



## INVITATION FOR BIDDERS CRACK SEALING

Notice is hereby given that the Town of Templeton is seeking sealed bids for the seasonal requirement of random Crack Sealing by fiber reinforcing method to be used for general work and State Aid work by the Town of Templeton for Fiscal Year 2021-2024, September 30, 2020 through June 30, 2023. Contract shall be an annual contract with the option of renewal for two additional, one-year periods (a maximum of three years total) at the sole discretion of the Town of Templeton. Invitation for Bidders (IFB) Packages with specifications and a sample contract will be available on August 19, 2020, on the Town of Templeton Website [www.templetonma.gov](http://www.templetonma.gov) (click on "Paid, Volunteer & Contract Opportunities" on towards the bottom of the page). Obtaining the bid documents online is strongly encouraged. If necessary, you may also contact the Selectmen's Office, 160 Patriots Road, Rm. 6, P.O Box 620, East Templeton, Massachusetts 01438, during weekday business hours from 7:30 a.m. until 4:30 p.m., Monday through Thursday by calling 978-894-2778 or emailing [alamontagne@templetonma.gov](mailto:alamontagne@templetonma.gov). Questions will be accepted until the deadline of September 3, 2020. Last addendum will be issued on September 8, 2020. All bids must conform to the specifications of the Office of the Selectmen and be submitted on the proper forms to be considered a valid bid. Sealed bids entitled "**Bid for Crack Sealing**" will be accepted at the Office of the Selectmen, at the above address, until **September 16, 2020 at 2:00 P.M.**, at which time the bids will be publicly opened and read.

All bids shall be in accordance with M.G.L. including but not limited to: Ch. 30, Section 39M (Bid Bond), Ch. 149, Sec. 27 (Prevailing Wage Rates), and Ch. 149, Sec. 29 (Labor and Material Bonds as applicable). A bid deposit in the amount of 5% of the bid shall accompany every bid. The bid deposit shall be in the form of a bid bond, certified treasurer's check, or cashier's check made payable to the Town of Templeton. Upon award and signing of the contract, the bid deposit will be returned to the Bidders. The Town of Templeton is exempt from sales and federal excise tax to the extent permitted under law; Bidders should not include such taxes in figuring or in references to any bid.

The Town of Templeton reserves the right to reject any and all bids, wholly or in part, or to accept any bid even if the bid is not the lowest cost, if it is deemed to be in the best interest of the municipality, to waive informalities deemed inconsequential and to make awards in a manner deemed to be in the town's best interest. Finally, a payment bond shall be furnished by the successful bidder, in the amount of fifty percent (50%) of the contract sum, prior to execution of the contract.

Carter Terenzini  
Town Administrator  
Town of Templeton  
August 12, 2020

## **GENERAL SPECIFICATIONS**

### **Bid Preparation**

The Bidder must satisfy himself by his own investigation and research regarding all conditions affecting the work to be done, and the labor and equipment needed to complete the work in accordance with these specifications.

### **Bid Forms**

All bids shall be submitted on the Bid Form Sheet and signed correctly with ink and by the person having legal authority to do so. In addition, the person signing the proposal shall provide his title and the address and telephone number of the firm.

### **Inspection of Work or Materials**

The Director of the Public Works or his representative shall inspect the work and give directions pertaining to the work or pertaining to the safety and convenience of the public. The Contractor shall notify the Director of the Public Works or his representative of the time of starting work, interruptions and delays. If the work done or any part thereof is not acceptable, the Director of the Public Works shall immediately notify the Contractor in order that it may be resolved as soon as possible. Materials delivered shall also be inspected to verify conformance with these specifications. Materials not conforming to the contract requirements shall be removed and replaced with acceptable materials at the contractor's expense.

### **Addenda**

If any changes are made to this IFB, an addendum will be issued. It is the bidder's responsibility to view on the webpage at [www.templetonma.gov](http://www.templetonma.gov) and click on Paid, Volunteer & Contract Opportunities. The Contractor shall be responsible for contacting the Town to verify that they have received any and all addenda issued, for familiarizing themselves with all addenda requirements and inclusion of all requirements into their bid prices. Failure to obtain and include all addenda issued by the Town and to list them on the bid form shall be grounds for disqualification.

### **Subletting or Assignment of Contract**

The Contractor shall keep the work under his personal control and shall not assign by power of attorney or otherwise, or sublet the work or any part thereof without approval of the Director of the Public Works.

### **Public Liability**

See Attachment A

### **Public Convenience and Safety**

The Contractor shall be responsible for the maintenance of traffic through and about the work included in the contract with the maximum of safety and practicable convenience to traffic. He/she shall take all precautions for property in or about the work. The convenience of the general public shall be provided for in an adequate and satisfactory manner. Both the Director of the Public Works and the Police Dept. shall be notified at least 48 hours in advance of the start of each day's work and as to its location.

### **Bid Prices**

All bid prices must remain firm throughout the contract term inclusive of any renewal and extensions.

### **Right to Cancel or Reject Bids**

The Town may cancel this IFB, 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.

### **Responsibility for Damage Claims**

The Contractor shall indemnify and save harmless the Town of Templeton and all its officers, agents and employees against all suits, claims or liabilities of every name and nature, for or on account of any injuries to persons or damage to property arising out of or in consequence of the acts or omissions of the Contractor in the performance of the work covered by the contract.

### **Right to Waive and Reject Defects in the Bids**

The Town reserves the right to reject any and all bids, to waive any informality in the bids received and accept the bid, which it deems to be most favorable to the interest of the Town. Bids, which are not complete, clean and concise, may be rejected as informal.

### **Contract Period**

The contract term will be September 30, 2020 through June 30, 2023.

### **Certified Payroll**

The Contractor shall submit certified payroll each week, and no payment under this contract is allowed without such certified payroll.

### **References**

Upon request the lowest Bidder shall submit a complete list of contracts they have performed that are similar in size and scope to this contract in the past three years including contact names and telephone numbers. Failure to submit a complete list of contracts will be grounds to reject the bid. Prior problems, issues or concerns of any kind with work performed for the Town of Templeton shall also be grounds for disqualification.

### **Wages and Labor**

Attention is called to the requirement that all bids for Public Works must be made subject to the provision of the General Laws of the Commonwealth of Massachusetts, Chapter 149.

### **Qualifications of Bidders**

No bids will be accepted from any party which the Town suspects of being irresponsible or unreliable. The Town has the right to request any Bidder to supply proof that he/she is financially capable and thoroughly experienced to complete the proposed work according to the contract documents. The Town may make such investigation as deemed necessary to determine the ability of the Bidders to perform the work, and the Bidders shall furnish to the Town all such information and data for this purpose as the Town may request. No award will be made to any Bidder who cannot meet all of the following requirements:

- A. He/she shall not have defaulted on any contract within three years prior to the bid date.
- B. He/she shall have adequate personnel and equipment to perform the work expeditiously.
- C. He/she shall have suitable financial status to meet obligations incident to the work.
- D. He/she shall have appropriate technical experience satisfactory to the Town in the class of work involved.
- E. He/she shall be registered with the Secretary of State of the Commonwealth of Massachusetts to do business in Massachusetts.
- F. He/she shall not have failed to perform satisfactorily on contracts of a similar nature.
- G. He/she shall not have failed to complete previous contracts on time.
- H. He/she shall be prequalified by the Massachusetts DOT for the categories of work contained herein.

### **Schedule**

The work shall be conducted in accordance with the Town of Templeton Public Works Department schedule, usually within a two-week period from date of notification or request to the Contractor. At a minimum the

Contractor shall be required to schedule and complete each work assignment within a four-week period from date of notification or request to the Contractor.

### **Scope of Work**

The work shall consist of the furnishing of such materials as may be ordered by the Director of the Public Works or his authorized agent. The work shall be conducted in accordance with the Town of Templeton, Public Works Department schedule. Said work may be, at the discretion of the Town, scheduled anytime during the contract period.

### **Quality**

It is the Contractor's responsibility to ensure that all materials for the Town of Templeton shall meet the appropriate industry standards and the "Standard Specifications for Road and Bridge Construction" of the Commonwealth of Massachusetts and the standards included in the Department of Public Works Standard Specifications and all revisions and amendments thereto. The Bidder and his/her subcontractors shall also be required to meet the additional technical qualification requirements as specified in these specifications.

### **Guarantee**

The Contractor guarantees that the work and services to be performed under the contract, and all workmanship, materials and equipment performed, furnished, used or installed in the construction of the same, shall be free from defects and flaws, and shall be performed and furnished in strict accordance with the drawings, specifications, and contract, that the strength of all materials or parts of all manufactured equipment shall be adequate and as specified and that the performance test requirements of the specifications shall be fulfilled. This guarantee shall be for a period of one year from the date of beneficial occupancy by the Department of Public Works. "Beneficial occupancy" is defined as the date in which the Public Works Department begins usage of the systems after satisfactory testing of the systems and operator training and receipt by the Public Works Department of all manuals and as built plans as required by the specifications. If at any time within the said period of the guarantee, with the exception of an emergency, any part of the work requires repairing, correction or replacement, the Public Works Department may notify the Contractor in writing to make the required repairs, correction, or replacements. If the Contractor neglects to commence making such repairs, corrections, or replacements to the satisfaction of the owner within three (3) days from the date of receipt of such notice, or having commenced fails to prosecute such work with diligence, the Public Works Department may employ other persons to make the same, and all direct and indirect costs of making said repairs, corrections, or replacements, including compensation for additional professional services, shall be paid by the Contractor.

### **Award**

The Town reserves the right to reject any or all bids or to make such awards as it may deem necessary for the best interest of the Town and to award individual items to individual Bidders or the entire set of materials to any Bidder. The method of award shall be based upon the lowest total price of all bid items combined. In the event of an equal bid the Templeton Selectmen's Office reserves the right to divide the award among two or more in the best interest of the Town. All bids shall be good for the entire contract period inclusive of any time extensions. In the event that the lowest responsible and responsive Bidder is unable to perform, the second lowest responsive and responsible Bidder would be called upon to continue contract. Bid prices are expected to be held or Bidder would hold price. The Town reserves the right to reject any bid if the foregoing requirements are not satisfied or if any other evidence fails to satisfy the Town that such Bidder is properly qualified to carry out and to complete the work contemplated therein. Conditional or qualified bids will not be accepted.

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**Item 1**  
**Random Crack Sealing – Polymer & Crumb Rubber Modified (PCRM) Asphalt Compound with Reinforcing Fibers**

**1. DESCRIPTION**

The work covered by this section of the specification consists of furnishing all plant, labor, equipment and materials necessary to perform all operations in connection with the cleaning and sealing of construction and random cracks in bituminous concrete pavements, including vegetation removal and sterilization of cracks, where necessary.

**2. MATERIAL**

Crack sealant shall be a modified asphalt-fiber compound designed specifically for improving the strength and performance of the parent asphalt sealant.

a) **The asphalt binder** shall consist of a blend of neat asphalt binder, chemically modified crumb rubber (CMCR), and a polymer package, all of which meet the following specifications:

- 1) The binder will meet PG 64-28E requirements after modification including:
  - PG grade requirements of AASHTO M320
  - Requirements of AASHTO TP70/MP19
- 2) Modification, at a minimum, shall consist of 7% crumb rubber, and the maximum particle size for the recycled tire rubber shall be 80 mesh (#80 sieve)
- 3) The asphalt supplier shall provide testing for both the neat and modified asphalt binders
- 4) See below for typical modified test results for 64-28E with crumb rubber:

DSR ORIGINAL

- kPa >1.00 @ 64° C. Fail temp = 76+° C

DSR RTFO

- kPa >2.20 @ 64° C. Fail temp = 76+° C

MSCR

- JNR (MSCR unit of measure): 3.2 E <0.5% @ 64° C
- R3200 (Average % Recovery): >70%

DSR PAV

- kPa <6000 @ 64° C

BBR

- Stiffness <300 @ -18° C. M-Value >0.300 @ -18° C

b) **The fiber reinforcing materials** shall be short-length polyester fibers having the following properties:

Length*	0.25 in. ± 0.02 in.
Elongation at Break (ASTM D2256-90)	35% ± 3%
Melting Point (ASTM D3418-82)	>475°F (246°C)
Crimps/Inch (ASTM D3937-90)	None
Cross Section	Round
Denier (ASTM D1577-90)	4.5 Nominal dpf
Tensile Strength (ASTM D2256-90)	>70,000 psi
Diameter	0.0008 in. **
Specific Gravity (ASTM D792-91)	1.32 to 1.40

\* At temperatures ranging from ambient to maximum finished product mix temperature

\*\* Subject to Normal Variations

- c) **Modifying Compound:** The modified asphalt-fiber compound shall be mixed at a rate of 8% fiber weight to weight of asphalt cement. This compound having the same chemical base provides compatibility and exhibits excellent bond strengths. The fiber functions to re-distribute high stress and strain concentrations that are imposed on the sealant by thermal sources, traffic loading, etc.

### 3. EQUIPMENT

Equipment used in the performance of the work required by this section of the specification shall be subject to approval by the Owner and maintained in a satisfactory working condition at all times.

- a) **Air Compressor:** Air compressors shall be capable of furnishing not less than 100 cubic feet of air per minute at not less than 90 lbs. per square inch pressure at the nozzle. The compressor shall be equipped with traps that will maintain the compressed air free of oil and water.
- b) **Broom or Sweeper:** Manually operated, gas powered air-broom or self-propelled sweeper designed especially for use in cleaning highway and airfield pavements shall be used to remove debris, dirt and dust from the cracks.
- c) **Melter:** The unit used to melt or maintain the crack sealant compound at the recommended application temperature shall be the indirect fired type. It shall be equipped with a remote heat exchanger and hot oil circulation pump capable of maintaining a consistent temperature of the heat transfer oil. The heat transfer oil shall be circulated to all sides and the bottom of the vat containing the crack sealant compound making a continuous loop back to the heat exchanger and having a flash point of not less than 600°F. The melter shall be equipped with a satisfactory means of agitating the crack sealant at all times. This may be accomplished by continuous stirring with mechanically operated paddles and/or by a circulating gear pump attached to the melter. The melter must be equipped with a thermostatic control calibrated between 200°F and 550°F, and must be capable of pumping an 8% fiber content blend.

### 4. PREPARATION OF CRACKS

- a) **Debris and Vegetation Removal:** All cracks shall be blown clean and sterilized by use of a propane air torch generating 2,000°F and 3,000' feet/second velocity to eliminate all vegetation, dirt, moisture and seeds. All debris removed from the cracks shall be removed
- b) **General:** No crack sealant material shall be applied in wet cracks or where frost, snow or ice is present; or when the ambient temperature is below 25°F.

### 5. PREPARATION AND PLACEMENT OF SEALANT

- a) The asphalt-fiber compound shall be thoroughly mixed for a minimum of one hour before application can begin. To ensure a uniform fiber distribution in the sealant, and also to limit fluctuations in the application temperature of the blended material, the Contractor must have a full melter kettle of sealant mixed, heated to the proper application temperature, and ready for testing at the start of each work day. Once that batch of sealant is emptied from the melter kettle, crack sealing operations will cease for the remainder of the day. No new materials will be allowed to be added to the melter kettle during the work day under any circumstances. Minimum application temperature shall be 320°F.
- b) Sealant shall be delivered to the pavement cracks through a high-pressure hose line and applicator shoe. Diameter of the applicator shoe is not to exceed 3.5" inches. Once the pavement cracks are sealed, the width of the sealant on the pavement (overbanding) shall be no greater than 3" inches. When traffic requires immediate use of the roadway, a liquid crack sealant barrier material or a boiler slag aggregate shall be broadcast over the cracks to prevent the sealant from being picked up at no additional cost to the Owner.

## 6. WORKMANSHIP

All workmanship shall be of the highest quality, and any excess of spilled sealant shall be removed from the pavement by approved methods and discarded. Any workmanship determined to be below the high standards of the particular craft involved will not be accepted and will be corrected and/or replaced as required by the Owner.

## 7. PERFORMANCE

- a) It is the intention of the Owner not to award a contract for this work under this or any other proposal if the contractor cannot furnish satisfactory evidence that he has the ability and experience to perform this class of work, and that he has sufficient capital and equipment to enable him to prosecute the work successfully and to complete it within the time named in the contract. The Owner reserves the right to reject this or any other proposal, or to award the contract as is deemed to be in the best interest of said Owner.
- b) To ensure contractor's capabilities, the bidder shall provide with his bid evidence that at least two (2) of the company's crack sealing field supervisory personnel have completed AASHTO TSP2 training, and successfully passed the Crack Treatment certification exam administered by the National Center for Pavement Preservation (NCPPE). During completion of the work, contractor will be required to have at least one (1) AASHTO TSP2 Crack Treatment certified employee assigned to the job and present at all times when crack sealing work is being performed.
- c) Properly formulated and mixed asphalt fiber compound overbanding shall not be greater than three inches (3") in width. Penalties will be imposed upon the Contractor for overbanding beyond three inches (3").
- d) The Contractor must submit the following with his bid proposal:
  - 1) A list of six (6) jobs which he has successfully completed with the polymer and crumb rubber modified asphalt compound with reinforcing fibers specified herein, giving the name and address of these projects so they can be investigated prior to the award of the contract.
  - 2) The trade name of the crack sealant the contractor intends to use.
  - 3) The manufacturer of the crack sealant the contractor intends to use.
- e) The Owner will require the Contractor to successfully perform a 200' foot test strip in the field prior to commencing work under the contract.
- f) Manufacturer's certificate of material compliance will be furnished to the Owner certifying conformance to the above material specifications, including the following:
  - 1) Performance Grade of Unmodified Asphalt: **PG 64-28S** (standard)
  - 2) AASHTO M-320, Table 1
  - 3) 7% chemically-modified crumb rubber (CMCR)
    - o Composed of 100% 80-mesh recycled tire rubber
  - 4) 3-4% specially formulated polymer package
  - 5) Performance Grade of Modified Asphalt: **PG 64-28E** (able to withstand "extremely heavy" traffic loads)
  - 6) AASHTO M-320, Table 1
    - o "E" Jnr 3.2 kPa @ 64°C: **<0.5%**
    - o R3200 (Average % Recovery) @ 3.200 kPa: **>70%**
  - 7) 8% polyester reinforcing fibers



## 8. TRAFFIC CONTROL

The cost of flaggers and any police details, if required, will be paid or reimbursed by the Owner. The Owner will coordinate detail assignments which will be billed to the Contractor directly based on the hourly cost. The Contractor will not be reimbursed for police detail expenses incurred due to failure to cancel or cancelling without the required notice.

## 9. METHOD OF AWARD

To ensure contractor accountability, the Owner intends to award all items to a single contractor. Accordingly, contractors must bid on all items of work, and the low bidder will be the contractor whose total bid price is the lowest. The bid quantities are not guaranteed, and their primary purpose is for the determination of the low bidder.

## 10. MEASUREMENT AND PAYMENT

The quantity to be measured for payment will be the number of gallons of crack sealing actually applied, and this quantity shall be determined and verified daily. The accepted quantity of crack sealing will be paid for at the contract unit price per gallon of the type specified in the proposal, which shall be full compensation for furnishing, transporting, handling and placing the material specified and furnishing of all labor, tools, equipment and incidentals for the satisfactory completion of this item.

## 11. ASPHALT PRICING AND PRICE ADJUSTMENTS

- a) **Asphalt Price Adjustments:** Contractor's bid prices below shall be based upon the current State DOT asphalt cement price index posted exactly two (2) weeks prior to the due date for receipt of bids ("Bid Index"). If the posted State DOT asphalt cement price index in place when the work is performed differs from the Bid Index, up or down, then Contractor's invoices shall include price adjustments for the asphaltic materials, and these adjustments shall be calculated based on the actual tons of liquid asphalt cement incorporated into the work.
- b) **Future Year Price Adjustments:** The Owner reserves itself the option to extend the use, terms, conditions and prices of this bid for an additional three (3) years after the first year in which the contract is awarded. Such extension will be subject to the Owner reviewing and approving the Contractor's annual request for a price adjustment based on and limited to the prior year's actual rate of inflation. If such price adjustment cannot be mutually agreed upon between the Owner and Contractor, Owner may choose to re-bid the work in lieu of extending this contract.

**Item 2**  
**Micro-Surfacing**  
**(Conventional and HiMA)**

**1. DESCRIPTION**

Micro-Surfacing is a tough and durable thin overlay material which can restore the original service properties to worn but structurally sound pavements. Its properties are based on a blend of select crushed aggregate and a sophisticated chemical formulation of asphalt cement, cationic emulsifiers, additives, and polymers. This specification covers all materials, equipment, construction and application procedures for rut filling and/or surfacing of existing paved surfaces. The Micro-Surfacing shall be a mixture of cationic, polymer-modified asphalt emulsion, mineral aggregate, mineral and field control additives, and water, properly proportioned, mixed and spread on the paved surface in accordance with this specification and as directed by the Engineer.

Where required by the Engineer, additional Micro-Surfacing mixture additives shall be utilized for the purpose of improving performance and durability. These mixture additives shall include heavy polymer dosages in the emulsion (6% SBS polymer and referred to as "HiMA", or "Highly Modified Asphalt"), as determined by the Engineer, and all additives shall be homogeneously blended with the other Micro-Surfacing components.

**2. MATERIALS**

- a) **Emulsified Asphalt:** The emulsified asphalt shall be a quick-set, polymer-modified cationic type CSS-1H emulsion, and shall conform to the requirements specified in AASHTO M208 and ASTM 2397. It shall pass all applicable storage and settlement tests. The polymer shall be milled into the emulsion, or in the case of the HiMA (6% SBS) emulsion, may be blended into the unmodified base asphalt. The cement mixing test shall be waived for this emulsion.

1) **Conventional Micro-Surfacing Residue Properties**

Distillation of residue will be at a temperature of 350° F for 20 minutes. Softening Point (ASTM D36 or AASHTO T53) of the residue shall be not less than 140° F.

2) **HiMA (6% SBS) Micro-Surfacing Residue Properties**

For HiMA mixtures, emulsion testing by distillation method (ASTM D5 or AASHTO T49) shall yield a Softening Point (ASTM D36 or AASHTO T53) not less than 170° F.

b) **Aggregate**

1) **General**

The mineral aggregate used shall be of the type and grade specified for Micro-Surfacing. The aggregate shall be manufactured crushed stone such as granite, slag, limestone, chat, or other high-quality aggregate or combination thereof.

