TOWN OF HOPKINTON
DEPARTMENT OF PUBLIC WORKS
83 Wood Street
P.O. Box 209
Hopkinton, Massachusetts 01748
508-497-9740
Fax 508-497-9761

February 2023

INVITATION FOR BIDS AND SPECIFICATIONS FOR MATERIALS AND SERVICES

TOWN OF HOPKINTON
OFFICE OF DEPARTMENT OF PUBLIC WORKS
83 WOOD STREET
P.O. BOX 209
HOPKINTON, MASSACHUSETTS 01748

TOWN OF HOPKINTON
Department of Public Works
83 Wood Street, P.O. Box 209
Hopkinton, Massachusetts 01748
508-497-9740

Sealed bids for materials, services, and construction services will be received by the Department of Public Works, for the Town of Hopkinton, MA, at the Department of Public Works, 83 Wood Street, Hopkinton, Massachusetts, until 11:00 AM, Tuesday, February 28, 2023 (according to Verizon time), and at that time and place will be publicly opened and read aloud.

Bids will be for the Town requirements in materials, services and construction services for various amounts in varying locations throughout the Town as determined by the Department of Public Works. The following items are advertised for bidders:

Placement of bituminous concrete with tack coat; cold-in-place recycling of bituminous concrete; pulverize and

reshape existing bituminous concrete pavement; bituminous concrete berm; by hand bituminous concrete; catch basins, manholes and water gates adjust to grade; liquid asphalt stone and rubber seal in place; installation of pressure treated wood and steel beam guardrail; cold planing of bituminous concrete; fiber reinforced asphalt crack sealing; infrared patching of semi-permanent repairs; micro-surfacing with crack sealing; placement of bonded wearing course; removal and replacement of concrete and bituminous concrete sidewalks; concrete sand; 1-1/2 inch stone; 3 inch stone; fill; gravel; screened loam; emulsified asphalt; bitumen for tack coat; bituminous concrete; cold patch; frames and grates or covers; cement concrete; street sweeping disposal; catch basin cleaning and disposal; street painting; and street shoulder grading.

All items bid are for varying amounts, varying locations, and should include F.O.B., delivered, in place, installed, provided and available, whichever the case may be.

Specifications and bid forms are available at the website www.projectdog.com beginning February 13, 2023. All bids are to become effective March 1, 2023 and remain in effect until March 1, 2024.

All materials and workmanship shall be in accordance with the Town of Hopkinton, Office of the Department of Public Works Specifications for Materials and Services.

Attention of the bidder is called to the requirements of the minimum wage rates to be paid where applicable. Bids shall be awarded to the lowest responsible and responsive bidder. The Department of Public Works agents for the Town of Hopkinton shall have the authority to reject any or all bids, in whole or in part, and accept the bid deemed to be in the best interest of the Town of Hopkinton.

John K. Westerling, Director of Public Works

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GENERAL INFORMATION

A. BID PROPOSALS

All bids must be presented on the Bid Schedule Sheet(s) as furnished herein. Special attention shall be observed with regards to any or all information relative to said bid proposal and all documentation required shall be included with the bid information. The envelope containing the bid must be sealed and clearly marked:

"Hopkinton - Bid for Materials, Services, and Construction
Items Bid Upon [with a list of those bids enclosed]"

All sealed bids shall be for materials, services, and construction services will be received by the Department of Public Works, for the Town of Hopkinton, MA, at the Department of Public Works, 83 Wood Street, Hopkinton, Massachusetts, until 11:00 AM, Tuesday, February 28, 2023 (according to Verizon time), and at that time and place will be publicly opened and read aloud. Any bids received after the first bid has been opened for an item, or that do not comply with the requirements herein shall be considered informal and will be rejected.

B. BID DEPOSIT CHECK

A bid deposit check (certified, cashier or bond) in the amount of $100.00 (One Hundred Dollars) must be included with the sealed bid proposal. Checks should be made payable to the Town of Hopkinton, and will be returned to all unsuccessful bidders within ten days of the opening of this contract. Bid deposit checks will be returned to the successful bidder or bidders upon execution of the contract. Failure on the part of the successful bidder to execute this contract will result in forfeiture of the bid deposit.

C. PERFORMANCE AND PAYMENT BOND

The successful bidder or bidders shall be required to furnish a performance bond and payment bond, written by a company licensed to do business in the Commonwealth of Massachusetts, amount to be determined prior to execution of the contract, with surety satisfactory to the Director of Public Works. The performance bond shall run for the entire contract period and shall insure for quality of material and prompt service.

D. PERFORMANCE OF WORK

It is agreed that the Contractor shall not assign or sublet this contract or any right he may have under the same, unless the written permission of the Town shall first be procured, but such consent or permission of the Town and subletting shall not in any way alter or diminish the obligation of the Contractor for the full performance or observance of the terms or conditions of this contract. The Contractor shall constantly be held responsible for the supervision of all work performed under this contract.

As evidenced by the signature of the Contractor's Authorized Signatory, the Contractor certifies under the pains and penalties of perjury that the Contractor shall not knowingly use undocumented workers in connection with the performance of the contract; that pursuant to federal requirements, the Contractor shall verify the immigration status of all workers assigned to such contract without engaging in unlawful discrimination; and that the Contractor shall not knowingly or recklessly alter, falsify, or accept altered or falsified documents from any such worker(s). The Contractor understands and agrees that breach of any of these terms during the period of the contract may be regarded as a material breach, subjecting the Contractor to sanctions, including but not limited to monetary penalties, withholding of payments, contract suspension or termination.

E. FAILURE TO PERFORM

In the case of failure on the part of the Contractor to perform the work as per contract, the Department of Public Works reserves the right to terminate the contract, and to perform or have performed any remaining work, and he will collect from or credit to the Contractor any difference in price paid by the Town as a direct result of such failure in performance on the part of the Contractor. Exercise of the above rights shall not impair or affect the Town's right to recover damages for breach or contract, whether by suit on the contract or on the bond securing it. This contract is, however, made subject to strikes, acts or war, and/or other natural disasters.

F. CERTIFICATE OF INSURANCE

Insurance coverage is required in accordance with the following:

1. The Contractor shall, at their own expense, obtain and maintain general liability and motor vehicle liability insurance policies protecting the Town of Hopkinton in connection with any operations included in the Contract, and shall have the Town named as an additional insured on the policies. Public Liability coverage shall be in the amount of at least $1,000,000 per occurrence and $3,000,000 aggregate for bodily injury liability and Property Damage coverage shall be in the amount of at least $1,000,000 per occurrence and $3,000,000 aggregate for property damage liability. The Contractor shall carry Workers Compensation in amounts as required by law.

2. All insurance coverage shall be in force from the time of the agreement until the date when all work under the Contract is completed and accepted by the Town. Since this insurance is normally written on a year-to-year basis, the Contractor shall notify the Town if coverage becomes unavailable or it its policy is changed.

3. The Contractor shall, before commencing performance of this contract, provide by insurance for the payment of compensation and the furnishing of other benefits in accordance with the Massachusetts General Laws (MGL), Chapter 152, as amended, to all employed under the Contract and shall continue such insurance in full force and effect during the term of the Contract.

4. Current insurance certificates and any and all renewals substantiating that required insurance coverage is in effect shall be filed with the town. Any cancellation of insurance, whether by the insurers or by the insured, shall not be valid unless written notice thereof is given by the party

proposing cancellation to the other party and to the Town, at least 15 days prior to the intended effective date thereof, which date should be expressed in said notice.

5. The Contractor shall indemnify, defend, and save harmless the Town, and all of its officers, agents, and employees against all suits, claims of liability of every name and nature, for or on account of any injuries to persons or damage to property arising out of the negligence of the Contractor in the performance of the work covered by this Contract and/or failure to comply with the terms and conditions of the Contract, whether by himself or his employees or sub-contractors.

G. PREVAILING MASSACHUSETTS WAGE RATES

Massachusetts Laws regarding Minimum Wage Rates and Employment conditions apply. In accordance with State mandates, the Awarding Authority requires certified payrolls BEFORE payments are made for work performed. Prevailing Massachusetts Wage Rates are included in the Contract Documents.

H. TRAFFIC CONTROL

The Contractor shall be responsible for payment of police details required. The Contractor shall be responsible for organizing all necessary police details and/or their cancellation. The Contractor shall pay any costs incurred due to his/her failure to cancel police details. The Contractor shall provide and maintain all traffic control devices necessary to secure their work area in accordance with the Manual on Uniform Traffic Control Devices. The Town may order additional safety measures if insufficient safety devices are being employed. In such instances, the Contractor shall erect in place said safety devices immediately. The cost of all traffic controls and police details shall be included in the unit price of the item stated in the bid proposal.

If the Contractor determines that it is necessary to close a road to perform the necessary work then the Contractor must make a request to close the road to the Department of Public Works and the Police Department for consideration a minimum of forty eight (48) hours prior to the start of work, unless otherwise authorized by the Town. If the request to close the road is denied then the Contractor will leave one (1) lane of the road open to traffic flow and make every effort to complete the work in a timely fashion.

I. MATERIAL DISPOSAL

The Contractor, at no additional cost to the Town, shall dispose of all material that has been removed from each location.

J. DIG SAFE LAW

Before proceeding with construction operations, the Contractor shall notify the State of Massachusetts Underground Plant Damage Prevention Systems (Dig Safe) at 1-888-344-7233, and shall make such supplemental investigations.

K. PRIVATE UTILITIES COORDINATION

Coordination with private utilities is the sole responsibility of the Contractor (including natural gas, electricity, telephone, cable, etc.). The Contractor shall be responsible for notifying Dig Safe prior to the start of work. Any assistance the Town may offer in coordinating with private utilities shall not absolve the Contractor's responsibility to coordinate with private utilities as necessary to accomplish the Contract Work. The Contractor shall be responsible and liable for all damages to the existing utilities and structures.

L. PUBLIC UTILITIES COORDINATION

Coordination with public utilities is the sole responsibility of the Contractor (including water and sewer). The Contractor shall be responsible to call the Water and Sewer Divisions at least 48 hours prior to the start of work to schedule said inspections, at 508-497-9765, Monday – Friday between 8:00 AM and 3:30 PM. The Water and Sewer Divisions must inspect the work. Any assistance the Town may offer in coordinating the public utilities shall not absolve the Contractor's responsibility to coordinate with public utilities as necessary to accomplish the Contract Work. The Contractor shall be responsible and liable for all damages to the existing utilities and structures.

M. PRICE ADJUSTMENTS

Due to the uncertainty of liquid asphalt, Portland cement, diesel fuel, gasoline, structural steel, and reinforcing steel prices, and in accordance with the requirements of Chapter 303 of the Acts of 2008, MassDOT Highway Division uses special provisions on selected projects to make contract adjustments to account for the prices in effect at the time the work is performed.

Hopkinton is required to include price adjustment clauses for diesel fuel, gasoline, liquid asphalt, Portland cement concrete, structural steel, and reinforcing steel in the bid documents of all construction contracts funded by the Chapter 90 Program. Projects that are not funded by Chapter 90 (e.g. operating budgets, general fund, etc.) are not subject to price adjustments.

* LIQUID ASPHALT: This provision applies to all projects using greater than 100 tons of hot mix asphalt (HMA) mixtures containing liquid asphalt cement.

The Price Adjustment will be based on the variance in price for the liquid asphalt component only from the Base Price to the Period Price. It shall not include transportation or other charges. This Price Adjustment will occur on a monthly basis.

Base Price
The Base Price of liquid asphalt on a project is a fixed price determined at the time of bid by the DPW by using the same method as for the determination of the Period Price detailed below.

Period Price
Please note that, starting December 15, 2008, two sets of period prices will be posted each month on the MassDOT website at *www.mhd.state.ma.us*. They will be labeled "New Asphalt Period Price Method" and "Old Asphalt Period Price Method".

New Asphalt Period Price Method
The "New Asphalt Period Price Method" is for contracts bid after December 15, 2008 and will show the Period Price of liquid asphalt for each monthly period as determined by MassDOT using the average selling price per standard ton of PG64-28 paving grade (primary binder classification) asphalt, FOB manufacturer's terminal, as listed under the "East Coast Market - New England, Boston, Massachusetts area" section of the Poten & Partners, Inc. "Asphalt Weekly Monitor". This average selling price is listed in the issue having a publication date of the second Friday of the month and will be posted as the Period Price for that month. MassDOT will post this Period Price on this website within two (2) business days following their receipt of the relevant issue of the "Asphalt Weekly Monitor". Poten and Partners has granted MassDOT the right to publish this specific asphalt price information sourced from the Asphalt Weekly Monitor.

Old Asphalt Period Price Method
The "Old Asphalt Period Price Method" Period Price will be for contracts bid on or before December 15, 2008 and is therefore not applicable to this bid.

New and Old Asphalt Period Price Methods
The paragraphs below apply to both the New and the Old Asphalt Period Price Methods.
The Contract Price of the hot mix asphalt mixture will be paid under the respective item in the Contract. The price adjustment, as herein provided, upwards or downwards, will be made after the work has been performed, using the monthly period price for the month during which the work was performed.

The Price Adjustment applies only to the actual virgin liquid asphalt content in the mixture placed on the job in accordance with the Standard Specifications for Highways and Bridges, Division III, Section M3.11.03.

The Price Adjustment will be a separate payment item. It will be determined by multiplying the number of tons of hot mix asphalt mixtures placed during each monthly period times the liquid asphalt content percentage times the variance in price between Base Price and Period Price of liquid asphalt.

This Price Adjustment will be paid only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.

No Price Adjustment will be allowed beyond the Completion Date of this Contract, unless there is a DPW approved extension of time.

* DIESEL FUEL AND GASOLINE: This monthly fuel price adjustment is inserted in this bid because the national and worldwide energy situation has made the future cost of fuel unpredictable. This adjustment will provide for either additional compensation to the Contractor or repayment to the town of Hopkinton, depending on an increase or decrease in the average price of diesel fuel or gasoline.

This adjustment will be based on fuel usage factors for various items of work developed by the Highway Research Board in Circular 158, dated July 1974. These factors will be multiplied by the quantities of work done in each item during each monthly period and further multiplied by the variance in price from the Base Price to the Period Price.

The Base Price of Diesel Fuel and Gasoline will be the price as indicated in MassDOT's web site *www.mhd.state.ma.us* for the month in which the contract was bid, which includes State Tax.

The Period Price will be the average of prices charged to the State, including State Tax for the bulk purchases made during each month.

This adjustment will be effected only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.

No adjustment will be paid for work done beyond the extended completion date of any contract.

