

SOLICITATION FOR:
REPLACEMENT OF SELECT WPCF BUR ROOFS with
EPDM ROOFING SYSTEMS

#19-IFB-001 - REBID



WAREHAM, MASSACHUSETTS

RELEASED:

APRIL 24, 2019

DUE BY:

MAY 15, 2019 @ 11:00 EST

DELIVER TO:

Town of Wareham
Wareham Water Pollution Control Facility
6 Tony's Lane
Wareham, MA 02571

SECTION 1.0 INSTRUCTIONS TO BIDDER

1.1 General

- When submitting bid, please identify the solicitation title and number clearly on the submitted envelope. All responses must be sealed and delivered to: Town of Wareham Water Pollution Control Facility, 6 Tony's Lane, Wareham, MA 02571
- Bids submitted must be originals.
- The completion of the following forms is necessary for consideration of a potential contract award. When submitting bid documents, please retain the order of documents as originally provided:
 - a. Signed Terms, Conditions and Certifications
 - b. Completed Bid Pricing Page
 - c. Completed Statement of Compliance Form
 - d. Completed Certificate of Authority
 - e. Completed Appendix A - Past Performance / References
- As part of the bid response, each bidder **MUST** include
 - a. technical specifications for the roof system included in the proposal.
 - b. type of roof system (i.e. TPO, EPDM, etc.)
 - c. application technique(s) to be utilized.
 - d. a written plan detailing the anticipated timeline for completion of the tasks set forth in the Scope of Work.
 - a. include a description of the overall project approach.
 - b. Include a statement that the Contractor will be available according to the proposed timeline.

NOTE: If Vendor is incorporated, an updated "CERTIFICATE OF GOOD STANDING" from the Commonwealth of Massachusetts may be required for the awarded vendor only.

- Please review and return with your sealed bids as sent. Also, insure that all forms are completed and your bid response is submitted as requested.

1.2 General Information & Submissions Instructions

1.2.1 Bid Delivery

Responses must be delivered by **May 15, 2019 @ 11:00 a.m.** to Town of Wareham Water Pollution Control Facility. Two (2) copies of the response should be submitted. Responses must be sealed and marked with the solicitation title and number. All bids must include a forms listed in Section 1.1.

1.2.2 Bid Signature

A response must be signed as follows: 1) if the Bidder is an individual, by her/him personally; 2) if the Bidder is a partnership, by the name of the partnership, followed by

the signature of each general partner; and 3) if the Bidder is a corporation, by the authorized officer, whose signature must be attested to by the clerk/secretary of the corporation, and with the corporate seal affixed.

1.2.3 Time for Bid Acceptance

The contract will be awarded within 30 days after the bid opening. The time for award may be extended for up to 30 additional days by mutual agreement between the Town of Wareham and the apparent lowest responsive and responsible bidder (or, for a contract requiring payment, the apparent highest responsive and responsible bidder.)

1.2.4 Bonding Requirements

- 5% Bid Bond
- 100% Payment Bond, Performance Bond and Labor and Materials Bond provided within 10 business days of award notice.
- All bonds must be issued by a surety company qualified to do business in the Commonwealth of Massachusetts and satisfactory to the Awarding Authority in the amount stated.

1.2.5 Changes & Addenda

If any changes are made to this solicitation, an addendum will be issued. Addenda will not be emailed or faxed. No changes may be made to the solicitation documents by the Bidders without written authorization and/or an addendum from the Purchasing Department. **It is also the responsibility of the vendor to monitor the Town's website for addenda. The web address is: www.wareham.ma.us**

1.2.6 Modification or Withdrawal of Bids, Mistakes, and Minor Informalities

Any Bidder may correct, modify, or withdraw a bid by written notice received by the Town of Wareham prior to the time and date set for the bid opening. Bid modifications must be submitted in a sealed envelope clearly labeled "Modification No. ____" to the address listed in part one of this section. Each modification must be numbered in sequence, and must reference the original solicitation.

After the bid opening, a Bidder may not change any provision of the bid in a manner prejudicial to the interests of the Town or fair competition. Minor informalities will be waived or the bidder will be allowed to correct them. If a mistake and the intended bid are clearly evident on the face of the bid document, the mistake will be corrected to reflect the intended correct bid, and the bidder will be notified in writing; the bidder may not withdraw the bid. A bidder may withdraw a bid if a mistake is clearly evident on the face of the bid document, but the intended correct bid is not similarly evident.

1.2.7 Right to Cancel/Reject Bids

The Town of Wareham may cancel this solicitation, or reject in whole or in part any and all bids, if the Town determines that cancellation or rejection serves the best interests of the Town.

1.2.8 Bid Prices to Remain Firm

All bid prices submitted in response to this solicitation must remain firm for 60 days following the bid opening.

1.2.9 Unbalanced Bids

The Town reserves the right to reject unbalanced, front-loaded and conditional bids.

1.2.10 Unforeseen Office Closure

If, at the time of the scheduled bid opening, the Water Pollution Control Facility is closed due to uncontrolled events such as fire, snow, ice, wind, or building evacuation, the bid opening will be postponed until **11:00 a.m.** on the next normal business day. Bids will be accepted until that date and time.

1.2.11 Price Submission

All prices must contain the unit rate as requested on the bid price form in this solicitation. All prices are to include delivery, the cost of fuel, the cost of labor and all other charges related to the products or services listed. Prices are to remain fixed for the contract period of performance.

1.2.12 Estimated Quantities

The Town of Wareham has provided estimated quantities for the Work. These estimates are estimates only and not guaranteed.

1.2.13 Brand Name "or Equal"

Any references to any brand name or proprietary product in the specifications shall require the acceptance of an equal or better brand. The Town has the right to make the final determination as to whether an alternate brand is equal to the brand specified.

1.2.14 Warranty

The Bidder warrants that (1) the Supplies sold are merchantable, (2) that they are fit for the purpose for which they are being purchased, (3) that they are absent any latent defects and (4) that they are in conformity with any sample which may have been presented to the Town. The bidder guarantees that upon inspection, any defective or inferior equipment or supplies shall be replaced without additional cost to the Town. The vendor will assume any additional cost accrued by the Town due to the defective or inferior equipment or supplies. The bidder guarantees all equipment or supplies for a period of one (1) year, or as otherwise specified herein.

1.2.15 Cancellation

The Town reserves the right to cancel this contract at any time on any grounds, including the vendor's failure to comply with the Scope of Work (SOW) provided herein.

1.3 Questions About the Solicitation

Questions concerning this solicitation must be submitted in writing to: Guy Campinha, Director, Town of Wareham Water Pollution Control Facility, 6 Tony's Lane, Wareham, MA

02571 **before 11:00 AM on May 3, 2019.** Questions may be delivered, mailed, faxed to 508-291-0155, or e-mailed to gcampinha@wareham.ma.us . Written responses will be mailed or faxed to all bidders on record as having picked up the IFB. If any bidders or proposers contact anyone outside of the Wareham Water Pollution Control Facility regarding this bid/proposal, that bidder/proposer will be disqualified immediately.

1.4 Pre-bid Site Visit

There will be a **mandatory** site visit for this project held at the site (6 Tony's Lane, Wareham, MA). The pre-bid site visit will be on **May 1, 2019 @ 11:00 a.m.**

1.5 Rule for Award

A contract will be awarded to the responsive and responsible bidder offering the lowest total cost to complete project.

SECTION 2.0 GENERAL TERMS, CONDITIONS, CERTIFICATIONS

2.1 Bid Offers

The right is reserved to reject any and all bids or parts of bids and to make an award as may be determined to be in the best interests of the Town of Wareham. Bids with erasures or alterations will be rejected.

2.2 Prices

Must be F.O.B. Delivered Destination-Wareham, MA. No charges will be allowed for packing, crating, freight, handling, or cartage unless specifically stated and included with bid.

2.3 Awards

To a bidder may be cancelled if the bidder shall fail to prosecute the work with promptness and diligence.

2.4. Payment

The Town of Wareham shall make no payment for a supply or service rendered prior to execution of a written Contract. Bills for services, materials, or supplies furnished by bidders under Contract should be submitted before the first day of the month in which payment is to be made to insure payment by twentieth day of that month, except where the allowance for a discount differs from the above. Contractor agrees to submit bills and delivery slips to the Town Department in sufficient time for such discounts to be taken advantage of by the Town and, in any event, shall not be less than ten (10) days from the submission to the Department of such bills and delivery slips. Time in connection with a discount offered will be computed from the date of delivery to the Town, as specified on the order or from the date a correct invoice is received by the using agency of the Town, if the latter date is later than the date of delivery.

2.5. Guarantees

The successful bidder shall repair, replace, or make good, without cost to the Town, any defects or faults arising within one (1) year after the date of acceptance of articles furnished hereunder resulting from imperfect or defective work done or materials furnished by the Seller.

2.6 Patents

The Seller shall indemnify and save harmless the Town and all persons acting for or on behalf of it from all suits and claims against them, or any of them, arising from or occasioned by the use of any material, equipment, or apparatus, or any part thereof, which infringes or is alleged to infringe on any patent rights. In case such material, equipment, or apparatus, or any part thereof, in any such suit is held to constitute an infringement, the Seller within a reasonable time, will, at its expense and as the Town may elect, replace such material, equipment, or apparatus, or remove the material, equipment, or apparatus and refund the sums paid.

2.7 Legality

The successful bidder shall comply with all applicable United States, Massachusetts, and/or Town of Wareham codes, statutes, ordinances, rules, and regulations.

2.8 Taxes

Purchases made by the Town are exempt from Massachusetts Sales Tax and Federal Excise Taxes. Bid prices must exclude any such taxes. Exemption certificates will be furnished upon request.

2.9 Bonds

If this Invitation requires bid surety, the surety shall be in the form of bid bond of a MA Licensed Company, certified check, bank check, money order from a responsible bank, made payable to Town of Wareham and must be filed with the original bid at the Wareham Water Pollution Control Facility. Failure to submit surety will cause the bid to be rejected. The bid surety will be returned to the successful bidder within seven (7) days after the execution of the awarded contract and approval by the Town of the performance bond. In the case of a default, the bid surety shall be forfeited to the Town of Wareham. The successful bidder maybe required to furnish a performance bond in an amount and with a MA licensed Surety satisfactory to the Town. The Contractor will assume all costs for bonds.

2.10 Orders

Verbal Orders are not binding on the Town of Wareham, and any delivery made or work performed without written order or written Contract are at the risk of the Seller or Contractor and may result in an unenforceable claim. The actual needs of the Town Department shall govern the actual amount delivered under Contract to be drawn and entered into between the successful bidder and the Town. Purchase Orders issued by the Town to pay for goods or services shall be made part of Contract.

2.11 Indemnity

Contractor shall agree to Indemnify, Defend, and Hold the Town of Wareham, its agents, servants, and employees Harmless from any and all claims arising out of the performance of this contract from the negligence, willful acts or omissions of the contractor, its employees, agents, or any sub-contractors.

2.12. Equality

Where trade names or specific manufacturers are mentioned in the specifications, the Town does not intend to limit competition, but merely to indicate the general type of commodity to be supplied. The Town invites offers on comparable commodities to those named or described in the specification. Naming of any commercial name, trademark or other identifier shall not be construed to exclude any item or manufacturer not mentioned by name or as limiting competition, but shall establish a standard of equality only. An item shall be considered equal to the item so named or described if: (a) it is at least equal in quality, durability, appearance, strength, and design; (b) it will perform at least equally the function imposed by the general design for the purpose being contracted for or the material being purchased; and (c) it conforms in a substantial way, even with deviations, to the detailed requirements for the item in the specifications. The name and identification of all materials, other than the one named, shall be submitted to the Town in writing for approval, prior to the purchase, use, or fabrication of such items. Subject to the provisions of M.G.L. Ch.30, §.39J, or other applicable statute, approval shall be at the sole discretion of the Town, it shall be in writing to be effective, and the decision of the Town shall be final. The Town may require tests of all materials so submitted to establish quality standards at the vendor's expense. All directions, specifications, and advice by the manufacturer for the proper installation, handling, storage, adjustment, or operation of their equipment shall be complied with and the responsibility for the proper performance shall continue to rest with the vendor. Include a written brochure outlining all features of the product offered whenever possible.

2.13 Minority Business Enterprise Plan [This is not a state funded project.]

Pursuant to M.G.L. c 7, §40N and M.G.L. c. 7, §61, the Supplier Diversity Office ("SDO") (formerly SOMWBA) and the Division of Capital Asset Management ("DCAM") have set revised participation goals for Minority Business Enterprise ("MBE") and Women Business Enterprise ("WBE") participation for affected state funded building projects and state assisted municipal building projects as defined in the above referenced laws and related Executive Orders, including Executive Orders 524 and 526.

Effective January 1, 2012, and until such time as the goals may be revised, the MBE and WBE participation goals for building construction and design awards and expenditures on new projects advertised on or after the effective date will be a combined MBE/WBE goal as follows:

10.4% combined MBE/WBE participation on construction contract awards; and, 17.9% combined MBE/WBE participation on design contract awards.

Overall annual designations by awarding authorities, as well as MBEI/WBE participation on individual projects with a combined MBE/WBE participation goal, must include a

reasonable representation of both MBE and WBE firms that meets or exceeds the combined goal. Proposed MBE/WBE participation plans that include solely MBE or solely WBE participation, or do not include a reasonable amount of participation by both MBE and WBE firms to meet the combined goal, will not be considered responsive. Where the prime contractor or designer is an SDO certified MBE or WBE, the prime must bring a reasonable amount of participation by a firm or firms that hold the certification which is not held by the prime contractor or designer on the project. Proposed participation on construction projects or design projects which consists solely of either an MBE or WBE representing 100% of the overall combined goal will not be considered reasonable participation.

The SDO and DCAM will determine whether there is reasonable participation by both MBE and WBE firms on individual projects under their respective oversight. Firms submitting MBE/WBE participation plans which do not provide reasonable participation by both MBE/WBE firms shall be provided an opportunity to revise and resubmit their plans within the time frame set by the awarding authority; however no price adjustments shall be permitted as a result of the revised plan. Firms failing to submit an MBE/WBE participation plan deemed reasonable and accepted by the awarding authority shall not be awarded the contract.

Participation by MBE and WBE firms must be documented, tracked and reported on separately as MBE participation and WBE participation by prime vendors, subcontractors and awarding authorities.

2.14 Right to Know Legislation

M.G.L., Ch. 111F and 454 CMR 21.06. All vendors furnishing substances or mixtures which may be classified as toxic or hazardous, pursuant to MGL,Ch.111F , are cautioned to obtain and read the Law and the Regulations referred to above. Copies may be obtained from the State House Bookstore, State House, Room 117, Boston, MA 02133 for a fee.

2.15 Non-Collusion Affidavit

M.G.L., Ch.30, s.39M and/or Ch.30B, s. 10. The undersigned bidder certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club or other organization, entity, or group of individuals,

2.16 State Taxes Paid

Pursuant to M.G. L. Ch.62C, s.49A, the undersigned bidder certifies that, to the best of their knowledge and belief, the bidder has complied with all the laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting of child support.

2.17 Bid Offers

Bid offers will be reviewed and awards made as soon as is possible. Awards will be made within 30 business days from Bid Opening. Offers must be signed to be valid.

2.18 Unit Price

The case of arithmetical error in any offer involving extension of prices quoted herein, the unit price will govern the final price of quantities offered.

2.19 Insurance

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:

- Contractual Liability - \$2,000,000 per occurrence
- Premises Operation Liability - \$1,000,000 per occurrence
- Independent Contractors Liability - \$1,000.00 per occurrence
- Explosion, Collapse and Underground Property Damage - \$1,000,000 per occurrence
- Personal Liability - \$1,000,000 per occurrence
- Products Liability - \$1,000,000 per occurrence

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.

- Bodily Injury Liability of not less than \$1,000,000 per accident, bodily injury and property damage combined

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.

- Coverage A - Massachusetts
- Coverage B - \$500,000 per insuring agreement

Certificates of insurance (COIs) naming the Town of Wareham and OSD Engineering Consultants as Additional Named Insured shall be filed with the Town prior to the commencement of any contract's operations. All policies and certificates shall contain an endorsement requiring at least thirty (30) days written notice, non-renewal, material change in coverage or cancellation of coverage to Town of Wareham. Compliance by the

Contractor with the insurance requirements shall not relieve the Contractor from liability under the full indemnity provisions contained herein (see 2.11).

2.20 Independent Contractor

The contractor is neither an agent nor an employee of the Town of Wareham and is not authorized to act in behalf of the Town of Wareham.

2.21 Complete Agreement

The written contract supersedes all prior agreements or understandings between the parties and shall not be changed unless mutually agreed by both parties in writing.

2.22 Assignment / Sub-Contracting

The Contractor shall not assign any interest in a contract nor engage any other entity, company, subcontractor or individual to perform any obligation to the Town without prior written consent of the Town of Wareham.

2.23 Conflict of Interest

The bidder certifies that no official or employee of the Town of Wareham has a financial interest in this offer or in the contract which the bidder offers to execute or in the expected profit to arise there from, unless there has been compliance with the provisions of M.G.L.,Ch.43, s.27 (Interest in Public Contracts by Public Employees) and of provisions of M.G.L.,Ch.268A, s.20 (Conflict of Interest Law) and that this offer is made in good faith without fraud or collusion or connection with any other person submitting an offer to the Town of Wareham .

2.24 Termination

The Town of Wareham shall have the Right to terminate this Agreement, if: (A) the Contractor neglects or fails to perform or observe any of its obligations hereunder and cure is not effected by the Contractor within Fifteen (15) Days next following its receipt of a termination notice issued by the Town of Wareham , or, (B) a judgment or decree is entered against the Contractor approving a petition for arrangement, liquidation, dissolution or similar relief relating to any bankruptcy or insolvency and such judgment or decree remains unvacated for Thirty (30) Days; or Immediately, if Contractor shall file a voluntary petition in bankruptcy or any petition in bankruptcy or any petition or answer seeking any arrangement, liquidation or dissolution relating to bankruptcy, insolvency or other relief of debtors, or shall seek or consent or acquiesce in appointment of any trustee, receiver or liquidation of Contractor's property; or (C) funds are not appropriated or otherwise made available to support continuation of performance in any Fiscal Year succeeding the first year of this Agreement. Town of Wareham shall pay all reasonable and supportable costs incurred prior to termination which payment shall not exceed the value of any services provided. NOTICE: The Town of Wareham may terminate this Contract or any Purchase Order issued hereunder without cause at anytime, effective upon the termination date stated in the notice of termination. The Contractor shall cease performance upon the stated termination date. If the Contract or any Purchase Order is terminated under this subsection, the Contractor shall be entitled to be paid for supplies and/or services delivered

and accepted prior to the notice of termination. In no event shall the Contractor be entitled to be paid for any supplies or services delivered after the effective date of termination.

2.25 Return of property

Upon termination, the Contractor shall immediately return to the Town of Wareham, without limitation, all documents, plans, drawings, tools, equipment, and items of any nature whatsoever supplied to the Contractor by the Town, or items developed by the Contractor in accordance with the terms of a Contract with the Town of Wareham .

2.26 Interpretations of Specifications

Any prospective bidder that requests an interpretation of existing specifications' terms or conditions must do so within five (5) working days before the scheduled bid opening or defined question due date located with the instructions to bidder. All requests shall be in writing to the Water Pollution Control Facility Director.

2.27 Information

The submission of a bid offer authorizes the Town to contact any and all parties referenced by the bidder in regard to financial and operational information. The Town shall have the right to request verification of any information or qualifications submitted as part of any offer to the Town.

2.28 Price Reduction

It is understood and agreed that should any price reductions occur between the opening of the bid offers and the completion of the delivery of goods or services that the benefit of all such reductions will be extended to Town.

2.29 Governing Law

The offer and any Contract which may ensue shall be governed by the Laws of the Commonwealth of Massachusetts and any laws thereof applicable hereto are incorporated into this agreement.

2.30 Enforceability

In the event that any provision of this offer or Contract is found to be legally unenforceable, such legal unenforceability shall not prevent enforcement of any other provisions of a Contract.

2.31 Samples

Any qualified bidder may be required to submit samples of the goods offered at the request of the Purchasing Agent. Evaluation for acceptability will be a determining factor in the selection process.

2.32 Discrimination

It is understood and agreed that it shall be a material breach of Contract resulting from this bid offer for the Contractor to engage in any practice which shall violate any provision of M.G.L., Ch.151B, relative to discrimination in hiring, discharge, or, terms or conditions of employment.

(THIS AREA IS LEFT BLANK INTENTIONALLY)

CERTIFICATIONS

Statements below shall be submitted with each Bid or Proposal and shall be duly dated and signed with an **original signature** and all other information, or, the Bid or Proposal will be rejected.

In witness whereof, the undersigned certifies, under the pains and penalties of perjury that:

1. STATE TAXES PAID: Pursuant to M.G.L. Chapter 62C, s. 49A, the undersigned certifies that, to the best of my knowledge and belief, have complied with all the laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting of child support.

2. CERTIFICATE OF NON-COLLUSION: M.G.L. C. 30, s. 39M and/or C. 30B, s.10: Any person submitting a bid or proposal for the procurement or disposal of supplies or services to any governmental body shall certify in writing, on the bid or proposal, as follows: The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club or other organization, entity, or group of individuals.

3. PUBLIC CONTRACTS - DEBARMENT: M.G.L. C. 550, Acts of 1991: The undersigned certifies that the said "person" is not presently debarred from doing public construction work in the Commonwealth of Massachusetts under the provisions of C. 29, s. 29F, or any other applicable debarment provision of any other Chapter of the General Laws, or any Rule or Regulation promulgated thereunder. Additionally, the undersigned is not presently debarred by any Agency of the Federal Government.

4. HEALTH & SAFETY ON PUBLIC CONSTRUCTION PROJECTS OVER \$10,000.00: Chapter 306 of the Acts of 2004: The undersigned certifies that the firm is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (2) that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the U.S. OSHA that is at least 10 hours in duration at the time that the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and (3) that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the U.S. OSHA that is at least 10 hours in duration.

5. COMPLIANCE:

The undersigned is in compliance with all of the provisions, and shall remain in full compliance with the provisions for the life of any Contract resulting from this solicitation. That the bidder is qualified to perform any such Contract and possesses, or shall obtain, all requisite licenses and/or permits to complete performance; shall maintain all unemployment, workers' compensation, professional and personal liability insurance policies sufficient to cover its performance under any such Contract; and shall comply with relevant prevailing wage rates and employment laws. To the best of its knowledge and belief has paid all local taxes, tax titles, utilities, motor vehicle excise taxes, water and wastewater bills in MA as required by Law.

Print Name _____

Circle: Corporation Partnership Individual

Authorized Signature _____

Print Name _____

Title of Person Signing Bid or Proposal _____

Date _____

Company Federal ID # or Social Security # _____

State of Incorporation _____

*Approval of a Contract, or other Agreement, will not be granted unless this form is signed and **fully** complete.*

**SECTION 3.0
INVOICING REQUIREMENTS**

3.1 General

Each invoice shall be mailed to the designated billing office at the following address after completion of order:

**Town of Wareham
Water Pollution Control Facility
6 Tony's Lane
Wareham, MA 02571**

To ensure a proper invoice, the invoice must include the following information and/or attached documentation:

Name of the business concern, invoice number and invoice date;

- 1) Contract number, or authorization for delivery of property of performance of services;
- 2) Description, price, and quantity and services actually delivered or rendered;
- 3) Shipping and payment terms;
- 4) Name (where practicable), title, phone number, and complete mailing address of responsible official to whom payment is to be sent; and
- 5) Other substantiating documentation or information as required by the contract.

**SECTION 4.0
SCOPE OF WORK (SOW)**

PART 4.1 GENERAL

Remove and dispose of existing roofing systems on the WPCF Vehicle Storage Garage Building, Septage Blower Building – East, Septage Blower Building – West, and Sludge Dewatering Building. Remove and dispose of all asbestos-containing roofing materials. Reroof all of the roofs with EPDM roofing systems. Remove and install new lightning protection system on the Sludge Dewatering Building.

4.1.1 Related Documents

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section. The final award of this bid will be contingent upon availability of sufficient funds. The Town reserves the right to award part or all of this contract pending availability of funds.

4.1.2 Site Description

The property location is 6 Tony's Lane, Wareham, MA. The four structures which are part of the Work are easily accessible via pavement driveway. The structures are known as **Vehicle Storage Garage, Septage Blower Building – East, Septage Blower Building – West, and Sludge Dewatering Building.**

4.1.3 SUMMARY

A. Section Includes: Work of this Section consists of installing all materials furnished under this section, including all equipment, labor, services and incidental items required to complete reroofing work of the **Vehicle Storage Garage (approximately 26' by 26')**, **Septage Blower Building – East (approximately 20' 4" by 32')**, **Septage Blower Building – West (approximately 20' 4" by 32')**, and **Sludge Dewatering Building (approximately 40' by 80')** as shown on Drawings and specified in this Section and in the Appendices.

1. The roofing membrane to be installed is a fully adhered, black, 90-mil EPDM Membrane with a 30-year warranty. Specifications and details based upon John Manville's Peak Advantage No Dollar Limit Roofing System Guarantee are included in the Appendix.
2. 30-year roofing systems by Carlisle Syntec and Firestone Building Products are approved equals.
3. The work also includes
 - a. Polyisocyanurate insulation mechanically fastened or secured with adhesive, as suited to substrate, and membrane fully adhered to insulation with manufacturer's recommended bonding adhesive.
 - b. Roof Coping/Edge Metal/Gravel Stops
 - c. Nailing strips/roof edge blocking
 - d. Expansion joints in connection with roofing (as required)
 - e. Metal and membrane Flashing and Counter flashing in connection with roofing
 - f. New Lightning Arrestor System for Sludge Dewatering Building
 - g. New non-skid, maintenance-free walkway/protection pad to replace existing wood walkway areas.

4.1.4 ASBESTOS ABATEMENT AND RELATED WORK

PART 1 – GENERAL

1.01 CONTRACT REFERENCES:

- A. Drawings and General Provisions of Contract, including General and Supplemental Conditions and Division 1 Specification Sections, apply to this Section.
- B. Examine all drawings and all other sections of the specifications for requirements therein affecting the work of this Section.

1.02 DESCRIPTION OF WORK

- A. The work of this Section includes removal and proper disposal of asbestos-containing roofing materials (ACM) from the **Septage Blower Building – East, Septage Blower Building – West, and Sludge Dewatering Building** at the Wareham Water Pollution Control Facility, 6 Tony's Lane, Wareham, Massachusetts. No ACM was found during the testing of the **Vehicle Storage Garage**.
- B. Pre-Abatement activities, including attendance at a pre-construction meeting, site inspection, notifications, permits, submittals, work area preparations, health and safety plan and standard operating procedures are included in this Section.
- C. Abatement activities including work area preparation, removal and disposal of ACM, recordkeeping, site security, inspection and monitoring are included in this Section.
- D. A copy of the Asbestos Test Survey Report is included in the Appendices.

1.03 WORK TO BE PERFORMED

- A. The Contractor shall remove and dispose of all asbestos-containing asphaltic roofing material including all layers of built up roofing, roof flashing cements and sealants and all mudded roof drain fitting insulation that will be disturbed by work of this Contract. Furnish all labor, materials, facilities, equipment, services, disposal, employee training and testing, permits, and agreements necessary to perform the work required for removal of ACM in accordance with these specifications, EPA, OSHA and DOT regulations, NIOSH recommendations, Massachusetts DEP and DLS requirements, Town of Wareham, any other applicable federal, state, and local government regulations and guidelines. Whenever there is a conflict among regulations, the strictest provisions shall prevail. The Owner's Representative must approve deviations from this specification in writing.
- B. All existing built-up roofing material and associated flashing cements, tar, and sealants on the four roofs shall be properly removed and disposed as ACM. Approximately 5,200 square feet of asphaltic roofing materials are present on the four roofs.
- C. All drain pipe and fitting insulation that will be disturbed by planned roof drain replacement work shall be removed by a Massachusetts DLS licensed asbestos removal contractor using glovebag methods within a negative pressure temporary work area enclosure. Include removal of six (6) linear feet of insulation from each roof drain. Exposed ends on adjacent insulation to remain shall be covered with rewettable fiberglass repair cloth and sealed with two coats of lag coat or bridging encapsulant.
- D. Installation of all temporary lighting, water, electrical connections, etc., as required for asbestos abatement. Coordinate temporary electrical and plumbing connections with the General Contractor.
- E. Provide all temporary connections, electrical cords, hoses, etc., as required for abatement and air sampling needs.
- F. Filing of all notifications and permits as required for the work to be performed. All cost associated with required notifications and permits shall be paid for by the Contractor and included in bid price.
- G. Work area preparation as specified by these specifications and all applicable regulations.
- H. Provide staging, rigging, and fall protection, etc., in accordance with applicable regulatory requirements and as required by site conditions to allow safe access to all areas as necessary to complete the work.
- I. Provide worker training, respiratory protection and medical examination.
- J. Submit copies of completed Waste Shipment Records to the Owner within 30 days of asbestos-containing waste leaving the site.

- K. Packing, labeling, transporting and disposal of ACM in an approved landfill. All debris produced as a result of the Contractor's work shall be sealed in appropriate leak tight containers sufficient to prevent leakage due to cuts, puncture, tears, etc.

1.04 INSURANCE REQUIREMENTS

- A. The Contractor shall purchase and maintain insurance coverage listed with respect to the operations and completed operations of this Project. All policies shall be written on an occurrence basis, by companies authorized to write the type of insurance in Massachusetts. Contractor shall submit a certificate of insurance acceptable to the Owner. Certificates shall show the Owner and OSD Engineering Consultants as additional insured.

1.05 WASTE REMOVAL

- A. Coordinate waste removal from roof and site with General Contractor and Owner.
- B. All waste shall be wetted and covered and lowered from roof by hand, crane, or lift.
- C. No dropping or throwing of asbestos waste will be permitted.
- D. Only dust-tight waste chutes will be permitted.
- E. All waste shall be removed from the roof on a daily basis.

1.06 AUTHORITY TO STOP WORK

- A. If the Owner or the Asbestos Consultant presents a written Stop Asbestos Removal Order, the Contractor shall immediately stop all asbestos removal and adequately wet any exposed ACM. The Contractor shall not resume any asbestos removal activity until authorized to do so by the Owner or the Asbestos Consultant. A stop asbestos removal order may be issued at any time the Owner or the Asbestos Consultant determines abatement conditions/activities are not within specification requirements. Work stoppage will continue until conditions have been corrected to the satisfaction of the Owner or the Asbestos Consultant. The Contractor shall pay standby time and costs for corrective actions.
- B. Stop work orders may be issued for, but may not be limited to the following:
 - 1. Asbestos fiber leakage from contained work area.
 - 2. If the Contractor disregards the authority of the Asbestos Consultant.
 - 3. If the Contractor disregards laws or regulations of any public body having jurisdiction.
 - 4. If the Contractor's work presents a risk to the general public.
- C. The absence of a stop work order by the Owner or the Asbestos Consultant shall not in any way be construed as an approval or acceptance of the Contractor's work.

1.07 RELATED SECTIONS

- A. Carefully examine the Contract Documents for requirements that affect the work of this section.

1.08 DEFINITIONS

- A. All terms not defined herein shall have the meaning given in the applicable publications and regulations.

- B. Abatement: Procedures to control the release of asbestos fibers from asbestos containing materials; includes removal, encapsulation, and enclosure of ACM.
- C. ACM: Asbestos-containing material and asbestos-contaminated material.
- D. Adequately Wet: Sufficiently mixed or penetrated with liquid to prevent the release of particulate. If visible emissions are observed coming from the ACM, then that material has not been adequately wetted.
- E. Air Intake: Any opening through which air is admitted to an air-handling system in a building.
- F. Air Locks: Airlocks are mechanisms on doors and curtains that control airflow patterns in the doorways.
- G. Amended Water: Water to which a surfactant has been added.
- H. Asbestos: Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated or altered.
- I. Asbestos-containing material (ACM): Any material containing one percent or more asbestos of any type or mixture.
- J. Asbestos-contaminated material: Material that has been determined to be contaminated by asbestos by analytical testing or due to its proximity to damaged ACM.
- K. Asbestos Consultant: The consultant employed by the Owner to conduct asbestos project monitoring services during asbestos removal activities.
- L. Authorized Visitors: Any visitor authorized by the Owner or any representative of a regulatory agency or other agency having jurisdiction over the project.
- M. Clean Room: An uncontaminated room that is a part of the worker decontamination unit and in which worker's street cloths and protective equipment can be stored.
- N. Competent Person: In addition to the definition in 29 CFR 1926.32(f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f); in addition, for Class I and II work who is specially trained in a training course which meets the criteria of EPA's Model Accreditation Plan (40 CFR 763) for supervisor.
- O. Decontamination Area/Unit: An enclosed area adjacent to and connected to the regulated area and consisting of an equipment room, shower room, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.
- P. Employee Exposure: The exposure to airborne asbestos that would occur if the employee were not wearing respiratory protection equipment.
- Q. HEPA Filter: High-Efficiency Particulate Air (HEPA). An air filter capable of trapping and retaining at least 99.97 percent of all monodispersed particles sized 0.3 micrometer in diameter.
- R. HEPA Vacuum: Vacuum equipment with HEPA filter system for filtering the exhaust air from the unit.
- S. Negative Initial Exposure Assessment: A demonstration by the employer that complies with the criteria in 29 CFR 1926.1101 (f)(2)(iii), that employee exposure during an operation is expected to be consistently below the PEL's.
- T. Owner: Town of Wareham Water Pollution Control, 6 Tony's Lane, Wareham, Massachusetts.
- V. Regulated Area: An established area where airborne concentration of asbestos fibers exceeds or can reasonably be expected to exceed the permissible exposure limit.
- W. Removal: All herein-specified procedures necessary to remove asbestos-containing materials from the designated areas and to dispose of these materials at an acceptable site.
- X. Waste Generator: Any owner or operator whose act or process produces asbestos-containing waste material.

Y. Waste Shipment Record: The shipping document, required to be originated and signed by the waste generator, used to track and substantiate the disposition of asbestos-containing waste material.

1.09 CODES, REGULATIONS, AND STANDARDS

A. General Applicability

1. All work under this contract shall be done in strict accordance with all applicable Federal, State, and local regulations, standards and codes governing asbestos abatement, and any other trade work done in conjunction with the abatement. All applicable codes, regulations and standards are adopted into this specification and will have the same force and effect as this specification.
2. The most recent edition of any relevant regulation, standard, document or code shall be in effect. Where conflict among the requirements or with these specifications exists, the most stringent requirement(s) shall be utilized.
3. Copies of all standards, regulations, codes and other applicable documents, including this specification shall be available at the worksite.

B. The Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State and Local regulations related to all aspects of the abatement project. The Contractor is responsible for providing and maintaining training, accreditation, medical exams, medical records, and personal protective equipment as required by applicable Federal, State and Local regulations. The Contractor shall hold the Owner and Owner's Representative harmless for any failure to comply with any applicable work, packaging, transporting, disposal, safety, health, or environmental requirement on the part of the Contractor, Contractor's employees, or subcontractors of the Contractor.

C. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in text by basic designation only. The publications listed below are not intended to be all inclusive of each regulation prevailing over the work.

1. Environmental Protection Agency (EPA):
Regulations for Asbestos (Code of Federal Regulations Title 40, Part 61).
A Guide to Respiratory Protection for the Asbestos Abatement Industry.
2. Occupational Safety and Health Administration (OSHA):
Asbestos Construction Standard 29 CFR Part 1926.1101
Asbestos General Industry Standard 29 CFR 1910.1001
Respiratory Protection, 29 CFR 1910.134
Construction Industry Standards, 29 CFR 1926
3. U.S. Department of Transportation
49 CFR 100 - 185, Transportation
4. National Institute for Occupational Safety and Health (NIOSH):
"Respiratory Protection A Guide for the Employee."