2) **Aggregate Physical Requirements**

- Grading- The aggregate including natural fines when tested by AASHTO methods T11 or T27 or ASTM C117 or C136, should meet the referenced gradation requirements.
- Deleterious Substances- To limit the permissible amount of clay-like fines in an aggregate, a sand equivalency value of 65 or higher is required when tested by ASTM 2419.
- Soundness- The aggregate shall have a weighted loss of not more than 15% when the sodium sulfate test is used, or 20% when the magnesium sulfate test is used.
- Hardness- The aggregate wear, from resistance to abrasion, shall be a maximum of 35% when using AASHTO T96 or ASTM C131 test methods.

- c) **Water:** The water shall be potable and shall be free of harmful soluble salts.
- d) **Modifier:** Special quick-setting emulsifier agents shall be milled into the asphalt emulsion. The emulsified asphalt shall be so formulated that when the paving mixture is applied at a thickness of one inch with the relative humidity at not more than 50% and an ambient air temperature of at least 75° F, the material will cure sufficiently so that rolling traffic can be allowed in one hour with no damage to the surface, as verified by the Engineer.
- e) **Additives:** A mineral additive shall be introduced to the aggregate and may be any recognized brand of non-air entrained Portland cement or hydrated lime that is free of lumps, or other approved mineral additive. It may be accepted upon visual inspection. The amount of mineral additive needed shall be determined by the laboratory mix design and will be considered as part of the material gradation requirement.

A liquid field control additive may be introduced and blended with water to provide effective control of the required quick-set properties. This additive shall be made available by the chemical supplier or emulsion manufacturer and certified to be compatible with the mixture.

### 3. ENGINEERING

- a) **General:** Before work commences, the contractor shall submit a signed and certified mix design covering the specific materials to be used on the project. This design shall be performed by an AASHTO re:sourse accredited facility specifically accredited for Pavement Preservation and micro-surfacing mix designs. Proof of such AASHTO accreditation shall be submitted with the mix design. Once the materials are approved, no substitution will be permitted unless first tested and approved by the laboratory preparing the mix design.
- b) **Mix Design:** The AASHTO re:sourse accredited laboratory shall develop the job mix design and present certified test results for the contractor's approval. Compatibility of the aggregate and emulsion shall be verified by the mix design. The job mix formula shall meet standard ISSA A143 micro-surfacing mix design requirements. All component material used in the mix design shall be representative of the material proposed by the contractor for use on the project.
- c) **Specifications:** The Engineer shall approve the design mix and all Micro-Surfacing materials and methods prior to use. The component materials shall be within the following limits.

Residual Asphalt	5% to 9% by dry weight of aggregate
Mineral Additive	0.5% to 3% by dry weight of aggregate
Polymer Modifier & Field Control Additives	As required to provide specified properties
Water	As required to produce consistency

Aggregate -	Recommended Gradations:	
	Type II	Type III
<u>Screen Size</u>	<u>% Passing</u>	<u>% Passing</u>
3/8"	100	100
#4	90-100	70-90
#8	65-90	45-70
#16	45-70	28-50
#30	30-50	19-34
#50	18-30	12-25
#100	10-21	7-18
#200	5-15	5-15

Suggested Application Rates:

Type II - Primary and Residential Streets and Airport Runways:

- single course = 18-20 lbs./s.y.
- Cape Seal wear course = 25-28 lbs./s.y.
- double course = 30-32 lbs./s.y.
- rut filling = as required

Type III - Interstate Routes:

- double course = 30-36 lbs./s.y.

wheel ruts = as required

Note: all application rates above are dry aggregate weights exclusive of emulsion and all other additives.

#### 4. EQUIPMENT

- a) **General:** All equipment, tools, and machines used in the performance of this work shall be maintained in satisfactory working condition at all times to ensure a high-quality product.
- b) **Mixing Equipment:** The material shall be mixed by a self-propelled Micro-Surfacing mixing machine which shall be a continuous flow, continuous run mixing unit able to accurately deliver and proportion the aggregate, emulsified asphalt, mineral and field control additives, and water to a revolving multi-blade twin shafted mixer and discharge the mixed product on a continuous flow basis. The Contractor shall own and have available two (2) continuous flow, continuous run mixing machines to ensure highest quality, and to mitigate the effect of equipment breakdowns. The machines shall have sufficient storage capacity for aggregate, emulsified asphalt, mineral and field control additives, and water to maintain an adequate supply to the proportioning controls. The machines shall be equipped with self-loading devices which provide for the loading of materials while continuing to lay Micro-Surfacing, thereby minimizing construction joints.
- c) **Proportioning Devices:** Individual volume or weight controls for proportioning each material to be added to the mix, i.e., aggregate, emulsified asphalt, mineral and field control additives, and water shall be provided and properly marked. These proportioning devices are usually revolution counters or similar devices and are used in material calibration and determining the materials output at any time.
- c) **Emulsion Pump:** The emulsion pump shall be a heated, positive displacement type pump.
- d) **Spreading Equipment:** The surfacing mixture shall be spread uniformly by means of a mechanical type spreader box attached to the mixer, equipped with paddles to agitate and spread the materials throughout the box. The spreader box width shall be capable of adjustment while paving in order to accommodate the changing width of some roadways without excessive overlaps. A front seal shall be provided to ensure no loss of the mixture at the road contact point. The rear seal and secondary strike-off shall act as the final strike-off, and both shall be adjustable. The mixture shall be spread to fill cracks and minor surface irregularities and leave a uniform skid resistant application of material on the surface. The spreader box and rear strike-off shall be so designed and operated that a uniform consistency is achieved to produce a free flow of material to the rear strike-off. The longitudinal joint where two passes join shall be neat in appearance, uniform and lapped. All excess material shall be removed from the jobsite prior to opening the road. The spreader box shall have suitable means provided to side-shift the box to compensate for variations in pavement width and longitudinal alignment. A rut box shall be available to pre-fill wheel ruts when necessary prior to overlay to eliminate puddles or runoff interruption. The rut box shall be no less than 4' wide and no more than 6' wide.
- e) **Auxiliary Equipment:** Suitable surface cleaning equipment, traffic control equipment, hand tools and any support equipment shall be provided as necessary to perform the work.
- f) **Screening Plant:** All aggregate shall be rescreened immediately prior to being loaded onto Micro-Surfacing equipment. The screening plant shall be equipped with a 3/8" screen to remove all oversized aggregate and shall be capable of discharging screened aggregate directly onto the support equipment. Any material discharged onto the ground must be rescreened prior to use.

## 5. MACHINE CALIBRATION

Each mixing unit to be used in the performance of the work shall be calibrated in the presence of the Engineer prior to construction, or previous calibration documentation covering the exact materials to be used may be acceptable provided they were made during the same calendar year. The documentation shall include the individual calibration of each material at various settings, which can be related to the machine metering devices.

## 6. WEATHER LIMITATIONS

The material shall be spread only when the road surface and atmospheric temperatures are at least 45° F and rising, the weather is not rainy, and there is no forecast of temperatures below 32°F within 48 hours from the time of placement of the mixture.

## 7. SURFACE PREPARATION

- a) **General:** The area to be resurfaced shall be thoroughly cleaned of vegetation, loose aggregate and soil, particularly soil that is bound to the surface. Manholes, valve boxes and other service entrances will be protected from the surfacing material with polyethylene sheeting. All services will be uncovered upon completion of work.
- b) **Cracks in Surface:** If required by the Engineer, pre-treat the cracks in the surface with a fiberized crack sealer prior to the application of the Micro-Surfacing. Crack sealer shall be a polymer and crumb rubber modified asphalt cement including not less than 3% polymers, 7% recycled tire crumb rubber (80 mesh), and 8% polyester fibers (PCRM + fibers). The modified asphalt cement incorporated in the PCRM + fibers material must meet PG 64-28E MSCR testing requirements. If crack sealing pre-treatment is required by the Engineer a separate pay item will be included in the bid proposal form.
- c) **Tack Coat:** The Contractor may be required to apply a tack coat on any heavily oxidized pavements, and on high traffic roadways as directed by the Engineer. The tack coat shall consist of one part emulsified asphalt (CSS-1H) and three parts water, and be applied with a distributor at a rate of 0.05-0.10 gallons per square yard. If tack coat is required by the Engineer, a separate pay item will be included in the bid proposal form.

## 8. STOCKPILE

Precautions shall be taken to ensure that aggregate stockpiles do not become contaminated. The mineral aggregate shall be re-screened prior to being directly loaded onto Micro-Surfacing equipment. Owner shall provide suitable stockpile and staging area to Contractor.

## 9. APPLICATION

- a) **General:** The surface should be pre-wetted by fogging ahead of the spreader box when required by surface and ambient conditions. The rate of application of the fog spray shall be adjusted during the day to suit temperatures, surface texture, humidity, and dryness of the pavement surface.

The Micro-Surfacing mixture shall be of the desired consistency upon leaving the mixer and no additional materials should be added. A sufficient amount of material shall be carried in all parts of the spreader at all times so that a complete coverage is obtained. Overloading of the spreader shall be avoided. No lumping, balling, or unmixed aggregate shall be permitted.

No streaks, such as those caused by oversized aggregate, will be left in the finished surface. If excessive amounts of oversized aggregates appear in the mix, the job will be stopped until the Contractor proves to the Engineer that the situation has been corrected.

- b) **Joints:** No excessive buildup, uncovered areas or unsightly appearances shall be permitted on longitudinal or transverse joints. The Contractor shall provide suitable width spreading equipment to produce a minimum number of longitudinal joints throughout the project. When possible, longitudinal joints shall be placed on lane lines. Half passes and odd width passes will be used only in minimum amounts. If half passes are used, they shall not be the last pass of any paved areas.
- c) **Mix Stability:** The Micro-Surfacing mixture shall possess sufficient stability so that premature breaking of the material in the spreader box does not occur. The mixture shall be homogeneous during and following mixing and spreading. It shall be free of excess water or emulsion, and free of segregation of the emulsion and aggregate fines from the coarser aggregate.
- d) **Hand Work:** Areas which cannot be reached with the mixing machine shall be surfaced using hand squeegees to provide complete and uniform coverage. The area to be hand-worked shall be lightly dampened prior to mix placement. Care shall be exercised to leave no unsightly appearance from handwork. The same type finish as applied by the spreader box shall be required. Handwork shall be completed immediately after the Micro-Surfacing mixture is discharged from the spreader box.
- e) **Lines:** Care shall be taken to ensure straight lines along curbs and shoulders. No runoff on these areas will be permitted. Lines at intersections will be kept straight to provide a neat workmanship appearance.
- f) **Rolling:** If required by the Engineer, specified areas shall be rolled by a self-propelled, 5 to 10 ton pneumatic roller with a tire pressure of 50 PSI and equipped with a water spray system. If rolling is required by the Engineer, a separate pay item will be included in the bid proposal form.

#### **10. QUALITY CONTROL**

- a) **Materials:** The Contractor will permit the Engineer to take samples of the aggregate and asphalt emulsion to be used in the project at the Engineer's discretion. Gradation and sand equivalency tests may be run on the aggregate, and residual asphalt content test run on the emulsion. Test results will be compared to specifications. Tests will be run by a qualified laboratory at the expense of the Owner. The Owner must notify the Contractor immediately if any test fails to meet the specifications.
- b) **Micro-Surfacing Mixture:** Samples of the mixture should be taken daily and may be taken directly from the mixing unit(s). Consistency and residual asphalt content tests may be made on the samples and compared to the specifications. Tests will be run by a qualified laboratory at the expense of the Owner. The Owner must notify the Contractor immediately if any test fails to meet specifications. The Engineer may use the recorder and measuring facilities of the unit to determine application rates, asphalt emulsion content, mineral and field control additives, and water.
- c) **Non-Compliance:** If any two successive tests fail on the stockpile material, the job shall be stopped. It is the responsibility of the Contractor, at his own expense, to prove to the Engineer that the conditions have been corrected. If any two successive tests on the mix from the same machine fail, the use of the machine shall be suspended. It will be the responsibility of the Contractor, at his own expense, to prove to the Engineer that the problems have been corrected and that the machine is working properly.

#### **11. PERFORMANCE**

It is the intention of the Owner not to award a contract for Micro-Surfacing work under this or any other proposal if the contractor cannot furnish satisfactory evidence that he has the ability and experience to perform this class of work, and that he has sufficient capital and equipment to enable him to prosecute the work successfully, and to complete it within the time named in the contract. The Owner also reserves the right to reject this or any other proposal, or to award the contract as is deemed to be in the best interest of said Owner

**Proof of Experience:** To illustrate its experience and capabilities to perform Micro-Surfacing work, contractor shall provide with his bid a list of similar projects completed within the last 3 years. Such list shall include the project names and locations, Owner or agency contact names and telephone numbers, and the total area of work completed for each project. The total area of work for all projects on this list shall not be less than 1 million square yards. In addition to experience with conventional Micro-Surfacing, the contractor must also be able to demonstrate experience applying the highly modified asphalt (HiMA 6% SBS polymer) variation of Micro-Surfacing, and such experience shall be noted on the above required list of similar recent projects including the contact information for each project.

- a) **Contractor Certification:** To ensure contractor's capabilities, the bidder shall provide with his bid evidence that at least two (2) of the company's micro-surfacing field supervisory personnel have completed AASHTO TSP2 training and successfully passed the Slurry Systems certification exam administered by the National Center for Pavement Preservation (NCP). During completion of the work, contractor will be required to have at least two (2) AASHTO TSP2 Slurry Systems certified employees including the crew foreman assigned to the job and present at all times when micro-surfacing work is being performed.
- b) **State DOT Prequalification:** To further ensure the contractor's capabilities, the contractor shall provide with his bid evidence of his current prequalification status by the State DOT for the categories of work contained herein.

## **12. PERFORMANCE WARRANTY**

The Contractor must furnish the following warranty after completion of the work and prior to final payment: The Contractor hereby warrants that all workmanship and all materials furnished under this contract comply fully with requirements of these Micro-Surfacing Specifications. If at any time within two years after the date of the final inspection, any unfaithful or defective work should appear which, in the opinion of the Owner, is due to inferior materials or workmanship, the Contractor warrants to do whatever is necessary to remedy the defects immediately without cost to the Owner. The Owner will notify the Contractor in writing of the defects and the repairs to be made, and the Contractor will begin repairs within a mutually agreed time frame.

## **13. NOTIFICATION**

All homeowners and businesses affected by the construction shall be notified a minimum of one day in advance of the surfacing by the Owner.

## **14. TRAFFIC CONTROL**

Suitable methods shall be used by the Contractor to protect the micro-surface from traffic until the new surface will support traffic without damage. All traffic control methods used shall be in accordance with the Engineer's specifications and shall be employed in a safe manner. The cost of flaggers and any police details, if required, will be paid or reimbursed by the Owner. The Owner will coordinate detail assignments which will be billed to the contractor directly based on the hourly cost. The Contractor will not be reimbursed for police detail expenses incurred due to failure to cancel or cancelling without the required notice.

## **15. METHOD OF AWARD**

To ensure contractor accountability, the Owner intends to award all items to a single contractor. Accordingly, contractors must bid on all items of work, and the low bidder will be the contractor whose total bid price is the lowest. The bid quantities are not guaranteed, and their primary purpose is for the determination of the low bidder.

## **16. MEASUREMENT AND PAYMENT**

The quantity to be measured for payment will be the number of square yards of Micro-Surfacing actually completed, and this quantity shall be determined and verified daily. The accepted quantity of Micro-Surfacing will be paid for at the contract unit price per square yard of the type specified in the proposal, which shall be full compensation for furnishing, transporting, handling and placing the material specified and furnishing of all labor, tools, equipment and incidentals for the satisfactory completion of this item. Rut filling will be paid by the ton, and tack coat and crack sealing (if required) will be paid for by the gallon of material applied as determined and approved daily by the Engineer.

## **17. ASPHALT PRICING AND PRICE ADJUSTMENTS**

- a) **Asphalt Price Adjustments:** Contractor's bid prices below shall be based upon the current State DOT asphalt cement price index posted exactly two (2) weeks prior to the due date for receipt of bids ("Bid Index"). If the posted State DOT asphalt cement price index in place when the work is performed differs from the Bid Index, up or down, then Contractor's invoices shall include price adjustments for the asphaltic materials, and these adjustments shall be calculated based on the actual tons of liquid asphalt cement incorporated into the work.
- b) **Future Year Price Adjustments:** The Owner reserves itself the option to extend the use, terms, conditions and prices of this bid for an additional three (3) years after the first year in which the contract is awarded. Such extension will be subject to the Owner reviewing and approving the Contractor's annual request for a price adjustment based on and limited to the prior year's actual rate of inflation. If such price adjustment cannot be mutually agreed upon between the Owner and Contractor, Owner may choose to re-bid the work in lieu of extending this contract.



**Item 3  
Cape Seal**

A Cape Seal is a surface treatment in which a chip seal interlayer course is followed by a Micro-Surfacing wearing course. The Micro-Surfacing course shall be applied no sooner than 7 calendar days after the chip seal application. The Micro-Surfacing course shall be applied during the same construction season as the chip seal interlayer course.

**CHIP SEAL INTERLAYER COURSE (PARAGRAPHS 1-5)**

**1. DESCRIPTION**

The Contractor shall furnish all labor, equipment, material, supplies, traffic control, and other incidentals necessary to provide the applications of liquid asphalt emulsion and aggregate coating on roadways.

**2. MATERIALS**

- a) **Liquid Asphalt:** Liquid asphalt grades shall be: CRS-2 or RS-2 conforming to AASHTO specifications M208 or M140. The liquid asphalt shall be compatible with the aggregate to be utilized for the chip seal interlayer course.
- b) **Stone:** Stone shall be crushed quarry stone, free from dust, soft stone or other contaminants with a minimum of 70% of the stones having a fractured face. All stone shall satisfy a 35% maximum for the L.A. Abrasion Test and a 35% maximum for the Flakiness Index Test. Stone shall be treated prior to application with liquid asphalt material at the rate of 0.2% to 0.5% residual asphalt to ensure uniform treatment of all stones. Proper pre-treatment shall be obtained by a twin-shafted pugmill with a digital readout belt scale.

**REQUIRED STONE GRADATION**

**9.5 mm (3/8") STONE**

SIEVE SIZE	% PASSING
12.5 mm (1/2")	100
9.5 mm (3/8")	85 – 100
6.3 mm (1/4")	10 – 60
4.75 mm (#4)	0 – 25
2.36 mm (#8)	0 – 5

**3. APPLICATION**

The quantity of asphalt material to be used shall be in the range of 0.35 to 0.50 gallons per square yard. Cover aggregate shall be spread in the range of 20 to 30 pounds per square yard. The Contractor will use lab tests and current chip seal design standards to design specific material quantities to meet existing field conditions. The chip seal design shall be submitted to the Owner for approval prior to starting the work. Variations in material quantities will be made without adjustment to contract unit price.

#### 4. EQUIPMENT

- a) **Asphalt Distributor:** The asphalt distributor shall contain suitable mechanical circulating and heating mechanisms to provide a uniform approved temperature of the entire mass of material. The distributor shall be equipped with a radar type sensor used to measure ground speed and feed a Digital Volumetric Accumulator capable of measuring gallons applied and distance traveled. It shall be capable of applying asphalt material in accurately measured quantities at any rate between 0.1 to 2.0 gallons per square yard of roadway surface, at any length of spray bar up to 12' feet. The distributor shall be capable of maintaining a uniform rate of distribution of asphalt material regardless of change in grade, width or direction of the road. It shall be equipped with an electronic control for setting asphalt pump discharge rate and on/off switching of spray for nozzles in one (1') foot increments which shall be located in the truck cab. The spray nozzles and pressure system shall provide a sufficient and uniform fan-shaped spray of asphalt material throughout the entire length of the spray bar at all times while operating. The spray shall completely cover the roadway surface receiving the treatment.
- b) **Aggregate Spreader:** The aggregate spreader shall be hydrostatically driven and self-propelled. It may be equipped with a hydraulically controlled variable adjustable head that is capable of spreading stone in widths from 4.5' to 12' feet. The spreader shall be mounted on pneumatic tires and shall apply the stone on the road surface in a manner that ensures that the tires do not contact the road surface until after the stone has been applied. The unit shall be equipped with an electronic radar type sensor used to measure ground speed and will automatically adjust the stone application rate depending on width of application and the speed of chip spreader. It shall have the ability to apply stone uniformly on any grade from 0 - 6%. The spreader shall be equipped with an integral hopper with a minimum capacity of 5 tons of stone which shall be filled by trucks in a manner which ensures that the truck tires never come in contact with the asphalt-treated road surfaces until the stone has been properly applied. To maintain constant stone application, a self-locking truck hitch will permit towing of aggregate trucks without stopping the chip spreader. It will be capable of maintaining positive engagement over irregular terrain.
- c) **Rollers:** At least two rubber tired rollers shall be used on each treated surface immediately after the stone has been applied. Each roller shall have a compacting width of not less than 5' feet. Each roller shall have a gross weight of not less than 8 tons and contact pressure adjustable from 200 to 300 psi.
- d) **Trucks:** Rear discharge conveyor-fed trucks in sufficient number and size must be used to deliver stone to the spreader.

#### 5. CONSTRUCTION METHODS

- a) **Surface Preparation:** Surface preparation, which may include patching and adjusting of drainage and utility structures, may be completed under other items on this contract prior to the chip seal treatment. Any other surface preparation required that is not covered under an item on this contract will be the responsibility of the Owner. Immediately prior to surface treatment, the roadways shall be swept of any loose debris by use of a mechanical sweeper. Sweeping in advance of the chip seal application may be done by the Owner or by the Contractor and paid hourly under this contract. Owner is responsible for the disposal of swept material, unless otherwise specified in the contract." The Contractor shall protect any manhole covers, drop inlets, catch basins, curbs, and any other structures that will be affected by the surface treatment application.
- b) **Weather Limitations:** Work will not be done unless the road surface is free of standing water. No work shall be done during rain or foggy periods. No work shall be done if the ambient temperature is below 50°F.