Any adjustment (increase or decrease) to estimated quantities made to each item at the time of final payment will have the fuel price adjustment figured at the average period price for the entire term of the project for the difference of quantity.
The fuel price adjustment will apply only to the following items of work at the fuel factors shown:

ITEMS COVERED		
	Diesel	**Gasoline**
Excavation: and Borrow Work: Items 120, 120.1, 121, 123, 124, 125, 127, 129.3, 140, 140.1, 141, 142, 143, 144., 150, 150.1, 151 and 151.1 (Both Factors used)	0.29 Gallons / CY	0.15 Gallons / CY
Surfacing Work: All Items containing Hot Mix Asphalt	2.90 Gallons / Ton	Does Not Apply

N. STREETS WITH LIMITED WORKING HOURS FROM 9:00 A.M. – 3:00 P.M.

The following streets shall have limited working hours from 9:00 a.m. through 3:00 p.m. No extension of working hours will be permitted without first obtaining permission from the Director of Public Works and the Hopkinton Police Department:

Ash Street from Chestnut St. to the Holliston town line
Cedar Street
Chestnut Street
Cordaville Road
East Main Street
Elm Street
Fruit Street
Grove Street
Hayden Rowe Street
Main Street
Pleasant Street
South Street
Spring Street
West Main Street

O. MOBILIZATION AND DEMOBILIZATION CHARGES

The Contractor shall not charge the town for mobilization and demobilization charges either to and from town nor to different locations within town. All bid prices submitted by the Contractor shall include the cost of mobilization and demobilization to and from town and to different locations within town.

P. MassDOT PREQUALIFICATION

Bidders must prequalify with the MassDOT for all construction related items (e.g. Placement of Bituminous Concrete, Bituminous Concrete Excavation by Cold Planer, Modified Asphalt Fiber Crack Sealing, etc.) with a value of more than $50,000.

Q. WATER FOR DUST CONTROL AND CONSTRUCTION PURPOSES

The Contractor must provide water for dust control or other construction purposes using a water truck, water tanks, or any other method available to the Contractor. The Town of Hopkinton will not supply water for dust control or any other construction purposes to the Contractor.

R. STANDARD VENDOR AGREEMENT

All work conducted under this document will be subject to Hopkinton's Standard Vendor Agreement. A copy of the Standard Vendor Agreement is inserted below for reference:

CONTRACT FOR SERVICES

TOWN: The Town of Hopkinton

TOWN'S REPRESENTATIVE: Norman Khumalo, Town Manager

VENDOR:

PROJECT:

SITE:

DATE:

BUDGET:

The Town hereby accepts the Vendor's proposal to perform services ("Services") in connection with the Project in accordance with and subject to: (i) the Terms and Conditions attached hereto as Exhibit A; (ii) Scope of Services attached hereto as Exhibit B; (iii) the salary or hourly rate attached hereto as Exhibit C; and the Personnel attached hereto as Exhibit D. Collectively, these documents constitute this Agreement.

COMMENCEMENT OF WORK (check applicable box):

[X] This Agreement constitutes a notice to proceed with services.
[ ] Services shall not be performed under this Agreement until the Town so advises the Vendor in writing.

INSURANCE:	MINIMUM INSURANCE LIMITS
General Liability (Bodily Injury & Property Damage):	$1,000,000.00
General Liability – Aggregate:	$3,000,000.00
Worker's Compensation:	$ (as required by law)
Builder's Risk Property Coverage:	$ (completed value)
Property Coverage (Materials in Transit)	$ (value of materials)
Automobile Liability:	$1,000,000.00
Umbrella Liability:	$2,000,000.00
Umbrella Liability – Aggregate:	$2,000,000.00
Professional Liability (Errors & Omissions):	$1,000,000.00
Professional Liability – Aggregate:	$3,000,000.00

COMPLETION DATE:

PERSONNEL AND SUBCONTRACTORS:

Vendor's Team: Subcontractors:

See Exhibit D

List of Attached Exhibits (check applicable boxes):

Exhibit	A	B	C	D
Attached	[X]	[X]	[X]	[X]
Not Attached	[ ]	[ ]	[ ]	[ ]

TOWN: VENDOR:

By: Norman Khumalo By: _____

Title: Town Manager Title: _____

Date Signed: _____ Date Signed: _____

Approved as to availability of funds:

_____

By: _____

Title: _____

Approved as to form by J. Raymond Miyares, Town Counsel – June 10, 2010

Exhibit A

TERMS AND CONDITIONS

1. PERFORMANCE OF SERVICES

All Services of the Vendor shall be performed by qualified personnel. The Vendor's Project team shall consist of those persons identified in Exhibit D of this Agreement and the Subcontractors identified on page 2 of this Agreement. The employment by the Vendor of additional Subcontractors for any of the Services shall be subject to the prior written approval of the Town. No member of the Project team shall be replaced without the consent of the Town. The Town shall have the right to require the Vendor to remove any personnel from the Project for reasonable cause. The Vendor shall perform its Services in accordance with the highest professional standards of skill, care, and diligence. Without limiting the foregoing, the Town shall have the right to require the Vendor to cease providing Services immediately upon written notice.

2. TIME

The Vendor shall perform its Services as expeditiously as is consistent with the standards of professional skill and care required hereby. The Vendor shall perform its Services in coordination with the operations of the Town at the Sites specified and with any party engaged by the Town in connection with the Project. It shall be the obligation of the Vendor to request any information necessary to be provided by the Town for the performance of the Vendor's Services. Time is of the essence of this Agreement.

3. REIMBURSABLE EXPENSES

Automobile mileage shall be reimbursed at the government rate. The Town shall compensate the Vendor for reimbursable expenses actually incurred; provided, however, that reimbursable expenses shall only be eligible for reimbursement if they have been submitted in advance and approved in writing by the Town. The Vendor agrees to use reasonable efforts to minimize expenses which are reimbursable by the Town.

4. VENDOR'S COMPENSATION

a. Lump Sum. If Services are to be provided on a Lump Sum basis, the total amount of compensation due to the Vendor in consideration of the full performance of Services by the Vendor is the amount set forth on page one of this Agreement. The Town shall pay the Vendor as Services are performed by the Vendor based upon the portion of Services completed.

b. Upset Limit. If Services are to be provided subject to an Upset Limit, the total amount of compensation due to the Vendor in consideration of the full performance of Services by the Vendor shall in no event exceed the amount set forth on page one of this Agreement. Unless otherwise agreed, payments shall be made to the Vendor on a Time Card/Unit Price basis as provided in paragraph c. below, subject to the Upset Limit.

c. Time Card/Unit Price. If Services are to be provided on a Time Card/Unit Price basis, payments shall be made to the Vendor for Services performed based upon the salary or hourly rate or unit price schedule included in the Proposal or attached as Exhibit C. If the agreed rate schedule is not included in the Proposal or attached as Exhibit C, the Vendor shall submit to the Town, before proceeding with Services, a rate schedule listing the maximum rates to be charged for the various employees or categories of employees performing Services or categories or services. Compensation for services performed by

authorized Subcontractors shall be on the basis of the actual costs to the Vendor unless otherwise specified herein or in the Proposal. The Vendor shall use his best efforts to complete the performance of his Services within the Estimated Amount set forth on the first page of this Agreement. The Vendor shall advise the Town at such time as the Estimated Amount has been reached. The Town shall not be obligated to pay for any amount in excess of the Estimated Amount, unless the Town gives the Vendor a written notice authorizing the further performance of Services and the incurring of additional costs for such Services.

d. No Compensation for Certain Services. Neither the Vendor nor any of its Subcontractors shall be compensated for any services involved in preparing changes that are required for additional work that should have been anticipated by the Vendor in the preparation of construction documents or other work products, as reasonably determined by the executive head of the Town, nor for any services made necessary by the fault or negligence of the Vendor or its Subcontractors.

e. Subject to Appropriation. The obligations of the Town hereunder shall be subject to appropriation on a fiscal year basis. In the absence of appropriation, this agreement shall be terminated immediately without liability of the Town for damages, lost profits, penalties, or other charges arising from early termination.

5. PAYMENT

The Vendor shall submit, not more often than monthly, statements for fees for Services rendered and reimbursable expenses (stated separately) incurred. The Vendor's statements shall include a description of the Services performed for the period in question with a progress report, and shall be in such form and detail and with such supporting data as the Town may reasonably require to show the computational basis for all charges (including reimbursable expenses), including a statement explaining any substantial deviation from the Vendor's anticipated work schedule, staffing plan and costs. Payment shall be due within thirty (30) days after the Town receives a proper statement. In no event shall the Town be liable for interest, penalties, expenses or attorney's fees. No payment made hereunder shall constitute or be construed as final acceptance or approval of that part of the Services to which such payment relates or relieve the Vendor of any of its obligations hereunder with respect thereto.

6. VENDOR'S ACCOUNTING RECORDS

The Vendor shall keep records pertaining to Services performed (including complete and detailed time records) and reimbursable expenses incurred, employing sound bookkeeping practices and in accordance with generally accepted accounting principles. All records pertaining to Services performed on a time card or unit price basis and reimbursable expenses shall be available to the Town or its authorized representatives for review and audit during normal business hours.

7. REPORTS, DRAWINGS, ETC.

All reports, drawings, plans and other data and material, including computer programs and other material in electronic media (collectively, "Materials") furnished to the Town shall become the Town's property and may be used by the Town (or such parties as the Town may designate) thereafter in such manner and for such purposes as the Town (or such parties as the Town may designate) may deem advisable, without further employment of or additional compensation to the Vendor. The Vendor shall not release or disclose to any third party any Materials produced for the Town without obtaining the Town's prior written consent. At no time shall the Vendor release or disclose to any third party any Materials furnished to the Vendor by the Town in connection with the performance of the Vendor's Services.

8. INSURANCE

The Vendor shall obtain and maintain the following insurance in amounts not less than the Minimum Insurance Limits set forth on page one of this Agreement during all times that the Vendor is performing Services and for at least one year after termination of this Agreement in the case of Commercial General Liability, Worker's Compensation and Employer's Liability insurance, and for at least the applicable period of limitations on actions provided by law in the case of Professional Liability insurance:

a. Commercial General Liability insurance covering claims for injury to persons and damage to property. Such insurance shall include contractual liability and shall cover the use of all equipment and motor vehicles on the Site or transporting persons, equipment, materials or debris to and from the Site. Products and Completed Operations insurance shall be maintained for at least three years after completion of this Agreement.

b. Professional Liability insurance for protection from claims arising out of the performance of professional services, including contractual coverage.

c. Worker's Compensation Liability insurance in amounts not less than those required by law and Employer's Liability insurance.

d. Automobile Liability insurance applicable for any contractor who has an automobile operating exposure for protection against bodily injury and property damage.

e. Umbrella Liability insurance, which shall be maintained for at least three years after completion of this Agreement.

Certificates of insurance evidencing the coverage required hereunder, together with evidence that all premiums for such insurance have been paid, shall be filed with the Town prior to the commencement of the Services to be rendered by the Vendor hereunder. All such policies and certificates shall be written through companies and in forms acceptable to the Town's lender or lenders, if any. All policies shall contain a provision that coverages afforded by them will not be cancelled or amended until at least thirty (30) days prior written notice has been given to the Town. The insurance provided under clause a, b, d and e, above, shall name the Town and such other parties as the Town shall require as "Additional Insured" parties.

At the request of the Town, a Subcontractor employed by the Vendor shall obtain and maintain a professional liability insurance policy covering negligent errors, omissions and acts of such Subcontractor or of any person or business entity for whose performance the Subcontractor is legally liable arising out of the performance of the contract for Subcontractor services. The Subcontractor shall furnish a certificate or certificates of such insurance coverage to the Town prior to the employment of such Subcontractor by the Vendor. A liability insurance policy maintained under this paragraph shall provide for coverage of such type and duration and in such amount as the Town shall require.

9. INDEMNIFICATION

To the maximum extent permitted by law, the Vendor agrees to indemnify, defend with counsel acceptable to the Town and save harmless the Town from all suits, actions, claims, demands, damages, losses, expenses and costs, including attorneys' fees, of every kind and description which the Town may incur or suffer resulting from, in connection with, or arising out of any act, error or omission of, or breach of contractual duties to the Town by, the Vendor, its agents, servants, employees or Subcontractors. The

extent of the foregoing indemnification and hold harmless provisions shall not be limited by any provision of insurance required by this Agreement and shall survive the termination of this Agreement.

10. COMPLIANCE WITH LAW

It is the responsibility of the Vendor that the Project be conducted, and that all Services and other work performed by the Vendor hereunder be performed so as to comply with all applicable federal, state and municipal laws, regulations, codes, ordinances and orders, and any permit conditions as to which the Vendor has knowledge, as the same may be in effect as of the time of the performance of such work. In particular, without limitation, the Vendor agrees to comply with (a) all regulations pertaining to approvals for federal and state grants (including, but not limited to, the Massachusetts Community Development Action Grant administered in accordance with Chapter 789 of the Acts of 1981), and with all federal and state environmental laws and regulations, and assist in making any submissions with respect thereto and (b) all applicable requirements of the Massachusetts public construction and procurement laws, which are incorporated by reference herein.

11. TERMINATION OF AGREEMENT

The Town may terminate this Agreement as follows:

a. Without cause, on ten days' prior written notice; or

b. Immediately, by written notice to the Vendor, if the Vendor violates any of the provisions of this Agreement, or fails to perform or observe any of the terms, covenants or conditions of this Agreement, or abandons in whole or in part its Services, or becomes unable to perform its Services, hereunder. For purposes of this Paragraph 12, it is acknowledged that the Vendor's Services under this Agreement are personal services and may not be assumed by or assigned by a trustee in bankruptcy.

In the event of termination, the Vendor shall promptly deliver to the Town all Materials, including all documents, work papers, studies, calculations, computer programs, data, drawings, plans, specifications and other tangible work product or materials pertaining to the Services performed under this Agreement to the time of termination, and thereupon the Town shall pay to the Vendor any unpaid and undisputed balance owing for Services rendered prior to the date of termination. Any termination of this Agreement shall not affect or impair the right of the Town to recover damages occasioned by any default of the Vendor or to set off such damages against amounts otherwise owed to the Vendor.

12. MISCELLANEOUS PROVISIONS

a. Successors and Assigns. Subject to the provisions of Subparagraph (b) below, the Town and the Vendor each binds itself, its partners, successors, assigns, and legal representatives to the other party.

b. Assignment by Vendor. The Vendor shall not assign, sublet or transfer any of its obligations, responsibilities, rights or interests (including, without limitation, its right to receive any moneys due hereunder) under this Agreement without the written consent of the Town. Any assignment, subletting, or transfer by the Vendor in violation of this Paragraph 13(b) shall be void and without force or effect.

c. Entire Agreement. This Agreement represents the entire and integrated agreement between the Town and the Vendor with respect to the subject matter hereof and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by written instrument signed by both the Town and the Vendor.

d. Confidentiality. The Vendor shall not, without the Town's prior written consent, release or disclose any information relating to the Project to anyone except as necessary to perform its duties hereunder.

e. Certifications. The Vendor shall, from time to time, make such certifications and statements to the Town and to such of the Town's architects, designers, vendors and lenders, and such other parties, as the Town shall reasonably request, in such form as the Town shall reasonably request, provided that the Vendor determines that such certifications are true and correct based upon the Services performed by the Vendor hereunder.

f. Additional Services. If the Town requests the Vendor to perform additional services beyond the scope of Services hereunder, the Vendor shall perform such additional services only upon obtaining written authorization from the Town including written agreement as to the method and amount of compensation for such additional services.

g. Disputes. All claims, disputes and other matters in question between the Town and the Vendor arising out of or relating to this Agreement or the breach thereof shall be submitted for resolution to a court of competent jurisdiction in Suffolk or Middlesex County, Massachusetts, unless otherwise agreed by the parties. No such action shall be brought, however, until the completion of all Services under this Agreement or the earlier termination thereof as provided in Paragraph 11 above, the parties agreeing to negotiate in good faith any claims, disputes or other matters in question during the term of this Agreement before resorting to litigation.

h. Limited Liability. No officer, director, member, employee, or other principal, agent or representative (whether disclosed or undisclosed) of the Town, nor any participant with the Town, shall be personally liable to the Vendor hereunder, for the Town's payment obligations or otherwise, the Vendor hereby agreeing to look solely to the assets of the Town for the satisfaction of any liability of the Town hereunder. In no event shall the Town ever be liable to the Vendor for indirect, incidental or consequential damages.

i. Governing Law. This Agreement shall be governed by the law of the Commonwealth of Massachusetts.

j. No Waiver. The Town's review, approval, acceptance or payment for Services under this Agreement shall not operate as a waiver of any rights under this Agreement and the Vendor shall be and remain liable to the Town for all damages incurred by the Town as the result of the vendor's failure to perform in conformance with the terms and conditions of this Agreement. The rights and remedies of the Town provided for under this Agreement are in addition to any other rights or remedies provided by law. The Town may assert a right to recover damages by any appropriate means, including but not limited to set-off, suit, withholding, recoupment, or counter-claim either during or after performance of this Agreement.

k. Interpretation. If any provision of this Agreement shall to any extent be held invalid or unenforceable, the remainder of this Agreement shall not be deemed affected thereby. Paragraph headings are included herein for reference purposes only and in no way define, limit or describe the scope or intent of any of the provisions of this Agreement.

j. Non-Exclusive. This Agreement is not exclusive and does not obligate the Town to employ the Vendor on all peer review contracts.

