94	\$8.67	\$8.55	\$0.00	\$47.16
6	60	\$32.66	\$8.67	\$8.55	\$0.00	\$49.88
7	65	\$35.38	\$8.67	\$8.55	\$0.00	\$52.60
8	70	\$38.10	\$8.67	\$8.55	\$0.00	\$55.32
9	75	\$40.82	\$8.67	\$8.55	\$0.00	\$58.04
10	80	\$43.54	\$8.67	\$8.55	\$0.00	\$60.76

Effective Date - 10/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$19.44	\$8.67	\$8.55	\$0.00	\$36.66
2	40	\$22.21	\$8.67	\$8.55	\$0.00	\$39.43
3	45	\$24.99	\$8.67	\$8.55	\$0.00	\$42.21
4	50	\$27.77	\$8.67	\$8.55	\$0.00	\$44.99
5	55	\$30.54	\$8.67	\$8.55	\$0.00	\$47.76
6	60	\$33.32	\$8.67	\$8.55	\$0.00	\$50.54
7	65	\$36.09	\$8.67	\$8.55	\$0.00	\$53.31
8	70	\$38.87	\$8.67	\$8.55	\$0.00	\$56.09
9	75	\$41.65	\$8.67	\$8.55	\$0.00	\$58.87
10	80	\$44.42	\$8.67	\$8.55	\$0.00	\$61.64

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>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 223</i>	09/01/2015	\$32.56	\$8.40	\$9.59	\$0.00	\$50.55
	09/01/2016	\$33.33	\$8.90	\$9.78	\$0.00	\$52.01

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 223

Effective Date - 09/01/2015

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

Notes: See Electrician Apprentice Wages
Steps are 750hrs
Telecom Apprentice Wages shall be the same as the Electrician Apprentice Wages

Apprentice to Journeyworker Ratio:2:3

TERRAZZO FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	08/01/2016	\$49.70	\$10.18	\$19.22	\$0.00	\$79.10
	02/01/2017	\$50.27	\$10.18	\$19.22	\$0.00	\$79.67

Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 08/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.85	\$10.18	\$19.22	\$0.00	\$54.25
2	60	\$29.82	\$10.18	\$19.22	\$0.00	\$59.22
3	70	\$34.79	\$10.18	\$19.22	\$0.00	\$64.19
4	80	\$39.76	\$10.18	\$19.22	\$0.00	\$69.16
5	90	\$44.73	\$10.18	\$19.22	\$0.00	\$74.13

Effective Date - 02/01/2017

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.14	\$10.18	\$19.22	\$0.00	\$54.54
2	60	\$30.16	\$10.18	\$19.22	\$0.00	\$59.56
3	70	\$35.19	\$10.18	\$19.22	\$0.00	\$64.59
4	80	\$40.22	\$10.18	\$19.22	\$0.00	\$69.62
5	90	\$45.24	\$10.18	\$19.22	\$0.00	\$74.64

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2016	\$37.20	\$7.45	\$14.00	\$0.00	\$58.65
	12/01/2016	\$38.20	\$7.45	\$14.00	\$0.00	\$59.65

For apprentice rates see "Apprentice- LABORER"

TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2016	\$35.92	\$7.45	\$14.00	\$0.00	\$57.37
	12/01/2016	\$36.92	\$7.45	\$14.00	\$0.00	\$58.37

For apprentice rates see "Apprentice- LABORER"

TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2016	\$35.80	\$7.45	\$14.00	\$0.00	\$57.25
	12/01/2016	\$36.80	\$7.45	\$14.00	\$0.00	\$58.25

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	08/01/2016	\$33.02	\$10.91	\$10.08	\$0.00	\$54.01
	12/01/2016	\$33.02	\$10.91	\$10.89	\$0.00	\$54.82
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	06/01/2016	\$48.08	\$7.45	\$14.40	\$0.00	\$69.93
	12/01/2016	\$49.08	\$7.45	\$14.40	\$0.00	\$70.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	06/01/2016	\$50.08	\$7.45	\$14.40	\$0.00	\$71.93
	12/01/2016	\$51.08	\$7.45	\$14.40	\$0.00	\$72.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2016	\$40.15	\$7.45	\$14.40	\$0.00	\$62.00
	12/01/2016	\$41.15	\$7.45	\$14.40	\$0.00	\$63.00
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2016	\$42.15	\$7.45	\$14.40	\$0.00	\$64.00
	12/01/2016	\$43.15	\$7.45	\$14.40	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	08/01/2016	\$32.44	\$10.91	\$10.08	\$0.00	\$53.43
	12/01/2016	\$32.44	\$10.91	\$10.89	\$0.00	\$54.24
WAGON DRILL OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2016	\$31.90	\$7.45	\$12.65	\$0.00	\$52.00
	12/01/2016	\$32.65	\$7.45	\$12.65	\$0.00	\$52.75
For apprentice rates see "Apprentice- LABORER"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$44.23	\$10.00	\$15.15	\$0.00	\$69.38
	12/01/2016	\$45.48	\$10.00	\$15.15	\$0.00	\$70.63
	06/01/2017	\$46.48	\$10.00	\$15.15	\$0.00	\$71.63
	12/01/2017	\$47.48	\$10.00	\$15.15	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS & PIPEFITTERS LOCAL 51</i>	03/01/2016	\$37.38	\$11.00	\$16.10	\$0.00	\$64.48
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Outside Electrical - East						
CABLE TECHNICIAN (Power Zone) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2015	\$26.11	\$7.25	\$1.78	\$0.00	\$35.14
	08/28/2016	\$26.61	\$7.50	\$1.80	\$0.00	\$35.91
	09/03/2017	\$27.14	\$7.75	\$1.81	\$0.00	\$36.70
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2015	\$36.98	\$7.25	\$8.12	\$0.00	\$52.35
	08/28/2016	\$37.70	\$7.50	\$8.87	\$0.00	\$54.07
	09/03/2017	\$38.45	\$7.75	\$9.53	\$0.00	\$55.73
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2015	\$30.46	\$7.25	\$8.34	\$0.00	\$46.05
	08/28/2016	\$31.05	\$7.50	\$8.89	\$0.00	\$47.44
	09/03/2017	\$31.66	\$7.75	\$9.44	\$0.00	\$48.85
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2015	\$23.93	\$7.25	\$1.72	\$0.00	\$32.90
	08/28/2016	\$24.39	\$7.50	\$1.73	\$0.00	\$33.62
	09/03/2017	\$24.88	\$7.75	\$1.75	\$0.00	\$34.38

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class A CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2015	\$36.98	\$7.25	\$12.29	\$0.00	\$56.52
	08/28/2016	\$37.70	\$7.50	\$12.95	\$0.00	\$58.15
	09/03/2017	\$38.45	\$7.75	\$13.61	\$0.00	\$59.81
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class B CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2015	\$32.63	\$7.25	\$9.05	\$0.00	\$48.93
	08/28/2016	\$33.26	\$7.50	\$9.63	\$0.00	\$50.39
	09/03/2017	\$33.92	\$7.75	\$10.21	\$0.00	\$51.88
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2015	\$23.93	\$7.25	\$1.72	\$0.00	\$32.90
	08/28/2016	\$24.39	\$7.50	\$1.73	\$0.00	\$33.62
	09/03/2017	\$24.88	\$7.75	\$1.75	\$0.00	\$34.38
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN -Inexperienced (<2000 Hrs.) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2015	\$19.58	\$7.25	\$1.59	\$0.00	\$28.42
	08/28/2016	\$19.96	\$7.50	\$1.60	\$0.00	\$29.06
	09/03/2017	\$20.35	\$7.75	\$1.61	\$0.00	\$29.71
For apprentice rates see "Apprentice- LINEMAN"						
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	08/30/2015	\$43.51	\$7.25	\$15.06	\$0.00	\$65.82
	08/28/2016	\$44.35	\$7.50	\$15.83	\$0.00	\$67.68
	09/03/2017	\$45.23	\$7.75	\$16.61	\$0.00	\$69.59

Apprentice - LINEMAN (Outside Electrical) - East Local 104

Effective Date - 08/30/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$26.11	\$7.25	\$3.28	\$0.00	\$36.64
2	65	\$28.28	\$7.25	\$3.35	\$0.00	\$38.88
3	70	\$30.46	\$7.25	\$3.41	\$0.00	\$41.12
4	75	\$32.63	\$7.25	\$4.98	\$0.00	\$44.86
5	80	\$34.81	\$7.25	\$5.04	\$0.00	\$47.10
6	85	\$36.98	\$7.25	\$5.11	\$0.00	\$49.34
7	90	\$39.16	\$7.25	\$7.17	\$0.00	\$53.58

Effective Date - 08/28/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$26.61	\$7.50	\$3.30	\$0.00	\$37.41
2	65	\$28.83	\$7.50	\$3.36	\$0.00	\$39.69
3	70	\$31.05	\$7.50	\$3.43	\$0.00	\$41.98
4	75	\$33.26	\$7.50	\$5.00	\$0.00	\$45.76
5	80	\$35.48	\$7.50	\$5.06	\$0.00	\$48.04
6	85	\$37.70	\$7.50	\$5.13	\$0.00	\$50.33
7	90	\$39.92	\$7.50	\$7.20	\$0.00	\$54.62

Notes:

Apprentice to Journeyworker Ratio:1:2

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

Additional Apprentices 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.

**Wareham Town Hall
East and West Single-Ply Roof Replacement
Slate Roof Replacement and Restoration**

Appendix A

OVERVIEW

1. Drawings and general provisions of the Contract apply to this appendix.
 - a. All work shall be done in accordance with the Single Ply Roofing Industry's "Application Guidelines for Thermoplastic Roofing Systems" and the National Roofing Contractors Association's "The NRCA Roofing Manuals" and "The NRCA Waterproofing Manual".
2. Remove Existing single ply systems, insulation and all flashing components related to the respective systems. Install specified Adhered Roofing System. Insulation to be adhered. Roofing Company to act as general contractor, including soliciting bids and overseeing any applicable plumbing, electrical and masonry work.
3. All RFI's must be submitted in writing.

East Roof Area

1. Remove and dispose the entire roofing system, including the membrane, insulation, flashings, and edge metal, to the deck.
2. Install specified vapor barrier to primed wood deck.
3. Inorganic Coated Glass insulation to meet R-25 value to wood deck.
4. Install ½" HD board or coverboard fastened to wood deck with XP fasteners and plates.
5. Install specified Adhered Roofing System membrane directly to coverboard with appropriate solvent base or water base adhesive. Water base adhesive to be used during appropriate weather conditions.
6. Provide and install new continuous, treated wood nailers where required to match height of insulation. Nailer securement must conform to Factory Mutual Data Sheet I-49. Existing nailers shall be securely fastened and free of rot.
7. Flash all penetrations using specified Adhered Roofing System in place using appropriate adhesive. All flashings to be installed as per manufacturer's specifications and where possible, pre molded flashings shall be used.
8. Counter flashing will be required on cupola walls.
9. Furnish new wood sleepers with slip-sheets where applicable.
10. Install a new PVC coated (bronze in color) metal edge system to be fabricated by the contractor.
11. Roofer responsible to provide a tie-in transition to Slate Roofing.
12. Remove and replace roof hatch. Prefer lightweight aluminum. Roofer to verify dimensions. Hatch to be returned to Town of Wareham.
13. Remove and replace existing copper flashing and coping cap. Existing copper flashing and coping cap to be returned to Town of Wareham.
14. Remove and properly dispose of deck with horn/siren. Siren apparatus to be returned to Town of Wareham.
15. Remove Satellite dish & antennas, return to Town of Wareham.
16. Remove and reinstall lighting with new fixtures.

17. Build a 8" h x 12" w x 8' l curb to be used for lights and antennas. Lights and antennas to be reinstalled by certified electrician.
18. Remove all pitch pockets.
19. Remove existing roof hatch and replace with new, aluminum, factory-fabricated roof hatch for ladder access. Return existing roof hatch to Town of Wareham.
 - a. Furnish and install metal roof hatch Type S, size width: 36" (914mm) x length: 36" (762mm). Length denotes hinge side. Contractor to confirm dimensions prior to ordering the roof hatch.
 - i. The roof hatch shall be single leaf.
 - ii. The roof hatch shall be pre-assembled from the manufacturer.
 - b. Performance characteristics:
 - i. Cover shall be reinforced to support a minimum live load of 40 psf (195kg/m²) with a maximum deflection of 1/150th of the span and a 140 psf (684 kg/m²) wind uplift for aluminum (Type S-50) roof hatches
 - ii. Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.
 - iii. Operation of the cover shall not be affected by temperature.
 - iv. Entire hatch shall be weather tight with fully welded corner joints on cover and curb.
 - v. Aluminum (Type S-50) roof hatches shall be Miami-Dade Product approved (NOA No. 14-0708.07 Expiration Date: December 2, 2019), meeting large and small missile impact requirements. Florida Product Approval #FL15110.
 - vi. Cover: Shall be 11 gauge (2.3mm) aluminum with a 3" (76mm) beaded flange with formed reinforcing members. Cover shall have a heavy extruded EPDM rubber gasket that is bonded to the cover interior to assure a continuous seal when compressed to the top surface of the curb.
 - vii. Cover insulation: Shall be fiberglass of 1" (25mm) thickness, fully covered and protected by a metal liner [select: 22 gauge (.8mm) paint bond G-90 galvanized steel or 18 gauge (1mm) aluminum].
20. Provide all required permits, fess, and licenses.
21. The roofing contractor is responsible to provide portable sanitary facilities for all personnel.
22. The roofing contractor is to provide a safety zone around the building. Must provide either fencing or caution tape around the perimeter.
 - a. The roofing contractor is to maintain safe public access to the building during construction. This includes handicap access.
23. The roofing contractor is responsible for daily debris clean up and removal.
24. The roofing contractor is responsible to provide adequate power as required to run any power equipment. No gas cans will be allowed on roof.
25. Roofer to be responsible for accurate dimensions and measurements.
26. Roofer must make owner aware of scheduled inspections by manufacturer's inspectors. Owner must be present.
27. Provide contractors' 2-year warranty and material manufacturer's 30-year system warranty and Contractor's workmanship warranty. Warranty cannot exclude ponding water.

West Roof Area

1. Remove and dispose the entire roofing system, including the membrane, insulation, flashings, and edge metal, to the deck.
2. Install specified vapor barrier to primed wood deck.
3. Install Inorganic Coated Glass insulation to meet R-25 value fastened to wood deck with XP fasteners and plates.
4. Install ½" HD board or coverboard fastened to wood deck with XP fasteners and plates.
5. Install specified Adhered Roofing System membrane directly to coverboard with appropriate solvent base or water base adhesive. Water base adhesive to be used during appropriate weather conditions.
6. Provide and install new continuous, treated wood nailers where required to match height of insulation. Nailer securement must conform to Factory Mutual Data Sheet I-49. Existing nailers shall be securely fastened and free of rot.
7. Flash all penetrations specified Adhered Roofing System in place using appropriate adhesive. All flashings to be installed as per manufacturer's specifications and where possible, pre-molded flashings shall be used.
8. Counter flashing will be required on cupola walls.
9. Furnish new wood sleepers with slip-sheets where applicable.
10. Install a new PVC coated (bronze in color) metal edge system to be fabricated by the contractor.
11. Roofer responsible to provide a tie-in transition to Slate Roofing.
12. Remove existing roof hatch and replace with new, aluminum, factory-fabricated roof hatch for ladder access. Return existing roof hatch to Town of Wareham.
 - a. Furnish and install metal roof hatch Type S, size width: 36" (914mm) x length: 36" (762mm). Length denotes hinge side. Contractor to confirm dimensions prior to ordering the roof hatch.
 - i. The roof hatch shall be single leaf.
 - ii. The roof hatch shall be pre-assembled from the manufacturer.
 - b. Performance characteristics:
 - i. Cover shall be reinforced to support a minimum live load of 40 psf (195kg/m²) with a maximum deflection of 1/150th of the span and a 140 psf (684 kg/m²) wind uplift for aluminum (Type S-50) roof hatches
 - ii. Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.
 - iii. Operation of the cover shall not be affected by temperature.
 - iv. Entire hatch shall be weather tight with fully welded corner joints on cover and curb.
 - v. Aluminum (Type S-50) roof hatches shall be Miami-Dade Product approved (NOA No. 14-0708.07 Expiration Date: December 2, 2019), meeting large and small missile impact requirements. Florida Product Approval #FL15110.
 - vi. Cover: Shall be 11 gauge (2.3mm) aluminum with a 3" (76mm) beaded flange with formed reinforcing members. Cover shall have a heavy extruded EPDM rubber gasket that is bonded to the cover interior to assure a continuous seal when compressed to the top surface of the curb.

- vii. Cover insulation: Shall be fiberglass of 1" (25mm) thickness, fully covered and protected by a metal liner [select: 22 gauge (.8mm) paint bond G-90 galvanized steel or 18 gauge (1mm) aluminum].
13. Remove and replace existing copper flashing and coping cap. Existing copper flashing and coping cap to be returned to the Town of Wareham.
 14. Remove and replace lighting with new fixtures.
 15. Remove all pitch pockets.
 16. Provide all required permits, fees and licenses.
 17. The roofing contractor is responsible to provide portable sanitary facilities for all personnel.
 18. The roofing contractor is to provide a safety zone around the building. Must provide either fencing or caution tape around the perimeter.
 19. The roofing contractor is responsible for daily debris clean up and removal.
 20. The roofing contractor is responsible to provide adequate power as required to run any power equipment. Gas cans not allowed on the roof.
 21. Provide contractors' 2-year warranty and material manufacturer's 30-year system warranty and Contractor's workmanship warranty.

Slope Transition Area

1. Remove and dispose the roofing system as shown on the Roof Slope Transition Detail (minimum of 8-inches of the auditorium roof and all of the pvc roofing on the south roof), including the membrane, insulation, flashings, and edge metal, to the deck.
2. Install specified vapor barrier to primed wood deck.
3. Install Inorganic Coated Glass insulation to meet R-25 value fastened to wood deck with XP fasteners and plates.
4. Install ½" HD board or coverboard fastened to wood deck with XP fasteners and plates.
5. Install ice dam protection membrane.
6. Install specified Adhered Roofing System membrane directly to coverboard with appropriate solvent base or water base adhesive. Water base adhesive to be used during appropriate weather conditions.
7. Provide and install new continuous, treated wood nailers where required to match height of insulation. Nailer securement must conform to Factory Mutual Data Sheet I-49. Existing nailers shall be securely fastened and free of rot.
8. Flash all penetrations specified Adhered Roofing System in place using appropriate adhesive. All flashings to be installed as per manufacturer's specifications and where possible, pre-molded flashings shall be used.
9. Counter flashing will be required on parapet walls.
10. Furnish new wood sleepers with slip-sheets where applicable.
11. Install a new PVC coated (bronze in color) metal edge system to be fabricated by the contractor.
12. The roofing contractor shall provide a waterproof tie-in transition to Copper and Slate Roofing.
13. Remove all pitch pockets.
14. Provide all required permits, fees and licenses.
15. The roofing contractor is responsible to provide portable sanitary facilities for all personnel.

16. The roofing contractor is to provide a safety zone around the building. Must provide either fencing or caution tape around the perimeter.
17. The roofing contractor is responsible for daily debris clean up and removal.
18. The roofing contractor is responsible to provide adequate power as required to run any power equipment. Gas cans not allowed on the roof.
19. Provide contractors' 2-year warranty and material manufacturer's 30-year system warranty and Contractor's workmanship warranty.

ADHERED THERMOPLASTIC MEMBRANE ROOFING

PART 1 – GENERAL CONDITIONS

DESCRIPTION

A. SCOPE

To install a complete adhered roofing manufacturer roofing system including membrane, flashing and other components.

B. RELATED WORK

The work includes but is not limited to the installation of:

1. Substrate Preparation
2. Roof Drains
3. Vapor Barrier
4. Wood Blocking
5. Roof insulation as part of Work provided under this Section Separation Layers
6. Fully adhered polyvinyl chloride (PVC) sheet roofing system including insulation and roof edging
7. Fasteners
8. Flashing at all penetrations through the roofing system and at all materials which abut roofing system
9. Provide walkways in places of traffic leading from roof access points (ladders, stairs, doorways) to, and around rooftop mechanical equipment
10. Metal Flashings
11. Sealants

C. Upon Successful completion of work the following warranties shall be obtained:

1. Roofing manufacturer Warranty
2. Roofing Applicator Warranty

1.01 GENERAL TERMS AND CONDITIONS

A. CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

- a. The Contractor shall at his or her own expense clean up frequently all refuse, rubbish, scrap materials and debris caused by the Work, to the end that at all

times the site of the work shall present a neat, orderly and workmanlike appearance.

- b. The Contractor shall at its own expense regularly properly dispose of all refuse, rubbish, scrap materials and debris caused by the Work.
- c. Before final payment, the Contractor shall remove all surplus material, false work, temporary structures, and debris in order to put the site in a neat, orderly condition.

B. ROUGH CARPENTRY

- a. Unless otherwise specifically provided for in the contract, all workmanship, equipment, materials and articles incorporated in the Work shall be new and of the best grade of the respective kinds for the purpose.
- b. The Contractor shall use pressure treated wood for blocking, curbing and nailers.

C. PREFABRICATED CURBS

- a. The Contractor may use prefabricated curbs for the roof mounted electrical and mechanical equipment.