- c) **Spreading Asphalt and Stone:** Prior to application of asphalt material on any street, sufficient quantities of materials to cover the entire street at the specified rates shall be on the site and ready for application. The Owner shall be responsible for providing the Contractor with an aggregate storage area near the job site. The asphalt material shall not be applied more than 300' feet in advance of the self-propelled aggregate spreader. At no time shall any asphalt material be on any road surface for more than fifteen seconds before it is covered with stone.
- d) **Rolling:** Initial rolling shall be done immediately following the application of treated stone. Rollers shall be operated at a speed that will not displace aggregate.
- e) **Final Sweeping:** Surplus aggregate shall be swept off of the road surfaces by the chip seal contractor in advance of Micro-Surfacing after stone seal has properly cured. In no case shall initial sweeping occur more than 10 days after the chip seal application. Care will be taken not to dislodge embedded aggregate or damage the surface. Owner is responsible for the disposal of swept material, unless otherwise specified in the contract.”

## 6. MICRO-SURFACING COURSE

Micro-Surfacing as specified in Item 2. shall be applied over the chip seal interlayer course in the same season but no sooner than 7 days after the chip seal application. After Micro-Surfacing has been applied the cape seal will be complete.

## 7. TRAFFIC CONTROL

Suitable methods shall be used by the Contractor to protect the micro-surface from traffic until the new surface will support traffic without damage. All traffic control methods used shall be in accordance with the Engineer's specifications and shall be employed in a safe manner. The cost of flaggers and any police details, if required, will be paid or reimbursed by the Owner. The Owner will coordinate detail assignments which will be billed to the contractor directly based on the hourly cost. The Contractor will not be reimbursed for police detail expenses incurred due to failure to cancel or cancelling without the required notice.

## 8. METHOD OF AWARD

To ensure contractor accountability, the Owner intends to award all items to a single contractor. Accordingly, contractors must bid on all items of work, and the low bidder will be the contractor whose total bid price is the lowest. The bid quantities are not guaranteed, and their primary purpose is for the determination of the low bidder.

## 9. MEASUREMENT AND PAYMENT

The quantity to be measured for payment will be the number of square yards of Cape Seal actually completed, and this quantity shall be determined and verified daily. The accepted quantity of Cape Seal will be paid for at the contract unit price per square yard of the type specified in the proposal, which shall be full compensation for furnishing, transporting, handling and placing the material specified and furnishing of all labor, tools, equipment and incidentals for the satisfactory completion of this item.

## 10. ASPHALT PRICING AND PRICE ADJUSTMENTS

- a) **Asphalt Price Adjustments:** Contractor's bid prices below shall be based upon the current State DOT asphalt cement price index posted exactly two (2) weeks prior to the due date for receipt of bids ("Bid Index"). If the posted State DOT asphalt cement price index in place when the work is performed differs from the Bid Index, up or down, then Contractor's invoices shall include price adjustments for the asphaltic materials, and these adjustments shall be calculated based on the actual tons of liquid asphalt cement incorporated into the work.

b) **Future Year Price Adjustments:** The Owner reserves itself the option to extend the use, terms, conditions and prices of this bid for an additional three (3) years after the first year in which the contract is awarded. Such extension will be subject to the Owner reviewing and approving the Contractor's annual request for a price adjustment based on and limited to the prior year's actual rate of inflation. If such price adjustment cannot be mutually agreed upon between the Owner and Contractor, Owner may choose to re-bid the work in lieu of extending this contract.

**Item 4**  
**Polymer Modified Rejuvenating Fog Seal**

**1. DESCRIPTION**

This work shall consist of furnishing all materials, equipment, labor and preparation necessary for the application of a light coating of asphalt emulsion containing a rejuvenating agent to an existing or newly constructed asphalt pavement for the primary purpose of slowing the oxidation, raveling and other damage caused to unprotected asphalt pavements.

**2. MATERIALS**

- a) **Emulsion:** Rejuvenating asphalt emulsion, **CMS-1PF**, shall contain a polymer and conform to the following specifications. The emulsion shall be certified as meeting this specification from the manufacturer, and shall not be diluted prior to application.

Property	Test Procedure (AASHTO)	Specification	
		(min)	(max)
<b>Emulsion Properties</b>			
Viscosity, Saybolt-Furol, @ 77°F, SFS	T59	10	100
Storage, 24 hour, %	T59		1
Oil Distillate, %	T59		0.5
Sieve Test, %	T59		0.1
Residue by Distillation <sup>(1)</sup> @350°F, % Residue by Distillation, % by weight	T59	30	
<b>Residue Properties From Distillation</b>			
Penetration @ 4C, 200g weight, 60 sec Residue by Distillation, % by weight	T49	30	
<b>Residue Properties From Low Temp Evaporation</b>			
Dynamic Shear, G*/sin @ 64oC, kPa	PP72-11, Procedure B		
<b>Polymer Properties</b>			
Swelling in rejuvenating agent, % max weight increase: 48 hrs	ASTM D471 <sup>(2)</sup>		40%
Tensile Strength (psi)	ASTM D412a <sup>(3)</sup>	800	
Glass Transition Temperature (Tg) – Midpoint by DSC (°C)	ASTM D7426 <sup>(4)</sup>	0	
Latex Density at 23°C (g/cm3)	ASTM D6937 <sup>(5)</sup>	1.00	1.05
Latex pH	ASTM E70 <sup>(6)</sup>	6.0	8.0
<b>Test on Rejuvenating Agent</b>			
Flash Point, COC, °F	T48	380	
Viscosity, 140°F, CST	201	50	175
Saturate, % by wt	ASTM D2007		30
Asphaltenes	ASTM D2007		1.0
<b>Test on Residue</b>			
Weight Change, %			6.5
Viscosity Ratio			3

(1) Exception to AASHTO T59: Bring the temperature on the lower thermometer slowly to 350°F plus or minus 10°F. Maintain this temperature for 20 minutes. Complete the total distillation in 60 plus or minus 5 minutes.

(2) Polymer Testing, Resistance to Swelling: Using a syringe, place 0.8 gm of latex into a 18 mm diameter DSR mold. Allow the sample to dry at ambient lab conditions (air conditioned) on the bench for 72 hours. Sample should be easily removable from the mold. Take the "button" out of the mold and place the sample into a forced air oven at 40°C (104°F) for 48 hours (on release paper). If at the end of the ambient dry, the sample sticks to the mold, place it into the oven and check it after 1-2 hours. After 48 hours, cool and weigh the sample to the nearest 0.0001 gram and record the weight. Put ½ inch of Rejuvenating Agent into a 3 oz penetration tin. Place the "button" on the Rejuvenating Agent, and add another ½ inch Of Rejuvenating Agent, so that the "button" is covered. Put the cap on the penetration tin and place it into the 40°C oven for 48 hours. Remove the "button" from the Rejuvenating Agent, blot surface of the "button" to remove excess Rejuvenating Agent, cool the "button" to room temperature and weigh it. Calculate weight gain of the "button", express as a %.

(3) To prepare the polymer film, dilute the waterborne polymer to 40% Total Solids Content and pour 57 g into a Teflon or silicone release mold of dimensions 7" X 7" X ¼". Allow to dry at 23°C (73 °F) and 50% RH (controlled conditions) for 7 – 10 days total time, during which time the film should be flipped around once, preferable after 3 or 4 days. The film should be transparent in the end. To drive out any residual water, place the film in an oven at 50°C for 30 min. Dried film thickness should be 25 mil +/- 5 mils. Discard films <20mil. Cut out dumbbell-shaped test specimens of dimension 75 mm total length, 25 mm mid-section (L) and 4 mm width of mid-section. Grip in Instron machine with gap size 1 inch, use 8 inch/min cross-head speed.

(4) Use between 3 – 30 mg dry polymer. Instrument used is TA Q2000 Differential Scanning Calorimeter (DSC). Heating rate is 20°C/min.

(5) Replace "Emulsified Asphalt" with "Latex" in text of test method. The testing temperature used should be 25 +/-

3°C. The calculation in Section 7 should be as follows:

$$D = (W_f - W_t) * 0.1$$

$$S.G. = D/8.337$$

Where:  $W_f$  = Weight of filled cup (g),  $W_t$  = Weight of empty cup (g)

(6) A pH meter with automatic temperature measurement should be used in the evaluation with a calomel cell assembly or combination electrode. Calibration should be made using the procedure with the pH meter, according to ASTM method, prior to testing the pH of the latex. In Section 9, the procedure for measuring pH of the latex should be as follows:

- 1) Place the electrode and probe into the dispersion that is to be measured and swirl the sample cup or beaker gently. (You may also use the probe in a stirring motion.)
- 2) Wait for the reading to stabilize (usually less than a minute) and read/record this value. Note the temperature if not utilizing an ATC probe.
- 3) Take the Electrode and ATC probes from the sample and rinse thoroughly with deionized water. Pat dry and place back into appropriate solution recommended by electrode manufacturer for storage.

**b) Material Certifications and Testing**

- 1) The emulsion manufacturer, through the Contractor, shall submit to the Owner certified test results that the emulsion meets the specification. The polymer manufacturer and the rejuvenating agent manufacturer, through emulsion supplier and the Contractor, shall submit to the Owner certified test results on the polymer and the recycling agent that meets the required specifications. The Owner will not accept test results dated more than 90 days from the date of bid opening.
- 2) Certifications and test results on the emulsion must be submitted to the Owner and approved by the Owner 5 days prior to supplying material.
- 3) Prior to and during the project the Owner may require samples of the finished emulsion, rejuvenating agent and the polymer used in the emulsion to be submitted to the Owner designated laboratory for testing. All testing shall be at the Owner's expense.

c) **Aggregate:** The aggregate material shall be a dry, clean, dust and dirt-free, sound, durable, angular shaped manufactured specialty sand, such as that used as an abrasive (i.e., trade name "Black Beauty"), with a Mohs hardness of 6 to 8. The Contractor shall submit manufacturer's technical data and a manufacturer's certification indicating that the specialty sand meets the requirements of the specification to the Engineer prior to start of construction. The sand must be approved for use by the Engineer and shall meet the following gradation limits.

Aggregate Material Gradation	Percentage Retained Sieves
No. 8 (2.38 mm)	0
No. 16 (1.19 mm)	0-10
No. 20 (0.84 mm)	0-25
No. 30 (0.60 mm)	15-50
No. 40 (0.42 mm)	20-45
No. 50 (0.30 mm)	5-35
No. 70 (0.21 mm)	0-5
No. 200 (0.07 mm)	0-2

**3. EQUIPMENT**

a) **Pressure distributor:** The emulsion shall be applied with a computer rate-controlled asphalt distributor. The equipment shall be in good working order and contain no contaminants or diluents in the tank. Spreader bar tips must be clean, free of burrs, and of a size to maintain an even distribution of the emulsion. Any type of tip or pressure source is suitable that will maintain predetermined flow rates and constant pressure during the application process with application speeds under eight (8) miles per hour or seven hundred (700') feet per minute. Before use the equipment must be tested under pressure for leaks to ensure it is in good working order.

The distributor truck shall be equipped with a 12'foot minimum, spreader bar with individual nozzle control. The distributor truck shall be capable of specific application rates in the range of 0.05 to 0.25 gallons per square yard. These rates shall be computer-controlled rather than mechanical. The distributor truck shall have an easily accessible thermometer that constantly monitors the temperature of the emulsion, and have an operable mechanical tank gauge that can be used to cross-check the computer accuracy.

A distributor truck shall be provided, if necessary, equipped to effectively heat and mix the material to the required temperature prior to application. Heating and mixing shall be done in accordance with the manufacturer's recommendations. Care shall be taken not to overheat or over-mix the material.

The distributor shall be equipped to hand-spray the emulsion in areas identified either on the plans or by the Engineer, or not accessible to the distributor truck itself.

- b) **Aggregate spreader:** The asphalt distributor truck shall be equipped with an aggregate spreader mounted to the distributor truck that can apply sand to the emulsion in a single pass operation without driving through the wet emulsion. The aggregate spreader shall be equipped with a variable control system capable of uniformly distributing the sand at the specified rate at varying application widths and speeds. The sander shall have a minimum hopper capacity of at least 3,000 pounds of sand. Push-type hand sanders will be allowed for use around lights, signs and other obstructions.

#### 4. WEATHER LIMITATIONS

Place the fog seal when both the pavement and atmospheric temperature is 50°F and rising. Do not place fog seal if any of the following conditions exist:

- a) Impending weather conditions do not allow for proper curing, or if temperatures are forecasted below 32°F within 24 hours from the time of work.
- b) The existing pavement temperature is 140°F or above.
- c) The pavement surface is wet, or rain is forecasted within 24 hours of placement.

#### 5. SURFACE PREPARATION

The Contractor shall clean the pavement surface prior to placement with a power broom or road sweeper. Clean any muddy or dirty areas by flushing with water. Allow surface to dry completely prior to applying asphalt emulsion.

#### 6. APPLICATION OF ASPHALT EMULSION & AGGREGATE

The Contractor shall follow the construction methods as described. Target application rates for the emulsion shall be in the range of 0.06 to 0.15 gallons per square yard as established by the Engineer after spraying a test strip or strips with varying application rates in order to determine the optimum rate to achieve coating without runoff or delayed curing times. Target application rate for the aggregate shall be 0.5 pounds per square yard, also as established by the Engineer after spraying the test strip(s). Apply the asphalt emulsion at the target rate(s) established during the test strip. Maintain the asphalt emulsion temperature from 120° to 160°F during construction, including the start of each day. Reheat the asphalt emulsion at a rate of no more than 25° F per hour whenever the asphalt emulsion is allowed to cool below 110°F. If the target application rates are not the optimum application rates to achieve proper coating of the existing or newly constructed pavement surface, or if the break time is too long or too short, immediately notify the Engineer. Adjust and document the new application rate by stationing. Do not allow the asphalt emulsion to streak on the road surface. If the Engineer determines that streaking is occurring, cease operations until the Engineer is satisfied that streaking has been eliminated. Apply the asphalt emulsion to all exposed areas of asphalt surface as directed by the Engineer.

During the application of the fog seal, ensure there are no deficiencies in the fog seal, resulting from poor workmanship, flushing, tracking from equipment, surface patterns, and sweeping. Inspect workmanship for untreated areas, minimum overlap on longitudinal joints, and minimum overlap on construction joints.



Verify the following for daily acceptance:

- a) Fog seal edges are neat and uniform along the roadway lane, shoulder and curb lines.
- b) Fog seal has no surface patterns such as lean or heavy lines.
- c) Fog seal has no bleeding/flushing areas.
- d) Fog seal uniformly covers all portions of the asphalt surface
- e) Blotter sand is broadcast uniformly and at the proper rate.

#### **7. TRAFFIC CONTROL**

Unless otherwise specified in the contract documents, maintain one-way traffic on two lane highways in accordance with Standard Drawing and as directed by the Engineer. Maintain traffic on multi-lane highways as specified by the contract documents. Lower volume roadways may be closed at the discretion of the Engineer. Traffic control shall be considered incidental to the performance of this item except for police details and flagger costs. The cost of flaggers and any police details, if required, will be paid or reimbursed by the Owner. The Owner will coordinate detail assignments which will be billed to the Contractor directly based on the hourly cost. The Contractor will not be reimbursed for police detail expenses incurred due to failure to cancel or cancelling without the required notice.

#### **8. METHOD OF AWARD**

To ensure contractor accountability, the Owner intends to award all items to a single contractor. Accordingly, contractors must bid on all items of work, and the low bidder will be the contractor whose total bid price is the lowest. The bid quantities are not guaranteed, and their primary purpose is for the determination of the low bidder.

#### **9. MEASUREMENT AND PAYMENT**

- a) The quantity to be measured for payment will be the number of square yards of Fog Seal completed.
- b) No additional compensation shall be made for additional work required to apply asphalt emulsion to areas outside the normal operating width of the distributor.

#### **10. Asphalt Pricing and Price Adjustments**

- a) **Asphalt Price Adjustments:** Contractor's bid prices below shall be based upon the current State DOT asphalt cement price index posted exactly two (2) weeks prior to the due date for receipt of bids ("Bid Index"). If the posted State DOT asphalt cement price index in place when the work is performed differs from the Bid Index, up or down, then Contractor's invoices shall include price adjustments for the asphaltic materials, and these adjustments shall be calculated based on the actual tons of liquid asphalt cement incorporated into the work.
- b) **Future Year Price Adjustments:** The Owner reserves itself the option to extend the use, terms, conditions and prices of this bid for an additional three (3) years after the first year in which the contract is awarded. Such extension will be subject to the Owner reviewing and approving the Contractor's annual request for a price adjustment based on and limited to the prior year's actual rate of inflation. If such price adjustment cannot be mutually agreed upon between the Owner and Contractor, Owner may choose to re-bid the work in lieu of extending this contract.

**Item 5  
Hot Mix Asphalt Leveling Course**

**1. DESCRIPTION**

Work under this item consists of furnishing and installing hot mix asphalt as a leveling course. The required depth of hot mix asphalt will vary by location. The Engineer will advise the Contractor with the desired depth prior to beginning work and shall make adjustments as deemed necessary.

Work under this item shall conform to the Commonwealth of Massachusetts Standard Specifications for Highways and Bridges for item 460.1 "Hot Mix Asphalt – Dense Binder Course", as amended by this specification, or as directed by the Engineer. The leveling course shall be constructed to the depth, typical section, or elevation required by the Engineer and shall be rolled and finished.

If directed by the Engineer, tack coat will be used at the rate of .05 to .10 GAL/SY, verified by metering on all surfaces prior to placement.

**2. TRAFFIC CONTROL**

Unless otherwise specified in the Contract Documents, maintain one-way traffic on two lane highways in accordance with Standard Drawing and as directed by the Engineer. Maintain traffic on multi-lane highways as specified by the Contract Documents. Lower volume roadways may be closed at the discretion of the Engineer. Traffic control shall be considered incidental to the performance of this item except for police details and flagger costs which shall be reimbursed or paid by the Owner.

The cost of flaggers and any police details, if required, will be paid or reimbursed by the Owner. The Owner will coordinate detail assignments which will be billed to the Contractor directly based on the hourly cost. The Contractor will not be reimbursed for police detail expenses incurred due to failure to cancel or cancelling without the required notice.

**3. METHOD OF AWARD**

To ensure contractor accountability, the Owner intends to award all items to a single contractor. Accordingly, contractors must bid on all items of work, and the low bidder will be the contractor whose total bid price is the lowest. The bid quantities are not guaranteed, and their primary purpose is for the determination of the low bidder.

**4. MEASUREMENT AND PAYMENT**

Hot mix asphalt shall be measured by the ton and shall be the actual and verified tonnage complete in place and approved. The quantity shall be determined only by weight slips that have been properly countersigned by the Engineer at the time of delivery.

The tonnage of hot mix asphalt will be paid for at the contract unit price per ton of specified hot mix asphalt, complete in place. If tack coat is required by the Engineer, a separate pay item will be included in the bid proposal form.

**5. ASPHALT PRICING AND PRICE ADJUSTMENTS**

- a) **Asphalt Price Adjustments:** Contractor's bid prices below shall be based upon the current State DOT asphalt cement price index posted exactly two (2) weeks prior to the due date for receipt of bids ("Bid Index"). If the posted State DOT asphalt cement price index in place when the work is performed differs from the Bid Index, up or down, then Contractor's invoices shall include price adjustments for the asphaltic materials, and these adjustments shall be calculated based on the actual tons of liquid asphalt cement incorporated into the work.

- b) **Future Year Price Adjustments:** The Owner reserves itself the option to extend the use, terms, conditions and prices of this bid for an additional three (3) years after the first year in which the contract is awarded. Such extension will be subject to the Owner reviewing and approving the Contractor's annual request for a price adjustment based on and limited to the prior year's actual rate of inflation. If such price adjustment cannot be mutually agreed upon between the Owner and Contractor, Owner may choose to re-bid the work in lieu of extending this contract

**Item 6  
Pavement Milling**

**1. DESCRIPTION**

Work under this item shall conform to the requirements of the Mass DOT Standard Specifications and the latest Supplemental Specifications for Section 120, as directed by the Engineer, and the following:

- a) The work shall consist of removing, by cold-planer, asphalt pavement in designated areas.
- b) The length and width of the excavation will be done as determined by the Engineer.
- c) The milled material shall become the property of the Contractor to be disposed of or recycled by him.
- d) At cold planing locations, the transition between existing and proposed pavement shall be constructed to maintain the grade of the roadway prior to cold planing in order to produce a smooth transition without dips or bumps.
- e) In no case will a deduction in area be made for minor un-milled areas due to catch basin or manhole castings, gate boxes or transverse joints.

**2. TRAFFIC CONTROL**

The cost of flaggers and any police details, if required, will be paid or reimbursed by the Owner. The Owner will coordinate detail assignments which will be billed to the Contractor directly based on the hourly cost. The Contractor will not be reimbursed for police detail expenses incurred due to failure to cancel or cancelling without the required notice.

**3. METHOD OF AWARD**

To ensure contractor accountability, the Owner intends to award all items to a single contractor. Accordingly, contractors must bid on all items of work, and the low bidder will be the contractor whose total bid price is the lowest. The bid quantities are not guaranteed, and their primary purpose is for the determination of the low bidder.

**4. MEASUREMENT AND PAYMENT**

The unit price bid per square yard for each item shall include the cost of furnishing all labor and equipment necessary to complete the milling including the removal of pavement by other means, the removal and disposal of milled material and raised or slotted pavement markers and cleaning the resultant surface after milling.

**5. FUTURE YEAR PRICE ADJUSTMENTS**

The Owner reserves itself the option to extend the use, terms, conditions and prices of this bid for an additional three (3) years after the first year in which the contract is awarded. Such extension will be subject to the Owner reviewing and approving the Contractor's annual request for a price adjustment based on and limited to the prior year's actual rate of inflation. If such price adjustment cannot be mutually agreed upon between the Owner and Contractor, Owner may choose to re-bid the work in lieu of extending this contract.

**Item 7**  
**Catch Basins and/or Manholes Adjusted**

**1. DESCRIPTION**

Work under this item shall conform to the requirements of the Mass DOT Standard Specifications and the latest Supplemental Specifications for Section 220 (Adjustment, Rebuilding and Remodeling of drainage Structures).

**2. MATERIALS**

Concrete collars will be constructed using 4,000 PSI, 1-1/2", cement concrete masonry, at no additional cost. A minimum of four (4") inches of hot mix asphalt shall be placed and compacted to the underlying grade of the proposed wearing surface and will be considered incidental to the above Item's unit price. All concrete collars will be completely coated with (RS-1) Asphaltic Emulsion before placement of hot mix asphalt. The brick to be used shall meet the requirements of MassDOT Materials Specification M4.05.2 (Clay Brick).