5. American National Standards Institute (ANSI):
Z86.1-1973 - Commodity Specification for Air
Z9.2 - HEPA Filter Specifications.
Z88.2-1980-Respiratory Protective Equipment
6. Massachusetts Department of Labor Standards:
The Removal, Containment or Encapsulation of Asbestos (453 CMR 6), including all clarifications, policy statements, etc.
7. Massachusetts Department of Environmental Protection:
310 CMR 7.00, 7.09, 7.15 (including amendments effective 6/20/2014)
Amendments to Regulations 310 CMR 7.00, 7.09, 7.15 to Control Airborne Asbestos Emissions for the Control of Air Pollution.

1.10 PERSONNEL QUALIFICATIONS

- A. All personnel of the Contractor or any approved subcontractors involved with asbestos abatement work shall meet the following minimum qualifications:
 1. Medical examination within the past year in accordance with OSHA 29 CFR 1926.1101 with a physician's written opinion that the worker has no condition that would preclude him/her from working with asbestos or wearing a respirator.
 2. Current certification by the MA DLS as an asbestos supervisor or asbestos worker, or
 3. Current training for Class II roofing removal work as specified by 29 CFR 1926.1101 (asphaltic roofing removal only)
- B. The Contractor shall employ a Competent Person to oversee all aspects of ACM removal. The Competent Person shall meet all requirements of 29 CFR 1926.1101 (o) and assure that all requirements for regulated areas at 29 CFR 1926.1101 (e) are met.
- C. There shall be a sufficient number of trained and qualified workers, foremen and superintendents to accomplish the work within the required schedule. No untrained nor fully qualified and pre-approved person shall be employed to speed up completion of the abatement work.

1.11 SITE SECURITY

- A. Regulated area access is to be restricted to authorized trained/accredited and protected personnel. The Contractor's Competent Person shall control site security during abatement operations in order to isolate work in progress and protect adjacent personnel.

1.12 EMERGENCY PRECAUTIONS

- A. A site specific Emergency Action Plan shall be submitted by the Contractor prior to the pre-construction meeting and shall be approved by the Owner. The Plan shall meet the requirements of 29 CFR 1926.35.

1.13 RESPIRATORY SYSTEMS

- A. The Contractor shall develop and implement a Respiratory Protection Program (RPP) which complies with the January 8, 1998 OSHA requirements, 29 CFR 1926.1101 and 29 CFR 1910.132 and 134. All respirators used must be NIOSH approved for asbestos abatement activities.
- B. Minimum respiratory protection required shall conform to current OSHA and Massachusetts DLS regulations including 29 CFR 1926.1101 and 453 CMR 6.00.

1.14 PROTECTIVE CLOTHING

- A. Prior to beginning any abatement activity, all personnel shall be trained in accordance with OSHA 29 CFR 1926.1101 (k)(9). Training must include, at a minimum, the elements listed at 29 CFR 1926.1101 (k)(9)(viii). Training shall have been conducted by an EPA approved trainer meeting the requirements of EPA 40 CFR 763 Appendix C (AHERA MAP). Initial training certificates and current refresher and accreditation proof must be submitted for each person working at the site.
- B. Medical examinations meeting the requirements of 29 CFR 1926.1101 (m) shall be provided for all personnel working in the regulated area, regardless of exposure levels. The physician's written opinion as required by 29 CFR 1926.1101 (m)(4) shall be provided for each person and shall include in the opinion the person has been evaluated for working in a heat stress environment while wearing personal protective equipment and is able to perform the work.
- C. Provide boots, booties, hard hats, goggles, clothing, respirators and any other personal protective equipment as determined by conducting the hazard assessment required by OSHA at 29 CFR 1910.132 (d). The Competent Person shall ensure the integrity of personal protective equipment worn for the duration of the project.
- D. Provide Fall Protection and Protective Systems for all work performed at a height of 6-feet or more above a lower level.
- E. The Competent Person shall ensure that each time workers enter the regulated area, they observe and follow all required procedures and wear appropriate personal protective equipment.
- F. All personnel in the regulated area shall not be allowed to eat, drink, smoke, chew tobacco or gum, apply cosmetics, or in any way interfere with the fit of their respirator.

1.15 DECONTAMINATION FACILITIES

- A. An equipment room or area shall be established at each regulated work area for the decontamination of workers and equipment contaminated with asbestos. The equipment room or area shall be of sufficient size to accommodate cleaning of equipment and removing personal protective equipment. Work clothing shall be cleaned with a HEPA filtered vacuum prior to removal. All equipment and surfaces of containers filled with ACM must be cleaned prior to removal from the equipment room or area. Employees shall enter and exit the regulated area through the equipment room or area.

1.16 CONTAINMENT BARRIERS

- A. Physical barriers shall be employed to restrict access to the regulated work area. These barriers shall not restrict access of WPCF personnel and contractors for routine work within the four buildings.

- B. Roof level HVAC and compressor units, DWV stacks, ventilator units, chimneys, façade vents and other penetrations shall be isolated by installation of sheet plastic barriers at least 6-mil in thickness and the ventilation system shall be shut down during all roofing removal activities.
- C. Coordinate schedule for shutdown and sealing of rooftop HVAC units servicing the four buildings to allow Owner sufficient time to install temporary air conditioning units.

1.17 DISPOSAL ACTIVITIES

- A. The Contractor shall comply with current DOT, EPA, OSHA and MA DEP waste handling, transportation, and disposal regulations for the work site and for each waste disposal landfill.
- B. Disposal of ACM roofing material shall be in a landfill permitted by the DEP to accept solid waste and, in accordance with the Solid Waste Management Facility Regulations, 310 CMR 19.061, "Special Waste" or an out of state facility permitted to accept non-friable roofing materials.
- C. Disposal of mudded insulation from roof drain fittings and pipe shall be in a landfill authorized to accept ACM, operated in accordance with regulatory requirements of 40 CFR 61 (NESHAP) and applicable state and local regulations.

1.18 SUBMITTALS

- A. Submittals shall be in accordance with Contract Documents.
- B. The following submittals shall be submitted to the Owner or Owner's Representative at the Pre-construction meeting. Submittals shall be submitted to and approved in writing by the Owner or Owner's Representative prior to the Contractor receiving approval to begin work.
 - 1. Certificates of training and documentation of medical examination including a physician's determination that the employee is able to wear a respirator and documentation of current successful respirator fit test (29 CFR 1926.1101 Appendix C) of all personnel assigned to the project, including Competent Person.
 - 2. Certification of compliance with OSHA requirements including but not limited to medical surveillance, record keeping and personal monitoring.
 - 3. Respiratory Protection Program. Include site specific exposure assessment for respirator selection.
 - 4. A written project schedule. The schedule shall be date specific and include all phases of the project.
 - 5. Emergency Action Plan.
 - 6. Proposed waste disposal site and waste transporter. Include name, address, telephone number and operating permits, etc.
 - 7. Material safety data sheets (MSDS) for all materials and products to be used by the Contractor on this project.
- B. During Construction
 - 1. Personal air sampling results.
- C. Post Construction Submittals
 - 1. Disposal receipts signed by the landfill operator demonstrating that the ACM removed from the project has been packaged removed and disposed of properly.
 - 2. Provide the owner with copies of on-site job logs, notifications, permits, accident reports, personal air monitoring results, waivers of lien.

PART 2 - MATERIALS AND EQUIPMENT

2.01 MATERIALS

- A. Deliver all materials in original packages, containers or bundles bearing the name of the manufacturer.
- B. Damaged, deteriorating, contaminated or previously used products or equipment shall not be used on this project, and shall be removed from the worksite and disposed of properly.
- C. Polyethylene sheeting shall be at least 6-mil thickness, shall be fire retardant and shall meet all applicable Standards for temporary construction barriers.
- D. All lumber shall be fire rated.
- E. Duct tape or other waterproof tape, furring strips, spray glue, staples, nails, screws, or other materials shall be available to secure polyethylene sheeting.
- F. Disposable bags and/or drums shall be of 6-mil polyethylene, on which labels are directly printed, as required by EPA and DOT regulations.
- G. Asbestos warning signs that are posted at all approaches and/or entrances to work areas shall conform to OSHA 29 CFR 1926.1101.
- H. All fire extinguishers required for the project shall be ABC class type, properly pressurized and in good working condition.
- I. Adequately stocked first aid kits shall be on-site.
- J. Surfactant (wetting agent) shall be a 50/50 mixture of polyoxyethylene ether and polyoxyethylene ester, or equivalent, mixed in a proportion of 1 fluid ounce to 5 gallons of water or as specified by manufacturer. An "equivalent surfactant" shall be understood to mean a material with a surface tension of 29 dynes/cm as tested in its properly mixed concentration, using ASTM method D1331-56- ("Surface and Interfacial Tension of Solutions of Surface Active Agents")

2.02 TOOLS AND EQUIPMENT

- A. Scaffolding: Scaffolding, as required to accomplish the specified work, shall meet all applicable safety regulations.
- B. Transportation Equipment: Transportation equipment, as required, shall be suitable for loading, temporary storage, transport, and unloading of contaminated waste without exposure to persons or property. The equipment shall be secured at all times and access restricted to unauthorized personnel.
- C. Vacuum Equipment: All vacuum equipment utilized in the work area shall utilize HEPA filtration systems, 99.97% efficient to 0.3 microns particulate size. Deliver all vacuums to the site with clean waste containers and new HEPA filters installed. Vacuum wands, brushes, hoses, and other accessories shall be delivered to the site new or if previously used shall be delivered to the site in airtight disposal bags.
- D. The Contractor shall provide approved respirators and protective clothing to all Contractor personnel, to representatives of the Owner, and to representatives of the State or other governmental entity who may inspect the jobsite.
- E. Protective clothing requirements include:
 - 1. One-time use, disposable, full-body coveralls made of Tyvek fabric or approved equal.

2. Hard Hats
 3. Eye protection
 4. Gloves
 5. Respiratory protective equipment in accordance with OSHA 29 CFR 1926.1101 and 29 CFR 1910.134. Respirators shall be NIOSH/MSHA approved for protection against asbestos exposure.
- F. The Contractor shall have sufficient equipment to mix and spray wetting agent and encapsulants.
- G. The Contractor shall have a sufficient quantity of scaffolding, ladders, platforms, hand tools, and materials to conduct the abatement project in an efficient and workmanlike manner. All equipment shall be used according to OSHA Safety and Health Standards for the Construction Industry (29 CFR Part 1926).
- H. All electrical cord and connections within all work areas shall be protected with ground-fault circuit interrupters (GFCI). Temporary electrical power panels and transformers as required for all equipment including all air sampling equipment.

PART 3 - EXECUTION

3.01 COORDINATION AND SCHEDULING

- A. The Contractor shall coordinate all work with the Owner or Owner's representative.
- B. The Contractor shall submit to the Owner, prior to contract performance, a schedule of work.

3.02 WORK AREA PREPARATION

- A. Prior to any asbestos related work in an area, establish a regulated work area for the removal of asbestos-containing roofing material. The entire roof area shall be designated as a regulated asbestos removal work area. Isolate the regulated work area to anybody other than trained personnel and authorized visitors.
- B. The Contractor shall erect signs around the perimeter of the regulated area in accordance with EPA, OSHA and this specification and provide 24 hour security against unauthorized entry during the abatement process. Maintain a log of all people entering and exiting the workplace.
- C. Physical barriers shall be installed at all potential entrances prior to the start of abatement activities.
- D. Provide all necessary connections for temporary utilities in the workplace during abatement work. Temporary electrical power shall be in accordance with OSHA Electrical Code of Wet Environment.
- E. Perform all work required for identification and de-energizing all building systems located within to the work area. All electrical components to remain energized shall be identified by color coding and tagging or other suitable means. The Contractor shall ensure that all workers are made aware of and instructed as to the danger of all remaining energized components.
- F. Isolate all roof level heating, ventilation air intake sources, by installation of 6-mil thickness polyethylene barriers secured with duct tape.
- G. Isolate façade ventilation air intake sources, by installation of 6-mil thickness polyethylene barriers secured with duct tape.

- H. The Contractor shall ensure proper fall protection training and protective systems are used during each phase of the work. Provisions shall be used to protect workers from falling equipment, materials, and debris.
- I. Install the personnel decontamination unit, material load-out units, and all required clean rooms. Establish emergency exits from the work area.

3.03 ASBESTOS-CONTAINING ASPHALTIC ROOFING REMOVAL

- A. Removal of all ACM roofing material shall be performed in compliance with the requirements of 310 CMR 7.15 (10) and OSHA 29 CFR 1926.1101.
- B. Perform work area preparations in accordance with Section 3.02.
- C. ACM roofing material shall be removed in an intact state to the extent feasible. All removed ACM roofing material shall be placed in an impermeable waste bag, or wrapped in plastic sheeting. All bagged or wrapped ACM roofing shall be transported to the ground in a closed container.
- D. Dust and airborne fiber release shall be minimized by the use of wet methods and HEPA vacuuming during removal of roofing materials. All roofing materials shall be wetted prior to removal and continuously wetted until placed into container for disposal. The Contractor shall prevent visible dust emissions during demolition activities.
- E. Cutting methods used to remove asbestos containing roofing materials shall minimize the release of fibers and prevent any visible dust emissions. Rotary cutting blades are prohibited unless equipped with HEPA filtered exhausts. The roofing materials shall be removed in an intact state to the extent feasible.
- F. All residual flashing cements located on equipment blocking, vents, pipes, cables, brick chimney shall be removed using manual scrapping and wet methods.
- G. The Contractor shall prevent visible dust emissions during removal activities. Removal of asbestos containing roofing materials shall not be performed during periods of strong wind conditions that cause dust and/or debris to be blown from the roof.
- H. Roofing material disposal containers shall be covered while on site and during transport to the landfill site.
- I. Following bulk removal of the asbestos containing roofing material, final clean the roof to a level of no visible dust or debris. All cleaning shall utilize wet methods and HEPA vacuuming. Dry sweeping is prohibited.

3.04 MONITORING, TESTING AND INSPECTION

- A. The Contractor is responsible for personnel monitoring for airborne asbestos fibers in compliance with OSHA regulations. The Owner's Industrial Hygienist may, at his or her discretion, also conduct personnel monitoring on Contractor personnel and area air monitoring at locations inside and outside of the work area.
- B. Provide cooperation and support to the Owner's Industrial Hygiene Consultant throughout the abatement process.
- C. Contractor is responsible for meeting OSHA requirements for his personnel, including but not limited to, monitoring requirements, safety compliance training and record keeping. Personal monitoring results from the previous day shall be posted each day, and copies of the results forwarded to the Owner's Industrial Hygiene Consultant.

3.05 FINAL INSPECTION AND TESTING

- A. After thorough cleaning, the Owner's Industrial Hygiene Consultant shall conduct a final visual inspection to determine that all roofing and insulation materials have been removed and HEPA vacuumed to a level of no visible dust or debris.
- B. Dust samples may be taken to be analyzed by polarized light microscopy (PLM) or TEM at the option of the Owner's Industrial Hygiene Consultant to confirm the results of the visual inspection. If the results of the final testing determine that asbestos is present then wet cleaning and/or HEPA vacuuming shall be repeated until the required decontamination levels have been achieved.

3.06 RESTORATION AND REPAIRS

- A. Repair and restore space in accordance with the final inspection punchlist specified herein.

3.07 RESPONSIBILITY FOR DAMAGES

- A. Any damages to the building and grounds that has been the result of actions by the Contractor personnel shall be repaired to their original condition without any additional cost to the Owner.

3.08 GENERAL APPLICABILITY OF CODES, REGULATIONS, LAWS AND STANDARDS

- A. Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all applicable codes, regulations, laws and standards have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith.

4.1.5 Roofing Performance Requirements

- A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit passage of water; and resist specified uplift pressures, thermally-induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.
- C. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7.
- D. FM Approvals Listing:
 - 1. Provide membrane roofing, base flashings, and component materials that comply with requirements in FM Approvals 4450 and FM Approvals 4470 as part of membrane roofing system, and that are listed in FM Approvals "RoofNav" for Class 1 on noncombustible construction, as applicable.
 - 2. Identify materials with FM Approvals' markings.
- E. Energy Performance: Provide roofing system that is listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for roof products.

4.1.6 Submittals

- A. Product Data: For each type of product indicated
- B. Shop Drawings for Roofing System:
 - 1. Submit Shop Drawings to the architect for review in accordance with the requirements of the Contract Documents.
 - 2. Provide shop drawings for fabrication, installation and erection of all parts of the work. Provide plans, elevations and details of anchorages, connections accessory items and the following:
 - a. Base flashing and membrane terminations
 - b. Tapered insulation, including slopes
 - c. Insulation fastening patterns
 - 3. Show dimensions locations and methods for installation of all membrane sheet roofing, insulation boards, tapered crickets, and all membrane and metal flashing installations.
 - 4. Provide large scale (1-1/2" = 1 ft. and 3" = 1 ft.) details at all flashings, penetrations, terminations and perimeters.
 - 5. Clearly note the work to be provided by other trades.

4.1.7 Quality Assurance

- A. Qualifications:
 - 1. Installer: Firm approved, authorized or licensed by roofing system manufacturer to install manufacturer's product and eligible to receive manufacturer's warranty.
 - 2. Manufacturer: Firm having FMG approval for membrane roofing system identical to that used for this Project.
- B. Source Limitations: Obtain components for membrane roofing system from same manufacturer as membrane roofing or approved by membrane roofing manufacturer.
- C. The name of the manufacturer of the material must be same as the name on the 30-year warranty.

4.1.8 Delivery, Storage and Handling

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type date of manufacturer, and directions for storing and mixing with other components.
- B. Storage:
 - 1. Store liquid materials in their original undamaged containers in clean, dry, protected location and within temperature range required by roofing system manufacturer.

2. Protect stored liquid material from direct sunlight.
3. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
4. Roof insulation:
 - a. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources.
 - b. Store in dry location.
 - c. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

4.1.9 Project Conditions

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

4.1.10 Warranty

- A. Special Warranty:
 1. Manufacturer's standard form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period.
 2. Failure includes roof leaks.
 3. Special warranty includes roofing membrane, base flashings, roofing accessories, roof insulation, fasteners, cover boards, substrate board, and other membrane roofing system components.
- B. Roofing manufacturer's warranty shall be for 72 mph in effect for a 30-year duration.
- C. Applicator's/Roofing Contractor's Warranty shall be in effect for a 2-year duration.
- D. This warranty shall not deprive Owner of other rights Owner may have under other provisions of Contract Documents and will be in addition to, and run concurrent with, other warranties made by Contractor under requirements of Contract Documents.

PART 4.2 2 PRODUCTS

4.2.1 Manufacturers

- A. 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: fully adhered, black, 90-mil EPDM Membrane with a 30-year warranty by John's Manville, Johns Manville's Peak Advantage No Dollar Limit Roofing System

B. 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. Johns Manville
2. Carlisle Syntec
3. Firestone Building Products

4.2.2 Materials

A. See specification in Appendix

LIGHTNING PROTECTION SYSTEM

1. Quality Assurance
 - a. Installer Qualifications: Engage an experienced installer to install lightning protection system. Upon request, submit evidence of such qualifications to the Designer.
 - b. Electrical Component Standard: Provide work complying with applicable requirements of State Electrical Code.
 - c. NFPA and UL Compliance: Comply with requirements of NFPA Standard 78, and UL Standard 96 as applicable to lightning protection systems for building projects.
 - d. LPI Compliance: Comply with requirements of Lightning Protection Institute (LPI) Standards 175, 176 and 177, pertaining to lightning protection system material components, installation and quality assurance procedures.
 - e. UL Compliance: Comply with UL Standards 96 and 96A.
 - f. ANSI Compliance: Comply with applicable requirements of ANSI Standard C2.
2. Sequencing and Scheduling
 - a. Coordinate installation of new lightning protection system with reroofing of the Sludge Dewatering Building.
3. Lightning Protection System Components
 - a. Install all lightning protection system materials and components so that they comply with the Specifications and Drawings found in the Appendices, the manufacturer's standard design, and in accordance with published product information. Provide all components required for a complete system that meets LPI-175, UL 96A or NFPA 78 standards.

PART 4.3 EXECUTION

4.3.1 Examination

- A. With installer present, examine substrates, areas, and conditions for compliance with following requirements and other conditions affecting performance of roofing system.
 - 1. Verify that roof openings and penetrations are in place, set, and braced and that roof drains are securely clamped in place.
 - 2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 - 3. Ensure dry, clean and smooth substrate has been prepared to receive adhered roof system.
 - 4. Inspect substrate for defects, such as excessive surface roughness, contamination, structural inadequacy, or any other condition adversely affecting quality of roofing installation.
 - 5. Ensure substrate is clean, smooth, dry, free of flaws, sharp edges, loose and foreign material, oil, and grease; do not proceed with roofing installation until all defects have been corrected.

4.3.2 Installation

- A. Vapor Retarder:
 - 1. Lay directly on and adhere to substrate board attached to deck, with all side and end joints of vapor retarder sealed in accordance with manufacturer's instructions.
 - 2. Seal all penetrations and terminations through vapor retarder.
- B. Wood Nailers:
 - 1. Install continuous wood nailers at perimeter of entire roof and around roof projections and penetrations.
 - 2. Anchor to resist min. 300 lbs. per lineal ft. force in any direction.
 - 3. Provide individual nailer lengths min. 36 in. long.
 - 4. Space nailer fasteners 12 in. o.c. or 16 in. o.c. to match structural framing.
 - 5. Stagger fasteners 1/3 nailer width and install within 5 in. of each end.
 - 6. Install 2 fasteners at ends of nailer lengths.
 - 7. Comply with specified requirements and Factory Mutual Loss Prevention Data Sheet 1-49.
 - 8. Provide thickness to match substrate or insulation height to allow smooth transition.
- C. Insulation:
 - 1. Install according to insulation manufacturer's instructions.
 - 2. Neatly cut to fit around penetrations and projections.
 - 3. Install tapered insulation in accordance with insulation manufacturer's shop drawings.
 - 4. Install tapered insulation around drains creating drain sump.
 - 5. Do not install more insulation board that can be covered with roofing membrane by end of day or onset of inclement weather.
 - 6. Use min. 2 layers of insulation when total insulation thickness exceeds 2.5 in.
 - 7. Stagger joints min. 12 in. between layers.

D. Adhered Roofing Membrane:

1. General:

- a. Inspect surface of insulation or substrate before installing roofing membrane to ensure substrate is clean, dry, free from debris, and smooth with no surface roughness or contamination.

2. Roofing Membrane Adhesive:

- a. Over properly installed and prepared absorbent substrate, pour adhesive from pail and spread using notched squeegee at rate according to roofing manufacture's requirements; do not place any adhesive on back of roofing membrane.
- b. Do not allow formation of film on adhesive surface to occur
- c. Unroll membrane carefully into wet adhesive with edges overlapped 3 in.
- d. Press membrane firmly into adhesive layer with water-filled, foam-covered lawn roller by frequently rolling in two directions.

E. Mechanically Fastened Roofing Membrane:

1. General:

- a. Inspect surface of insulation or substrate before installing roofing membrane to ensure substrate is clean, dry, free from debris, and smooth with no surface roughness or contamination.

2. Roofing Membrane Attachment:

- a. Place perimeter membrane sheet as required by manufacturer.
- b. Mechanically fasten membrane with appropriate fasteners and seam plates.
- c. Overlap adjacent EPDM membrane sheets a minimum of 6 inches at fastener locations (along the length of the membrane sheet) and 3" at end roll sections (the width of the membrane).
- d. EPDM membrane must be secured at the perimeter of each roof level, roof section, expansion joint, curb, skylight, interior wall, penthouse, etc., at any angle change which exceeds 2" in one horizontal foot, and at all penetrations in accordance with manufacturer's details and specifications.

E. Flashing:

1. General:

- a. Install all flashing concurrently with roof membrane as job progresses; do not allow any temporary flashing without prior written approval of Owner's Representative and roofing membrane manufacturer.
- b. If any water is allowed to enter under newly-completed roofing, remove and replace affected area at no additional cost to Owner.
- c. Adhere flashing to compatible, dry, smooth and solvent-resistant surfaces.
- d. Use caution to ensure adhesive fumes are not drawn into building.
- e. Extend all flashings min. 8 in. above roofing level, unless otherwise accepted in writing by Owner's Representative.
- f. Adhere all flashing membranes consistently to substrates.

- g. Cut all interior and exterior corners and miters and hot-air weld into place; do not allow any bitumen in contact with membrane.
 - h. Mechanically-fasten all flashing membranes fastened along counterflashed top edge with stop bar at 6 in. to 8 in. o.c.
- G. Metal:
 - 1. Ensure metal details, fabrication practices, and installation methods conform to applicable requirements of following:
 - a. Factory Mutual Loss Prevention Data Sheet 1-49/
 - b. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA).
 - c. Metal, other than that provided by roofing membrane manufacturer is not covered under membrane roofing warranty.
 - 2. Complete all metal work in conjunction with roofing and flashings for watertight condition at end of each day.
 - 3. Install to provide adequate resistance to bending to allow for normal thermal expansion and contraction.

4.3.3 COMPLETION

- A. Prior to demobilization from site, arrange review of work by Owner's Representative and installer.
- B. Note all defects and non-compliance with Specifications or manufacturer's recommendations in Punch List and arrange for items to be corrected immediately by installer to satisfaction of Owner's Representative before demobilization.

4.3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Engage qualified testing agency to perform tests and inspections.
- B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
- C. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.
- D. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

4.3.5 TEMPORARY CUT-OFF

- A. Install all flashing concurrently with roof membrane in order to maintain watertight condition as work progresses.
- B. Construct all temporary waterstops to provide 100 percent watertight seal, with stagger of insulation joints made even by installing partial panels of insulation.
- C. Carry roofing membrane to waterstop and seal waterstop to substrate so water will not be allowed to travel under permanent roofing.
- D. Seal Edge of Roofing Membrane:

1. Seal edge in continuous heavy application of sealant.
 2. Cut out contaminated membrane when work resumes, including removal of all sealant, contaminated membrane, insulation fillers, and similar materials placed with temporary cut-off.
 3. Do not allow any of these materials to be used in permanent work.
- E. If inclement weather occurs while temporary waterstop is in place, provide labor necessary to monitor situation to maintain watertight condition.
- F. If any water is allowed to enter under permanent roofing, remove affected area and replace at no additional cost to Owner.

4.3.6 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period.
- B. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing nature and extent in written report, with copies to Architect and Owner.
- C. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates, and repair and reinstall membrane roofing system to condition free of damage and deterioration at Substantial Completion and according to warranty requirements.

4.4.1 Permits

All applicable permits and compliance with regulations are the responsibility of the Contractor. The Contractor is responsible for securing all permits and providing copies to the Water Pollution Control Facility Director before commencement of work.

4.4.2 Site Condition During Work

The construction site will be kept neat and secured each day. Equipment security is the responsibility of the Contractor. Equipment may be stored at the site, but may not obstruct any roads or paths. The site will be free of trash and be kept in an orderly fashion.

4.4.3 Best Management Practices

The Contractor shall employ best management practices for construction sites to reduce erosion and maintain a clean and safe site.

4.4.4 Health and Safety

The Contractor will be responsible for ensuring the health and safety of employees and subcontractors. Work will be conducted in a safe and responsible manner and in compliance with all applicable health and safety laws and regulations.

4.4.5 Hazardous Materials

The contractor will be responsible for disposal of any and all hazardous materials in accordance with federal, state and local regulations and ordinances.

4.4.6 Contract Completion

The contract will be considered complete when:

- The site is clean of all debris
- All paperwork indicating disposal of materials has been turned in to the Project Manager.
- All permits have been signed off as complete by the managing authorities
- All items on punchlist have been completed
- All invoices have been submitted

4.5 Period of Performance

The contract period shall be for a period one hundred twenty (120) days however substantial completion is anticipated to take no more than 90 days from notice to proceed.

SECTION 5.0 PRICING

The undersigned proposes to supply and deliver the materials and services specified below in full accordance with the Contract Documents supplied by the Town of Wareham entitled:

REROOFING OF THE WAREHAM WATER POLLUTION CONTROL FACILITY

The Bidder proposes to furnish and deliver the services specified at the following prices. Pricing is firm fixed price (FFP)

CLIN	Description	Qty	Unit	Unit Price	Total Amount
001	Removal and disposal of existing roofing system including stone, membranes, insulation, mastics and related material down to existing deck in accordance with specifications				
001A	Vehicle Storage Garage	1	EA		
001B	Septage Blower Building – East	1	EA		
001C	Septage Blower Building – West	1	EA		
001D	Sludge Dewatering Building	1	EA		
002	Removal and proper disposal of asbestos-containing roofing materials (ACM) from				
002A	Septage Blower Building – East	1	EA		
002B	Septage Blower Building – West	1	EA		
002C	Sludge Dewatering Building	1	EA		
003	Reroof with EPDM Membrane Roofing in accordance with IFB and associated specifications and details				
003A	Vehicle Storage Garage	1	EA		
003B	Septage Blower Building – East	1	EA		
003C	Septage Blower Building – West	1	EA		
003D	Sludge Dewatering Building	1	EA		
004	Remove and Install New Lightning Protection Equipment in Sludge Dewatering Building in accordance with IFB and associated specifications and details	1	EA		
	Total Firm Fixed Price (FFP)				
	FOB: Destination				

SEE FOLLOWING PAGE FOR REQUIRED SIGNATURE OR PRICING

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

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

NAME OF COMPANY/ INDIVIDUAL: _____

ADDRESS: _____

CITY/STATE/ZIP: _____

TELEPHONE/FAX/EMAIL:

SIGNATURE OF AUTHORIZED INDIVIDUAL:

ACKNOWLEDGEMENT OF ADDENDUMS:

Addendum #1 _____ #2 _____ #3 _____ #4 _____

**SECTION 6.0
FORMS**

6.1 Required Submissions

6.1.1 Certificate of Authority

6.1.2 Statement of Compliance

6.1.3 Insurance Certificate (Post Award)

**APPENDIX A
PAST PERFORMANCE / REFERENCE SHEET**

The Town requires that the Contractor demonstrate experience providing similar services in **size, and scope** for a minimum of three (3) EPDM roofing projects and one (1) lightning protection roofing project. Three (3) references shall be provided for past performance.

Please use the below format for all references submitted and provide as much detail as possible in the Summary section.