1.02 QUALITY ASSURANCE

- A. This roofing system shall be applied only by a roofing Applicator authorized by roofing manufacturer prior to bid (roofing manufacturer "Applicator")
- B. Upon completion of the installation and the delivery to roofing manufacturer by the Applicator of certification that all work has been done in strict accordance with the contract specifications and roofing manufacturer's requirements, a roofing manufacturer Technical Service Representative will review the installed roof system whenever a Standard or System warranty has been specified.
- C. There shall be no deviation made from the Project Specification or the approved shop drawings without prior written approval by the Owner, the Owner's representative and roofing manufacturer.
- D. All work pertaining to the installation of roofing membrane and flashings shall only be completed by Applicator personnel trained and authorized by roofing manufacturer in those procedures.
- E. Roofing Membrane Manufacturer must have a demonstrated performance history of producing thermoplastic membranes no less, in duration of years, than the warranty duration specified.
- F. Membrane Manufacturer must provide a list of at least 10 (ten) projects in which the submitted roofing material has been performing for the specified warranty duration. Membranes with modified formulation changes and undocumented proven performance will not be accepted.
- G. Membrane manufacturer must not require the use of membrane cut edge sealant at any location. This is a maintenance item that the Owner does not accept.
- H. Any scrap PVC roof membrane associated with the new PVC roof membrane installation work is to be recycled by the PVC roof membrane manufacturer. Contractor is responsible for all costs associated with the proper removal, bagging, loading, and shipping of the PVC roof membrane to the PVC roof membrane manufacturer's designated recycling facility.
- 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. Flashing Membrane must have a fiberglass reinforcement to ensure proper dimensional stability for the specified adhered vertical and wall flashings.
- K. Manufacturer's warranty must have "No Dollar Limit" for the replacement of defective materials and labor with no exclusions for ponding water.
- L. Product shall be UL certified with 10% recycled content.
- M. Manufacturer must have a continuous, 30-year record of producing roofing membranes. Private labeled material does not qualify.
- N. Membrane Manufacturer to confirm in writing that they directly manufacture the roofing membrane; private labeled membranes are not acceptable.
- O. Manufacturer to have a minimum of five years' experience recycling their membranes at the end of their service life into new membrane products. Provide a minimum of five reference projects.
- P. Membrane Manufacturer must have recycled content certification from UL (Underwriters Laboratories) Environment.
- Q. Membrane Manufacturer must have ISO 14001 Certification and a Responsible Care program in place
- R. A licensed contractor approved and certified by the PVC 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, PVC roof membrane systems. Minimum required experience involves at least 5-years' experience installing PVC roof membranes system 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 PVC roof membrane system. All such references must be provided with the Contractor's Bid 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 the 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.

1.03 SUBMITTALS

- A. Submit the following within 10 days of award:
 - 1. Literature: Manufacturer's product data sheets, specifications, performance data, physical properties and installation instructions for each item furnished hereunder.
 - a. Manufacturer's written certification that roofing membrane furnished for project has been treated with specified "dirt -repellent" acrylic coating.
 - b. Material Safety Data Sheets for products submitted.

2. Manufacturer's specimen warranties: Provide sample copies of manufacturers' actual warranties for all materials to be furnished under this Section, clearly defining all terms, conditions, and time periods for the coverage thereof.
 3. Review Statement: Written statement, signed by the roofing applicator, stating that the Contract Drawings have been reviewed by an agent of the roofing system manufacturer; accompanied by a pre-installation written statement from the manufacturer that the selected roof system is proper, compatible, and adequate for the application shown.
 - a. Provide certification from roofing manufacturer that system meets all identified code requirements.
 - b. The roofing applicator will notify the Architect and Owner in writing if the existing conditions when exposed are in conflict with the Contract Documents for the proper application of the selected roofing system or the warranty requirements.
 4. Project roofing superintendent's resume and project experience list for similar installations.
 5. Shop drawings:
 - a. Setting plans for insulation, showing types of insulation, thickness and direction of slopes.
- B. Submit the following under provisions of Section 01 00 00- CLOSEOUT SUBMITTALS:
1. Manufacture's field quality control reports of field inspections, including, revised "built" shop drawings and manufacturer's final punch list.
 2. Manufacturer's warranties: Include coverage of materials and installation.

1.04 CODE REQUIREMENTS

The applicator shall submit evidence that the proposed roof system meets the requirements of the local building code and has been tested and approved or listed by the following test organizations. These requirements are minimum standards and no roofing work shall commence without written documentation of the system's compliance, as required in the "Submittals" section of this specification.

- A. System shall be designed to meet minimum wind design requirements per Massachusetts Building Code referencing ASCE 7 uplift calculations.
 1. In additions, the roofing system shall be rated for uplift as follows:
 - a. Field: 60psf
 - b. Perimeter (6' from edge): 90psf
 - c. Corners (6'x6'): 135psf
- B. Factory Mutual Research Corporation (FM) – Norwood, MA
 1. Class 1
- C. Underwriters Laboratories, Inc. – Northbrook, IL

1. Class A assembly

1.06 REGULATORY REQUIREMENTS

- A. Refer to applicable building codes for roofing system installation requirements and limitations. When a conflict exists, the more restrictive document will govern.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. All products delivered to the job site shall be in the original unopened containers or wrappings bearing all seals and approvals.
- B. Handle all materials to prevent damage. Place all materials on pallets and fully protect from moisture.
- C. Membrane rolls shall be stored lying down on pallets and fully protected from the weather with clean canvas tarpaulins. Unvented polyethylene tarpaulins are not accepted due to the accumulation of moisture beneath the tarpaulin in certain weather conditions that may affect the ease of membrane weldability.
- D. As a general rule all adhesives shall be stored at temperatures between 40 degrees F (5 degree C) and 80 degree F (27 degree C). Read instructions contained on adhesive canister for specific storage instructions.
- E. All flammable materials shall be destroyed in a cool, dry area away from sparks and open flames. Follow precautions outlined on containers or supplied by material manufacturer/supplier.
- F. All materials which are determined to be damaged by the Owner's Representative or roofing manufacturer are to be removed from the job site and replaced at no cost to the Owner.

1.08 JOB CONDITIONS

- A. Roofing materials may be installed under certain adverse weather conditions but only after consultation with roofing manufacturer, as installation time and system integrity may be affected.
- B. Only as much of the new roofing as can be made weathertight each day, including all flashing and detail work, shall be installed. All seams shall be heat welded before leaving the job site that day.
- C. All work shall be scheduled and executed without exposing the interior building areas to the effects of inclement weather. The existing building and its contents shall be protected against all risks.
- D. All surfaces to receive new insulation, membrane or flashing shall be dry. Should surface moisture occur, the Applicator shall provide the necessary equipment to dry the surface prior to application.
- E. All new and temporary construction, including equipment and accessories, shall be secured in such a manner as to preclude windblown-off and subsequent roof or equipment damage.
- F. Uninterrupted waterstops shall be installed at the end of each day's work and shall be completely removed before proceeding with the next day's work. Waterstops shall not emit dangerous or unsafe fumes and shall not remain in

- contact with the finished roof as the installation progresses. Contaminated membrane shall be replaced at no cost to the Owner.
- G. The Applicator is cautioned that certain roofing membranes are incompatible with asphalt, coal tar, heavy oils, roofing cements, creosote and some preservative materials. Such materials shall not remain in contact with roofing membranes. The Applicator shall consult roofing manufacturer regarding compatibility, precautions and recommendations.
 - H. Arrange work sequence to avoid use of newly constructed roofing as a walking surface or for equipment movement and storage. Where such access is absolutely required, the Applicator shall provide all necessary protection and barriers to segregate the work area and to prevent damage to adjacent areas. A substantial protection layer consisting of plywood over Sarnafelt or plywood over insulation board shall be provided for all new and existing roof areas that receive rooftop traffic during construction.
 - I. Prior to and during application all dirt, debris and dust shall be removed from surfaces either by vacuuming, sweeping, blowing with compressed air or similar methods.
 - J. The Applicator shall follow all safety regulations as required by OSHA and any other applicable authority having jurisdiction.
 - K. All roofing, insulation, flashings and metal work removed during construction shall be immediately taken off site to a legal dumping area authorized to receive such materials. Hazardous materials, such as materials containing asbestos, are to be removed and disposed of in strict accordance with applicable City, State and Federal requirements.
 - L. All new roofing waster material (i.e. scrap roof membrane, empty cans of adhesive) shall be immediately removed from the site by Applicator and properly transported to a legal dumping area authorized to receive such material.
 - M. The Applicator shall take precautions that storage and application of materials and equipment does not overload the roof deck or building structure.
 - N. Installation of a roofing membrane over coal tar pitch or a resaturated roof requires special consideration to protect the roofing membrane from volatile fumes and materials. Consult roofing manufacturer for precautions prior to bid.
 - O. Flammable adhesives and deck primers shall not be stored and not used in the vicinity of open flames, sparks and excessive heat.
 - P. All rooftop contamination that is anticipated or that is occurring shall be reported to roofing manufacturer to determine the corrective steps to be taken.
 - Q. The Applicator shall verify that all roof drain lines are functioning correctly (not clogged or blocked) before starting work. Applicator shall report any such blockages in writing (letter copy to roofing manufacturer) to the Owner's

- Representative for corrective action prior to the installation of the roofing manufacturer roof system.
- R. Applicator shall immediately stop work if any unusual or concealed condition is discovered and shall immediately notify Owner of such condition in writing for correction at the Owner's expense (letter copy to roofing manufacturer).
 - S. Site cleanup, including both interior and exterior building areas that have been affected by construction, shall be completed to the Owner's satisfaction.
 - T. All landscaped areas damaged by construction activities shall be repaired at no cost to the Owner.
 - U. The Applicator shall conduct fastener pullout tests in accordance with the latest version of the SPRI/ANSI Fastener Pullout Standard to verify condition of the deck/substrate and to confirm expected pullout values.
 - V. The roofing membrane shall not be installed under the following conditions without consulting roofing manufacturer's Technical Department for precautionary steps:
 - 1. The roof assembly permits interior air to pressurize the membrane underside.
 - 2. Any exterior wall has 10 percent or more of the surface area comprised of opening doors or windows.
 - 3. The wall/deck intersection permits air entry into the wall flashing area.
 - W. Precautions shall be taken when using Sarnacol adhesives at or near rooftop vents or air intakes. Adhesive odors could enter the building. Coordinate the operation of vents and air intakes in such a manner as to avoid the intake of adhesive odor while ventilating the building. Keep lids on unused cans at all times.
 - X. Protective wear shall be worn when using solvents or adhesives or as required by job conditions.
 - Y. Roofing membranes are slippery when wet or covered with snow, frost, or ice. Working on surfaces under these conditions is hazardous. Appropriate safety measures must be implemented prior to working on such surfaces. Always follow OSHA and other relevant fall protection standards when working on roofs.

1.09 SEQUENCING AND SCHEDULING

- A. Coordinate the work of this Section with the respective trades responsible for installing interfacing work, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.
- B. Notify manufacturer's representative 48 hours in advance for deck acceptance. Plan the lay-up of roofing membranes with respect to deck slope; avoid situations where excessive drainage could pass into completed roofing.

- C. The Roofing applicator shall maintain communication with roofing manufacturer's representative to inform of progress and to schedule period sample testing.
- D. Manufacture's Technical representative must conduct at least 2 inspections. Owner to attend inspections as well as be provided copies of the results.

1.10 BIDDING REQUIREMENTS

- A. Prior to commencing the work of this Section, the General Contractor shall conduct a pre-installation conference at the Project site and coordinate the time of said meeting to occur prior to installation of work under the related sections named below.
 - 1. Required attendees: Owner, Engineer, Contractor, Roofing Applicator's Project Superintendent, roof manufacturer's technical representative and representatives of other related trades as directed by the Engineer or Contractor, and representatives for installers or related work:
 - a. Electrician
 - b. Mason
 - 2. Agenda:
 - a. Scheduling of roofing operations.
 - b. Review of staging and material storage locations.
 - c. Coordination of work by other trades.
 - d. Installation procedures for mechanical equipment.
 - e. Protection of completed roofing.
 - f. Establish weather and working temperature condition which Engineer and Contractor must agree.
 - g. Emergency rain protection procedure.
 - h. Establish conditions for which a temporary roof will be provided by the Contractor.
 - i. Discuss process for manufacturer's inspection and acceptance of completed roofing and flashings.
 - j. Manufacturer's deck inspection to be performed.

1.11 WARRANTIES

- A. Roofing manufacturer System Warranty (only products purchased from roofing manufacturer are covered under System Warranty). Warranty cannot exclude ponding water.

Upon successful completion of the work to roofing manufacturer's satisfaction and receipt of final payment, the roofing manufacturer System Warranty shall be issued.

- B. Applicator/Roofing Contractor Warranty

Applicator shall supply Owner with a separate workmanship warranty. In the event any work related to roofing, flashing, or metal is found to be within Applicator warranty term, defective or otherwise not in accordance with Contract Documents, the Applicator shall repair that defect at no cost to the Owner. Applicator’s warranty obligation shall run directly to the Owner, and a copy shall be sent to roofing manufacturer.

C. Owner Responsibility

Owner shall notify both roofing manufacturer and the Applicator of any leaks as they occur during the time period when both warranties are in effect.

1.12 WARRANTY DURATIONS

- A. Roofing manufacturer’s warranty shall be for 72 mph in effect for a 30 year duration.
- B. Applicator’s/Roofing Contractor’s Warranty shall be in effect for a 2 year duration.

PART 2 - PRODUCTS

2.01 GENERAL

- C. Specified Manufacturer: To establish a standard of quality, design and function desired, Drawings and specifications have been based on the following:
 - 1. Fully adhered roofing: Sika Sarnafil, Inc. “G410 Energy Smart” system color White.

2.02 MEMBRANE

- D. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, no substitutes or alternates allowed:
 - 1. Sika Sarnafil: G410-20, 80 mil minimum thermoplastic membrane
 - 2. Fibertite-90 mil XTreme
 - 3. Duro-last Roofing-Duro-Fleece 80 mil membrane

<u>Minimum Parameters Properties</u>	ASTM	
	<u>Test Method</u>	<u>Physical</u>
Reinforcing Material	-	Fiberglass
Overall Thickness, minimum	D638	(0.080inches)
Thickness Above Reinforcement (mils), min. 50%		40
Tensile Strength, min, lbf/in (N) machine traverse (245)	D751	55 (245) - 55
Elongation at Break, min (machine x transverse)	D638	250%/220%
Seam strength min. (% of tensile strength)	D638	80
Retention of Properties After Heat Aging	D3045	-

Tensile Strength, min (% of original)	D638	95
Elongation, min (% of original)	D638	90
Tearing Resistance, min, lbf (N)	D1004	14 (63.0)
Low Temperature Bend, -40F (-40C)	D2136	Pass
Accelerated Weathering Test (Xenon Arc)	D2565	Pass
Cracking (7xmagnification)	-	None
Discoloration (by observation)	-	Negligible
Crazing (7x magnification)	-	None
Linear Dimensional Change	D1204	0.02%
Weight Change After Immersion in Water	D570	2.5%
Static Puncture Resistance, 33 lbf (15kg)	D5602	Pass
Dynamic Puncture Resistance, 7.3 ft-lbf (10J)	D5635	Pass

<u>Minimum Parameters Properties</u>	ASTM	
	<u>Test Method</u>	<u>Physical</u>
Initial Solar Reflectance	E903	0.83
Emissivity 0.90	E408, C1371,	
	Other	
Solar Reflective Index (SRI)	E1980	104
Recycled Content (5 & 10 ft. sheets only)	9% Pre0Consumer/Up to 1% Post Consumer	

*Failure occurs through membrane rupture not seam failure.

2.03 FLASHING MATERIALS

A. Wall/Curb Flashing

1. A 60 mil fiberglass reinforced membrane adhered to approved substrate using membrane bonding adhesive.
2. Oil Resistant Membrane
An asphalt-resistant, fiberglass reinforced membrane adhered to approved substrate using membrane bonding adhesive.
3. Coated Metal
A PVC-coated, heat-weldable sheet metal capable of being formed into a variety of shapes and profiles. PVC clad shall be 24 gauge, G90 galvanized metal sheet with a 20 mil (0.5mm) unsupported PVC membrane laminated on one side.

B. Perimeter Edge Flashing

1. PVC Coated metal
A PVC-coated, heat-weldable sheet metal capable of being formed into a variety of shapes and profiles. Minimum 24 gauge, G90 galvanized metal sheet with a 20 mil (0.5mm) unsupported membrane laminated on one side. Color to be selected from manufacturer's standard colors by Owner.

C. Miscellaneous Flashing

1. Reglet Bar

A heavy-duty, extruded aluminum flashing termination reglet at walls and large curbs. Reglet is produced from 6063-T5, 0.10 inch to 0.12 inch (2.5mm to 3.0mm) thick extruded aluminum.

2. Vent Stack

A prefabricated vent pipe flashing made from 0.048 inch (48 mil/1.2mm) thick PVC membrane.

3. "T" Patches

Circular 0.060 inch (60 mil) thick PVC membrane patch welded over T-joints formed by overlapping thick membranes.

4. Prefab Corners

Prefabricated outside and inside flashing corners made of 0.060 inch (60 mil/1.5mm) thick membrane that are heat-welded to membrane or clad base flashings. Available in one size which accommodate both inside and outside corners.

5. Sealant

The roofing membrane manufacturer's urethane used at flashing terminations.

6. Pitch Box Filler

A two-component urethane adhesive used for pitch pocket filler.

7. Membrane Adhesive

Compliant solvent-based reactivating-type adhesive used to attach membrane to flashing substrate. Or a water-based adhesive for low VOC applications in temperatures above 40 degrees.

8. Separation Felt

A non-woven polyester or polypropylene mat cushion layer behind flashing membrane when the flashing substrates are rough or incompatible with the flashing membrane.

2.04 INSULATION/OVERLAYMENT/RECOVER BOARD

A. Insulation to be rigid polyisocyanurate insulation board that comes with inorganic coated polymer bonded glass fiber mat facer.

B. Insulation shall meet Factory Mutual Class 1-90, FM 4450, and Class 1 component for roof deck construction.

C. Exterior flammability (ASTM E-108) Class A component for roof deck construction.

D. Underwriters Laboratories, Inc: UL 790 (ASTM E-108) Class A component.

E. Physical Properties (ASTM C1289-01, Type II, Class 2, Grade 2)

F. Properties	ASTM	Value
Water Absorption	ASTM C-209	<1%
Dimensional Stability	ASTM D-2126	2%max. 7 days
Compressive Strength		Grade 2, 20 psi min

Foam Core Density	ASTM D-1622	2.0 pcf nominal
Moisture Vapor Trans.	ASTM E-84	<1 perm
Service Temperature		-100F – 250F
R-Value	LTRR	5.6 per inch

Maximum board size to be 48" x 96". Maximum board thickness to be two Inches (2.0).

- G. Insulation to be supplied by primary roofing membrane manufacturer for inclusion in roof system warranty (as noted below):
1. Sarnatherm by Sika Sarnafil
 2. Duro-Guard ISO III CG by Duro-last roofing
 3. H Shield CG by Hunter Panels
 4. AC Foam III by Atlas Roofing Corporation
 - 5.

2.05 WALKWAY PROTECTION

- A. Sarnatred Walk Tread, or equal
A polyester reinforced, 0.096 inch (96 mil/2.4 mm), weldable.

2.06 MISCELLANEOUS ACCESSORIES:

- A. Aluminum Tape
A 2 inch (50mm) wide pressure-sensitive aluminum tape used as a separation layer between small areas of asphalt contamination and the membrane and as a bond-breaker under the coverstrip at clad joints.
- B. Sealing Tape Strip
Compressible foam with pressure-sensitive adhesive on one side. Used with metal flashings as a preventive measure against air and wind blown moisture entry.
- C. Multi-Purpose Tape
A high performance sealant tape used with metal flashings as a preventive measure against air and wind blown moisture entry.
- D. Perimeter Warning Tape
Designed for use on PVC membranes as a reflective, highly visible pressure sensitive tape used to draw attention to roof perimeters and potential hazardous areas.
The tape is available in 2 inch wide rolls by 30 feet long and comes on a release liner for easy application. Perimeter Warning Tape exceeds reflectively 3 requirements and Federal spec. L-S-300, Class 1.
- E. Sealant
Use Sikaflex 1A to seal around the fastener penetrations for the copper roofing.

2.07 VAPOR BARRIER

- F. Sarnavap Self-Adhered, or Equal
A 32 mil (0.8mm) self-adhesive vapor barrier that can serve as temporary roof protection. Sarnavap Self-Adhered is available in rolls 44.9 inches x 133.8 feet (1.14 x 40.8m). Consult Product Data Sheet for additional information.

2.08 MISCELLANEOUS FASTENERS AND ANCHORS

- A. All fasteners, anchors, nails, straps, bars, etc. 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 1-1/4 inch (32mm) 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 (25mm) and shall be approved for such use by the fastener manufacturer.

2.09 RELATED MATERIALS

- A. Wood Nailers (If needed)
Treated wood nailers shall be installed at the perimeter of the entire roof and around such other roof projections and penetrations as specified on Project Drawings. Thickness of nailers must match the insulation thickness to achieve a smooth transition. Wood nailers shall be treated for fire and rot resistance (wolmanized or osmose treated) and be #2 quality or better lumber. Creosote or asphalt-treated wood is not acceptable. Wood nailers shall conform to Factory Mutual Loss Prevention Data Sheet 1-49. All wood shall have a maximum moisture content of 19 percent by weight on a dry-weight basis.

Note: Wood nailers or wood blocking for snow protection system shall be installed prior to the installation of the roof membrane whenever possible.

- B. Plywood
When bonding directly to plywood, a minimum ½ inch (12mm) CDX (C side out), smooth-surfaced exterior grade plywood with exterior grade glue shall be used. Rough-surfaced plywood or high fastener heads will require the use of Sarnafelt behind the flashing membrane. Plywood shall have a maximum moisture content of 19 percent by weight on a dry weight basis.

Part 3 - EXECUTION

3.01 SUBSTRATE CONDITION

- A. Applicator shall be responsible for acceptance or provision of proper substrate to receive new roofing materials.
- B. Applicator shall verify that the work done under related sections meets the following conditions:
 - 1. Roof drains and scuppers have been reconditioned or replaced and installed properly.

2. Roof curbs, nailers, equipment supports, vents and other roof penetrations are properly secured and prepared to receive new roofing materials.
3. All surfaces are smooth and free of dirt, debris and incompatible materials.
4. All roof surfaces shall be free of water, ice and snow.

3.02 SUBSTRATE PREPARATION

The roof deck and existing roof construction must be structurally sound to provide support for the new roof system. The Applicator shall load materials on the rooftop in such a manner as to eliminate risk of deck overload due to concentrated weight. The Owner's Representative shall ensure that the roof deck is secured to the structural framing according to local building code and in such a manner as to resist all anticipated wind loads in that location.

3.03 SUBSTRATE INSPECTION

- A. A dry, clean and smooth substrate shall be prepared to receive the Adhered roof system.
- B. The Applicator shall inspect the substrate for defects such as excessive surface roughness, contamination, structural inadequacy, or any other condition that will adversely affect the quality of work.
- C. The substrate shall be clean, smooth, dry, free of flaws, sharp edges, loose and foreign material, oil and grease. Roofing shall not start until all defects have been corrected.
- D. All roof surfaces shall be free of water, ice and snow.
- E. Roofing shall be applied over compatible and accepted substrates only.