13. EQUAL EMPLOYMENT OPPORTUNITY

a. In connection with the performance of work under this Agreement, the Vendor shall not discriminate against any employee or applicant for employment because of race, color, religion, creed, national origin, ancestry, age, sex or handicap. The Vendor shall post in conspicuous places, available for employees and applicants for employment, notices to be provided by the Massachusetts Commission Against Discrimination (the "Commission"), setting forth the provisions of the Fair Employment Practices Law of the Commonwealth.

b. In connection with the performance of work under this Agreement, the Vendor shall not discriminate in its relationships with Subcontractors or suppliers on the basis of race, color, religion, creed, national origin, ancestry, age, sex or handicap.

c. The Vendor shall comply with all applicable laws and regulations pertaining to non-discrimination, equal opportunity and affirmative action, including without limitation executive orders and rules and regulations of federal and state agencies of competent jurisdiction.

14. CERTIFICATIONS BY VENDOR

By execution of this Agreement, the Vendor certifies:

a. The Vendor has not given, offered or agreed to give any person, corporation or other entity any gift, contribution or offer of employment as an inducement for, or in connection with, the award of this Agreement.

b. No Vendor to or subcontractor for the Vendor has given, offered or agreed to give any gift, contribution or offer of employment to the Vendor or to any other person, corporation, or entity as an inducement for, or in connection with, the award to the Vendor or subcontractor of a contract by the Vendor.

c. No person, corporation or other entity, other than a bona fide full time employee of the Vendor, has been retained or hired by the Vendor to solicit for or in any way assist the Vendor in obtaining this Agreement upon an agreement or understanding that such person, corporation or other entity be paid a fee or other consideration contingent upon the award of this Agreement to the Vendor.

d. The Vendor shall comply with all applicable requirements of Section 39R of Chapter 30 of the Massachusetts General Laws.

15. TAXES

By execution of this Agreement the vendor, pursuant to Section 49A of Chapter 62C of the Massachusetts General Laws, certifies under the penalties of perjury that it has, to the best knowledge and belief of the person(s) who signed this Agreement on the vendor's behalf, filed all state tax returns and paid all state taxes required under law.

16. CONFLICT OF INTEREST

The Vendor acknowledges that the Town is a municipality for the purposes of Chapter 268A of the Massachusetts General Laws (the Massachusetts conflict of interest statute), and the Vendor agrees, as circumstances require, to take actions and to forbear from taking actions so as to be in compliance at all times with obligations of the Vendor based on said statute.

Exhibit B

SCOPE OF SERVICES

Exhibit C

CONSTRUCTION SERVICES PRICING SCHEDULE

Exhibit D

PERSONNEL

DOCUMENT 00800

GENERAL CONDITIONS

1.0 GENERAL PROVISIONS

1.1 Definitions.

1.1.1 Awarding Authority. Where the term "Awarding Authority" appears in any statutory provision, it shall mean "the Owner."

1.1.2 Contracting Officer. The term "Contracting Officer" shall mean the town official so designated below, or the individual duly appointed by him for the performance of any of his functions or responsibilities under this Contract. The Work shall be carried out under the direction and subject to the approval and acceptance of the **Town of Hopkinton Select BoardBoard**, (hereinafter called the Contracting Officer).

1.2 Scope of the Work. The Work comprises the completed project described in the Contract Documents and includes all labor, professional services, transportation, tools, materials, supplies, equipment, permits, approvals, documents, calculations, submittals, and certificates necessary to develop, perform, construct and complete the project in accordance with all applicable laws, ordinances, and regulations, and in accordance with the Contract Documents.

1.3 Interpretation. The Plans and Specifications and other Contract Documents are to be considered together and are intended to be mutually complementary, so that any work shown on the Plans though not specified in the Specifications, and any work specified in the Specifications though not shown on the Plans, is part of the Work to be performed by the Contractor.

1.4 Written Authorization. Actions taken, and approvals and decisions made by the Owner under this Contract require the prior approval and signature of the Contracting Officer. These include, but are not limited to, the following: changes in the Contract Price, time for completion, or any other provision of this Contract; written orders, notices, and approvals given by the Contracting Officer pursuant to the Contract Documents or pursuant to any laws applicable to this Contract, including approval of "or equal" submissions; issuance of stop work orders; approval of Contractor's applications for payment; and termination of the Contract. Work undertaken by the Contractor not authorized by the Contracting Officer's signature prior to the start of such work shall be considered unauthorized work and shall not entitle the Contractor to any extra payment. The Contractor shall perform, at its own expense, corrective measures required by the Owner due to any failure to obtain prior approval for any item of work.

1.5 Contractor's General Duties. The Contractor shall perform the Work in a competent manner in accordance with the Contract Documents and all applicable laws. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences and procedures, and coordination of all portions of the Work under this Contract. The Contractor shall provide and perform for the Contract Price all of the duties and obligations set forth

in the Contract Documents. Except as otherwise specified in this Contract, it is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable Laws. However, if the Contractor observes that portions of the Contract Documents are at variance with legal requirements, the Contractor shall promptly notify the Owner of that fact in writing. If the Contractor performs Work knowing it to be contrary to legal requirements, the Contractor shall be liable for all damages caused thereby, including the cost of correcting the Work.

1.6 **Sales Tax Exemption and Other Taxes.** To the extent that materials and supplies are used or incorporated in the performance of this Contract, the Contractor is considered an exempt purchaser under the Massachusetts Sales Act, Chapter 14 of the Acts of 1966. The Contractor shall pay all taxes and tariffs of any sort related to the Work, subject to the applicable exemptions.

1.7 **Permits, Fees and Notices.** The Contractor shall secure and pay for all permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the Work. The Contractor shall coordinate all efforts required to obtain these permits unless otherwise directed in writing by the Owner. The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations, codes, and lawful orders of public authorities bearing on the performance of the Work.

1.7 **Safety Requirements.** The Contractor shall comply with all Federal, State, and local safety laws and regulations applicable to the Work.

1.8 **Minimum Wage Rates.** The Contractor shall comply with M.G.L. c. 149, §§ 26-27H. The wage schedule found in Exhibit A to the Instructions to Bidders lists the minimum wage rates that must be paid to all workers employed in the Work throughout the term of this Contract, subject to the exceptions provided in M.G.L c.149, §§ 26-27H. The Owner is not responsible for any errors, omissions, or misprints in the said schedule. The Contractor shall not have any claim for extra compensation from the Owner arising from the fact that the actual wages paid to workers employed in the Work exceed the rates listed on the schedule or as otherwise provided by law. The Contractor shall cause a copy of the schedule to be posted in a conspicuous place at the Site during the term of the Contract. If reserve police officers are employed by the Contractor, they shall be paid the prevailing wage of regular police officers. (See M.G.L c. 149, § 34B).

1.9 **Corporate Disclosures.** The Contractor, if a foreign corporation, shall comply with M.G.L. c. 181, §§ 3 and 5, and M.G.L. c. 30, § 39L.

1.10 **Safety Requirements; OSHA Training [M.G.L. c. 30, s. 39S].** The Contractor shall comply and shall cause all subcontractors and persons employed on the Work to comply with all applicable safety requirements. By executing this contract the Contractor hereby certifies that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by

the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration. Any employee found on a worksite subject to this section without documentation of successful completion of a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration shall be subject to immediate removal.

1.11 **Payroll Records and Statement of Compliance.** The Contractor shall comply and shall cause its subcontractors to comply with Massachusetts General Law c. 149, § 27B, which requires that a true and accurate record be kept of all persons employed on a project for which the prevailing wage rates have been provided. The Contractor and all Subcontractors shall keep these records and preserve them for a period of six years from the date of completion of the Contract. Such records shall be open to inspection by any authorized representative of the Owner at any reasonable time, and as often as may be necessary. The Contractor shall, and shall cause its subcontractors to, submit weekly copies of their weekly payroll records to the Owner. In addition, the Contractor and each Subcontractor shall furnish to the Executive Department of Labor within fifteen days after completion of its portion of the Work a signed statement in the form required by the Owner.

1.12 **Workforce Qualifications.** The Contractor shall: (i) employ competent workers; (ii) enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work; (iii) not permit employment of unfit persons or persons not skilled in tasks assigned to them. Whenever the Contracting Officer shall notify the Contractor in writing that any worker is, in the Contracting Officer's opinion, incompetent, unfaithful, disorderly, or otherwise unsatisfactory, such employee shall be discharged from the Work and shall not again be employed on the Work except with the consent of the Contracting Officer.

1.13 **Non-Discrimination in Hiring and Employment.** By signing this Contract the Contractor hereby certifies under the pains and penalties of perjury that the Contractor currently complies with and will continue to comply with all federal and state laws, rules and regulations promoting fair employment practices or prohibiting employment discrimination and unfair labor practices and shall not discriminate in the hiring of any applicant for employment nor shall any qualified employee be demoted, discharged or otherwise subject to discrimination in the tenure, position, promotional opportunities, wages, benefits or terms and conditions of their employment because of race, color, national origin, ancestry, age, sex, religion, disability, handicap, sexual orientation or for exercising any rights afforded by law.

1.14 **Veterans Preference.** In the employment of mechanics and apprentices, teamsters, chauffeurs, and laborers in the performance of Work in the Commonwealth, preference shall first be given to citizens of the Commonwealth who have been residents of the Commonwealth for at least six months at the commencement of their employment and who are veterans as defined M.G.L. c. 4, § 7 (34), and who are qualified to perform the work to which the employment relates and, within such preference, preference shall be given to service-disabled veterans; and secondly, to citizens of the Commonwealth generally who have been residents of the Commonwealth for at least six months at the commencement of their employment, and if they cannot be obtained in sufficient numbers, then to citizens of the United States.

1.15 **Weekly or Biweekly wage payments [M.G.L. c. 149, § 148].** The Contractor shall comply with, and shall cause its Subcontractors to comply with M.G.L. c. 149, § 148, which requires the weekly or biweekly payment of employees within six days of the end of the pay period during which wages were earned if employed for five or six days of a calendar week, and within other periods of time under certain circumstances as set forth therein.

1.16 **Labor Harmony [M.G.L. c. 30, s. 39S].** By executing this contract the Contractor hereby certifies that (1) that Contractor is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work. The Contractor shall procure materials from such sources and shall manage its own forces and the forces of its Subcontractors and any sub-subcontractors in such a manner as will result in harmonious labor relations on the site. The Contractor shall cause persons to be employed in the Work who will work in harmony with others so employed. Should the Work be stopped or materially delayed in the Owner's reasonable judgment due to a labor dispute, the Owner shall have the right to require the Contractor to employ substitutes acceptable to the Owner.

1.17 **Risk of Loss.** The Contractor shall bear the risk of loss with respect to any of its or its agents', employees' or subcontractors' vehicles, equipment or tools brought onto or left at the worksite and for any materials stored at the worksite.

1.18 **CORI Checks.** No person shall be given access to the Site without first passing a Criminal Offender Record Information (CORI) check. Contractor shall provide Owner with proof, satisfactory to Owner, that each employee, agent, contractor, subcontractor and invitee ("Contractor Worker(s)") that visits the site has passed a CORI check. The Contractor shall see to it that no Contractor Worker shall perform any Work at the Site if the Owner has objected to such person being at the site based upon information contained in the CORI check. The Contractor shall not allow any Contractor Worker on the site until the Owner has reviewed such worker's CORI check and has not objected within ten (10) days after the receipt of the CORI check to such worker being at the site on account of the CORI check, unless the Owner waives such requirement for advance review of a Contractor Worker's CORI check prior to that worker entering the site (which waiver shall only be effective as to the Contractor Worker(s) that the Contractor requests the

Owner to provide such waiver in each instance). Notwithstanding the foregoing, the Contractor shall remain liable for the conduct of its workers, employees, subcontractors, agents and invitees on Site.

2.0 MATERIALS AND EQUIPMENT WARRANTY

Materials and equipment to be installed as part of the Work (both or either of which are hereinafter referred to as "materials") shall be new, unused, of recent manufacture, assembled, and used in accordance with the best construction practices. The Contractor shall inform itself as to, and shall comply with, the provisions of M.G.L. c. 7, § 23A, as amended.

3.0 PROSECUTION OF THE WORK -- LIQUIDATED DAMAGES

3.1. **Beginning, Progress Schedule.** The Contract time shall commence upon the date specified in the Notice to Proceed executed by the Contracting Officer and delivered to the Contractor after the execution of this Contract. The Contractor shall begin Work at the Site within ten days of said date unless otherwise ordered in writing by the Owner. Prior to commencing the Work, the Contractor shall meet with representatives of the Owner to discuss the quality assurance program, safety program, labor provisions, progress schedule, schedule of values, and other Contract procedures. Upon Approval by the Contracting Officer, the progress schedule shall constitute the progress schedule for the Work. Upon approval by the Contracting Officer, the schedule of values shall be the basis for payment for the Work. The Contractor shall at the end of each month, or more often if required, furnish to the Owner a schedule meeting the requirements of the Specifications showing the actual progress of the parts of the Work in comparison with the approved progress schedule.

3.2 **Time for Completion of Work.** Time is of the essence of this Contract. The Work shall be completed within the time specified in Agreement subject only to extensions specifically permitted in accordance with the terms of this Contract.

3.3 **Definition of "Substantial Completion."** For the purposes of this Contract the term "Substantial Completion" shall occur when (1) the Contractor fully completes the Work or substantially completes the Work so that the value of the Work remaining to be done is, in the estimate of the Owner, less than one percent of the original Contract price, or (2) the Contractor substantially completes the work and the Owner takes possession for occupancy, whichever occurs first. For the purposes of the preceding sentences the term "substantially completes" means that the work required by the Contract has been completed except for minor incomplete or unsatisfactory work items that do not materially impair the usefulness of the Work.