Past Performance/Reference Title:

Period of Performance	
Contract \$ Value	
Technical & Contractual POC Names & Titles	
Telephone numbers	
Email address	
Detailed summary of services provided	

**APPENDIX B
SITE PHOTOS**

Appendix B
Site Photos – WPCF



Figure 1 Sludge Dewatering Building



Figure 2 Sludge Dewatering Building

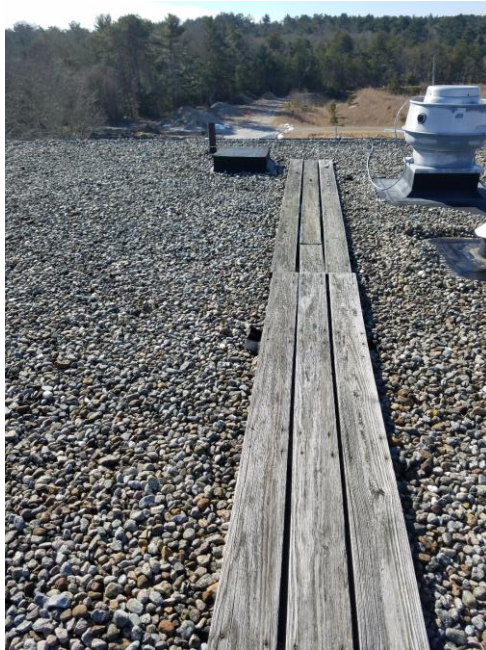


Figure 3 Sludge Dewatering Building



Figure 4 Sludge Dewatering Building



Figure 5 Sludge Dewatering Building



Figure 6 Sludge Dewatering Building

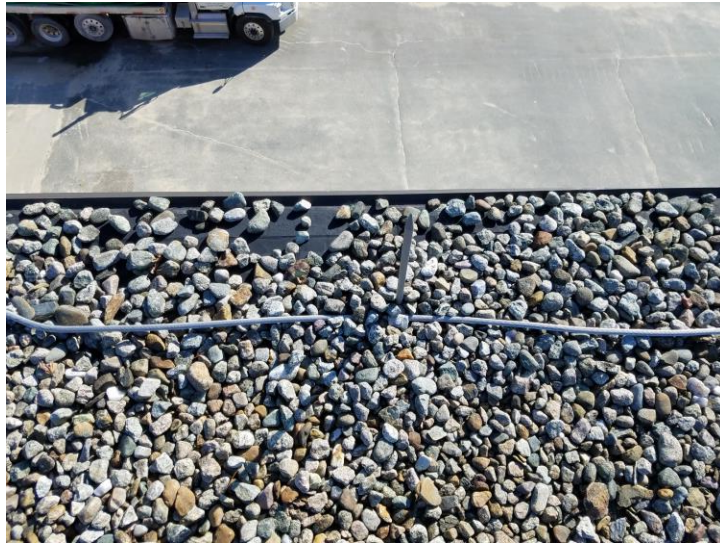


Figure 7 Sludge Dewatering Building – Existing Lightning Protection



Figure 8 Vehicle Storage Garage

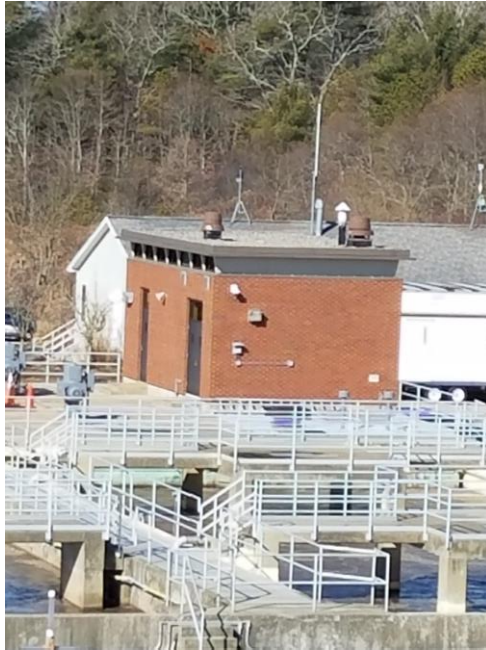


Figure 9 Septage Blower Building - East



Figure 10 Septage Blower Building - West

**APPENDIX C
PREVAILING WAGES**



CHARLES D. BAKER
Governor

KARYN E. POLITO
Lt. Governor

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

Prevailing Wage Rates

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

ROSALIN ACOSTA
Secretary

WILLIAM D MCKINNEY
Director

Awarding Authority: Town of Wareham
Contract Number: 19-IFB-001 Rebid **City/Town:** WAREHAM
Description of Work: Remove and replace existing roofing systems with EPDM roofing systems. Remove existing asbestos-containing roofing materials. Remove existing and install new lightning protection system.
Job Location: 6 Tony's Lane, 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>	12/01/2018	\$33.25	\$11.91	\$12.70	\$0.00	\$57.86
	06/01/2019	\$34.25	\$11.91	\$12.70	\$0.00	\$58.86
	08/01/2019	\$34.25	\$12.41	\$12.70	\$0.00	\$59.36
	12/01/2019	\$34.25	\$12.41	\$13.72	\$0.00	\$60.38
	06/01/2020	\$35.15	\$12.41	\$13.72	\$0.00	\$61.28
	08/01/2020	\$35.15	\$12.91	\$13.72	\$0.00	\$61.78
	12/01/2020	\$35.15	\$12.91	\$14.82	\$0.00	\$62.88
	06/01/2021	\$35.95	\$12.91	\$14.82	\$0.00	\$63.68
	08/01/2021	\$35.95	\$13.41	\$14.82	\$0.00	\$64.18
	12/01/2021	\$35.95	\$13.41	\$16.01	\$0.00	\$65.37
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2018	\$33.32	\$11.91	\$12.70	\$0.00	\$57.93
	06/01/2019	\$34.32	\$11.91	\$12.70	\$0.00	\$58.93
	08/01/2019	\$34.32	\$12.41	\$12.70	\$0.00	\$59.43
	12/01/2019	\$34.32	\$12.41	\$13.72	\$0.00	\$60.45
	06/01/2020	\$35.22	\$12.41	\$13.72	\$0.00	\$61.35
	08/01/2020	\$35.22	\$12.91	\$13.72	\$0.00	\$61.85
	12/01/2020	\$35.22	\$12.91	\$14.82	\$0.00	\$62.95
	06/01/2021	\$36.02	\$12.91	\$14.82	\$0.00	\$63.75
	08/01/2021	\$36.02	\$13.41	\$14.82	\$0.00	\$64.25
	12/01/2021	\$36.02	\$13.41	\$16.01	\$0.00	\$65.44
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2018	\$33.44	\$11.91	\$12.70	\$0.00	\$58.05
	06/01/2019	\$34.44	\$11.91	\$12.70	\$0.00	\$59.05
	08/01/2019	\$34.44	\$12.41	\$12.70	\$0.00	\$59.55
	12/01/2019	\$34.44	\$12.41	\$13.72	\$0.00	\$60.57
	06/01/2020	\$35.34	\$12.41	\$13.72	\$0.00	\$61.47
	08/01/2020	\$35.34	\$12.91	\$13.72	\$0.00	\$61.97
	12/01/2020	\$35.34	\$12.91	\$14.82	\$0.00	\$63.07
	06/01/2021	\$36.14	\$12.91	\$14.82	\$0.00	\$63.87
	08/01/2021	\$36.14	\$13.41	\$14.82	\$0.00	\$64.37
	12/01/2021	\$36.14	\$13.41	\$16.01	\$0.00	\$65.56
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2018	\$97.80	\$9.90	\$21.15	\$0.00	\$128.85
	08/01/2019	\$102.78	\$9.90	\$21.15	\$0.00	\$133.83
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2018	\$34.27	\$7.85	\$14.44	\$0.00	\$56.56
	06/01/2019	\$35.14	\$7.85	\$14.44	\$0.00	\$57.43
	12/01/2019	\$36.00	\$7.85	\$14.44	\$0.00	\$58.29
	06/01/2020	\$36.89	\$7.85	\$14.44	\$0.00	\$59.18
	12/01/2020	\$37.78	\$7.85	\$14.44	\$0.00	\$60.07
	06/01/2021	\$38.70	\$7.85	\$14.44	\$0.00	\$60.99
	12/01/2021	\$39.61	\$7.85	\$14.44	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ASBESTOS WORKER (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (SOUTHERN MASS)</i>	12/01/2018	\$35.40	\$12.50	\$8.50	\$0.00	\$56.40
	06/01/2019	\$36.40	\$12.50	\$8.50	\$0.00	\$57.40
	12/01/2019	\$37.40	\$12.50	\$8.50	\$0.00	\$58.40
	06/01/2020	\$38.40	\$12.50	\$8.50	\$0.00	\$59.40
	12/01/2020	\$39.40	\$12.50	\$8.50	\$0.00	\$60.40
ASPHALT RAKER <i>LABORERS - ZONE 2</i>	12/01/2018	\$33.77	\$7.85	\$14.44	\$0.00	\$56.06
	06/01/2019	\$34.64	\$7.85	\$14.44	\$0.00	\$56.93
	12/01/2019	\$35.50	\$7.85	\$14.44	\$0.00	\$57.79
	06/01/2020	\$36.39	\$7.85	\$14.44	\$0.00	\$58.68
	12/01/2020	\$37.28	\$7.85	\$14.44	\$0.00	\$59.57
	06/01/2021	\$38.20	\$7.85	\$14.44	\$0.00	\$60.49
	12/01/2021	\$39.11	\$7.85	\$14.44	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$47.58	\$11.50	\$15.60	\$0.00	\$74.68
	06/01/2019	\$48.68	\$11.50	\$15.60	\$0.00	\$75.78
	12/01/2019	\$49.83	\$11.50	\$15.60	\$0.00	\$76.93
	06/01/2020	\$50.93	\$11.50	\$15.60	\$0.00	\$78.03
	12/01/2020	\$52.08	\$11.50	\$15.60	\$0.00	\$79.18
	06/01/2021	\$53.18	\$11.50	\$15.60	\$0.00	\$80.28
	12/01/2021	\$54.33	\$11.50	\$15.60	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$47.58	\$11.50	\$15.60	\$0.00	\$74.68
	06/01/2019	\$48.68	\$11.50	\$15.60	\$0.00	\$75.78
	12/01/2019	\$49.83	\$11.50	\$15.60	\$0.00	\$76.93
	06/01/2020	\$50.93	\$11.50	\$15.60	\$0.00	\$78.03
	12/01/2020	\$52.08	\$11.50	\$15.60	\$0.00	\$79.18
	06/01/2021	\$53.18	\$11.50	\$15.60	\$0.00	\$80.28
	12/01/2021	\$54.33	\$11.50	\$15.60	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 2</i>	12/01/2018	\$33.77	\$7.85	\$14.44	\$0.00	\$56.06
	06/01/2019	\$34.64	\$7.85	\$14.44	\$0.00	\$56.93
	12/01/2019	\$35.50	\$7.85	\$14.44	\$0.00	\$57.79
	06/01/2020	\$36.39	\$7.85	\$14.44	\$0.00	\$58.68
	12/01/2020	\$37.28	\$7.85	\$14.44	\$0.00	\$59.57
	06/01/2021	\$38.20	\$7.85	\$14.44	\$0.00	\$60.49
	12/01/2021	\$39.11	\$7.85	\$14.44	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 2</i>	12/01/2018	\$34.27	\$7.85	\$14.44	\$0.00	\$56.56
	06/01/2019	\$35.14	\$7.85	\$14.44	\$0.00	\$57.43
	12/01/2019	\$36.00	\$7.85	\$14.44	\$0.00	\$58.29
	06/01/2020	\$36.89	\$7.85	\$14.44	\$0.00	\$59.18
	12/01/2020	\$37.78	\$7.85	\$14.44	\$0.00	\$60.07
	06/01/2021	\$38.70	\$7.85	\$14.44	\$0.00	\$60.99
	12/01/2021	\$39.61	\$7.85	\$14.44	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BOILER MAKER	01/01/2019	\$44.71	\$7.07	\$17.72	\$0.00	\$69.50
<i>BOILERMAKERS LOCAL 29</i>	01/01/2020	\$46.10	\$7.07	\$17.98	\$0.00	\$71.15

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$29.06	\$7.07	\$11.52	\$0.00	\$47.65
2	65	\$29.06	\$7.07	\$11.52	\$0.00	\$47.65
3	70	\$31.30	\$7.07	\$12.40	\$0.00	\$50.77
4	75	\$33.53	\$7.07	\$13.30	\$0.00	\$53.90
5	80	\$35.77	\$7.07	\$14.18	\$0.00	\$57.02
6	85	\$38.00	\$7.07	\$15.07	\$0.00	\$60.14
7	90	\$40.24	\$7.07	\$15.95	\$0.00	\$63.26
8	95	\$42.47	\$7.07	\$16.84	\$0.00	\$66.38

Effective Date - 01/01/2020

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

Notes:

Apprentice to Journeyworker Ratio:1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	02/01/2019	\$53.55	\$10.75	\$20.66	\$0.00	\$84.96
<i>BRICKLAYERS LOCAL 3 (NEW BEDFORD)</i>	08/01/2019	\$54.90	\$10.75	\$20.80	\$0.00	\$86.45
	02/01/2020	\$55.54	\$10.75	\$20.80	\$0.00	\$87.09
	08/01/2020	\$56.89	\$10.75	\$20.95	\$0.00	\$88.59
	02/01/2021	\$57.53	\$10.75	\$20.95	\$0.00	\$89.23
	08/01/2021	\$58.93	\$10.75	\$21.11	\$0.00	\$90.79
	02/01/2022	\$59.52	\$10.75	\$21.11	\$0.00	\$91.38

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 02/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.78	\$10.75	\$20.66	\$0.00	\$58.19
2	60	\$32.13	\$10.75	\$20.66	\$0.00	\$63.54
3	70	\$37.49	\$10.75	\$20.66	\$0.00	\$68.90
4	80	\$42.84	\$10.75	\$20.66	\$0.00	\$74.25
5	90	\$48.20	\$10.75	\$20.66	\$0.00	\$79.61

Effective Date - 08/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.45	\$10.75	\$20.80	\$0.00	\$59.00
2	60	\$32.94	\$10.75	\$20.80	\$0.00	\$64.49
3	70	\$38.43	\$10.75	\$20.80	\$0.00	\$69.98
4	80	\$43.92	\$10.75	\$20.80	\$0.00	\$75.47
5	90	\$49.41	\$10.75	\$20.80	\$0.00	\$80.96

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER	12/01/2018	\$47.10	\$11.50	\$15.60	\$0.00	\$74.20
<i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2019	\$48.19	\$11.50	\$15.60	\$0.00	\$75.29
	12/01/2019	\$49.33	\$11.50	\$15.60	\$0.00	\$76.43
	06/01/2020	\$50.41	\$11.50	\$15.60	\$0.00	\$77.51
	12/01/2020	\$51.55	\$11.50	\$15.60	\$0.00	\$78.65
	06/01/2021	\$52.64	\$11.50	\$15.60	\$0.00	\$79.74
	12/01/2021	\$53.78	\$11.50	\$15.60	\$0.00	\$80.88

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CAISSON & UNDERPINNING BOTTOM MAN	12/01/2018	\$39.75	\$7.85	\$15.55	\$0.00	\$63.15
<i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2019	\$40.75	\$7.85	\$15.55	\$0.00	\$64.15
	12/01/2019	\$41.75	\$7.85	\$15.55	\$0.00	\$65.15
	06/01/2020	\$42.74	\$7.85	\$15.55	\$0.00	\$66.14
	12/01/2020	\$43.72	\$7.85	\$15.55	\$0.00	\$67.12
	06/01/2021	\$44.74	\$7.85	\$15.55	\$0.00	\$68.14
	12/01/2021	\$45.75	\$7.85	\$15.55	\$0.00	\$69.15

For apprentice rates see "Apprentice- LABORER"

CAISSON & UNDERPINNING LABORER	12/01/2018	\$38.60	\$7.85	\$15.55	\$0.00	\$62.00
<i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2019	\$39.60	\$7.85	\$15.55	\$0.00	\$63.00
	12/01/2019	\$40.60	\$7.85	\$15.55	\$0.00	\$64.00
	06/01/2020	\$41.59	\$7.85	\$15.55	\$0.00	\$64.99
	12/01/2020	\$42.57	\$7.85	\$15.55	\$0.00	\$65.97
	06/01/2021	\$43.59	\$7.85	\$15.55	\$0.00	\$66.99
	12/01/2021	\$44.60	\$7.85	\$15.55	\$0.00	\$68.00

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2018	\$38.60	\$7.85	\$15.55	\$0.00	\$62.00
	06/01/2019	\$39.60	\$7.85	\$15.55	\$0.00	\$63.00
	12/01/2019	\$40.60	\$7.85	\$15.55	\$0.00	\$64.00
	06/01/2020	\$41.59	\$7.85	\$15.55	\$0.00	\$64.99
	12/01/2020	\$42.57	\$7.85	\$15.55	\$0.00	\$65.97
	06/01/2021	\$43.59	\$7.85	\$15.55	\$0.00	\$66.99
	12/01/2021	\$44.60	\$7.85	\$15.55	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2018	\$33.77	\$7.85	\$14.44	\$0.00	\$56.06
	06/01/2019	\$34.64	\$7.85	\$14.44	\$0.00	\$56.93
	12/01/2019	\$35.50	\$7.85	\$14.44	\$0.00	\$57.79
	06/01/2020	\$36.39	\$7.85	\$14.44	\$0.00	\$58.68
	12/01/2020	\$37.28	\$7.85	\$14.44	\$0.00	\$59.57
	06/01/2021	\$38.20	\$7.85	\$14.44	\$0.00	\$60.49
	12/01/2021	\$39.11	\$7.85	\$14.44	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	03/01/2019	\$42.35	\$9.90	\$17.50	\$0.00	\$69.75

Apprentice - CARPENTER - Zone 2 Eastern MA

Effective Date - 03/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.18	\$9.90	\$1.73	\$0.00	\$32.81
2	60	\$25.41	\$9.90	\$1.73	\$0.00	\$37.04
3	70	\$29.65	\$9.90	\$12.31	\$0.00	\$51.86
4	75	\$31.76	\$9.90	\$12.31	\$0.00	\$53.97
5	80	\$33.88	\$9.90	\$14.04	\$0.00	\$57.82
6	80	\$33.88	\$9.90	\$14.04	\$0.00	\$57.82
7	90	\$38.12	\$9.90	\$15.77	\$0.00	\$63.79
8	90	\$38.12	\$9.90	\$15.77	\$0.00	\$63.79

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 \$30.69/ 3&4 \$36.59/ 5&6 \$53.59/ 7&8 \$59.55

Apprentice to Journeyworker Ratio:1:5

CARPENTER WOOD FRAME <i>CARPENTERS -ZONE 2 (Wood Frame)</i>	04/01/2019	\$27.52	\$7.07	\$7.86	\$0.00	\$42.45
	10/01/2019	\$27.95	\$7.07	\$7.86	\$0.00	\$42.88

All Aspects of New Wood Frame Work

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER (Wood Frame) - Zone 2

Effective Date - 04/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$16.51	\$7.07	\$0.00	\$0.00	\$23.58
2	60	\$16.51	\$7.07	\$0.00	\$0.00	\$23.58
3	65	\$17.89	\$7.07	\$7.86	\$0.00	\$32.82
4	70	\$19.26	\$7.07	\$7.86	\$0.00	\$34.19
5	75	\$20.64	\$7.07	\$7.86	\$0.00	\$35.57
6	80	\$22.02	\$7.07	\$7.86	\$0.00	\$36.95
7	85	\$23.39	\$7.07	\$7.86	\$0.00	\$38.32
8	90	\$24.77	\$7.07	\$7.86	\$0.00	\$39.70

Effective Date - 10/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$16.77	\$7.07	\$0.00	\$0.00	\$23.84
2	60	\$16.77	\$7.07	\$0.00	\$0.00	\$23.84
3	65	\$18.17	\$7.07	\$7.86	\$0.00	\$33.10
4	70	\$19.57	\$7.07	\$7.86	\$0.00	\$34.50
5	75	\$20.96	\$7.07	\$7.86	\$0.00	\$35.89
6	80	\$22.36	\$7.07	\$7.86	\$0.00	\$37.29
7	85	\$23.76	\$7.07	\$7.86	\$0.00	\$38.69
8	90	\$25.16	\$7.07	\$7.86	\$0.00	\$40.09

Notes:
 % Indentured After 10/1/17; 45/45/55/55/70/70/80/80
 Step 1&2 \$19.45/ 3&4 \$26.96/ 5&6 \$34.19/ 7&8 \$36.95

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING BRICKLAYERS LOCAL 3 (NEW BEDFORD)	01/01/2019	\$47.50	\$12.50	\$22.41	\$0.30	\$82.71
	07/01/2019	\$48.24	\$12.50	\$22.41	\$0.30	\$83.45
	01/01/2020	\$49.64	\$12.50	\$22.41	\$0.30	\$84.85

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CEMENT MASONRY/PLASTERING - Eastern Mass (New Bedford)

Effective Date - 01/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.75	\$12.50	\$15.41	\$0.00	\$51.66
2	60	\$28.50	\$12.50	\$17.41	\$0.30	\$58.71
3	65	\$30.88	\$12.50	\$18.41	\$0.30	\$62.09
4	70	\$33.25	\$12.50	\$19.41	\$0.30	\$65.46
5	75	\$35.63	\$12.50	\$20.41	\$0.30	\$68.84
6	80	\$38.00	\$12.50	\$21.41	\$0.30	\$72.21
7	90	\$42.75	\$12.50	\$22.41	\$0.30	\$77.96

Effective Date - 07/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.12	\$12.50	\$15.41	\$0.00	\$52.03
2	60	\$28.94	\$12.50	\$17.41	\$0.30	\$59.15
3	65	\$31.36	\$12.50	\$18.41	\$0.30	\$62.57
4	70	\$33.77	\$12.50	\$19.41	\$0.30	\$65.98
5	75	\$36.18	\$12.50	\$20.41	\$0.30	\$69.39
6	80	\$38.59	\$12.50	\$21.41	\$0.30	\$72.80
7	90	\$43.42	\$12.50	\$22.41	\$0.30	\$78.63

Notes:

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

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR	12/01/2018	\$33.77	\$7.85	\$14.44	\$0.00	\$56.06
LABORERS - ZONE 2	06/01/2019	\$34.64	\$7.85	\$14.44	\$0.00	\$56.93
	12/01/2019	\$35.50	\$7.85	\$14.44	\$0.00	\$57.79
	06/01/2020	\$36.39	\$7.85	\$14.44	\$0.00	\$58.68
	12/01/2020	\$37.28	\$7.85	\$14.44	\$0.00	\$59.57
	06/01/2021	\$38.20	\$7.85	\$14.44	\$0.00	\$60.49
	12/01/2021	\$39.11	\$7.85	\$14.44	\$0.00	\$61.40

For apprentice rates see "Apprentice- LABORER"

CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES	12/01/2018	\$48.58	\$11.50	\$15.60	\$0.00	\$75.68
OPERATING ENGINEERS LOCAL 4	06/01/2019	\$49.68	\$11.50	\$15.60	\$0.00	\$76.78
	12/01/2019	\$50.83	\$11.50	\$15.60	\$0.00	\$77.93
	06/01/2020	\$51.93	\$11.50	\$15.60	\$0.00	\$79.03
	12/01/2020	\$53.08	\$11.50	\$15.60	\$0.00	\$80.18
	06/01/2021	\$54.18	\$11.50	\$15.60	\$0.00	\$81.28
	12/01/2021	\$55.33	\$11.50	\$15.60	\$0.00	\$82.43

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
COMPRESSOR OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$32.03	\$11.50	\$15.60	\$0.00	\$59.13
	06/01/2019	\$32.78	\$11.50	\$15.60	\$0.00	\$59.88
	12/01/2019	\$33.57	\$11.50	\$15.60	\$0.00	\$60.67
	06/01/2020	\$34.32	\$11.50	\$15.60	\$0.00	\$61.42
	12/01/2020	\$35.10	\$11.50	\$15.60	\$0.00	\$62.20
	06/01/2021	\$35.85	\$11.50	\$15.60	\$0.00	\$62.95
	12/01/2021	\$36.64	\$11.50	\$15.60	\$0.00	\$63.74

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

DELEADER (BRIDGE) <i>PAINTERS LOCAL 35 - ZONE 2</i>	01/01/2019	\$50.36	\$8.15	\$20.85	\$0.00	\$79.36
	07/01/2019	\$51.46	\$8.15	\$20.85	\$0.00	\$80.46
	01/01/2020	\$52.56	\$8.15	\$20.85	\$0.00	\$81.56
	07/01/2020	\$53.66	\$8.15	\$20.85	\$0.00	\$82.66
	01/01/2021	\$54.76	\$8.15	\$20.85	\$0.00	\$83.76

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.18	\$8.15	\$0.00	\$0.00	\$33.33
2	55	\$27.70	\$8.15	\$5.64	\$0.00	\$41.49
3	60	\$30.22	\$8.15	\$6.15	\$0.00	\$44.52
4	65	\$32.73	\$8.15	\$6.66	\$0.00	\$47.54
5	70	\$35.25	\$8.15	\$17.78	\$0.00	\$61.18
6	75	\$37.77	\$8.15	\$18.29	\$0.00	\$64.21
7	80	\$40.29	\$8.15	\$18.80	\$0.00	\$67.24
8	90	\$45.32	\$8.15	\$19.83	\$0.00	\$73.30

Effective Date - 07/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.73	\$8.15	\$0.00	\$0.00	\$33.88
2	55	\$28.30	\$8.15	\$5.64	\$0.00	\$42.09
3	60	\$30.88	\$8.15	\$6.15	\$0.00	\$45.18
4	65	\$33.45	\$8.15	\$6.66	\$0.00	\$48.26
5	70	\$36.02	\$8.15	\$17.78	\$0.00	\$61.95
6	75	\$38.60	\$8.15	\$18.29	\$0.00	\$65.04
7	80	\$41.17	\$8.15	\$18.80	\$0.00	\$68.12
8	90	\$46.31	\$8.15	\$19.83	\$0.00	\$74.29

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN <i>LABORERS - ZONE 2</i>	12/01/2018	\$38.80	\$7.85	\$15.35	\$0.00	\$62.00
	06/01/2019	\$39.80	\$7.85	\$15.35	\$0.00	\$63.00
	12/01/2019	\$40.80	\$7.85	\$15.35	\$0.00	\$64.00

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>	12/01/2018	\$39.80	\$7.85	\$15.35	\$0.00	\$63.00
	06/01/2019	\$40.80	\$7.85	\$15.35	\$0.00	\$64.00
	12/01/2019	\$41.80	\$7.85	\$15.35	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS <i>LABORERS - ZONE 2</i>	12/01/2018	\$39.55	\$7.85	\$15.35	\$0.00	\$62.75
	06/01/2019	\$40.55	\$7.85	\$15.35	\$0.00	\$63.75
	12/01/2019	\$41.55	\$7.85	\$15.35	\$0.00	\$64.75
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 2</i>	12/01/2018	\$39.80	\$7.85	\$15.35	\$0.00	\$63.00
	06/01/2019	\$40.80	\$7.85	\$15.35	\$0.00	\$64.00
	12/01/2019	\$41.80	\$7.85	\$15.35	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2018	\$39.55	\$7.85	\$15.35	\$0.00	\$62.75
	06/01/2019	\$40.55	\$7.85	\$15.35	\$0.00	\$63.75
	12/01/2019	\$41.55	\$7.85	\$15.35	\$0.00	\$64.75
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 2</i>	12/01/2018	\$38.80	\$7.85	\$15.35	\$0.00	\$62.00
	06/01/2019	\$39.80	\$7.85	\$15.35	\$0.00	\$63.00
	12/01/2019	\$40.80	\$7.85	\$15.35	\$0.00	\$64.00
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$47.10	\$11.50	\$15.60	\$0.00	\$74.20
	06/01/2019	\$48.19	\$11.50	\$15.60	\$0.00	\$75.29
	12/01/2019	\$49.33	\$11.50	\$15.60	\$0.00	\$76.43
	06/01/2020	\$50.41	\$11.50	\$15.60	\$0.00	\$77.51
	12/01/2020	\$51.55	\$11.50	\$15.60	\$0.00	\$78.65
	06/01/2021	\$52.64	\$11.50	\$15.60	\$0.00	\$79.74
	12/01/2021	\$53.78	\$11.50	\$15.60	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2018	\$65.20	\$9.90	\$21.15	\$0.00	\$96.25
	08/01/2019	\$68.52	\$9.90	\$21.15	\$0.00	\$99.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2018	\$46.57	\$9.90	\$21.15	\$0.00	\$77.62
	08/01/2019	\$48.94	\$9.90	\$21.15	\$0.00	\$79.99
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2018	\$69.86	\$9.90	\$21.15	\$0.00	\$100.91
	08/01/2019	\$73.41	\$9.90	\$21.15	\$0.00	\$104.46
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2018	\$97.80	\$9.90	\$21.15	\$0.00	\$128.85
	08/01/2019	\$102.78	\$9.90	\$21.15	\$0.00	\$133.83
For apprentice rates see "Apprentice- PILE DRIVER"						
ELECTRICIAN <i>ELECTRICIANS LOCAL 223</i>	03/01/2019	\$41.64	\$9.90	\$13.15	\$0.00	\$64.69
	09/01/2019	\$42.26	\$10.15	\$13.54	\$0.00	\$65.95
	03/01/2020	\$42.87	\$10.40	\$13.94	\$0.00	\$67.21

Apprentice - ELECTRICIAN - Local 223

Effective Date - 03/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$16.66	\$9.90	\$0.50	\$0.00	\$27.06
2	42	\$17.49	\$9.90	\$0.52	\$0.00	\$27.91
3	45	\$18.74	\$9.90	\$0.58	\$0.00	\$29.22
4	48	\$19.99	\$9.90	\$4.64	\$0.00	\$34.53
5	50	\$20.82	\$9.90	\$4.68	\$0.00	\$35.40
6	55	\$22.90	\$9.90	\$5.04	\$0.00	\$37.84
7	60	\$24.98	\$9.90	\$5.34	\$0.00	\$40.22
8	65	\$27.07	\$9.90	\$5.64	\$0.00	\$42.61
9	70	\$29.15	\$9.90	\$5.93	\$0.00	\$44.98
10	75	\$31.23	\$9.90	\$6.18	\$0.00	\$47.31

Effective Date - 09/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$16.90	\$10.15	\$0.51	\$0.00	\$27.56
2	42	\$17.75	\$10.15	\$0.53	\$0.00	\$28.43
3	45	\$19.02	\$10.15	\$0.57	\$0.00	\$29.74
4	48	\$20.28	\$10.15	\$4.93	\$0.00	\$35.36
5	50	\$21.13	\$10.15	\$4.97	\$0.00	\$36.25
6	55	\$23.24	\$10.15	\$5.33	\$0.00	\$38.72
7	60	\$25.36	\$10.15	\$5.64	\$0.00	\$41.15
8	65	\$27.47	\$10.15	\$5.94	\$0.00	\$43.56
9	70	\$29.58	\$10.15	\$6.25	\$0.00	\$45.98
10	75	\$31.70	\$10.15	\$6.50	\$0.00	\$48.35

Notes:
Steps are 750 hours

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR	01/01/2019	\$59.47	\$15.58	\$17.51	\$0.00	\$92.56
ELEVATOR CONSTRUCTORS LOCAL 4	01/01/2020	\$61.42	\$15.73	\$18.41	\$0.00	\$95.56
	01/01/2021	\$63.47	\$15.88	\$19.31	\$0.00	\$98.66
	01/01/2022	\$65.62	\$16.03	\$20.21	\$0.00	\$101.86

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ELEVATOR CONSTRUCTOR - Local 4

Effective Date - 01/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$29.74	\$15.58	\$0.00	\$0.00	\$45.32
2	55	\$32.71	\$15.58	\$17.51	\$0.00	\$65.80
3	65	\$38.66	\$15.58	\$17.51	\$0.00	\$71.75
4	70	\$41.63	\$15.58	\$17.51	\$0.00	\$74.72
5	80	\$47.58	\$15.58	\$17.51	\$0.00	\$80.67

Effective Date - 01/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$30.71	\$15.73	\$0.00	\$0.00	\$46.44
2	55	\$33.78	\$15.73	\$18.41	\$0.00	\$67.92
3	65	\$39.92	\$15.73	\$18.41	\$0.00	\$74.06
4	70	\$42.99	\$15.73	\$18.41	\$0.00	\$77.13
5	80	\$49.14	\$15.73	\$18.41	\$0.00	\$83.28

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>	01/01/2019	\$41.63	\$15.58	\$17.51	\$0.00	\$74.72
	01/01/2020	\$42.99	\$15.73	\$18.41	\$0.00	\$77.13
	01/01/2021	\$44.43	\$15.88	\$19.31	\$0.00	\$79.62
	01/01/2022	\$45.93	\$16.03	\$20.21	\$0.00	\$82.17

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

FENCE & GUARD RAIL ERECTOR <i>LABORERS - ZONE 2</i>	12/01/2018	\$33.77	\$7.85	\$14.44	\$0.00	\$56.06
	06/01/2019	\$34.64	\$7.85	\$14.44	\$0.00	\$56.93
	12/01/2019	\$35.50	\$7.85	\$14.44	\$0.00	\$57.79
	06/01/2020	\$36.39	\$7.85	\$14.44	\$0.00	\$58.68
	12/01/2020	\$37.28	\$7.85	\$14.44	\$0.00	\$59.57
	06/01/2021	\$38.20	\$7.85	\$14.44	\$0.00	\$60.49
	12/01/2021	\$39.11	\$7.85	\$14.44	\$0.00	\$61.40

For apprentice rates see "Apprentice- LABORER"

FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2018	\$43.19	\$11.00	\$15.50	\$0.00	\$69.69
	05/01/2019	\$44.33	\$11.00	\$15.50	\$0.00	\$70.83
	11/01/2019	\$45.33	\$11.00	\$15.50	\$0.00	\$71.83
	05/01/2020	\$46.48	\$11.00	\$15.50	\$0.00	\$72.98
	11/01/2020	\$47.48	\$11.00	\$15.50	\$0.00	\$73.98
	05/01/2021	\$48.68	\$11.00	\$15.50	\$0.00	\$75.18
	11/01/2021	\$49.63	\$11.00	\$15.50	\$0.00	\$76.13
	05/01/2022	\$50.78	\$11.00	\$15.50	\$0.00	\$77.28

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2018	\$44.67	\$11.00	\$15.50	\$0.00	\$71.17
	05/01/2019	\$45.82	\$11.00	\$15.50	\$0.00	\$72.32
	11/01/2019	\$46.83	\$11.00	\$15.50	\$0.00	\$73.33
	05/01/2020	\$47.98	\$11.00	\$15.50	\$0.00	\$74.48
	11/01/2020	\$48.99	\$11.00	\$15.50	\$0.00	\$75.49
	05/01/2021	\$50.15	\$11.00	\$15.50	\$0.00	\$76.65
	11/01/2021	\$51.16	\$11.00	\$15.50	\$0.00	\$77.66
	05/01/2022	\$52.32	\$11.00	\$15.50	\$0.00	\$78.82
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2018	\$22.45	\$11.00	\$15.50	\$0.00	\$48.95
	05/01/2019	\$23.13	\$11.00	\$15.50	\$0.00	\$49.63
	11/01/2019	\$23.72	\$11.00	\$15.50	\$0.00	\$50.22
	05/01/2020	\$24.39	\$11.00	\$15.50	\$0.00	\$50.89
	11/01/2020	\$24.98	\$11.00	\$15.50	\$0.00	\$51.48
	05/01/2021	\$25.66	\$11.00	\$15.50	\$0.00	\$52.16
	11/01/2021	\$26.26	\$11.00	\$15.50	\$0.00	\$52.76
	05/01/2022	\$26.93	\$11.00	\$15.50	\$0.00	\$53.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 223</i>	03/01/2019	\$41.64	\$9.90	\$13.15	\$0.00	\$64.69
	09/01/2019	\$42.26	\$10.15	\$13.54	\$0.00	\$65.95
	03/01/2020	\$42.87	\$10.40	\$13.94	\$0.00	\$67.21
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS</i> <i>LOCAL 223</i>	03/01/2019	\$35.25	\$9.90	\$11.14	\$0.00	\$56.29
	09/01/2019	\$35.78	\$10.15	\$11.45	\$0.00	\$57.38
	03/01/2020	\$36.27	\$10.40	\$11.78	\$0.00	\$58.45
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$39.13	\$11.50	\$15.60	\$0.00	\$66.23
	06/01/2019	\$40.04	\$11.50	\$15.60	\$0.00	\$67.14
	12/01/2019	\$40.99	\$11.50	\$15.60	\$0.00	\$68.09
	06/01/2020	\$41.90	\$11.50	\$15.60	\$0.00	\$69.00
	12/01/2020	\$42.85	\$11.50	\$15.60	\$0.00	\$69.95
	06/01/2021	\$43.76	\$11.50	\$15.60	\$0.00	\$70.86
	12/01/2021	\$44.71	\$11.50	\$15.60	\$0.00	\$71.81
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER <i>LABORERS - ZONE 2</i>	12/01/2018	\$22.50	\$7.85	\$14.44	\$0.00	\$44.79
	06/01/2019	\$22.50	\$7.85	\$14.44	\$0.00	\$44.79
	12/01/2019	\$23.50	\$7.85	\$14.44	\$0.00	\$45.79
	06/01/2020	\$23.50	\$7.85	\$14.44	\$0.00	\$45.79
	12/01/2020	\$24.50	\$7.85	\$14.44	\$0.00	\$46.79
	06/01/2021	\$24.50	\$7.85	\$14.44	\$0.00	\$46.79
	12/01/2021	\$24.50	\$7.85	\$14.44	\$0.00	\$46.79
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

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - FLOORCOVERER - Local 2168 Zone I

Effective Date - 03/01/2016

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

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

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$47.58	\$11.50	\$15.60	\$0.00	\$74.68
	06/01/2019	\$48.68	\$11.50	\$15.60	\$0.00	\$75.78
	12/01/2019	\$49.83	\$11.50	\$15.60	\$0.00	\$76.93
	06/01/2020	\$50.93	\$11.50	\$15.60	\$0.00	\$78.03
	12/01/2020	\$52.08	\$11.50	\$15.60	\$0.00	\$79.18
	06/01/2021	\$53.18	\$11.50	\$15.60	\$0.00	\$80.28
	12/01/2021	\$54.33	\$11.50	\$15.60	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$32.03	\$11.50	\$15.60	\$0.00	\$59.13
	06/01/2019	\$32.78	\$11.50	\$15.60	\$0.00	\$59.88
	12/01/2019	\$33.57	\$11.50	\$15.60	\$0.00	\$60.67
	06/01/2020	\$34.32	\$11.50	\$15.60	\$0.00	\$61.42
	12/01/2020	\$35.10	\$11.50	\$15.60	\$0.00	\$62.20
	06/01/2021	\$35.85	\$11.50	\$15.60	\$0.00	\$62.95
	12/01/2021	\$36.64	\$11.50	\$15.60	\$0.00	\$63.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 1333</i>	06/01/2018	\$37.18	\$10.40	\$9.35	\$0.00	\$56.93
	06/01/2019	\$38.18	\$10.60	\$9.90	\$0.00	\$58.68
	06/01/2020	\$39.18	\$10.80	\$10.45	\$0.00	\$60.43

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - GLAZIER - Local 1333

Effective Date - 06/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.59	\$10.40	\$1.60	\$0.00	\$30.59
2	56	\$20.91	\$10.40	\$1.60	\$0.00	\$32.91
3	63	\$23.24	\$10.40	\$2.10	\$0.00	\$35.74
4	69	\$25.56	\$10.40	\$2.10	\$0.00	\$38.06
5	75	\$27.89	\$10.40	\$2.60	\$0.00	\$40.89
6	81	\$30.21	\$10.40	\$2.60	\$0.00	\$43.21
7	88	\$32.53	\$10.40	\$9.35	\$0.00	\$52.28
8	94	\$34.86	\$10.40	\$9.35	\$0.00	\$54.61

Effective Date - 06/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.09	\$10.60	\$1.80	\$0.00	\$31.49
2	56	\$21.48	\$10.60	\$1.80	\$0.00	\$33.88
3	63	\$23.86	\$10.60	\$2.40	\$0.00	\$36.86
4	69	\$26.25	\$10.60	\$2.40	\$0.00	\$39.25
5	75	\$28.64	\$10.60	\$2.90	\$0.00	\$42.14
6	81	\$31.02	\$10.60	\$2.90	\$0.00	\$44.52
7	88	\$33.41	\$10.60	\$9.90	\$0.00	\$53.91
8	94	\$35.79	\$10.60	\$9.90	\$0.00	\$56.29