**3. ENGINEERING**

In all roadways, the castings shall be adjusted to the final grade and measured by each catch basin or manhole adjusted and approved by the Engineer. Damaged or obsolete castings shall be replaced with new castings as directed by the Engineer. Frames, Grates and Covers will be furnished by the Owner. The Contractor shall properly dispose of the old castings. No additional compensation will be made for disposal for old castings.

If in the opinion of the Engineer a drainage structure requires replacement or reconstruction, the structure or part of structure shall be rebuilt in conformance with Mass DOT specifications and measured and paid for by multiples of "Catch Basin and/or Manhole Adjusted". Each 2' feet of reconstructed structure will be paid for as an adjustment. For example, if the top 4' feet of a manhole is reconstructed this will be paid for as adjustments. The Contractor shall properly dispose of the old drainage structure. No additional compensation will be made for disposal of the old structure material.

**4. TRAFFIC CONTROL**

The cost of flaggers and any police details, if required, will be paid or reimbursed by the Owner. The Owner will coordinate detail assignments which will be billed to the Contractor directly based on the hourly cost. The Contractor will not be reimbursed for police detail expenses incurred due to failure to cancel or cancelling without the required notice.

**5. METHOD OF AWARD**

To ensure contractor accountability, the Owner intends to award all items to a single contractor. Accordingly, contractors must bid on all items of work, and the low bidder will be the contractor whose total bid price is the lowest. The bid quantities are not guaranteed, and their primary purpose is for the determination of the low bidder.

**6. MEASUREMENT AND PAYMENT**

Compensation for all labor, materials (including cement concrete, hot mix asphalt, and asphaltic emulsion), equipment and incidentals to construct the collars shall be included in the contract unit price of this item. The quantity to be measured for payment will be the number of catch basins and manhole adjusted, to be paid for at the unit price per each.

**7. FUTURE YEAR PRICE ADJUSTMENTS**

The Owner reserves itself the option to extend the use, terms, conditions and prices of this bid for an additional three (3) years after the first year in which the contract is awarded. Such extension will be subject to the Owner reviewing and approving the Contractor's annual request for a price adjustment based on and limited to the prior year's actual rate of inflation. If such price adjustment cannot be mutually agreed upon between the Owner and Contractor, Owner may choose to re-bid the work in lieu of extending this contract.

**Item 8  
Water Gates Adjusted**

**1. DESCRIPTION**

Valve boxes shall be installed vertically, centered over the operating nut, and the elevation of the top shall be adjusted to final grade. Boxes shall be continuously and adequately supported during backfilling to maintain vertical alignment. Bricks shall be placed at the base of the flange to properly support the box. Backfill around valve boxes and anywhere excavation is made in the street shall be compacted in 12" lifts. The boxes and tops shall be furnished by the Owner. Old castings shall be disposed of by the Contractor. The Contractor shall properly dispose of the old castings. No additional compensation will be made for disposal for old castings.

**2. TRAFFIC CONTROL**

The cost of flaggers and any police details, if required, will be paid or reimbursed by the Owner. The Owner will coordinate detail assignments which will be billed to the Contractor directly based on the hourly cost. The Contractor will not be reimbursed for police detail expenses incurred due to failure to cancel or cancelling without the required notice.

**3. METHOD OF AWARD**

To ensure contractor accountability, the Owner intends to award all items to a single contractor. Accordingly, contractors must bid on all items of work, and the low bidder will be the contractor whose total bid price is the lowest. The bid quantities are not guaranteed, and their primary purpose is for the determination of the low bidder.

**4. MEASUREMENT AND PAYMENT**

The unit price payment for this item will be for all work described above, for each water gate adjusted.

**5. FUTURE YEAR PRICE ADJUSTMENTS:**

The Owner reserves itself the option to extend the use, terms, conditions and prices of this bid for an additional three (3) years after the first year in which the contract is awarded. Such extension will be subject to the Owner reviewing and approving the Contractor's annual request for a price adjustment based on and limited to the prior year's actual rate of inflation. If such price adjustment cannot be mutually agreed upon between the Owner and Contractor, Owner may choose to re-bid the work in lieu of extending this contract.

**Item 9  
Structure Rebuild**

**1. METHOD OF AWARD**

To ensure contractor accountability, the Owner intends to award all items to a single contractor. Accordingly, contractors must bid on all items of work, and the low bidder will be the contractor whose total bid price is the lowest. The bid quantities are not guaranteed, and their primary purpose is for the determination of the low bidder.

**2. MEASUREMENT AND PAYMENT**

The unit price payment for this item will be by the vertical foot.

**ALL PAY ITEMS ON PAGES 40 - BID PROPOSAL PAGES  
PERTAIN TO THE COLD IN-PLACE PROCESS**

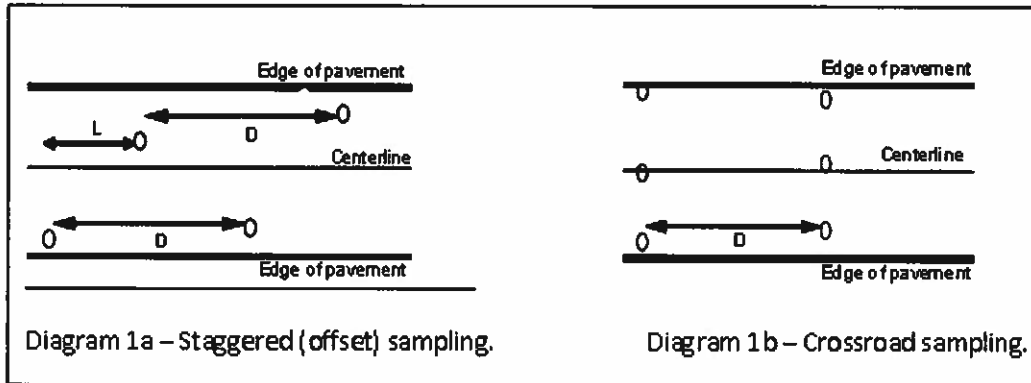


## Item 10 Core Sampling

### 1. DESCRIPTION

Core sampling and mix design are required to determine a road(s) viability for the Cold In-place Recycling process. It is also an optional process to assess existing road conditions.

Cores shall be obtained using a pattern that results in a representative sample of the pavement to be recycled including at or near lane lines, within and between wheel paths, at the pavement edge, and within shoulders, if shoulders are to be recycled. The roadway shall be sampled in accordance with staggered or offset sampling (as illustrated in **Diagram 1a**) or crossroad sampling with no offset (as illustrated in **Diagram 1b**).



Core samples shall be obtained to the underlying base or subgrade soil. If a core breaks off prior to penetrating the underlying materials, coring shall continue to the bottom of the pavement for thickness measurement purposes. On retrieval, each core shall be measured to the nearest 1/8th inch, and then placed in a separate container and labeled. A coring log summarizing the date, station, offset, and core thickness shall be recorded for each core location and provided to the mix design laboratory.

D – 1 mile maximum

L – 0.5 mile maximum

- At least 15% of the cores shall be in the shoulder, if the shoulder is getting recycled.
- At least 25% of the cores shall be on or within 3 feet of centerline.

#### Arterial and Industrial Streets

D – 2,000 feet maximum

L – 1,000 feet maximum

- At least 25% of the cores shall be in the shoulder, if it is getting recycled, or within 3 feet of gutter.
- At least 25% of the cores shall be on or within 3 feet of centerline.

#### Residential Streets

- For streets less than 250 feet long, a minimum of one core when grouped with other streets to obtain the quantity of material required for mix design.
- For streets 250 feet to 500 feet long, a minimum of two cores when grouped with other streets to obtain the quantity of material required for mix design (one within 3 feet of gutter, and the other within 3 feet of centerline).
- For streets over 500 feet long, a minimum of three cores when grouped with other streets to obtain the quantity of material required for mix design (one within 3 feet of gutter, one within 3 feet of centerline, and the third between the two).

## **2. FILLING SAMPLE HOLES**

- a) Each sample hole shall be filled in accordance with the procedures described below. After sampling and filling the holes, the roadway shall be cleaned of all loose debris.
- b) A high quality cold patch material shall be used to fill core or milling holes. The cold mix shall be compacted flush with a tamping rod, sledge or Marshall hammer. Approximately the same amount of cold patch (350lbs) will be required to fill the holes as is required for each mix design.

## **3. METHOD OF AWARD**

To ensure contractor accountability, the Owner intends to award all items to a single contractor. Accordingly, contractors must bid on all items of work, and the low bidder will be the contractor whose total bid price is the lowest. The bid quantities are not guaranteed, and their primary purpose is for the determination of the low bidder.

## **4. MEASUREMENT AND PAYMENT**

The cost of coring labor, equipment and materials shall be paid per day for each day of coring operations conducted.

**Item 11  
Mix Design**

**1. MIXTURE DESIGN**

- a) Obtain cored samples for the project mix design. Three hundred and fifty pounds (350 lbs.) of representative material to be recycled is required for each mix design.
- b) An independent laboratory not owned or controlled by the contractor shall develop and submit a Job Mix Formula (JMF) prior to the start of the CIR operation. Develop the JMF conforming to the requirements of Table 2B below.

**Table 2B – CIR Minimum Mix Design Requirements for Stabilizing Agents**

Test Method	Specification	Criteria
Gradation of RAP (Sieve Analysis of Aggregates)	ASTM C117 and C136	1 ½" sieve-100% passing 1" sieve-95 to 100% passing
Bulk Specific Gravity of Compacted Samples	ASTM D6752 or D2726	Report Only; Ndes=30
Maximum Theoretical Specific Gravity	ASTM D2041	Report Only
% Air Voids		Report Only
Tensile Strength (Resistance of Compacted Mixture to Moisture): Dry, psi	ASTM D4867 Part 8.11.1, 25°C, psi	Minimum 45
Wet (conditioned), psi	Conditioned ITS, ASTM D 4867, psi	Minimum 30
RAP Coating Test	AASHTO T 59	Minimum Good
Minimum Virgin Asphalt Content		1.5%
Foamed Asphalt Expansion Ratio		Minimum 8.0 Times
Foamed Asphalt Half-life		Minimum 6.0 Seconds

- c) The lab equipment used to simulate the asphalt foaming process and RAP stabilization shall be substantially similar to the contractor's recycling equipment to be used on the project.
- d) The mix design JMF shall be the baseline measure for the rate of stabilizing agent application and water blended with the RAP to construct the CIR mixture. The mix design shall indicate the allowable tolerance for field adjustments for the stabilizing agent and/or water so as not to jeopardize the performance of the mix in regard to Table 2B but allow the contractor to adjust the mix in response to field conditions in consultation with the Engineer.
- e) Provide the mix design report with the following minimum information:

- 1) Gradation of RAP
- 2) Density, maximum specific gravity, air void content, indirect dry tensile strength, indirect wet (conditioned) tensile strength, and tensile strength ratio at each recycling agent content iteration (minimum of 4, inclusive of recommended moisture and stabilizing contents) and at the recommended moisture and stabilizing agent contents
- 3) Recommended water content range as a percentage of dry RAP
- 4) Optimum stabilizing agent content as a percentage of dry RAP
- 5) Stabilizing agent designation, PG grading of asphalt binder, if applicable, supplier name and location, and certificates of compliance
- 6) Application means of recycling agent
- 7) Allowable tolerances for field adjustments for stabilizing agent and/or water
- 8) Portland cement, if needed

## **2. METHOD OF AWARD**

To ensure contractor accountability, the Owner intends to award all items to a single contractor. Accordingly, contractors must bid on all items of work, and the low bidder will be the contractor whose total bid price is the lowest. The bid quantities are not guaranteed, and their primary purpose is for the determination of the low bidder.

## **3. METHOD OF PAYMENT**

Payment for Mix Designs shall be per each mix design required.

**Item 12**  
**Cold In-Place Recycling (CIR)**

**1. DESCRIPTION**

This work consists of the full or partial depth milling of the existing HMA pavement to the width and depth specified on the plans, blending the processed material with a foamed asphalt stabilizing agent, water and other additives as necessary and required by the mix design, and placement and compaction of this mixture in accordance with the plans and specifications.

**2. MATERIALS**

**a) Reclaimed Asphalt Pavement (RAP) Material**

Mill the RAP from the existing roadway and process it in-place.

The RAP shall be free of contamination of concrete, silt, clay, or other deleterious materials.

Remove rubberized crack filler, pavement markers, loop wires, fabric, or other materials as observed from the roadway during the recycling process. Appropriately size and homogenously blend any residual materials with the RAP.

The milled and processed material shall conform to the following gradation prior to addition of the stabilizing agent:

<u>Sieve Size</u>	<u>Percent Passing</u>
1 ½"	100
1"	95 to 100

**b) Stabilizing Agent (ITEM 5)**

The asphalt stabilizing agent shall be Foamed Asphalt.

**c) Foamed Asphalt**

- 1) Provide asphalt binder performance grade for foamed asphalt of PG 64-22 or PG 64-28.
- 2) Sufficiently heat asphalt binder to meet the mix design expansion and half-life criteria; not to exceed 375° F.
- 3) Asphalt binder shall produce asphalt foam with a minimum expansion ratio of 8 and half-life of no less than 6 seconds.

**d) Mineral Filler (ITEM 6)**

If required by the mix design, the mineral filler shall be Portland Cement.

**e) Water**

Provide water added to the RAP for foaming asphalt. Water may be added to the RAP at the milling head and/or in a mixing chamber.

**f) Asphalt Pricing and Price Adjustments**

- 1) Contractor's bid prices below shall be based upon the current State DOT asphalt cement index posted exactly two (2) weeks prior to the due date for receipt of bids ("Bid Index"). If the posted State DOT asphalt cement index in place when the work is performed differs by more than 5% from the Bid Index, then Contractor's invoices shall include price adjustments for the asphaltic materials based on the actual gallons incorporated into the work.

- 2) The owner agency reserves itself the option to extend the use, terms, conditions and prices of this bid for an additional three (3) years after the first year in which the contract is awarded. Such extension will be subject to the Owner reviewing and approving the Contractor's annual request for a price adjustment based on and limited to the prior year's actual rate of inflation. If such price adjustment cannot be mutually agreed upon between the Owner and Contractor, Owner may choose to re-bid the work in lieu of extending this contract.

### **3. QUALITY MANAGEMENT PROGRAM**

#### **a) Personnel**

Provide a qualified and certified technician for performance of field density.

#### **b) Equipment**

- 1) Furnish the necessary equipment and supplies for performing quality control testing. Ensure that all testing equipment conforms to the equipment specifications applicable to the required testing methods. The Engineer may inspect the measuring and testing devices to confirm both calibration and condition. Calibrate all testing equipment according to the applicable AASHTO and/or ASTM specifications and maintain a calibration record at the laboratory.
- 2) Furnish a nuclear gauge and ensure that the gauge manufacturer or an approved calibration service calibrates the gauge the same calendar year it is used on the project. Retain a copy of the calibration certificate with the gauge.
- 3) Conform to ASTM D 6938 for density testing and gauge monitoring methods.

#### **c) Quality Control (QC) Testing**

- 1) Roadway production lots will be defined as 4000 lane-feet. Each roadway production lot will consist of two 2000 lane-feet sub lots.
- 2) Take roadway samples at a minimum frequency of 1 per lot of production.
- 3) For each roadway sample, report the gradation of material as determined by use of a rocker screen, or equal, for the 1" sieve and larger.
- 4) Report stabilizing agent foaming properties, if applicable, (i.e. half-life and expansion ratio) at a minimum frequency of 1 per lot of production.
- 5) Conduct and report density testing at a minimum frequency of 3 random tests per sub lot.
- 6) Conduct and report mill depth checks at a minimum frequency of 1 per sub lot.
- 7) Report stabilizing agent temperature and application rate at a minimum frequency of 1 per sub lot.
- 8) Provide a Daily Inspection Report to the Engineer summarizing the: daily beginning and ending stations, applicable mix design, sub lot test (mill depth check, density test, stabilizing agent temperature and application rate) locations and values, lot roadway sample locations, and any adjustments to the application rate of the stabilizing agent or water.
- 9) If stabilizing agent adjustments exceed the allowable limits defined in the mix design, or reduce the stabilizing agent application rate below the 1.5% mix design minimum specified in Table 2B, based on a single test or meter adjustment, re-evaluate the entire process. Obtain approval by the Engineer before resuming production.

#### **d) Owner Testing**

- 1) The owner may conduct quality verification (QV) testing to validate the quality of the product, and independent assurance (IA) testing to evaluate the sampling and testing. The owner will provide the contractor with a listing of names and telephone numbers of all QV and IA personnel for the project and provide test results to the contractor within 5 business days after the owner obtains the sample.
- 2) If the owner identifies a deficiency, and after further investigation confirms it, the contractor shall correct that deficiency. If the contractor does not correct or fails to cooperate in resolving identified deficiencies, the Engineer may suspend placement until action is taken.

### **4. CONSTRUCTION**

#### **a) General**

- 1) Unless the contract provides otherwise, keep the road open to traffic during construction.
- 2) Perform CIR operations only between the dates of April 15 and October 15 when the pavement temperature in the shade is above 55°F, when the ambient air temperature approximately 3 feet above grade, in shade, and away from artificial heat sources is above 50°F and rising, and when the nighttime ambient air temperature is above 45°F the night prior and following, unless approved otherwise by the Engineer.
- 3) Do not perform CIR operations during inclement weather such as heavy rain that will not allow proper mixing, placing, and/or compacting of the mixture.
- 4) CIR operations and recycled pavement curing to allow adequate time for placement of the Complete finish wearing course prior to the onset of winter. The finish wearing course should be applied to protect the CIR no later than 14 days after the CIR process begins.

#### **b) Equipment**

- 1) Equipment used for CIR shall be subject to approval by the Engineer.
- 2) Tankers supplying hot stabilizing agent components shall be equipped to constantly monitor temperature within the tank.
- 3) Portland cement bulk spreader must be fully automated and capable of achieving the application rate specified in the mix design. Portland cement spreader shall also be equipped with a water misting spray bar to reduce the amount of airborne cement dust from the spreading operation.

#### **c) Milling Machine**

- 1) Utilize milling units not inclusive of pre-mill/wedge-cut milling units capable of milling the existing pavement full lane width (12'- 6" minimum) to the depth shown on the plans, specified in the contract or directed by the Engineer, in a single pass.
- 2) Utilize units equipped with automatic depth control that maintain constant cutting depth and width, uniform grade, and uniform slope.
- 3) For processes not incorporating additional screening, sizing, or crushing, utilize a milling unit capable of producing RAP sized as specified in B.1.
- 4) Use of a heating device to soften the pavement is not permitted.

**d) Mixing Unit**

- 1) Processed RAP shall be mixed with the stabilizing agent and water in a mixing unit which shall be the milling machine cutter housing.
- 2) The asphalt stabilizing agent shall be applied uniformly at the predetermined application rate using a computer controlled additive system. Monitor the metering of the stabilizing agent through a calibrated pump providing a continuous readout of quantities.
- 3) The additive system shall contain separate pumping systems for adding stabilizing agent and water. Each system shall have an inspection or test nozzle for stabilizing agent and/or water sampling.
- 4) The additive system shall include a heating system to maintain the PG binder flowing into the mixing chamber at the optimal foaming temperature. The PG binder heating system shall be heated electrically.
- 5) The system shall be capable of producing a uniformly mixed, homogenous recycled pavement mixture.

**e) Paving Equipment**

- 1) The placement and shaping of the recycled pavement mixture shall be completed using a self-propelled paver, with a minimum 10' and maximum 20' screed width.
- 2) The screed shall not be heated when paving the recycled mix.
- 3) The material shall be transferred directly into the paver hopper from the recycling equipment or with a pick-up device. When a pick-up device is used, the entire windrow shall be removed from the milled surface and transferred to the paver hopper.

**f) Compaction Equipment**

- 1) Compaction equipment shall be a minimum of 9 tons, self-propelled and include both dual smooth drum vibratory and pneumatic rollers.
- 2) The number and types of rollers shall be as necessary to achieve the specified compaction and surface smoothness required for the finish wearing course.

**g) Preparation**

- 1) Inspect the pavement surface for any areas of failing subgrade. If needed, repair areas will be saw cut, and all inferior material shall be taken out. Removed materials shall be replaced with clean granular material compacted in lifts not to exceed 6" in thickness, up to within 6" of the road surface. The final 6", bringing the repair to road grade, shall be done with 3/4" hot mix binder.
- 2) If pre-milling to remove the material ahead of recycling is warranted, it will be paid under the "Pre-milling".
- 3) Any blading of the existing roadway shoulders away from the asphaltic surface edge to minimize contamination of the CIR pavement will be the responsibility of the owner.
- 4) Saw cutting cost shall be incidental to the repair. Gravel to be priced by the cubic yard, and hot mix asphalt to be priced by the ton.

**h) Processing and Placement of Recycled Pavement Mixture**

- 1) Mill the existing pavement to the required depth and width indicated on the plans.



- 2) Blend the RAP material with the mix design specified proportions of stabilizing agent and water; produce a uniform and homogeneous recycled mixture.
- 3) Spread the recycled mixture to the grade, elevations, and slopes specified on the plans; avoiding tearing or scarring of the recycled pavement surface.
- 4) Ensure proper material transfer, handling, and spreading to prevent particle segregation.
- 5) Overlap longitudinal joints between successive CIR operations a minimum of 3 inches. Overlap transverse joints between successive CIR operations a minimum of 2 feet. Control the addition of foamed asphalt to the CIR in overlap areas in order to avoid excessive localized high asphalt content in the CIR layer.

**i) Compaction - Control Strip Construction**

- 1) On the first day of production, construct a control strip to identify the target wet density for the CIR layer. Perform the control strip construction and density testing under the direct observation and/or assistance of the Engineer.
- 2) Unless the Engineer approves otherwise, construct control strips to a minimum dimension of 500 feet long and one full lane width.
- 3) Completed control strips may remain in-place to be incorporated into the final roadway cross-section.
- 4) Construct additional control strips at a minimum, when:
  - The CIR layer thickness changes in excess of 2.0 inches, or
  - The percent of target density is less than 90% or exceeds 105.0%, and is outside the range of the 10 random measurements defining the control strip, on three consecutive sub lots.
- 5) Construct control strips using equipment and methods representative of the operations to be used for constructing the CIR layer.
- 6) After compacting the control strip with a minimum of 2 passes, mark and take density measurements at 3 random locations, at least 1½ feet from the edge of the CIR layer. Take subsequent density measurements at the same 3 locations.
- 7) After each subsequent pass of compaction equipment over the entirety of the control strip, take density measurements at the 3 marked locations. Continue compacting and testing until the increase in density measurements is less than 2.0 lb/cubic feet, or the density measurements begin to decrease.
- 8) Upon completion of control strip compaction, take 10 randomly located density measurements within the limits of the control strip, at least 1½ feet from the edge of the base. The final measurements recorded at the 3 locations under paragraph (f) of this section may be included as 3 of the 10 measurements. Average the 10 measurements to obtain the control strip target density.