3. 4 **Failure to Complete Work on Time - Liquidated Damages.** Because both parties recognize (1) that the time for completion of this Contract is of the essence, (2) that the Owner will suffer loss if the work is not completed in accordance with

the phasing requirements and within the contract time specified, plus any extensions thereof allowed in accordance with the provisions of this Contract, and (3) that there are significant delays, expense and difficulties associated with a legal proceeding to determine the actual loss suffered by the Owner if the work is not completed on time; therefore, it is agreed that the Contractor will pay the Owner, as liquidated damages, the sum of one hundred dollars ($100.00) per calendar per day for each and every day thereafter that it fails to deliver such Work completed according to the requirements of the Contract Documents. Such liquidated damages shall be paid not as a penalty, but to partially cover losses and expenses to the Owner, including intangible costs and losses that are or may be impracticable to ascertain. Allowing the Contractor to continue to finish the work (or any portion of the work) after the time specified for completion of the Work shall not operate as a waiver on the part of the Owner of any of its rights under the Contract Documents or otherwise under law or equity. The Owner's right to impose liquidated damages shall in no way prohibit or restrict the Owner's right to bring legal action for damages in lieu of its option to impose liquidated damages from money due the Contractor, and if such money is insufficient to cover the liquidated damages, then the Contractor shall pay the amount due.

3.5 **Collection of Liquidated Damages.** The Owner may recover liquidated damages by deducting the amount thereof from any moneys due or that might become due the Contractor, and if such moneys shall be insufficient to cover the liquidated damages, then the Contractor or the Surety shall pay to the Owner the amount due.

3.6 **Owner's Approvals and Interpretations**. Decisions by the Owner regarding interpretation of the specifications, approval of equipment, material or any other approval, or progress of the Work, shall be made promptly and, in any event, no later than thirty days after the Contractor's written submission for decision; but if such decision requires extended investigation and study, the Owner shall, within thirty days after the receipt of the submission, give the Contractor written notice of the reasons why the decision cannot be made within the thirty day period and the date by which the decision will be made.

3.7 **Extension for Delays Caused by Owner.** The only circumstances under which the Contract Price shall be increased due to delays caused by the Owner are those specified in M.G.L. c. 30, § 39O. In all other cases the Contractor shall be entitled neither to increase the Contract Price nor to receive damages on account of any hindrances or delays, avoidable or unavoidable, but if the delay is caused by the Owner, the Contractor shall be entitled to an extension of time to the extent provided in M.G.L. c. 30, §39O. The Contractor must submit any claim under this paragraph to the Owner in writing as soon as practicable after the end of the Owner's suspension, delay, interruption or failure to act and, in any event, not later than the date of final payment under this Contract. Except for costs due to a suspension order, the Owner shall not approve any costs in the claim incurred more than 20 days before the Contractor notified the Owner in writing of the act or

failure to act or the Owner that gave rise to the claim.

3.8 **Owner's Right to Reject Defective Materials and Work.** Except as otherwise provided herein, the Owner's inspection of the Work shall not relieve the Contractor of any of its responsibilities hereunder, and defective work shall be corrected. The Owner may reject unsuitable work, notwithstanding that such work and materials have been previously accepted for payment. If any part of the Work shall be found defective at any time before the final acceptance of the whole Work, the Contractor shall promptly correct such defects in a manner satisfactory to the Owner. If any material brought upon the site for use in the Work shall be rejected by the Owner as not in conformity with the Contract Documents, the Contractor shall promptly remove such materials from the site.

3.9 **Substantial Completion of the Work; Final Completion; Owner's Remedies.** When the Work has reached the point of Substantial Completion as shown on Approved payment request, the Contractor shall assist the Owner in the development of a punch list identifying those items of unfinished or unacceptable Work that remain to be performed or corrected under the Contract. The Contractor shall complete the lunch list items to final completion within 30 days after the Owner's approval of the punch list. At any time after the value of the Work remaining to be done is, in the estimation of the Owner, less than 1 per cent of the adjusted Contract price, or the Owner has determined that the Contractor has substantially completed the work and the Owner has taken possession for occupancy, the Owner may send to the Contractor by certified mail, return receipt requested, a complete and final list of all incomplete and unsatisfactory work items, including, for each item on the list, a good faith estimate of the fair and reasonable cost of completing such item. The Contractor shall then complete all such work items within 30 days of receipt of such list or before the Contract completion date, whichever is later. If the Contractor fails to complete all incomplete and unsatisfactory work items within 45 days after receipt of such items furnished by the Owner or before the Contract completion date, whichever is later, subsequent to an additional 14 days' written notice to the Contractor by certified mail, return receipt requested, the Owner may terminate this Contract and complete the incomplete and unsatisfactory work items and charge the cost of same to the Contractor and such termination shall be without prejudice to any other rights or remedies the Owner may have under this Contract.

4.0 CHANGES IN THE WORK

4.1 **Changes within the Scope of the Work**. A change order may be issued by the Owner for changes in the Work within the scope of the Contract, including but not limited to, changes in: (1) the Plans and Specifications; (2) the method or manner of performance of the Work; (3) the Owner-furnished facilities, equipment, materials, services, or Site; or (4) the schedule for performance of the Work. The Contractor shall immediately perform any change order work that is ordered in writing by the Owner.

4.2. **Request for Equitable Adjustment due to Change Order.** Whenever a change order is issued by the Owner that will cause a change in the Contractor's cost or time for performance, the Contractor or the Owner may request an equitable adjustment in the Contract Price or the Contract time. A request for such an adjustment shall be in writing and shall be submitted by the party making such claim to the other party.

4.3. **Latent Conditions.** If, during the progress of the Work, the Contractor or the Owner discovers that the actual subsurface or latent physical conditions encountered at the Site differ substantially or materially from those indicated in the Contract Documents, then either the Contractor or the Owner may request an equitable adjustment in the Contract Price in accordance with M.G.L. c. 30, § 39N. Likewise if the latent or subsurface physical condition causes a change in the time for performing the Work, either the Contractor or the Owner may request an equitable adjustment of the time for the performance of the Work.

4.4 **Computation of Equitable Adjustments.** Equitable adjustments in the Contract Price shall be determined according to one of the following methods, or a combination thereof, as determined by the Owner: (1) fixed price basis, provided that the fixed price shall be inclusive of items described in 4.4.1 below and shall be computed in accordance with that provision; (2) estimated lump sum basis to be adjusted in accordance with Contract unit prices or other agreed upon unit prices provided that the unit prices shall be inclusive of all costs related to such equitable adjustment; (3) time and materials basis to be subsequently adjusted on the basis of actual costs (but subject to a predetermined "not to exceed limit") calculated as follows:

4.4.1 Where the value of work performed directly by the Contractor under an change order is determined either by a lump sum proposal or by actual cost of work as it progresses, the Contractor will be allowed an additional amount of ten percent (10%) of the total cost of work plus an additional amount of two percent (2%) for the cost of bonds and insurance associated with the added work. Where such work is performed by a Subcontractor, the Contractor will be allowed an additional amount of five percent (5%) to the total payment made to the Subcontractor, plus an additional amount of two percent (2%) for the cost of bonds and insurance associated with the added work. The cost of work shall include the cost at the minimum wage rates established for this contract pursuant to M.G.L. c. 149, §§ 26-27H for direct labor, material and use of equipment, plus the cost of workmen's compensation insurance, liability insurance, federal social security and Massachusetts unemployment compensation. The cost of work may include the cost of added mobilization, engineering, layout, transit staging/scaffolding, lifting, hoisting, dumpster, handling, cleanup, street sweeping, safety protection, temporary weather protection, temporary heat and utilities, shipping/receiving, construction fences, police barricades and

signs; provided, however, that such added costs may be included only to the extent that they are directly attributable to the added work and are properly substantiated as determined by the Owner and Architect, in their discretion. Mark-up for overhead, superintendence and profit shall include (and no additional payment shall be made for) general conditions, management, supervision coordination, record drawings, small tools/computers, "tools of the trade", administration, accounting, punch list, O&M manuals, estimator time, schedule updating, and certified payrolls. Contractor and Subcontractor mark-up of such rates for payroll costs associated FUI, SUI, MUI, worker's compensation insurance and other direct payroll costs, shall only be calculated on the direct labor rate as computed above and shall not exceed 30%, except that a higher rate may be allowed for subcontractors only to the extent such higher rate is based on actual payroll costs of the subcontractor for which substantiating documentation of how such higher cost is calculated provided, and no other labor cost mark-ups other than those specified above will be allowed.

4.5 **Timely Decision by the Owner.** In accordance with M.G.L. c. 30, § 39P, "Every contract subject to section thirty-nine M of this chapter or section forty-four A of chapter one hundred forty-nine which requires the awarding authority, any official, its architect or engineer to make a decision on interpretation of the specifications, approval of equipment, material or any other approval, or progress of the work, shall require that the decision be made promptly and, in any event, no later than thirty days after the written submission for decision; but if such decision requires extended investigation and study, the awarding authority, the official, architect or engineer shall, within thirty days after the receipt of the submission, give the party making the submission written notice of the reasons why the decision cannot be made within the thirty day period and the date by which the decision will be made."

4.6 **Work Performed Under Protest.** The Contractor must perform any work required by the Owner. If it considers the work to be 'extra' and the Owner disagrees, the work must be performed under protest.

5.0 PAYMENT PROVISIONS

5.1 **Applications for Periodic Payments.** Once each month, on a date established at the beginning of the Work, the Contractor shall deliver to the Owner an itemized Application for Payment, supported by such data substantiating the Contractor's right to payment as the Owner may require. The application shall reflect a minimum of 5% retainage and shall be subject to, and processed in accordance with, the provisions of M.G.L. c. 30, §39K, which provides:

"Within fifteen days (30 days in the case of the commonwealth, including local housing authorities) after receipt from the contractor, at the place designated by the awarding authority if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the awarding authority will make a periodic payment to the contractor for the work performed during the preceding month and for the materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the contractor has title or to which a subcontractor has title and has authorized the contractor to transfer title to the awarding authority, upon certification by the contractor that he is the lawful owner and that the materials are free from all encumbrances, but less (1) a retention based on its estimate of the fair value of its claims against the contractor and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and less (3) a retention not exceeding five per cent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within sixty-five days after (a) the contractor fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the awarding authority, less than one per cent of the original contract price, or (b) the contractor substantially completes the work and the awarding authority takes possession for occupancy, whichever occurs first, the awarding authority shall pay the contractor the entire balance due on the contract less (1) a retention based on its estimate of the fair value of its claims against the contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, or based on the record of payments by the contractor to the subcontractors under this contract if such record of payment indicates that the contractor has not paid subcontractors as provided in section thirty-nine F. If the awarding authority fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of three percentage points above the rediscount rate than charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the contractor; provided, that no interest shall be due, in any event, on the amount due on a periodic estimate for final payment until fifteen days (twenty-four days in the case of the commonwealth) after receipt of such a periodic estimate from the contractor, at the place designated by the awarding authority if such a place is so designated. The contractor agrees to pay to each subcontractor a portion of any such interest paid in accordance with the amount due each subcontractor.

The awarding authority may make changes in any periodic estimate submitted by the contractor and the payment due on said periodic estimate shall be computed in accordance with the changes so made, but such changes or any requirement for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made, as provided

herein; provided, that the awarding authority may, within seven days after receipt, return to the contractor for correction, any periodic estimate which is not in the required form or which contains computations not arithmetically correct and, in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter. The provisions of section thirty-nine G shall not apply to any contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building to which this section applies.

All periodic estimates shall be submitted to the awarding authority, or to its designee as set forth in writing to the contractor, and the date of receipt by the awarding authority or its designee shall be marked on the estimate. All periodic estimates shall contain a separate item for each filed subtrade and each sub-subtrade listed in sub-bid form as required by specifications and a column listing the amount paid to each subcontractor and sub-subcontractor as of the date the periodic estimate is filed. The person making payment for the awarding authority shall add the daily interest provided for herein to each payment for each day beyond the due date based on the date of receipt marked on the estimate.

A certificate of the architect to the effect that the contractor has fully or substantially completed the work shall, subject to the provisions of section thirty-nine J, be conclusive for the purposes of this section.

Notwithstanding the provisions of this section, at any time after the value of the work remaining to be done is, in the estimation of the awarding authority, less than 1 per cent of the adjusted contract price, or the awarding authority has determined that the contractor has substantially completed the work and the awarding authority has taken possession for occupancy, the awarding authority may send to the general contractor by certified mail, return receipt requested, a complete and final list of all incomplete and unsatisfactory work items, including, for each item on the list, a good faith estimate of the fair and reasonable cost of completing such item. The general contractor shall then complete all such work items within 30 days of receipt of such list or before the contract completion date, whichever is later. If the general contractor fails to complete all incomplete and unsatisfactory work items within 45 days after receipt of such items furnished by the awarding authority or before the contract completion date, whichever is later, subsequent to an additional 14 days' written notice to the general contractor by certified mail, return receipt requested, the awarding authority may terminate the contract and complete the incomplete and unsatisfactory work items and charge the cost of same to the general contractor and such termination shall be without prejudice to any other rights or remedies the awarding authority may have under the contract.

The awarding authority shall note any such termination in the evaluation form to be

filed by the awarding authority pursuant to the provisions of section 44D of chapter 149."

5.1.1 The Contractor may include in a periodic estimate the value of materials or equipment delivered at the Site (or at some location agreed to in writing) only upon delivery to the Owner of: (1) an acceptable transfer of title on the form provided by the Owner; (2) written certification by the Contractor (or applicable subcontractor) on the form provided by the Owner that the Contractor (or the Subcontractor which executed the transfer of title) is the lawful owner and that the materials or equipment are free from all encumbrances, accompanied by receipted invoices or other acceptable proof of prior payment for such materials; (3) a stored materials insurance binder that covers the materials for which payment is requested, that names the Owner as an insured party should the stored materials be subjected to any casualty, loss, or theft prior to their inclusion in the Work. The material(s) or equipment must, in the judgment of the Designer (1) meet the requirements of the Contract, including prior shop drawing, product data, and sample approval, (2) be ready for use, and (3) be properly stored by the Contractor and be adequately protected until incorporated into the Work.

5.1.2 In submitting an Application for Payment, the Contractor warrants that title to all work covered by an application for payment will pass to the Owner either by incorporation into the construction or upon the receipt of payment by the Contractor, whichever occurs first, free and clear of all liens, claims, security interests, or encumbrances, hereinafter referred to in this article as 'liens.' The Contractor further agrees that the submission of any application for payment shall conclusively be deemed to waive all liens with respect to set work to which the Contractor may then be entitled, provided that such waiver of the lien rights shall not waive the Contractor's right to payment for such work.

5.1.3 Payment for materials stored off site shall be at the sole discretion of the Owner. Any additional costs to the Owner resulting from storage of material off site for which payment is requested, such as, but not limited to, travel expenses and time for inspectors, shall be charged to, and paid by, the Contractor.