3.04 WOOD NAILER INSTALLATION

- A. Install continuous wood nailers at the perimeter of the entire roof and around roof projections and penetrations as shown on the Detail Drawings.
- B. Nailers shall be anchored to resist minimum force of 300 pounds per lineal foot (4,500 Newtons per lineal meter) in any direction. Individual nailer lengths shall not be less than 3 feet (0.9 meter) long. Nail fastener spacing shall be at 12 inches (0.3m) on center or 16 inches (0.4m) on center if necessary to match the structural framing. Fasteners shall be staggered 1/3 the nailer width and installed within 6 inches (0.15m) of each end. Two fasteners shall be installed at ends of nailer lengths. Nailer attachment shall also meet the requirements of the current Factory Mutual Loss Prevention Data Sheet 1-49.
- C. Thickness shall be as required to match substrate or insulation height to allow a smooth transition.

- D. Any existing nailer woodwork which is to remain shall be firmly anchored in place to resist a minimum force of 300 pounds per lineal foot (4,500 Newtons per lineal meter) in any direction and shall be free of rot, excess, moisture or deterioration. Only woodwork shown to be reused in Detail Drawings shall be left in place. All other nailers woodwork shall be removed.
- E. Stainless steel, corrosion resistant, fasteners are required when mechanically attaching any roofing manufacturer product to wood nailers and wood products treated with ACQ (Alkaline copper Quaternary). When ACQ treated wood is used on steel roof decks or with metal edge detailing, a separation layer must be placed between the metal and ACQ treated wood.

3.05 INSULATION/COVER BOARD INSTALLATION

- F. Insulation shall be installed according to insulation manufacturer's instructions.
- G. Insulation shall be neatly cut to fit around penetrations and projections.
- H. Install tapered insulation in accordance with insulation manufacturer's shop drawings.
- I. Install tapered insulation around drains creating a drain sump.
- J. Do not install more insulation board than can be covered with membrane by the end of the day or the onset of inclement weather.
- K. Use at least 2 layers of insulation when the total insulation thickness exceeds 2-1/2 inches (64mm). Stagger joints at least 12 inches (0.3m) between layers.
- L. Coverboard/HD Board
 - 1. 1/2" Board will be mechanically fastened into wood deck according to manufacturer's instructions.

3.06 INSTALLATION OF ROOFING MEMBRANE

- A. The surface of the insulation or substrate shall be inspected prior to installation of the PVC roof membrane. The substrate shall be clean, dry, free from debris and smooth with no surface roughness or contamination. Broken, delaminated, wet or damaged insulation boards shall be removed and replaced.
- B. Membrane Adhesive:
 - 1. Over the properly installed and prepared substrate surface. The adhesive shall be applied to the substrate at a rate according to the roofing manufacturer requirements. The adhesive shall be applied in smooth, even coating with no gaps, globs, puddles or similar inconsistencies. Only an area which can be completely covered in the same day's operations shall be coated with adhesive. The first layer of adhesive shall be allowed to dry completely prior to installing the membrane.

2. When the adhesive on the substrate is dry, the roof membrane is unrolled. Adjacent sheets shall be overlapped 3 inches (75 mm). Once in place, one-half of the sheet's length shall be turned back and the underside shall be coated with Membrane adhesive at a rate specified by membrane manufacturer. When the membrane adhesive has dried slightly to produce strings when touched with a dry finger, the coated membrane shall be rolled onto the previously-coated substrate being careful to avoid wrinkles. **Do not allow adhesive on the underside of the membrane to dry completely.** The amount of membrane that can be coated with adhesive before rolling into substrate will be determined by ambient temperature, humidity and crew. The bonded sheet shall be pressed firmly in place with a water-filled, foam-covered lawn roller by frequent rolling in two directions. The remaining un-bonded half of the sheet shall be folded back and the procedure repeated.

Notes:

- a) The applicator shall count the amount of pails of adhesive used per area per day to verify conformance to the specified adhesive rate.
- b) No adhesive shall be applied in seam areas. All membrane shall be applied in the same manner.

3.07 HOT-AIR WELDING OF SEAM OVERLAPS

A. General

1. All seams shall be hot-air welded. Seam overlaps should be 3 inches (76mm) wide when automatic machine-welding and 4 inches (100mm) wide when hand-welding, except for certain details.
2. Welding equipment shall be provided by or approved by roofing manufacturer. All mechanics intending to use the equipment shall have successfully completed a training course provided by a roofing manufacturer Technical Service Representative prior to welding.
3. All membrane to be welded shall be clean and dry.

B. Hand-Welding

Hand-welded seams shall be completed in two stages. Hot-air welding equipment shall be allowed to warm up for at least one minute prior to welding.

1. The back edge of the seam shall be welded with a narrow but continuous weld to prevent loss of air during the final welding.
2. The nozzle shall be inserted into the seam at a 45 degree angle to the edge of the membrane. Once the proper welding temperature has been reached and the membrane begins to "flow",

the hand roller is positioned perpendicular to the nozzle and rolled lightly. For straight seams, the 1-1/2 inch (40mm) wide nozzle is recommended for use. For corners and compound connections, the 3/4 inch (20mm) wide nozzle shall be used.

C. Machine Welding

1. Machine welded seams are achieved by the use of roofing manufacturer's automatic welding equipment. When using this equipment, roofing manufacturer's instructions shall be followed and local codes for electric supply, grounding and over current protection observed. Dedicated circuit house power or a dedicated portable generator is recommended. No other equipment shall be operated simultaneously off the generator.
2. Metal tracks may be used over the deck membrane and under the machine welder to minimize or eliminate wrinkles.

D. Quality Control of Welded Seams

1. The applicator shall check all welded seams for continuity using a rounded screwdriver. Visible evidence that welding is proceeding correctly is smoke during the welding operation, shiny membrane surfaces, and an uninterrupted flow of dark gray material from the underside of the top membrane. On-site evaluation of welded seams shall be made daily by the Applicator at locations as directed by the Owner's Representative or roofing manufacturer's representative. One inch (25mm) wide cross-section samples of welded seams shall be taken at least three times a day. Correct welds display failure from shearing of the membrane prior to separation of the weld. Each test cut shall be patched by the Applicator at no extra cost to the Owner.

3.08 MEMBRANE FLASHINGS

- A. All flashings shall be installed concurrently with the roof membrane as the job progresses. No temporary flashings shall be allowed without the prior written approval of the Owner's Representative and roofing manufacturer. Approval shall only be for specific locations on specific dates. If any water is allowed to enter under the newly completed roofing, the affected area shall be removed and replaced at the Applicator's expense. Flashing shall be adhered to compatible, dry, smooth, and solvent-resistant surfaces. Use caution to ensure adhesive fumes are not drawn into the building.
- B. Adhesive for Membrane Flashings
1. Over the properly installed and prepared flashing substrate, adhesive shall be applied according to instructions. The adhesive shall be applied in smooth, even coats with no gaps, globs or similar inconsistencies. Only

an area which can be completely covered in the same day's operations shall be flashed. The bonded sheet shall be pressed firmly in place with a hand roller.

2. No adhesive shall be applied in seam areas that are to be welded. All panels of membrane shall be applied in the same manner, overlapping the edges of the panels as required by welding techniques.
- C. Install bars according to the Detail Drawings with approved fasteners into the structural deck at the base of parapets, walls and curbs. Bars are required at the base of all tapered edge strips and at transitions, peaks, and valleys according to the roofing manufacturer's details.
- D. Roofing manufacturer's requirements and recommendations and the specifications shall be followed. All material submittals shall have been accepted by the roofing manufacturer prior to installation.
- E. All flashings shall extend a minimum of 8 inches (0.2) above level unless otherwise accepted in writing by the Owner Representative and the roofing manufacturer Technical Department.
- F. All flashing membranes shall be consistently adhered to substrates. All interior and exterior corners and miters shall be cut and hot-air welded into place. No bitumen shall be in contact with the flashing membrane.
- G. All flashing membranes shall be mechanically fastened along the counter-flashed top edge with bars at 6 to 8 inches (0.15 to 0.20m) on center.
- H. PVC flashings shall be terminated according to the roofing manufacturer recommended details.
- I. All flashings that exceed 30 inches (0.75m) in height shall receive additional securement. Consult the roofing manufacturer Technical Department for securement **methods**.

3.09 METAL FLASHINGS

- A. Metal details, fabrication practices and installation methods shall conform to the applicable requirements of the following:
 1. Factory Mutual Loss Prevention Data Sheet 1-49 (latest issue).
 2. Sheet metal and Air Conditioning Contractors National Association, Inc. (SMACNA) – latest issue.
- B. Metal, other than provided by the roofing manufacturer, is not covered under the roofing manufacturer warranty.
- C. Complete all metal work in conjunction with roofing and flashings so that a watertight condition exists daily.

- D. Metal shall be installed to provide adequate resistance to bending to allow for normal thermal expansion and contraction.
- E. Metal joints shall be watertight.
- F. Metal flashings shall be securely fastened into solid wood blocking. Fasteners shall penetrate the wood nailer a minimum of 1 inch (25mm).
- G. Airtight and continuous metal hook strips are required behind metal fascias. Hook strips are to be fastened 12 inches (0.3m) on center into the wood nailer or masonry wall.
- H. Counter flashings shall overlap base flashings at least 4 inches (100mm).
- I. Hook strips shall extend past wood nailers over wall surfaces by 1-1/2 inch (38mm) minimum and shall be securely sealed from air entry.

3.10 CLAD METAL BASE FLASHINGS/EDGE METAL

- A. All flashings shall be installed concurrently with the roof membrane as the job progresses. No temporary flashings shall be allowed without the prior written approval of the Owner's Representative and the roofing manufacturer. Acceptance shall only be for specific locations on specific dates. If any water is allowed to enter under the newly completed roofing due to incomplete flashings, the affected area shall be removed and replaced at the Applicator's expense.
- B. Clad metal flashings shall be formed and installed per the Detail Drawings.
 - 1. All metal flashings shall be fastened into solid wood nailers with two rows of post galvanized flat head annular ring nails, 4 inches (100mm) on center staggered. Fasteners shall penetrate the nailer a minimum of 1 inch (25mm).
 - 2. Metal shall be installed to provide adequate resistance to bending and allow for normal thermal expansion and contraction. Adjacent sheets of clad shall be spaced ¼ inch (6mm) apart. The joint shall be covered with 2 inch (50mm) wide aluminum tape. A 4 inch minimum (100mm) wide strip of PVC flashing membrane shall be hot-air welded over the joint. Exercise caution at perimeter of roof. Workers shall follow OSHA safety procedures.

3.11 WALKWAY INSTALLATION

- A. Walkway

Roofing membrane to receive Walkway shall be clean and dry. Please chalk lines on deck sheet to indicate location of Walkway. Apply a continuous coat of adhesive to the deck sheet and the back of Walkway in accordance with roofing manufacturer's technical requirements and press Walkway into place with a minimum 100 lb. (45kg) linoleum roller. Clean the deck membrane in areas to be welded. Hot-air weld the entire perimeter of the Walkway to the roofing deck sheet. Check all welds with a rounded screwdriver. Re-weld any inconsistencies. **Important:** Check all existing deck membrane seams that are to be covered by Walkway with rounded screwdriver and reweld any inconsistencies before Walkway installation. Do not run Walkway over term bars.

3.12 PERIMETER WARNING TAPE

Areas of membrane where tape is to be applied must be cleaned to a "like new" condition. Failure to properly clean the membrane will result in less than satisfactory adhesion. The membrane should be cleaned as follows:

- 1) New membrane: Remove loose dirt and dust by wiping clean with water. For areas where dirt is embedded, scrub the application area with a commercial cleaner such as Simple Green, 409 or other similar all-purpose cleaner using a Scotch Brite scrubbing pad or similar product. Wash away residual cleaning material with clean water.
- 2) Weathered membrane: For older membranes or areas where there is excessive dirt buildup, use the above cleaning procedure followed by cleaning with a natural fiber rag wet with MEK, and wipe away all residual cleaning solution and remaining dirt until membrane has a "like new" appearance.

After surface is clean and dry, apply tape to surface taking care to avoid trapping air and creating blisters as tape is smoothed over with hand pressure. If a chalk line is used be sure to keep chalk dust clear of application area.

Do not apply Perimeter Warning Tape to surfaces where the temperature is 40 degrees Fahrenheit.

Perimeter Warning Tape may be slippery when wet.

3.13 TEMPORARY CUT-OFF

All flashings shall be installed concurrently with the roof membrane in order to maintain a watertight condition as the work progresses.

All temporary waterstops shall be constructed to provide a 100 percent watertight seal. The stagger of the insulation joints shall be made even by installing partial panels of insulation. The new membrane shall be carried into the waterstop. Waterstop shall be sealed to the deck or substrate so that water will not be allowed to travel under the new or existing roofing. The edge of the membrane shall be sealed in a continuous heavy application of sealant as described in Section **Error! Reference source not found.**

When work resumes, the contaminated membrane shall be cut out. All sealant, contaminated membrane, insulation fillers, etc. shall be removed from the work area and properly disposed of offsite. None of these materials shall be used in the new work.

If inclement weather occurs while a temporary waterstop is in place, the Applicator shall provide the labor necessary to monitor the situation to maintain a watertight condition.

If any water is allowed to enter under the newly-completed roofing, the affected area shall be removed and replaced at the Applicator's expense.

3.14 COMPLETION

Prior to demobilization from the site, the work shall be reviewed by the Owner's Representative and the Applicator. All defects noted and non-compliances with the Specifications or the recommendations of roofing manufacturer shall be itemized in a punch list. These items must be corrected immediately by the Applicator to the satisfaction of the Owner's Representative and roofing manufacturer prior to demobilization.

All Warranties referenced in this Specification shall have been submitted and have been accepted at time of contract award.

3.15 DETAILS

See Appendix C. Refer to the roofing manufacturer Typical System Details section for additional details.

**Wareham Town Hall
East and West Single-Ply Roof Replacement
Slate Roof Replacement and Restoration**

Appendix B

Slate Restoration for the Memorial Town Hall Roof

1. Drawings and general provisions of the Contract apply to this appendix.
 - a. All work shall be done in accordance with the National Slate Associations' "Slate Roofs Design and Installation Manual" and the National Roofing Contractors Association's "The NRCA Roofing Manuals" and "The NRCA Waterproofing Manual".
2. Roofing contractor shall inspect slate roofing on the town hall building. The roofing contractor shall remove and replace all loose, missing or improperly installed slates on the North, East, and West elevations of the building roof.
3. When replacing individual slates, the replacement slate shall be reclaimed from the South elevation of the town hall roof so that the slates match the existing slate in type, color, weathering characteristics, size, shape and texture. The roofing contractor shall submit reclaimed slate before beginning work. All slate shall meet Grade S1 ASTM C 406 "Standard Specification for Roofing Slate."
 - a. The existing slate roof is comprised of 16"x10" and 16"x8" green and purple slate
4. All work is to be done in accordance with the latest version of the Slate Roofs Design and Installation Manual.
 - a. The Contractor shall use the Nail-And-Bid Method for this Work.
 - b. The Contractor may use the Slate Hook Method if approved by the Engineer on a case-by-case basis.
5. The roofing contractor is to provide a safety zone around the building. Must provide either fencing or caution tape around the perimeter.
 - a. The roofing contractor is to maintain safe public access to the building during construction. This includes handicap access.
6. The contractor shall set up all material, equipment and boom lift to perform the Work.
7. Slate quantity will be approximately 300 reclaimed slates from South elevation of the town hall building.

Appendix C

Slate Replacement for the Memorial Town Hall Roof

Overview

1. Drawings and general provisions of the Contract apply to this appendix.
 - a. All work shall be done in accordance with the National Slate Associations' "Slate Roofs Design and Installation Manual" and the National Roofing Contractors Association's "The NRCA Roofing Manuals" and "The NRCA Waterproofing Manual".
2. Roofing contractor shall remove and replace slate roofing on the South elevation of the town hall building.
 - a. The Contractor shall remove and reinstall the existing snow rails.
3. The new slates shall match the existing slate in type, color, weathering characteristics, size, shape and texture. The roofing contractor shall submit new or reclaimed slate before beginning work. All slate shall meet Grade S1 ASTM C 406 "Standard Specification for Roofing Slate".
 - a. The existing slate roof is comprised of 16"x10" and 16"x8" green and purple slate
 - b. The new slate roof on the South elevation shall have matching slate.
4. All work is to be done in accordance with the latest version of the Slate Roofs Design and Installation Manual.
5. The roofing contractor shall provide a waterproof tie-in transition to Copper and PVC Roofing.
6. The roofing contractor is to provide a safety zone around the building. Must provide either fencing or caution tape around the perimeter.
 - a. The roofing contractor is to maintain safe public access to the building during construction. This includes handicap access.
7. The roofing contractor Provide all required permits, fees and licenses.
8. The roofing contractor is responsible to provide portable sanitary facilities for all personnel.

9. The roofing contractor is responsible for daily debris clean up and removal.
10. The roofing contractor is responsible to provide adequate power as required to run any power equipment. Gas cans not allowed on the roof.
11. Provide contractors' 2-year warranty and material manufacturer's system 30-year warranty and Contractor's workmanship warranty.
12. The contractor shall set up all material, equipment and boom lift to perform the Work.
13. The quantity of slate to be installed is approximately 33 Squares.

Slate Roofing Specifications

1.01 Installation Assurance

1. Slates shall be installed by skilled and experienced roofers who will fit and fasten each slate. Each roofer proposed for the Project shall provide proof of relevant experience.

1.02 Certificate

1. Slate supplier shall furnish a certificate stating that materials used for the Project strictly adhere to the provisions of these specifications. The certificate shall also state that any required roof repairs resulting solely from defective materials or workmanship of the slates furnished under this contract shall be made without cost to the owner for a period of two years.
2. The roofer awarded the Project shall order the slate within thirty (30) days of receiving a contract. The engineer shall receive written confirmation of said order.

1.03 Submittals

1. Product Data: Include slate properties, construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of slate indicated.
2. Shop Drawings: Include sections at hips, gables, ridges, valleys and eaves; component details; accessories; and attachments for other work.
3. Samples for Submittal: Manufacturer's color charts consisting of units for sections of units showing the full range of colors, textures, shape and size specified, showing the full range of variations expected. Prepare samples from the same material to be used for the work.

1.04 Project Conditions

1. The roofer shall proceed with slate shingle installation only after the existing roofing has been properly removed and disposed of, the substrate is dry, and weather conditions are favorable.

2.01 Roofing Slate

A. Material

1. Classification: Slate shall meet the requirements of Grade S1 per ASTM C-406-06.

2. Color: Slate shall be non-weathering purple and non-weathering green.
3. Size and Shape: Slates shall be rectangular and have dimensions of 16"x10" and 16"x8"
4. Thickness: Slates shall have a nominal thickness of 3/8 inch.
5. Nail Holes: Each slate shall be machine punched or drilled for two nails located for proper headlap. See Details for headlap.

B. Physical Requirements

1. Slates with a strong grain must be produced "on the grain", that is, the direction of the grain of the stone must be parallel to the long dimension of the shingle. Slates shall be randomly selected from each shipment and tested for grain direction to ensure proper fabrication.
2. Slates with broken corners on the exposed ends shall not be installed when either the base or leg of the right triangular piece broken off is greater than 1 1/2 inches. Slates with broken corners are acceptable for cutting stock.
3. The curvature of shingles shall not exceed 1/8 inch in 12 inches. Curved slates shall be trimmed and holed to permit them to be laid with the convex side facing up.
4. "Knots" and "knurls" are rounded defects that affect the smoothness of split. They are acceptable on the exposed portion of the top face but on other parts will prevent close contact of shingles. Shingles having knots or knurls on the covered portions projecting in excess of 1/16 inch shall not be used if they prevent proper fit and contact.
5. Slates shall be free from ribbons.
6. Not more than 1% of broken slates, including those having cracks materially precluding ringing when sounded, shall be accepted.
7. Face dimensions shall not differ from those specified by more than 1/8 inch.

C. Available Manufacturers: Subject to compliance with requirements, manufacturers offering materials that may be incorporated in the Work include, but are not limited to, the following:

1. Greenstone Slate Company
2. Vermont Structural Slate Company

2.02 Roofing Felt

1. The roofer shall use 30-pound asphalt saturated rag felt per ASTM D 226.

2.03 Nails

1. The roofer shall use 10 gauge, large head slaters' solid copper nails, 1 1/2 inch or longer for field, and 2 inch for slates on hips and ridges. Nails should adequately penetrate the roof deck. Length formula = (slate thickness x 2) + 1"

2.04 Caulking

1. The roofer shall use approved waterproof elastic slaters' cement, color to match slate.

2.05 Flashing and Trim

1. The roofer shall use copper flashing.
2. Fabricate sheet metal flashing and trim to comply with recommendations in Sheet Metal and Air Conditioning Contractor's Metal Association's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item.

3.01 Roofing Felt Installation

1. The Roofer shall lay the felt in horizontal layers, with joints lapped toward the eaves at least 2 inches. The felt shall be well secured along laps and at ends as necessary to properly hold the felt in place and protect the structure until the slate has been installed.
2. The Roofer shall lap the felt over all hips and ridges at least 12 inches to form double thickness.
3. The Roofer shall lap the felt 2 inches over the metal of any valleys or built-in gutters.

3.01.1 Membrane Waterproofing Installation

1. The roof decks shall be treated with a self-adhering membrane of rubberized asphalt integrally bonded to polyethylene sheeting (e.g. Ice & Water Shield, manufactured by W.R. Grace & Co.). Follow manufacturer's literature for membrane application. Areas to be sheeted with membrane are hips, eaves, low slope areas, all slope changes or tie-ins and protrusions through the roof.

3.02 Slate Installation

1. Hips, Ridges and Valleys shall be installed similar to existing slate roofing.
2. Slate shall project 2 inches at eaves and 1 inch at gable ends, and shall be laid in horizontal courses with 3 inch headlaps, and each course shall break vertical joints with a minimum of 3 inch sidelap. Starter or "undereave" slates and slates at the ridge shall be canted 1/4 inch by a wooden cant strip which shall be provided by the roofer.
3. Nails shall not be driven as to produce strain on slates. The slate shall be loose when fully nailed. Nail heads should not interfere with overlapping shingle above.
4. Roofer shall draw slates from several pallets at once (shuffle) so as to blend the material on the roof.
5. Exposed nails are only permissible at the top courses where unavoidable. Exposed nail heads shall be covered with elastic cement. Hip slates and ridge slates shall be laid in elastic cement spread thickly over unexposed surface of under courses, nailed securely in place, and pointed with elastic cement.
6. All penetrations such as pipes and ventilators shall have slate neatly fitted around them.
7. The roofer shall build in, and place, all flashing pieces. Each course of slate shall have copper step-flashing neatly woven into the slate.
8. Entire surfaces of all roofs, except as noted, shall be covered with slate in a proper and weatherproof manner.
9. Upon completion, all slates must be sound, whole and clean. The roof must be left watertight and neat in every respect, and subject to the engineer's approval.
10. The owner shall be furnished with a stock of 2% extra slates for future roof repairs.