**j) Compaction Requirements**

Compact the CIR layer to a required minimum density of 95% of the target density.

**k) Surface Requirements**

- 1) Test the pavement surface at regular intervals using a 10-foot straightedge or other Engineer-specified device.

- 2) The Engineer may direct the repair of surface deviations greater than 1/4 inch between two surface contact points. Correct high points by reworking, rerolling, trimming, milling, or grinding. Minor depressions greater than 3/4 inch may be corrected by reworking or have a tack coat applied and be filled with HMA immediately prior to placement of the surface treatment.

**l) Maintaining the Work**

- 1) After compaction is complete, determine whether the CIR is sufficiently stable and cured adequately to open to traffic.
- 2) Apply a fog seal to minimize raveling and reduce water intrusion into the recycled pavement by the end of each CIR treatment day. Fog seal shall be a diluted CSS-1h emulsion (50% emulsion, 50% water), or approved equal.
- 3) After opening to traffic, and prior to placing a surface treatment, maintain the surface of the recycled pavement in a condition suitable for safe movement of traffic.
- 4) Repair any damage to the recycled pavement prior to placement of the wearing course at no additional cost to the owner.

**m) Curing and Surfacing**

- 1) Application of a surface treatment will not be allowed until the moisture content of the CIR layer is not more than 1.5%.
- 2) If the moisture content of the CIR layer does not reduce to 1.5%, the surface treatment may be applied after the change in moisture content is less than 0.10 percentage points for three consecutive calendar days.
- 3) The finish wearing course should be applied as soon as curing is complete, not more than 14 days after the recycling process begins.
  - Immediately before the application of the finish wearing course, an asphalt emulsion tack coat shall be applied at a minimum rate of 0.05 gal/SY.
  - Do not use a hot asphaltic cement tack coat.

**5. MEASUREMENT AND PAYMENT**

**Table D.14**

DESCRIPTION	UNIT
Cold In-place Recycling (CIR) Including Fog Seal	SY
Liquid Asphalt Stabilizing Agent	GAL
Portland Cement Stabilizing Agent	TON

- a) The owner will measure the Cold In-place Recycling (CIR) bid item as acceptably completed by the square yard.
- b) The owner will measure the Liquid Asphalt and Portland Cement Stabilizing Agents incorporated into the work by the gallon and by the ton, respectively, as metered through a calibrated pump, calibrated auger, or through delivered ticket quantity, acceptably completed.

- c) Payment is full compensation for measured quantities as specified above; all material including mixing and milling water; equipment necessary for milling and sizing, mixing, paving, compacting the completed CIR and fog seal to maintain the completed CIR.
- d) For roadways where owner elects to have contractor install additional RAP or virgin aggregate on top of the existing pavement ahead of the milling machine to thicken the recycled layer, owner shall furnish and deliver the virgin aggregate or screened and sized RAP (1" minus) to contractor's spreading equipment. RAP or virgin aggregate shall be delivered at a rate adequate not to slow down the subsequent recycling operation. Contractor shall be paid for spreading this additional virgin aggregate or RAP layer by the SY, under the separate bid item "Pave RAP or Aggregate Ahead of Recycler" (ITEM 8). A sample of the RAP or virgin aggregate to be used will be supplied to the contractor to develop mix design(s).

**6. METHOD OF AWARD**

- a) To ensure the contractor's capabilities, the bidder shall provide with his bid evidence of his current State DOT prequalification status, for the categories of work contained herein. Bidder shall also submit with his bid documented experience of at least ten (10) foamed asphalt stabilized CIR jobs totaling a minimum of 250,000 square yards including the street names and limits, year completed, owner agency name and contact information for verification purposes.
- b) To ensure the contractor's capabilities, the bidder shall provide with his bid, evidence of his current State DOT prequalification status, for the categories of work contained herein.

**7. ASPHALT PRICE ADJUSTMENTS**

Contractor's bid prices below shall be based upon the current State DOT asphalt cement price index posted exactly two (2) weeks prior to the due date for receipt of bids ("Bid Index"). If the posted State DOT asphalt cement price index in place when the work is performed differs from the Bid Index, up or down, then Contractor's invoices shall include price adjustments for the asphaltic materials, and these adjustments shall be calculated based on the actual tons of liquid asphalt cement incorporated into the work.

## Item 13 Pre-Milling Pavement

### 1. DESCRIPTION

Work under this item shall be done in conjunction with the CIR. The work shall consist of removing, by cold-planer, asphalt pavement in designated areas. The milled material shall become the property of the owner to be disposed of or recycled.

### 2. EQUIPMENT

- a) The cold-planer, and any other motorized vehicular equipment, shall be equipped with taillights, headlights, and necessary reflectors so that they can be operated in traffic with complete safety.
- b) The cold-planing machine shall be adjustable as to crown and minimum depth of 1/8". The width of the cutting drum shall be a minimum of 51"
- c) The equipment shall be capable of accurately and automatically establishing profile grade along each edge of the machine (within 1/8-inch, more or less) by referencing from the existing pavement by means of a ski or matching shoe controlling cross slope at a given rate.
- d) The machine shall be capable of being operated at speeds from 18 to 40 feet per minute and designed so that the operator can, at all times, observe the operations without leaving his control area.
- e) The equipment furnished by the contractor shall be in good repair and shall be maintained so as to produce a clean cut into the pavement at all times.
- f) The machine shall be equipped with an integral loading and reclaiming means to immediately remove material being cut from the surface of the roadway and discharge the cuttings into a truck, all in one operation. All planing machinery shall be equipped with dust control devices to prevent any dust produced in the cutting operation from escaping into the air, in compliance with EPA air quality standards. The equipment shall meet the standards set by the Air Quality Act for noise and pollution. This machine shall be equipped with a floating moldboard cutting device which is behind the mandrel, and such moldboard must have an infinitely variable down pressure from 0-300 PSI.

### 3. CONSTRUCTION METHOD

- a) The cold planing machine shall be delivered to the project limits on a trailer. The machine shall be loaded on to the trailer to be transferred from work site to work site. The owner shall not "walk" the machine to the next site unless prior approval from the Engineer is granted.
- b) Once the cold-planing process has begun, the contractor is obliged to carry this effort forward without interruption, yet in accordance with all work hour restrictions unless otherwise directed by the Engineer
- c) Cold-planing operations shall not be limited to just the primary roadway surface, but shall also extend into the adjacent intersections as well. The limit of this work shall be determined in the field by the Engineer so as to best meet the existing conditions and to further provide for a smooth pavement transitioning.
- d) No asphalt millings shall remain on-site at the end of each day. Material resulting from the operation shall become the property of the owner and disposed of at an owner-furnished disposal site. Existing catch basins shall be protected in place to not allow loose material to enter structures.
- e) Owner to provide trucking of pre-millings from the project. If contractor is required to provide trucking of pre-millings, it will be paid for under ITEM 6 – Trucking.

**4. METHOD OF AWARD**

To ensure contractor accountability, the Owner intends to award all items to a single contractor. Accordingly, contractors must bid on all items of work, and the low bidder will be the contractor whose total bid price is the lowest. The bid quantities are not guaranteed, and their primary purpose is for the determination of the low bidder.

**5. MEASUREMENT AND PAYMENT**

Pre-Milling: The bid price per SY will be multiplied by the number of inches of depth milled to calculate the final payment amount per square yard.

**Item 14  
Base Repair – Gravel**

**Item 15  
Base Repair - Hot Mix Asphalt**

**1. DESCRIPTION**

If needed, repair areas will be saw cut, and then all inferior material shall be removed. Gravel will then be placed and compacted in 6" lifts. The final 6", bringing the repair area to road grade, shall be done with ¾" hot mix binder.

**2. METHOD OF AWARD**

To ensure contractor accountability, the Owner intends to award all items to a single contractor. Accordingly, contractors must bid on all items of work, and the low bidder will be the contractor whose total bid price is the lowest. The bid quantities are not guaranteed, and their primary purpose is for the determination of the low bidder.

**3. MEASUREMENT AND PAYMENT**

Saw cutting cost shall be incidental to the repair. Gravel to be paid by the cubic yard, and hot mix asphalt to be paid by the ton.

**4. ASPHALT PRICE ADJUSTMENTS**

**Asphalt Price Adjustments:** Contractor's bid prices below shall be based upon the current State DOT asphalt cement price index posted exactly two (2) weeks prior to the due date for receipt of bids ("Bid Index"). If the posted State DOT asphalt cement price index in place when the work is performed differs from the Bid Index, up or down, then Contractor's invoices shall include price adjustments for the asphaltic materials, and these adjustments shall be calculated based on the actual tons of liquid asphalt cement incorporated into the work.

**Item 16**  
**Lowering and Raising of Existing Structures**  
**(Frames and Grates or Frames and Covers)**  
**For CIR**

**1. MATERIALS**

- a) Concrete collars will be constructed using 4,000 PSI cement concrete masonry or hot mix asphalt compacted in lifts not to exceed 6", at no additional cost. A minimum of four (4) inches of hot mix asphalt shall be placed around the adjusted structure and compacted to the underlying grade of the proposed wearing surface, and this work will be considered incidental to the above Item's unit price. All concrete collars will be completely coated with (RS-1) asphaltic emulsion before placement of hot mix asphalt. The brick to be used shall be clay brick.
- b) Concrete collars shall be constructed with high early strength cement. Concrete collars shall be incidental to the item of work to which they pertain.
- c) Use of steel plates to cover open structures shall be considered incidental to the work and not cause for additional compensation. Multiple adjustments that may be necessary as a result of the work sequence shall be considered part of the one-time measurement and payment and not cause for additional compensation

**2. ENGINEERING**

- a) In all roadways, the castings shall be lowered to the top of the structure base.
- b) After the CIR, castings shall be raised to the final grade.
- c) Damaged or obsolete castings shall be replaced with new castings as directed by the Engineer. Frames, grates and covers will be furnished by the Owner.
- d) The Contractor shall properly dispose of the old damaged or obsolete castings. No additional compensation will be made for disposal of the old castings.

**3. METHOD OF AWARD**

To ensure contractor accountability, the Owner intends to award all items to a single contractor. Accordingly, contractors must bid on all items of work, and the low bidder will be the contractor whose total bid price is the lowest. The bid quantities are not guaranteed, and their primary purpose is for the determination of the low bidder.

**4. MEASUREMENT AND PAYMENT**

Compensation for all labor, materials (including cement concrete, hot mix asphalt, and asphaltic emulsion), equipment and incidentals to construct the collars shall be included in the contract unit price of this item. The quantity to be measured for payment will be the number of catch basins and manholes adjusted, to be paid for at the unit price per each. Measurement shall be by each catch basin or manhole adjusted and approved by the Engineer.

In instances where the structure base is more than one foot (12") below the final rim elevation of the adjusted casting, the additional required structure rebuild will be paid for by the vertical foot under ITEM 17 – Structure Rebuild for every foot beyond the initial one foot.

**Item 18**  
**Adjustment of Existing Water Gates**  
**and Other Small Structures (Box or Service)**  
**for CIR**

**1. CONSTRUCTION METHOD**

- a) Valve boxes are to be lowered prior to the CIR process and raised after the CIR process. They shall be installed vertically, centered over the operating nut, and the elevation of the top shall be adjusted to final grade.
- b) Boxes shall be continuously and adequately supported during backfilling to maintain vertical alignment.
- c) Bricks shall be placed at the base of the flange to properly support the box.
- d) Backfill around valve boxes, and anywhere excavation is made in the street, shall be compacted in lifts not exceeding 6 inches.
- e) The boxes and tops shall be furnished by the Owner.
- f) The contractor shall properly dispose of any old damaged or obsolete castings. No additional compensation will be made for disposal of old castings.

**2. METHOD OF AWARD**

To ensure contractor accountability, the Owner intends to award all items to a single contractor. Accordingly, contractors must bid on all items of work, and the low bidder will be the contractor whose total bid price is the lowest. The bid quantities are not guaranteed, and their primary purpose is for the determination of the low bidder.

**3. MEASUREMENT AND PAYMENT**

The unit price payment for this item will be for all work described above, for each water gate or other small structure adjusted.



**Item 19**  
**Backing Up Road Edge**

**1. CONSTRUCTION METHOD**

- a) If determined by the owner that backing up of road edge is required, additional material shall be placed at a maximum width of 2'.
- b) Owner to provide material and trucking.

**2. METHOD OF AWARD**

To ensure contractor accountability, the Owner intends to award all items to a single contractor. Accordingly, contractors must bid on all items of work, and the low bidder will be the contractor whose total bid price is the lowest. The bid quantities are not guaranteed, and their primary purpose is for the determination of the low bidder.

**3. MEASUREMENT AND PAYMENT**

- a) Cost of placement shall be charged by the linear foot.
- b) If owner wishes to have contractor provide trucking, it will be paid under "Trucking" at a unit rate of per hour, per truck.

### Bid Proposal Pages

Bid Item	Bid Quantity	Bidder's Price Per UNIT	Bid Total
Crack Sealing- Polymer & Crumb Rubber Modified with Fibers	4,000 GAL	\$/GAL	\$
Conventional Microsurfacing (Type II) (1 Lift)	28,000 SY	\$/SY	\$
Conventional Microsurfacing (Type II) Leveling & Surface Course (2 Lifts)	28,000SY	\$/SY	\$
Conventional Rut Filling	50 TON	\$/TON	\$
HiMA Microsurfacing (Type II) – (1 lift)	28,000 SY	\$/SY	\$
HiMA Microsurfacing (Type II) Leveling & Surface Course (2 Lifts)	28,000 SY	\$/SY	\$
HiMA Rut Filling	50 TON	\$/TON	\$
Cape Seal (Chip Seal & Conventional Micro)	28,000 SY	\$/SY	\$
Cape Seal (Chip Seal & HiMA Micro)	28,000 SY	\$/SY	\$
Conventional 3/8" chip seal	28,000 SY	\$/SY	\$
Sweeping with Vacuum Broom Truck	40 HR	\$/HR	\$
Pneumatic Roller with Operator	3 DAY	\$/DAY	\$
Polymer Modified Rejuvenating Fog Seal	20,000 SY	\$/SY	\$
Hot Mix Leveling Course	750 TON	\$/TON	\$
Pavement Milling	1,000 SY	\$/SY	\$
Adjust Manholes/Catch Basins	25 EA	\$/EA	\$
Adjust Water Gates/Small Structures	25 EA	\$/EA	\$
Structure Rebuild	25 VF	\$/VF	\$

**Pay Items are continued on the following page.  
Total Bid Price must include All pay items on this page and the following page.**

## Bid Proposal Pages

Bid Item	Bid	Bidder's Price Per UNIT	Bid Total
<b>COLD IN-PLACE RECYCLING PROCESS</b>			
Core Sampling	1 DAY	\$ /DAY	\$
Mix Design	1 EA	\$ /EA	\$
Cold In-place Recycling Including Fog Seal	30,000 SY	\$ /SY	\$
Liquid Asphalt Stabilizing Agent	30,000 GAL	\$ /GAL	\$
Portland Cement Stabilizing Agent	75 TON	\$ /TON	\$
Trucking- minimum body size 14 CY (per hour, per truck)	40 HR	\$ /HR	\$
Pre-milling* (see footnote)	30,000 SY	\$ /SY	\$
Pave RAP or Aggregate Ahead of Recycler	500 SY	\$ /SY	\$
Gravel for Base Repair	0 CY	\$ /CY	\$
Hot Mix Asphalt for Base Repair	100 TON	\$ /TON	\$
Adjust Manholes/Catch Basins for CIR	25 EA	\$ /EA	\$
Adjust Water Gates/Small Structures for CIR	25 EA	\$ /EA	\$
Backing up Edge of Road	25 LF	\$ /LF	\$
		<b>Total Bid Price</b>	<b>\$</b>
<b>Total Bid Price in Words</b>			
<p><b>Total Bid Price must include All pay items on this page and previous page as well as acknowledging addenda and completing the following pages (Up to Payment Bond)</b></p>			

**\*Pre-Milling:** The bid unit cost per SY will be multiplied by the number of inches of depth required. Bidder's unit price will be based on one inch (1") depth.

## Bid Proposal Pages

**ADDENDA:** This bid includes addenda numbered \_\_\_\_\_ (List all Addenda numbers).

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The quantities specified are approximate and are based on previous consumption. It is specifically understood that the Town does not agree to purchase any specific quantity, and purchases will be made for actual requirements of the Town, only. The Town may increase or decrease the quantity of any item specified without change in price per unit of quantity as stated in the Contractor's Bid Response. Bids must remain firm throughout the contract term, unless otherwise specified. No increase in the unit price bid, once accepted and awarded will be permitted. The Town shall specify the unit of measurement and payment prior to beginning each assignment under this contract.

I understand that the town reserves the right to reject any and all bids, and waive any minor or non-material informalities, if deemed to be in its best interests.

I understand that the Town may hold my bid for forty five (45) days prior to awarding a contract.

I certify, under the penalties of perjury, that (1) I have had an opportunity to view the full bid package and am aware it was my responsibility to perform my own due diligence appropriate to submitting this proposal, (2) I am fully authorized to submit this bid, (3) I have not engaged in discussions, negotiations, or collusion with any person to determine what my bid will be and (4) that I, to the best of my knowledge and belief, have paid all taxes, fees, assessments, betterments or other municipal charges that I owe to the Town of Templeton or have payment agreement in place or have filed an appeal over the same.

---

Signature of Bidder

Corporate  
Seal

---

Title of Bidder

Signed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

**TOWN OF TEMPLETON**

**CERTIFICATE OF NONCOLLUSION**

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.

FIRM \_\_\_\_\_ SIGNATURE \_\_\_\_\_

ADDRESS \_\_\_\_\_

NAME (print) \_\_\_\_\_ TITLE \_\_\_\_\_

PHONE \_\_\_\_\_ DATE \_\_\_\_\_

**NOTE: This certificate must be signed by the individual submitting the bid or proposal.**

**OSHA CERTIFICATION**

**I hereby certify that all of our employees who will be employed at the work site have successfully passed the OSHA approved 10-hour safety course, and we have proof on file. I also certify that I am able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work.**

Date \_\_\_\_\_

 Authorized Official's Signature

\_\_\_\_\_  
Typed or Printed Name of Person Signing

\_\_\_\_\_  
Company or Corporation

\_\_\_\_\_  
Name and Tel # of Person who will be filing CERTIFIED PAYROLL

**TOWN OF TEMPLETON**

**STATE TAXES CERTIFICATION CLAUSE**

I certify under the penalties of perjury that I, to my best knowledge and belief, have filed all state tax returns and paid all state taxes under law.

\_\_\_\_\_ by: \_\_\_\_\_  
\* Signature of individual or Corporate Officer  
Corporate Name (Mandatory) (Mandatory, if applicable)

\_\_\_\_\_  
\*\*Social Security # (Voluntary) or Federal Identification #

\* Approval of a contract or other agreement will not be granted unless this certification clause is signed by the applicant.

\*\* Your Social Security Number will be furnished to the Massachusetts Department of Revenue to determine whether you have met tax filing or tax payment obligations. Providers who fail to correct their non-filing or delinquency will not have a contract or other agreement issued, renewed, or extended. This request is made under the authority of Mass. G.L.62C s. 49.A.

**TOWN OF TEMPLETON**  
**OFFICE OF THE BOARD OF SELECTMEN**  
*160 Patriots Road, Rm. 6*  
*East Templeton, Massachusetts 01438*

**Attachment A**

**INSURANCE REQUIREMENTS**

Prior to commencing work, and throughout the term of this contract, the Contractor shall obtain, and maintain, in the limits and under the conditions set forth below, insurance coverage naming the town, its officers, employees and assigns, as Certificate Holder and additionally Named Insured, for the following types and levels of coverage:

- Workers Compensation	Statutory
- Automobile and Equipment	\$1 Million/\$2 Million
- Property Damage	\$1 Million/\$2 Million
- General Liability	\$1 Million/\$2 Million

The Town shall be earlier than thirty (30) days before any such policy is cancelled.

If a sub-Contractor is used for any portion of the work, the Contractor will provide to the Town a similar certificate, in similar amounts and under similar conditions, from the sub-Contractor. The town must be given 30 days advance notice of cancellation of any insurance required herein.

Should the Contractor fail to maintain such Workers' Compensation insurance, and should the Town be found liable to principals, officers, employees and agents of the Contractor, the Town may recover from the Contractor the amount of any medical costs and compensation paid to or on behalf of the principals, officers, employees and agents of the Contractor and any expenses relating to claims filed under the provisions of Workers' Compensation.

**Indemnification & Litigation**

The Contractor agrees to indemnify, pay on behalf of, defend and hold harmless the Town and its officers, agents and employees of Templeton from and against any and all claims, demands, suits, actions, costs, judgments, whatsoever, including reasonable attorney's fees, which may be imposed upon, incurred by, or asserted against the Town by reason of (a) any failure on the part of the Contractor under this contract, or (b) for the death, injury or property damage suffered by any person on account of or based upon the act, omission, fault, negligence or misconduct of any person whomsoever other than the Town of Templeton. The Town agrees that the Contractor will not be responsible for any suit, action or claim of loss or expenses because of bodily injury, including death caused by the Town and its agents and employees.

The foregoing indemnity and hold harmless agreement shall include indemnity against all costs, expenses and liabilities incurred in or in connection with any such claim or proceeding brought here on, and the defense thereof with counsel acceptable to the Town or counsel selected by an insurance company which has accepted liability for any such claim.

This covenant shall survive the termination of this Contract.