Notes:

Apprentice to Journeyworker Ratio:1:3

HOISTING ENGINEER/CRANES/GRADALLS	12/01/2018	\$47.58	\$11.50	\$15.60	\$0.00	\$74.68
OPERATING ENGINEERS LOCAL 4	06/01/2019	\$48.68	\$11.50	\$15.60	\$0.00	\$75.78
	12/01/2019	\$49.83	\$11.50	\$15.60	\$0.00	\$76.93
	06/01/2020	\$50.93	\$11.50	\$15.60	\$0.00	\$78.03
	12/01/2020	\$52.08	\$11.50	\$15.60	\$0.00	\$79.18
	06/01/2021	\$53.18	\$11.50	\$15.60	\$0.00	\$80.28
	12/01/2021	\$54.33	\$11.50	\$15.60	\$0.00	\$81.43

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - OPERATING ENGINEERS - Local 4

Effective Date - 12/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$26.17	\$11.50	\$0.00	\$0.00	\$37.67
2	60	\$28.55	\$11.50	\$15.60	\$0.00	\$55.65
3	65	\$30.93	\$11.50	\$15.60	\$0.00	\$58.03
4	70	\$33.31	\$11.50	\$15.60	\$0.00	\$60.41
5	75	\$35.69	\$11.50	\$15.60	\$0.00	\$62.79
6	80	\$38.06	\$11.50	\$15.60	\$0.00	\$65.16
7	85	\$40.44	\$11.50	\$15.60	\$0.00	\$67.54
8	90	\$42.82	\$11.50	\$15.60	\$0.00	\$69.92

Effective Date - 06/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$26.77	\$11.50	\$0.00	\$0.00	\$38.27
2	60	\$29.21	\$11.50	\$15.60	\$0.00	\$56.31
3	65	\$31.64	\$11.50	\$15.60	\$0.00	\$58.74
4	70	\$34.08	\$11.50	\$15.60	\$0.00	\$61.18
5	75	\$36.51	\$11.50	\$15.60	\$0.00	\$63.61
6	80	\$38.94	\$11.50	\$15.60	\$0.00	\$66.04
7	85	\$41.38	\$11.50	\$15.60	\$0.00	\$68.48
8	90	\$43.81	\$11.50	\$15.60	\$0.00	\$70.91

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) 04/01/2019 \$34.71 \$13.20 \$16.55 \$1.93 \$66.39
 SHEETMETAL WORKERS LOCAL 17 - B

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) 03/01/2019 \$41.64 \$9.90 \$13.15 \$0.00 \$64.69
 ELECTRICIANS LOCAL 223

09/01/2019 \$42.26 \$10.15 \$13.54 \$0.00 \$65.95
 03/01/2020 \$42.87 \$10.40 \$13.94 \$0.00 \$67.21

For apprentice rates see "Apprentice- ELECTRICIAN"

HVAC (TESTING AND BALANCING - AIR) 04/01/2019 \$34.71 \$13.20 \$16.55 \$1.93 \$66.39
 SHEETMETAL WORKERS LOCAL 17 - B

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (TESTING AND BALANCING -WATER) 09/01/2018 \$42.04 \$10.00 \$18.20 \$0.00 \$70.24
 PLUMBERS & PIPEFITTERS LOCAL 51

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

HVAC MECHANIC 09/01/2018 \$42.04 \$10.00 \$18.20 \$0.00 \$70.24
 PLUMBERS & PIPEFITTERS LOCAL 51

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HYDRAULIC DRILLS <i>LABORERS - ZONE 2</i>	12/01/2018	\$34.27	\$7.85	\$14.44	\$0.00	\$56.56
	06/01/2019	\$35.14	\$7.85	\$14.44	\$0.00	\$57.43
	12/01/2019	\$36.00	\$7.85	\$14.44	\$0.00	\$58.29
	06/01/2020	\$36.89	\$7.85	\$14.44	\$0.00	\$59.18
	12/01/2020	\$37.78	\$7.85	\$14.44	\$0.00	\$60.07
	06/01/2021	\$38.70	\$7.85	\$14.44	\$0.00	\$60.99
	12/01/2021	\$39.61	\$7.85	\$14.44	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER"						
INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (SOUTHERN MASS)</i>	09/01/2018	\$42.38	\$12.50	\$15.60	\$0.00	\$70.48
	09/01/2019	\$44.63	\$12.50	\$15.60	\$0.00	\$72.73

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

Effective Date - 09/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.19	\$12.50	\$11.40	\$0.00	\$45.09
2	60	\$25.43	\$12.50	\$12.24	\$0.00	\$50.17
3	70	\$29.67	\$12.50	\$13.08	\$0.00	\$55.25
4	80	\$33.90	\$12.50	\$13.92	\$0.00	\$60.32

Effective Date - 09/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.32	\$12.50	\$11.40	\$0.00	\$46.22
2	60	\$26.78	\$12.50	\$12.24	\$0.00	\$51.52
3	70	\$31.24	\$12.50	\$13.08	\$0.00	\$56.82
4	80	\$35.70	\$12.50	\$13.92	\$0.00	\$62.12

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER <i>IRONWORKERS LOCAL 37</i>	03/16/2019	\$38.81	\$7.70	\$17.10	\$0.00	\$63.61
	09/16/2019	\$39.71	\$7.70	\$17.10	\$0.00	\$64.51
	03/16/2020	\$40.61	\$7.70	\$17.10	\$0.00	\$65.41
	09/16/2020	\$41.51	\$7.70	\$17.10	\$0.00	\$66.31
	03/16/2021	\$42.46	\$7.70	\$17.10	\$0.00	\$67.26

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - IRONWORKER - Local 37

Effective Date - 03/16/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	70	\$27.17	\$7.70	\$17.10	\$0.00	\$51.97
2	75	\$29.11	\$7.70	\$17.10	\$0.00	\$53.91
3	80	\$31.05	\$7.70	\$17.10	\$0.00	\$55.85
4	85	\$32.99	\$7.70	\$17.10	\$0.00	\$57.79
5	90	\$34.93	\$7.70	\$17.10	\$0.00	\$59.73
6	95	\$36.87	\$7.70	\$17.10	\$0.00	\$61.67

Effective Date - 09/16/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	70	\$27.80	\$7.70	\$17.10	\$0.00	\$52.60
2	75	\$29.78	\$7.70	\$17.10	\$0.00	\$54.58
3	80	\$31.77	\$7.70	\$17.10	\$0.00	\$56.57
4	85	\$33.75	\$7.70	\$17.10	\$0.00	\$58.55
5	90	\$35.74	\$7.70	\$17.10	\$0.00	\$60.54
6	95	\$37.72	\$7.70	\$17.10	\$0.00	\$62.52

Notes:

Apprentice to Journeyworker Ratio:1:4

JACKHAMMER & PAVING BREAKER OPERATOR LABORERS - ZONE 2	12/01/2018	\$33.77	\$7.85	\$14.44	\$0.00	\$56.06
	06/01/2019	\$34.64	\$7.85	\$14.44	\$0.00	\$56.93
	12/01/2019	\$35.50	\$7.85	\$14.44	\$0.00	\$57.79
	06/01/2020	\$36.39	\$7.85	\$14.44	\$0.00	\$58.68
	12/01/2020	\$37.28	\$7.85	\$14.44	\$0.00	\$59.57
	06/01/2021	\$38.20	\$7.85	\$14.44	\$0.00	\$60.49
	12/01/2021	\$39.11	\$7.85	\$14.44	\$0.00	\$61.40

For apprentice rates see "Apprentice- LABORER"

LABORER LABORERS - ZONE 2	12/01/2018	\$33.52	\$7.85	\$14.44	\$0.00	\$55.81
	06/01/2019	\$34.39	\$7.85	\$14.44	\$0.00	\$56.68
	12/01/2019	\$35.25	\$7.85	\$14.44	\$0.00	\$57.54
	06/01/2020	\$36.14	\$7.85	\$14.44	\$0.00	\$58.43
	12/01/2020	\$37.03	\$7.85	\$14.44	\$0.00	\$59.32
	06/01/2021	\$37.95	\$7.85	\$14.44	\$0.00	\$60.24
	12/01/2021	\$38.86	\$7.85	\$14.44	\$0.00	\$61.15

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - LABORER - Zone 2

Effective Date - 12/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.11	\$7.85	\$14.44	\$0.00	\$42.40
2	70	\$23.46	\$7.85	\$14.44	\$0.00	\$45.75
3	80	\$26.82	\$7.85	\$14.44	\$0.00	\$49.11
4	90	\$30.17	\$7.85	\$14.44	\$0.00	\$52.46

Effective Date - 06/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.63	\$7.85	\$14.44	\$0.00	\$42.92
2	70	\$24.07	\$7.85	\$14.44	\$0.00	\$46.36
3	80	\$27.51	\$7.85	\$14.44	\$0.00	\$49.80
4	90	\$30.95	\$7.85	\$14.44	\$0.00	\$53.24

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER LABORERS - ZONE 2	12/01/2018	\$33.52	\$7.85	\$14.44	\$0.00	\$55.81
	06/01/2019	\$34.39	\$7.85	\$14.44	\$0.00	\$56.68
	12/01/2019	\$35.25	\$7.85	\$14.44	\$0.00	\$57.54
	06/01/2020	\$36.14	\$7.85	\$14.44	\$0.00	\$58.43
	12/01/2020	\$37.03	\$7.85	\$14.44	\$0.00	\$59.32
	06/01/2021	\$37.95	\$7.85	\$14.44	\$0.00	\$60.24
	12/01/2021	\$38.86	\$7.85	\$14.44	\$0.00	\$61.15

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER LABORERS - ZONE 2	12/01/2018	\$33.52	\$7.85	\$14.44	\$0.00	\$55.81
	06/01/2019	\$34.39	\$7.85	\$14.44	\$0.00	\$56.68
	12/01/2019	\$35.25	\$7.85	\$14.44	\$0.00	\$57.54
	06/01/2020	\$36.14	\$7.85	\$14.44	\$0.00	\$58.43
	12/01/2020	\$37.03	\$7.85	\$14.44	\$0.00	\$59.32
	06/01/2021	\$37.95	\$7.85	\$14.44	\$0.00	\$60.24
	12/01/2021	\$38.86	\$7.85	\$14.44	\$0.00	\$61.15

For apprentice rates see "Apprentice- LABORER"

LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS - ZONE 2	12/01/2018	\$33.72	\$7.85	\$14.39	\$0.00	\$55.96
	06/01/2019	\$34.59	\$7.85	\$14.39	\$0.00	\$56.83
	12/01/2019	\$35.45	\$7.85	\$14.39	\$0.00	\$57.69

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: MASON TENDER <i>LABORERS - ZONE 2</i>	12/01/2018	\$33.77	\$7.85	\$14.44	\$0.00	\$56.06
	06/01/2019	\$34.64	\$7.85	\$14.44	\$0.00	\$56.93
	12/01/2019	\$35.50	\$7.85	\$14.44	\$0.00	\$57.79
	06/01/2020	\$36.39	\$7.85	\$14.44	\$0.00	\$58.68
	12/01/2020	\$37.28	\$7.85	\$14.44	\$0.00	\$59.57
	06/01/2021	\$38.20	\$7.85	\$14.44	\$0.00	\$60.49
	12/01/2021	\$39.11	\$7.85	\$14.44	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 2</i>	12/01/2018	\$33.52	\$7.85	\$14.44	\$0.00	\$55.81
	06/01/2019	\$34.39	\$7.85	\$14.44	\$0.00	\$56.68
	12/01/2019	\$35.25	\$7.85	\$14.44	\$0.00	\$57.54
	06/01/2020	\$36.14	\$7.85	\$14.44	\$0.00	\$58.43
	12/01/2020	\$37.03	\$7.85	\$14.44	\$0.00	\$59.32
	06/01/2021	\$37.95	\$7.85	\$14.44	\$0.00	\$60.24
	12/01/2021	\$38.86	\$7.85	\$14.44	\$0.00	\$61.15
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 2</i>	12/01/2018	\$33.52	\$7.85	\$14.44	\$0.00	\$55.81
	06/01/2019	\$34.39	\$7.85	\$14.44	\$0.00	\$56.68
	12/01/2019	\$35.25	\$7.85	\$14.44	\$0.00	\$57.54
	06/01/2020	\$36.14	\$7.85	\$14.44	\$0.00	\$58.43
	12/01/2020	\$37.03	\$7.85	\$14.44	\$0.00	\$59.32
	06/01/2021	\$37.95	\$7.85	\$14.44	\$0.00	\$60.24
	12/01/2021	\$38.86	\$7.85	\$14.44	\$0.00	\$61.15
This classification applies to all tree work associated with the removal of standing trees, and trimming and removal of branches and limbs when the work is not done for a utility company for the purpose of operation, maintenance or repair of utility company equipment. For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2018	\$33.77	\$7.85	\$14.44	\$0.00	\$56.06
	06/01/2019	\$34.64	\$7.85	\$14.44	\$0.00	\$56.93
	12/01/2019	\$35.50	\$7.85	\$14.44	\$0.00	\$57.79
	06/01/2020	\$36.39	\$7.85	\$14.44	\$0.00	\$58.68
	12/01/2020	\$37.28	\$7.85	\$14.44	\$0.00	\$59.57
	06/01/2021	\$38.20	\$7.85	\$14.44	\$0.00	\$60.49
	12/01/2021	\$39.11	\$7.85	\$14.44	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE & TILE</i>	02/01/2019	\$40.91	\$10.75	\$18.97	\$0.00	\$70.63
	08/01/2019	\$41.99	\$10.75	\$19.11	\$0.00	\$71.85
	02/01/2020	\$42.50	\$10.75	\$19.11	\$0.00	\$72.36
	08/01/2020	\$43.58	\$10.75	\$19.26	\$0.00	\$73.59
	02/01/2021	\$44.09	\$10.75	\$19.26	\$0.00	\$74.10
	08/01/2021	\$45.21	\$10.75	\$19.42	\$0.00	\$75.38
	02/01/2022	\$45.68	\$10.75	\$19.42	\$0.00	\$75.85

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 02/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.46	\$10.75	\$18.97	\$0.00	\$50.18
2	60	\$24.55	\$10.75	\$18.97	\$0.00	\$54.27
3	70	\$28.64	\$10.75	\$18.97	\$0.00	\$58.36
4	80	\$32.73	\$10.75	\$18.97	\$0.00	\$62.45
5	90	\$36.82	\$10.75	\$18.97	\$0.00	\$66.54

Effective Date - 08/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.00	\$10.75	\$19.11	\$0.00	\$50.86
2	60	\$25.19	\$10.75	\$19.11	\$0.00	\$55.05
3	70	\$29.39	\$10.75	\$19.11	\$0.00	\$59.25
4	80	\$33.59	\$10.75	\$19.11	\$0.00	\$63.45
5	90	\$37.79	\$10.75	\$19.11	\$0.00	\$67.65

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS, TILELAYERS & TERRAZZO MECH	02/01/2019	\$53.57	\$10.75	\$20.66	\$0.00	\$84.98
BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2019	\$54.92	\$10.75	\$20.80	\$0.00	\$86.47
	02/01/2020	\$55.55	\$10.75	\$20.80	\$0.00	\$87.10
	08/01/2020	\$56.90	\$10.75	\$20.95	\$0.00	\$88.60
	02/01/2021	\$57.54	\$10.75	\$20.95	\$0.00	\$89.24
	08/01/2021	\$58.94	\$10.75	\$21.11	\$0.00	\$90.80
	02/01/2022	\$59.51	\$10.75	\$21.11	\$0.00	\$91.37

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 02/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.79	\$10.75	\$20.66	\$0.00	\$58.20
2	60	\$32.14	\$10.75	\$20.66	\$0.00	\$63.55
3	70	\$37.50	\$10.75	\$20.66	\$0.00	\$68.91
4	80	\$42.86	\$10.75	\$20.66	\$0.00	\$74.27
5	90	\$48.21	\$10.75	\$20.66	\$0.00	\$79.62

Effective Date - 08/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.46	\$10.75	\$20.80	\$0.00	\$59.01
2	60	\$32.95	\$10.75	\$20.80	\$0.00	\$64.50
3	70	\$38.44	\$10.75	\$20.80	\$0.00	\$69.99
4	80	\$43.94	\$10.75	\$20.80	\$0.00	\$75.49
5	90	\$49.43	\$10.75	\$20.80	\$0.00	\$80.98

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$47.10	\$11.50	\$15.60	\$0.00	\$74.20
	06/01/2019	\$48.19	\$11.50	\$15.60	\$0.00	\$75.29
	12/01/2019	\$49.33	\$11.50	\$15.60	\$0.00	\$76.43
	06/01/2020	\$50.41	\$11.50	\$15.60	\$0.00	\$77.51
	12/01/2020	\$51.55	\$11.50	\$15.60	\$0.00	\$78.65
	06/01/2021	\$52.64	\$11.50	\$15.60	\$0.00	\$79.74
	12/01/2021	\$53.78	\$11.50	\$15.60	\$0.00	\$80.88

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$47.10	\$11.50	\$15.60	\$0.00	\$74.20
	06/01/2019	\$48.19	\$11.50	\$15.60	\$0.00	\$75.29
	12/01/2019	\$49.33	\$11.50	\$15.60	\$0.00	\$76.43
	06/01/2020	\$50.41	\$11.50	\$15.60	\$0.00	\$77.51
	12/01/2020	\$51.55	\$11.50	\$15.60	\$0.00	\$78.65
	06/01/2021	\$52.64	\$11.50	\$15.60	\$0.00	\$79.74
	12/01/2021	\$53.78	\$11.50	\$15.60	\$0.00	\$80.88

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 2) <i>MILLWRIGHTS LOCAL 1121 - Zone 2</i>	04/01/2019	\$38.87	\$9.90	\$18.50	\$0.00	\$67.27
---	------------	---------	--------	---------	--------	---------

Apprentice - MILLWRIGHT - Local 1121 Zone 2

Effective Date - 04/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$21.38	\$9.90	\$5.31	\$0.00	\$36.59
2	65	\$25.27	\$9.90	\$15.13	\$0.00	\$50.30
3	75	\$29.15	\$9.90	\$16.10	\$0.00	\$55.15
4	85	\$33.04	\$9.90	\$17.06	\$0.00	\$60.00

Notes:

Steps are 2,000 hours

Apprentice to Journeyworker Ratio:1:5

MORTAR MIXER <i>LABORERS - ZONE 2</i>	12/01/2018	\$33.77	\$7.85	\$14.44	\$0.00	\$56.06
	06/01/2019	\$34.64	\$7.85	\$14.44	\$0.00	\$56.93
	12/01/2019	\$35.50	\$7.85	\$14.44	\$0.00	\$57.79
	06/01/2020	\$36.39	\$7.85	\$14.44	\$0.00	\$58.68
	12/01/2020	\$37.28	\$7.85	\$14.44	\$0.00	\$59.57
	06/01/2021	\$38.20	\$7.85	\$14.44	\$0.00	\$60.49
	12/01/2021	\$39.11	\$7.85	\$14.44	\$0.00	\$61.40

For apprentice rates see "Apprentice- LABORER"

OILER (OTHER THAN TRUCK CRANES,GRADALLS) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$23.06	\$11.50	\$15.60	\$0.00	\$50.16
	06/01/2019	\$23.61	\$11.50	\$15.60	\$0.00	\$50.71
	12/01/2019	\$24.18	\$11.50	\$15.60	\$0.00	\$51.28
	06/01/2020	\$24.73	\$11.50	\$15.60	\$0.00	\$51.83
	12/01/2020	\$25.30	\$11.50	\$15.60	\$0.00	\$52.40
	06/01/2021	\$25.85	\$11.50	\$15.60	\$0.00	\$52.95
	12/01/2021	\$26.43	\$11.50	\$15.60	\$0.00	\$53.53

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OILER (TRUCK CRANES, GRADALLS) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$27.42	\$11.50	\$15.60	\$0.00	\$54.52
	06/01/2019	\$28.07	\$11.50	\$15.60	\$0.00	\$55.17
	12/01/2019	\$28.74	\$11.50	\$15.60	\$0.00	\$55.84
	06/01/2020	\$29.39	\$11.50	\$15.60	\$0.00	\$56.49
	12/01/2020	\$30.07	\$11.50	\$15.60	\$0.00	\$57.17
	06/01/2021	\$30.71	\$11.50	\$15.60	\$0.00	\$57.81
	12/01/2021	\$31.39	\$11.50	\$15.60	\$0.00	\$58.49

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

OTHER POWER DRIVEN EQUIPMENT - CLASS II <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$47.10	\$11.50	\$15.60	\$0.00	\$74.20
	06/01/2019	\$48.19	\$11.50	\$15.60	\$0.00	\$75.29
	12/01/2019	\$49.33	\$11.50	\$15.60	\$0.00	\$76.43
	06/01/2020	\$50.41	\$11.50	\$15.60	\$0.00	\$77.51
	12/01/2020	\$51.55	\$11.50	\$15.60	\$0.00	\$78.65
	06/01/2021	\$52.64	\$11.50	\$15.60	\$0.00	\$79.74
	12/01/2021	\$53.78	\$11.50	\$15.60	\$0.00	\$80.88

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PAINTER (BRIDGES/TANKS) <i>PAINTERS LOCAL 35 - ZONE 2</i>	01/01/2019	\$50.36	\$8.15	\$20.85	\$0.00	\$79.36
	07/01/2019	\$51.46	\$8.15	\$20.85	\$0.00	\$80.46
	01/01/2020	\$52.56	\$8.15	\$20.85	\$0.00	\$81.56
	07/01/2020	\$53.66	\$8.15	\$20.85	\$0.00	\$82.66
	01/01/2021	\$54.76	\$8.15	\$20.85	\$0.00	\$83.76

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.18	\$8.15	\$0.00	\$0.00	\$33.33
2	55	\$27.70	\$8.15	\$5.64	\$0.00	\$41.49
3	60	\$30.22	\$8.15	\$6.15	\$0.00	\$44.52
4	65	\$32.73	\$8.15	\$6.66	\$0.00	\$47.54
5	70	\$35.25	\$8.15	\$17.78	\$0.00	\$61.18
6	75	\$37.77	\$8.15	\$18.29	\$0.00	\$64.21
7	80	\$40.29	\$8.15	\$18.80	\$0.00	\$67.24
8	90	\$45.32	\$8.15	\$19.83	\$0.00	\$73.30

Effective Date - 07/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.73	\$8.15	\$0.00	\$0.00	\$33.88
2	55	\$28.30	\$8.15	\$5.64	\$0.00	\$42.09
3	60	\$30.88	\$8.15	\$6.15	\$0.00	\$45.18
4	65	\$33.45	\$8.15	\$6.66	\$0.00	\$48.26
5	70	\$36.02	\$8.15	\$17.78	\$0.00	\$61.95
6	75	\$38.60	\$8.15	\$18.29	\$0.00	\$65.04
7	80	\$41.17	\$8.15	\$18.80	\$0.00	\$68.12
8	90	\$46.31	\$8.15	\$19.83	\$0.00	\$74.29

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SIGN, PICTORIAL & DISPLAY) <i>PAINTERS LOCAL 35 - ZONE 2</i>	06/01/2013	\$25.81	\$7.07	\$7.05	\$0.00	\$39.93
--	------------	---------	--------	--------	--------	---------

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER SIGN - 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

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2019	\$41.26	\$8.15	\$20.85	\$0.00	\$70.26
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	07/01/2019	\$42.36	\$8.15	\$20.85	\$0.00	\$71.36
	01/01/2020	\$43.46	\$8.15	\$20.85	\$0.00	\$72.46
	07/01/2020	\$44.56	\$8.15	\$20.85	\$0.00	\$73.56
	01/01/2021	\$45.66	\$8.15	\$20.85	\$0.00	\$74.66

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 01/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.63	\$8.15	\$0.00	\$0.00	\$28.78
2	55	\$22.69	\$8.15	\$5.64	\$0.00	\$36.48
3	60	\$24.76	\$8.15	\$6.15	\$0.00	\$39.06
4	65	\$26.82	\$8.15	\$6.66	\$0.00	\$41.63
5	70	\$28.88	\$8.15	\$17.78	\$0.00	\$54.81
6	75	\$30.95	\$8.15	\$18.29	\$0.00	\$57.39
7	80	\$33.01	\$8.15	\$18.80	\$0.00	\$59.96
8	90	\$37.13	\$8.15	\$19.83	\$0.00	\$65.11

Effective Date - 07/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.18	\$8.15	\$0.00	\$0.00	\$29.33
2	55	\$23.30	\$8.15	\$5.64	\$0.00	\$37.09
3	60	\$25.42	\$8.15	\$6.15	\$0.00	\$39.72
4	65	\$27.53	\$8.15	\$6.66	\$0.00	\$42.34
5	70	\$29.65	\$8.15	\$17.78	\$0.00	\$55.58
6	75	\$31.77	\$8.15	\$18.29	\$0.00	\$58.21
7	80	\$33.89	\$8.15	\$18.80	\$0.00	\$60.84
8	90	\$38.12	\$8.15	\$19.83	\$0.00	\$66.10

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	01/01/2019	\$39.32	\$8.15	\$20.85	\$0.00	\$68.32
PAINTERS LOCAL 35 - ZONE 2	07/01/2019	\$40.42	\$8.15	\$20.85	\$0.00	\$69.42
	01/01/2020	\$41.52	\$8.15	\$20.85	\$0.00	\$70.52
	07/01/2020	\$42.62	\$8.15	\$20.85	\$0.00	\$71.62
	01/01/2021	\$43.72	\$8.15	\$20.85	\$0.00	\$72.72

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 01/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.66	\$8.15	\$0.00	\$0.00	\$27.81
2	55	\$21.63	\$8.15	\$5.64	\$0.00	\$35.42
3	60	\$23.59	\$8.15	\$6.15	\$0.00	\$37.89
4	65	\$25.56	\$8.15	\$6.66	\$0.00	\$40.37
5	70	\$27.52	\$8.15	\$17.78	\$0.00	\$53.45
6	75	\$29.49	\$8.15	\$18.29	\$0.00	\$55.93
7	80	\$31.46	\$8.15	\$18.80	\$0.00	\$58.41
8	90	\$35.39	\$8.15	\$19.83	\$0.00	\$63.37

Effective Date - 07/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.21	\$8.15	\$0.00	\$0.00	\$28.36
2	55	\$22.23	\$8.15	\$5.64	\$0.00	\$36.02
3	60	\$24.25	\$8.15	\$6.15	\$0.00	\$38.55
4	65	\$26.27	\$8.15	\$6.66	\$0.00	\$41.08
5	70	\$28.29	\$8.15	\$17.78	\$0.00	\$54.22
6	75	\$30.32	\$8.15	\$18.29	\$0.00	\$56.76
7	80	\$32.34	\$8.15	\$18.80	\$0.00	\$59.29
8	90	\$36.38	\$8.15	\$19.83	\$0.00	\$64.36

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (TRAFFIC MARKINGS)	12/01/2018	\$33.52	\$7.85	\$14.44	\$0.00	\$55.81
LABORERS - ZONE 2	06/01/2019	\$34.39	\$7.85	\$14.44	\$0.00	\$56.68
	12/01/2019	\$35.25	\$7.85	\$14.44	\$0.00	\$57.54
	06/01/2020	\$36.14	\$7.85	\$14.44	\$0.00	\$58.43
	12/01/2020	\$37.03	\$7.85	\$14.44	\$0.00	\$59.32
	06/01/2021	\$37.95	\$7.85	\$14.44	\$0.00	\$60.24
	12/01/2021	\$38.86	\$7.85	\$14.44	\$0.00	\$61.15

For Apprentice rates see "Apprentice- LABORER"

PAINTER / TAPER (BRUSH, NEW) *	01/01/2019	\$39.86	\$8.15	\$20.85	\$0.00	\$68.86
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	07/01/2019	\$40.96	\$8.15	\$20.85	\$0.00	\$69.96
	01/01/2020	\$42.06	\$8.15	\$20.85	\$0.00	\$71.06
	07/01/2020	\$43.16	\$8.15	\$20.85	\$0.00	\$72.16
	01/01/2021	\$44.25	\$8.15	\$20.85	\$0.00	\$73.25

Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW

Effective Date - 01/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.93	\$8.15	\$0.00	\$0.00	\$28.08
2	55	\$21.92	\$8.15	\$5.64	\$0.00	\$35.71
3	60	\$23.92	\$8.15	\$6.15	\$0.00	\$38.22
4	65	\$25.91	\$8.15	\$6.66	\$0.00	\$40.72
5	70	\$27.90	\$8.15	\$17.78	\$0.00	\$53.83
6	75	\$29.90	\$8.15	\$18.29	\$0.00	\$56.34
7	80	\$31.89	\$8.15	\$18.80	\$0.00	\$58.84
8	90	\$35.87	\$8.15	\$19.83	\$0.00	\$63.85

Effective Date - 07/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.48	\$8.15	\$0.00	\$0.00	\$28.63
2	55	\$22.53	\$8.15	\$5.64	\$0.00	\$36.32
3	60	\$24.58	\$8.15	\$6.15	\$0.00	\$38.88
4	65	\$26.62	\$8.15	\$6.66	\$0.00	\$41.43
5	70	\$28.67	\$8.15	\$17.78	\$0.00	\$54.60
6	75	\$30.72	\$8.15	\$18.29	\$0.00	\$57.16
7	80	\$32.77	\$8.15	\$18.80	\$0.00	\$59.72
8	90	\$36.86	\$8.15	\$19.83	\$0.00	\$64.84

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT)	01/01/2019	\$37.92	\$8.15	\$20.85	\$0.00	\$66.92
PAINTERS LOCAL 35 - ZONE 2	07/01/2019	\$39.02	\$8.15	\$20.85	\$0.00	\$68.02
	01/01/2020	\$40.12	\$8.15	\$20.85	\$0.00	\$69.12
	07/01/2020	\$41.22	\$8.15	\$20.85	\$0.00	\$70.22
	01/01/2021	\$42.32	\$8.15	\$20.85	\$0.00	\$71.32

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT

Effective Date - 01/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.96	\$8.15	\$0.00	\$0.00	\$27.11
2	55	\$20.86	\$8.15	\$5.64	\$0.00	\$34.65
3	60	\$22.75	\$8.15	\$6.15	\$0.00	\$37.05
4	65	\$24.65	\$8.15	\$6.66	\$0.00	\$39.46
5	70	\$26.54	\$8.15	\$17.78	\$0.00	\$52.47
6	75	\$28.44	\$8.15	\$18.29	\$0.00	\$54.88
7	80	\$30.34	\$8.15	\$18.80	\$0.00	\$57.29
8	90	\$34.13	\$8.15	\$19.83	\$0.00	\$62.11

Effective Date - 07/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.51	\$8.15	\$0.00	\$0.00	\$27.66
2	55	\$21.46	\$8.15	\$5.64	\$0.00	\$35.25
3	60	\$23.41	\$8.15	\$6.15	\$0.00	\$37.71
4	65	\$25.36	\$8.15	\$6.66	\$0.00	\$40.17
5	70	\$27.31	\$8.15	\$17.78	\$0.00	\$53.24
6	75	\$29.27	\$8.15	\$18.29	\$0.00	\$55.71
7	80	\$31.22	\$8.15	\$18.80	\$0.00	\$58.17
8	90	\$35.12	\$8.15	\$19.83	\$0.00	\$63.10

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PANEL & PICKUP TRUCKS DRIVER <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2018	\$33.08	\$11.91	\$12.70	\$0.00	\$57.69
	06/01/2019	\$34.08	\$11.91	\$12.70	\$0.00	\$58.69
	08/01/2019	\$34.08	\$12.41	\$12.70	\$0.00	\$59.19
	12/01/2019	\$34.08	\$12.41	\$13.72	\$0.00	\$60.21
	06/01/2020	\$34.98	\$12.41	\$13.72	\$0.00	\$61.11
	08/01/2020	\$34.98	\$12.91	\$13.72	\$0.00	\$61.61
	12/01/2020	\$34.98	\$12.91	\$14.82	\$0.00	\$62.71
	06/01/2021	\$35.78	\$12.91	\$14.82	\$0.00	\$63.51
	08/01/2021	\$35.78	\$13.41	\$14.82	\$0.00	\$64.01
	12/01/2021	\$35.78	\$13.41	\$16.01	\$0.00	\$65.20
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2018	\$46.57	\$9.90	\$21.15	\$0.00	\$77.62
<i>For apprentice rates see "Apprentice- PILE DRIVER"</i>	08/01/2019	\$48.94	\$9.90	\$21.15	\$0.00	\$79.99
PILE DRIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2018	\$46.57	\$9.90	\$21.15	\$0.00	\$77.62
	08/01/2019	\$48.94	\$9.90	\$21.15	\$0.00	\$79.99

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PILE DRIVER - Local 56 Zone 1

Effective Date - 08/01/2018

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

Effective Date - 08/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.47	\$9.90	\$21.15	\$0.00	\$55.52
2	60	\$29.36	\$9.90	\$21.15	\$0.00	\$60.41
3	70	\$34.26	\$9.90	\$21.15	\$0.00	\$65.31
4	75	\$36.71	\$9.90	\$21.15	\$0.00	\$67.76
5	80	\$39.15	\$9.90	\$21.15	\$0.00	\$70.20
6	80	\$39.15	\$9.90	\$21.15	\$0.00	\$70.20
7	90	\$44.05	\$9.90	\$21.15	\$0.00	\$75.10
8	90	\$44.05	\$9.90	\$21.15	\$0.00	\$75.10

Notes:

Apprentice to Journeyworker Ratio:1:5

PIPELAYER	12/01/2018	\$33.77	\$7.85	\$14.44	\$0.00	\$56.06
LABORERS - ZONE 2	06/01/2019	\$34.64	\$7.85	\$14.44	\$0.00	\$56.93
	12/01/2019	\$35.50	\$7.85	\$14.44	\$0.00	\$57.79
	06/01/2020	\$36.39	\$7.85	\$14.44	\$0.00	\$58.68
	12/01/2020	\$37.28	\$7.85	\$14.44	\$0.00	\$59.57
	06/01/2021	\$38.20	\$7.85	\$14.44	\$0.00	\$60.49
	12/01/2021	\$39.11	\$7.85	\$14.44	\$0.00	\$61.40

For apprentice rates see "Apprentice- LABORER"

PLUMBER & PIPEFITTER	09/01/2018	\$42.04	\$10.00	\$18.20	\$0.00	\$70.24
PLUMBERS & PIPEFITTERS LOCAL 51						

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PLUMBER/PIPEFITTER - Local 51

Effective Date - 09/01/2018

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$16.82	\$10.00	\$2.50	\$0.00	\$29.32
2	50	\$21.02	\$10.00	\$2.50	\$0.00	\$33.52
3	60	\$25.22	\$10.00	\$7.85	\$0.00	\$43.07
4	70	\$29.43	\$10.00	\$12.56	\$0.00	\$51.99
5	80	\$33.63	\$10.00	\$15.70	\$0.00	\$59.33

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.) <i>PLUMBERS & PIPEFITTERS LOCAL 51</i>	09/01/2018	\$42.04	\$10.00	\$18.20	\$0.00	\$70.24
--	------------	---------	---------	---------	--------	---------

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

PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2018	\$33.77	\$7.85	\$14.44	\$0.00	\$56.06
	06/01/2019	\$34.64	\$7.85	\$14.44	\$0.00	\$56.93
	12/01/2019	\$35.50	\$7.85	\$14.44	\$0.00	\$57.79
	06/01/2020	\$36.39	\$7.85	\$14.44	\$0.00	\$58.68
	12/01/2020	\$37.28	\$7.85	\$14.44	\$0.00	\$59.57
	06/01/2021	\$38.20	\$7.85	\$14.44	\$0.00	\$60.49
	12/01/2021	\$39.11	\$7.85	\$14.44	\$0.00	\$61.40