5.2 **Deductions by the Owner.** The Owner may deduct from any application for a periodic payment submitted by the Contractor a retention based upon the value of its claims (including claims of defective work and liquidated damages) against the Contractor plus a retention of 5% of the approved amount of the Application for Payment and any other amounts authorized by M.G.L. c. 30, §§ 39F, 39G and/or 39K, as applicable.

5.3 **Final Payment**. Final Payment under this Contract shall be processed in accordance with the procedures set forth in M.G.L. c. 30, §§ 39F, 39G and/or 39K, as applicable. The acceptance by the Contractor of the last payment due under this Contract or the Contractor's execution of the Final Certificate of Completion, shall

operate as a release to the Owner from all claims and liability related to this Contract.

5.4 **Payment of Subcontractors.** The Contractor shall make payment to subcontractors in accordance with M.G.L. c. 30, § 39F. For purposes of this Agreement, the word "forthwith" appearing in paragraph (1)(a) of M.G.L. c. 30, § 39F shall be deemed to mean "within five (5) business days." The Contractor shall, at the Owner's request, furnish satisfactory evidence that all such obligations have been paid, discharged, or waived.

6.0 WARRANTIES AND GUARANTEE

6.1 **Warranty.** The Contractor warrants to the Owner that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor guarantees and warrants to the Owner that all labor furnished under this Agreement will be competent to perform the tasks undertaken that the product of such labor will yield only first-class results.

6.2 **General Guaranty.** If at any time during the period of one (1) year from the date of the its final completion, as shown on an approved payment request, the Work or any part of the Work shall in the reasonable determination of the Owner require replacing or repairing due to the fact that it is broken, defective, or otherwise does not conform to the Contract Documents, the Owner will notify the Contractor to make the required repairs or replacement. If the Contractor shall neglect to commence such repairs or replacements to the satisfaction of the Owner within ten (10) days from the date of giving or mailing such notice, then the Owner may employ other persons to make said repairs or replacements. The Contractor agrees, upon demand, to pay to the Owner all amounts which the Owner expends for such repairs or replacements. For items of work completed after substantial completion, the one-year guarantee shall commence at the time the Owner approves of the completion of such items. This one-year guarantee shall not limit any express guaranty or warranty required to be assigned to the Owner pursuant to the terms of the Plans and Specifications.

6.3 All guarantees and warranties required in the various Sections of the Specifications that originate with a Subcontractor or Manufacturer must be delivered to the Owner before final payment to the Contractor may be made for the amount of the sub-trade or for the phase of work to which the guarantee or warranty relates. The failure to deliver a required guarantee or warranty shall constitute a failure of the Subcontractor to fully complete its work in accordance with the Contract Documents. The Contractor's obligation to correct work is in addition to, and not in

substitution of, such guarantees or warranties as may be required in the various Sections of the Specifications.

7.0 INSURANCE REQUIREMENTS

7.1 The Contractor shall purchase from, and maintain in a company or companies lawfully authorized to do business in the Commonwealth of Massachusetts, and to which the Owner has no reasonable objection, insurance for protection from claims under workers' compensation acts and other employee benefit acts which are applicable, claims for damages because of bodily injury, including death, and claims for damages, other than to the Work itself, to property which may arise out of or result from the Contractor's operations and completed operations under the Contract, whether such operations be by the Contractor or by a Subcontractor or anyone directly or indirectly employed by any of them. This insurance shall be written for not less than limits of liability specified herein.

7.2 The insurance required by the above shall be written for not less than the following amounts and shall be submitted on ACORD Certificate of Insurance Form 2.5-S (08/01) or other similar form acceptable to the Owner:

7.2.1 Commonwealth of Massachusetts Statutory Worker's Compensation and other benefits as required under the General Laws of Massachusetts, including Employer's Liability Part B: $500,000/$500,000/$500,000.

7.2.2 Broad form Commercial General Liability, written on a "per occurrence" basis with an aggregate cap no less than three (3) times the required limit: $1,000,000 C.S.L. Property Damage Liability shall include coverage for X-C-U hazard of explosion, collapse, and damage to underground property.

7.2.3 Umbrella or Excess Liability coverage following form of underlying General, Automobile and Employers' Liability Coverage: (a) Minimum of $2,000,000 C.S.L. over primary insurance; (b) No more than $10,000 Retention.

7.2.4 Comprehensive Automobile Liability covering owned, non-owned, and hired or borrowed vehicles: $1,000,000 C.S.L.

7.3 The above insurance policies shall also be subject to the following requirements:

7.3.1 Certificates of Insurance and copies of policies acceptable to the Owner shall be addressed to and filed with the Owner prior to commencement of the work. Renewal certificates shall be filed with the Owner at least thirty (30) days prior to the expiration date of required policies.

7.3.2 No insurance coverage shall be subject to cancellation or non-renewal without at least thirty (30) days prior written notice forwarded by registered or certified mail to the Town. The Contractor shall notify the Town of the attachment of any restrictive amendments, material changes or impairment to the policies.

7.3.3 All premium costs shall be included in Contractor's bid. The Contractor

shall be responsible for the cost of any and all deductibles.

7.3.4 The Town of Hopkinton (including its officials, employees, agents and representatives) shall be named as additional insured on Contractor's General Liability, Automobile Liability, and Umbrella or Excess Liability Insurance Policies.

7.4 Neither the Owner's authority to review certificates and policies of insurance nor its decision to raise or not to raise any objections about those certificates and policies, shall in any way give rise to any duty or responsibility on the part of the Owner to exercise this authority for the benefit of the Contractor, any Subcontractor, Sub-subcontractor, or Supplier, or any other party.

7.5 The Contractor's liability insurance shall remain in effect until the end of the Correction period as defined in the Contract Documents, and at all times after that when the Contractor may be correcting, removing or replacing defective Work. The Completed Operations insurance shall be maintained for three (3) years after Final Payment.

7.6 Insufficient insurance shall not release the Contractor from any liability for breach of its obligations under this Agreement.

8.0 INDEMNIFICATION

To the fullest extent permitted by law, the Contractor shall defend, indemnify in whole or in part, defend, pay-on-behalf of and hold harmless the Owner, the Engineer, and the agents and employees of each from and against all claims, damages, losses and expenses, including but not limited to attorneys' fees and loss of use caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Article 8.

9.0 BONDS

The Contractor shall furnish a performance bond for the full amount of the Contract, and also a labor and materials payment bond for the full amount of the Contract, the form of which bonds are set forth in the Contract Documents, each of a surety company qualified to do business under State laws and satisfactory to the Owner, the premiums for which are to be included in the Contract Price and paid by the Contractor. These bonds shall (a) guarantee the faithful performance by the Contractor of all its obligations under this contract and (b) constitute the security required by M.G.L. c. 149, § 29 and M.G.L. c. 30, § 39A, as amended, for payment by the Contractor or its subcontractors used or employed in connection with the contract. Each bond shall incorporate by reference the terms of this contract. These bonds shall remain in effect for the entire guarantee period for each phase of the work, which shall commence on the date of Final Completion, as defined in the Contract Documents.

10.0 TERMINATION

10.1 **Termination for Cause.** If the Contractor is adjudged a bankrupt, or if the Contractor makes a general assignment for the benefit of the Contractor's creditors, or if a receiver is appointed on account of the Contractor's insolvency, or if the Contractor consistently or repeatedly refuses or fails, excepting cases of which extension of time is appropriated, to supply enough properly skilled workmen or proper materials, or if the Contractor fails to make prompt payment to the Subcontractors of for materials or labor, or persistently disregards law, ordinances, rules, regulations, or orders of any public authority having jurisdiction or disregards an instruction, order or decision of the Contracting Officer, or otherwise is guilty of a substantial violation of any provision of the contract, then the Contractor shall be in default, and the Owner may, without prejudice to any other right or remedy and upon written notice to the Contractor, take possession of all materials, tools, appliances, equipment, construction equipment, and machinery and vehicles, offices and other facilities on the project site and all material intended for the work, wherever stored, and seven (7) days after such notice, may terminate the employment of the Contractor, accept assignment of any or all Subcontractor's contracts pursuant to this Agreement, and furnish the work by whatever method the Owner may deem expedient. The Owner shall be entitled to collect from the Contractor all direct, indirect, and consequential damages suffered by the Owner of behalf of the Contractor's defaults. The Owner shall be entitled to hold all amounts due to Contractor at the date of termination until all of the Owner's damages have been established, and to apply such amounts to such damages.

10.1.1 The Owner shall incur no liability by reason of such termination.

10.2 **Termination for Convenience.**

10.2.1 In the event that this Contract is terminated by the Owner prior to the completion of construction and termination is not based on a reason listed in Paragraph 10.1, the Contractor shall be compensated for its costs incurred, including reasonable costs of de-mobilization, calculated on a percent completion basis covering the period of time between the last Approved application for payment and the date of termination.

10.2.2 Payment by the Owner pursuant to Subparagraph 10.2.1 shall be deemed to fully compensate the Contractor for all claims and expenses directly or indirectly attributable to the termination, including any claims for lost profits.

10.3 The Contractor shall not be relieved of liability to the Owner by virtue of any termination of this Contract, and any claim for damages against the Contractor relating to the Contractor's performance under this Contract shall survive any termination hereunder.

10.4 In the event of termination of this Contract, the Contractor shall promptly deliver to the Town all documents, work papers, calculations, computer programs, data, drawings, plans, and other tangible work product, or materials pertaining to the Services performed under this Contract to the time of termination.

11. NON-APPROPRIATION

Payments are subject to appropriation and shall be made only for work performed in accordance with the terms of this Contract. The Contractor shall not be obligated to perform, and may not perform, work outside the duration and scope of this Contract without an appropriate amendment to this Contract, and a sufficient appropriation(s) to support such additional work. The Owner may immediately terminate or suspend this Contract in the event that the appropriation(s) funding this Contract is eliminated or reduced to an amount which will be insufficient to support anticipated future obligations under this Contract.

12. RECORDS AND LAWS

The Contractor shall comply with M.G.L. c. 30, § 39R.The Contractor shall make, and keep for at least six years after final payment, books, records, and accounts, which in reasonable detail accurately and fairly reflect the transactions and dispositions of the Contractor.

13. DISPUTE RESOLUTION

Claims, disputes or other matters in question between the parties to this Contract arising out of or relating to this Contract or breach thereof shall be subject to and decided by the Superior Court of Massachusetts in _____ County, if jurisdiction exists, and if jurisdiction does not exist in the Superior Court, said action shall be brought in the _____ District Court of Massachusetts. A claim, dispute or other matter may be submitted to mediation, in accordance with the provisions of the American Arbitration Association, at the sole discretion of the Owner.

12.1 In the event that the Owner elects to demand mediation to settle any claim, dispute or matter in question, the parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

14. CHOICE OF LAW

This Contract shall be construed under and governed by the laws of the Commonwealth of Massachusetts. The Contractor, and the agents thereof, agree to bring any federal or state legal proceedings arising under this Contract, in which either the Commonwealth or the Owner is a party, in a court of competent jurisdiction within the Commonwealth of Massachusetts. This section shall not be construed to limit any rights a party may have to intervene in any action, in any court or wherever, pending, in which the other is a party.

15. NOTICES

Notices to the Contractor shall be deemed given when hand delivered to the Contractor's

Representative in person, or when deposited in the U.S. mail addressed to the Contractor at the Contractor's address specified in the Owner - Contractor Agreement, or when delivered by courier to either location. Unless otherwise specified in writing by the Owner, notices and deliveries to the Owner shall be effective only when delivered to the Owner at the address specified in the Owner - Contractor Agreement and date-stamped at the reception desk or for which a receipt has been signed by the agent or employee designated by the Owner to receive official notices.

GENERAL REQUIREMENTS

All bids must state terms. Prices are to be delivered to the Department of Public Works, Highway Division, 83 Wood Street, Hopkinton, Massachusetts, through www.projectdog.com.

All bids must be signed and accompanied with a Certificate of Non Collusion and a State Tax Certification Form found at the end of this document.

The Town of Hopkinton does not bind itself to purchasing any specified amount or quantity and may terminate this agreement at any time if the Town, by its Director of Public Works, may so decide, on 30 days notice.

In case of failure on the part of the Contractor to make deliveries as per this agreement, the Town of Hopkinton, acting through the Director of Public Works, reserves the right to terminate this contract at any time upon written notice to the Contractor participants and without penalty.

All materials furnished under this contract shall be to the satisfaction of the Director of Public Works or his representative, who will in all cases determine the quality, amount, acceptability and fitness of the material which may arise as to the fulfillment of this contract on the part of the Contractor. The Director's determination and decision thereon shall be final and conclusive, and such determination and decision, in case any questions shall arise, shall be a condition precedent to the right of the Contractor to receive any money hereunder.

This contract is made subject to strikes, acts of war and any other natural disaster.

The Town of Hopkinton reserves the right to accept, reject and/or extend any/all bids deemed to be in the best interest of the Town of Hopkinton.

Item 1 – DELETED ITEM

End

Item 2 – DELETED ITEM

End

Item 3 – Crushed Gravel: For use in roadway base, shall meet the requirements of Section M2.01.7 of the Standard Specifications.

M2.01.7 Dense-graded Crushed Stone for Sub-Base.

This specification covers the quality and gradation requirements for a sub-base material combining crusher-run coarse aggregates of crushed stone and fine aggregates of natural sand or stone screenings uniformly pre-mixed with a predetermined quantity of water.

Coarse aggregate shall consist of hard, durable particles or fragments of stone. Materials that break up when alternately frozen and thawed or wetted and dried shall not be used.

Coarse aggregate shall have a percentage of wear, by the Los Angeles Test, of not more than 42.

Fine aggregate shall consist of natural or crushed sand.

The composite material shall be free from clay, loam or other plastic material, and shall conform to the following grading requirements:

Sieve Size	% by Weight Passing Square Mesh Sieves
2 inch	100
1-1/2 inch	70 to 100
¾ inch	50 to 85
#4	30 to 55
#50	8 to 24
#200	3 to 10

Sampling and testing shall be in accordance with the following standard AASHTO methods:

Sieve Analysis	T27
Passing #200 Sieve	T11

The use of Processed Glass Aggregate (PGA) meeting the requirements of M.2.01.8 will be allowed at a maximum addition rate of 10% mass, providing the blended material is homogeneous and the physical requirements of dense graded crushed stone are maintained.

M2.01.8 Processed Glass Aggregate (PGA)

Processed Glass Aggregate shall be manufactured from an approved supplier of crushed cullet. The material shall consist of recycled glass food or beverage containers free of debris such as paper, metals, fabrics, toxins, clay, loam, or other materials that would be associated with the glass recycling process. A maximum of 5% mass of the material may be produced from china dishes, ceramics, plate glass or other glass products. The material will have a nominal aggregate size of 3/8 inch and meet the following gradation requirements:

Sieve Size	% by Mass Passing
3/8 inch	100
#4	70 to 100
#8	35 to 88
#16	15 to 40
#50	4 to 12
#200	0 to 5

The percent wear as determined by the Los Angeles Abrasion Test, Class C or D will be a maximum or 40%.

Method of Measurement:

Crushed Gravel will be measured per ton.

Basis of Payment:

The unit bid price is per ton and shall include all labor, materials and equipment necessary to complete the work.

End

Item 4 – 1-1/2 inch Stone: Shall meet the requirements of Section M2.01.2 of the Standard Specifications.