**PAYMENT BOND**

Know All Men By These Presents: That we, \_\_\_\_\_  
\_\_\_\_\_ as PRINCIPAL, and, as SURETY,  
are held and firmly bound unto the Town of Templeton as Oblige, in the sum of  
\_\_\_\_\_ dollars \$\_\_\_\_\_ to be  
paid to the Oblige, for which payments well and truly to be made, we bind ourselves, our respective  
heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.  
Whereas, the said PRINCIPAL has made a contract with the Oblige, bearing the date of  
\_\_\_\_\_, 20\_\_\_\_, for the construction of \_\_\_\_\_  
\_\_\_\_\_ (Project Title) in Templeton, Massachusetts.  
Now, the conditions of this obligation are such that if the PRINCIPAL and all Sub-contractors under said  
contract shall pay for all labor performed or furnished and for all materials used or employed in said  
contract and in any and all duly authorized modifications, alterations, extensions of time, changes or  
additions to said contract that may hereafter be made, notice to the SURETY of such modifications,  
alterations, extensions of time, changes or additions being hereby waived, the foregoing to include any  
other purposes or items set out in, and to be subject to, provisions of M.G.L. c. 30, sec. 39A, and M.G.L.  
c. 149 sec. 29, as amended, then this obligation shall become null and void; otherwise it shall remain in full  
force, virtue and effect. In Witness Whereof, the PRINCIPAL and SURETY have hereto set their hands  
and seals this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

PRINCIPAL SURETY

\_\_\_\_\_

BY \_\_\_\_\_ (SEAL) (ATTORNEY-IN-FACT) (SEAL)

(Title) ATTEST: \_\_\_\_\_ ATTEST: \_\_\_\_\_

**EXAMPLE - AGREEMENT BY AND BETWEEN  
THE TOWN OF TEMPLETON AND (CONTRACTOR)**

This agreement made and entered into this (DATE OF AGREEMENT), by and between the Town of Templeton, a municipal corporation organized and existing under the laws of the Commonwealth of Massachusetts, hereinafter referred to as the "Town", by and through its Board of Selectmen and (Contractor / Address), the Vendor.

ARTICLE I. The Vendor agrees to furnish and deliver services, materials, supplies, or equipment as follows:

(SUPPLY OR SERVICE) in accordance with the Invitation to Bid and to the extent not contradicted by the specifications and consistent with applicable law, the Vendor's Bid documents annexed hereto and incorporated hereby by reference marked Exhibit "A". This Contract is subject to and conditioned upon appropriation by the Town.

ARTICLE II. The Town agrees to pay for the Vendor for work performed in conformity with Section 17 of the Invitation for Bid, which states: "The Contractor will be paid per approved invoice (on a monthly basis). An invoice will be presented for the services performed. This invoice shall, as a minimum, identify the work that was done, where it was done, when it was done, who authorized it and the applicable work order. Additionally, it will detail the unit cost and extended cost for each wage/labor category, Contractor cost and applicable markup for parts and/or materials and costs for equipment rental."

ARTICLE III. The Vendor shall submit and conform to all determinations and directions of the designee of the Town of Templeton relating to the services and its delivery, suitability, amount, quality and value of everything furnished or to any other questions which may arise as to the product and services and the time and manner of their delivery.

ARTICLE IV. If the Vendor shall fail to furnish and deliver any of said product and/or services as required under the terms of this agreement after the purchase order for same has been given to the Vendor or mailed to him/her at the business address stated in his/her proposal, the Town, acting by the Town Administrator, may obtain the product and/or services ordered from any other source, and the Town shall give to the Vendor or mail to him/her at the business address stated in his/her proposal, a notice, signed by the Town Administrator, that the Vendor has failed to carry out the contract to the satisfaction of the Town Administrator and as required by the terms of said Bid Document. Upon such default, the Town Administrator, may at his/her discretion and without further notice, cancel the contract.

ARTICLE V. Upon such default, the Town may charge to the Contractor (and deduct from contract sums then or thereafter payable to the Contractor, if any there be) any and all costs and expenses incurred by the Town as a direct or indirect consequence of such default, including, without limitation, any excess cost of material or service, any administrative costs or expenses, and all costs of collection of amounts payable by the Contractor hereunder (including reasonable attorney's fee).

ARTICLE VI. The contract is made subject to General Laws, Chapter 30, Section 39M, Chapter 30B, Chapter 149, Sections 44A through M, and all other laws of the Commonwealth, and the ordinances of the Town, and if any clause hereof does not conform to such laws or ordinances, such clause shall be void and such laws or ordinances operative in lieu thereof.

ARTICLE VII. The Vendor shall furnish such bond as may be required by law (including without limitation M.G.L. c.149 §29) to insure the faithful performance of this contract, with a surety duly licensed to issue such bond in the Commonwealth of Massachusetts and satisfactory to the Town.

ARTICLE VIII. In the performance of all work, after award and prior to completion of the contract work, the Vendor will not discriminate on grounds of race, color, religion, national origin, age or sex in employment practices or in the selection or retention of subcontractors, and in the procurement of materials and of equipment. The Town may cancel, terminate or suspend the contract in whole or in part for any violation of this paragraph.

ARTICLE IX. The Vendor shall not assign this contract without express prior written consent of the Town of Templeton.

ARTICLE X. The Vendor shall indemnify and save harmless the Town of Templeton and all of its officers, agents and employees for any suits, causes of action, claims, judgments or other liability that may arise as a result of Vendor's action or failure to act. Certificates of Insurances shall be filed with the Town if it so requires and shall be subject to its approval for adequacy of protection.

WITNESS WHEREOF, the parties have hereunto set their hands the day and year first above written.

Town of Templeton

Contractor

\_\_\_\_\_  
Town Administrator

As to Appropriation:

\_\_\_\_\_  
Town Accountant



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

CHARLES D. BAKER  
Governor

KARYN E. POLITO  
Lt. Governor

ROSALIN ACOSTA  
Secretary  
MICHAEL FLANAGAN  
Director

**Awarding Authority:** Templeton Board of Selectmen  
**Contract Number:** \_\_\_\_\_ **City/Town:** TEMPLETON  
**Description of Work:** Random Crack Sealing of roads by fiber reinforcing method to be used for general work and State Aid work by the Town of Templeton  
**Job Location:** 381 Baldwinville Road

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Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the "Wage Request Number" on all pages of this schedule.
  - An Awarding Authority must request an updated wage schedule from the Department of Labor Standards ("DLS") if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
  - The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
  - All apprentices working on the project are required to be registered with the Massachusetts Department of Labor Standards, Division of Apprentice Standards (DLS/DAS). Apprentice must keep his/her apprentice identification card on his/her person during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DLS/DAS regardless of whether or not they are registered with any other federal, state, local, or private agency must be paid the journeyworker's rate for the trade.**
  - The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule. Awarding authorities are required to request these updates no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. Contractors are required to obtain the wage schedules from awarding authorities, and to pay no less than these rates to covered workers. The annual update requirement is not applicable to 27F "rental of equipment" contracts.
  - Every contractor or subcontractor which performs construction work on the project is required to submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee's name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. A sample of a payroll reporting form may be obtained at <http://www.mass.gov/dols/pw>.
  - Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
  - Employees not receiving the prevailing wage rate set forth on the wage schedule may report the violation to the Fair Labor Division of the office of the Attorney General at (617) 727-3465.
  - Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.
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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
<b>Construction</b>						
<b>(2 AXLE) DRIVER - EQUIPMENT</b> <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	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
<b>(3 AXLE) DRIVER - EQUIPMENT</b> <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	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
<b>(4 &amp; 5 AXLE) DRIVER - EQUIPMENT</b> <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	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
<b>ADS/SUBMERSIBLE PILOT</b> <i>PILE DRIVER LOCAL 56 (ZONE 2)</i>	08/01/2019	\$102.78	\$9.90	\$21.15	\$0.00	\$133.83
For apprentice rates see "Apprentice- PILE DRIVER"						
<b>AIR TRACK OPERATOR</b> <i>LABORERS - ZONE 2</i>	06/01/2020	\$34.81	\$8.60	\$15.77	\$0.00	\$59.18
	12/01/2020	\$35.70	\$8.60	\$15.77	\$0.00	\$60.07
	06/01/2021	\$36.62	\$8.60	\$15.77	\$0.00	\$60.99
	12/01/2021	\$37.53	\$8.60	\$15.77	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER"						
<b>ASBESTOS WORKER (PIPES &amp; TANKS)</b> <i>HEAT &amp; FROST INSULATORS LOCAL 6 (WORCESTER)</i>	06/01/2020	\$38.00	\$12.50	\$8.85	\$0.00	\$59.35
	12/01/2020	\$39.00	\$12.50	\$8.85	\$0.00	\$60.35
<b>ASPHALT RAKER</b> <i>LABORERS - ZONE 2</i>	06/01/2020	\$34.31	\$8.60	\$15.77	\$0.00	\$58.68
	12/01/2020	\$35.20	\$8.60	\$15.77	\$0.00	\$59.57
	06/01/2021	\$36.12	\$8.60	\$15.77	\$0.00	\$60.49
	12/01/2021	\$37.03	\$8.60	\$15.77	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
<b>AUTOMATIC GRADER-EXCAVATOR (RECLAIMER)</b> <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2019	\$35.40	\$11.94	\$14.35	\$0.00	\$61.69
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>BACKHOE/FRONT-END LOADER OPERATOR</b> <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2019	\$35.40	\$11.94	\$14.35	\$0.00	\$61.69
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>BARCO-TYPE JUMPING TAMPER</b> <i>LABORERS - ZONE 2</i>	06/01/2020	\$34.31	\$8.60	\$15.77	\$0.00	\$58.68
	12/01/2020	\$35.20	\$8.60	\$15.77	\$0.00	\$59.57
	06/01/2021	\$36.12	\$8.60	\$15.77	\$0.00	\$60.49
	12/01/2021	\$37.03	\$8.60	\$15.77	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
<b>BATCH/CEMENT PLANT - ON SITE</b> <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2019	\$34.87	\$11.94	\$14.35	\$0.00	\$61.16
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BLOCK PAVER, RAMMER / CURB SETTER LABORERS - ZONE 2	06/01/2020	\$34.81	\$8.60	\$15.77	\$0.00	\$59.18
	12/01/2020	\$35.70	\$8.60	\$15.77	\$0.00	\$60.07
	06/01/2021	\$36.62	\$8.60	\$15.77	\$0.00	\$60.99
	12/01/2021	\$37.53	\$8.60	\$15.77	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER"						
BOILER MAKER BOILERMAKERS LOCAL 29	01/01/2020	\$46.10	\$7.07	\$17.98	\$0.00	\$71.15

**Apprentice - BOILERMAKER - Local 29**

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

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

Notes:

Apprentice to Journeyworker Ratio:1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) BRICKLAYERS LOCAL 3 (LOWELL)	08/01/2020	\$53.61	\$10.75	\$21.45	\$0.00	\$85.81
	02/01/2021	\$54.21	\$10.75	\$21.45	\$0.00	\$86.41
	08/01/2021	\$55.61	\$10.75	\$21.61	\$0.00	\$87.97
	02/01/2022	\$56.19	\$10.75	\$21.61	\$0.00	\$88.55

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
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**Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Lowell**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.81	\$10.75	\$21.45	\$0.00	\$59.01
2	60	\$32.17	\$10.75	\$21.45	\$0.00	\$64.37
3	70	\$37.53	\$10.75	\$21.45	\$0.00	\$69.73
4	80	\$42.89	\$10.75	\$21.45	\$0.00	\$75.09
5	90	\$48.25	\$10.75	\$21.45	\$0.00	\$80.45

**Effective Date - 02/01/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.11	\$10.75	\$21.45	\$0.00	\$59.31
2	60	\$32.53	\$10.75	\$21.45	\$0.00	\$64.73
3	70	\$37.95	\$10.75	\$21.45	\$0.00	\$70.15
4	80	\$43.37	\$10.75	\$21.45	\$0.00	\$75.57
5	90	\$48.79	\$10.75	\$21.45	\$0.00	\$80.99

Notes:

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

<b>BULLDOZER/POWER SHOVEL/TREE SHREDDER</b> <i>/CLAM SHELL OPERATING</i>	12/01/2019	\$35.40	\$11.94	\$14.35	\$0.00	\$61.69
<i>ENGINEERS LOCAL 98</i> For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>CAISSON &amp; UNDERPINNING BOTTOM MAN</b> <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2020	\$40.30	\$8.60	\$17.24	\$0.00	\$66.14
	12/01/2020	\$41.28	\$8.60	\$17.24	\$0.00	\$67.12
	06/01/2021	\$42.30	\$8.60	\$17.24	\$0.00	\$68.14
	12/01/2021	\$43.31	\$8.60	\$17.24	\$0.00	\$69.15
For apprentice rates see "Apprentice- LABORER"						
<b>CAISSON &amp; UNDERPINNING LABORER</b> <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2020	\$39.15	\$8.60	\$17.24	\$0.00	\$64.99
	12/01/2020	\$40.13	\$8.60	\$17.24	\$0.00	\$65.97
	06/01/2021	\$41.15	\$8.60	\$17.24	\$0.00	\$66.99
	12/01/2021	\$42.16	\$8.60	\$17.24	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
<b>CAISSON &amp; UNDERPINNING TOP MAN</b> <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2020	\$39.15	\$8.60	\$17.24	\$0.00	\$64.99
	12/01/2020	\$40.13	\$8.60	\$17.24	\$0.00	\$65.97
	06/01/2021	\$41.15	\$8.60	\$17.24	\$0.00	\$66.99
	12/01/2021	\$42.16	\$8.60	\$17.24	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
<b>CARBIDE CORE DRILL OPERATOR</b> <i>LABORERS - ZONE 2</i>	06/01/2020	\$34.31	\$8.60	\$15.77	\$0.00	\$58.68
	12/01/2020	\$35.20	\$8.60	\$15.77	\$0.00	\$59.57
	06/01/2021	\$36.12	\$8.60	\$15.77	\$0.00	\$60.49
	12/01/2021	\$37.03	\$8.60	\$15.77	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CARPENTER	03/01/2020	\$42.50	\$9.40	\$18.95	\$0.00	\$70.85
CARPENTERS -ZONE 2 (Eastern Massachusetts)	09/01/2020	\$43.15	\$9.40	\$18.95	\$0.00	\$71.50
	03/01/2021	\$43.75	\$9.40	\$18.95	\$0.00	\$72.10
	09/01/2021	\$44.40	\$9.40	\$18.95	\$0.00	\$72.75
	03/01/2022	\$45.00	\$9.40	\$18.95	\$0.00	\$73.35
	09/01/2022	\$45.65	\$9.40	\$18.95	\$0.00	\$74.00
	03/01/2023	\$46.25	\$9.40	\$18.95	\$0.00	\$74.60

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

**Effective Date - 03/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.25	\$9.40	\$1.73	\$0.00	\$32.38
2	60	\$25.50	\$9.40	\$1.73	\$0.00	\$36.63
3	70	\$29.75	\$9.40	\$13.76	\$0.00	\$52.91
4	75	\$31.88	\$9.40	\$13.76	\$0.00	\$55.04
5	80	\$34.00	\$9.40	\$15.49	\$0.00	\$58.89
6	80	\$34.00	\$9.40	\$15.49	\$0.00	\$58.89
7	90	\$38.25	\$9.40	\$17.22	\$0.00	\$64.87
8	90	\$38.25	\$9.40	\$17.22	\$0.00	\$64.87

**Effective Date - 09/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.58	\$9.40	\$1.73	\$0.00	\$32.71
2	60	\$25.89	\$9.40	\$1.73	\$0.00	\$37.02
3	70	\$30.21	\$9.40	\$13.76	\$0.00	\$53.37
4	75	\$32.36	\$9.40	\$13.76	\$0.00	\$55.52
5	80	\$34.52	\$9.40	\$15.49	\$0.00	\$59.41
6	80	\$34.52	\$9.40	\$15.49	\$0.00	\$59.41
7	90	\$38.84	\$9.40	\$17.22	\$0.00	\$65.46
8	90	\$38.84	\$9.40	\$17.22	\$0.00	\$65.46

**Notes:**

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80  
 Step 1&2 \$30.26/ 3&4 \$36.18/ 5&6 \$54.64/ 7&8 \$60.62

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

CARPENTER WOOD FRAME	04/01/2020	\$22.66	\$7.21	\$4.80	\$0.00	\$34.67
CARPENTERS-ZONE 3 (Wood Frame)	04/01/2021	\$23.16	\$7.21	\$4.80	\$0.00	\$35.17
	04/01/2022	\$23.66	\$7.21	\$4.80	\$0.00	\$35.67
	04/01/2023	\$24.16	\$7.21	\$4.80	\$0.00	\$36.17

All Aspects of New Wood Frame Work

**Classification**

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

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

**Effective Date - 04/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$13.60	\$7.21	\$0.00	\$0.00	\$20.81
2	60	\$13.60	\$7.21	\$0.00	\$0.00	\$20.81
3	65	\$14.73	\$7.21	\$0.00	\$0.00	\$21.94
4	70	\$15.86	\$7.21	\$0.00	\$0.00	\$23.07
5	75	\$17.00	\$7.21	\$3.80	\$0.00	\$28.01
6	80	\$18.13	\$7.21	\$3.80	\$0.00	\$29.14
7	85	\$19.26	\$7.21	\$3.80	\$0.00	\$30.27
8	90	\$20.39	\$7.21	\$3.80	\$0.00	\$31.40

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

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

**Notes:**  
 % Indentured After 10/1/17; 45/45/55/55/70/70/80/80  
 Step 1&2 \$17.41/ 3&4 \$19.67/ 5&6 \$26.87/ 7&8 \$29.14

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

<b>CEMENT MASONRY/PLASTERING</b> <i>BRICKLAYERS LOCAL 3 (LOWELL)</i>	<b>01/01/2020</b>	<b>\$45.23</b>	<b>\$12.75</b>	<b>\$22.41</b>	<b>\$0.62</b>	<b>\$81.01</b>
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**Apprentice - CEMENT MASONRY/PLASTERING - Lowell**

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

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

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

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



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CHAIN SAW OPERATOR LABORERS - ZONE 2	06/01/2020	\$34.31	\$8.60	\$15.77	\$0.00	\$58.68
	12/01/2020	\$35.20	\$8.60	\$15.77	\$0.00	\$59.57
	06/01/2021	\$36.12	\$8.60	\$15.77	\$0.00	\$60.49
	12/01/2021	\$37.03	\$8.60	\$15.77	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
COMPRESSOR OPERATOR OPERATING ENGINEERS LOCAL 98	12/01/2019	\$34.87	\$11.94	\$14.35	\$0.00	\$61.16
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CRANE OPERATOR OPERATING ENGINEERS LOCAL 98	12/01/2019	\$38.90	\$11.94	\$14.35	\$0.00	\$65.19
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) PAINTERS LOCAL 35 - ZONE 2	07/01/2020	\$51.51	\$8.25	\$22.40	\$0.00	\$82.16
	01/01/2021	\$52.06	\$8.25	\$22.75	\$0.00	\$83.06

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

**Effective Date - 07/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.76	\$8.25	\$0.00	\$0.00	\$34.01
2	55	\$28.33	\$8.25	\$6.05	\$0.00	\$42.63
3	60	\$30.91	\$8.25	\$6.60	\$0.00	\$45.76
4	65	\$33.48	\$8.25	\$7.15	\$0.00	\$48.88
5	70	\$36.06	\$8.25	\$19.10	\$0.00	\$63.41
6	75	\$38.63	\$8.25	\$19.65	\$0.00	\$66.53
7	80	\$41.21	\$8.25	\$20.20	\$0.00	\$69.66
8	90	\$46.36	\$8.25	\$21.30	\$0.00	\$75.91

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.03	\$8.25	\$0.00	\$0.00	\$34.28
2	55	\$28.63	\$8.25	\$6.16	\$0.00	\$43.04
3	60	\$31.24	\$8.25	\$6.72	\$0.00	\$46.21
4	65	\$33.84	\$8.25	\$7.28	\$0.00	\$49.37
5	70	\$36.44	\$8.25	\$19.39	\$0.00	\$64.08
6	75	\$39.05	\$8.25	\$19.95	\$0.00	\$67.25
7	80	\$41.65	\$8.25	\$20.51	\$0.00	\$70.41
8	90	\$46.85	\$8.25	\$21.63	\$0.00	\$76.73

**Notes:**

Steps are 750 hrs.

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

DEMO: ADZEMAN LABORERS - ZONE 2	12/01/2019	\$39.30	\$8.10	\$16.60	\$0.00	\$64.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS - ZONE 2	12/01/2019	\$40.30	\$8.10	\$16.60	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: BURNERS LABORERS - ZONE 2	12/01/2019	\$40.05	\$8.10	\$16.60	\$0.00	\$64.75
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER LABORERS - ZONE 2	12/01/2019	\$40.30	\$8.10	\$16.60	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR LABORERS - ZONE 2	12/01/2019	\$40.05	\$8.10	\$16.60	\$0.00	\$64.75
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER LABORERS - ZONE 2	12/01/2019	\$39.30	\$8.10	\$16.60	\$0.00	\$64.00
For apprentice rates see "Apprentice- LABORER"						
DIVER PILE DRIVER LOCAL 56 (ZONE 2)	08/01/2019	\$68.52	\$9.90	\$21.15	\$0.00	\$99.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER PILE DRIVER LOCAL 56 (ZONE 2)	08/01/2019	\$48.94	\$9.90	\$21.15	\$0.00	\$79.99
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) PILE DRIVER LOCAL 56 (ZONE 2)	08/01/2019	\$73.41	\$9.90	\$21.15	\$0.00	\$104.46
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) PILE DRIVER LOCAL 56 (ZONE 2)	08/01/2019	\$102.78	\$9.90	\$21.15	\$0.00	\$133.83
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) DRAWBRIDGE - SEIU LOCAL 888	07/01/2020	\$26.77	\$6.67	\$3.93	\$0.16	\$37.53
ELECTRICIAN ELECTRICIANS LOCAL 96	07/01/2019	\$44.07	\$10.72	\$16.04	\$0.00	\$70.83

**Apprentice - ELECTRICIAN - Local 96**

**Effective Date - 07/01/2019**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.63	\$10.72	\$0.53	\$0.00	\$28.88
2	43	\$18.95	\$10.72	\$0.57	\$0.00	\$30.24
3	48	\$21.15	\$10.72	\$12.93	\$0.00	\$44.80
4	55	\$24.24	\$10.72	\$13.27	\$0.00	\$48.23
5	65	\$28.65	\$10.72	\$13.88	\$0.00	\$53.25
6	80	\$35.26	\$10.72	\$14.81	\$0.00	\$60.79

**Notes:**

Steps 1-2 are 1000 hrs; Steps 3-6 are 1500 hrs.