For apprentice rates see "Apprentice- LABORER"

POWDERMAN & BLASTER <i>LABORERS - ZONE 2</i>	12/01/2018	\$34.52	\$7.85	\$14.44	\$0.00	\$56.81
	06/01/2019	\$35.39	\$7.85	\$14.44	\$0.00	\$57.68
	12/01/2019	\$36.25	\$7.85	\$14.44	\$0.00	\$58.54
	06/01/2020	\$37.14	\$7.85	\$14.44	\$0.00	\$59.43
	12/01/2020	\$38.03	\$7.85	\$14.44	\$0.00	\$60.32
	06/01/2021	\$38.95	\$7.85	\$14.44	\$0.00	\$61.24
	12/01/2021	\$39.86	\$7.85	\$14.44	\$0.00	\$62.15

For apprentice rates see "Apprentice- LABORER"

POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$47.58	\$11.50	\$15.60	\$0.00	\$74.68
	06/01/2019	\$48.68	\$11.50	\$15.60	\$0.00	\$75.78
	12/01/2019	\$49.83	\$11.50	\$15.60	\$0.00	\$76.93
	06/01/2020	\$50.93	\$11.50	\$15.60	\$0.00	\$78.03
	12/01/2020	\$52.08	\$11.50	\$15.60	\$0.00	\$79.18
	06/01/2021	\$53.18	\$11.50	\$15.60	\$0.00	\$80.28
	12/01/2021	\$54.33	\$11.50	\$15.60	\$0.00	\$81.43

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$47.58	\$11.50	\$15.60	\$0.00	\$74.68
	06/01/2019	\$48.68	\$11.50	\$15.60	\$0.00	\$75.78
	12/01/2019	\$49.83	\$11.50	\$15.60	\$0.00	\$76.93
	06/01/2020	\$50.93	\$11.50	\$15.60	\$0.00	\$78.03
	12/01/2020	\$52.08	\$11.50	\$15.60	\$0.00	\$79.18
	06/01/2021	\$53.18	\$11.50	\$15.60	\$0.00	\$80.28
	12/01/2021	\$54.33	\$11.50	\$15.60	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$32.03	\$11.50	\$15.60	\$0.00	\$59.13
	06/01/2019	\$32.78	\$11.50	\$15.60	\$0.00	\$59.88
	12/01/2019	\$33.57	\$11.50	\$15.60	\$0.00	\$60.67
	06/01/2020	\$34.32	\$11.50	\$15.60	\$0.00	\$61.42
	12/01/2020	\$35.10	\$11.50	\$15.60	\$0.00	\$62.20
	06/01/2021	\$35.85	\$11.50	\$15.60	\$0.00	\$62.95
	12/01/2021	\$36.64	\$11.50	\$15.60	\$0.00	\$63.74
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>	12/01/2018	\$47.10	\$11.50	\$15.60	\$0.00	\$74.20
	06/01/2019	\$48.19	\$11.50	\$15.60	\$0.00	\$75.29
	12/01/2019	\$49.33	\$11.50	\$15.60	\$0.00	\$76.43
	06/01/2020	\$50.41	\$11.50	\$15.60	\$0.00	\$77.51
	12/01/2020	\$51.55	\$11.50	\$15.60	\$0.00	\$78.65
	06/01/2021	\$52.64	\$11.50	\$15.60	\$0.00	\$79.74
	12/01/2021	\$53.78	\$11.50	\$15.60	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2018	\$33.77	\$7.85	\$14.44	\$0.00	\$56.06
	06/01/2019	\$34.64	\$7.85	\$14.44	\$0.00	\$56.93
	12/01/2019	\$35.50	\$7.85	\$14.44	\$0.00	\$57.79
	06/01/2020	\$36.39	\$7.85	\$14.44	\$0.00	\$58.68
	12/01/2020	\$37.28	\$7.85	\$14.44	\$0.00	\$59.57
	06/01/2021	\$38.20	\$7.85	\$14.44	\$0.00	\$60.49
	12/01/2021	\$39.11	\$7.85	\$14.44	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$47.10	\$11.50	\$15.60	\$0.00	\$74.20
	06/01/2019	\$48.19	\$11.50	\$15.60	\$0.00	\$75.29
	12/01/2019	\$49.33	\$11.50	\$15.60	\$0.00	\$76.43
	06/01/2020	\$50.41	\$11.50	\$15.60	\$0.00	\$77.51
	12/01/2020	\$51.55	\$11.50	\$15.60	\$0.00	\$78.65
	06/01/2021	\$52.64	\$11.50	\$15.60	\$0.00	\$79.74
	12/01/2021	\$53.78	\$11.50	\$15.60	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofers Waterproofing &Roofers Damproofg) <i>ROOFERS LOCAL 33</i>	02/01/2019	\$43.36	\$11.50	\$15.90	\$0.00	\$70.76

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ROOFER - Local 33

Effective Date - 02/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.68	\$11.50	\$3.69	\$0.00	\$36.87
2	60	\$26.02	\$11.50	\$15.90	\$0.00	\$53.42
3	65	\$28.18	\$11.50	\$15.90	\$0.00	\$55.58
4	75	\$32.52	\$11.50	\$15.90	\$0.00	\$59.92
5	85	\$36.86	\$11.50	\$15.90	\$0.00	\$64.26

Notes: ** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1
 Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.
 (Hot Pitch Mechanics' receive \$1.00 hr. above ROOFER)

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 33	02/01/2019	\$43.61	\$11.50	\$15.90	\$0.00	\$71.01
--	------------	---------	---------	---------	--------	---------

For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 17 - B	04/01/2019	\$34.71	\$13.20	\$16.55	\$1.93	\$66.39
--	------------	---------	---------	---------	--------	---------

Apprentice - SHEET METAL WORKER - Local 17-B

Effective Date - 04/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$13.88	\$13.20	\$4.02	\$0.95	\$32.05
2	45	\$15.62	\$13.20	\$4.52	\$1.02	\$34.36
3	50	\$17.36	\$13.20	\$10.48	\$1.26	\$42.30
4	55	\$19.09	\$13.20	\$10.48	\$1.31	\$44.08
5	60	\$20.83	\$13.20	\$13.52	\$1.43	\$48.98
6	65	\$22.56	\$13.20	\$13.78	\$1.49	\$51.03
7	70	\$24.30	\$13.20	\$14.03	\$1.55	\$53.08
8	75	\$26.03	\$13.20	\$14.28	\$1.61	\$55.12
9	80	\$27.77	\$13.20	\$14.54	\$1.67	\$57.18
10	85	\$29.50	\$13.20	\$14.79	\$1.72	\$59.21

Notes:

Apprentice to Journeyworker Ratio:1:3

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SPECIALIZED EARTH MOVING EQUIP < 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2018	\$33.54	\$11.91	\$12.70	\$0.00	\$58.15
	06/01/2019	\$34.54	\$11.91	\$12.70	\$0.00	\$59.15
	08/01/2019	\$34.54	\$12.41	\$12.70	\$0.00	\$59.65
	12/01/2019	\$34.54	\$12.41	\$13.72	\$0.00	\$60.67
	06/01/2020	\$35.44	\$12.41	\$13.72	\$0.00	\$61.57
	08/01/2020	\$35.44	\$12.91	\$13.72	\$0.00	\$62.07
	12/01/2020	\$35.44	\$12.91	\$14.82	\$0.00	\$63.17
	06/01/2021	\$36.24	\$12.91	\$14.82	\$0.00	\$63.97
	08/01/2021	\$36.24	\$13.41	\$14.82	\$0.00	\$64.47
	12/01/2021	\$36.24	\$13.41	\$16.01	\$0.00	\$65.66
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2018	\$33.83	\$11.91	\$12.70	\$0.00	\$58.44
	06/01/2019	\$34.83	\$11.91	\$12.70	\$0.00	\$59.44
	08/01/2019	\$34.83	\$12.41	\$12.70	\$0.00	\$59.94
	12/01/2019	\$34.83	\$12.41	\$13.72	\$0.00	\$60.96
	06/01/2020	\$35.73	\$12.41	\$13.72	\$0.00	\$61.86
	08/01/2020	\$35.73	\$12.91	\$13.72	\$0.00	\$62.36
	12/01/2020	\$35.73	\$12.91	\$14.82	\$0.00	\$63.46
	06/01/2021	\$36.53	\$12.91	\$14.82	\$0.00	\$64.26
	08/01/2021	\$36.53	\$13.41	\$14.82	\$0.00	\$64.76
	12/01/2021	\$36.53	\$13.41	\$16.01	\$0.00	\$65.95
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section B) Zone 2</i>	03/01/2019	\$53.08	\$9.47	\$19.60	\$0.00	\$82.15
	10/01/2019	\$54.43	\$9.47	\$19.60	\$0.00	\$83.50
	03/01/2020	\$55.78	\$9.47	\$19.60	\$0.00	\$84.85
	10/01/2020	\$57.13	\$9.47	\$19.60	\$0.00	\$86.20
	03/01/2021	\$58.48	\$9.47	\$19.60	\$0.00	\$87.55

Apprentice - SPRINKLER FITTER - Local 550 (Section B) Zone 2

Effective Date - 03/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$18.58	\$9.47	\$9.10	\$0.00	\$37.15
2	40	\$21.23	\$9.47	\$9.10	\$0.00	\$39.80
3	45	\$23.89	\$9.47	\$9.10	\$0.00	\$42.46
4	50	\$26.54	\$9.47	\$9.10	\$0.00	\$45.11
5	55	\$29.19	\$9.47	\$9.10	\$0.00	\$47.76
6	60	\$31.85	\$9.47	\$10.60	\$0.00	\$51.92
7	65	\$34.50	\$9.47	\$10.60	\$0.00	\$54.57
8	70	\$37.16	\$9.47	\$10.60	\$0.00	\$57.23
9	75	\$39.81	\$9.47	\$10.60	\$0.00	\$59.88
10	80	\$42.46	\$9.47	\$10.60	\$0.00	\$62.53

Effective Date - 10/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$19.05	\$9.47	\$9.10	\$0.00	\$37.62
2	40	\$21.77	\$9.47	\$9.10	\$0.00	\$40.34
3	45	\$24.49	\$9.47	\$9.10	\$0.00	\$43.06
4	50	\$27.22	\$9.47	\$9.10	\$0.00	\$45.79
5	55	\$29.94	\$9.47	\$9.10	\$0.00	\$48.51
6	60	\$32.66	\$9.47	\$10.60	\$0.00	\$52.73
7	65	\$35.38	\$9.47	\$10.60	\$0.00	\$55.45
8	70	\$38.10	\$9.47	\$10.60	\$0.00	\$58.17
9	75	\$40.82	\$9.47	\$10.60	\$0.00	\$60.89
10	80	\$43.54	\$9.47	\$10.60	\$0.00	\$63.61

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 OPERATING ENGINEERS LOCAL 4	12/01/2018	\$47.10	\$11.50	\$15.60	\$0.00	\$74.20
	06/01/2019	\$48.19	\$11.50	\$15.60	\$0.00	\$75.29
	12/01/2019	\$49.33	\$11.50	\$15.60	\$0.00	\$76.43
	06/01/2020	\$50.41	\$11.50	\$15.60	\$0.00	\$77.51
	12/01/2020	\$51.55	\$11.50	\$15.60	\$0.00	\$78.65
	06/01/2021	\$52.64	\$11.50	\$15.60	\$0.00	\$79.74
	12/01/2021	\$53.78	\$11.50	\$15.60	\$0.00	\$80.88

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$47.10	\$11.50	\$15.60	\$0.00	\$74.20
	06/01/2019	\$48.19	\$11.50	\$15.60	\$0.00	\$75.29
	12/01/2019	\$49.33	\$11.50	\$15.60	\$0.00	\$76.43
	06/01/2020	\$50.41	\$11.50	\$15.60	\$0.00	\$77.51
	12/01/2020	\$51.55	\$11.50	\$15.60	\$0.00	\$78.65
	06/01/2021	\$52.64	\$11.50	\$15.60	\$0.00	\$79.74
	12/01/2021	\$53.78	\$11.50	\$15.60	\$0.00	\$80.88

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 223</i>	03/01/2019	\$35.25	\$9.90	\$11.14	\$0.00	\$56.29
	09/01/2019	\$35.78	\$10.15	\$11.45	\$0.00	\$57.38
	03/01/2020	\$36.27	\$10.40	\$11.78	\$0.00	\$58.45

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 223

Effective Date - 03/01/2019

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>	02/01/2019	\$52.49	\$10.75	\$20.66	\$0.00	\$83.90
	08/01/2019	\$53.84	\$10.75	\$20.80	\$0.00	\$85.39
	02/01/2020	\$54.48	\$10.75	\$20.80	\$0.00	\$86.03
	08/01/2020	\$55.83	\$10.75	\$20.95	\$0.00	\$87.53
	02/01/2021	\$56.47	\$10.75	\$20.95	\$0.00	\$88.17
	08/01/2021	\$57.87	\$10.75	\$21.11	\$0.00	\$89.73
	02/01/2022	\$58.46	\$10.75	\$21.11	\$0.00	\$90.32

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile

Effective Date - 02/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.25	\$10.75	\$20.03	\$0.00	\$57.03
2	60	\$31.49	\$10.75	\$20.03	\$0.00	\$62.27
3	70	\$36.74	\$10.75	\$20.03	\$0.00	\$67.52
4	80	\$41.99	\$10.75	\$20.03	\$0.00	\$72.77
5	90	\$47.24	\$10.75	\$20.03	\$0.00	\$78.02

Effective Date - 08/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.92	\$10.75	\$20.80	\$0.00	\$58.47
2	60	\$32.30	\$10.75	\$20.80	\$0.00	\$63.85
3	70	\$37.69	\$10.75	\$20.80	\$0.00	\$69.24
4	80	\$43.07	\$10.75	\$20.80	\$0.00	\$74.62
5	90	\$48.46	\$10.75	\$20.80	\$0.00	\$80.01

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2018	\$40.00	\$7.85	\$15.55	\$0.00	\$63.40
	06/01/2019	\$41.00	\$7.85	\$15.55	\$0.00	\$64.40
	12/01/2019	\$42.00	\$7.85	\$15.55	\$0.00	\$65.40
	06/01/2020	\$42.99	\$7.85	\$15.55	\$0.00	\$66.39
	12/01/2020	\$43.97	\$7.85	\$15.55	\$0.00	\$67.37
	06/01/2021	\$44.99	\$7.85	\$15.55	\$0.00	\$68.39
	12/01/2021	\$46.00	\$7.85	\$15.55	\$0.00	\$69.40

For apprentice rates see "Apprentice- LABORER"

TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2018	\$38.72	\$7.85	\$15.55	\$0.00	\$62.12
	06/01/2019	\$39.72	\$7.85	\$15.55	\$0.00	\$63.12
	12/01/2019	\$40.72	\$7.85	\$15.55	\$0.00	\$64.12
	06/01/2020	\$41.71	\$7.85	\$15.55	\$0.00	\$65.11
	12/01/2020	\$42.69	\$7.85	\$15.55	\$0.00	\$66.09
	06/01/2021	\$43.71	\$7.85	\$15.55	\$0.00	\$67.11
	12/01/2021	\$44.72	\$7.85	\$15.55	\$0.00	\$68.12

For apprentice rates see "Apprentice- LABORER"

TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2018	\$38.60	\$7.85	\$15.55	\$0.00	\$62.00
	06/01/2019	\$39.60	\$7.85	\$15.55	\$0.00	\$63.00
	12/01/2019	\$40.60	\$7.85	\$15.55	\$0.00	\$64.00
	06/01/2020	\$41.59	\$7.85	\$15.55	\$0.00	\$64.99
	12/01/2020	\$42.57	\$7.85	\$15.55	\$0.00	\$65.97
	06/01/2021	\$43.59	\$7.85	\$15.55	\$0.00	\$66.99
	12/01/2021	\$44.60	\$7.85	\$15.55	\$0.00	\$68.00

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>	12/01/2018	\$47.10	\$11.50	\$15.60	\$0.00	\$74.20
	06/01/2019	\$48.19	\$11.50	\$15.60	\$0.00	\$75.29
	12/01/2019	\$49.33	\$11.50	\$15.60	\$0.00	\$76.43
	06/01/2020	\$50.41	\$11.50	\$15.60	\$0.00	\$77.51
	12/01/2020	\$51.55	\$11.50	\$15.60	\$0.00	\$78.65
	06/01/2021	\$52.64	\$11.50	\$15.60	\$0.00	\$79.74
	12/01/2021	\$53.78	\$11.50	\$15.60	\$0.00	\$80.88
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2018	\$34.12	\$11.91	\$12.70	\$0.00	\$58.73
	06/01/2019	\$35.12	\$11.91	\$12.70	\$0.00	\$59.73
	08/01/2019	\$35.12	\$12.41	\$12.70	\$0.00	\$60.23
	12/01/2019	\$35.12	\$12.41	\$13.72	\$0.00	\$61.25
	06/01/2020	\$36.02	\$12.41	\$13.72	\$0.00	\$62.15
	08/01/2020	\$36.02	\$12.91	\$13.72	\$0.00	\$62.65
	12/01/2020	\$36.02	\$12.91	\$14.82	\$0.00	\$63.75
	06/01/2021	\$36.82	\$12.91	\$14.82	\$0.00	\$64.55
	08/01/2021	\$36.82	\$13.41	\$14.82	\$0.00	\$65.05
	12/01/2021	\$36.82	\$13.41	\$16.01	\$0.00	\$66.24
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	12/01/2018	\$50.88	\$7.85	\$15.95	\$0.00	\$74.68
	06/01/2019	\$51.88	\$7.85	\$15.95	\$0.00	\$75.68
	12/01/2019	\$52.88	\$7.85	\$15.95	\$0.00	\$76.68
	06/01/2020	\$53.87	\$7.85	\$15.95	\$0.00	\$77.67
	12/01/2020	\$54.85	\$7.85	\$15.95	\$0.00	\$78.65
	06/01/2021	\$55.87	\$7.85	\$15.95	\$0.00	\$79.67
	12/01/2021	\$56.88	\$7.85	\$15.95	\$0.00	\$80.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	12/01/2018	\$52.88	\$7.85	\$15.95	\$0.00	\$76.68
	06/01/2019	\$53.88	\$7.85	\$15.95	\$0.00	\$77.68
	12/01/2019	\$54.88	\$7.85	\$15.95	\$0.00	\$78.68
	06/01/2020	\$55.87	\$7.85	\$15.95	\$0.00	\$79.67
	12/01/2020	\$56.85	\$7.85	\$15.95	\$0.00	\$80.65
	06/01/2021	\$57.87	\$7.85	\$15.95	\$0.00	\$81.67
	12/01/2021	\$58.88	\$7.85	\$15.95	\$0.00	\$82.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2018	\$42.95	\$7.85	\$15.95	\$0.00	\$66.75
	06/01/2019	\$43.95	\$7.85	\$15.95	\$0.00	\$67.75
	12/01/2019	\$44.95	\$7.85	\$15.95	\$0.00	\$68.75
	06/01/2020	\$45.94	\$7.85	\$15.95	\$0.00	\$69.74
	12/01/2020	\$46.92	\$7.85	\$15.95	\$0.00	\$70.72
	06/01/2021	\$47.94	\$7.85	\$15.95	\$0.00	\$71.74
	12/01/2021	\$48.95	\$7.85	\$15.95	\$0.00	\$72.75
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2018	\$44.95	\$7.85	\$15.95	\$0.00	\$68.75
	06/01/2019	\$45.95	\$7.85	\$15.95	\$0.00	\$69.75
	12/01/2019	\$46.95	\$7.85	\$15.95	\$0.00	\$70.75
	06/01/2020	\$47.94	\$7.85	\$15.95	\$0.00	\$71.74
	12/01/2020	\$48.92	\$7.85	\$15.95	\$0.00	\$72.72
	06/01/2021	\$49.94	\$7.85	\$15.95	\$0.00	\$73.74
	12/01/2021	\$50.95	\$7.85	\$15.95	\$0.00	\$74.75
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2018	\$33.54	\$11.91	\$12.70	\$0.00	\$58.15
	06/01/2019	\$34.54	\$11.91	\$12.70	\$0.00	\$59.15
	08/01/2019	\$34.54	\$12.41	\$12.70	\$0.00	\$59.65
	12/01/2019	\$34.54	\$12.41	\$13.72	\$0.00	\$60.67
	06/01/2020	\$35.44	\$12.41	\$13.72	\$0.00	\$61.57
	08/01/2020	\$35.44	\$12.91	\$13.72	\$0.00	\$62.07
	12/01/2020	\$35.44	\$12.91	\$14.82	\$0.00	\$63.17
	06/01/2021	\$36.24	\$12.91	\$14.82	\$0.00	\$63.97
	08/01/2021	\$36.24	\$13.41	\$14.82	\$0.00	\$64.47
	12/01/2021	\$36.24	\$13.41	\$16.01	\$0.00	\$65.66
WAGON DRILL OPERATOR <i>LABORERS - ZONE 2</i>	12/01/2018	\$33.77	\$7.85	\$14.44	\$0.00	\$56.06
	06/01/2019	\$34.64	\$7.85	\$14.44	\$0.00	\$56.93
	12/01/2019	\$35.50	\$7.85	\$14.44	\$0.00	\$57.79
	06/01/2020	\$36.39	\$7.85	\$14.44	\$0.00	\$58.68
	12/01/2020	\$37.28	\$7.85	\$14.44	\$0.00	\$59.57
	06/01/2021	\$38.20	\$7.85	\$14.44	\$0.00	\$60.49
	12/01/2021	\$39.11	\$7.85	\$14.44	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2018	\$47.58	\$11.50	\$15.60	\$0.00	\$74.68
	06/01/2019	\$48.68	\$11.50	\$15.60	\$0.00	\$75.78
	12/01/2019	\$49.83	\$11.50	\$15.60	\$0.00	\$76.93
	06/01/2020	\$50.93	\$11.50	\$15.60	\$0.00	\$78.03
	12/01/2020	\$52.08	\$11.50	\$15.60	\$0.00	\$79.18
	06/01/2021	\$53.18	\$11.50	\$15.60	\$0.00	\$80.28
	12/01/2021	\$54.33	\$11.50	\$15.60	\$0.00	\$81.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS & PIPEFITTERS LOCAL 51</i>	09/01/2018	\$42.04	\$10.00	\$18.20	\$0.00	\$70.24
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Outside Electrical - East						
CABLE TECHNICIAN (Power Zone) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$27.14	\$7.75	\$1.81	\$0.00	\$36.70
For apprentice rates see "Apprentice- LINEMAN"						
CABLEMAN (Underground Ducts & Cables) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$38.45	\$7.75	\$9.53	\$0.00	\$55.73
For apprentice rates see "Apprentice- LINEMAN"						
DRIVER / GROUNDMAN CDL <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$31.66	\$7.75	\$9.44	\$0.00	\$48.85
For apprentice rates see "Apprentice- LINEMAN"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$24.88	\$7.75	\$1.75	\$0.00	\$34.38
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class A CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$38.45	\$7.75	\$13.61	\$0.00	\$59.81
For apprentice rates see "Apprentice- LINEMAN"						
EQUIPMENT OPERATOR (Class B CDL) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$33.92	\$7.75	\$10.21	\$0.00	\$51.88
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$24.88	\$7.75	\$1.75	\$0.00	\$34.38
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN -Inexperienced (<2000 Hrs.) <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$20.35	\$7.75	\$1.61	\$0.00	\$29.71
For apprentice rates see "Apprentice- LINEMAN"						
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104</i>	09/03/2017	\$45.23	\$7.75	\$16.61	\$0.00	\$69.59

Apprentice - LINEMAN (Outside Electrical) - East Local 104

Effective Date - 09/03/2017

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

Notes:

Apprentice to Journeyworker Ratio:1:2

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

APPENDIX D
ASBESTOS SURVEY TEST REPORT



Asbestos Identification Laboratory

165 New Boston St., Ste 227
Woburn, MA 01801
781-932-9600

Web: www.asbestosidentificationlab.com
Email: mikemanning@asbestosidentificationlab.com

Batch: 37028



October 31, 2018

Robert DaPrato
Commonwealth Environmental
128 Forest Street
Medford, MA 02155

Project Number:

Project Name: 6 Tony's Ln., Wareham, MA

Date Sampled: 2018-10-29

Work Received: 2018-10-29

Work Analyzed: 2018-10-31

Analysis Method: BULK PLM ANALYSIS EPA/600/R-93/116

Dear Robert DaPrato,

Asbestos Identification Laboratory has completed the analysis of the samples from your office for the above referenced project .

The information and analysis contained in this report have been generated using the EPA /600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials. Materials or products that contain more than 1% of any kind or combination of asbestos are considered an asbestos containing building material as determined by the EPA. This Polarized Light Microscope (PLM) technique may be performed either by visual estimation or point counting. Point counting provides a determination of the area percentage of asbestos in a sample. If the asbestos is estimated to be less than 10% by visual estimation of friable material, the determination may be repeated using the point counting technique. The results of the point counting supersede visual PLM results. Results in this report only relate to the items tested. This report may not be used by the customer to claim product endorsement by NVLAP or any other U.S. Government Agency.

Laboratory results represent the analysis of samples as submitted by the customer. Information regarding sample location, description, area, volume, etc., was provided by the customer. Asbestos Identification Laboratory is not responsible for sample collection activities or analytical method limitations. Unless notified in writing to return samples, Asbestos Identification Laboratory discards customer samples after 30 days. Samples containing subsamples or layers will be analyzed separately when applicable. Reports are kept at Asbestos Identification Laboratory for three years. This report shall not be reproduced, except in full, without the written consent of Asbestos Identification Laboratory.

- NVLAP Lab Code: 200919-0
- Massachusetts Certification License: AA000208
- State of Connecticut, Department of Public Health Approved Environmental Laboratory Registration Number: PH-0142
- State of Maine, Department of Environmental Protection Asbestos Analytical Laboratory License Number: LB-0078(Bulk) LA-0087(Air)
- State of Rhode Island and Providence Plantations. Department of Health Certification: AAL-121
- State of Vermont, Department of Health Environmental Health License AL934461

Thank you Robert DaPrato for your business.

Michael Manning
Owner/Director

Robert DaPrato
 Commonwealth Environmental
 128 Forest Street
 Medford, MA 02155

Project Number:

Project Name: 6 Tony's Ln., Wareham, MA

Date Sampled: 2018-10-29

Work Received: 2018-10-29

Work Analyzed: 2018-10-31

Analysis Method: BULK PLM ANALYSIS EPA/600/R-93/116

FieldID	Material	Location	Color	Non-Asbestos %	Asbestos %
LabID					
001	Vapor Barrier-Roof	Sludge Bldg East	black	Non-Fibrous 80	Detected Chrysotile 20
408030					
002	Vapor Barrier	Sludge Bldg East	black	Non-Fibrous 90	Detected Chrysotile 10
408031					
003	Black Paper Insulation Roof	Sludge Bldg East	black	Cellulose 70 Non-Fibrous 30	None Detected
408032					
004	Black Paper Insulation Roof	Sludge Bldg East	black	Cellulose 70 Non-Fibrous 30	None Detected
408033					
005	Vapor Barrier Roof	Sludge Bldg West	black	Non-Fibrous 80	Detected Chrysotile 20
408034					
006	Vapor Barrier Roof	Sludge Bldg West	black	Non-Fibrous 85	Detected Chrysotile 15
408035					
007	Black Paper Insulation Roof	Sludge Bldg West	black	Cellulose 70 Non-Fibrous 30	None Detected
408036					
008	Black Insulation Paper Roof	Sludge Bldg West	black	Cellulose 70 Non-Fibrous 30	None Detected
408037					
009	Black Shiny Flashing Roof	Sludge Bldg	black	Non-Fibrous 100	None Detected
408038					
010	Black Flashing Roof	Sludge Bldg	black	Non-Fibrous 100	None Detected
408039					
011	Black Paper/Tar Insulation Roof	Vehicle Storage Bldg	black	Fiberglass 50 Cellulose 40 Non-Fibrous 10	None Detected
408040					
012	Black Insulation/Tar Paper Roof	Vehicle Storage Bldg	black	Fiberglass 50 Cellulose 40 Non-Fibrous 10	None Detected
408041					
013	Fiber Board Insulation Roof	Vehicle Storage Bldg	brown	Cellulose 95 Non-Fibrous 5	None Detected
408042					
014	Fiber Board Insulation Roof	Vehicle Storage Bldg	brown	Cellulose 95 Non-Fibrous 5	None Detected
408043					

FieldID	Material	Location	Color	Non-Asbestos %	Asbestos %
LabID					
015	Black Paper Insulation Roof	West Septage Bldg	black	Cellulose 80	None Detected
408044				Non-Fibrous 20	
016	Black Paper Insulation Roof	West Septage Bldg	black	Cellulose 85	None Detected
408045				Non-Fibrous 15	
017	Black Vapor Barrier Roof	West Septage Bldg	black	Non-Fibrous 75	Detected Chrysotile 25
408046					
018	Black Vapor Barrier Roof	West Septage Bldg	black	Non-Fibrous 75	Detected Chrysotile 25
408047					
019	Black Paper Insulation Roof	East Septage Bldg	black	Cellulose 80	Detected Chrysotile 2
408048				Non-Fibrous 18	
020	Black Paper Ins Roof	East Septage Bldg	black	Cellulose 80	Detected Chrysotile 2
408049				Non-Fibrous 18	
021	Vapor Black Barrier Roof	East Septage Bldg	black	Non-Fibrous 75	Detected Chrysotile 25
408050					
022	Black Vapor Barrier Roof	East Septage Bldg	black	Non-Fibrous 75	Detected Chrysotile 25
408051					

Wednesday 31

Analyzed by:

Erik Gargas

End of Report

Batch: 37028

Page 2 of 2

Client: Commonwealth Env Testing
 Address: 128 Forest St - Woburn - MA
 Project Site & #: 6 Tony's Lab - WAREHAM - MA
 Phone / email address: 617-605-0405

Contact: Rob DeRato
 Relinquish by/date: DMW 10/21/18
 Received by/date: DMW 10/21/18
 # of Samples Received: 22

Temp in Celsius = 21

CHAIN OF CUSTODY
 EPA/600/R-93/116

Asbestos Identification Lab
 165 New Boston St.
 Suite 227
 Woburn, MA 01801
 (781)932-9600
 www.asbestosidentificationlab.com



Date Sampled: _____
 BATCH# 97025 Rev 06/16

Page 1
 Turnaround Time Less 3 Hrs Bulk
 Same Day Soil
 Next Day Wipe
 Two Day Point Count
 Stop on 1st Positive? Yes/No

Notify Method: Mail/E-Mail/Verbal
 Analyzed By: DMW
 Date: 10/13/18

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Material / Location	Stereo Scope					Optical Properties						Non-Asbestos Percentage (%)								
			Temp in Celsius =	% of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other
408030	001	Material VAPOR BARRIER ROOF Location SCUDGE BLDG - EAST		0	Black	Homogeneous	Fragmentary	Asbestos Minerals	Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
	002	Material VAPOR BARRIER Location SCUDGE BLDG - EAST		0	Black	Homogeneous	Fragmentary	Asbestos Minerals	Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous
	003	Material BLACK PAPER Location SCUDGE BLDG - EAST		0	Black	Homogeneous	Fragmentary	Asbestos Minerals	Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous

Handwritten notes at bottom left: 70, R, 90, 30

Lab ID# (Lab Use Only)	Field ID/ (Client Reference)	Temp in Celsius = 21	Stereo Scope					Optical Properties							Non-Asbestos Percentage (%)									
			Material / Location	% of Asbestos	Color	Homogeneity	Texture	Friable	Asbestos Minerals	Asbestos %	Morphology	Extinction	Sign of Elongation	Birefringence	Pleochroism	RI	Fiberglass	Mineral Wool	Cellulose	Hair	Synthetic	Other	Non-Fibrous	
33	004		Material BLACK PAPER INSULATION Roof. Location SCUDGE BLDG. - EAST	0	Black	W	FIN	~	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite	20	W	=	+	~	N	1.507 1.511			R					30
34	005		Material VAPOR BARRIER Roof. Location SCUDGE BLDG. WEST	0	Black	W	FIN	~	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite	15	W	=	+	~	N	1.507 1.511								30
35	006		Material VAPOR BARRIER Roof. Location SCUDGE BLDG. WEST	0	Black	W	FIN	~	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite														65	
36	007		Material BLACK PAPER INSULATION Roof. Location SCUDGE BLDG. WEST	0	Black	W	FIN	~	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite										R				30	
37	008		Material BLACK PAPER INSULATION Roof. Location SCUDGE BLDG. WEST	0	Black	W	FIN	~	Chrysotile Amosite Crocidolite Tremolite Anthophyllite Actinolite										R				30	

APPENDIX E
ROOFING SPECIFICATION AND DETAILS

SECTION 07531 - Ethylene Propylene Diene Monomer (EPDM) MEMBRANE ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the IFB apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Adhered EPDM membrane roofing system.
 - 2. Roof walkway pads.
 - 3. Roof insulation.
 - 4. Cover board.
 - 5. Vapor retarder

1.3 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.
- B. Factored Design Uplift Pressure: The uplift pressure, calculated according to procedures in SPRI's "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems," after multiplication by a safety factor.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.
- C. FMG Listing: Provide roofing membrane, base flashings, and component materials that comply with requirements in FMG 4450 and FMG 4470 as part of a membrane roofing system and that are listed in FMG's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FMG markings.
 - 1. Fire/Windstorm Classification: Class 1A-90, 72 MHP peak wind speed.
- D. Installer must comply with current code requirements based on authority having jurisdiction.
- E. Fire-Test-Response Characteristics: Provide roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.

1. Exterior Fire-Test Exposure: Class A ASTM E 108, for application and roof slopes indicated.

1.5 SUBMITTALS

- A. Product Data: Manufacturer's data sheets for each type of product indicated.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work.
 1. Base flashings and membrane terminations.
 2. Tapered insulation, including slopes.
 3. Crickets, saddles, and tapered edge strips, including slopes.
 4. Insulation fastening patterns.
- C. Verification Samples: Provide for each product specified.
- D. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system.
- E. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article and is eligible to receive the specified 30-year guarantee.
 1. Submit evidence of meeting performance requirements.
 2. Include product and systems to be installed
 3. Include roofing manufacturer's current guarantee specimen
- F. Qualification Data: For Installer and manufacturer.
- G. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.
- H. Roof Test Reports:
 1. Roof drain and leader test or submit plumber's verification
 2. Core cut (if requested)
 3. Roof deck fastener pullout test
- I. Maintenance Data: For roofing system to include in maintenance manuals.
- J. Warranties: Special warranties specified in this Section
- K. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.
 1. Installer must have a minimum of three (3) years experience installing the roof system specified.

2. Job Site Superintendent must have a minimum of 5 years experience in roofing.
- B. Manufacturer Qualifications: A qualified manufacturer that has UL listing and FMG approval for membrane roofing system identical to that used for this Project.
 - C. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548 and ASTM E 329.
 - D. Source Limitations: Obtain all components from the single source roofing system manufacturer guaranteeing the roofing system. All products used in the system must be labeled by the single source roofing system manufacturer issuing the guarantee.
 - E. Fire-Test-Response Characteristics: Provide membrane roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
 1. Exterior Fire-Test Exposure: Class A; ASTM E 108, for application and roof slopes indicated.
 2. Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.
 - F. Preinstallation Conference: Conduct conference at Project site. Review methods and procedures related to roofing system including, but not limited to, the following:
 1. Meet with Owner, Engineer, Roofing Installer, Roofing system manufacturer's representative and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.
 - a. Include asbestos-containing roofing materials removal representative
 2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
 3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
 5. Review structural loading limitations of roof deck during and after roofing.
 6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
 7. Review governing regulations and requirements for insurance and certificates if applicable.
 8. Review temporary protection requirements for roofing system during and after installation.
 9. Review roof observation and repair procedures after roofing installation.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.

- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.8 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.9 WARRANTY/GUARANTEES

- A. Manufacturer's Warranty: Manufacturer's form, without monetary limitation, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.
 - 1. Special warranty includes roofing membrane, base flashings, roofing membrane accessories roof insulation fasteners cover boards walkway products and other components of roofing system.
 - 2. Warranties that allow for arbitration are not acceptable.
 - 3. Indicate by letter that "All roofing components exclusive of the deck are approved and compatible with the warranty requirements of the roof system as specified, and that the warranty specified will be issued at completion of the project if system is installed as designed."
 - 4. Guarantee Period: 30 years from date of Substantial Completion.
 - a. Provide manufacturer's system guarantee equal to Johns Manville's Peak Advantage No Dollar Limit Roofing System Guarantee.
 - b. Approved Equals: Firestone Building Products, Carlisle Syntec
- B. Installers Warranty: Submit roofing Installer's warranty, signed by Installer, covering Work of this Section, including all components of roofing system such as roofing membrane, ply sheets, base sheets, base flashing, roof insulation, fasteners, cover boards, and walkway products, for the following warranty period:
 - 1. The liability of the Surety Company under the installer warranty provisions of this contract is limited to correcting defective workmanship and materials for a period of two years from the substantial completion date of the project.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.
2. Products: Subject to compliance with requirements, provide one of the products specified.
3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.
4. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 EPDM ROOFING MEMBRANE

- A. EPDM Roofing Membrane: ASTM D 4637, Type I, nonreinforced uniform, flexible sheet made from EPDM, and as follows:
 1. Basis of Design: JM EPDM NR, JM EPDM NR FIT SYSTEMS
 2. Approved Manufacturers:
 - a. Carlisle SynTec Incorporated.
 - b. Firestone Building Products Company.
 - c. Johns Manville International, Inc.
 3. Thickness: 90 mils, nominal.
 4. Exposed Face Color: Black.
 5. Factory Inseam Tape: 6-inch (150-mm) wide minimum, butyl splice tape with release film

2.3 AUXILIARY MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
 1. Liquid-type auxiliary materials shall meet VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: Manufacturer's sheet flashing of same material, type, reinforcement, thickness, and color as sheet membrane. Basis of Design: JM EPDM Peel & Stick Flashing
 1. 90-mil- thick EPDM, partially cured or cured, according to application.
- C. Primer Material: Manufacturer's standard synthetic-rubber polymer primer. Basis of Design: JM EPDM Tape Primer (Low VOC)
- D. Bonding Adhesive: Manufacturer's standard bonding adhesive. Basis of Design: JM LVOC Membrane Adhesive
- E. Seaming Material: Manufacturer's standard synthetic-rubber polymer primer and 6-inch- (150-mm-) wide minimum, butyl splice tape with release film. Basis of Design: JM EPDM Seam Tape Plus
- F. Lap Sealant: Manufacturer's standard single-component sealant.

- G. Sealing Strip: Manufacturer's standard 6-inch- (150-mm-) and 9-inch- (200-mm-) wide, 45 mil (1.14 mm) thick minimum, cured EPDM with factory-laminated, self-adhering seam tape. Basis of Design: JM EPDM Peel & Stick Sealing Strip
- H. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.
- I. Slip Sheet: Manufacturer's recommended slip sheet, based on type required for application.
- J. Metal Termination Bars: Manufacturer's standard predrilled stainless-steel or aluminum bars, with anchors. Basis of Design: JM Termination Systems
- K. Metal Battens: Manufacturer's standard aluminum-zinc-alloy-coated or zinc-coated steel sheet, prepunched.
- L. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.
- M. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.

2.4 AUXILIARY ROOFING SYSTEM COMPONENTS

- A. Coping System: Manufacturer's factory fabricated coping consisting of a base piece and a snap-on cap. Provide product manufactured and marketed by single-source membrane supplier that is included in the No Dollar Limit guarantee. Basis of Design: Presto-Lock Coping
- B. Fascia System: Manufacturer's factory fabricated fascia consisting of a base piece and a snap-on cover. Provide product manufactured and marketed by single-source membrane supplier that is included in the No Dollar Limit guarantee. Basis of Design: Presto-Tite Fascia (Single Ply Systems)
- C. Metal/Membrane Flashing: Specially designed and manufactured flashing for sealing and waterproofing. JM EPDM Metal/Membrane Flashing
- D. Metal Flashing Sheet: Metal flashing sheet is specified in the IFB.

2.5 WALKWAYS

- A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads sourced from membrane roofing system manufacturer. Basis of Design: JM EPDM Peel & Stick Walkpads

2.6 COVER BOARD

- A. High-Density Polyisocyanurate: ASTM C 1289, Type II, Class 4, Grade 3, High-density Polyisocyanurate technology bonded in-line to mineral-surfaced, fiber glass reinforced facers with greater than 140 lbs of compressive strength. Basis of Design: Invinsa Roof Board
- B. Composite Polyisocyanurate Board Insulation: Closed cell medium density foam bonded to high-density foam to create a composite board with coated glass facers. High-Density layer meets the requirements of ASTM C 1289, Type II, Class 4, Grade 3. Normal-Density layer meets the requirements of ASTM C 1289, Type II, Class 2. Basis of Design: Invinsa Foam

2.7 ROOF INSULATION

- A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, felt or glass-fiber mat facer on both major surfaces. Grade 2 (20 psi). Basis of Design: ENRGY 3
 - 1. Manufacturers:
 - a. Carlisle SynTec Incorporated.
 - b. Firestone Building Products Company.
 - c. Johns Manville International, Inc.
 - 2. Provide insulation package with minimum R Value: 30, minimum required by applicable code
 - 3. Provide insulation package with minimum thickness:
 - a. Base Layer 2.6" 20psi Energy 3 (4x4) - R=15.0
 - b. Second Layer 2.7" InvinsaFoam (4x4) - R=15.3
 - 4. Provide insulation package in multiple layers.
 - 5. Minimum Long-Term Thermal Resistance (LTTR): 5.7 per inch.
 - a. Determined in accordance with CAN/ULC S770 at 75°F (24°C)
- C. Tapered Insulation: ASTM C 1289, Type II, Grade 2 (20 psi), provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48), unless otherwise indicated. Basis of Design: Tapered ENRGY 3
- D. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated with min. slope of 1/4 inch per 12 inches, unless otherwise indicated.

2.8 INSULATION ACCESSORIES

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roof insulation to substrate, and furnished by roofing system manufacturer. Basis of Design: All Purpose Fasteners - Concrete Deck. Ultrafast Fasteners - Steel Deck
- C. Urethane Adhesive: Manufacturer's two component polyurethane adhesive formulated to adhere insulation to substrate. Basis of Design: JM Two-Part Urethane Insulation Adhesive (UIA), JM One-Step Foamable Adhesive, Roofing Systems Urethane Adhesive (RSUA), and JM Two-Part Urethane Insulation Adhesive (UIA) Canister
- D. Wood Nailer Strips: Comply with requirements of the IFB

2.9 VAPOR RETARDER

- A. Self-Adhered SBS Vapor Retarder: Tri-laminate woven polyethylene, nonslip UV protected top surface; suitable for application method specified. Basis of Design: JM Vapor Barrier SA
- B. Self-Adhered Primer: One-part penetrating primer solution to enhance the adhesion of self-adhering membranes. SA Primer Low VOC

2.10 ASPHALT MATERIALS

- A. Roofing Asphalt: ASTM D 312, Type III, only to be used as insulation attachment.
- B. Asphalt Primer: ASTM D 41.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
 - 1. Verify that roof openings and penetrations are in place and set and braced and that roof drains are securely clamped in place.
 - 2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 - 3. Verify that surface plane flatness and fastening of steel roof deck meets manufacturer's requirements
 - 4. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
 - 5. Verify that concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
 - 6. Verify that concrete curing compounds that will impair adhesion of roofing components to roof deck have been removed.
 - 7. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.
- D. If applicable, prime surface of deck with asphalt primer at a rate recommended by roofing manufacturer and allow primer to dry.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 RE-ROOF PREPARATION

- A. Remove all roofing membrane, surfacing, coverboards, insulation, fasteners, asphalt, pitch, adhesives, etc.
 - 1. Remove an area no larger than can be re-roofed in one day.
 - 2. Contractor is responsible for all costs associated with removal and disposal of all asbestos containing material in accordance with all applicable regulations and standards.

- B. Tear out all base flashings, counterflashings, pitch pans, pipe flashings, vents and like components necessary for application of new membrane.
- C. Remove abandoned equipment curbs, skylights, smoke hatches, and penetrations.
 - 1. Install decking to match existing as directed by Owner's Representative.
- D. Raise (disconnect by licensed craftsmen, if necessary) all HVAC units and other equipment supported by curbs to conform with the following:
 - 1. Modify curbs as required to provide a minimum 8" base flashing height measured from the surface of the new membrane to the top of the flashing membrane.
 - 2. Secure of flashing and install new metal counterflashing prior to re-installation of unit.
 - 3. Perimeter nailers must be elevated to match elevation of new roof insulation.
- E. Immediately remove all debris from roof surface. Demolished roof system may not be stored on the roof surface.
- F. Proceed with installation only after unsatisfactory conditions have been

3.4 VAPOR RETARDER INSTALLATION

- A. Self-adhere vapor retarder to substrate according to roofing system manufacturer's instruction.
- B. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.
- C. Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Completely bond and seal laps, leaving no voids.
 - 1. Repair tears and voids in laps and lapped seams not completely sealed.
- D. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into membrane roofing system.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.5 INSULATION INSTALLATION

- A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with membrane roofing system manufacturer's written instructions for installing roof insulation and cover board.
- C. Install tapered insulation under area of roofing to conform to slopes indicated.
- D. Install insulation boards with long joints in a continuous straight line. Joints should be staggered between rows, abutting edges and ends per manufacturer's written instructions. Fill gaps exceeding 1/4 inch (6 mm) with like material.
 - 1. Cut and fit insulation within **1/4 inch (6 mm)** of nailers, projections, and penetrations.
- E. Install 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches (150 mm) in each direction.
- F. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

- G. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- H. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:
 - 1. Install each layer in a two-part urethane adhesive according to roofing system manufacturer's instruction.
 - 2. Install each layer to resist uplift pressure at corners, perimeter, and field of roof.

3.6 COVER BOARD INSTALLATION

- A. Coordinate installing membrane roofing system components so cover board is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with membrane roofing system manufacturer's written instructions for installing roof cover board.
- C. Install cover board with long joints in a continuous straight line. Joints should be staggered between rows, abutting edges and ends per manufacturer's written instructions. Fill gaps exceeding 1/4 inch (6 mm) with cover board.
 - 1. Cut and fit cover board within 1/4 inch (6 mm) of nailers, projections, and penetrations.
- D. Trim surface of cover board where necessary at roof drains so completed surface is flush and does not restrict flow of water.
 - 1. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- E. Adhered Cover Board: Adhere cover board to substrate as follows:
 - 1. Install in a two-part urethane adhesive according to roofing system manufacturer's instruction.
 - 2. Install to resist uplift pressure at corners, perimeter, and field of roof.
- F. Mechanically Fastened Cover Board: Install cover board and secure to deck using mechanical fasteners designed and sized for fastening specified cover board to deck type.
 - 1. Fasten to resist uplift pressure at corners, perimeter, and field of roof.
- G. Proceed with installation only after unsatisfactory conditions have been corrected.

3.7 ROOFING MEMBRANE INSTALLATION, GENERAL

- A. Install roofing membrane in accordance with roofing system manufacturer's written instructions, applicable recommendations of the roofing manufacturer and requirements in this Section.
- B. Where roof slope exceeds 1/2 inch per 12 inches (1:24), contact the membrane manufacturer for installation instructions regarding installation direction and backnailing.
- C. Cooperate with testing and inspecting agencies engaged or required to perform services for installing roofing system.
- D. Coordinate installing roofing system so insulation and other components of the roofing membrane system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is imminent.
 - 1. Provide tie-offs at end of each day's work to cover exposed roofing membrane sheets and insulation with a course of coated felt set in roofing cement or hot roofing asphalt with joints and edges sealed.

2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.
 3. Remove and discard temporary seals before beginning work on adjoining roofing.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.8 ADHERED ROOFING MEMBRANE INSTALLATION

- A. Install EPDM roofing membrane over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll roofing membrane and allow to relax before installing.
- B. Start installation of roofing membrane in presence of membrane roofing system manufacturer's technical personnel.
- C. Accurately align roofing membrane and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- D. Bonding Adhesive: Apply bonding adhesive to substrate and underside of roofing membrane at rate required by manufacturer and allow to partially dry before installing roofing membrane. Do not apply bonding adhesive to splice area of roofing membrane.
- E. Mechanically or adhesively fasten roofing membrane securely at terminations, penetrations, and perimeter of roofing.
- F. Apply roofing membrane with side laps shingled with slope of roof deck where possible.
- G. Field Fabricated Seam Installation: Clean and prime both faces of splice areas, apply splice tape, and firmly roll side and end laps of overlapping roofing membranes according to manufacturer's written instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of roofing membrane terminations.
- H. Tape to Tape Installation: Align membrane for appropriate overlap, remove release liners and firmly roll side and end laps of overlapping roofing membranes according to manufacturer's written instructions to ensure a watertight seam installation.
- I. Repair tears, voids, and lapped seams in roofing that does not meet requirements.
- J. Spread sealant or mastic bed over deck drain flange at deck drains and securely seal roofing membrane in place with clamping ring.
- K. Install roofing membrane and auxiliary materials to tie in to existing roofing.
- L. Proceed with installation only after unsatisfactory conditions have been corrected.

3.9 BASE FLASHING INSTALLATION

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply bonding adhesive to seam area of flashing.

- C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.
- D. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.10 WALKWAY INSTALLATION

- A. Flexible Walkways: Install walkway products in locations indicated. Adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

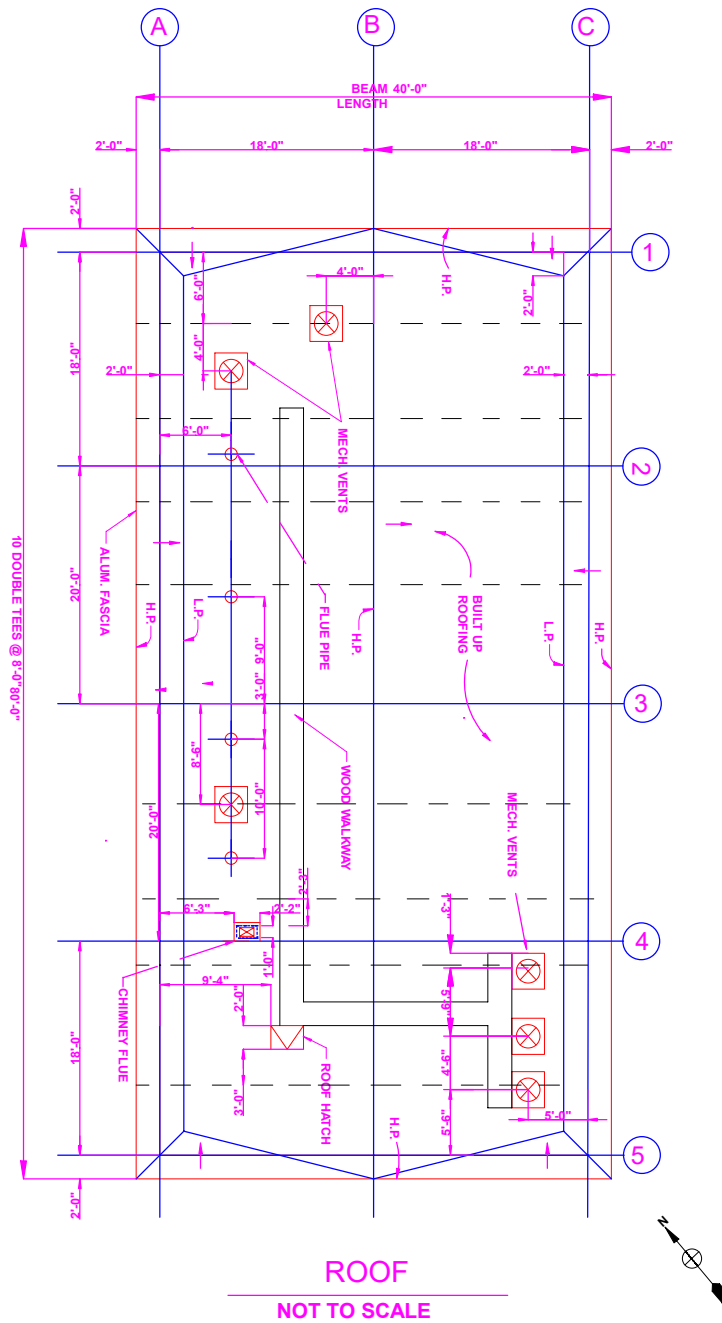
3.11 FIELD QUALITY CONTROL

- A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Engineer.
 - 1. Notify Engineer and Owner 48 hours in advance of date and time of inspection.
- B. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified requirements.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.12 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Engineer and Owner.
- B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07531



Existing Conditions- Sludge Dewatering Building

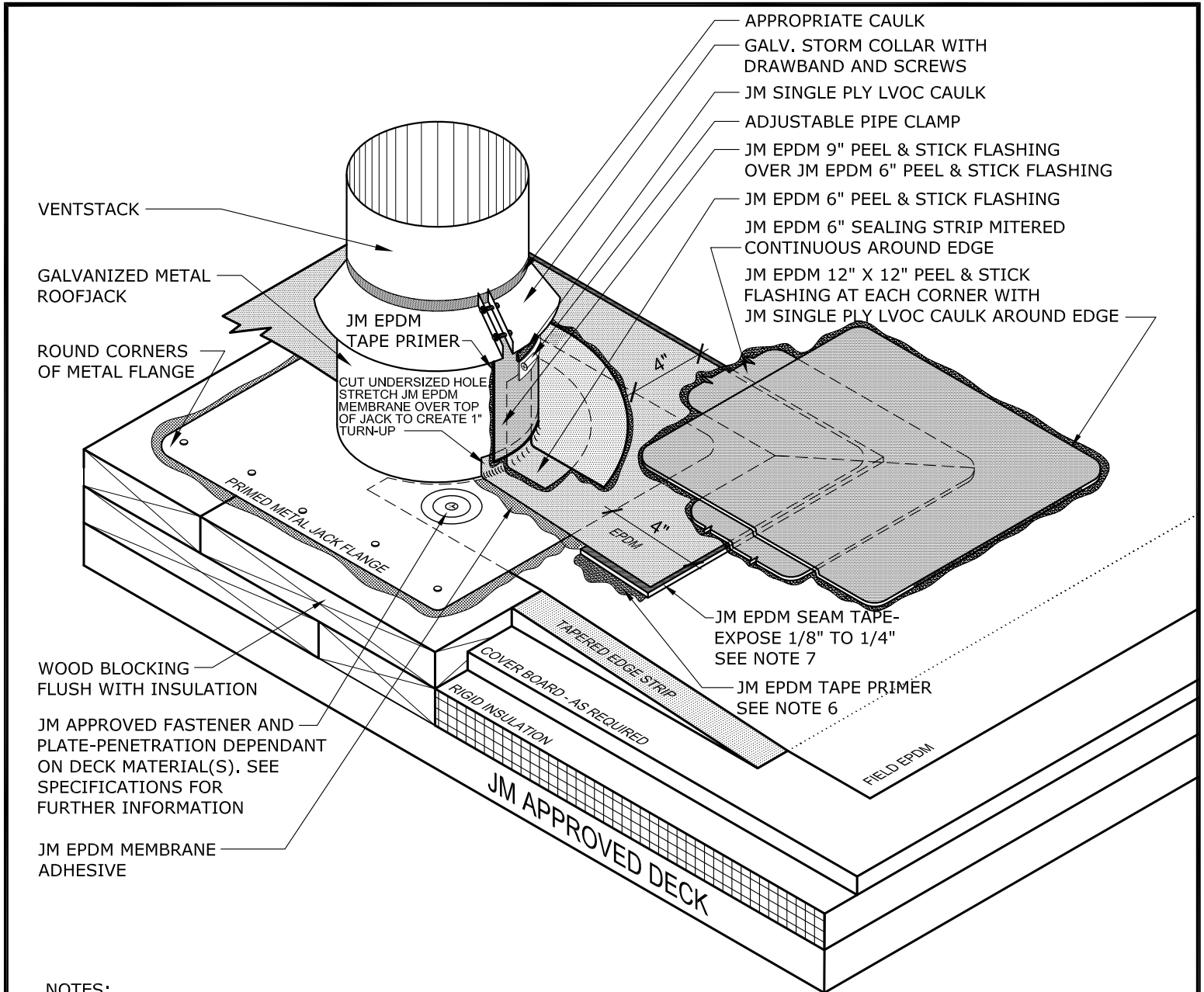
Replacement of Select WPCF
BUR Roofs with EPDM Roofing
Systems (#19-IFB-001)

Wareham Water Pollution Control Facility
6 Tony's Lane
Wareham, MA 02571

OSD Engineering Consultants
238 Bedford Street, Suite 9
Lexington, MA 02420

Sheet:


A1

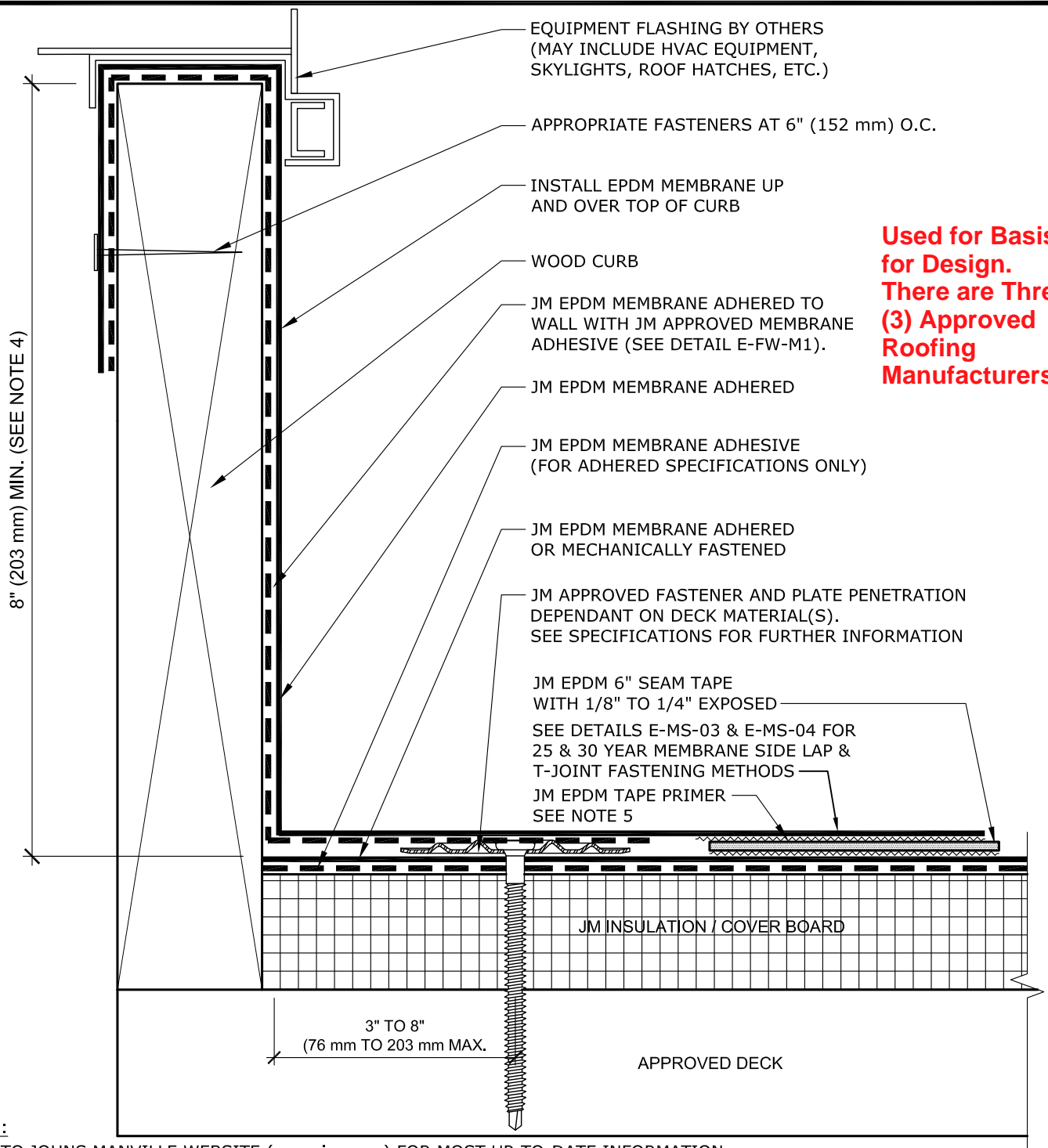


NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. PLEASE SEE SINGLE PLY FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
3. ANY CARPENTRY OR METAL WORK SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. ON RE-ROOF OR RECOVER PROJECTS, VENT PIPES MUST BE CLEANED OF LARGE DEPOSITS OF ASPHALT. ALUMINUM TAPE IS WRAPPED AROUND THE PIPE AS A SEPARATION LAYER. NEW ASPHALT-COATED CAST IRON PIPES MUST BE WRAPPED WITH ALUMINUM TAPE.
5. DETAILS TO BE USED IN CONJUNCTION WITH GUIDE SPECIFICATIONS CONTAINING REQUIREMENTS FOR NAILERS, INSULATION, ETC.
6. JM EPDM TAPE PRIMER OR JM SINGLE PLY MEMBRANE PRIMER (LOW VOC) MUST BE APPLIED ON ALL SURFACES COMING INTO CONTACT WITH JM EPDM PEEL & STICK FLASHINGS. ROLL MEMBRANE WITH HAND ROLLER UNDER PRESSURE AT SEAM.
7. 1/8" TO 1/4" OF EPDM SEAM TAPE MUST BE EXPOSED ALONG ENTIRE LENGTH OF ALL SEAMS.
8. ALL SEALANTS / CAULKING SHALL BE PERIODICALLY INSPECTED AND MAINTAINED BY THE BUILDING OWNER THROUGHOUT THE LIFE OF THE ROOF.

**Used for Basis
for Design.
There are
Three (3)
Approved
Roofing
Manufacturers.**


DRAWING NO. E-DV-02		VENT PIPE 30 YEAR		
NEW DETAIL		MEMBRANE TYPE: JM EPDM	<small>Johns Manville is a manufacturer of commercial roofing products and offers this general conceptual information to you as a courtesy. This complimentary assistance is not to be used or relied upon by anyone as a substitute for professional engineering design and documentation required by building code, contract, or applicable law. By accepting these comments you agree they do not constitute any representations, endorsements of, or an assumption by Johns Manville of any liability for either the adequacy of the design of this building or any other material not supplied by Johns Manville.</small>	
SCALE N.T.S	ISSUE DATE 1-11-17	MAXIMUM GUARANTEE TERM: 30 YEAR		



**Used for Basis
for Design.
There are Three
(3) Approved
Roofing
Manufacturers.**

NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. PLEASE SEE SINGLE PLY FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
3. ANY CARPENTRY OR METAL WORK SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. HEIGHT OF CURB TO BE ADJUSTED WITH NAILERS. IT IS PREFERRED TO RAISE CURB ONTO NAILERS TO EXTEND FLASHING HEIGHT.
5. JM EPDM TAPE PRIMER OR JM SINGLE PLY MEMBRANE PRIMER (LOW VOC) MUST BE APPLIED ON ALL SURFACES COMING INTO CONTACT WITH JM EPDM PEEL & STICK PRODUCTS. ROLL MEMBRANE WITH HAND ROLLER UNDER PRESSURE AT SEAM.
6. 1/8" TO 1/4" OF EPDM SEAM TAPE MUST BE EXPOSED.
7. REINFORCED JM EPDM MEMBRANE IS REQUIRED FOR MECHANICALLY FASTENED INSTALLATIONS ONLY.
8. SEE E-FW-B DETAILS FOR JM APPROVED BASE FLASHING TIE IN TERMINATION METHODS.

DRAWING NO.		WOOD CURB BASE FLASHING		 <p>Johns Manville</p>
E-FC-12		MEMBRANE TYPE: JM EPDM		
NEW DETAIL		MAXIMUM GUARANTEE TERM: 30 YEAR		
SCALE N.T.S	ISSUE DATE 5-22-18	<small>Johns Manville is a manufacturer of commercial roofing products and offers this general conceptual information to you as a courtesy. This complimentary assistance is not to be used or relied upon by anyone as a substitute for professional engineering design and documentation required by building code, contract, or applicable law. By accepting these comments you agree they do not constitute any representations, endorsements of, or an assumption by Johns Manville of any liability for either the adequacy of the design of this building or any other material not supplied by Johns Manville.</small>		

JM 3" EPDM SEAM TAPE
EXPOSE 1/8" TO 1/4"

JM 6" EPDM SEALING STRIP

12" X 12" (304 mm) PATCH CUT FROM
JM EPDM 6" PEEL & STICK FLASHING

APPLY JM SINGLE PLY LVOC
CAULK UNDER THE PATCH
AT T-JOINT INTERSECTION

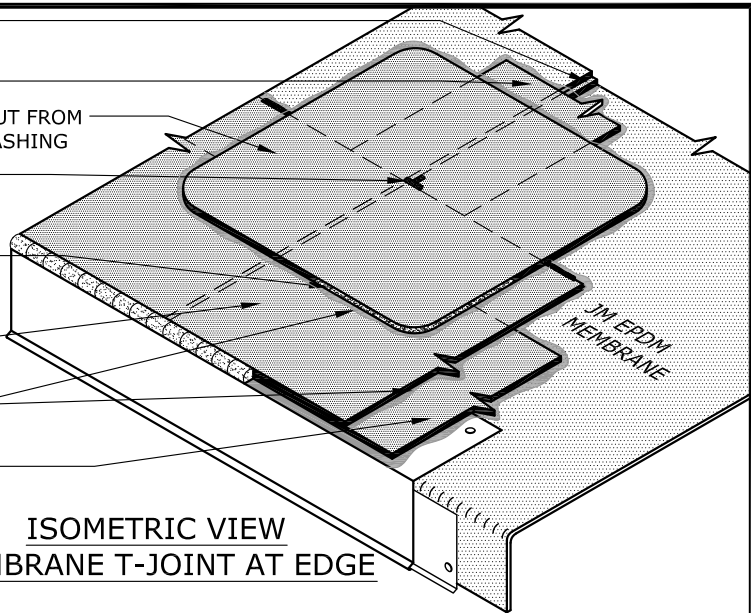
JM SINGLE PLY LVOC CAULK
ALL AROUND T-JOINT PATCH
AND SEALING STRIP EDGES

JM 9" EPDM
SEALING STRIP

JM EPDM TAPE PRIMER
SEE NOTE 4

JM 6" EPDM
SEALING STRIP

**ISOMETRIC VIEW
MEMBRANE T-JOINT AT EDGE**



JM EPDM MEMBRANE
ADHESIVE (FOR ADHERED
SPECIFICATIONS ONLY)

JM 9" EPDM SEALING
STRIP OVER JM 6" EPDM
SEALING STRIP

JM EPDM TAPE PRIMER
SEE NOTE 4

JM 6" EPDM
SEALING STRIP

JM SINGLE PLY LVOC CAULK
AT ALL EDGES OF
SEALING STRIP

JM EPDM MEMBRANE
ADHERED, BALLASTED OR
MECHANICALLY FASTENED

3" (76 mm) MIN. LAP ONTO METAL

1" (25 mm)

APPROPRIATE FASTENERS
6" (150 mm) O.C. STAGGERED

JM INSULATION / COVER BOARD

WOOD NAILER SECURELY
ANCHORED TO DECK-RE: DETAIL E-FE-01

MEMBRANE FASTENED TO BACK SIDE
OF WALL 12" (304 mm) MAX.

APPROVED DECK

1" (25 mm) MIN.

METAL CLEAT GAUGE, FASTENER
AND SPACING PER NRCA, SMACNA
(MINIMUM 24 GAUGE, 6"
(150 mm) O.C. MAXIMUM

JM SINGLE PLY LVOC CAULK, OPTIONAL

METAL EDGE BY OTHERS

**Used for Basis for
Design. There are
Three (3)
Approved
Roofing
Manufacturers.**

NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. PLEASE SEE SINGLE PLY FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
3. ANY CARPENTRY OR METAL WORK SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. JM EPDM TAPE PRIMER OR JM SINGLE PLY MEMBRANE PRIMER (LOW VOC) MUST BE APPLIED ON ALL SURFACES COMING INTO CONTACT WITH JM EPDM PEEL & STICK PRODUCTS. ROLL MEMBRANE WITH HAND ROLLER UNDER PRESSURE AT SEAM.

DRAWING NO.

E-FE-V3

METAL DRIP EDGE WITH EPDM SEALING STRIP 30 YEAR

NEW DETAIL

MEMBRANE TYPE:
JM EPDM

SCALE
N.T.S

ISSUE DATE
7-10-17

MAXIMUM GUARANTEE TERM:
30 YEAR

Johns Manville is a manufacturer of commercial roofing products and offers this general conceptual information to you as a courtesy. This complimentary assistance is not to be used or relied upon by anyone as a substitute for professional engineering design and documentation required by building code, contract, or applicable law. By accepting these comments you agree they do not constitute any representations, endorsements of, or an assumption by Johns Manville of any liability for either the adequacy of the design of this building or any other material not supplied by Johns Manville.



ROLL PATCHES INTO SEAMS WITH HAND ROLLER UNDER PRESSURE AND CREASE INTO SEAMS ACCORDING TO THE JM EPDM APPLICATION GUIDE

12" x 12"
(304 mm X 304 mm)
PATCH CUT FROM
JM EPDM 12"
PEEL & STICK FLASHING

JM EPDM 3" (MIN.)
SEAM TAPE
SEE NOTE 4

JM 6" EPDM
SEALING STRIP

JM EPDM MEMBRANE
ADHERED

JM 6" EPDM SEALING STRIP

JM EPDM TAPE PRIMER
SEE NOTE 5

JM EPDM 3" (MIN.) SEAM
TAPE - EXPOSE
1/8" TO 1/4" - SEE NOTE 4

JM EPDM MEMBRANE

JM EPDM MEMBRANE
ADHESIVE

JM EPDM TAPE PRIMER
SEE NOTE 5

JM EPDM 3" SEAM
TAPE-EXPOSE 1/8" TO 1/4"
SEE NOTE 4

JM 6" EPDM
SEALING STRIP

JM SINGLE PLY LVOC CAULK ALL
AROUND PEEL & STICK FLASHING

ISOMETRIC VIEW

JM INSULATION / COVER BOARD

APPROVED DECK

NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. PLEASE SEE SINGLE PLY FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
3. ANY CARPENTRY OR METAL WORK SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. 1/8" TO 1/4" OF JM EPDM SEAM TAPE MUST BE EXPOSED ALONG ENTIRE LENGTH OF ALL SEAMS.
5. JM EPDM TAPE PRIMER OR JM SINGLE PLY MEMBRANE PRIMER (LOW VOC) MUST BE APPLIED ON ALL SURFACES COMING INTO CONTACT WITH JM EPDM PEEL & STICK PRODUCTS. ROLL MEMBRANE WITH HAND ROLLER UNDER PRESSURE AT SEAM IN ACCORDANCE WITH THE JM EPDM INSTALLATION GUIDE.