M2.01.0 Crushed Stone.

Crushed stone shall consist of one or the other of the following material:

Durable crushed rock consisting of the angular fragments obtained by breaking and crushing solid or shattered natural rock, and free from a detrimental quantity of thin, flat, elongated*, or other objectionable pieces. A detrimental quantity will be considered as any amount in excess of 15% of the total weight.

Durable crushed gravel stone obtained by artificial crushing of gravel boulders or field stone with a minimum diameter before crushing of 8 inches.

*Thin or elongated pieces are defined as follows: Thin stones shall be considered to be such stones whose average width exceeds four (4) times their average thickness. Elongated stones shall be considered to be such stones whose average length exceeds four (4) times their average width.

The crushed stone shall be reasonably free from clay, loam or deleterious material and not more than 1.0% of satisfactory material passing a number 200 sieve will be allowed to adhere to the crushed stone. Where crushed stone is to be used for surfacing this requirement shall be not more than 0.5% of satisfactory material passing a number 200 sieve.

The crushed stone shall have a maximum percentage of wear as determined by the Los Angeles Abrasion Test (AASHTO-T96) as follows:

For Class I Bituminous Concrete	30%**
For Cement Concrete Aggregate	42%***
Crushed Stone for Sub-Base	42%
Special Borrow Ledge	45%

**Crushed stone for this use shall consist of crushed or shattered natural rock only. Crushed gravel stone will not be permitted.

***Except for Classes D, E & F, and prestressed concrete which shall be 30%.

The crushed stone shall be uniformly blended according to the grading requirements for the respective stone sizes shown in the following table:

M2.01.1 to M2.01.6 (See the following table for grading requirements).

TABULATION OF STONE SIZES
% BY WEIGHT PASSING THROUGH

Square Opening Sieve	M2.01.1 and M2.01.2	M2.01.3	M2.01.4	M2.01.5	M2.01.6
	1-1/2 inch	1-1/4 inch	3/4 inch	1/2 inch	3/8 inch
2 inch	100				
1-1/2 inch	95-100	100			
1-1/4 inch		85-100			
1 inch	35-70		100		
3/4 inch	0-25	Oct-40	90-100		
5/8 inch				100	
1/2 inch		0-8	Oct-50	85-100	100
3/8 inch			0-20	15-45	85-100
#4			0-5	0-15	20-50
#8				0-5	0-15
#16					0-5

Method of Measurement:

Stone – 1-1/2 inch will be measured per ton.

Basis of Payment:

The unit bid price is per ton and shall include all labor, materials and equipment necessary to complete the work.

End

Item 5 – Stone 3 inch: Crushed stone shall be obtained from rock of uniform quality and shall consist of clean, angular fragments of quarried rock, free from soft disintegrated pieces or other objectionable matter.

The stone shall meet the following gradation requirements in the stockpile at the source.

Sieve Size	% by Weight Passing Square Mesh Sieves
4 inch	100
3-1/2 inch	90 to 100
2-1/2 inch	25 to 60
1-1/2 inch	0 to 15
¾ inch	0 to 5

Method of Measurement:

Stone – 3-inch will be measured per ton.

Basis of Payment:

The unit bid price is per ton and shall include all labor, materials and equipment necessary to complete the work.

End

Item 6 – Fill: Fill shall meet the requirements of Section M1.02.0 of the Standard Specifications amended as shown below.

M1.02.0 Special Borrow

Special Borrow shall consist of one of the following:

A native in-situ soil that is classified under AASHTO-M145 as A-3, or that portion of A-1 with less than 12 % passing the #200 mesh sieve as determined by AASHTO-T11 and T27. Maximum size of stone for testing purposes shall be three (3) inches (nominal).

For Muck Backfill only, 15% or less passing the #200 sieve will be allowable.

A crushed rock, either obtained from ledge excavation on the project or other approved sources, which meets the following requirements:

% of wear (L.A. Abrasion Test)	45% Maximum
Plasticity Index	65% Maximum

Gradation Requirements

Sieve	% Passing
6 inch	100
2 inch	90-100
#4 mesh	20-65
#200 mesh	0-10

Maximum size of stone shall be 6 inches.

The use of processed glass aggregate (PGA) meeting the requirements of M2.01.8 may be blended with either special borrow material outlined above. An addition rate of 10% by mass in areas where the borrow will not be exposed will be allowed, providing the physical characteristics are maintained. The PGA will be blended so as to produce a homogeneous borrow material.

Method of Measurement:

Fill will be measured per cubic yard.

Basis of Payment:

The unit bid price is per cubic yard and shall include all labor, materials and equipment necessary to complete the work.

End

Item 7 – Gravel: Gravel shall meet the requirements of Section M1.03.0 Type B of the Standard Specifications.

M1.03.0 Gravel Borrow

Gravel borrow shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings, and deleterious materials.

Gradation requirements for gravel shall be determined by AASHTO-T11 and T27 and shall conform to the following:

Sieve Size	% Passing
½ inch	50-85
#4	40-75
#50	8-28
#200	0-8

Maximum size of stone in gravel shall be as follows:

M1.03.0 Type A	6 inches largest dimension
M1.03.0 Type B	3 inches largest dimension
M1.03.0 Type C	2 inches largest dimension

The use of Processed Glass Aggregate (PGA) meeting the requirements of M2.01.8 may be homogeneously blended with the processed gravel up to an addition rate of 10% by mass, providing the sub-base material will not be exposed. The resulting blend will meet the physical requirements of gravel borrow types A, B and C specified above.

Method of Measurement:

Gravel will be measured per cubic yard.

Basis of Payment:

The unit bid price is per cubic yard and shall include all labor, materials and equipment necessary to complete the work.

End

Item 8 – Loam: Loam shall meet the requirements of Section M1.05.0 of the Standard Specifications.

M1.05.0 Loam Borrow

Loam borrow shall be fertile, friable soil obtained from naturally well-drained areas or shall be the product of a commercial sand and gravel processing facility. It shall be uncontaminated by salt water, foreign matter, or substances harmful to plant growth. Loam borrow shall be free of debris rocks, clods, and any other extraneous matter greater than 2 inches in diameter.

Loam borrow shall have the following mechanical analysis:

Sieve Size	% Passing
#10	85-100
#40	35-85
#200	10-35
<20um	<5

Testing shall be on material that has passed the #10 sieve. Loam borrow shall contain 4% to 10% organic matter as determined by the loss on ignition of oven-dried samples. Lawn areas shall have an organic content of at least 4%. Organic content for lawn areas shall be at least 4%; for woody plantings, organic content shall be 7% to 10%. Salinity (electrical conductivity) shall be less than 0.1 S/m as determined by a 1:2 (by volume) soil-to-water mix. Salt test samples shall not be oven-dried. The acidity range of the Loam borrow shall be pH 5.5 to 7.0.

The Contractor shall provide testing submittals as follows:

One 25 pound representative sample per source of loam.

For sources providing >1000 cubic yards, one additional 25 pound representative sample for each 1000 cubic yards unit of soil.

In addition, five random representative 25 pound samples of on-site stockpiles of delivered loam shall be collected and packaged in the presence of the Engineer.

The Contractor shall deliver samples to testing laboratories and shall have the testing report sent directly to the Engineer.

Testing and analysis will be at the Contractor's expense. Soil samples shall be dry. Tests for particle gradation, organic content, and pH shall be performed by an Agricultural Experiment Station testing laboratory or other testing laboratory approved by the Engineer. Soil analysis tests shall show recommendations for soil additives to correct soils deficiencies, and for additives necessary to accomplish particular planting objectives noted. University of Massachusetts Agricultural Extension Service methods for soil and soil additive analysis shall be used.

No Loam borrow shall be delivered to the site until the review and approval of loam test results by the Engineer.

Method of Measurement:

Loam will be measured per cubic yard.

Basis of Payment:

The unit bid price is per cubic yard and shall include all labor, materials and equipment necessary to complete the work.

End

Item 9 – DELETED ITEM

End

Item 10 – Bituminous Concrete: Bituminous Concrete shall meet the requirements of Section M3.11.00 of the Standard Specifications.

M3.11.00 Class I Bituminous Concrete

M3.11.01 General

These mixtures shall be composed of mineral aggregate, mineral filler (if required), bituminous material, and reclaimed asphalt pavement (RAP). The use of RAP shall be at the Contractor's option unless provided otherwise by the Special Provisions of the contract.

Plants producing recycled mix shall be modified so that they can properly proportion, blend and mix all components of a recycled mixture so that the end product is in conformance with the designated job-mix formula.

Subsection M3.11.02 Composition of the Mixture

The mineral aggregates, filler (if required), bituminous material, asphalt modifier (if required) and RAP shall be proportioned and mixed to conform with the designated mixture as tabulated in Table A, hereinafter.

Subsection M3.11.03 Job Mix Formula

The composition limits in Table A are master ranges of tolerances of materials in general. In order to obtain standard texture, density and stability, the Contractor will furnish to the Engineer a specific job mix formula for the particular uniform combination of materials and sources of supply to be used on each project.

The use of RAP will be permitted at the option of the Contractor and provided that the end product is in conformance with the designated job-mix formula. The proportion of RAP to virgin aggregate shall be limited to a maximum of 40% for drum mix plants and 20% for modified batch plants. The maximum amount of RAP for surface courses shall be 10% except no RAP will be allowed in the open graded friction course (OFGC).

The job mix formula for each mixture shall establish a single percentage of aggregate passing each required sieve size, a single percentage of bituminous material to be added to the aggregate and the number of seconds for dry mixing time and the number of seconds for wet mixing time. AASHTO-T195 (Ross Count) with a coating factor of 98% will be used when necessary to evaluate proper mixing time. The job mix formula shall also specify a single source of uniform blend of particular sources for fine aggregate, a single source for each nominal size of coarse aggregate, a single source of supply for mineral filler and for asphalt. Two or more job mix formulae may be approved for a particular plant; however, only material conforming to one job mix formula will be permitted to be used on any given calendar day. The job mix formula shall bind the Contractor to furnish paving mixtures not only within the master ranges, but also conforming to the exact formula thus set up for the project, within allowable tolerances as follows:

Sieve Designation / Binder Content	Action Limit
Passing #4 Sieve and Larger Sieve Sizes	JMF Target +/- 6%
Passing #8 Sieve	JMF Target +/- 5%
Passing #16 to #50 Sieves (inclusive)	JMF Target +/- 3%
Passing #100 Sieve	JMF Target +/- 2%
Passing #200 Sieve	JMF Target +/- 1%
Binder	JMF Target +/- 0.3%

Action Limits for Aggregate Gradation and Binder Content

Table A
*Percent by Weight Passing Square Opening Sieves

Standard Sieves	Base Course	Binder Course	Top Course	**Dense Mix	Surface Treatment	***Patching Mix
2 inch	100					
1 inch	57-87	100	100			
3/4 inch		80-100	95-100			
5/8 inch						
1/2 inch	40-65	55-80	79-100	100		100
3/8 inch			68-88	80-100	100	90-100
#4	20-45	28-50	48-68	55-80	80-100	50-65
#8	15-33	20-38	33-53	48-63	64-85	24-36
#16			20-40	36-49	46-68	14-28
#30	8-17	8-22	14-30	24-38	26-50	8-25
#50	4-12	5-15	9-21	14-27	13-31	5-21
#100			6-16	6-18	7-17	3-15
#200	0-4	0-5	2-6	4-8	3-8	2-8
Bitumen	4-5	4.5-5.5	5-6	7-8	7-8	4-6

* Percentages shown in table above for aggregate sizes are stated as proportional percentages of integral total aggregate for the mix.

** Dense mix including approved anti-stripping compound shall be furnished and used for protective (bottom) courses of pavement on bridges, and elsewhere shown on the plans.

*** Patching mix shall include 1% of hydrated lime based on weight of total aggregate.
No Job Mix Formula will be approved which specifies:

More than 45% passing #8 for Top Course.
More than 55% passing #8 for Dense Mix.
Less than 4% passing #200 for Top Course.
M3.11.04 Mineral Aggregate
Coarse Aggregate

The coarse mineral aggregate shall be clean, crushed rock consisting of the angular fragments obtained by breaking and crushing shattered natural rock, free from a detrimental quantity of thin or elongated pieces, free from dirt or other objectionable materials, and shall have a percentage of wear, as determined by the Los Angeles Abrasion Test (AASHTO-T96), of not more than 30. It shall be surface dry and shall have a moisture content of not more than ½ % after drying. The use of crushed gravel stone will not be permitted.

Coarse aggregate shall be blended from stone sizes 1-1/2 inch, ¾ inch, ½ inch and 3/8 inch. Each stone size shall meet its respective gradation as tabulated under M2.01.0. Sizes other than primary stone sizes may be used providing they are separately introduced on the cold feed belt and can be shown to be an improvement to the mix. Such usage shall require prior written approval of the Engineer.

Fine Aggregate

The fine aggregate shall consist of one of the following:

100% Natural Sand.
100% Stone Sand.
A blend of natural sand and stone screenings of which at least 50% shall be natural sand.
A blend of natural sand and stone sand.

Natural sand shall consist of clean, inert, hard durable grains of quartz or other hard, durable rock, free from loam or clay, surface coatings and other deleterious materials.

Stone sand shall be processed from the stone screenings of either a primary or secondary crusher to produce a product that when used alone or blended in any combination with natural sand shall meet the gradation requirements for fine aggregate specified hereinafter. Wash plant or other equipment used for processing stone sand must be approved by the Engineer.

Stone screenings shall be the product of a secondary crusher and shall be free from dirt, clay, organic matter, excess fines or other deleterious material.

When two or more materials are to be blended, the composite must conform to the gradation shown below and the percentage of each component to form the composite shall be furnished to the Engineer.

The fine aggregate as delivered to the dryer shall meet the following requirements:

Maximum Sieve Size	% Passing	
3/8 inch	95 min	100 max
#8	70 min	100 max
#50	7 min	40 max
#200	0 min	12 max

Reclaimed Asphalt Pavement (RAP)

Reclaimed Asphalt Pavement shall consist of the material obtained from highways or streets by crushing, milling or planing existing pavements. This material shall be transported to the mix plant yard and processed through an approved crusher so that the resulting material will contain no particles larger than 1-1/2 inch. The material shall be stockpiled on a free draining base and kept separate from the other aggregates. The stockpile should be adequately protected against the weather. The material contained in the stockpiles shall have a reasonable uniform gradation from fine to coarse and shall not be contaminated by foreign materials.

Processed Glass Aggregate (PGA)

The use of Processed Glass Aggregate meeting the requirements of M.2.01.8 may be added at a maximum addition rate of 10% mass. This addition will only be allowed in base and binder bituminous concrete mixtures. PGA in mixes containing reclaimed asphalt pavement (RAP) will be considered as part of the overall allowable mass or RAP in the mix. If PGA is used in the mix a separate aggregate bin shall be used and the use of lime as an anti stripping agent will be required.

M3.11.05 Mineral Filler

Mineral filler shall consist of approved Portland Cement, Limestone dust, hydrated lime, stone float or stone dust. Stone dust shall be produced from crushed ledge stone and shall be the product of a secondary crusher so processed as to deliver a product of uniform grading. Mineral filler shall completely pass a #50 sieve and at least 65% shall pass a #200 sieve.