**Wareham Town Hall
East and West Single-Ply Roof Replacement
Slate Roof Replacement and Restoration**

Appendix D

Copper Roof Installation for the Memorial Town Hall Roof

Overview

1. Drawings and general provisions of the Contract apply to this appendix.
 - a. All work shall be done in accordance with the Copper Development Associations Inc.'s "Copper in Architecture" and the National Roofing Contractors Association's "The NRCA Roofing Manuals" and "The NRCA Waterproofing Manual".
2. Roofing contractor shall install standing seam red copper roofing near the slope transition on the South elevation of the town hall building.
 - a. The roofing contractor shall provide a waterproof tie-in transition to Slate and PVC Roofing.
3. The roofing contractor is to provide a safety zone around the building. Must provide either fencing or caution tape around the perimeter.
 - a. The roofing contractor is to maintain safe public access to the building during construction. This includes handicap access.
4. The roofing contractor Provide all required permits, fees and licenses.
5. The roofing contractor is responsible to provide portable sanitary facilities for all personnel.
6. The roofing contractor is responsible for daily debris clean up and removal.
7. The roofing contractor is responsible to provide adequate power as required to run any power equipment. Gas cans not allowed on the roof.
8. Provide contractors' 2-year warranty and material manufacturer's system 30-year warranty and Contractor's workmanship warranty.
9. The contractor shall set up all material, equipment and boom lift to perform the Work.
10. The dimensions of slate the copper roofing to be installed is approximately 53' by 3'.

PART 1-GENERAL

1.1 SUMMARY

A. Section Includes:

1. Standing-seam copper roofing.

B. Related Requirements:

1. Drawings and general provisions of Contract,

1.2 COORDINATION

- #### A. Coordinate copper roofing with PVC roofing, slate roofing, and other adjoining work to provide permanently watertight, secure, and noncorrosive installation.

1.3 PERFORMANCE REQUIREMENTS

- #### A. Installation Requirements: Fabricator is responsible for installing system, including anchorage to substrate and necessary modifications to meet specified and drawn requirements and maintain visual design concepts in accordance with Contract Documents and following installation methods as stipulated in the "Copper in Architecture" handbook published by the Copper Development Association Inc. (CDA)

1. Drawings are diagrammatic and are intended to establish basic dimension of units, sight lines, and profiles of units.
2. Make modifications only to meet field conditions and to ensure fitting of system components.
3. Obtain Engineer's approval of modifications.
4. Provide concealed fastening wherever possible.
5. Attachment considerations: Account for site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening and fracturing connection between units and building structure or between components themselves.
6. Obtain Engineer's approval for connections to building elements at locations other than indicated in Drawings.
7. Accommodate building structure deflections in system connections to structure.

B. Performance Requirements:

1. System shall accommodate movement of components without buckling, failure of joint seals, undue stress on fasteners, or other detrimental effects when subjected to seasonal temperature changes and live loads.
2. Design system capable of withstanding building code requirements for negative wind pressure.

C. Interface With Adjacent Systems:

1. Integrate design and connections with adjacent construction.
2. Accommodate allowable tolerances and deflections for structural members in installation.

1.4 SUBMITTALS

- A. General: Submit the following in accordance with the Construction Documents.
- B. Product data including metal manufacturer's specifications, installation instructions, and general recommendations for roofing applications. Include certification or other data substantiating that materials comply with requirements.
- C. Shop drawings showing manner of forming, joining, and securing copper roofing, and pattern of seams. Show expansion joint details and waterproof connections to adjoining work and at obstructions and penetrations.
- D. Samples consisting of 6-inch (150 mm) square specimens of specified copper roofing material.
- E. Certificates: Fabricator's certification that products furnished for Project meets or exceeds specified requirements.

1.5 CLOSEOUT SUBMITTALS

- A. Provide maintenance data in Operations and Maintenance manual for maintaining applied coatings on copper panels.

1.6 QUALITY ASSURANCE

- A. Fabricator's Qualifications: Company specializing in copper sheet metal roofing work with three years' experience in similar size and type of installations.
- B. Installer: A firm with 5 years of successful experience with installation of copper roofing of type and scope equivalent to Work of this Section.
- C. Industry Standard: Except as otherwise shown or specified, comply with applicable recommendations and details of the "Copper in Architecture" handbook published by the Copper Development Association Inc. (CDA). Conform to dimensions and profiles shown.
- D. Wind Uplift: Provide roof assemblies meeting wind uplift ratings as required by code.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Packing, Shipping, Handling, and Unloading: Protect finish panel faces.
- B. Acceptance at Site: Examine each panel and accessory as delivered and confirm that finish is undamaged. Do not accept or install damaged panels.

C. Storage and Protection:

1. Stack pre-formed material to prevent twisting, bending, and abrasions.
2. Provide ventilation.
3. Prevent contact with materials which may cause discoloration or staining.

1.8 WARRANTY

- A. Contractors shall warrant installed system and components to be free from defects in material and workmanship for period of 2 years.
- B. Contractor's warranty shall include coverage against leakage and damages to finishes.
- C. Contractor shall provide material manufacturer's system 30-year warranty.

PART 2-PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering materials that may be incorporated in the Work include, but are not limited to, the following:
 1. Hussey Copper, Ltd.
 2. Revere Copper Products, Inc.

2.2 MATERIALS

- A. Copper Roofing Sheets: Cold-rolled copper sheet complying with ASTM B 370 temper H00, unless otherwise indicated, and as follows:
 1. Weight: 20 oz. per sq. ft. (0.0270-inch thick) (0.69-mm) unless otherwise indicated.
- B. Miscellaneous Materials: Provide materials and types of fasteners, solder, protective coatings, separators, sealants and accessory items as recommended by copper sheet manufacturer for copper roofing work, except as otherwise indicated.
 1. Use Sikaflex 1A, or equivalent, around the fastener penetrations for the copper roofing.
- C. Accessories: Except as indicated as work of another specification Section, provide components required for a complete roof system, including trim, copings, fascias, ridge closures, cleats, seam covers, battens, flashings, gutters, louvers, sealants, gaskets, and closure strips. Match materials and finishes of roof.
 1. Sealing Tape: Pressure-sensitive 100 percent solids polyisobutylene compound sealing tape with release paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.

2. Joint Sealant: One-part, copper compatible elastomeric polyurethane, polysulfide, butyl or silicone rubber sealant as tested by sealant manufacturer for copper substrates.
 3. Cleats:
 - a. Concealed type as indicated in the "Copper in Architecture " handbook published by the Copper Development Association Inc. (CDA) for standing seam spaced on 12-inch (300-mm) centers.
 - b. Fabricate cleats to allow thermal movement of copper roof panels while preventing copper panel distortion due to wind uplift forces.
 4. Trim, Closure Pieces, and Accessories:
 - a. Same material, thickness and finish as adjacent copper roof panels, brake formed to required profiles.
 - b. Comply with standards conforming to recognized industry standard sheet metal practice.
- D. Bituminous Coating: SSPC-Paint 12, Cold-Applied Asphalt Mastic (Extra Thick Film), nominally free of sulfur, compounded for 15-mil dry film thickness per coat.
- E. High Temperature Grade Water Barrier Underlayment: Cold applied, self-adhering membrane composed of a high density, cross laminated polyethylene film coated on one side with a layer of butyl rubber or high temperature asphalt adhesive. Provide primer when recommended by water barrier manufacturer.
1. Minimum Thickness: 30 mil.
 2. Tensile Strength: ASTM D 412 (Die C Modified); 250 psi.
 3. Membrane Elongation: ASTM D412 (Die C Modified); 250%.
 4. Permeance (Max): ASTM E96; 0.05 Perms.
 5. Acceptable Products:
 - a. Blueskin PE 200 HT, Henry.
 - b. Ultra, W.R. Grace Company.
 - c. CCW MiraDRI WIP 300 High Temperature, Carlisle Coatings and Waterproofing.
- F. Roofing Felt Underlayment: Asphalt saturated felt weighing not less than 30 lbs per 100 square feet.
- G. Paper Slip Sheet: Minimum 4-lb. red rosin-sized building paper.

- H. Nails for Wood Substrates: Copper or hardware bronze, 0.109-inch minimum not less than 7/8-inch (22-mm) long barbed with large head.
- I. Screws & Bolts: Copper, bronze, brass, or passivated stainless steel (300 Series) of sufficient size and length to sustain imposed stresses.
- J. Cleats: 20 oz. ounce cold rolled copper, as required to sustain loads 2-inch (50 mm) wide x 3-inch (75-mm) long.
- K. Solder: ASTM B32; Provide 50-50 tin/lead or lead free alternative of similar or greater strength solder. Killed acid flux.
- L. Flux: Muriatic acid neutralized with zinc or approved brand of soldering flux.
- M. Rivets:
 - 1. Pop Rivets: 1/8-inch (3-mm) to 3/16-inch (4.5-mm) diameter, with solid brass mandrels.
 - 2. Provide solid copper rivet (tinner's rivets) where structural integrity of seam is required.

2.3 FABRICATION

- A. General Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown and with applicable requirements of the "Copper in Architecture" handbook published by the Copper Development Association (CDA) and other recognized industry practices. Fabricate for waterproof and weather-resistant performance with expansion provisions for running work, sufficient to permanently prevent leakage, damage, or deterioration of the work. Form work to fit substrate. Comply with material manufacturer's instructions and recommendations for forming material. Form exposed copper work without excessive oil-canning, buckling, and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.
 - 1. Fabricate to allow for adjustments in field for proper anchoring and joining.
 - 2. Form sections true to shape, accurate in size, square, free from distortion and defects.
 - 3. Cleats: Fabricate cleats and starter strips of same material as sheet, interlockable with sheet in accordance with CDA recommendations.
 - 4. Tin edges of copper sheets and cleats at soldered joints for flat lock and soldered system.
 - 5. Standing Seam Panels:
 - a. Fabricate pans to interlock standing seam with center to center seam spacing as indicated on Drawings.
 - b. Fabricate interlocking seams to heights and patterns indicated.

- c. Form overlapping and interlocking transverse joints.
- B. Seams: Fabricate nonmoving seams in copper sheet with flat-lock seams. Tin edges and cleats to be soldered, form seams, and solder.
- C. Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used, or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1-inch (25-mm) deep, filled with mastic sealant (concealed within joints).
- D. Sealant Joints: Where movable, non-expansion-type joints are indicated or required for proper performance of work, form copper to provide for proper installation of elastomeric sealant, in compliance with the "Copper in Architecture" handbook published by the Copper Development Association Inc. (CDA).
- E. Separations: Provide for separation of copper from noncompatible metal or corrosive substrate by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.
- F. Solder:
 - 1. Solder and seal non-moving copper joints on slopes up to 3:12, except those indicated or required to be expansive type joints.
 - 2. After soldering, remove flux. Wipe and wash solder joints clean. Refer to CLEANING Article in PART 3.

2.4 FINISHES

- A. Natural weathering mill finished copper. No applied finish.

PART 3-EXECUTION

3.1 EXAMINATION

- A. General: Examine conditions and proceed with work when substrates are ready.
- B. Confirm that substrate system is even, smooth, sound, clean, dry, and free from defects.
- C. Verify roof openings, pipes, sleeves, ducts, and vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.

3.2 PREPARATION

- A. Clean surfaces to receive copper roofing. Substrate to be smooth and free of defects. Drive all projecting nails or other fasteners flush with substrate.
- B. Water Barrier Underlayment:
 - 1. Install high temperature grade water barrier on clean, dry roof substrate.
 - 2. Remove dust, dirt, and loose fasteners.

3. Remove protrusions from the deck area.
4. Verify substrate has no voids, damaged, or unsupported areas.
5. Repair voids or unacceptable areas before installing membrane.
6. Prime substrates with manufacturer's approved primer if required for proper installation of membrane over substrate.
7. Install membrane in strict accordance with manufacturer's printed application procedures, precautions, and limitations.
8. Start application at low points and lap membrane shingle fashion to prevent water penetration.
9. Membrane Underlayment: Apply horizontally, lapping preceding layer not less than 4-inches (100 mm). End lap membrane not less than 6-inches (150-mm) .
 - a. Maximize adhesion to substrate by brooming or rolling membrane in place after placement.
 - b. Center membrane at valleys, hips, and ridges.

C. Roofing Felt Underlayment:

1. Install underlayment over solid substrates with horizontal overlaps and endlaps staggered.
2. Lay parallel to ridge line with 2 ½-inch (63-mm) sidelaps and 6-inch (150-mm) endlaps.
3. Start application at low point, working up deck laying plies in shingle fashion.
4. Fasten underlayment with copper roofing nails spaced on 12-inch (300-mm) centers maximum.

D. Install underlayment and paper slip sheet on substrate under copper roofing to greatest extent possible unless otherwise recommended by manufacturer of sheet metal. Paper slip sheets must be installed over the underlayment. Use adhesive for temporary anchorage, where possible, to minimize use of mechanical fasteners under copper roofing. Lap joints 2 inch (50 mm) minimum.

3.3 INSTALLATION

A. Manufacturer's Recommendations: Except as otherwise shown or specified, comply with recommendations and instructions of manufacturer of copper being fabricated and installed.

B. General:

1. Separate dissimilar metals by painting each metal surface in area of contact with a bituminous coating, by applying rubberized asphalt or butyl underlayment to each

metal surface, or by other permanent separation as recommended by manufacturers of dissimilar metals.

2. Form and fabricate sheets, seams, strips, cleats, valleys, ridges, edge treatments, integral flashings, and other components of copper roofing to profiles, patterns, and drainage arrangements shown and as required for permanently leakproof construction. Provide for thermal expansion and contraction of the work, as indicated. Seal joints as shown and as required for leakproof construction. Shop-fabricate materials to greatest extent possible.
3. Sealant-Type Joints: Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch (25 mm) into sealant. Form joints to conceal sealant completely. When ambient temperature is moderate at time of installation, 40 degrees to 70 degrees F (4 degrees to 21 degrees C), set joint members for 50 percent movement either way. Adjust setting proportionately for installation at higher or lower ambient temperatures. Do not install sealant-type joints at temperatures below 40 degrees F (4 degrees C). Comply with manufacturer's requirements for handling and installing sealants.
4. Fabricate and install work with lines and corners of exposed units true and accurate. Form exposed faces flat and free of buckles, excessive waves, and avoidable tool marks considering temper and reflectivity of metal. Provide uniform, neat seams with minimum exposure of solder, and sealant. Except as otherwise shown, fold back sheet metal to form a hem on concealed side of exposed edges.
5. Conceal fasteners and expansion provisions where possible in exposed work, and locate so as to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
6. Tin uncoated copper surfaces and cleats at edges of sheets to be soldered, for a width of 1-1/2 inch (38 mm), using solder recommended for copper work.

C. Standing Seam Roofing:

1. Fold lower end of each pan under 3/4 inch (19 mm). Slit fold 1-inch (25-mm) away from corner to form tab where pan turns up to make standing seam. Fold upper end of each pan over 2-inches (50 mm). Hook fold on lower end of upper pan into fold on upper end of underlying pan.
2. Apply pans beginning at eaves. Loose lock pans to valley flashing and edge strips at eaves and gable rakes.
3. Finish standing seams one inch (25-mm) high. Bend up one side edge 1 1/2-inch (38-mm) and other 1-3/4 inch (44 mm). Make first fold 1/4-inch (6-mm) wide single fold and second fold 1/2-inch (13-mm) wide, providing locked portion of standing seam with 5 plies in thickness. Fold lower ends of seams at eaves over at 45-degree angle. Terminate standing seams at ridge and hips by turning down in tapered fold.

4. Form valleys of sheets not exceeding 10'-0" (3000-mm) in length. Lap joints 8-inches (200 mm) in direction of drainage. Extend valley sheet minimum 6-inches (150-mm) under roofing sheets. At valley, double fold valley and roofing sheets and secure with cleats spaced 12-inch (300-mm) centers.
- D. Coordinate installation of panels with adjacent construction to ensure watertight enclosure.
1. Ensure that ice dam protection is properly installed.
- E. Coordinate with PVC roofing manufacturer to ensure that materials are compatible.

3.4 CLEANING

- A. Remove protective film (if any) from exposed surfaces of copper roofing promptly upon installation. Strip with care to avoid damage to finishes.
- B. Upon completion of each area of soldering, carefully remove flux and other residue from surfaces. Neutralize acid flux by washing with baking soda solution, and then flushing clear water rinse. Use special care to neutralize and clean crevices.
- C. Clean exposed metal surfaces of substances that would interfere with uniform oxidation and weathering.

3.5 PROTECTION

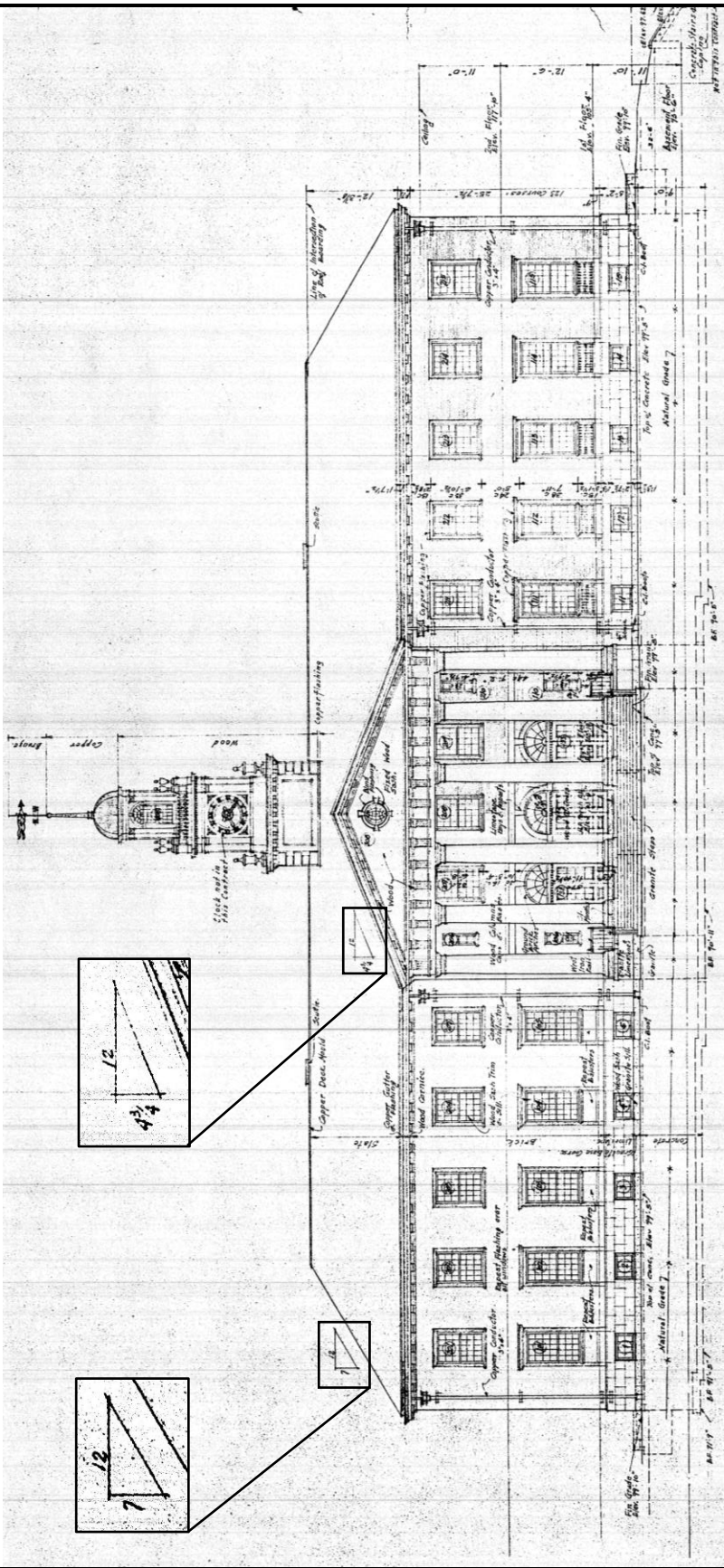
- A. Provide final protection in a manner acceptable to installer that ensures that copper roofing is without damage or deterioration at time of Substantial Completion.