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

ELEVATOR CONSTRUCTOR ELEVATOR CONSTRUCTORS LOCAL 41	01/01/2020	\$54.85	\$15.73	\$18.41	\$0.00	\$88.99
	01/01/2021	\$56.69	\$15.88	\$19.31	\$0.00	\$91.88
	01/01/2022	\$58.62	\$16.03	\$20.21	\$0.00	\$94.86



<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
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**Apprentice - OPERATING ENGINEERS - Local 98 Class 3**

**Effective Date - 12/01/2019**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.92	\$11.94	\$14.35	\$0.00	\$47.21
2	70	\$24.41	\$11.94	\$14.35	\$0.00	\$50.70
3	80	\$27.90	\$11.94	\$14.35	\$0.00	\$54.19
4	90	\$31.38	\$11.94	\$14.35	\$0.00	\$57.67

**Notes:**

Steps 1-2 are 1000 hrs.; Steps 3-4 are 2000 hrs.

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

<b>FLAGGER &amp; SIGNALER</b>	06/01/2020	\$23.50	\$8.60	\$15.77	\$0.00	\$47.87
<i>LABORERS - ZONE 2</i>	12/01/2020	\$24.50	\$8.60	\$15.77	\$0.00	\$48.87
	06/01/2021	\$24.50	\$8.60	\$15.77	\$0.00	\$48.87
	12/01/2021	\$24.50	\$8.60	\$15.77	\$0.00	\$48.87
For apprentice rates see "Apprentice- LABORER"						
<b>FLOORCOVERER</b>	03/01/2020	\$44.74	\$9.40	\$19.25	\$0.00	\$73.39
<i>FLOORCOVERERS LOCAL 2168 ZONE II</i>	09/01/2020	\$45.54	\$9.40	\$19.25	\$0.00	\$74.19
	03/01/2021	\$46.34	\$9.40	\$19.25	\$0.00	\$74.99
	09/01/2021	\$47.14	\$9.40	\$19.25	\$0.00	\$75.79
	03/01/2022	\$47.94	\$9.40	\$19.25	\$0.00	\$76.59

**Classification**

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

**Apprentice - FLOORCOVERER - Local 2168 Zone II**

**Effective Date - 03/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.37	\$9.40	\$1.79	\$0.00	\$33.56
2	55	\$24.61	\$9.40	\$1.79	\$0.00	\$35.80
3	60	\$26.84	\$9.40	\$13.88	\$0.00	\$50.12
4	65	\$29.08	\$9.40	\$13.88	\$0.00	\$52.36
5	70	\$31.32	\$9.40	\$15.67	\$0.00	\$56.39
6	75	\$33.56	\$9.40	\$15.67	\$0.00	\$58.63
7	80	\$35.79	\$9.40	\$17.46	\$0.00	\$62.65
8	85	\$38.03	\$9.40	\$17.46	\$0.00	\$64.89

**Effective Date - 09/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.77	\$9.40	\$1.79	\$0.00	\$33.96
2	55	\$25.05	\$9.40	\$1.79	\$0.00	\$36.24
3	60	\$27.32	\$9.40	\$13.88	\$0.00	\$50.60
4	65	\$29.60	\$9.40	\$13.88	\$0.00	\$52.88
5	70	\$31.88	\$9.40	\$15.67	\$0.00	\$56.95
6	75	\$34.16	\$9.40	\$15.67	\$0.00	\$59.23
7	80	\$36.43	\$9.40	\$17.46	\$0.00	\$63.29
8	85	\$38.71	\$9.40	\$17.46	\$0.00	\$65.57

**Notes:** Steps are 750 hrs.  
 % After 09/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)  
 Step 1&2 \$31.32/ 3&4 \$37.53/ 5&6 \$56.39/ 7&8 \$62.65

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

<b>FORK LIFT</b> <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2019	\$35.09	\$11.94	\$14.35	\$0.00	\$61.38
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>GENERATORS/LIGHTING PLANTS</b> <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2019	\$31.64	\$11.94	\$14.35	\$0.00	\$57.93
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)</b> <i>GLAZIERS LOCAL 35 (ZONE 2)</i>	07/01/2020	\$41.01	\$8.25	\$22.40	\$0.00	\$71.66
	01/01/2021	\$41.56	\$8.25	\$22.75	\$0.00	\$72.56

**Classification**

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

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

**Effective Date - 07/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.51	\$8.25	\$0.00	\$0.00	\$28.76
2	55	\$22.56	\$8.25	\$6.05	\$0.00	\$36.86
3	60	\$24.61	\$8.25	\$6.60	\$0.00	\$39.46
4	65	\$26.66	\$8.25	\$7.15	\$0.00	\$42.06
5	70	\$28.71	\$8.25	\$19.10	\$0.00	\$56.06
6	75	\$30.76	\$8.25	\$19.65	\$0.00	\$58.66
7	80	\$32.81	\$8.25	\$20.20	\$0.00	\$61.26
8	90	\$36.91	\$8.25	\$21.30	\$0.00	\$66.46

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.78	\$8.25	\$0.00	\$0.00	\$29.03
2	55	\$22.86	\$8.25	\$6.16	\$0.00	\$37.27
3	60	\$24.94	\$8.25	\$6.72	\$0.00	\$39.91
4	65	\$27.01	\$8.25	\$7.28	\$0.00	\$42.54
5	70	\$29.09	\$8.25	\$19.39	\$0.00	\$56.73
6	75	\$31.17	\$8.25	\$19.95	\$0.00	\$59.37
7	80	\$33.25	\$8.25	\$20.51	\$0.00	\$62.01
8	90	\$37.40	\$8.25	\$21.63	\$0.00	\$67.28

**Notes:**

Steps are 750 hrs.

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

GRADER/TRENCHING MACHINE/DERRICK OPERATING ENGINEERS LOCAL 98	12/01/2019	\$35.40	\$11.94	\$14.35	\$0.00	\$61.69
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 63	01/01/2020	\$36.99	\$10.64	\$16.22	\$1.77	\$65.62
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 96	07/01/2019	\$44.07	\$10.72	\$16.04	\$0.00	\$70.83
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 63	01/01/2020	\$36.99	\$10.64	\$16.22	\$1.77	\$65.62
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) PLUMBERS LOCAL 4	03/01/2020	\$46.16	\$9.80	\$15.46	\$0.00	\$71.42
	09/01/2020	\$47.16	\$9.80	\$15.46	\$0.00	\$72.42
	03/01/2021	\$48.16	\$9.80	\$15.46	\$0.00	\$73.42
	09/01/2021	\$49.16	\$9.80	\$15.46	\$0.00	\$74.42
	03/01/2022	\$50.16	\$9.80	\$15.46	\$0.00	\$75.42
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC MECHANIC PLUMBERS LOCAL 4	03/01/2020	\$46.16	\$9.80	\$15.46	\$0.00	\$71.42
	09/01/2020	\$47.16	\$9.80	\$15.46	\$0.00	\$72.42
	03/01/2021	\$48.16	\$9.80	\$15.46	\$0.00	\$73.42
	09/01/2021	\$49.16	\$9.80	\$15.46	\$0.00	\$74.42
	03/01/2022	\$50.16	\$9.80	\$15.46	\$0.00	\$75.42
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS LABORERS - ZONE 2	06/01/2020	\$34.81	\$8.60	\$15.77	\$0.00	\$59.18
	12/01/2020	\$35.70	\$8.60	\$15.77	\$0.00	\$60.07
	06/01/2021	\$36.62	\$8.60	\$15.77	\$0.00	\$60.99
	12/01/2021	\$37.53	\$8.60	\$15.77	\$0.00	\$61.90
For apprentice rates see "Apprentice- LABORER"						
INSULATOR (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 (WORCESTER)	09/01/2019	\$43.60	\$12.80	\$16.40	\$0.00	\$72.80

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

Effective Date - 09/01/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.80	\$12.80	\$11.90	\$0.00	\$46.50
2	60	\$26.16	\$12.80	\$12.80	\$0.00	\$51.76
3	70	\$30.52	\$12.80	\$13.70	\$0.00	\$57.02
4	80	\$34.88	\$12.80	\$14.60	\$0.00	\$62.28

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER IRONWORKERS LOCAL 7 (WORCESTER AREA)	03/16/2019	\$46.36	\$8.00	\$23.50	\$0.00	\$77.86
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**Apprentice - IRONWORKER - Local 7 Worcester**

Effective Date - 03/16/2019

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$27.82	\$8.00	\$23.50	\$0.00	\$59.32
2	70	\$32.45	\$8.00	\$23.50	\$0.00	\$63.95
3	75	\$34.77	\$8.00	\$23.50	\$0.00	\$66.27
4	80	\$37.09	\$8.00	\$23.50	\$0.00	\$68.59
5	85	\$39.41	\$8.00	\$23.50	\$0.00	\$70.91
6	90	\$41.72	\$8.00	\$23.50	\$0.00	\$73.22

Notes:

Structural 1:6; Ornamental 1:4

Apprentice to Journeyworker Ratio:

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
JACKHAMMER & PAVING BREAKER OPERATOR LABORERS - ZONE 2	06/01/2020	\$34.31	\$8.60	\$15.77	\$0.00	\$58.68
	12/01/2020	\$35.20	\$8.60	\$15.77	\$0.00	\$59.57
	06/01/2021	\$36.12	\$8.60	\$15.77	\$0.00	\$60.49
	12/01/2021	\$37.03	\$8.60	\$15.77	\$0.00	\$61.40

For apprentice rates see "Apprentice- LABORER"

LABORER LABORERS - ZONE 2	06/01/2020	\$34.06	\$8.60	\$15.77	\$0.00	\$58.43
	12/01/2020	\$34.95	\$8.60	\$15.77	\$0.00	\$59.32
	06/01/2021	\$35.87	\$8.60	\$15.77	\$0.00	\$60.24
	12/01/2021	\$36.78	\$8.60	\$15.77	\$0.00	\$61.15

**Apprentice - LABORER - Zone 2**

Effective Date - 06/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.44	\$8.60	\$15.77	\$0.00	\$44.81
2	70	\$23.84	\$8.60	\$15.77	\$0.00	\$48.21
3	80	\$27.25	\$8.60	\$15.77	\$0.00	\$51.62
4	90	\$30.65	\$8.60	\$15.77	\$0.00	\$55.02

Effective Date - 12/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.97	\$8.60	\$15.77	\$0.00	\$45.34
2	70	\$24.47	\$8.60	\$15.77	\$0.00	\$48.84
3	80	\$27.96	\$8.60	\$15.77	\$0.00	\$52.33
4	90	\$31.46	\$8.60	\$15.77	\$0.00	\$55.83

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER LABORERS - ZONE 2	06/01/2020	\$34.06	\$8.60	\$15.77	\$0.00	\$58.43
	12/01/2020	\$34.95	\$8.60	\$15.77	\$0.00	\$59.32
	06/01/2021	\$35.87	\$8.60	\$15.77	\$0.00	\$60.24
	12/01/2021	\$36.78	\$8.60	\$15.77	\$0.00	\$61.15

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER LABORERS - ZONE 2	06/01/2020	\$34.06	\$8.60	\$15.77	\$0.00	\$58.43
	12/01/2020	\$34.95	\$8.60	\$15.77	\$0.00	\$59.32
	06/01/2021	\$35.87	\$8.60	\$15.77	\$0.00	\$60.24
	12/01/2021	\$36.78	\$8.60	\$15.77	\$0.00	\$61.15

For apprentice rates see "Apprentice- LABORER"

LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS - ZONE 2	06/01/2020	\$34.15	\$8.60	\$15.83	\$0.00	\$58.58
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For apprentice rates see "Apprentice- LABORER"

LABORER: MASON TENDER LABORERS - ZONE 2	06/01/2020	\$34.31	\$8.60	\$15.77	\$0.00	\$58.68
	12/01/2020	\$35.20	\$8.60	\$15.77	\$0.00	\$59.57
	06/01/2021	\$36.12	\$8.60	\$15.77	\$0.00	\$60.49
	12/01/2021	\$37.03	\$8.60	\$15.77	\$0.00	\$61.40

For apprentice rates see "Apprentice- LABORER"



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 2</i>	06/01/2020	\$34.06	\$8.60	\$15.77	\$0.00	\$58.43
	12/01/2020	\$34.95	\$8.60	\$15.77	\$0.00	\$59.32
	06/01/2021	\$35.87	\$8.60	\$15.77	\$0.00	\$60.24
	12/01/2021	\$36.78	\$8.60	\$15.77	\$0.00	\$61.15
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 2</i>	06/01/2020	\$34.06	\$8.60	\$15.77	\$0.00	\$58.43
	12/01/2020	\$34.95	\$8.60	\$15.77	\$0.00	\$59.32
	06/01/2021	\$35.87	\$8.60	\$15.77	\$0.00	\$60.24
	12/01/2021	\$36.78	\$8.60	\$15.77	\$0.00	\$61.15
This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction. For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR <i>LABORERS - ZONE 2</i>	06/01/2020	\$34.31	\$8.60	\$15.77	\$0.00	\$58.68
	12/01/2020	\$35.20	\$8.60	\$15.77	\$0.00	\$59.57
	06/01/2021	\$36.12	\$8.60	\$15.77	\$0.00	\$60.49
	12/01/2021	\$37.03	\$8.60	\$15.77	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	08/01/2020	\$42.57	\$10.75	\$20.27	\$0.00	\$73.59
	02/01/2021	\$43.08	\$10.75	\$20.27	\$0.00	\$74.10
	08/01/2021	\$44.20	\$10.75	\$20.43	\$0.00	\$75.38
	02/01/2022	\$44.67	\$10.75	\$20.43	\$0.00	\$75.85

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

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.29	\$10.75	\$20.27	\$0.00	\$52.31
2	60	\$25.54	\$10.75	\$20.27	\$0.00	\$56.56
3	70	\$29.80	\$10.75	\$20.27	\$0.00	\$60.82
4	80	\$34.06	\$10.75	\$20.27	\$0.00	\$65.08
5	90	\$38.31	\$10.75	\$20.27	\$0.00	\$69.33

**Effective Date - 02/01/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.54	\$10.75	\$20.27	\$0.00	\$52.56
2	60	\$25.85	\$10.75	\$20.27	\$0.00	\$56.87
3	70	\$30.16	\$10.75	\$20.27	\$0.00	\$61.18
4	80	\$34.46	\$10.75	\$20.27	\$0.00	\$65.48
5	90	\$38.77	\$10.75	\$20.27	\$0.00	\$69.79

**Notes:**

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

MARBLE MASONS, TILELAYERS & TERRAZZO MECH <i>BRICKLAYERS LOCAL 3 - MARBLE &amp; TILE</i>	08/01/2020	\$55.77	\$10.75	\$22.08	\$0.00	\$88.60
	02/01/2021	\$56.41	\$10.75	\$22.08	\$0.00	\$89.24
	08/01/2021	\$57.81	\$10.75	\$22.24	\$0.00	\$90.80
	02/01/2022	\$58.38	\$10.75	\$22.24	\$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 - 08/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.89	\$10.75	\$22.08	\$0.00	\$60.72
2	60	\$33.46	\$10.75	\$22.08	\$0.00	\$66.29
3	70	\$39.04	\$10.75	\$22.08	\$0.00	\$71.87
4	80	\$44.62	\$10.75	\$22.08	\$0.00	\$77.45
5	90	\$50.19	\$10.75	\$22.08	\$0.00	\$83.02

**Effective Date - 02/01/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.21	\$10.75	\$22.08	\$0.00	\$61.04
2	60	\$33.85	\$10.75	\$22.08	\$0.00	\$66.68
3	70	\$39.49	\$10.75	\$22.08	\$0.00	\$72.32
4	80	\$45.13	\$10.75	\$22.08	\$0.00	\$77.96
5	90	\$50.77	\$10.75	\$22.08	\$0.00	\$83.60

**Notes:**

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

<b>MECH. SWEEPER OPERATOR (ON CONST. SITES)</b> <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2019	\$35.40	\$11.94	\$14.35	\$0.00	\$61.69
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>MECHANIC/WELDER/BOOM TRUCK</b> <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2019	\$34.87	\$11.94	\$14.35	\$0.00	\$61.16
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>MILLWRIGHT (Zone 3)</b> <i>MILLWRIGHTS LOCAL 1121 - Zone 3</i>	04/01/2019	\$37.11	\$9.90	\$18.50	\$0.00	\$65.51
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**Apprentice - MILLWRIGHT - Local 1121 Zone 3**

**Effective Date - 04/01/2019**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$20.41	\$9.90	\$5.31	\$0.00	\$35.62
2	65	\$24.12	\$9.90	\$15.13	\$0.00	\$49.15
3	75	\$27.83	\$9.90	\$16.10	\$0.00	\$53.83
4	85	\$31.54	\$9.90	\$17.06	\$0.00	\$58.50

**Notes:**

Steps are 2,000 hours

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

<b>MORTAR MIXER</b> <i>LABORERS - ZONE 2</i>	06/01/2020	\$34.31	\$8.60	\$15.77	\$0.00	\$58.68
	12/01/2020	\$35.20	\$8.60	\$15.77	\$0.00	\$59.57
	06/01/2021	\$36.12	\$8.60	\$15.77	\$0.00	\$60.49
	12/01/2021	\$37.03	\$8.60	\$15.77	\$0.00	\$61.40

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
OILER OPERATING ENGINEERS LOCAL 98	12/01/2019	\$30.56	\$11.94	\$14.35	\$0.00	\$56.85
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS VI OPERATING ENGINEERS LOCAL 98	12/01/2019	\$28.58	\$11.94	\$14.35	\$0.00	\$54.87
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) PAINTERS LOCAL 35 - ZONE 2	07/01/2020	\$51.51	\$8.25	\$22.40	\$0.00	\$82.16
	01/01/2021	\$52.06	\$8.25	\$22.75	\$0.00	\$83.06

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

**Effective Date - 07/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.76	\$8.25	\$0.00	\$0.00	\$34.01
2	55	\$28.33	\$8.25	\$6.05	\$0.00	\$42.63
3	60	\$30.91	\$8.25	\$6.60	\$0.00	\$45.76
4	65	\$33.48	\$8.25	\$7.15	\$0.00	\$48.88
5	70	\$36.06	\$8.25	\$19.10	\$0.00	\$63.41
6	75	\$38.63	\$8.25	\$19.65	\$0.00	\$66.53
7	80	\$41.21	\$8.25	\$20.20	\$0.00	\$69.66
8	90	\$46.36	\$8.25	\$21.30	\$0.00	\$75.91

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$26.03	\$8.25	\$0.00	\$0.00	\$34.28
2	55	\$28.63	\$8.25	\$6.16	\$0.00	\$43.04
3	60	\$31.24	\$8.25	\$6.72	\$0.00	\$46.21
4	65	\$33.84	\$8.25	\$7.28	\$0.00	\$49.37
5	70	\$36.44	\$8.25	\$19.39	\$0.00	\$64.08
6	75	\$39.05	\$8.25	\$19.95	\$0.00	\$67.25
7	80	\$41.65	\$8.25	\$20.51	\$0.00	\$70.41
8	90	\$46.85	\$8.25	\$21.63	\$0.00	\$76.73

**Notes:**

Steps are 750 hrs.

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

PAINTER (SPRAY OR SANDBLAST, NEW) *	07/01/2020	\$41.21	\$8.25	\$22.40	\$0.00	\$71.86
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	01/01/2021	\$42.96	\$8.25	\$22.75	\$0.00	\$73.96

**Classification**

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

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

**Effective Date - 07/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.61	\$8.25	\$0.00	\$0.00	\$28.86
2	55	\$22.67	\$8.25	\$6.05	\$0.00	\$36.97
3	60	\$24.73	\$8.25	\$6.60	\$0.00	\$39.58
4	65	\$26.79	\$8.25	\$7.15	\$0.00	\$42.19
5	70	\$28.85	\$8.25	\$19.10	\$0.00	\$56.20
6	75	\$30.91	\$8.25	\$19.65	\$0.00	\$58.81
7	80	\$32.97	\$8.25	\$20.20	\$0.00	\$61.42
8	90	\$37.09	\$8.25	\$21.30	\$0.00	\$66.64

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.48	\$8.25	\$0.00	\$0.00	\$29.73
2	55	\$23.63	\$8.25	\$6.16	\$0.00	\$38.04
3	60	\$25.78	\$8.25	\$6.72	\$0.00	\$40.75
4	65	\$27.92	\$8.25	\$7.28	\$0.00	\$43.45
5	70	\$30.07	\$8.25	\$19.39	\$0.00	\$57.71
6	75	\$32.22	\$8.25	\$19.95	\$0.00	\$60.42
7	80	\$34.37	\$8.25	\$20.51	\$0.00	\$63.13
8	90	\$38.66	\$8.25	\$21.63	\$0.00	\$68.54

**Notes:**

Steps are 750 hrs.

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

<b>PAINTER (SPRAY OR SANDBLAST, REPAINT)</b>	<b>07/01/2020</b>	<b>\$40.47</b>	<b>\$8.25</b>	<b>\$22.40</b>	<b>\$0.00</b>	<b>\$71.12</b>
<i>PAINTERS LOCAL 35 - ZONE 2</i>	<b>01/01/2021</b>	<b>\$41.02</b>	<b>\$8.25</b>	<b>\$22.75</b>	<b>\$0.00</b>	<b>\$72.02</b>

**Classification**

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

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

**Effective Date - 07/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.24	\$8.25	\$0.00	\$0.00	\$28.49
2	55	\$22.26	\$8.25	\$6.05	\$0.00	\$36.56
3	60	\$24.28	\$8.25	\$6.60	\$0.00	\$39.13
4	65	\$26.31	\$8.25	\$7.15	\$0.00	\$41.71
5	70	\$28.33	\$8.25	\$19.10	\$0.00	\$55.68
6	75	\$30.35	\$8.25	\$19.65	\$0.00	\$58.25
7	80	\$32.38	\$8.25	\$20.20	\$0.00	\$60.83
8	90	\$36.42	\$8.25	\$21.30	\$0.00	\$65.97

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.51	\$8.25	\$0.00	\$0.00	\$28.76
2	55	\$22.56	\$8.25	\$6.16	\$0.00	\$36.97
3	60	\$24.61	\$8.25	\$6.72	\$0.00	\$39.58
4	65	\$26.66	\$8.25	\$7.28	\$0.00	\$42.19
5	70	\$28.71	\$8.25	\$19.39	\$0.00	\$56.35
6	75	\$30.77	\$8.25	\$19.95	\$0.00	\$58.97
7	80	\$32.82	\$8.25	\$20.51	\$0.00	\$61.58
8	90	\$36.92	\$8.25	\$21.63	\$0.00	\$66.80

**Notes:**

Steps are 750 hrs.