**Used for Basis
for Design.
There are Three
(3) Approved
Roofing
Manufacturers.**

DRAWING NO.

E-MS-04

REPLACES EL-14T

SCALE
N.T.S

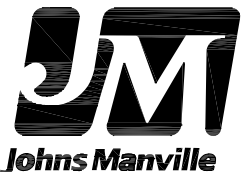
ISSUE DATE
7-10-17

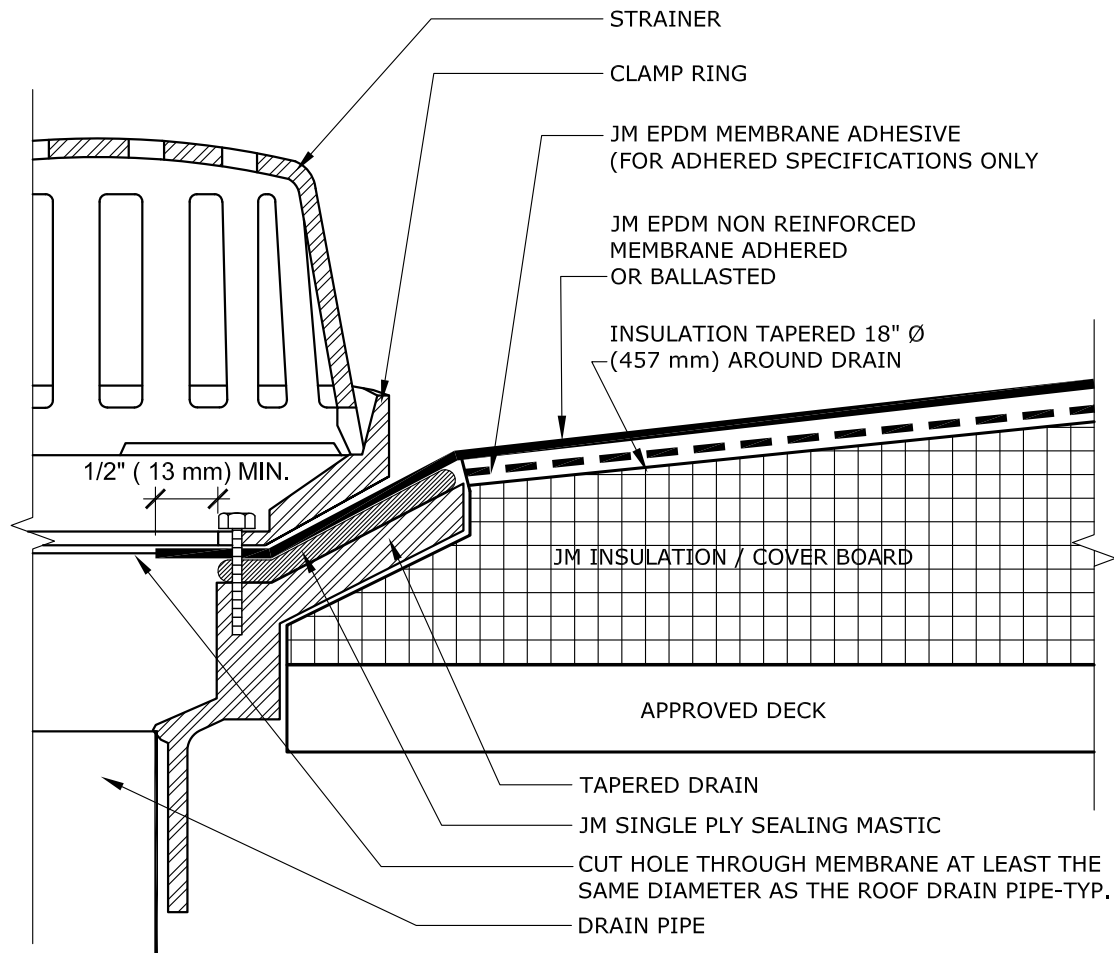
EPDM SIDE LAP & T-JOINT 30 YEAR

MEMBRANE TYPE:
JM EPDM

MAXIMUM GUARANTEE TERM:
30 YEAR

Johns Manville is a manufacturer of commercial roofing products and offers this general conceptual information to you as a courtesy. This complimentary assistance is not to be used or relied upon by anyone as a substitute for professional engineering design and documentation required by building code, contract, or applicable law. By accepting these comments you agree they do not constitute any representations, endorsements of, or an assumption by Johns Manville of any liability for either the adequacy of the design of this building or any other material not supplied by Johns Manville.





NOTES:

1. REFER TO JOHNS MANVILLE WEBSITE (www.jm.com) FOR MOST UP-TO-DATE INFORMATION.
2. PLEASE SEE SINGLE PLY FLASHING SPECIFICATIONS FOR A FULL DESCRIPTION OF INSTALLATION INSTRUCTIONS AND REQUIREMENTS WHICH ARE CONSIDERED A PART OF THIS DETAIL.
3. ANY CARPENTRY OR METAL WORK SHOULD BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS AND/OR PROJECT SPECIFICATIONS. THESE COMPONENTS SHOULD BE REVIEWED AND APPROVED BY A LICENSED DESIGN PROFESSIONAL.
4. NO SEAMS OR FOLDS UNDER THE CLAMPING RING.

Used for Basis for Design. There are Three (3) Approved Roofing Manufacturers.

PRIMARY DRAIN SUMP (LOW SLOPE) LESS THAN 3:12 SLOPE

DRAWING NO.

E-DV-08

REPLACES ED-1

MEMBRANE TYPE:

JM EPDM

MAXIMUM GUARANTEE TERM:

30 YEAR

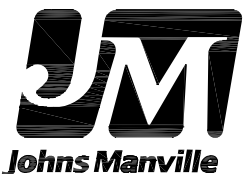
ISSUE DATE

7-11-17

SCALE

N.T.S

Johns Manville is a manufacturer of commercial roofing products and offers this general conceptual information to you as a courtesy. This complimentary assistance is not to be used or relied upon by anyone as a substitute for professional engineering design and documentation required by building code, contract, or applicable law. By accepting these comments you agree they do not constitute any representations, endorsements of, or an assumption by Johns Manville of any liability for either the adequacy of the design of this building or any other material not supplied by Johns Manville.



APPENDIX F
LIGHTNING PROTECTION SPECIFICATION AND DETAILS

SECTION 16050
BASIC ELECTRICAL

PART 1 - GENERAL

1.01 SCOPE

- A. The CONTRACTOR shall provide the labor, tools, equipment, and materials necessary to furnish and install the complete electrical work in accordance with the plans and as specified herein. The work shall include but not be limited to the following:
1. Complete lightning protection systems including raceway, cable, wire, grounding, etc.
 2. All support material and hardware for raceway and electrical equipment.
 3. Underground system.
 4. Termination of all cable and wire unless otherwise noted.
 5. Building wall, floor and roof penetrations for raceway system.
 6. Fire rated sealing of all electrical penetrations.
 7. Miscellaneous equipment.
- B. This section also includes general construction materials and methods for application with electrical installations as follows:
1. Miscellaneous metals for support of electrical materials and equipment.
 2. Joint sealers for sealing around electrical materials and equipment; and for sealing penetrations in fire and smoke barriers, floors, and foundation walls.
- C. Examination of Site:
1. Before submitting a bid, the CONTRACTOR shall visit and carefully examine site to identify existing conditions and difficulties that may affect the Work of this Section. No extra payment will be allowed for additional work caused by unfamiliarity with site conditions.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 specification sections, apply to this section.

1.03 QUALITY ASSURANCE

- A. Codes and Standards. Perform all work associated with basic electrical materials in compliance with applicable requirements of governing agencies having jurisdiction and in accordance with these plans and as specified herein. Where provisions of the pertinent codes and standards conflict with this specification, the more stringent provision shall govern.

1. Massachusetts Electrical Code (MEC).
2. National Fire Protection Association (NFPA).
3. Underwriters Laboratories, Inc. (UL).
4. Local and State Building Codes.
5. All electrical equipment shall be listed and labeled by UL or an approved independent nationally recognized electrical testing laboratory.

- B. Inspector Certifications

1. Provide two copies of the electrical inspector's certificate of approved showing acceptability of work done under this contract.

1.04 SUBMITTALS

- A. Furnish manufacturer's product data, test reports, and materials certifications as required.
- B. Follow the procedures specified in Division 1 Section "Submittals" and in addition, the CONTRACTOR shall prepare and submit a complete submittal list to the Owner's Representative. The submittal list shall include all submittal items covered in the Division 16 specification sections.
- C. Shop drawings shall be submitted to the Owner's Representative for approval. Shop drawings shall identify the specific equipment and material being supplied; the quantity being supplied; and all accessories, dimensions, descriptions, mounting and connection details, wiring diagrams, elementary control diagrams, equipment interface diagrams and any other information necessary to determine compliance with the plans and specifications. Fabrication and installation shall be in accordance with the approved shop drawings.
- D. As-built copies of all shop drawings shall be submitted to the ENGINEER.

- E. Permits and Easements. Submit copies of reports, permits, and easements necessary for installation, use, and operation.

1.05 RECORD DRAWINGS

- A. The CONTRACTOR shall maintain a complete and separate set of prints of Contract Drawings and specifications at job site for duration of the contract. The CONTRACTOR shall record work completed and all changes from original Contract. Drawings shall clearly and accurately include work installed as a modification or as an addition to the original design.
- B. At completion of work and prior to final request for payment, the CONTRACTOR shall submit a complete set of reproducible record drawings showing all systems as actually installed.

1.06 JOB CONDITIONS

A. Existing Conditions:

1. Maintain and protect existing building services, which transit the area affected by selective demolition.
2. Existing Utilities. Locate existing underground utilities in excavation areas. If utilities are indicated to remain, support and protect services during excavation operations.
3. Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
4. Verify that the electrical installation may be made in complete accordance with all pertinent codes and regulations and the original design.

B. Coordination.

1. Coordinate the installation of electrical items with the Owner.
2. Any changes shall be done at the CONTRACTOR'S expense.
3. Any work installed contrary to or without acceptance by the ENGINEER shall be subject to change as directed by the ENGINEER, and no extra compensation will be allowed to the CONTRACTOR for making these changes.

C. Accuracy of Data:

1. The Drawings are diagrammatic and functional only, and are not intended to show exact layouts, number of fittings, components, etc. Install additional components and material wherever needed to conform to the specific requirements of the equipment whether or not indicated or specified.
2. Information and components called for in the specification but not shown on plans or vice versa, shall apply and shall provided as though required expressly by both.
3. The locations of equipment and devices shown on the Drawings are approximate only. Field measurements shall take precedence over scaled dimensions from Drawings. Exact locations shall be as accepted by ENGINEER during construction. Obtain in the field all information relevant to the placing of electrical work and, in case of any interference with other work, proceed as directed by the ENGINEER and furnish all labor and materials necessary to complete the work in an acceptable manner.
4. The Contract Drawings and the specifications are intended to comply with all pertinent codes, regulations and standards. In the event of discrepancy, the CONTRACTOR shall immediately notify the ENGINEER in writing of said discrepancies and apply for an interpretation and, unless an interpretation is offered in writing by the ENGINEER prior to the execution of the Contract, the applicable rules and regulations shall be complied with as a part of the Contract.
5. In case of difference between building codes, specifications, state laws, industry standards and the Contract Documents, the most stringent shall govern. Should the CONTRACTOR perform any work that does not comply with the requirements of the applicable building codes, state laws, and industry standards, he shall bear all cost arising in correcting these deficiencies.

1.07 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Protection. Use all means necessary to protect electrical system materials before, during and after installation and to protect the installed work and materials of all other trades.
- B. Replacements. In the event of damage, immediately make all repairs and replacements necessary to the acceptance of the ENGINEER and at no additional cost to the OWNER. If any apparatus has been subject to possible injury by water, it shall be thoroughly dried out and put through such special tests

as directed by the ENGINEER, at the cost and expense of the CONTRACTOR, or shall be replaced by the CONTRACTOR at his own expense.

- C. Protect the work of other trades. Restore any damage caused to other trades to the condition existing prior to damage at no additional cost to the OWNER.
- D. Investigate each space in the building through which equipment must pass to reach its final location. If necessary, the manufacturer shall be required to ship his material in sections sized to permit passing through such restricted areas in the building.

1.08 SPECIAL WARRANTY

- A. Compile and assemble the warranties specified in Division 16 into a separate set of vinyl covered three ring binders, tabulated and indexed for easy reference.
- B. Provide complete warranty information for each item. Information to include:
 - 1. Product or equipment list.
 - 2. Date of beginning of warranty or bond.
 - 3. Duration of warranty or bond.
 - 4. Names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.

1.09 DEFINITIONS

- A. As used in this specification, "provide" means "furnish and install", "furnish" means "to purchase and deliver to the project site complete with every necessary appurtenance and support and to store in a secure area in accordance with manufacturers instructions", and "install" means "to unload at the delivery point at the site or retrieve from storage, move to point of installation and perform every operation necessary to establish secure mounting and correct operation at the proper location in the project".
- B. Finished Areas. In general, areas with carpet or tile floors, lay-in or fixed ceiling tile, special architectural ceiling treatment, or tiled, plastered, or paneled walls shall be considered finished areas.
- C. Interior. For the purposes of this specification, interior is any area within the boundaries of the foundation of any building within the superstructure or other structures not classified as a building.
- D. Hazardous (Classified) Areas. Hazardous (classified) areas are designated on the drawings in conformance with the Massachusetts Electrical Code (MEC). All equipment and the installation shall conform to requirements for installation in

the designated hazardous area as described in Articles 500, 501, and 502 of the MEC.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Materials and equipment shall be listed by UL unless it can be demonstrated that no UL standards exist for a specific item or class of equipment.
- B. All other materials, not specifically described but required for a complete and operable electrical installation, shall be new, first quality of their respective kinds, specification grade or better, and as selected by the CONTRACTOR subject to the acceptance by the ENGINEER.

2.02 INTERCHANGEABILITY

- A. In all design and purchasing, interchangeability of items of equipment, subassemblies, parts and other items is essential. All similar items shall be of the same manufacturer, type, model and dimensions.
- B. For ease of maintenance and parts replacement, to the maximum extent possible, use equipment of a single manufacturer.
- C. The ENGINEER reserves the right to reject any submittal which contains equipment from various manufacturers if suitable materials can be secured from fewer manufacturers and to require that source of materials be unified to the maximum extent possible.

PART 3 - EXECUTION

3.01 COORDINATION

- A. Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
- B. Field verify all locations and dimensions to ensure that the equipment will be properly located, readily accessible, and installed in accordance with all pertinent codes and regulations, the contract documents, and the referenced standards.
- C. The work shall be carefully laid out in advance, and where cutting, drilling, etc., of floors, walls, ceilings, or other surfaces is necessary for the proper installation,

this work shall be carefully done, and any damage to building, piping, or equipment shall be repaired by skilled mechanics of the trades involved at no additional cost to the Owner.

- D. In the event any discrepancies are discovered, immediately notify the Owner's Representative in writing. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.02 INSTALLATION

- A. Install all equipment in complete accordance with the manufacturer's recommendations and all pertinent codes and regulations.
- B. Thoroughly inspect all items of equipment and any items dented, scratched, or otherwise damaged in any manner shall be replaced or repaired and painted to match original finish.
 - 1. All items so repaired and refinished shall be brought to the attention of the ENGINEER for inspection and acceptance.
- C. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete or supported from or on other structural components, as they are constructed.
- D. Sequence, coordinate, and integrate installations of electrical materials and equipment for efficient flow of the work. Give particular attention to large equipment requiring positioning prior to closing in the building and equipment which must be placed in service before further construction can take place.
- E. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible.
- F. The final routing of raceways shall be determined by structural conditions, interference with other trades and by terminal locations on apparatus. The ENGINEER reserves the right of a reasonable amount of shifting at no extra cost up until time of roughing in the work.
- G. Where circuits are shown as "home-runs" all necessary fittings and boxes shall be provided for a complete raceway installation.
- H. Surface mounted panel boxed, junction boxes, conduits, etc., shall be supported by spacers to provide a clearance between wall and equipment.

- I. Upon completion of all installation and testing, thoroughly inspect all exposed portions of the electrical installation and completely remove all exposed labels, soils, markings and foreign material.

3.03 CLEANING

- A. General. When all work is completed and has been tested and accepted by the Owner's Representative, the CONTRACTOR shall clean all equipment, and exposed surfaces that have been directly affected by this work. The CONTRACTOR, insofar as the work is concerned, shall at all times keep the premises in a neat and orderly condition and at the completion of the work shall properly clean up and remove from the site any excess materials.

END OF SECTION

SECTION 16110

RACEWAYS

PART 1 – GENERAL

1.01 SCOPE

- A. The Contractor shall provide the labor, tools, equipment, and materials necessary to install raceways in accordance with the plans and as specified herein.
- B. All raceway systems shall be complete with fittings, boxes, and necessary connections as required.
- C. Types of raceways in this section include the following:
 - 1. Intermediate metal conduit (IMC).
 - 2. Liquid tight flexible conduit.
 - 3. Rigid galvanized steel conduit (RGS).
 - 4. Rigid nonmetallic conduit (PVC).
 - 5. Wireways.
 - 6. Underground ducts.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 specification sections, apply to this section.
- B. Related Sections. The following sections contain requirements that relate to this section:
 - 1. Section 16050 Basic Electrical
 - 2. Section 16120 Wires and Cables (for other wiring methods).
 - 3. Section 16190 Supporting Devices (for raceway supports).
 - 4. Section 16130 Cabinets, Boxes and Fittings (for boxes used with conduit and tubing systems).

1.03 QUALITY ASSURANCE

- A. Reference Standards:
 - 1. National Fire Protection Association (NFPA) 70 "Massachusetts Electrical Code" (MEC).
 - 2. National Electrical Manufacturers Association (NEMA) Compliance.

3. Underwriter's Laboratories, Inc. (UL) Compliance and Labeling. Provide raceway products and components listed and labeled by UL, Electrical Testing Laboratories (ETL), or Canadian Standards Association (CSA).

1.04 SUBMITTALS

- A. Furnish manufacturer's product data, test reports, and materials certifications as required.
- B. Submit in accordance with Conditions of Contract and Division 1 specification sections:

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Metal Conduit and Tubing
 1. Provide rigid steel conduit conforming to ANSI C80.1.
 2. Provide intermediate steel conduit conforming to UL 1242.
 3. Provide liquid tight flexible metal conduit and fittings conforming to UL 360.
- B. Nonmetallic Conduit
 1. Rigid Nonmetallic Conduit. PVC, Schedule 40 or 80, 90° C, conforming to NEMA TC-2, UL 651, and MEC Article 347.
- C. Fittings and Couplings:
 1. Threaded for rigid and IMC.
 2. Compression for EMT.
 3. Solvent weld for PVC, NEMA TC3.
 4. Ferrous fittings shall be cadmium or zinc-coated, UL 614B.
 5. Fittings for use in hazardous locations, UL 886.
 6. Conduit Bodies
- D. Wireways
 1. General Purpose Wireways. NEMA 1 steel, front accessible, totally enclosed with bolted covers. Finish with rust-inhibiting coating and gray baked enamel finish.

2. Oiltight Wireways. NEMA 12, oiltight and dusttight steel with hinged gasketed cover, external latches, and flanged gasketed joints. Finished with gray enamel paint inside and outside.
3. Watertight Wireways. NEMA 4X, watertight, corrosion resistant stainless steel with hinged gasketed cover, screw clamps, and flanged gasketed joints.

2.02 ACCEPTABLE MANUFACTURERS

A. Conduit.

1. General Electric.
2. National.
3. Allied Tube and Conduit.
4. Carlon.
5. Electri-Flex Company.
6. Republic.
7. Perma-Cote Industries.
8. Robroy Industries, Inc.
9. Triangle PWC, Inc.
10. VAW of America, Inc.
11. Wheatland Tube Co.

B. Conduit Fittings and Accessories.

1. Pyle-National.
2. American Electric.
3. Appleton Electric Co.
4. Carlon.
5. Crouse-Hinds Division, Cooper Industries, Inc.
6. Thomas & Betts.
7. Killark Electric Mfg. Co.
8. Kraloy Products Co.
9. O-Z/Gedney.
10. Perma-Cote Industries
11. Raco
12. Robroy Industries.
13. Unistrut Corp.

C. Wireways

1. American Electric
2. B-Line Systems, Inc.
3. Circle AW Products.
4. GS Metals Corp.
5. Hoffman Engineering Co.

6. Square D Company.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Uses Permitted

1. Use liquidtight flexible metal conduit for the final 24 inches of connections to motors or control items subject to movement or vibration.
2. Use RGS or IMC for all exterior aboveground installations unless otherwise noted.
3. Use Schedule 40 PVC or RGS conduit for exterior direct buried installations as shown the drawings.

B. Routing

1. Install exposed conduits, parallel or perpendicular to walls, ceilings, or structural members. Do not run through structural members. Avoid horizontal runs within partitions or side walls. Avoid ceiling inserts, lights, or ventilation ducts or outlets. Do not run conduits across pipe shafts or ventilation duct openings and keep conduits a minimum of 6 inches from parallel runs of flues, hot water pipes, or other sources of heat. Wherever possible, install horizontal raceway runs above water and steam piping.
2. Conduits installed in finished areas of new construction shall be concealed in walls or slabs. New conduits installed in existing finished areas shall be concealed where practical.
3. Conduits installed in other interior areas shall not be embedded in waterproofed or water bearing walls. Where possible, conduits to motors or equipment more than 3 feet from walls shall be run in or under the slab and stubbed up to the junction box. For all other interior applications, conduits shall be installed, exposed, or concealed as indicated on the plans.
4. For conduits installed in exterior areas:
 - a) Do not run conduits exposed on the exterior surface of buildings.
5. Conduits penetrating exterior walls below grade, at grade floors, or below grade floors shall be sealed to prevent moisture migration. The exterior of the conduit shall be sealed with a mechanical pipe seal. The interior conduit seal shall be a gland type sealing bushing or RTV closed cell silicone foam. Ensure that conduits do not retain water against these seals.
6. Conduits shall penetrate roofs only where specifically shown on the plans. Provide all required flashing.
7. Raceways penetrating fire rated walls, floors, and partitions shall be sealed with a fire rated sealant as described in Division 16 specification Section "Basic Electrical"

8. All conduits must be supported with materials specifically made for this purpose. Do not use wire hangers. Do not attach any parts of the raceway system to ventilation ducts. Conduit supports shall be attached to the building. Support conduits on each side of bends and on a spacing not to exceed the following: 6 feet for conduits smaller than 1 1/4 inches and 8 feet for conduits 1 1/4 inches and larger. Support riser conduits at each floor level with clamp hangers. All underground conduits shall be securely anchored to prevent movement during placement of concrete or backfill. Use precast separators and heavy gauge wire ties or other approved fasteners.
9. Install accessible pull boxes in runs over 100 feet or with more than three 90° bends or equivalent.
10. All empty conduits shall have #14 galvanized steel pull wire and terminate in accessible junction boxes or have accessible capped ends for future use.
11. Use E.Y.S. seal fittings for all conduits leaving hazardous areas and chemical rooms.

C. Conduit Embedded In Slab

1. Electrical conduit may be embedded in concrete according to the provisions of Article 6.3 of ACI 318 "Building Code Requirements for Reinforced Concrete", provided the following conditions are met:
 - a) Outside diameter of conduit shall not exceed 1/3 of concrete thickness. Maximum conduit outside diameter shall not exceed 3 inches when embedded in slab.
 - b) Conduit shall not be placed closer than three diameters on center. Route conduit to minimize crossing of different conduit runs.
 - c) Conduit shall not be embedded in structural concrete slabs less than four inches thick.
 - d) A 1 1/2 inch minimum concrete cover shall be provided for conduits in structural concrete slabs.
 - e) Conduit shall be located between the bottom and top of reinforcing steel. Conduit, crossing in the slab must be reviewed by the ENGINEER for proper cover.
 - f) Conduit is generally not permitted in beams or girders.
 - g) Only two conduits may cross at any point. The sum of the outside diameters of the crossing conduits shall not exceed 1/3 of the concrete thickness.
 - h) Provide additional reinforcement around all groups of conduits which stub up through the slabs.
 - i) Except where there are only isolated runs of conduit in slab, a plan showing conduit detail and the proposed routing of the conduits in slab shall be submitted, for the ENGINEERS approval prior to installation.

D. Underground Conduits

1. When installed in concrete or underground, apply two coats of approved asphalt paint to metallic conduits. Provide protection for conduit in areas subject to vehicle traffic.
2. Where conduits are installed in concrete slabs, on the ground, underground, or exposed to the weather, make all joints liquid tight and gas tight.
3. Bury all underground conduit, except under concrete slabs placed on fill, to a depth of at least two feet below finished grade unless otherwise indicated on the Drawings.
4. Slope ducts to drain away from buildings into manholes and/or handholes. Adjust final slopes to coordinate with existing site utilities.
5. Install on undisturbed soil where possible. Concrete encase conduits as shown on Drawings. Use pit run gravel and sand, placed 8 in. lifts and compacted for backfill.
6. After installation, clean and swab ducts.
7. Install galvanized steel pull wires in spare ducts. Cap spare ducts.

END OF SECTION

SECTION 16120
WIRE AND CABLES

PART 1 – GENERAL

1.01 SCOPE

- A. The Contractor shall provide the labor, tools, equipment, and materials necessary to install wires, cables, and connectors in accordance with the plans and as specified herein.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 specification sections, apply to this section.

1.03 QUALITY ASSURANCE

A. Reference Standards:

1. National Fire Protection Association (NFPA) 70 "Massachusetts Electrical Code (MEC)."
2. Underwriter's Laboratories, Inc. (UL) Compliance.
 - a) UL Standard 83 Thermoplastic Insulated Wires and Cables.
 - b) UL Standard 486A Wire Connectors and Soldering Lugs for Use with Copper Conductors.
 - c) UL Standard 854 Service Entrance Cable.
3. National Electrical Manufacturers Association (NEMA) Compliance.
 - a) WC-5 Thermoplastic Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.
 - b) WC-7 Cross Linked Thermosetting Polyethylene Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.
 - c) WC-8 Ethylene Propylene Rubber Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.
4. Institute of Electrical and Electronic Engineers (IEEE) Compliance.
 - a) Standard 82 Test Procedure for Impulse Voltage Tests on Insulated Conductors.

1.04 SUBMITTALS

- A. Furnish manufacturer's product data, test reports, and materials certifications as required.
- B. Submit the following in accordance with Conditions of Contract and Division 1 specification sections:
 - 1. Product data for electrical wires, cables, and connectors.
 - 2. Product data for Megger insulation testing instrument.
 - 3. Report sheets for Megger testing.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wire and cable properly packaged in factory fabricated type containers, or wound on NEMA specified type wire and cable reels.
- B. Store wire and cable in clean dry space in original containers. Protect products from weather, damaging fumes, construction debris, and traffic.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General
 - 1. Provide factory fabricated wires of sizes, ampacity ratings, and materials for applications and services indicated. Where not indicated, provide proper wire selection as determined by Installer to comply with project's installation requirements, NEC and NEMA standards. Select from the following UL types those wires with construction features which fulfill project requirements:
 - 2. Provide factory applied nylon or polyvinyl chloride (PVC) external jackets on wires and cables for pulls in raceways over 100 feet in length, for pulls in raceways with more than three equivalent 90 degree bends, for pulls in conduits underground or under slabs on grade, and where indicated.

B. Service Wiring:

1. 98 percent conductivity copper.
2. 600 volt insulation, type RHW-RHH.
3. U.L. listed for underground use in wet locations at 75° C.

C. Building Wiring:

1. 98 percent conductivity copper.
2. 600 volt insulation, type THWN-THHN.
3. Solid conductor: #10 AWG and smaller.
4. Stranded conductor: #8 AWG and larger.
5. Minimum branch circuit: #12 AWG.
6. Minimum control wiring: #14 AWG, unless otherwise indicated.

D. Splices:

1. No. 10 and smaller with 600 volt pressure type insulated connector of wire-nut type, or equal; soldered and crimped type not allowed. Ideal type "wire nut" Buchanan type "B-Cap" and Minnesota Mining (3M) type "Scotchlok".
2. No. 8 and larger with solderless lugs or solderless connectors of Lock-tite or similar type properly taped with plastic insulating tape, Minnesota Mining Co. #33, or equal, then two half-lap servings of friction tape, Manson, or equal.'
3. Wire connector systems for use with underground conductors shall be UL listed specifically for such use.
4. Service entrance conductors shall be installed without splices. Electrical equipment feeders shall be spliced only where shown or specifically approved. Control and metering conductors shall be installed without splices.
5. All splices shall be made only by specific permission of the Engineer and then only in manholes or pull boxes and shall be sealed watertight with a heat shrunk insulation.
6. Tighten electrical connectors and terminals in accordance with manufacturer's published torque tightening values. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Standards 486A and 486B.
7. Use UL listed splice for all underground wires, ducts buried, in conduit and in ducts. Connectors and splices shall be waterproof.

2.02 ACCEPTABLE MANUFACTURERS

- A. Wire and Cable.
 - 1. American Insulated Wire Corp.
 - 2. Brintec Corp.
 - 3. Carol Cable Co., Inc.
 - 4. Piroll.
 - 5. General Cable.
 - 6. Rome.
 - 7. Triangle.

- B. Connectors and Terminals for Wires and Cable Conductors.
 - 1. AMP.
 - 2. Burndy Corporation.
 - 3. Ideal Industries, Inc.
 - 4. 3M Company
 - 5. O-Z/Gedney Co.
 - 6. Raychem.
 - 7. Thomas and Betts Corp.

PART 3 - EXECUTION

3.01 WIRE AND CABLE INSTALLATION

- A. All wire and cables shall be installed in conduit of size and type indicated on the drawing and specifications.

- B. Install electrical cables, wires, and connectors in compliance with MEC.

- C. Coordinate cable installation with other work.

- D. Pull conductors simultaneously where more than one is being installed in same raceway. Use UL listed pulling compound or lubricant, where necessary.

- E. Use pulling means including, fish tape, cable, rope, and basket weave wire/cable grips which will not damage cables or raceways. Do not use rope hitches for pulling attachment to wire or cable.

- F. Conceal all cable in finished spaces.

- G. Install exposed cable parallel and perpendicular to surfaces or exposed structural members, and follow surface contours, where possible.

- H. Power conductors shall be No. 12 AWG minimum. Control conductors may be No. 14 AWG where circuit amperes and the NEC allow and when length does not pose a voltage drop problem.

- I. Conductors shall be sized such that voltage drop does not exceed 3 percent for branch circuits or 5 percent for feeder/branch circuit combination.
- J. Provide adequate length of conductors within electrical enclosures and train the conductors to terminal points with no excess. Bundle multiple conductors, with conductors larger than No. 10 AWG cabled in individual circuits. Make terminations so there is no bare conductor at the terminal.
- K. All feeder and branch circuit wiring shall be color coded at all termination and splice locations. System neutrals shall be designated in addition to phase conductors. Equipment grounds shall be green.
- L. The number of conductors shown on the Drawings is not necessarily the correct number required. As many conductors as are required in each case shall be installed. Grounding conductors are not scheduled.

END OF SECTION

SECTION 16130

CABINETS, BOXES AND FITTINGS

PART 1 - GENERAL

1.01 SCOPE

- A. The Contractor shall provide the labor, tools, equipment, and materials necessary to furnish and install cabinets, boxes, and fittings in accordance with the plans and as specified herein.
- B. This section includes cabinets, boxes, and fittings for electrical installations and certain types of electrical fittings not covered in other sections. Types of products specified in this section include:
 - 1. Outlet and device boxes.
 - 2. Pull and junction boxes.
 - 3. Boxes and fittings for hazardous locations.
 - 4. Hinged door enclosures.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 specification sections, apply to this section.
- B. Related Sections:
 - Section 16050 Basic Electrical
 - Section 16110 Raceways

1.03 QUALITY ASSURANCE

- A. Reference Standards.
 - 1. Underwriter's Laboratories, Inc. (UL) Listing and Labeling. Items provided under this section shall be listed and labeled by UL.
 - 2. Massachusetts Electrical Code (MEC) Compliance.
 - 3. National Electrical Manufacturers Association (NEMA) Compliance.

1.04 SUBMITTALS

- A. Furnish manufacturer's product data, test reports, and material certifications as required.

B. Submit the following in accordance with Conditions of Contract and Division 1 specification sections:

1. Product data for cabinets and enclosures with classification higher than NEMA 1.
2. Shop drawings for floor boxes and boxes, enclosures and cabinets that are to be shop fabricated (nonstock items).

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cabinets, Boxes, and Fittings, General

1. Electrical cabinets, boxes, and fittings of indicated types, sizes, and NEMA enclosure classes. Where not indicated, provide units of types, sizes, and classes appropriate for the use and location. Provide all items complete with covers and accessories required for the intended use. Provide gaskets for units in damp or wet locations and provide air sealing gaskets for units mounted in exterior walls.

B. Materials and Finishes

1. Provide fasteners for general use which are corrosion resistant screws and hardware including cadmium and zinc plated items.
2. Provide fasteners for damp or wet locations which are stainless steel screws and hardware.
3. Provide cast metal for boxes, enclosures, and covers which is copper-free aluminum except as otherwise specified.
4. Provide exterior finish which is gray baked enamel for items exposed in finished locations except as otherwise indicated.
5. Provide fittings for boxes, cabinets, and enclosures which conform to UL 514B. Malleable iron or zinc plated steel for conduit hubs, bushings, and box connectors.

C. Metal Outlet Boxes

1. Conform to UL 514A, "Metallic Outlet Boxes," and UL 514B, "Fittings for Conduit and Outlet Boxes." Boxes shall be of type, shape, size, and depth to suit each location and application.
2. Provide cast iron boxes of iron alloy, waterproof, with threaded raceway entries and features and accessories suitable for each location, including mounting ears, threaded screw holes for devices and closure plugs.

D. Pull and Junction Boxes

1. Comply with UL 50, "Electrical Cabinets and Boxes", for boxes over 100 cubic inches volume. Boxes shall have screwed or bolted on covers of material same as box and shall be of size and shape to suit application cover shall be gasketed.
2. Provide hot-dipped galvanized steel boxes constructed of sheet steel with welded seams. Where necessary to provide a rigid assembly, construct with internal structural steel bracing. Hot-dip galvanized after fabrication. Cover shall be gasketed.

E. Nonmetallic Outlet, Device, and Wiring Boxes

1. Conform to NEMA OS 2, "Nonmetallic Outlet Boxes, Device Boxes, Covers, and box Supports," and UL 514C, "Nonmetallic Outlet Boxes, Flush Device Boxes and Covers." Boxes shall be molded polyvinyl chloride (PVC) units of type, shape, size, and depth to suit location and application.
2. Boxes shall be equipped with threaded screw holes for device and cover plate mounting. Each box shall have a molded cover of matching PVC material suitable for the application.

2.02 ACCEPTABLE MANUFACTURERS

- A. American Electric
- B. Appleton
- C. Carlon
- D. Crouse Hinds
- E. Hoffman Engineering Co.
- F. Killark Electric Mfg. Co.
- G. O.Z. Gedney
- H. Parker Electrical Mfg. Co.
- I. Raco/Bell Division Harvey Hubbell
- J. Spring City Electrical Mfg. Co.
- K. Square D Co.
- L. Steel City/Thomas & Betts

PART 3 – EXECUTION

3.01 INSTALLATION

A. General

1. Install items where indicated and where required to suit code requirements and installation conditions.

2. Cap unused knockout holes where blanks have been removed and plug unused conduit hubs.
3. Support and fasten items securely in accordance with Division 16 section "Supporting Devices." Boxes shall be securely mounted to the building structure, independent of the raceway entering or leaving.
4. Sizes shall be adequate to meet MEC volume requirements, but in no case smaller than sizes indicated.
5. Remove sharp edges where they may come in contact with wiring or personnel.