Wareham Town Hall
East and West Rubber Roof Replacement
Slate Roof Restoration

Appendix E

Copper Roof, PVC Roof and Slate Roof Details

P. W. A. DUCKET MASS. 1890. P. S.
MEMORIAL MUNICIPAL BUILDING
 FOR THE
TOWN OF WAREHAM MASS.
 WILLIAM G. UPHAM ARCHITECT
 NORWOOD MASS.
 DATE JAN 12 1925 DRAWING NO. **7**



NORTH ELEVATION
 SCALE 3/8" = 1'-0"

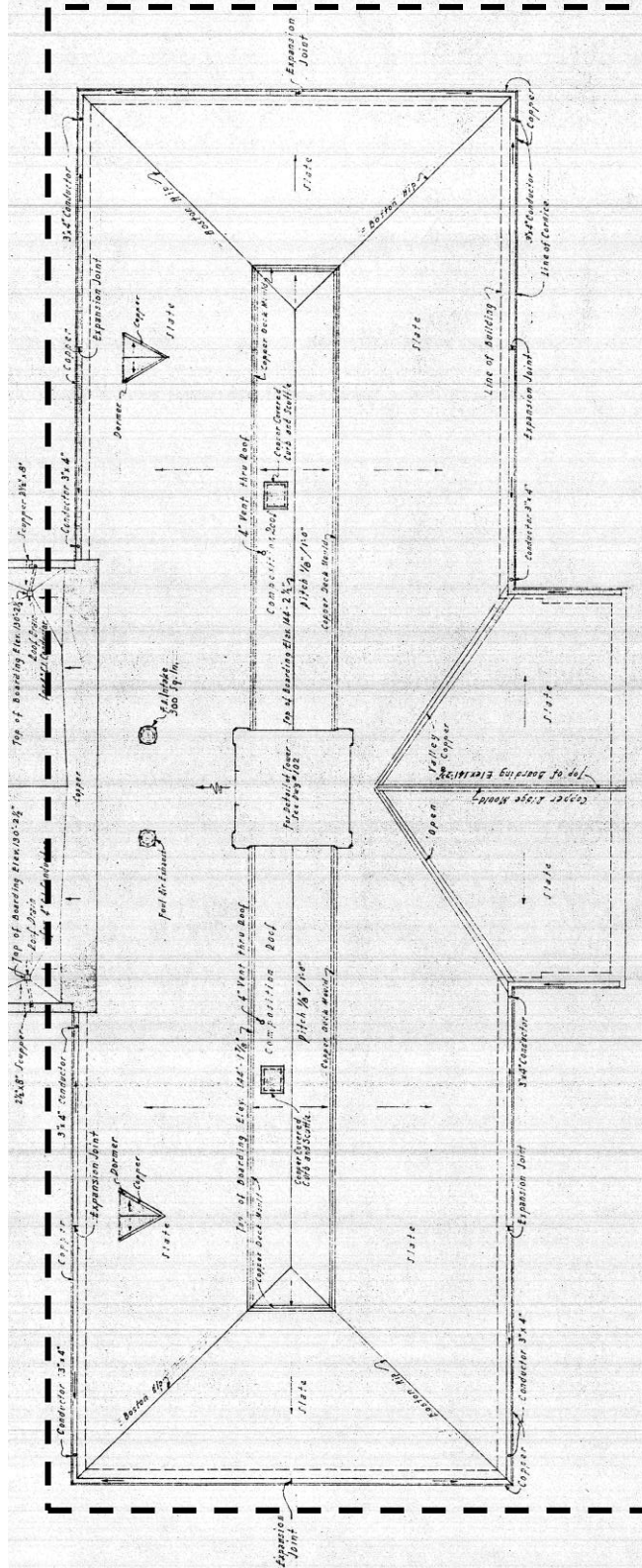
Existing Conditions – Roof Elevation Record Drawing

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 54 Marion Road
 Wareham, MA 02571

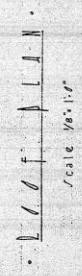
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WORK AREA



P. W. A. DOCKET M.A.S. 1360 D. S.
MEMORIAL MUNICIPAL BUILDING
 FOR THE
TOWN OF WAREHAM, MASS.
 WILLIAM G. UPHAM ARCHITECT
 NORWOOD, MASS.
 DATE: JAN. 15, 1934 DRAWING NO. **6**



Existing Conditions – Roof Plan Record Drawing

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 Replacement and Restoration on Memorial Town Hall
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Existing Conditions – Antenna Stand to be Removed

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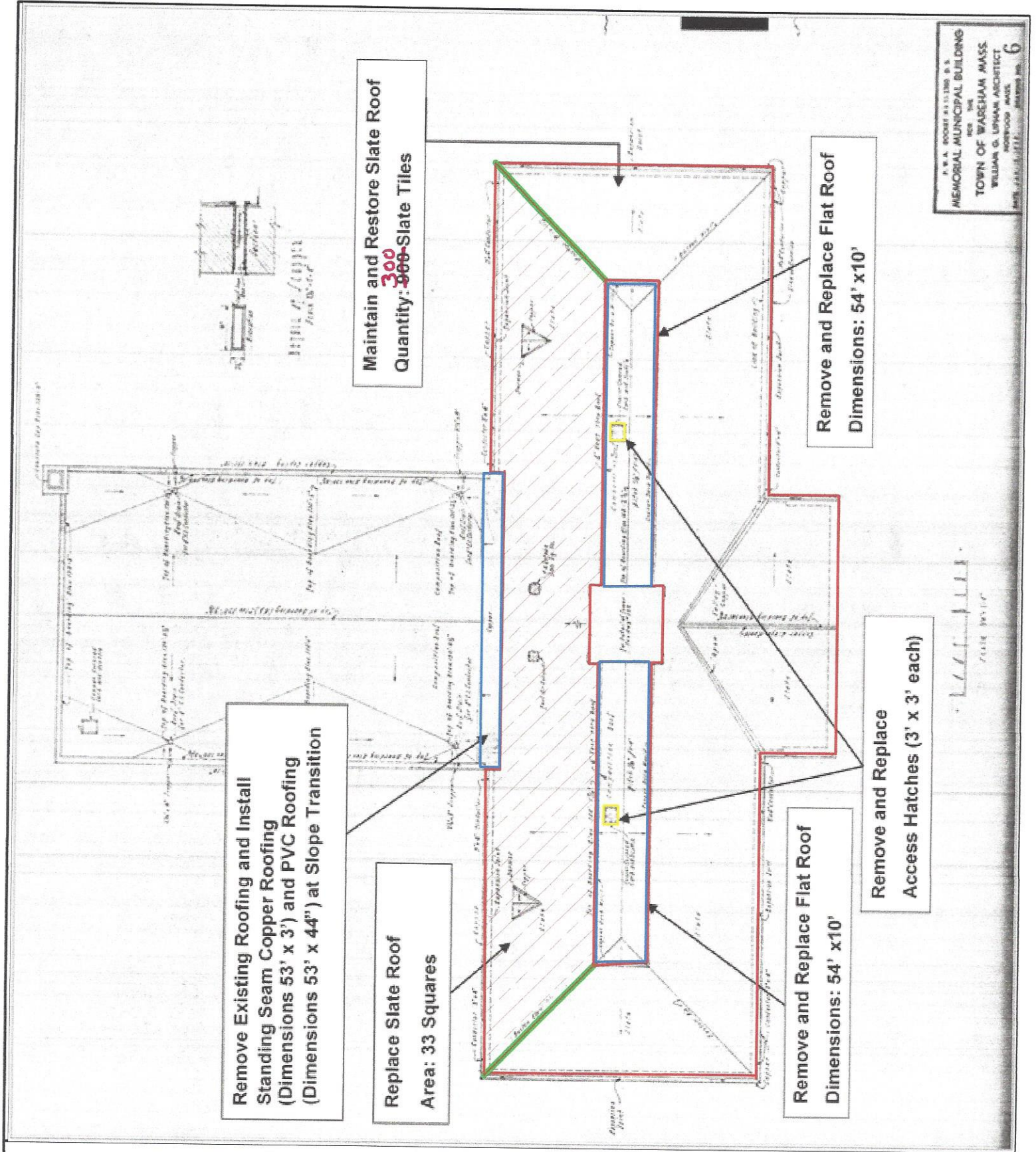
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Remove Existing Roofing and Install Standing Seam Copper Roofing (Dimensions 53' x 3') and PVC Roofing (Dimensions 53' x 44") at Slope Transition

Replace Slate Roof Area: 33 Squares

Maintain and Restore Slate Roof Quantity: ~~300~~ 300 Slate Tiles

Remove and Replace Flat Roof Dimensions: 54' x 10'

Remove and Replace Access Hatches (3' x 3' each)

Remove and Replace Flat Roof Dimensions: 54' x 10'

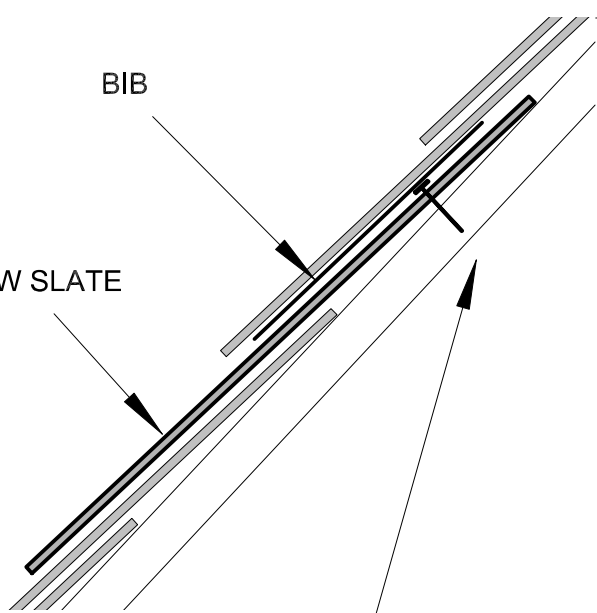
Proposed Work

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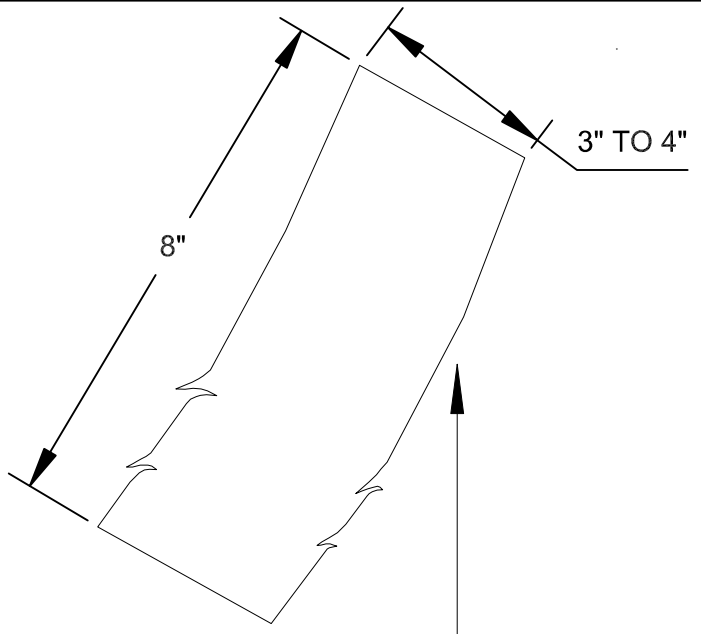
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BIB
NEW SLATE



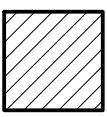
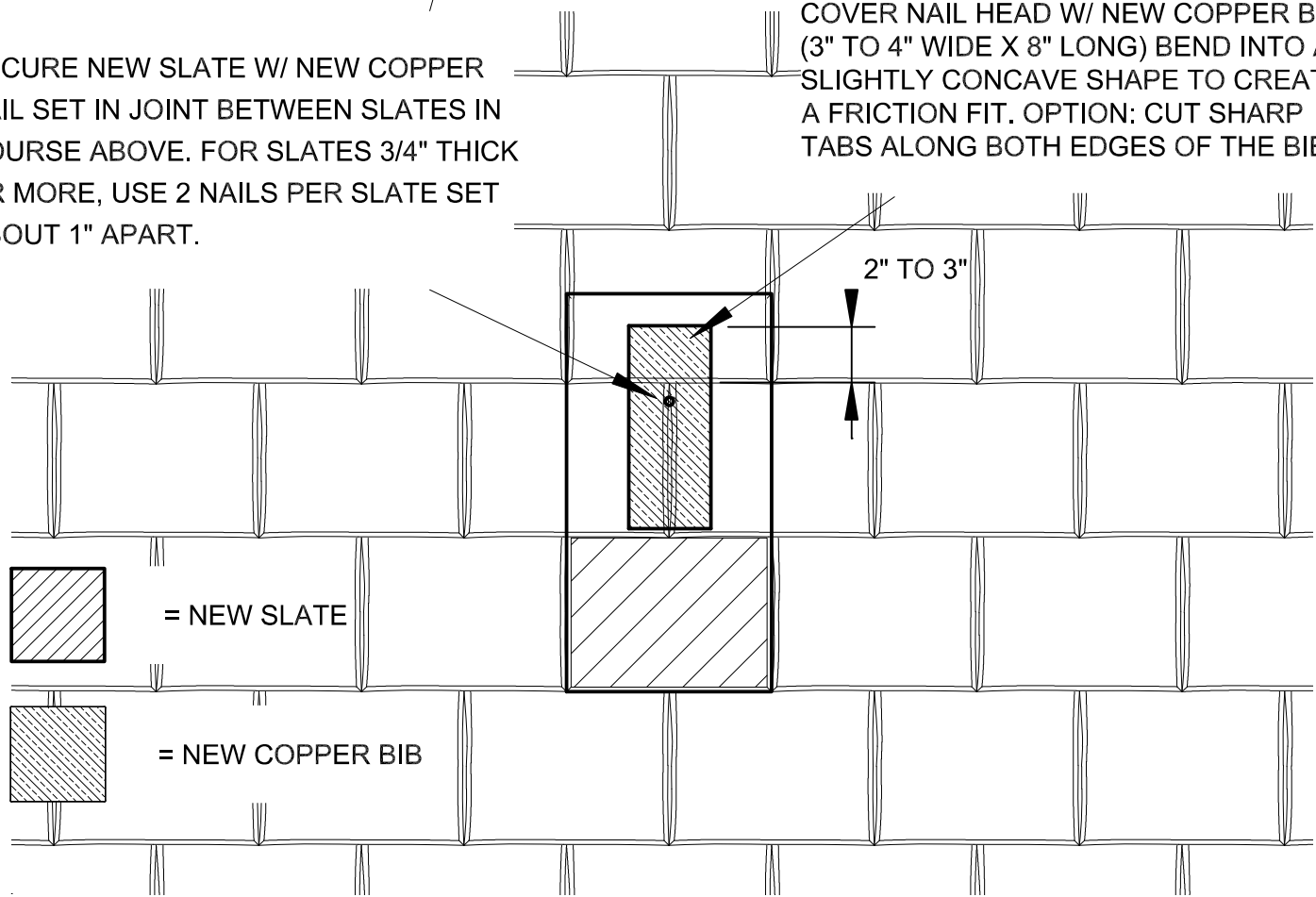
SECTION



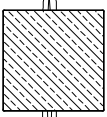
DETAIL: BIB

SECURE NEW SLATE W/ NEW COPPER NAIL SET IN JOINT BETWEEN SLATES IN COURSE ABOVE. FOR SLATES 3/4" THICK OR MORE, USE 2 NAILS PER SLATE SET ABOUT 1" APART.

COVER NAIL HEAD W/ NEW COPPER BIB (3" TO 4" WIDE X 8" LONG) BEND INTO A SLIGHTLY CONCAVE SHAPE TO CREATE A FRICTION FIT. OPTION: CUT SHARP TABS ALONG BOTH EDGES OF THE BIB.



= NEW SLATE



= NEW COPPER BIB

PLAN

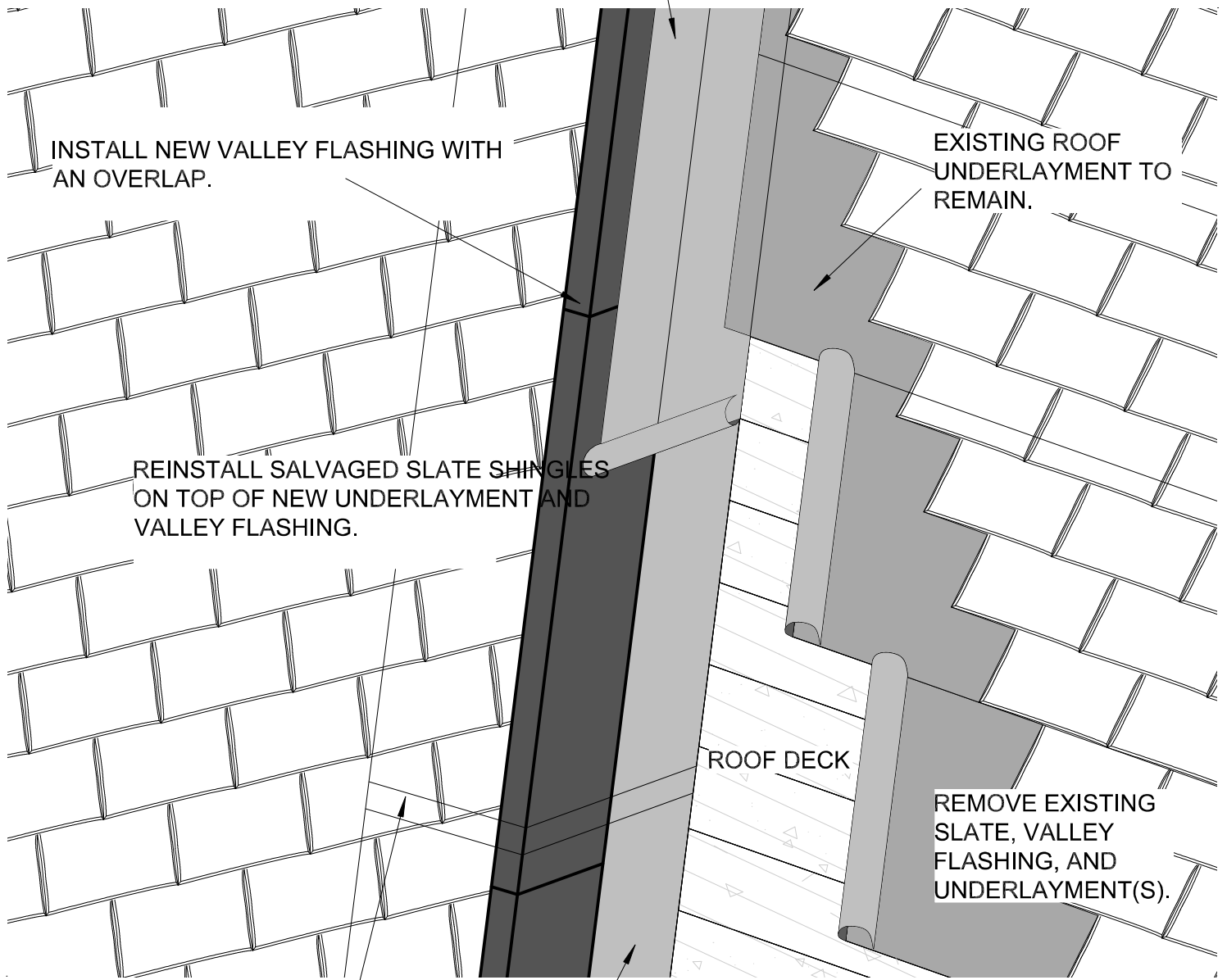
Slate Roof Repair Nail-and-Bib Method

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INSTALL ADDITIONAL UNDERLAYMENT TO MAINTAIN CONTINUITY. LAY NEW UNDERLAYMENT LONGITUDINALLY, LAP ON TOP OF VALLEY FLASHING AND BELOW EXISTING ROOF UNDERLAYMENT 6" MIN.



INSTALL NEW VALLEY FLASHING WITH AN OVERLAP.

EXISTING ROOF UNDERLAYMENT TO REMAIN.

REINSTALL SALVAGED SLATE SHINGLES ON TOP OF NEW UNDERLAYMENT AND VALLEY FLASHING.

ROOF DECK

REMOVE EXISTING SLATE, VALLEY FLASHING, AND UNDERLAYMENT(S).

INSTALL NEW VALLEY UNDERLAYMENT WITH 18" MIN ON EITHER SIDE OF VALLEY C.L. AND 6" MIN OF OVERLAP BETWEEN PIECES.

CUT BACK EXISTING ROOF UNDERLAYMENT, EITHER SIDE OF VALLEY.