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

<b>PAINTER (TRAFFIC MARKINGS)</b>	06/01/2020	\$34.06	\$8.60	\$15.77	\$0.00	\$58.43
<i>LABORERS - ZONE 2</i>	12/01/2020	\$34.95	\$8.60	\$15.77	\$0.00	\$59.32
	06/01/2021	\$35.87	\$8.60	\$15.77	\$0.00	\$60.24
	12/01/2021	\$36.78	\$8.60	\$15.77	\$0.00	\$61.15
<i>For Apprentice rates see "Apprentice- LABORER"</i>						
<b>PAINTER / TAPER (BRUSH, NEW) *</b>	07/01/2020	\$41.01	\$8.25	\$22.40	\$0.00	\$71.66
<b>* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2</b>	01/01/2021	\$41.56	\$8.25	\$22.75	\$0.00	\$72.56

**Classification**

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

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

**Effective Date - 07/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.51	\$8.25	\$0.00	\$0.00	\$28.76
2	55	\$22.56	\$8.25	\$6.05	\$0.00	\$36.86
3	60	\$24.61	\$8.25	\$6.60	\$0.00	\$39.46
4	65	\$26.66	\$8.25	\$7.15	\$0.00	\$42.06
5	70	\$28.71	\$8.25	\$19.10	\$0.00	\$56.06
6	75	\$30.76	\$8.25	\$19.65	\$0.00	\$58.66
7	80	\$32.81	\$8.25	\$20.20	\$0.00	\$61.26
8	90	\$36.91	\$8.25	\$21.30	\$0.00	\$66.46

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.78	\$8.25	\$0.00	\$0.00	\$29.03
2	55	\$22.86	\$8.25	\$6.16	\$0.00	\$37.27
3	60	\$24.94	\$8.25	\$6.72	\$0.00	\$39.91
4	65	\$27.01	\$8.25	\$7.28	\$0.00	\$42.54
5	70	\$29.09	\$8.25	\$19.39	\$0.00	\$56.73
6	75	\$31.17	\$8.25	\$19.95	\$0.00	\$59.37
7	80	\$33.25	\$8.25	\$20.51	\$0.00	\$62.01
8	90	\$37.40	\$8.25	\$21.63	\$0.00	\$67.28

**Notes:**  
Steps are 750 hrs.

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

<b>PAINTER / TAPER (BRUSH, REPAINT)</b>	<b>07/01/2020</b>	<b>\$39.07</b>	<b>\$8.25</b>	<b>\$22.40</b>	<b>\$0.00</b>	<b>\$69.72</b>
<b>PAINTERS LOCAL 35 - ZONE 2</b>	<b>01/01/2021</b>	<b>\$39.62</b>	<b>\$8.25</b>	<b>\$22.75</b>	<b>\$0.00</b>	<b>\$70.62</b>

**Classification**

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

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

**Effective Date - 07/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.54	\$8.25	\$0.00	\$0.00	\$27.79
2	55	\$21.49	\$8.25	\$6.05	\$0.00	\$35.79
3	60	\$23.44	\$8.25	\$6.60	\$0.00	\$38.29
4	65	\$25.40	\$8.25	\$7.15	\$0.00	\$40.80
5	70	\$27.35	\$8.25	\$19.10	\$0.00	\$54.70
6	75	\$29.30	\$8.25	\$19.65	\$0.00	\$57.20
7	80	\$31.26	\$8.25	\$20.20	\$0.00	\$59.71
8	90	\$35.16	\$8.25	\$21.30	\$0.00	\$64.71

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.81	\$8.25	\$0.00	\$0.00	\$28.06
2	55	\$21.79	\$8.25	\$6.16	\$0.00	\$36.20
3	60	\$23.77	\$8.25	\$6.72	\$0.00	\$38.74
4	65	\$25.75	\$8.25	\$7.28	\$0.00	\$41.28
5	70	\$27.73	\$8.25	\$19.39	\$0.00	\$55.37
6	75	\$29.72	\$8.25	\$19.95	\$0.00	\$57.92
7	80	\$31.70	\$8.25	\$20.51	\$0.00	\$60.46
8	90	\$35.66	\$8.25	\$21.63	\$0.00	\$65.54

**Notes:**

Steps are 750 hrs.

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

<b>PANEL &amp; PICKUP TRUCKS DRIVER</b> <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	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
<b>PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)</b> <i>PILE DRIVER LOCAL 56 (ZONE 2)</i> For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2019	\$44.61	\$9.90	\$21.15	\$0.00	\$75.66
<b>PILE DRIVER</b> <i>PILE DRIVER LOCAL 56 (ZONE 2)</i>	08/01/2019	\$44.61	\$9.90	\$21.15	\$0.00	\$75.66

**Classification**

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

**Apprentice - PILE DRIVER - Local 56 Zone 2**

**Effective Date - 08/01/2019**

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

**Notes:** Apprentice wages shall be no less than the following Steps;  
 (Same as set in Zone 1)  
 1\$54.34/2\$58.99/3\$63.65/4\$65.98/5\$68.31/6\$68.31/7\$72.96/8\$72.96

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

<b>PIPELAYER</b> <i>LABORERS - ZONE 2</i>	06/01/2020	\$34.31	\$8.60	\$15.77	\$0.00	\$58.68
	12/01/2020	\$35.20	\$8.60	\$15.77	\$0.00	\$59.57
	06/01/2021	\$36.12	\$8.60	\$15.77	\$0.00	\$60.49
	12/01/2021	\$37.03	\$8.60	\$15.77	\$0.00	\$61.40

For apprentice rates see "Apprentice- LABORER"

<b>PLUMBER &amp; PIPEFITTER</b> <i>PLUMBERS LOCAL 4</i>	03/01/2020	\$46.16	\$9.80	\$15.46	\$0.00	\$71.42
	09/01/2020	\$47.16	\$9.80	\$15.46	\$0.00	\$72.42
	03/01/2021	\$48.16	\$9.80	\$15.46	\$0.00	\$73.42
	09/01/2021	\$49.16	\$9.80	\$15.46	\$0.00	\$74.42
	03/01/2022	\$50.16	\$9.80	\$15.46	\$0.00	\$75.42

**Apprentice - PLUMBER/PIPEFITTER - Local 4**

**Effective Date - 03/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$18.46	\$9.80	\$0.00	\$0.00	\$28.26
2	50	\$23.08	\$9.80	\$0.00	\$0.00	\$32.88
3	60	\$27.70	\$9.80	\$0.00	\$0.00	\$37.50
4	70	\$32.31	\$9.80	\$5.75	\$0.00	\$47.86
5	80	\$36.93	\$9.80	\$5.75	\$0.00	\$52.48

**Effective Date - 09/01/2020**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$18.86	\$9.80	\$0.00	\$0.00	\$28.66
2	50	\$23.58	\$9.80	\$0.00	\$0.00	\$33.38
3	60	\$28.30	\$9.80	\$0.00	\$0.00	\$38.10
4	70	\$33.01	\$9.80	\$5.75	\$0.00	\$48.56
5	80	\$37.73	\$9.80	\$5.75	\$0.00	\$53.28

**Notes:**  
 Steps - 2000 hrs; Step 4 w/lic 75%, Step 5 w/lic 85%  
 Step 4 w/lic \$50.17, Step 5 w/lic \$54.79

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



<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
<b>PNEUMATIC CONTROLS (TEMP.)</b> <i>PLUMBERS LOCAL 4</i>	03/01/2020	\$46.16	\$9.80	\$15.46	\$0.00	\$71.42
	09/01/2020	\$47.16	\$9.80	\$15.46	\$0.00	\$72.42
	03/01/2021	\$48.16	\$9.80	\$15.46	\$0.00	\$73.42
	09/01/2021	\$49.16	\$9.80	\$15.46	\$0.00	\$74.42
	03/01/2022	\$50.16	\$9.80	\$15.46	\$0.00	\$75.42
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
<b>PNEUMATIC DRILL/TOOL OPERATOR</b> <i>LABORERS - ZONE 2</i>	06/01/2020	\$34.31	\$8.60	\$15.77	\$0.00	\$58.68
	12/01/2020	\$35.20	\$8.60	\$15.77	\$0.00	\$59.57
	06/01/2021	\$36.12	\$8.60	\$15.77	\$0.00	\$60.49
	12/01/2021	\$37.03	\$8.60	\$15.77	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
<b>POWDERMAN &amp; BLASTER</b> <i>LABORERS - ZONE 2</i>	06/01/2020	\$35.06	\$8.60	\$15.77	\$0.00	\$59.43
	12/01/2020	\$35.95	\$8.60	\$15.77	\$0.00	\$60.32
	06/01/2021	\$36.87	\$8.60	\$15.77	\$0.00	\$61.24
	12/01/2021	\$37.78	\$8.60	\$15.77	\$0.00	\$62.15
For apprentice rates see "Apprentice- LABORER"						
<b>PUMP OPERATOR (CONCRETE)</b> <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2019	\$35.40	\$11.94	\$14.35	\$0.00	\$61.69
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>PUMP OPERATOR (DEWATERING, OTHER)</b> <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2019	\$34.87	\$11.94	\$14.35	\$0.00	\$61.16
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>READY-MIX CONCRETE DRIVER</b> <i>TEAMSTERS 170 -J.G.MacLellan (Lunenburg)</i>	01/01/2020	\$24.64	\$9.65	\$8.00	\$0.00	\$42.29
	01/01/2021	\$24.64	\$10.01	\$8.00	\$0.00	\$42.65
	02/02/2021	\$24.84	\$10.01	\$8.00	\$0.00	\$42.85
	01/01/2022	\$24.84	\$10.37	\$8.00	\$0.00	\$43.21
	02/02/2022	\$25.04	\$10.37	\$8.00	\$0.00	\$43.41
	01/01/2023	\$25.04	\$10.77	\$8.00	\$0.00	\$43.81
	02/02/2023	\$25.29	\$10.77	\$8.00	\$0.00	\$44.06
	01/01/2024	\$25.29	\$11.17	\$0.00	\$0.00	\$36.46
<b>RIDE-ON MOTORIZED BUGGY OPERATOR</b> <i>LABORERS - ZONE 2</i>	06/01/2020	\$34.31	\$8.60	\$15.77	\$0.00	\$58.68
	12/01/2020	\$35.20	\$8.60	\$15.77	\$0.00	\$59.57
	06/01/2021	\$36.12	\$8.60	\$15.77	\$0.00	\$60.49
	12/01/2021	\$37.03	\$8.60	\$15.77	\$0.00	\$61.40
For apprentice rates see "Apprentice- LABORER"						
<b>ROLLER OPERATOR</b> <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2019	\$34.26	\$11.94	\$14.35	\$0.00	\$60.55
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>ROOFER (Inc.Roofers Waterproofng &amp;Roofers Dampproofg)</b> <i>ROOFERS LOCAL 33</i>	08/01/2020	\$46.60	\$11.75	\$16.15	\$0.00	\$74.50
	02/01/2021	\$48.03	\$11.75	\$16.15	\$0.00	\$75.93
	08/01/2021	\$49.46	\$11.75	\$16.15	\$0.00	\$77.36
	02/01/2022	\$50.89	\$11.75	\$16.15	\$0.00	\$78.79

**Classification**

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

**Apprentice - ROOFER - Local 33**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.30	\$11.75	\$3.81	\$0.00	\$38.86
2	60	\$27.96	\$11.75	\$16.15	\$0.00	\$55.86
3	65	\$30.29	\$11.75	\$16.15	\$0.00	\$58.19
4	75	\$34.95	\$11.75	\$16.15	\$0.00	\$62.85
5	85	\$39.61	\$11.75	\$16.15	\$0.00	\$67.51

**Effective Date - 02/01/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.02	\$11.75	\$3.81	\$0.00	\$39.58
2	60	\$28.82	\$11.75	\$16.15	\$0.00	\$56.72
3	65	\$31.22	\$11.75	\$16.15	\$0.00	\$59.12
4	75	\$36.02	\$11.75	\$16.15	\$0.00	\$63.92
5	85	\$40.83	\$11.75	\$16.15	\$0.00	\$68.73

**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:\*\***

<b>ROOFER SLATE / TILE / PRECAST CONCRETE</b> <i>ROOFERS LOCAL 33</i>	08/01/2020	\$46.85	\$11.75	\$16.15	\$0.00	\$74.75
	02/01/2021	\$48.28	\$11.75	\$16.15	\$0.00	\$76.18
	08/01/2021	\$49.71	\$11.75	\$16.15	\$0.00	\$77.61
	02/01/2022	\$51.14	\$11.75	\$16.15	\$0.00	\$79.04
For apprentice rates see "Apprentice- ROOFER"						
<b>SCRAPER</b> <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2019	\$34.87	\$11.94	\$14.35	\$0.00	\$61.16
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>SELF-POWERED ROLLERS AND COMPACTORS (TAMPERS)</b> <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2019	\$34.26	\$11.94	\$14.35	\$0.00	\$60.55
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>SELF-PROPELLED POWER BROOM</b> <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2019	\$31.64	\$11.94	\$14.35	\$0.00	\$57.93
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>SHEETMETAL WORKER</b> <i>SHEETMETAL WORKERS LOCAL 63</i>	01/01/2020	\$36.99	\$10.64	\$16.22	\$1.77	\$65.62

**Classification**

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

**Apprentice - SHEET METAL WORKER - Local 63**

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$16.65	\$6.21	\$4.67	\$0.00	\$27.53
2	50	\$18.50	\$6.55	\$5.19	\$0.00	\$30.24
3	55	\$20.34	\$6.88	\$9.33	\$1.08	\$37.63
4	60	\$22.19	\$7.22	\$9.33	\$1.14	\$39.88
5	65	\$24.04	\$7.55	\$9.33	\$1.20	\$42.12
6	70	\$25.89	\$7.88	\$9.33	\$1.27	\$44.37
7	75	\$27.74	\$8.22	\$9.33	\$1.33	\$46.62
8	80	\$29.59	\$9.30	\$15.18	\$1.59	\$55.66
9	85	\$31.44	\$9.64	\$15.18	\$1.66	\$57.92
10	90	\$33.29	\$9.98	\$15.18	\$1.72	\$60.17

**Notes:**

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

<b>SPECIALIZED EARTH MOVING EQUIP &lt; 35 TONS</b> <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	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
<b>SPECIALIZED EARTH MOVING EQUIP &gt; 35 TONS</b> <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	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
<b>SPRINKLER FITTER</b> <i>SPRINKLER FITTERS LOCAL 669</i>	01/01/2019	\$41.51	\$10.02	\$13.08	\$0.00	\$64.61

**Classification**

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

**Apprentice - SPRINKLER FITTER - Local 669**

**Effective Date - 01/01/2019**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$18.68	\$7.75	\$0.00	\$0.00	\$26.43
2	50	\$20.76	\$7.75	\$0.00	\$0.00	\$28.51
3	55	\$22.83	\$10.02	\$7.25	\$0.00	\$40.10
4	60	\$24.91	\$10.02	\$7.25	\$0.00	\$42.18
5	65	\$26.98	\$10.02	\$7.50	\$0.00	\$44.50
6	70	\$29.06	\$10.02	\$7.50	\$0.00	\$46.58
7	75	\$31.13	\$10.02	\$7.50	\$0.00	\$48.65
8	80	\$33.21	\$10.02	\$7.50	\$0.00	\$50.73
9	85	\$35.28	\$10.02	\$7.50	\$0.00	\$52.80
10	90	\$37.36	\$10.02	\$7.50	\$0.00	\$54.88

Notes:

Apprentice to Journeyworker Ratio:1:1

TERRAZZO FINISHERS BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2020	\$54.69	\$10.75	\$22.09	\$0.00	\$87.53
	02/01/2021	\$55.33	\$10.75	\$22.09	\$0.00	\$88.17
	08/01/2021	\$56.73	\$10.75	\$22.25	\$0.00	\$89.73
	02/01/2022	\$57.32	\$10.75	\$22.25	\$0.00	\$90.32

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

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

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.35	\$10.75	\$22.09	\$0.00	\$60.19
2	60	\$32.81	\$10.75	\$22.09	\$0.00	\$65.65
3	70	\$38.28	\$10.75	\$22.09	\$0.00	\$71.12
4	80	\$43.75	\$10.75	\$22.09	\$0.00	\$76.59
5	90	\$49.22	\$10.75	\$22.09	\$0.00	\$82.06

**Effective Date - 02/01/2021**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.67	\$10.75	\$22.09	\$0.00	\$60.51
2	60	\$33.20	\$10.75	\$22.09	\$0.00	\$66.04
3	70	\$38.73	\$10.75	\$22.09	\$0.00	\$71.57
4	80	\$44.26	\$10.75	\$22.09	\$0.00	\$77.10
5	90	\$49.80	\$10.75	\$22.09	\$0.00	\$82.64

Notes:

Apprentice to Journeyworker Ratio:1:3

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2020	\$40.55	\$8.60	\$17.24	\$0.00	\$66.39
	12/01/2020	\$41.53	\$8.60	\$17.24	\$0.00	\$67.37
	06/01/2021	\$42.55	\$8.60	\$17.24	\$0.00	\$68.39
	12/01/2021	\$43.56	\$8.60	\$17.24	\$0.00	\$69.40
For apprentice rates see "Apprentice- LABORER"						
TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2020	\$39.27	\$8.60	\$17.24	\$0.00	\$65.11
	12/01/2020	\$40.25	\$8.60	\$17.24	\$0.00	\$66.09
	06/01/2021	\$41.27	\$8.60	\$17.24	\$0.00	\$67.11
	12/01/2021	\$42.28	\$8.60	\$17.24	\$0.00	\$68.12
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2020	\$39.15	\$8.60	\$17.24	\$0.00	\$64.99
	12/01/2020	\$40.13	\$8.60	\$17.24	\$0.00	\$65.97
	06/01/2021	\$41.15	\$8.60	\$17.24	\$0.00	\$66.99
	12/01/2021	\$42.16	\$8.60	\$17.24	\$0.00	\$68.00
For apprentice rates see "Apprentice- LABORER"						
TRACTORS <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2019	\$34.26	\$11.94	\$14.35	\$0.00	\$60.55
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	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>	06/01/2020	\$51.38	\$8.60	\$17.69	\$0.00	\$77.67
	12/01/2020	\$52.36	\$8.60	\$17.69	\$0.00	\$78.65
	06/01/2021	\$53.38	\$8.60	\$17.69	\$0.00	\$79.67
	12/01/2021	\$54.39	\$8.60	\$17.69	\$0.00	\$80.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	06/01/2020	\$53.38	\$8.60	\$17.69	\$0.00	\$79.67
	12/01/2020	\$54.36	\$8.60	\$17.69	\$0.00	\$80.65
	06/01/2021	\$55.38	\$8.60	\$17.69	\$0.00	\$81.67
	12/01/2021	\$56.39	\$8.60	\$17.69	\$0.00	\$82.68
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2020	\$43.45	\$8.60	\$17.69	\$0.00	\$69.74
	12/01/2020	\$44.43	\$8.60	\$17.69	\$0.00	\$70.72
	06/01/2021	\$45.45	\$8.60	\$17.69	\$0.00	\$71.74
	12/01/2021	\$46.46	\$8.60	\$17.69	\$0.00	\$72.75
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2020	\$45.45	\$8.60	\$17.69	\$0.00	\$71.74
	12/01/2020	\$46.43	\$8.60	\$17.69	\$0.00	\$72.72
	06/01/2021	\$47.45	\$8.60	\$17.69	\$0.00	\$73.74
	12/01/2021	\$48.46	\$8.60	\$17.69	\$0.00	\$74.75
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
VAC-HAUL TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	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
VOICE-DATA-VIDEO TECHNICIAN ELECTRICIANS LOCAL 96	07/01/2019	\$30.10	\$10.57	\$14.15	\$0.00	\$54.82

**Apprentice - VOICE-DATA-VIDEO TECHNICIAN - Local 96**

**Effective Date - 07/01/2019**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$15.05	\$10.57	\$3.83	\$0.00	\$29.45
2	55	\$16.56	\$10.57	\$3.88	\$0.00	\$31.01
3	60	\$18.06	\$10.57	\$13.79	\$0.00	\$42.42
4	65	\$19.57	\$10.57	\$13.84	\$0.00	\$43.98
5	70	\$21.07	\$10.57	\$13.88	\$0.00	\$45.52
6	75	\$22.58	\$10.57	\$13.93	\$0.00	\$47.08
7	80	\$24.08	\$10.57	\$13.97	\$0.00	\$48.62
8	85	\$25.59	\$10.57	\$14.02	\$0.00	\$50.18

**Notes:**

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

WAGON DRILL OPERATOR LABORERS - ZONE 2	06/01/2020	\$34.31	\$8.60	\$15.77	\$0.00	\$58.68
	12/01/2020	\$35.20	\$8.60	\$15.77	\$0.00	\$59.57
	06/01/2021	\$36.12	\$8.60	\$15.77	\$0.00	\$60.49
	12/01/2021	\$37.03	\$8.60	\$15.77	\$0.00	\$61.40

For apprentice rates see "Apprentice- LABORER"

WATER METER INSTALLER PLUMBERS LOCAL 4	03/01/2020	\$46.16	\$9.80	\$15.46	\$0.00	\$71.42
	09/01/2020	\$47.16	\$9.80	\$15.46	\$0.00	\$72.42
	03/01/2021	\$48.16	\$9.80	\$15.46	\$0.00	\$73.42
	09/01/2021	\$49.16	\$9.80	\$15.46	\$0.00	\$74.42
	03/01/2022	\$50.16	\$9.80	\$15.46	\$0.00	\$75.42

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

**Additional Apprentice Information:**

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

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

All steps are six months (1000 hours.)

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

\*\* Multiple ratios are listed in the comment field.

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

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