M3.11.06 Bituminous Materials

The asphalt cement for the mixture shall be the grade designated by the Engineer and shall conform to the requirements of M3.01.0. When required an approved anti stripping additive conforming to M3.10.0 shall be added to the asphalt cement.

Bituminous material for the prime coat on the existing surface, where required and specified, shall consist of either emulsified asphalt, grade RS-1 conforming to M3.03.0 or cutback asphalt, grades RC-70 or RC-250 conforming to M3.02.0.

For any bituminous mixture containing RAP the Contractor shall submit in addition to the Job Mix Formula, the amount and type of asphalt modifier to be added to the mixture to restore the asphalt properties of the RAP to a level that is reasonably consistent with the requirements of current

specifications for new asphalt. The restored asphalt when recovered by the Abson Method from the recycled mixture shall have a minimum penetration at 77 degrees F of 50 and a maximum absolute viscosity at 140 degrees F of 8000 poises.

The asphalt modifier shall be a material that is chemically and physically compatible with asphalt cement and have a minimum flash point (COC) of 450 degrees F. If asphalt cement is used as the modifier, it shall be grade AC-5 or AC-10 and shall meet the requirements of M3.01.0.

M3.11.07 Plant Requirements

The plant used in the production of bituminous concrete shall comply with the AASHTO-M156, subject to the following additional requirements:

Plant Scales

Scales for measuring materials into the mixtures shall be springless dial type and shall be of standard make and design. Scale graduations and markings shall be plainly visible and dials must be so located as to be easily readable from the operator's normal work station by direct sight through repeating dials, or digital displays. Parallax effects shall be reduced to the practical minimum with clearance between indicator index and scale graduations not exceeding 0.06 inches (1.5mm). Dials shall be equipped with a full complement of adjustable index pointers for marking the required weight of each material to be weighed into the batch.

Bitumen scales shall be accurate to 0.05%, have minimum graduations not greater than 0.025%, and must be readable and sensitive to 0.0125% or less. Scales for any weigh box or hopper shall be accurate to 0.5%, have minimum graduations not greater than 0.5% and must be readable and sensitive to 0.25% or less. The preceding percentages for both bitumen and aggregate scales are to be based on the maximum total batch weight of the mixtures.

Testing of Scales

All plant scales, including truck scales, shall be tested at the expense of the producer by a competent scale technician as follows:

Annually prior to use in Department work.
At intervals of not more than 90 calendar days.
At any time ordered by the Engineer.

A cradle or platform, approved by the Engineer for each scale and at least ten (10) standard fifty (50) pound test weights shall be provided for testing scales whenever directed by the Engineer. The use of a set of test weights for two (2) or more plants will be permitted only when they can be made readily available with no more than an hour's notice.

Automated Batching

Automatic Proportioning – All mixing plants furnishing bituminous concrete mixture for contracts which are financed fully or partially with Federal Funds, or 100% State Contracts requiring in excess of 15,000 tons shall be equipped with approved automatic proportioning devices. Such devices shall include equipment for accurately proportioning batches containing the various components of the mixture by weight in the proper sequence and for controlling the sequence and timing of mixing operations. Interlocks shall be provided which will hold or delay the automatic batch cycling whenever the batched quantity of any component is not within the specified weight tolerance, when any aggregate bin becomes empty or when there is a malfunction in any portion of the control system. The weight setting and time controls shall be so equipped that they may be locked when directed by the Engineer.

Automatic Recordation – Recordation equipment shall be provided in all plants providing bituminous concrete under the provisions requiring automatic proportioning. Each recorder shall include an automatic printer system. The printer shall be so positioned that the scale dial, or digital display, and the printer can be readily observed at one location by the plant inspector. Use of repeating dials, or digital displays, or an additional printer to achieve this condition will be permitted. The printer will print, in digital form, on a delivery ticket the following data:

- Date mixed.
- Time of batching.
- Tare weight of aggregate weigh box.
- Tare weight of bitumen weigh bucket.
- Accumulative, or net weights, as batched for each bin, with a batch total of all net ingredients. (Total of last bin will be aggregate total).
- Weight of bitumen.
- Total weight of mix in truck. (Pay weight).

This printed ticket will be used in lieu of truck scale weights.

Equipment Failure – If at any time the automatic proportioning or recording system becomes inoperative, the plant will be allowed to batch materials manually for a period not in excess of 2 working days. Manual batching for longer periods will require written permission of the Engineer.

Batching Controls – The batching controls shall meet the following delivery tolerances with respect to the various components weighed in each batch:

Tare Weight of Aggregate Weigh Box	=	0.5% of total batch weight
Tare Weight of Bitumen Weigh Bucket	=	0.1% of total batch weight
Combined Aggregate Components	=	1.5% of total batch weight
Mineral Filler	=	0.5% of total batch weight
Asphalt	=	0.1% of total batch weight

The total weight of the batch shall not vary more than plus or minus 2% from the theoretical design weight.

If directed by the Engineer, provision shall be made for locking controls against tampering.

Plant Laboratory

A building shall be furnished at the site of the producing plant suitable for the housing and use of equipment necessary to carry on the various tests required and for recording and processing test results. This building shall be for the exclusive use of the Engineer or his representatives for testing and recording purposes.

The building shall have a minimum floor area of 100 square feet, the least dimension to be 6 feet. Windows and doors shall be adequately screened; satisfactory lighting, heating and water shall be supplied. A table, chairs, desk and work bench shall be provided. Provision shall be made for the safe performance of extraction test determinations by providing an adequate exhaust fan and suitable means of disposing of used solvent and other waste.

If the Engineer permits, the plant laboratory may be part of another building in which case it shall be entirely partitioned off from the remainder of such building.

Testing equipment shall be furnished as follows and installed in the building for use in testing the materials and mixtures supplied by the Plant for the work:

- 1 Approved Rotary Extractor.
- 1 Coarse Aggregate Sieve Shaker, power driven with a minimum clear sieve area of 324 square inches. The shaker shall be attached to a firm anchorage.
- 1 Each of the following square opening screens for coarse aggregate shaker: 2 inch, 1-1/2 inch, 1 inch, ¾ inch, ½ inch, 3/8 inch, #4 and #8.
- 1 Fine Aggregate Sieve Shaker, power driven and independent of the coarse aggregate shaker, for eight (8) inch minimum diameter sieves.
- 1 Each of the following standard eight (8) inch minimum diameter square opening sieves: ¾ inch, ½ inch, 3/8 inch, #4, #8, #16, #30, #50, #100 and #200 with pan and cover.
- 1 Sample Splitter with a minimum capacity of one (1) cubic foot. It shall be of the clam shell type and the shute width shall be adjustable from a minimum of ½ inch up to 2 inch.
- 1 Solution Balance, 20 kilogram capacity, weighing directly to 1 gram, with two weighing beams and a tarring beam; tare capacity to be 2 kilograms; weighing beams to read 1000 grams by 100 gram divisions and 100 grams by 1 gram divisions. Additional matching weights (one 1 kg., two kg., one 5 kg., and one 10 kg.) shall be provided to fulfill the capacity of 20 kilograms. The platform to be 11 inches in diameter.
- 1 Approved Scale with a minimum capacity of 2000 grams and with a sensitivity of 0.50 grams.
- 2 Approved Dial Type Thermometers, range 50 degrees F to 500 degrees F.
- 1 Approved Hot Plate.

Approval of a plant will be contingent upon approval of the aforementioned requirements for Plant Laboratory, including the building and appurtenances, furnishing, facilities including heat, light, power and water, the testing equipment and any other incidentals.

Sampling Facilities

Adequate and convenient sampling facilities shall be provided which allow the Inspector to obtain representative samples from the full width and depth of the discharge area of each aggregate bin. The sampling tray shall be structurally supported during the sampling operation. Access to the sampling facilities shall be provided requiring no more difficulty than that to climb a ladder leading to a secure platform with railings.

Inspection

The Engineer or his authorized representative shall have access at any time to all parts of the plant for:

1. Inspection of the conditions and operations of the plant.
2. Confirmation of the adequacy of the equipment in use.
3. Verification of the character and proportions of the mixture.
4. Determination of temperatures being maintained in the preparation of the mixtures.
5. Inspection of incidental related procedures.

M3.11.08 Preparation of Mixtures

Preparation of Asphalt Cement – The temperature of the bituminous materials when placed in the mixer shall be not less than 275 degrees F, no more than 375 degrees F, as directed.

Preparation of Mineral Aggregate – All aggregates shall be thoroughly dried and heated before entering the mixer. The temperature of the aggregates shall be controlled so that the temperature of the completed mixture shall be within the range specified in M3.11.08 C.

Preparation of Bituminous Concrete Mixture – The mineral aggregate, prepared as above prescribed, shall be combined and conveyed into the mixer in the proportionate amounts of each aggregate required to meet the job mix formula. The required quantity of asphalt cement shall be measured by weight, or approved metering device.

The mixture shall be made by first charging the mixer with the required amount of mineral aggregate and mineral filler. After these materials have been thoroughly mixed, the asphalt cement shall be added and the mixing continued for a period of time sufficient to produce a homogeneous mixture.

The ingredients shall be heated and combined in such a manner as to produce a mixture which shall be at a temperature, when discharged, of not less than 275 degrees F, nor more than 325 degrees F.

The temperature of mixture containing RAP as discharged from the modified batch plant shall be within the range of 265 degrees F to 300 degrees F. Moisture content of the mixture at discharge shall be no greater than 1.0% by weight. All aggregate particles shall be completely and uniformly coated. The recycled mixture shall not contain any visible chunks of unprocessed RAP. The

recycled mixture shall be capable of being spread and compacted to a density that is not less than 95% of the density obtained from laboratory compaction of a mixture composed of the same materials in like proportions.

M3.11.09 Composition and Compaction Acceptance Tests

Where plant inspection is maintained, the material will not be considered acceptable for use unless the specified tests from samples obtained at the production plant indicate conformance to the approved job mix formula.

The applicable tolerances defining reasonably close conformity with the specifications (as outlined in Subsection 5.03) shall be the amount of bitumen, the percent by weight passing the #8 and #200 sieves as specified under M3.11.03, Table "A".
For determination of pavement density, samples for the full depth of the course being laid shall be taken from the mixture incorporated in the work after finishing operations have been completed and the pavement has cooled. The Contractor shall have suitable coring equipment available in order that the required number of samples (6 inch cores) may be taken. At least one such sample shall be taken from each project containing 500 or more tons of mixture. In each project containing 3,000 or more tons of mixture, at least one sample shall be taken for each 3,000 tons, except that any additional number of samples shall be taken as may be deemed necessary by the Engineer.

These samples will be removed by the Contractor in the presence of the Engineer on the day following the placement of the course, weather permitting.

Method of Measurement:

Bituminous Concrete will be measured per ton.

Basis of Payment:

The unit bid price is per ton and shall include all labor, materials and equipment necessary to complete the work.

End

ITEM 11 – COLD PATCH:

1.0 DESCRIPTION:

This material shall be a plant-mixed pavement patching material capable of being stored in a stockpile composed of mineral aggregates and a modified bituminous material, and approved by Town. The mix provided shall meet the gradation contained herein.

Material shall be provided in accordance with the standard specifications for Cold Patching within the state or local jurisdiction, except as modified herein.

The material shall be uniform, workable, coated, and free of contaminants, debris, or ice and have a wet, shiny visual appearance at the time of delivery.

2.0 MATERIALS:

A. Aggregates: Aggregates shall conform to AASHTO M43 (aggregate size designation) modified as shown below and in accordance with ASTM C136 for standard test method.

Sieve	Open Graded #9 Stone % Passing	Open Graded #89 Stone % Passing
½" (12.5mm)	100	100
3/8" (9.50mm)	100	90-100
#4 (4.75mm)	85-100	20-55
#8 (2.36mm)	10-40	5-30
#16 (1.18mm)	0-10	0-10
#30 (0.60mm)	0-7	0-7
#50 (0.30mm)	0-5	0-5
#200 (0.075mm)	0-2.5	0-2.5

ASTM C-88	Soundness Loss (Sodium – 5 cycles	12.0% Max.
ASTM C-131	Los Angeles Abrasion Loss	40.0% Max.
ASTM C-127, 128	Absorption	0.5% - 2.0%
ASTM C-127-128	Specific Gravity	2.45% - 2.80%
ASTM C-123	Deleterious Material soft pieces	3.0% Max.
ASTM C-295	Deleterious Material Coal & Lignite	1.0% Max.
ASTM C-142	Deleterious Material Shale/Chirt/etc.	2.5% Max.

B. Bituminous Material: The bituminous material shall be either UPM Liquid Asphalt Blend (Unique Paving Materials-Cleveland, Ohio 1-800-441-4880), or an approval equal. The material must be prepared from a base asphalt stock meeting the following requirements:

ASTM D-1310	Flash Point (TOC) 94°C (200°F) min.					
ASTM D-2170	Kinematic Viscosity @ 60°C (140°F) 400-650					
ASTM D-95	Water: 0.2% Max.					
ASTM D-402	Distillate	Test	(Volume	of	original	sample)
	To	225°C		(437°F):		None
	To	260°C		(500°F):		None
	To	315°C		(600°F):		0-18%
	Residue from Distillate at 360°C (680°F): 72-95%					
Tests on Residue:						
ASTM D-2171	Abs. Viscosity at 60°C (140°F): 125-425 Poises					
ASTM D-5*	Penetration: 180 min. (using cone method)*					
ASTM D-113	Ductility at 4°C (39°F) 1cm/min: 100 min.					
ASTM D-2042	Solubility in Trichloroethylene: 99% min.					

* Same procedure as ASTM D-5 except using a penetration cone conforming to ASTM D-217 in lieu of the standard penetration needle. The total moving weight of the cone and attachments shall be 150g ± 0.1 grams. The transfer dish water level shall be lowered to less than the height of the sample followed by decanting water from the top of the sample before transferring from the bath to the electrometer.

The bituminous material shall be available in various grades so that one such grade shall enable a stockpile to remain pliable and workable at a temperature of -15°F (-26°C).

3.0 COMPOSITION OF MIXTURES:

The aggregate gradation and bituminous material quantities shall meet the requirements given in Table 1 below. The Job Mix Formula design computations and trial batch(es) tests shall be submitted to TOWN or their Engineer designate for review prior to shipment of material to any municipal location. As with the State and local specifications, information shall be supplied including aggregate gradations; aggregate type and sources of supply; bituminous material amount and type including any additives; and temperature ranges for the material preparation. Submission of the above design and test information shall be required each time a change is made in the production design, producer, aggregate type, or source.

TABLE 1
COMPOSITION OF STOCKPILE PATCHING MATERIALS

Sieve	Open Graded #9 Stone % Passing	Open Graded #89 Stone % Passing
1/2" (12.5mm)	100	100
3/8" (9.50mm)	100	90-100
#4 (4.75mm)	85-100	20-55
#8 (2.36mm)	10-40	5-30
#16 (1.18mm)	0-10	0-10
#30 (0.60mm)	0-7	0-7
#50 (0.30mm)	0-5	0-5
#200 (0.075mm)	0-2.5	0-2.5
Total Liquid	5.75-7.0	5.25-7.0

The Final Job Mix Formula Total Liquid Content, when received by TOWN, shall not vary more than 0.5% from the design content when tested in accordance with ASTM D2172 Method A (including the ash), or Method E. The master ranges given above in Table 1 shall govern over the final job mix design content and allowable variations. All aggregate percentages in the table are based on the total weight of aggregate. The bituminous material percentage is based on the total weight of the mix and shall include any additives.