Slate Roof Valley Flashing and Underlayment Detail

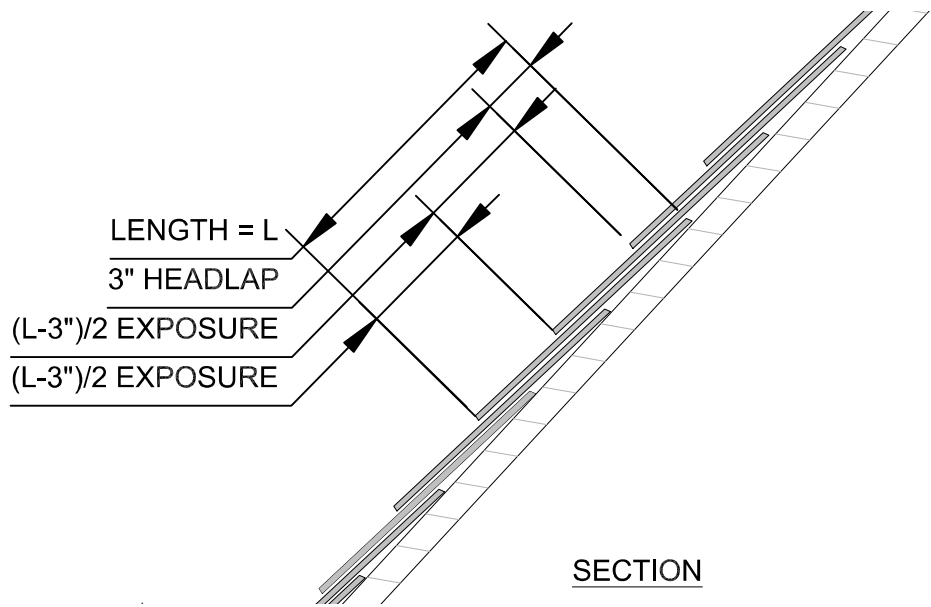
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Wareham, MA 02571

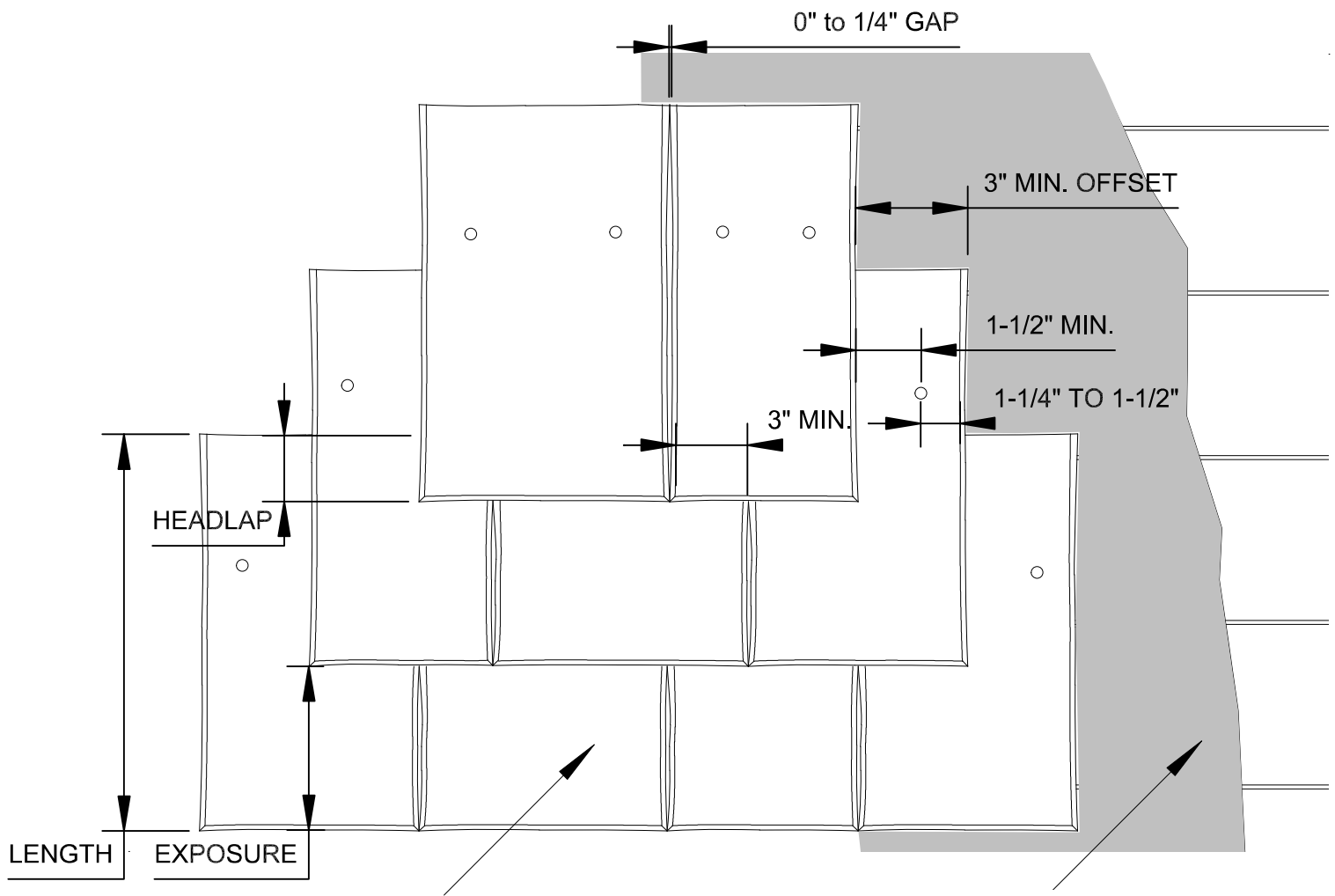
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SECTION



PLAN

Slate Roof Installation - Varied Width Slate

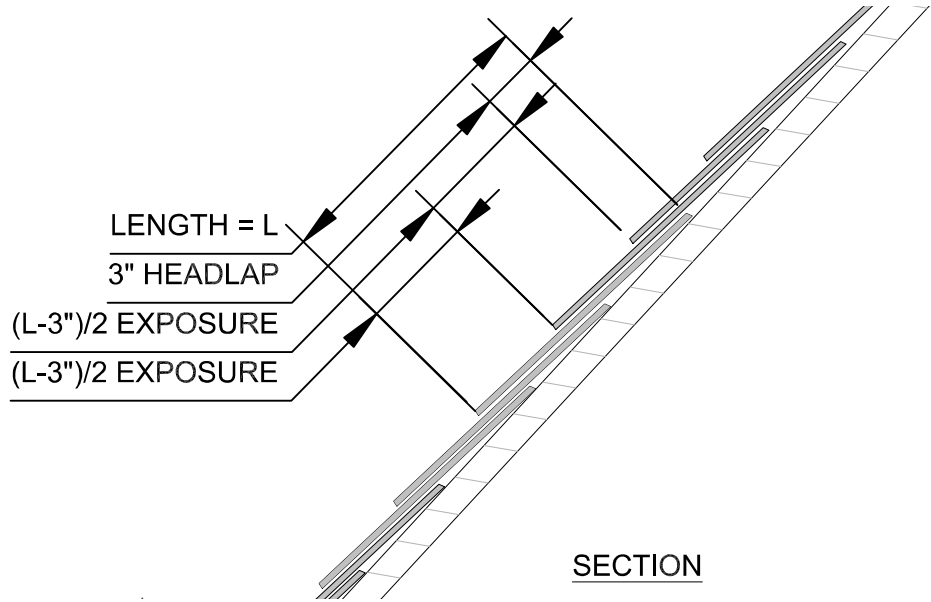
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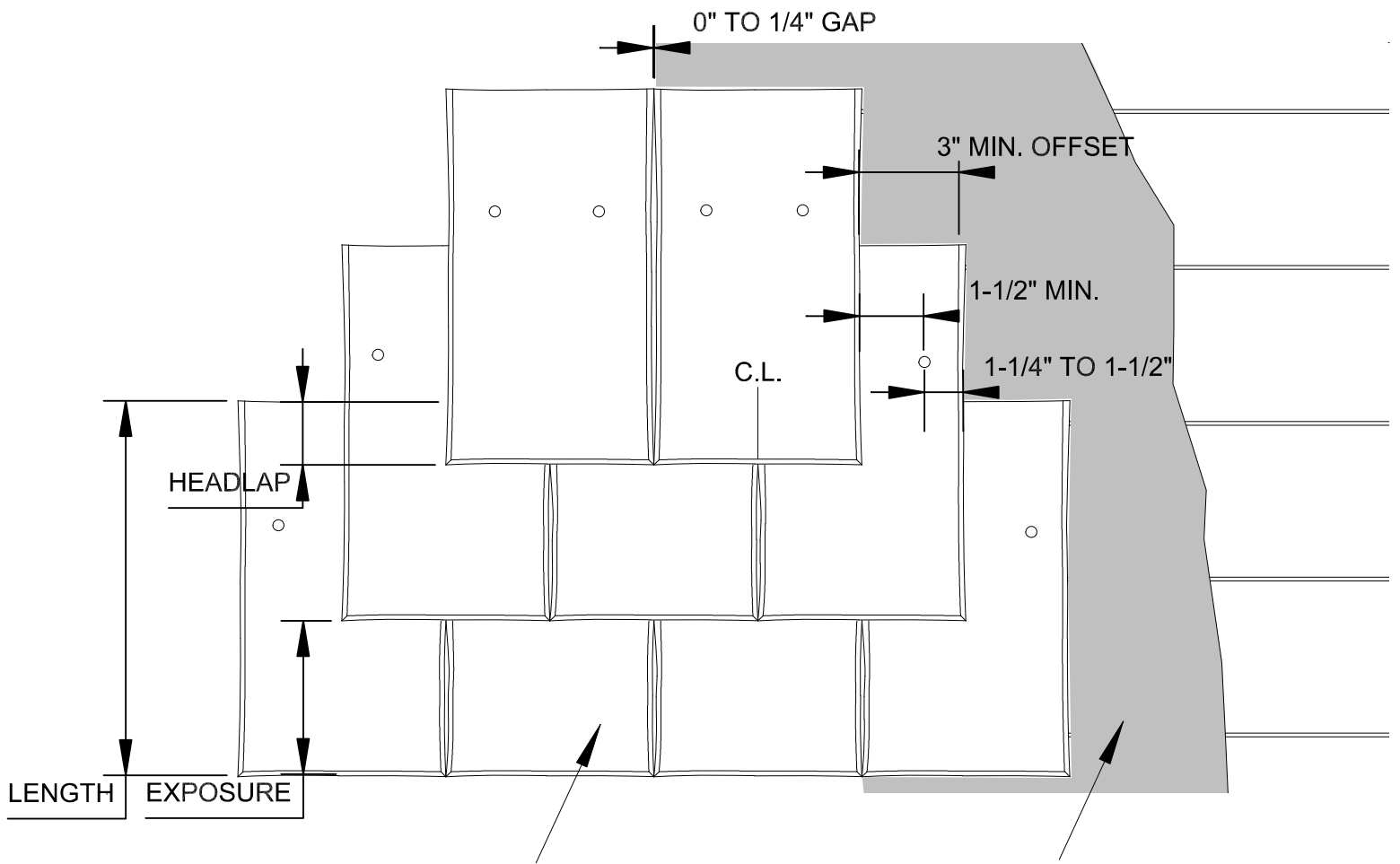
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SECTION



PLAN

Slate Roof Installation - Uniform Width Slate

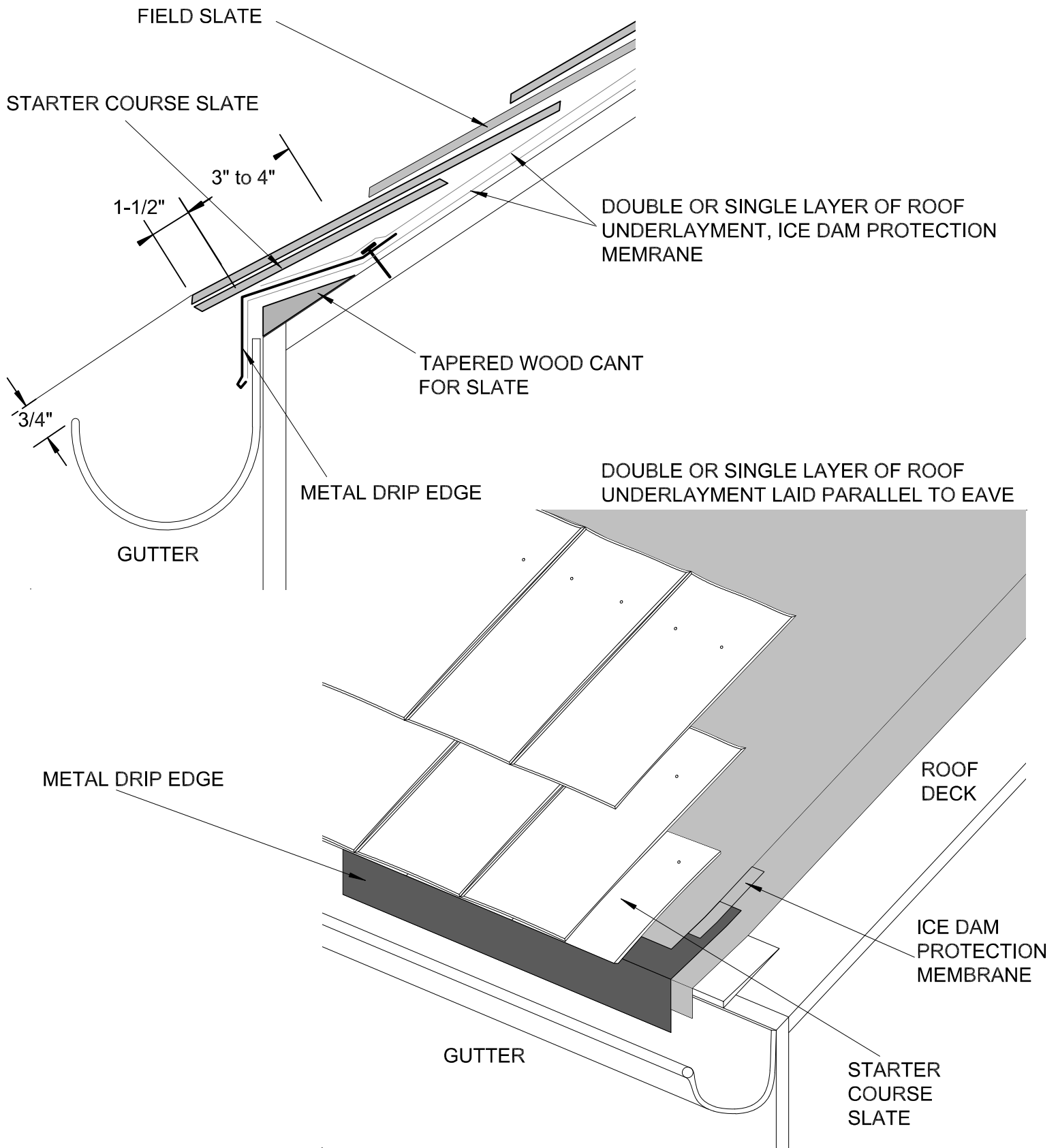
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Slate Roof Drip Edge and Gutter Detail

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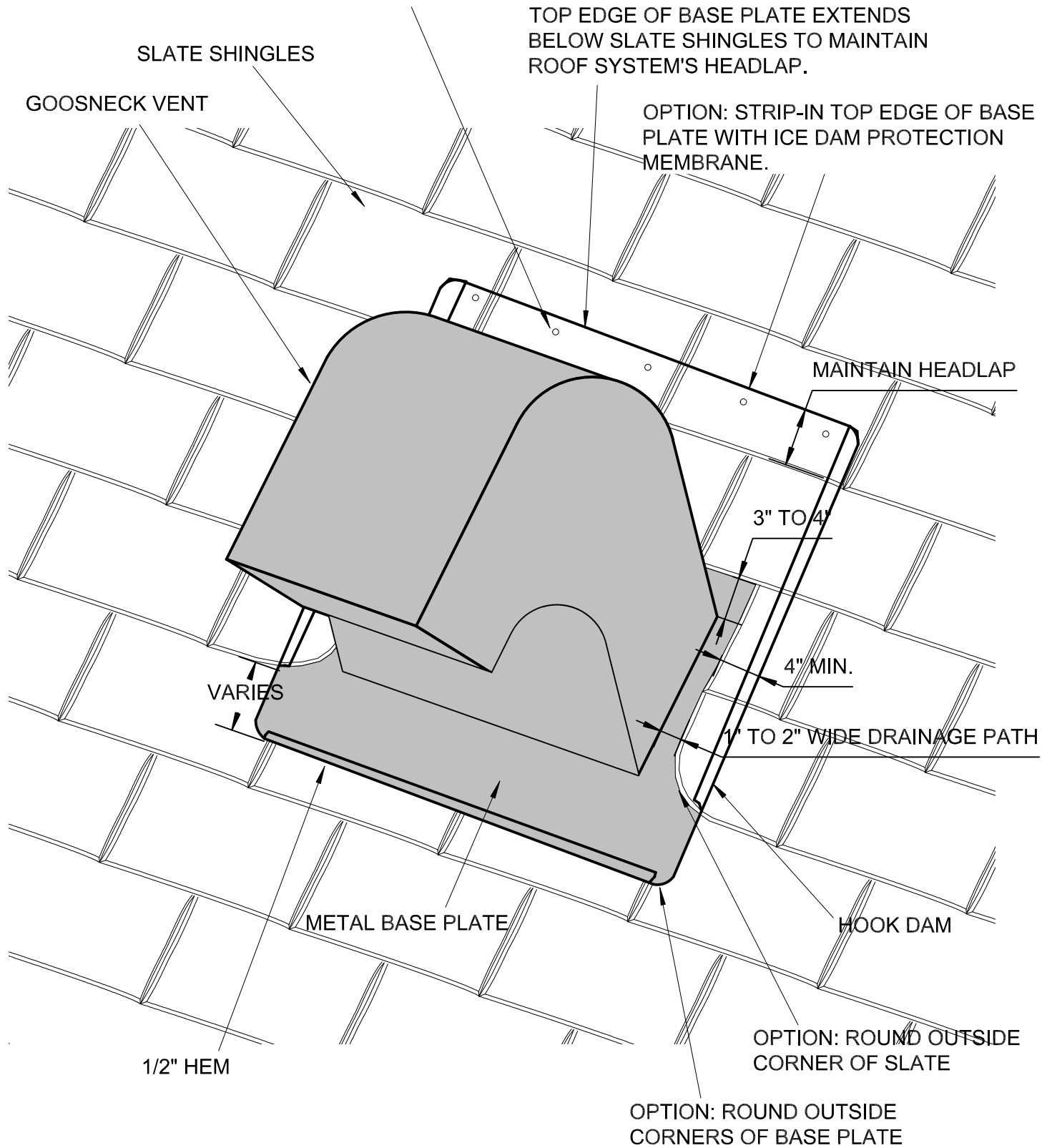
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NAIL TOP EDGE OF BASE PLATE AT 6" TO 12"
O.C. OPTION: INSTALL CLEATS AT 12" O.C.

TOP EDGE OF BASE PLATE EXTENDS
BELOW SLATE SHINGLES TO MAINTAIN
ROOF SYSTEM'S HEADLAP.

OPTION: STRIP-IN TOP EDGE OF BASE
PLATE WITH ICE DAM PROTECTION
MEMBRANE.



Slate Roof Gooseneck Vent Flashing Detail

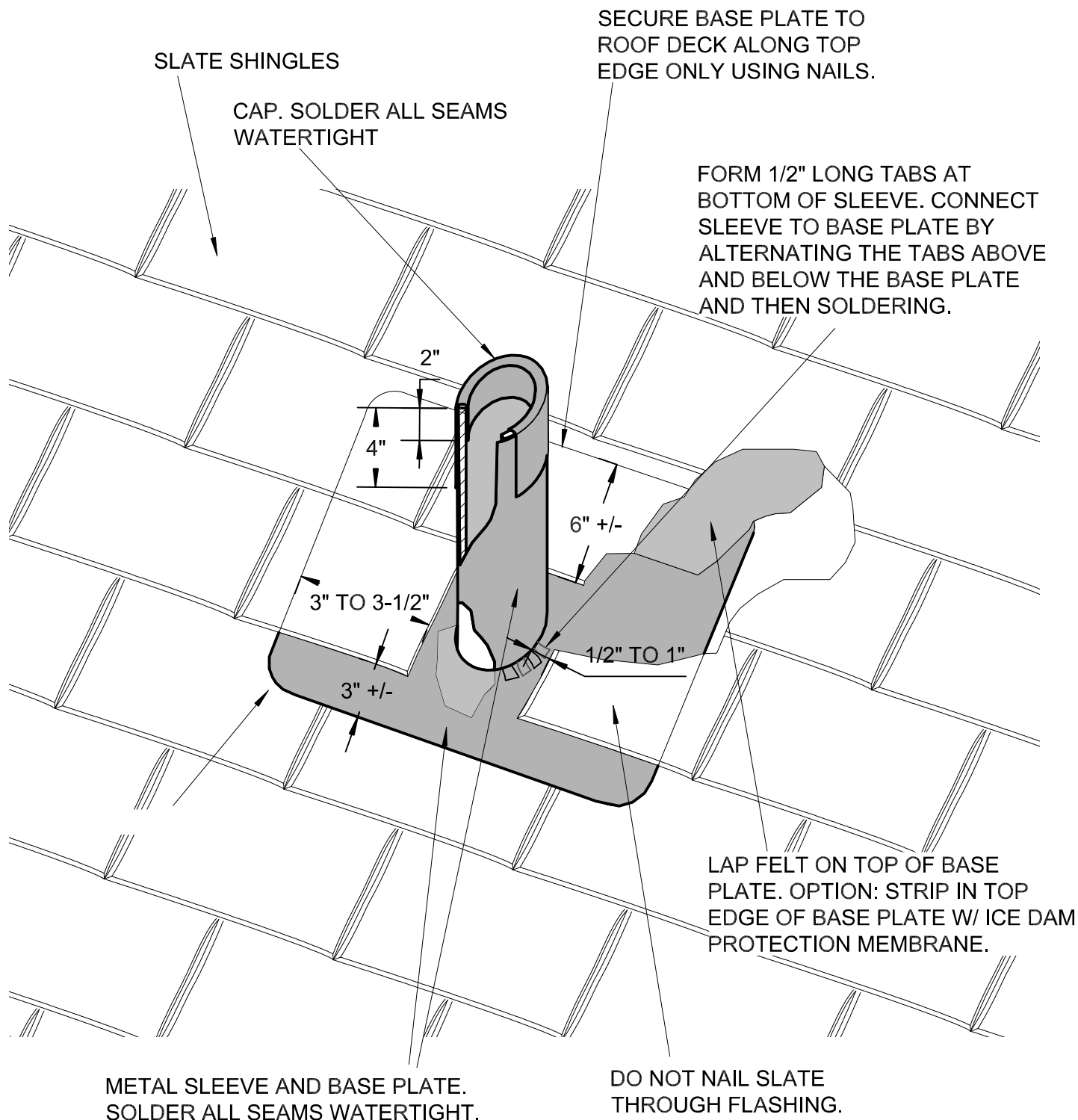
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METAL SLEEVE AND BASE PLATE.
SOLDER ALL SEAMS WATERTIGHT.

DO NOT NAIL SLATE
THROUGH FLASHING.

Slate Roof Vent Pipe Flashing Detail

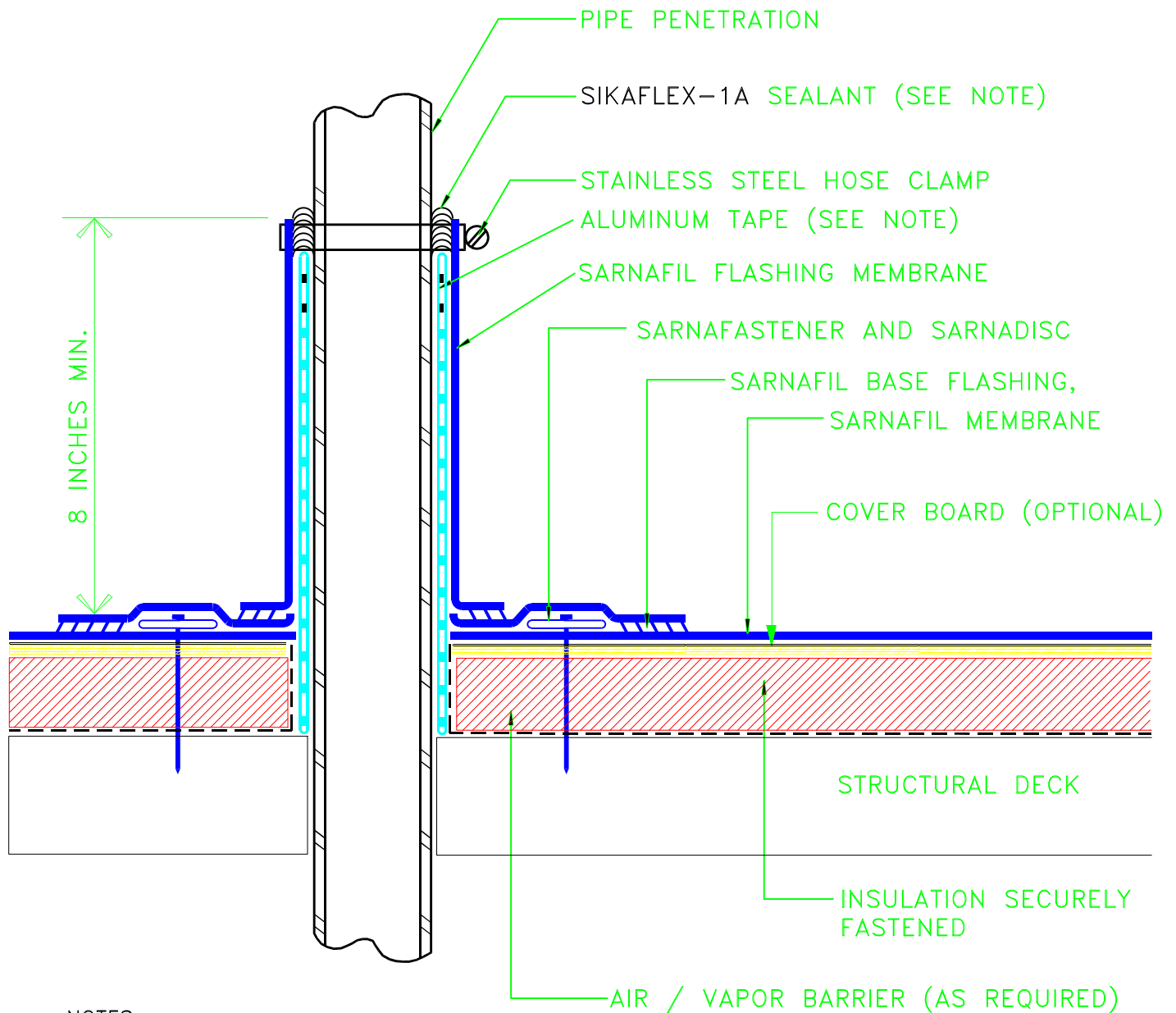
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NOTES:

- 1) ALUMINUM TAPE IS REQUIRED IF EXISTING PENETRATION IS CONTAMINATED.
- 2) SEALANT IS A MAINTENANCE ITEM, MAINTENANCE IS NOT COVERED UNDER THE SARNAFIL WARRANTY.
- 3) VAPOR BARRIER SHALL BE SEALED AT EDGES.