B. Uses Permitted

1. Outlet Boxes.

- a) Use nonmetallic boxes in corrosive areas such as chemical feed and storage or as designated on the plans.
- b) Use explosionproof boxes in hazardous areas as designated on the plans.
- c) Use cast metal boxes in all other locations. Each box with associated covers and fittings shall have a NEMA rating suitable for each location installed.

2. Pull and Junction Boxes.

- a) Use general purpose boxes (NEMA 1) in finished areas with framed construction.
- b) Use dusttight and oiltight boxes (NEMA 12) in other dry interior areas.
- c) Use explosionproof boxes (NEMA 7) in hazardous areas as designated on the plans.
- d) Use watertight boxes (NEMA 4) for exterior and wet locations on outdoor structure where moisture is present.

3. Cabinets

- a) Install enclosures and associated materials and NEMA types suitable for each location and in conformance with the drawings.

C. Installation of Outlet Boxes

1. Surface mount outlet boxes for exposed conduit runs.
2. Adjust position of outlets in finished masonry walls to suit masonry course lines.
3. Coordinate cutting of masonry walls to achieve neat openings for boxes. Use rotary cutting equipment to cut masonry work for installation of electrical fittings.

4. Locate boxes in masonry walls so that only a corner need be cut from masonry units.
5. Do not use sectional or handy boxes unless specifically requested.
6. Adjust outlet mounting height to agree with required location for equipment served.
7. Wall boxes in block construction shall be masonry boxes with inside ears and shall be concrete tight.
8. Outlet boxes shall be installed at all lighting fixtures.
9. Mount outlet boxes for switches with the long axis vertical or as indicated. Mount boxes for receptacles either vertically or horizontally, but consistently either way. Locate boxes for switches near doors on the side opposite the hinges and close to door trim, even though electrical floor plans may show them on hinge side.
10. For concrete boxes use extra deep boxes to permit side conduit entrance without interfacing with reinforcing, but do not use such boxes with over 6 inch depth.
11. For existing outlet boxes where extension rings are required to be installed, drill new mounting holes in the rings to align with the mounting holes on the existing boxes where existing holes are not aligned.

D. Installation of Pull and Junction Boxes

1. For boxes in main feeder conduit runs, use sizes not smaller than 8 inches square by 4 inches deep. Do not exceed 6 entering and 6 leaving raceways in a single box. Quantities of conductors (including equipment grounding conductors) in pull or junction box shall not exceed those required by MEC.
2. Install clamps, grips, or devices to which cables may be secured. Arrange cables so they may be readily identified. Support cable at least every 30 inches inside boxes.
3. Mount pull boxes in inaccessible ceilings with the covers flush with the finished ceiling.
4. Provide pull and junction boxes for telephone, signal, and other systems at least 50 percent larger than would be required by Article 370 of MEC, or as indicated.
5. Steel enclosed wireways and auxiliary gutter may be used at grouped equipment locations and at other locations where multiple circuits are run, when such use is accepted by the ENGINEER.

3.02 GROUNDING

- A. Electrically ground metallic cabinets, boxes, and enclosures.

END OF SECTION

SECTION 16190
SUPPORTING DEVICES

PART 1 - GENERAL

1.01 SCOPE

- A. The Contractor shall provide the labor, tools, equipment, and materials necessary to furnish and install supporting devices in accordance with the plans and as specified herein.
- B. This section includes secure support from the building structure for electrical items by means of hangers, supports, anchors, sleeves, inserts, seals, and associated fastenings.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 specification sections, apply to work of this section.
- B. Related Sections:
Section 16050 Basic Electrical

1.03 QUALITY ASSURANCE

- A. Reference Standards.
 - 1. Massachusetts Electrical Code (MEC) Compliance.
 - 2. Underwriter's Laboratories, Inc. (UL), Electrical Testing Laboratories, Inc. (ETL), or Canadian Standards Association (CSA).

1.04 SUBMITTALS

- A. Furnish manufacturer's product data, test reports, and materials certifications as required.
- B. Submit the following in accordance with Conditions of Contract and Division 1 specification sections:
 - 1. Product data for each type of product specified.
 - 2. Hanger and support schedule showing manufacturer's figure, number, size, spacing, features, and application for each required type of hanger, support, sleeve, seal, and fastener to be used.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Coatings

1. Supports, support hardware, and fasteners shall be protected with zinc coating or with treatment of equivalent corrosion resistance using approved alternative treatment, finish, or inherent material characteristic. Products for use outdoors shall be hot dip galvanized unless material is inherently corrosion resistant.

B. Conduit Supports:

1. Single run hangers: Galvanized steel conduit straps or clamps, or cast metal beam clamps. Perforated straps and spring steel clips and clamp will not be permitted.
2. Group run hangers: Minimum 12-gauge galvanized performed U-channel rack with conduit fittings; 25 percent spare capacity.
3. Hanger rods: Threaded steel, 3/8-inch diameter.
4. Vertical run supports: Minimum 12-gauge galvanized performed U-channel struts with conduit fittings.

C. Equipment and lighting supports:

1. U-channel: 12-gauge galvanized performed U-channel struts with fixture and conduit fittings, as applicable.
2. Loose angles, channels, plates and tubing: As specified in Section 05500.

D. Anchors:

1. Hollow masonry: Stainless steel toggle bolts.
2. Solid masonry: Lead expansion anchors or preset inserts.
3. Metal surfaces: Machine screws, bolts, or steel clamps as required for application.
4. Wood surfaces: Wood screws.

- #### E. Conduit Seals.
- Provide factory fabricated watertight conduit sealing bushing assemblies suitable for sealing around conduit, or tubing passing through concrete floors and walls. Provide a cast-in-place water stop wall sleeve with a mechanical pipe seal between the conduit and the sleeve. Construct seals with steel sleeve, malleable iron body, neoprene sealing grommets or rings, metal pressure rings, pressure clamps, and cap screws.

2.02 ACCEPTABLE MANUFACTURERS

A. Metal Angle and U-Channel Systems.

1. Allied Tube and Conduit Corp.
2. American Electric.
3. B-Line Systems, Inc.
4. GS Metals Corp.
5. Kin-Line, Inc.
6. Unistrut Diversified Products.

B. Conduit Sealing Bushings.

1. Cooper Industries, Inc.
2. GS Metals Corp.
3. Killark Electric Mfg. Co.
4. OZ/Gedney.
5. Product Electric Corp.
6. Raco, Inc.
7. Spring City Electrical Mfg. Co.
8. Thomas & Betts Corp.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install supporting devices to fasten electrical components securely and permanently in accordance with MEC requirements.
- B. Coordinate with the building structural system and with other electrical installations.
- C. Conform to manufacturer's recommendations for selection and installation of supports.
- D. Install individual and multiple (trapeze) raceway hangers and riser clamps as necessary to support raceways. Provide U-bolts, clamps, attachments, and other hardware necessary for hanger assembly and for securing hanger rods and conduits.
- E. Support parallel runs of horizontal raceways together on trapeze type hangers.
- F. Support individual horizontal raceways by separate pipe hangers. Spring steel fasteners may be used in lieu of hangers only for 1 1/2 inch and smaller raceways serving lighting and receptacle branch circuits above suspended

ceilings only. For hanger rods with spring steel fasteners, use 1/4 inch diameter or larger threaded steel. Use spring steel fasteners that are specifically designed for supporting single conduits or tubing.

- G. In vertical runs, arrange support so the load produced by the weight of the raceway and the enclosed conductors is carried entirely by the conduit supports with no weight load on raceway terminals.
- H. Support miscellaneous electrical components as required to produce the same structural safety factors as specified for raceway supports. Install metal channel racks for mounting cabinets, panelboards, disconnects, control enclosures, pull boxes, junction boxes, transformers, and other devices.
- I. Install sleeves in concrete slabs and walls and all other fire rated floors and walls for raceways and cable installations. For sleeves through fire rated wall or floor construction, apply UL listed firestopping sealant in gaps between sleeves and enclosed conduits and cables.
- J. Install conduit seals for conduit penetrations of slabs on grade and exterior walls below grade and where indicated. Tighten sleeve seal screws until sealing grommets have expanded to form watertight seal. Provide seals for the interior of conduits which penetrate exterior or water bearing walls, consisting of gland type sealing bushings or RTV closed cell silicone foam. Provide explosionproof conduit seal fittings with appropriate potting material where conduits enter or leave a Class 1, Division 1 or 2 environment or a Class 2, Division 1 or 2 environment.

END OF SECTION

SECTION 16450

GROUNDING

PART 1 - GENERAL

1.01 SCOPE

- A. The Contractor shall provide the labor, tools, equipment, and materials necessary to furnish and install grounding materials in accordance with the plans and as specified herein.
- B. Grounding. This section includes solid grounding of electrical systems and equipment.

1.02 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 specification sections, apply to this section.
- B. Related Sections

Section 16050	Basic Electrical
Section 16120	Wires and Cables

1.03 QUALITY ASSURANCE

- A. Reference Standards.
 - 1. "Massachusetts Electrical Code" (MEC), as applicable to electrical grounding and bonding, Art. 250. Use of conduit system for ground conductor shall not be allowed.
 - 2. Underwriters' Laboratories, Inc. (UL). UL 467 "Electrical Grounding and Bonding Equipment."
 - 3. Institute of Electrical and Electronic Engineers (IEEE) IEEE 81 and 142.
 - a) 80-1986, "IEEE Guide for Safety in AC Substation Grounding."
 - b) 81-1983, "IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounded System (Part 1)."

- c) 141-1993, "IEEE Recommended Practice for Electric Power Distribution for Industrial Plants."
- d) 142-1991, "IEEE Recommended Practice for Grounding of Industrial and Commercial Power Systems."

1.04 SUBMITTALS

- A. Submit the following in accordance with Conditions of Contract and Division 1 specification sections:
 - 1. Product data for each type of product specified.

PART 2 - EXECUTION

2.01 MATERIALS

- A. Provide each electrical grounding system with assembly of materials required for complete installation including wires/cables, connectors, lugs, clamps, ground rods, bonding jumpers and accessories.
- B. Provide electrical grounding conductors for grounding connections matched to power supply wiring materials and sized according to N.E.C.
- C. Provide electrical connectors, lugs, clamps, bonding jumpers and accessories as recommended by the respective manufacturer for the particular application, unless other indicated.
- D. Ground rods; Solid copper, 5/8-inch diameter by 10 feet long.
- E. Insulated conductors: Green in color.
- F. Ground Bus. Bare annealed copper bars of rectangular cross section, 1/4" x 3" x length as required, with 98 percent conductivity, rigidly attached to structure.
- G. Bonding Strap Conductor/Connectors. Soft copper, 0.05 inch thick and 2 inches wide, except as indicated.
- H. Pressure Connectors. High conductivity plated units.
- I. Bolted Clamps. Heavy duty units listed for the application.
- J. Exothermic Welded Connections. Provided in kit form and selected for the specific types, sizes, and combinations of conductors and other items to be connected.

2.02 ACCEPTABLE MANUFACTURERS

- A. Burndy Corporation.
- B. A.B. Chance Co.
- C. Dossert Corp.
- D. Erico Products, Inc.
- E. GB Electrical, Inc.
- F. Joslyn Manufacturing Co.
- G. Kearney-National.
- H. O-Z/Gedney Co.
- I. Quazite Corporation.
- J. Raco, Inc.
- K. Thomas and Betts.

PART 3 - EXECUTION

3.01 GROUNDING AND BONDING

- A. Ground main service entrance distribution panel ground bus or lug to neutral of incoming service, to enclosure, to building steel and to main cold water pipe. Install grounding bushings or service conduits.
- B. Provide equipment grounding conductors in all conduits containing power, control, or instrumentation conductors on the load side of the service equipment or on the load side of a separately derived system.
- C. Comply with MEC Article 250 for sizes and quantities of equipment grounding conductors, except that larger sizes indicated or shown on the Contract Documents shall take precedence. Use of metallic conduit systems for equipment grounding as recognized by the MEC shall not be permitted under this specification.
- D. Separately derived systems required by MEC to be grounded shall be grounded in accordance with MEC 250-26.
 - 1. In addition, bond the grounded conductor of the separately derived system to the nearest available point on the interior metal water piping system, per MEC 250-80(a), or if no water piping extend to main service disconnect ground.
- E. Install grounding bushings on conduits at both primary and secondary entrances to transformers. Ground transformer enclosures to bushings.

- F. Install bonding jumper for flexible metal conduit unless fittings are approved for grounding or otherwise comply with N.E.C.
 - 1. Size jumper to match over-current device.
 - 2. Green insulation.
 - 3. Connect to grounding bushing at each end.
- G. Ground each metal lighting pole or standard with a common bare copper equipment grounding conductor run with the circuit conductors.
- H. Ensure that entire electrical system is electrically continuous and permanently and effectively grounded, including all electrical equipment and motors.
 - 1. Locate ground rods with a minimum of one rod length from each other and at least the same distance from any other grounding electrode. Connect ground conductors to ground rods by means of exothermic welds except at test wells and as otherwise indicated. Drive rods until tops are 24 inches below finished floor or final grade except as otherwise indicated.
- I. Route grounding electrode conductors along the shortest and straightest paths possible without obstructing access or placing conductors where they may be subjected to strain, impact, or damage, except as indicated.
- J. Ensure that grounding electrode conductor connections to interior piping, structural members, and the like are accessible for periodic inspection during the life of the structure.

3.02 BONDING FOR OTHER TRADES

- A. Signal raceways, water piping, heating piping and metallic air ducts shall be bonded together and to the grounding conductor with No. 8 soft drawn bare solid conductors. Connections to pipes shall be made with cast clamps of like material as the pipes to which attached, to ducting terminated in a secure manner by best practical means, bonding across any flexible or insulated connections.
- B. All bonding conductors shall be installed in a neat and workmanlike manner, properly shaped for contour of surface involved and properly supported. At locations remote from the switch gear, bond to the largest raceway nearby.

3.03 FIELD QUALITY CONTROL

- A. Independent Testing Organization. Arrange and pay for the services of a qualified independent electrical testing organization to perform tests described below.

- B. Measure ground resistance without the soil being moistened by any means other than natural precipitation or natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance. Perform tests by the three point fall of potential method in accordance with Section 9.03 of IEEE 81. Simple moisture addition is not acceptable.

- C. Ground/resistance maximum values shall be as follows:
 - Equipment rated 500 kva and less. 10 ohms.
 - Equipment rated 500 kVA to 1000 kVA. 5 ohms.
 - Equipment rated over 1000 kVA. 3 ohms.
 - Unfenced substations and pad mounted equipment. 5 ohms.
 - Fence Grounds. 10 ohms.

- D. Where ground resistances exceed specified values, and if directed, modify the grounding system to reduce resistance values. Where measures are directed that exceed those indicated under the provisions of the Contract, covering change orders will be provided.

END OF SECTION

SECTION 16670

LIGHTNING PROTECTION SYSTEMS

PART 1 - GENERAL

1.1 SCOPE

- A. The Contractor shall provide the labor, tools, equipment, and materials necessary to furnish and install lightning protection systems in accordance with the plans and as specified herein.
 - 1. This section includes lightning protection systems for buildings and associated structures and includes requirements for lightning protection systems components including, but not limited to, the following:
 - a. Air terminals.
 - b. Bonding plates.
 - c. Conductors.
 - d. Connectors.
 - e. Fasteners.
 - f. Grounding plates.
 - g. Grounding rods.
 - h. Rod clamps.
 - i. Splicers.
 - 2. Raceways used for lightning protection system conductors are specified in Section 16110 "Raceways."

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 specification sections, apply to this section.
- B. Related sections. The following sections contain requirements that relate to this section:
 - 1. Section 16050 "Basic Electrical."
 - 2. Section 16110 "Raceways."

1.3 QUALITY ASSURANCE

LIGHTNING PROTECTION SYSTEMS

A. Reference Standards:

1. National Fire Protection Association (NFPA) 70 "Massachusetts Electrical Code" (MEC).
2. NFPA Standard 78, and UL Standard 96.
3. Lightning Protection Institute (LPI) Standards 175, 176, and 177.
4. UL Standards 96 and 96A.
5. ANSI Standard C2.

1.4 SUBMITTALS

- A. Furnish manufacturer's product data, test reports, and materials certifications as required.
- B. Submit the following in accordance with Conditions of Contract and Division 1 specification sections.
1. Product data for each type of product specified, including roof adhesive where used.
 2. Shop drawings detailing lightning protection system including, but not limited to, air terminal locations, conductor routing, connections and grounding.

1.5 JOB CONDITIONS

- A. Coordinate installation of lightning protect system with the installation of other building systems and components, including electrical wiring, supporting structures and building materials, and metal components requiring interface with lightning protection systems.

1.6 DELIVERY, STORAGE, AND HANDLING

Not used.

1.7 SPECIAL WARRANTY

Not used.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Acceptable Manufacturers
- a. East Coast Lightning Equipment.

LIGHTNING PROTECTION SYSTEMS

16670- 2

1465

- b. Harger Lightning Protection, Inc.
 - c. Independent Protection Co., Inc.
 - d. Maxwell Lightning Protection Co.
 - e. Robbins Lightning Protection Co.
 - f. Sewell Manufacturing Co., Inc.
 - g. Thompson Lightning Protection, Inc.
 - h. or approved equal.
- B. Lightning Protection System Components. Provide lightning protection system materials and components, that comply with manufacturer's standard design, in accordance with published product information. Provide air terminals, bonding plates, conductors, connectors, conductor straps, fasteners, grounding plates, grounding rods, rod clamps, splicers, and other components required for a complete system that meets LPI-175, UL 96A and NFPA 78 standards.
- C. Air Terminals:
- 1. Pint: Solid Aluminum, 12 inches high, ½ inch diameter, with tapered points.
 - 2. Point Coating: Minimum 1/16 inch lead.
- D. Fasteners and Attachments:
- 1. Same material as air terminals.
- E. Main Conductors Down Leads and Roof:
- 1. Copper cable, minimum weight not less than 375 lbs/1,000 ft: minimum wire size No. 14 AWG.
- F. Secondary Conductors:
- 1. Copper cable, minimum 13 strand No. 17 AWG.
- G. Fasteners:
- 1. All fasteners shall be substantial in construction, not subject to breakage and shall be of the same material as the conductor or of such nature that there will be no serious tendency toward electrolytic corrosion in the presence of moisture.
 - 2. Galvanized fasteners not acceptable.
- H. Connectors and Disconnectors:

1. Compression type designed to withstand 200 lbs pull.
 2. Exothermic Welding Type. (for below grade only).
 3. Bi-metallic Type.
- I. Depth Indicator Tags:
1. Copper.
- J. Ground Rods:
1. 10 feet copper clad steel rods $\frac{3}{4}$ " diameter. The proportion of copper on copper-clad rods shall be approximately 30 percent of the weigh of the rod. Ground rods shall be driven vertically.

PART 3 EXECUTION

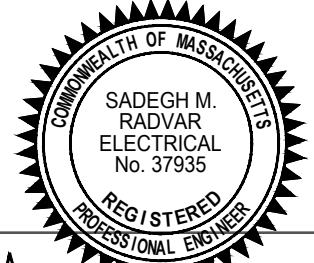
3.1 INSTALLATION

- A. Install system in accordance with manufacturer's instruction and UL requirements.
- B. Install a perimeter cable around the entire roof of each building. Each perimeter shall be connected to down leads not to exceed 100 feet OC around the perimeter of any level to be protected. Down leads shall be in concealed conduit.
- C. Install Air Terminals in plumb position securely fastened to withstand overturning. Provide the required number of air terminals around each perimeter protected and all prominent parts of the building. Air terminals shall be placed at intervals not exceeding 20'-0" around perimeter of building, and shall extend a 10" minimum distance above the object they are to protect.
- D. All metallic masses above the structure which are a permanent part of the building with the exception of those of comparatively small sizes and not within six feet of the lightning conductor, shall be made a part of the lightning protection system by interconnection with the system, or shall be independently grounded. Plumbing vent stacks, fan housing, fences and other metallic masses high in the building shall be permanently and effectively grounded by bonding to the lightning conductor.
- E. Conductors shall be fastened and run as follows:
1. Fasten conductors to building at 3 feet maximum intervals.

2. On masonry set fasteners in brick, block, or stone but not in mortar joints.
3. Bend to radii greater than 8 inches.
4. Limit angle of turns to 90 degrees.
5. Route horizontal conductors around obstruction in horizontal plane.
6. Route conductor in horizontal or vertical planes only.
7. Do not form obstructions to ice or snow.
8. Connect main conductor to metal bodies of inductance located within 6 feet by secondary conductor.
9. Connect conductor to metal bodies of inductance located within 6 feet by secondary conductor.
10. Place depth indicator tags on each down lead between 3 feet and 6 feet above grade. Stamp each tag to indicate depth of ground and whether connection is to water pipe or common ground.
11. Install disconnect on all but one down lead, located one (1) foot above grade.
12. Protect down conductors subject to damage with guards to 6 feet above grade level.
13. Bond nonferrous metal guards to conductors at top.
14. Protect down conductors entering acidic soil with lead pipe leads extending not less than 3 feet above grade and 3 feet below grade.

PROJECT GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE (N.E.C.), NFPA 780, U.L. 96A, & LPI-175 LATEST EDITIONS.
2. COORDINATE ALL ELECTRICAL EQUIPMENT LOCATIONS AND MECHANICAL APPURTENANCES WITHIN THE EXISTING CONDITIONS TO PROVIDE ADEQUATE WORKING AND ACCESS PER N.E.C. REQUIREMENTS.
3. WHERE EXISTING ELECTRICAL DEVICES AND PROCESS DEVICES ARE INDICATED THOSE LOCATIONS ARE APPROXIMATE AND NOT ALL ELECTRICAL DEVICES MAY BE INDICATE. (FIELD VERIFY ALL ELECTRICAL ITEMS WHERE POSSIBLE.)
4. CONDUITS, RACEWAYS AND CABLES SHALL BE PROPERLY AND SECURELY ATTACHED TO BUILDING STRUCTURAL COMPONENTS AS REQUIRED BY N.E.C. ALL FASTENERS AND HARDWARE SHALL BE APPROVED FOR THE INSTALLATION AND THE CONDITIONS ENCOUNTERED.
5. EACH JUNCTION IN ANY OF THE WIRING SYSTEMS SHALL BE MADE IN AN APPROVED JUNCTION BOX. SUCH BOX SHALL BE SUITABLE FOR THE SIZE AND NUMBER OF CONDUCTORS AND DEVICES TO BE INSTALLED, AS WELL AS THE CONDITION ENCOUNTERED. ALL SPLICES SHALL BE MADE WITH APPROVED, MECHANICAL CONNECTORS.
6. CONTRACTOR SHALL VERIFY ALL STRUCTURAL, PROCESS AND MECHANICAL CONDITIONS PRIOR TO ROUGH-IN FOR ELECTRICAL WIRING AND EQUIPMENT.
7. ALL ELECTRICAL WORK SHALL BE CAREFULLY COORDINATED WITH THE ON-SITE CONDITIONS. WHERE CUTTING, DRILLING OR ALTERATION TO THE WORK OF OTHERS IS NECESSARY FOR THE PROPER INSTALLATION OF ELECTRICAL EQUIPMENT, SUCH WORK SHALL BE PLANNED IN ADVANCE AND SHALL BE CAREFULLY DONE. ANY DAMAGE TO THE BUILDINGS OR EQUIPMENT SHALL BE REPAIRED BY PROPERLY TRAINED PERSONNEL TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST TO THE OWNER.
8. DURING ROUGH-IN AND FINISHED STAGES OF CONSTRUCTION, THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT AND KEEP CLEAN ALL ELECTRICAL EQUIPMENT, PANELS, FIXTURES AND DEVICES AS WELL AS ALL EXISTING EQUIPMENT AND RELATED WORK AREAS.
9. THE CONTRACTOR SHALL PROVIDE ALL INFORMATION ABOUT EQUIPMENT WHICH HE/SHE IS FURNISHING TO THE ENGINEER/OWNER FOR REVIEW PURPOSES. THE CONTRACTOR SHALL PROVIDE ALL INSTALLATION DETAILS AND SUPPORT COMPONENTS SO THAT THESE MAY BE BUILT INTO THE CONSTRUCTION IN A TIMELY MANNER.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF THE FINAL LOCATIONS OF INSTRUMENTATION, CONTROL AND POWER CONNECTION DETAILS SO THAT THE ASSOCIATED ELECTRICAL WORK WILL BE PROPERLY COORDINATED AND INSTALLED.
11. EQUIPMENT LAYOUT AND EXACT LAYOUT OF NEW ELECTRICAL EQUIPMENT AND INSTRUMENTATION SHALL BE COORDINATED WITH PROCESS AND MECHANICAL EQUIPMENT.
12. DRAWINGS SHOW A LAYOUT OF ELECTRICAL/INSTRUMENTATION SYSTEMS AND EQUIPMENT DIAGRAMMATICALLY. EXACT LOCATION OF EQUIPMENT AND ROUTING OF RACEWAYS SHALL BE DETERMINED BY FIELD CONDITIONS AND DIRECTION BY ENGINEER AND OWNER. BY SUBMITTING A BID, CONTRACTOR WARRANTS THAT HE HAS VISITED THE SITE WHERE WORK IS TO BE PERFORMED, AND HAS EXAMINED THE EXISTING CONDITIONS AND EXTENT OF LABOR AND MATERIALS TO BE PROVIDED. COORDINATION WITH ALL TRADES, UTILITIES, ETC. SHALL BE PROVIDED. THE ENGINEER SHOULD BE NOTIFIED OF ANY DISCREPANCIES, OMISSIONS, CONFLICTS OR INTERFERENCES WHICH OCCUR BETWEEN VARIOUS DRAWINGS AND SPECIFICATIONS. IF SUCH NOTIFICATION IS NOT RECEIVED, THE INSTALLING CONTRACTOR(S) SHALL BE RESPONSIBLE FOR THEIR INTERPRETATIONS.



Saidegh M. Radvar
10-16-18

GENERAL NOTES

SCALE: NONE

SMR®
ENGINEERING, PC

Electrical, Instrumentation & Control Systems Engineering

22 Greeley Street, Suite 2
Merrimack, NH 03054
Phone 603/429-3313 Fax 603/429-3466

THE DRAWINGS FOR THIS PROJECT SHALL NOT BE REUSED OR ALTERED IN ANY WAY WITHOUT THE WRITTEN APPROVAL AND AUTHORITY OF SMR ENGINEERING, P.C. ANY REVISIONS SHALL BE MADE BY THE ENGINEER.

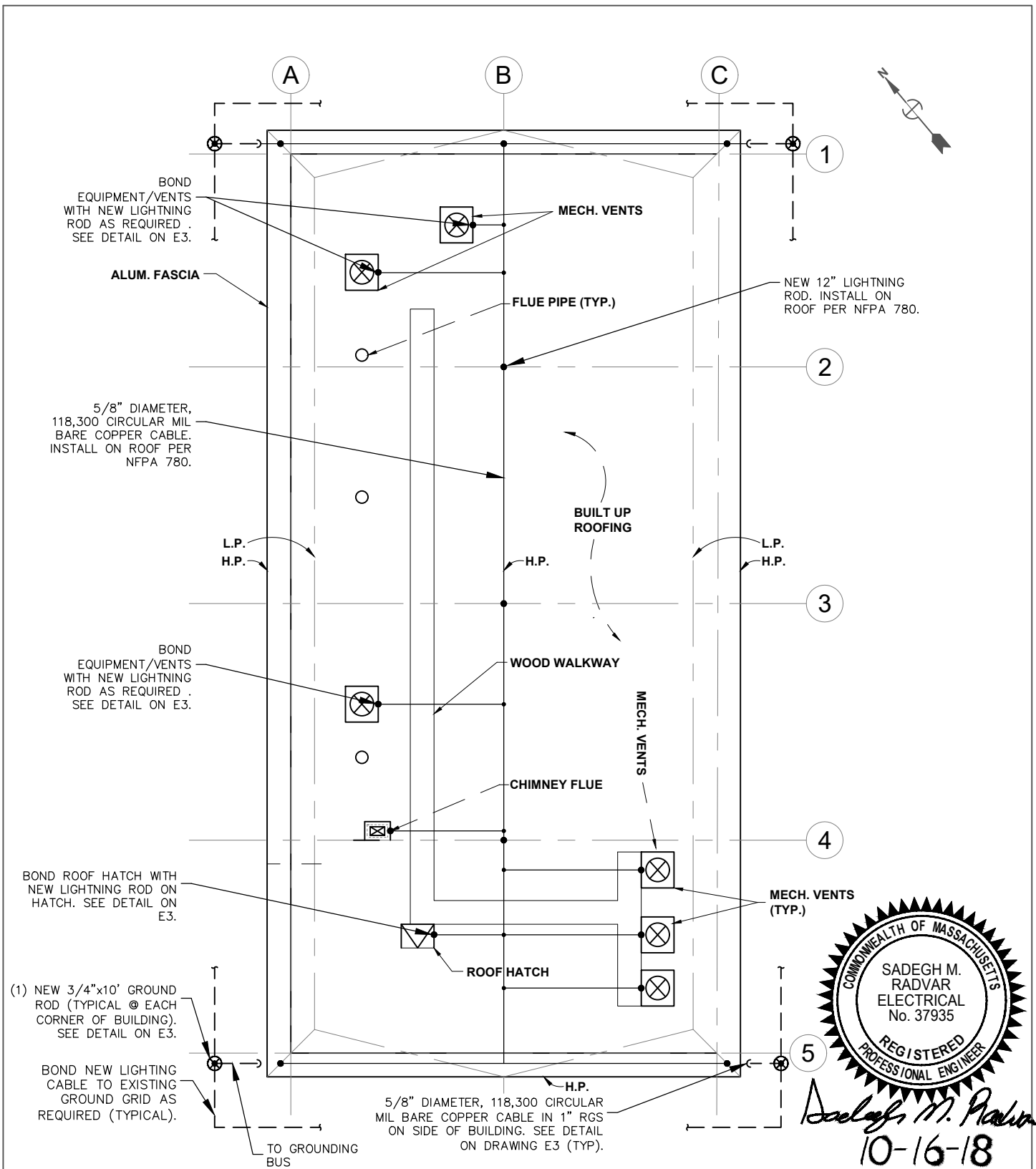
SMR ENGINEERING, PC ©

Wareham Water Pollution Control Facility
6 Tony's Lane
Wareham, MA 02571

OSD Engineering Consultants
238 Bedford Street, Suite 9
Lexington, MA 02420

Sheet:

E1



12" LIGHTING ROD WITH BRONZE ADJUSTABLE BASE POINT, MOUNTED TO ROOF FACADE, HVAC EQUIPMENT, ROOF HATCHES ETC. WITH 5/8" BRONZE NUTS, BOLTS, & U-CLIPS AS REQUIRED.

1" RGS CONDUIT WITH 5/8" BRAIDED UL LISTED BARE COPPER WIRE (TYPICAL).

BRAIDED UL LISTED BARE COPPER WIRE IN SMOOTH OR BASKET WEAVE CONFIGURATION. 5/8" DIAMETER, 118,300 CIRCULAR MIL CROSS SECTION (TYP.). SECURE TO ROOF WITH APPROVED WATERTIGHT CONNECTIONS.

EXTERIOR

GALVANIZED UNISTRUT W/HARDWARE CONDUIT CLAMP (TYPICAL)

INTERIOR

1" RGS CONDUIT WITH 5/8" BRAIDED UL LISTED BARE COPPER WIRE (TYPICAL).

FINISHED GRADE (TYP.).

ERICO INSPECTION WELL MODEL NO. T416B, (TYP. AT EACH GROUND ROD).

FINISHED FLOOR

5/8" DIAMETER, 118,300 CIRCULAR MIL CROSS SECTION BRAIDED BARE CONDUCTOR. BOND TO 3/4" ϕ x 8'-0" LONG COPPERWELD GROUND ROD DRIVEN INTO EARTH WITH EXOTHERMIC WELD AT EACH CORNER OF BUILDING (TYP.).



Saidegh M. Radvar
10-16-18

LIGHTNING PROTECTION DETAIL

SCALE: NONE

SMR ENGINEERING, PC
Electrical, Instrumentation & Control Systems Engineering
 22 Greeley Street, Suite 2
 Merrimack, NH 03054
 Phone 603/429-3313 Fax 603/429-3466

Wareham Water Pollution Control Facility
 6 Tony's Lane
 Wareham, MA 02571

Sheet:

OSD Engineering Consultants
 238 Bedford Street, Suite 9
 Lexington, MA 02420

E3

THE DRAWINGS FOR THIS PROJECT SHALL NOT BE REUSED OR ALTERED IN ANY WAY WITHOUT THE WRITTEN APPROVAL AND AUTHORITY OF SMR ENGINEERING, P.C. ANY REVISIONS SHALL BE MADE BY THE ENGINEER.



AGREEMENT

THIS AGREEMENT, made this _____ day of _____ 2014, by and between the party of the first part, the Town of Wareham, hereinafter called "OWNER," acting herein through its Town Authority and the party of the second part, _____ doing business as *(an individual) (a partnership) (a joint venture) (a corporation) located in the _____ (City/ Town) of _____, County, and State of _____ hereinafter called "CONTRACTOR."

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the OWNER, the CONTRACTOR hereby agrees with the OWNER to commence and complete the project described as follows:

_____, hereinafter called the Project, for the sum of _____ Dollars (\$ _____) and all extra work in connection therewith, under the terms as stated in the Bid Documents; and at his (its or their) own proper cost and expense to furnish all the materials, supplies, machinery equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in GENERAL BID, including all maps, plates, blue prints, and the specifications and plans, as prepared by the Owner.

CONTRACTOR hereby agrees to commence work under this Contract on or before a date to be specified in written "Notice to Proceed" of the OWNER.

The CONTRACTOR further agrees to fully complete the project within _____ consecutive calendar days of the date of the notice to proceed, but in no event later than _____

The CONTRACTOR further agrees to pay as liquidated damages the sum of \$500.00 for each consecutive calendar day thereafter.

The CONTRACTOR agrees not to discriminate against or exclude any person from participation herein on grounds of race, religion, color, sex, age or national origin; and that it shall take affirmative actions to insure that applicants are employed, and that employees are treated during their employment, without regard to race, religion, color, sex, age, handicapped status, or national origin.

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the contract, subject to additions and deductions, as provided in GENERAL CONDITIONS, and to make payments on account thereof as provided in the GENERAL CONDITIONS.

IN WITNESS WHEREOF, the parties to these presents have executed this contract in two (2) counterparts, each of which shall be deemed an original, in the year and day first above.

AGREED:

Town of Wareham, Massachusetts

Derek D. Sullivan,
Town Administrator

Approved As to Form:

Town Counsel

Certified as to the Availability of Funds:

Town Accountant

Purchasing Agent

CERTIFICATE OF VOTE

(to be filed if Contractor is a Corporation)

I, _____, hereby certify that I am the duly qualified and
(Secretary of the Corporation)

acting Secretary of _____ and I further certify that a meeting of the Directors
(Name of Corporation)

of said Company, duly called and held on _____ at which all Directors were present
(Date of Meeting)

and voting, the following vote was unanimously passed:

VOTED: To authorize and empower

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

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

By: _____
(Secretary of Corporation)

A True Copy:

Attest: _____
(Notary Public)

My Commission Expires: _____
(Date)