PVC Roof Vent Pipe Penetration Flashing Detail

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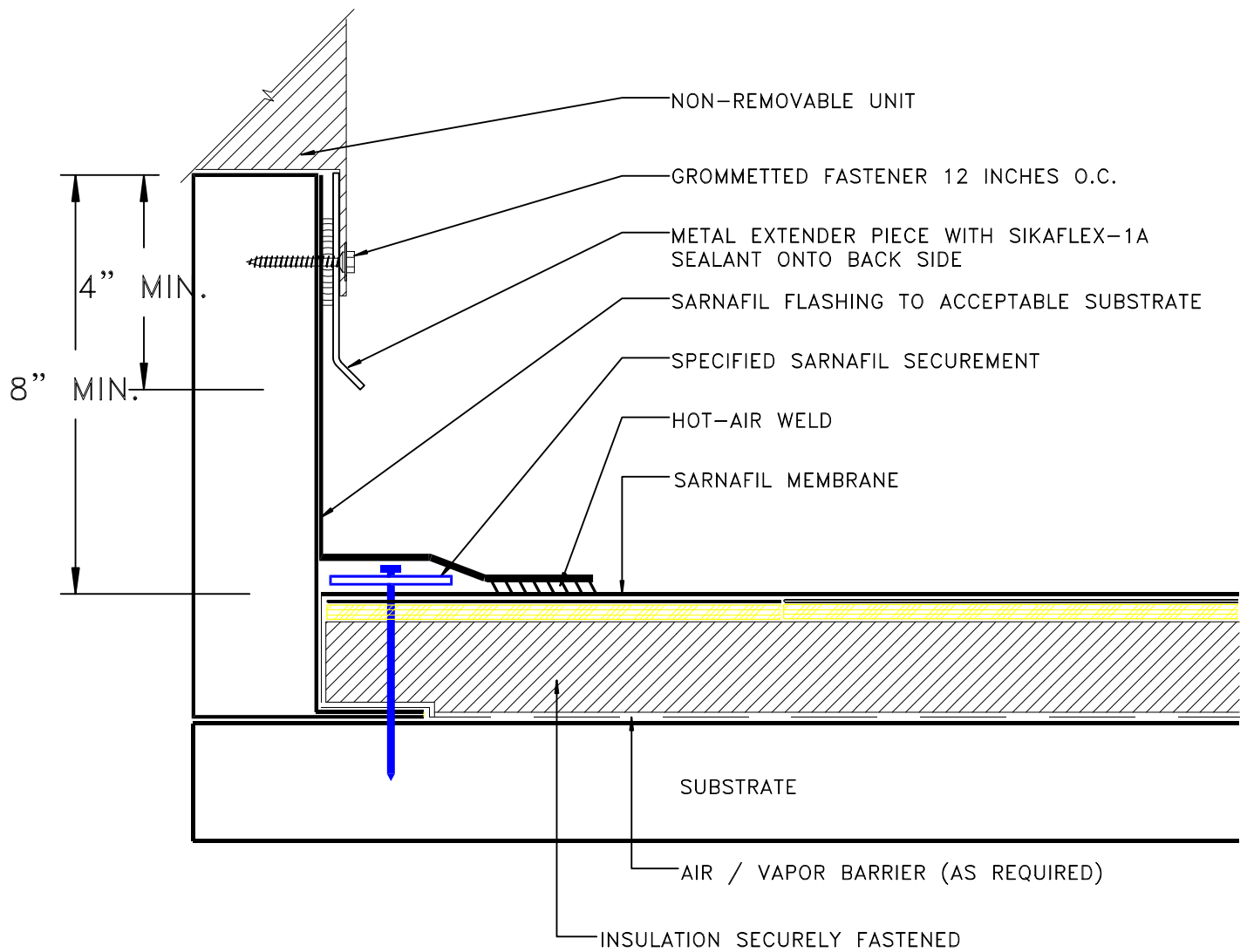
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NOTE:

- 1) METAL EXTENDER PIECE IS REQUIRED IF EXISTING COUNTERFLASHING IS CONTAMINATED AND OR COUNTERFLASHING FASCIA IS LESS THAN 4 INCHES WIDE. FASTENED 12 INCHES O.C. WITH GROMMETTED FASTENER.
- 2) VAPOR BARRIER SHALL BE SEALED AT EDGES.

PVC Roof Access Hatch Flashing Detail

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 Replacement and Restoration on Memorial Town Hall
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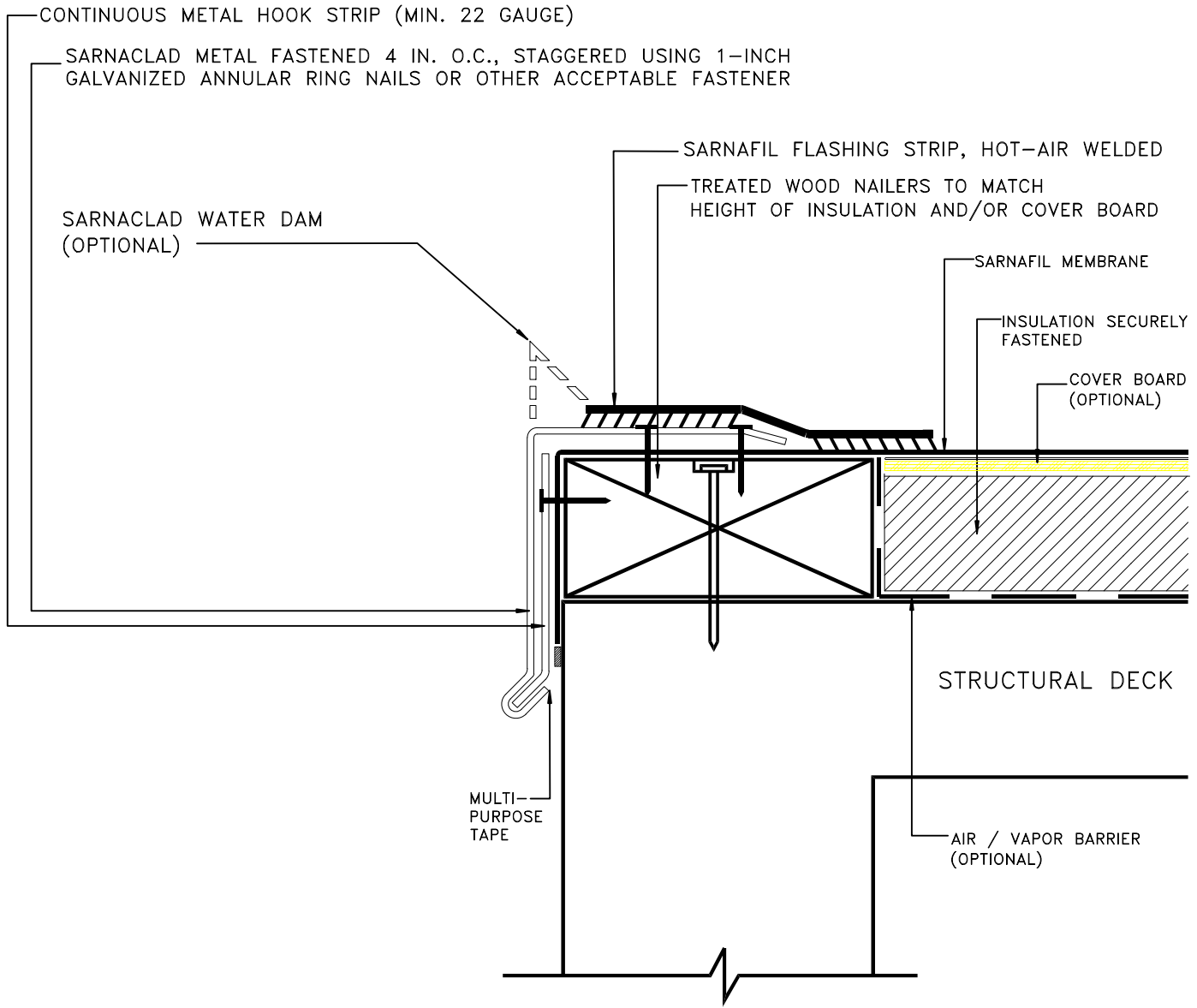
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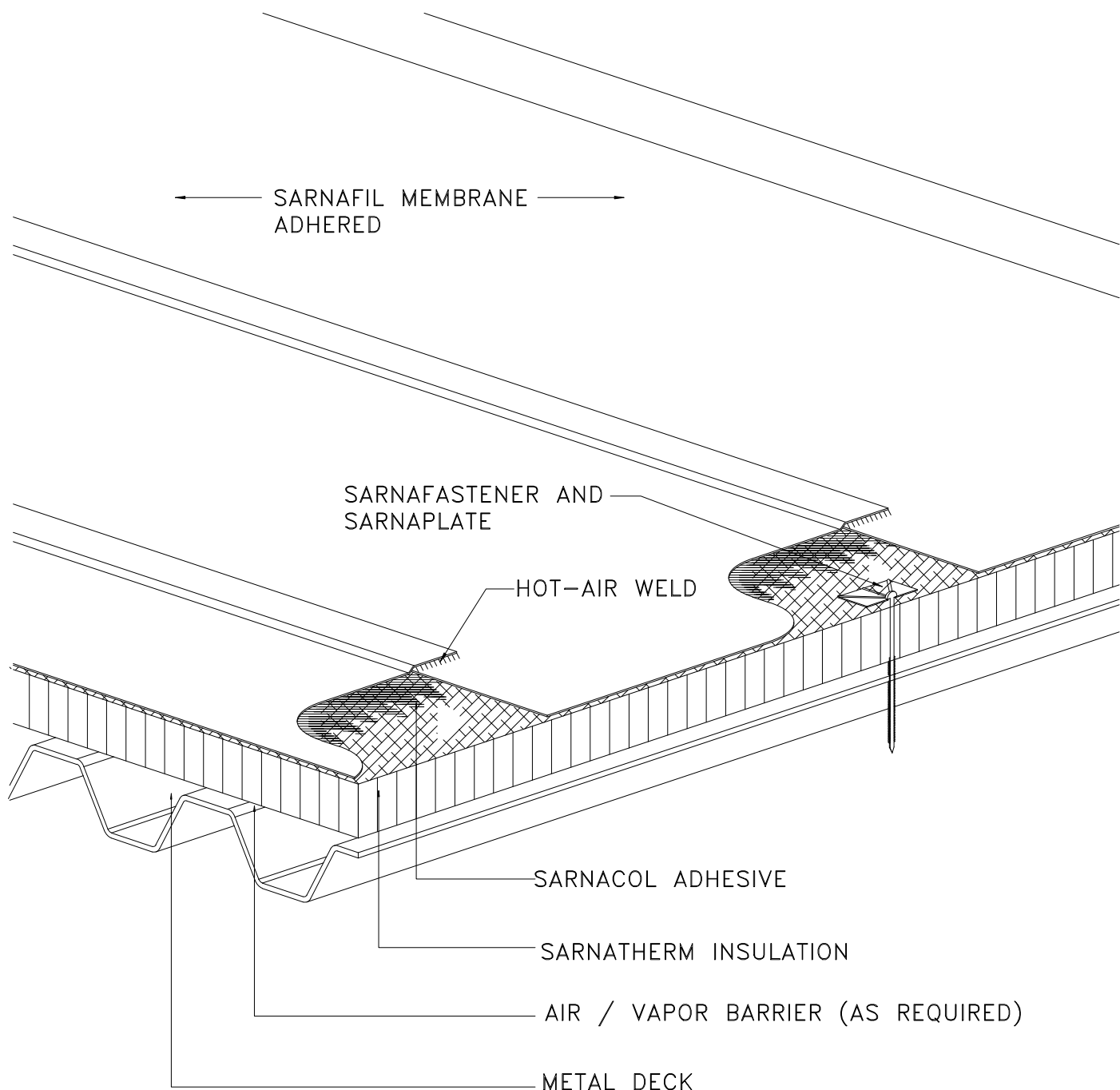


NOTES:

- 1) NAILERS SHALL BE SECURELY ANCHORED TO THE DECK TO RESIST A MINIMUM FORCE OF 300 POUNDS PER LINEAR FOOT. FOLLOW FACTORY MUTUAL LOSS PREVENTION DATA SHEET 1-49 RECOMMENDATIONS.
- 2) THE THICKNESS OF THE NAILER SHALL MATCH THE HEIGHT OF THE INSULATION OR SURFACE TO WHICH THE MEMBRANE IS TO BE APPLIED.
- 3) VAPOR BARRIER SHALL BE SEALED AT EDGES.
- 4) POSITION THE SARNAFIL MEMBRANE (NON-FELTED) OVER THE ROOF EDGE AND DOWN OUTSIDE FACE OF WALL, COVERING TREATED WOOD NAILER(S) COMPLETELY.

PVC Roof Edge Detail

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NOTE: VAPOR BARRIER SHALL BE SEALED AT EDGES

PVC Roof Adhered System Installation Detail

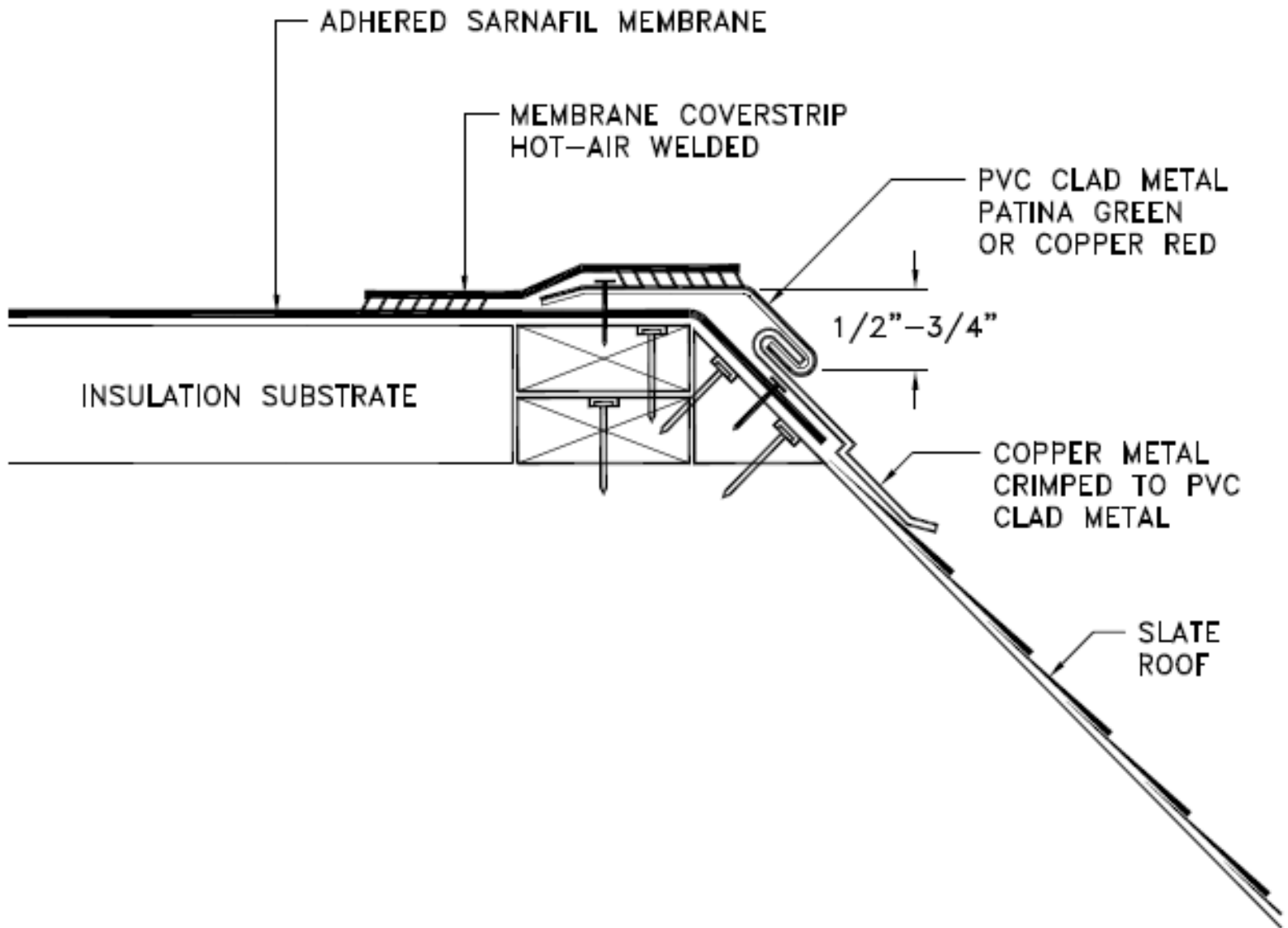
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Flat Roof Tie-In to Slate Roof Detail

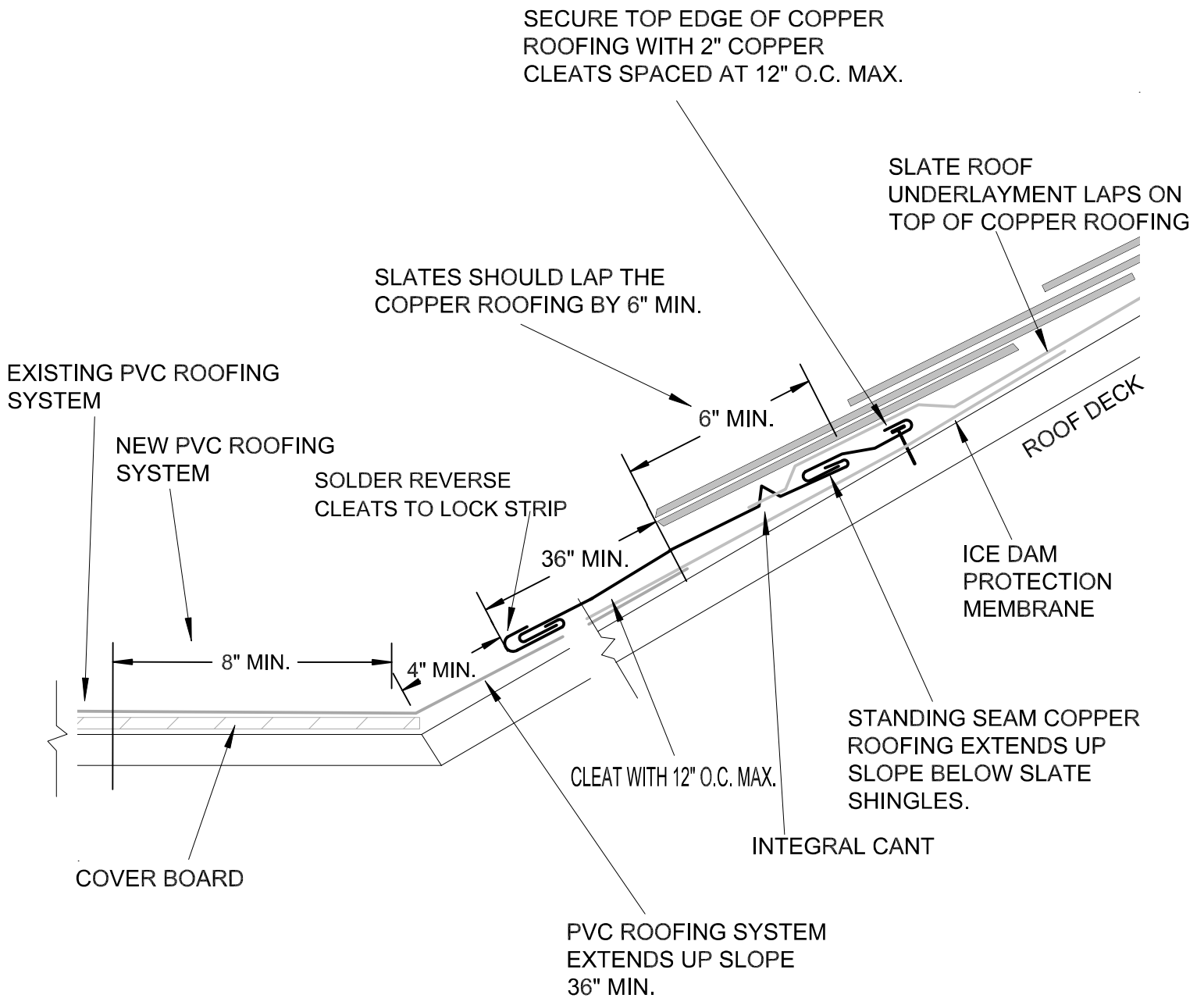
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NOTES:

1. STANDING SEAMS SHALL BE "LAID DOWN" ON THEIR SIDE BEFORE TRANSITIONING UNDER THE SLATES.
2. CANT STRIPS SHALL BE SOLDERED PERPENDICULAR TO THE SEAMS TO RAISE THE LOWER EDGE OF EACH SLATE ABOVE THE LAID DOWN STANDING SEAMS.
3. LOCK STRIPS SHALL BE INSTALLED ALONG THE LOWER EDGE OF THE STANDING SEAM PANELS.
4. EACH CLEAT SHALL BE ATTACHED WITH TWO (2) S316 SCREWS. SOLDER A COPPER CAP OVER EACH SCREW HEAD.

Roof Slope Transition Detail

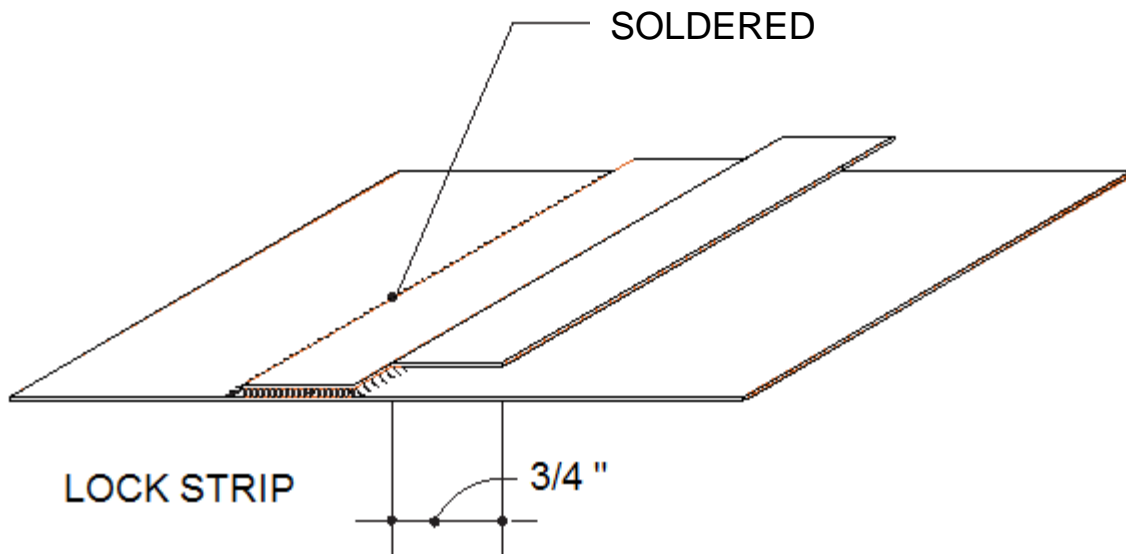
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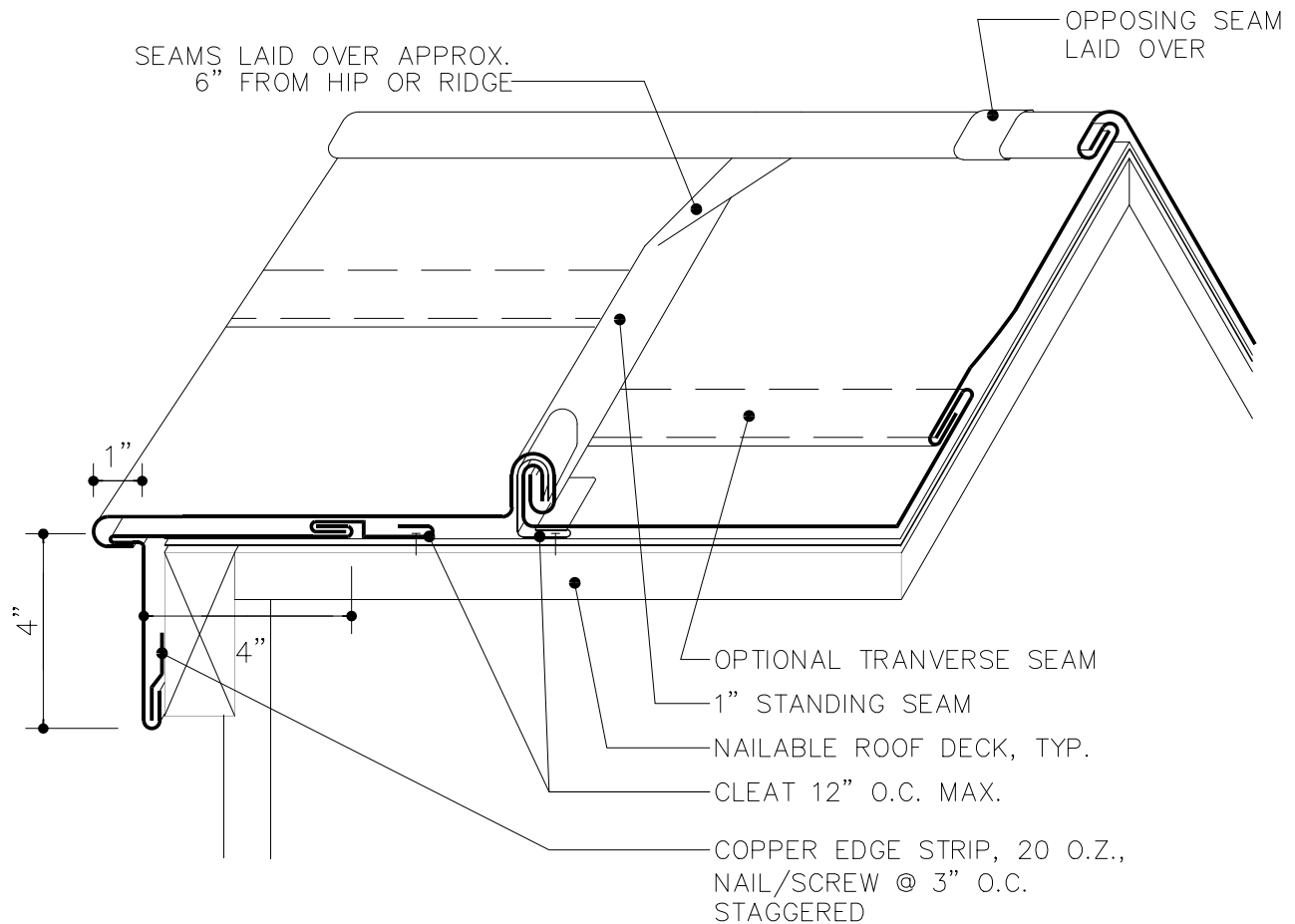


NOTES:

1. THE COPPER LOCK STRIP SHALL BE 20 OZ. COPPER AND FASTENED TO PVC ROOFING SYSTEM WITH #8 FLAT HEAD S316 SCREWS AT 3" O.C. STAGGERED. SOLDER A COPPER CAP OVER EACH SCREW HEAD.
2. COMPATIBLE WATERPROOFING SHALL BE INSTALLED BELOW THE LOCK STRIP AND ABOVE THE FASTENERS.
3. LOCK STRIP EXPOSED EDGE SHALL HAVE A 1/2" HEM

Copper Lock Strip Detail

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NOTES:

1. USE GABLE EDGE DETAIL AT END OF GUTTERS ADJACENT TO THE FLAT ROOF.
2. ATTACH EACH CLEAT WITH TWO (2) S316 SCREWS. SOLDER A COPPER CAP OVER EACH SCREW HEAD.
3. USE SEALANT IN SEAMS OR FULLY SOLDER TO PROVIDE WATERTIGHT BARRIER.

Typical Standing Seam Copper Detail

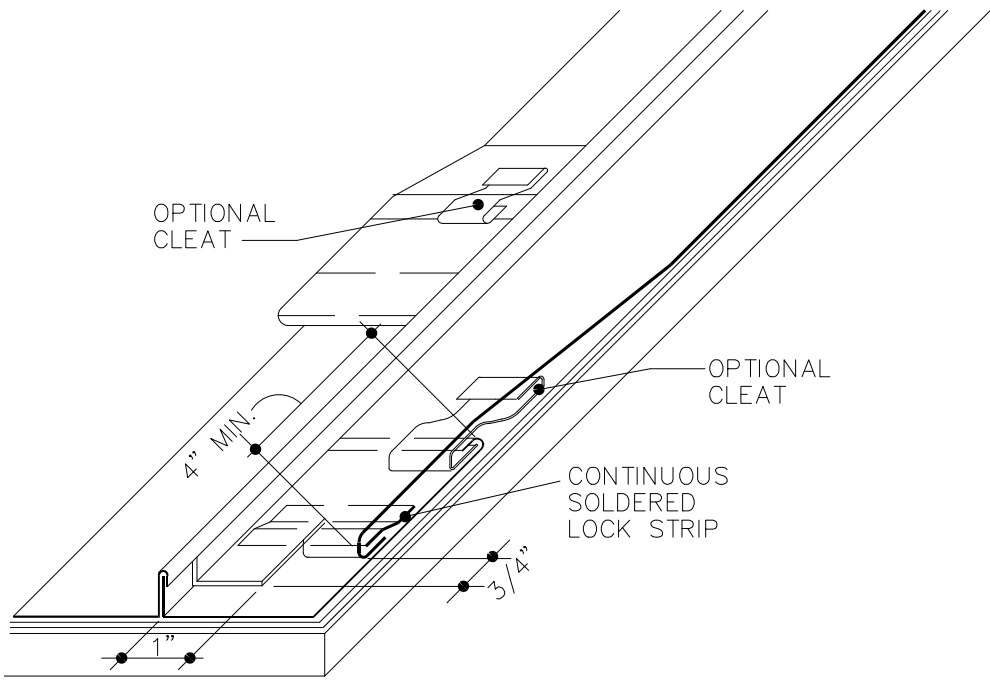
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Wareham, MA 02571

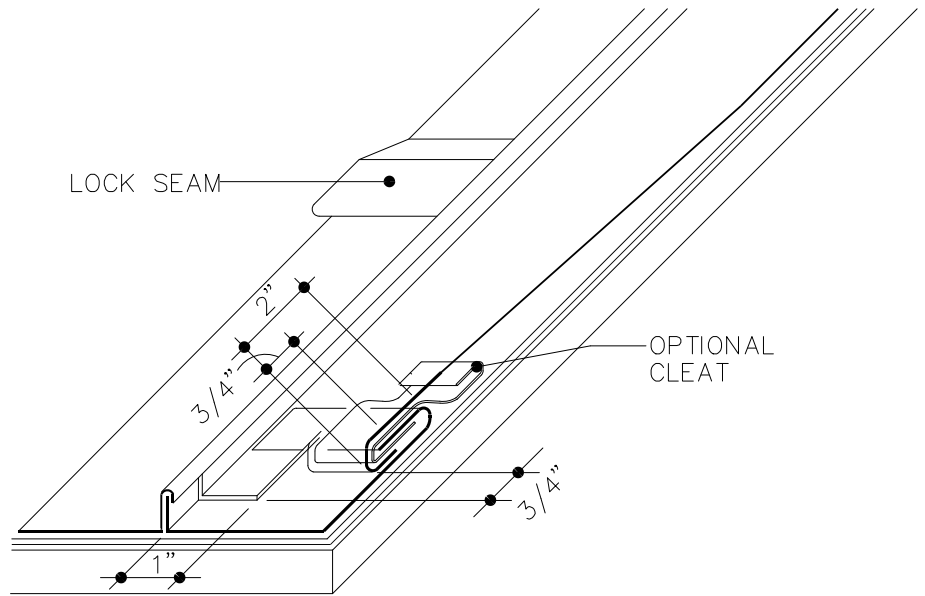
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1. LOW PITCH



2. STEEP PITCH

Transverse Seam Copper Details

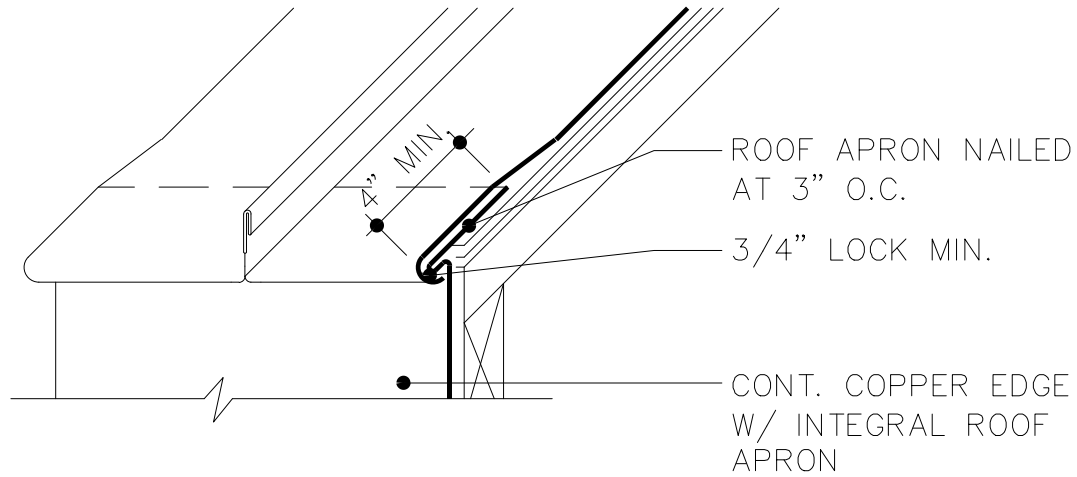
Replacement of Two Flat Roofs and Slate Roof
 Replacement and Restoration on Memorial Town Hall
 54 Marion Road
 Wareham, MA 02571

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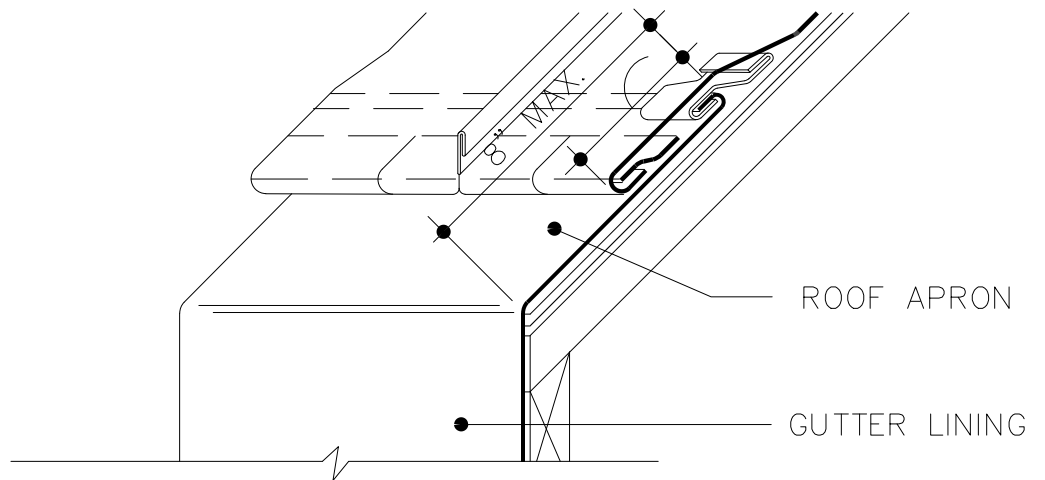
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1. TYP. EAVE WITHOUT GUTTER – STEEP PITCH



2. EAVE WITH GUTTER LINING – LOW PITCH

Eave Copper Details

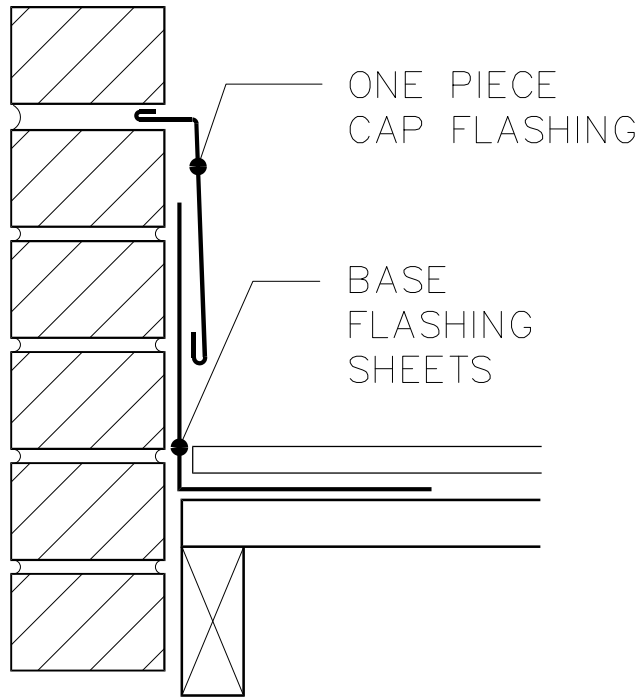
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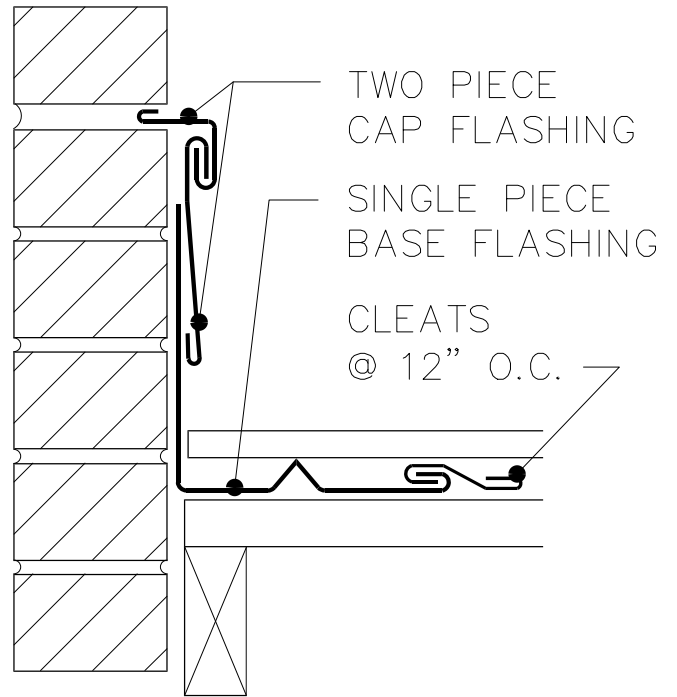
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1. ONE PIECE CAP



2. TWO PIECE CAP

Alternate Step Flashing Methods Copper Detail

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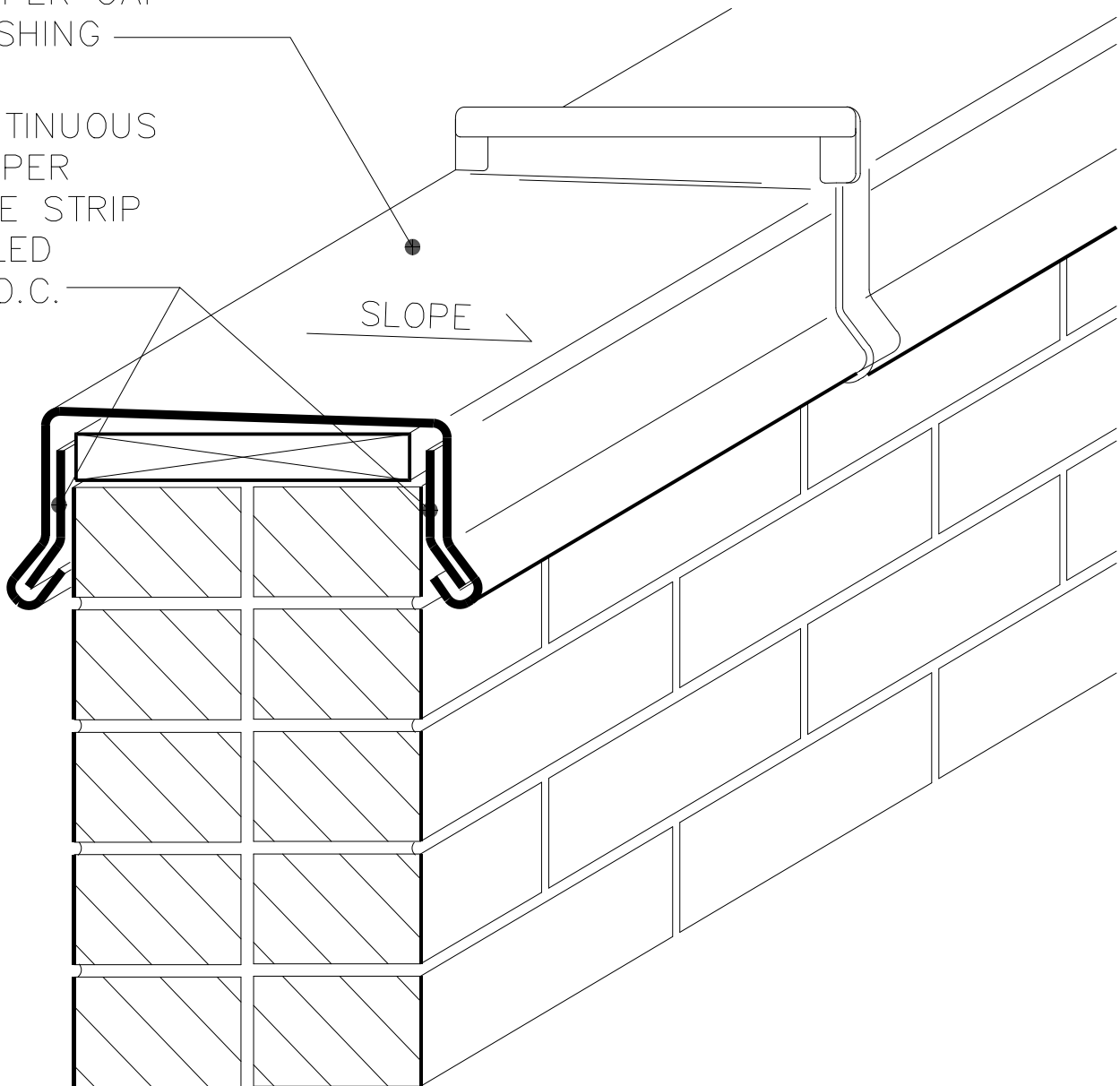
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COPPER CAP
FLASHING

CONTINUOUS
COPPER
EDGE STRIP
NAILED
3" O.C.



Copper Coping Detail

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