The mixture, after obtaining field working temperature following mixing, shall meet the following requirements:

A. *Stripping Test*: A sample for testing is to be obtained by removing a sample toward the top of the stockpile and at a one-foot depth, and removing a similar sample toward the bottom of the stockpile at least one foot up from the toe of the stockpile and one foot into the stockpile. The suitable size test sample of the plant mixed material shall be permitted to cure at normal laboratory temperature for at least 24 hours after which it shall be placed in a glass jar, fitted with a tight cover, and completely covered with distilled water. The jar and contents shall then be allowed to stand for a period of 24 hours at normal laboratory temperature (approximately 70°± F) (21°C). The sample shall then be shaken vigorously for a period of 15 minutes. The water shall then be poured from the jar and the sample removed to a flat surface and is permitted to air dry after which it shall be visually examined for stripping of the bituminous film from the aggregate.

4.0 FIELD PERFORMANCE:

The mixture shall be capable of maintaining all of its performance features after remaining in an uncovered stockpile of 100 tons or more for up to (12) twelve months. The field performance, as specified in this Section, shall meet a minimum of 80% effectiveness. The mixture shall be capable of maintaining adhesive qualities in areas that are damp or wet at the time of placement, and shall not bleed (flush) when overlaid with bituminous concrete.

Provided an approved material was used in the application, and provided the mixture was stockpiled and applied in accordance with the manufacturer's recommendations, and municipal records can document the application date and locations as well as the method of placement, ambient temperature and weather, the following field performance criteria shall be used to measure the effectiveness of the patch material. A total of (20) twenty patches shall be used for the rating process; (10) ten each within two discrete areas from one another, preferably representing two different work crews. The rating of the patches for field performance may be undertaken by TOWN or their designate Engineer at any time, but a minimum of (2) two ratings shall be performed during each patch season.

A. The in-place patch shall not ravel out. Raveling shall be measured in accordance with pavement management distress survey methods. Light raveling shall be acceptable, whereas heavy raveling shall be unacceptable.

RAVELLING: Raveling is the wearing away of the pavement material surface caused by the dislodging of aggregate particles; it shall be an indication of poor in-place patch adhesion performance. LIGHT Raveling is viewed as loose aggregate particles, coated or uncoated, existing on or near the patch and having a patch surface texture that exhibits a pitted surface texture. HEAVY Raveling shall be indicative of a loss of aggregate particles greater than two stone thicknesses in depth from the original placed surface normally taken from the elevation of the adjacent pavement surface.

B. The in-place patch shall not distort. Distortion shall be measured in accordance with pavement management distress survey methods. Light distortion shall be acceptable, whereas medium or heavy
distortion shall be unacceptable.

DISTORTION: Distortions are localized pavement material surface areas having elevations slightly lower or higher than those of the surrounding pavement. Distortions can cause discomfort and/or a safety hazard, and/or vehicle damage, requiring a reduction in speed for safety. LIGHT Distortion is measured as having a deviation from the normal plane of the street less than or equal to (1") one inch. MEDIUM or HIGH Distortion is a measurement from the normal plane of the street that is in excess of (>1") one inch. Generally, distortion shall exist as a depression within the patch area, or a bump or shove of material at the downside of the patch to the traffic flow.

5.0 STOCKPILING AND HANDLING PROCEDURES:

Following production, the patch material should be allowed to cool to ambient temperature prior to field use by storing (24) twenty-four to (48) forty-eight hours in piles no greater than (6) six feet. Once ambient temperature levels are reached, the patch material can be mounded to meet local needs, being sure to avoid traveling on the patch material with loaders and trucks. The stockpile of patch should be placed on a clean, hard, paved surface preferably away from blowing dust. Avoid contamination from other sources. To take advantage of the solar heat effects the ideal stockpile is rectangular in shape with sloped sides and ends. The stockpiles

are placed in southeasterly to northwesterly directions; this allows the operator work off the southeast face during the morning hours, providing additional workability at sub-zero temperatures. These modified patch material stockpiles form a thin protective crust after a few weeks. This crust plays an important role in the longevity of the stockpile. It should not be disturbed except for the portion that gets mixed in while loading trucks, which should be loaded if possible from the shorter rectangular end of the stockpile. Do not freshen or work the entire pile to disturb the protective crust. If moisture has penetrated the stockpile, subsequently freezes and creates visible ice crystals inside of the pile, the material should be placed inside overnight at a minimum temperature of 50°F (10°C). Material returning to the stockpile at the end of the day should be near the working face, followed by mixing with fresh material on a 50/50 basis during the next load out.

6.0 INSPECTION, TESTING AND ACCEPTANCE:

The Producer shall contact the Highway Department office seventy-two (72) hours in advance to arrange for an inspector, or their designate, to oversee the preparation of mixtures. All submittals as required by this specification are to follow immediately after design/production of the material. If inspections have not been performed at the time of mixture preparation, samples from the stockpile shall be tested by TOWN to determine acceptability of the mixture prior to shipment to any municipal yard. Two (2) samples shall be lifted from each stockpile, one sample taken toward the top and twelve (12) inches inside the pile, while the second sample is to be taken twelve (12) inches off from the toe of the stockpile and (12") twelve inches inside the pile. The results of the two (2) tests shall be averaged and compared to the design Job Mix Formula. Performance evaluations shall be conducted randomly by TOWN and at the discretion of TOWN, but in no cased less than two (2) such performance evaluations per patch season as given in Section 9 of this specification. The municipal inspector, or designate, shall follow and document the patch placement. A minimum of ten (10) documentations for each of two (2) separate working crews shall be considered for each initial performance evaluation. Follow-up condition evaluations may be conducted at any time after placement for up to twelve (12) months. Each follow-up condition evaluation shall be reported and submitted to the Highway Department. Less than eighty (80) percent effective performance at any time after the placement of the patching material shall be considered unacceptable when at least twenty (20) patches have been evaluated. In the event the material furnished does not meet the requirements of this specification (regardless of weather, test acceptability, method of repair or other conditions), suppliers shall reimburse TOWN at a replacement cost of $150/ton of representative material purchased and placed. Such reimbursement shall be submitted to TOWN in the form of a cashier's check within twenty-eight (28) days from the date of written notification from TOWN. Remaining stockpiled material representative of the rejected patches shall be removed from the site(s) and replaced, in equal quantity, with new specification material at no cost to TOWN. The material shall be delivered to the location(s) designated by TOWN within fourteen (14) days from the date of written notification from TOWN.

The initial approval of a mixture, or the initial acceptance of material, shall in no way preclude further examination and testing if unsatisfactory results are achieved. The acceptance at any time shall not bar its future rejection.

Method of Measurement:

Cold Patching material will be measured per ton.

Basis of Payment:

The unit bid price is per ton and shall include all labor, materials and equipment necessary to complete the work.

End

Item 12A – Placement of Bituminous Concrete:

455.20 General: This work shall consist of producing and placing Hot Mix Asphalt (HMA) pavement. All HMA mixtures shall meet the requirements of the SUPERPAVE volumetric design system. The HMA pavement shall be constructed in courses on the prepared or existing base in accordance with these specifications and in conformance with the lines, grades, compacted thickness and typical cross section as shown on the plans. Each SUPERPAVE HMA pavement course placed shall be comprised of one of the mixture types listed in Table 455.1.

Table 455.1 - SUPERPAVE HMA Pavement Courses & Mixture Types

Pavement Course	Mixture Type	Mixture Designation
Friction Course	• Open-Graded Friction Course - Polymer Modified	OGFC – P
Surface Course	• SUPERPAVE Surface Course - 4.75 • SUPERPAVE Surface Course - 9.5 • SUPERPAVE Surface Course - 12.5 • SUPERPAVE Surface Course - 19.0	SSC - 4.75 SSC - 9.5 SSC - 12.5 SSC - 19.0
Intermediate Course	• SUPERPAVE Intermediate Course - 12.5 • SUPERPAVE Intermediate Course - 19.0	SIC - 12.5 SIC - 19.0
Base Course	• SUPERPAVE Base Course - 25.0 • SUPERPAVE Base Course - 37.5	SBC - 25.0 SBC - 37.5
Leveling Course	• SUPERPAVE Leveling Course - 4.75 • SUPERPAVE Leveling Course - 9.5	SLC - 4.75 SLC - 9.5
Bridge Surface Course	• SUPERPAVE Bridge Surface Course - 9.5 • SUPERPAVE Bridge Surface Course - 12.5	SSC-B - 9.5 SSC-B - 12.5
Bridge Protective Course	• SUPERPAVE Bridge Protective Course - 9.5 • SUPERPAVE Bridge Protective Course - 12.5	SPC-B - 9.5 SPC-B - 12.5

When a SUPERPAVE Surface Course - 19.0 (SSC - 19.0) is specified in the contract, the Laboratory Trial Mix Formula (LTMF) aggregate gradation shall provide a fine-graded HMA mixture as defined in Subsection 455.42F.

MATERIALS

455.40 General.

SUPERPAVE HMA mixtures shall be composed of the following: Mineral aggregate, mineral filler (if required), Performance Graded Asphalt Binder (PGAB), and as permitted, reclaimed materials (limited to Reclaimed Asphalt Pavement (RAP), Reclaimed Asphalt Shingles (RAS), and Processed Glass Aggregate (PGA)). Materials shall meet the requirements in the following Subsections of Division III, Materials and as otherwise specified herein:

Asphalt Emulsion	M3.03.0
Hot Poured Joint Sealer	M3.05.0
Asphalt Anti-Stripping Additive	M3.10.0
Mineral Aggregate	M3.11.04
Mineral Filler	M3.11.05
Plant Requirements	M3.11.07

455.42 SUPERPAVE Hot Mix Asphalt Mixture Design.

The Contractor shall be responsible for development of all SUPERPAVE HMA mixture designs. All HMA surface courses, intermediate courses, base courses, leveling courses, bridge surface courses, and bridge protective courses shall be supported by volumetric mixture designs using the SUPERPAVE mixture design system. All SUPERPAVE HMA mixture designs shall be developed in accordance with the following AASHTO standards, as modified herein:

AASHTO M 323
AASHTO R 35
AASHTO T 312

Volumetric mixture designs are not required for OGFC. The aggregate gradation structure and target PG Asphalt Binder content for Open-Graded Friction Course - Polymer Modified (OGFC-P) shall conform to the master ranges in M3.11.03 – Table B.

A. Development of Laboratory Trial Mix Formula (LTMF).
The Contractor shall develop and submit for Department approval, a minimum of forty-five (45) days prior to the start of SUPERPAVE HMA pavement construction, a Laboratory Trial Mix Formula (LTMF) as the proposed Job Mix Formula (JMF) for each SUPERPAVE mixture type to be used on the project. Two or more JMFs per HMA mixture type may be approved for a particular plant, however, only HMA conforming to one JMF is permitted to be produced and placed on any given day.

The following is a general outline of the steps for developing an LTMF and an approved JMF:

1. Estimate Percentage of RAP to be utilized and select PG Asphalt Binder as required by the specifications (Subsection 455.42C.);

2. Evaluate aggregates (and reclaimed materials) for conformance with Consensus Properties (Subsection 455.42D.) and Source Properties (Subsection 455.42E.);
3. Develop trial aggregate blends and estimate PG Asphalt Binder content in accordance with AASHTO R 35. Compact each of the blends. Based on volumetric analysis, select the best trial blend that meets the requirements of M 323 (Subsections 455.42F and 455.42G.);
4. Determine volumetric properties of LTMF and select PG Asphalt Binder content (Subsection 455.42H.);
5. Evaluate Moisture Sensitivity of the mixture (Subsection 455.42I.);
6. LTMF to be verified in the laboratory by the Department (Subsection 455.43);
7. Through production of a Control Strip Lot, verify that LTMF can be produced through the plant. (Subsection 450.66B.). Verification of the LTMF results in an approved JMF;
8. Repeat process for all mixtures to be utilized.

B. Estimated Design Traffic.
The estimated traffic level to be used for SUPERPAVE HMA mixture designs for this contract, expressed in Equivalent Single Axle Loads (ESALs) for the design travel lane over a 20-year period, is 3.0 Million_18-kip (80-kn) ESALs.

C. Performance Graded Asphalt Binder.
The Asphalt Binder used for all HMA mixtures under this contract shall comply with the requirements of Subsection 450.48. The PGAB Grade selected for this Contract is **PG64-28**. The Contractor shall provide PGAB samples to the Department for verification of each LTMF a minimum of forty-five (45) days prior to SUPERPAVE HMA production.

D. Aggregate Consensus Properties.
Aggregates utilized in SUPERPAVE HMA mixtures, including RAP if used in the mixture, shall be tested for conformance with the following Consensus Property requirements:

- Determining the Percentage of Fractured Particles in Coarse Aggregate (ASTM D 5821)
- Uncompacted Void Content of Fine Aggregate (AASHTO T 304 - Method A)
- Flat or Elongated Particles (ASTM D 4791)
- Clay Content/Sand Equivalent Test (AASHTO T 176)

The Consensus Property test results shall be submitted with the LTMF for each SUPERPAVE HMA mixture. The Contractor shall provide aggregate samples a minimum of forty-five (45) days prior to production for each LTMF to the Department for LTMF verification prior to SUPERPAVE HMA production. The required minimum or maximum criteria for each of the Consensus Property tests for the total aggregate blend are specified below in Table 455.2 below.

Table 455.2 - Aggregate Consensus Property Requirements

Traffic Level	Design ESALs 18-kip (80-kn))	Coarse Aggregate Angularity (1) (2) ASTM D5821 (Percent Minimum)		Fine Aggregate Angularity (1) AASHTO T 304 - Method A (Percent Minimum)		Flat or Elongated Particles (2) ASTM D4791 (Percent Maximum)	Sand Equivalent AASHTO T 176 (Percent Minimum)
-----	(million)	(Depth from final surface) ≤ 4 in (100 mm)	(Depth from final surface) > 4 in (100 mm)	(Depth from final surface) ≤ 4 in (100 mm)	(Depth from final surface) > 4 in (100 mm)	> # 4 (4.75 mm)	----
1	< 0.3	55/--	--/--	--	--	--	40
2	0.3 to < 3.0	75/--	50/--	40	40	10	40
3	3 to < 10	85/80	60/--	45	40	10	45
4	10 to < 30.0	95/90	80/75	45	40	10	45
5	≥ 30.0	100/100	100/100	45	45	10	50
	Design ESALS are the anticipated project traffic level expected on the design lane, projected over a 20 year period, regardless of the actual expected design life of the roadway.	Criteria presented as minimum values. 95/90 denotes that a minimum of 95% of the coarse aggregate, by mass, shall have one fractured face and that a minimum of 90% shall have two fractured faces.		Criteria presented as minimum percent air voids in loosely compacted fine aggregate passing the #8 (2.36 mm) sieve.		Criteria presented as maximum percent by mass of flat or elongated particles of materials retained on the #4 (4.75 mm) sieve, determined at 5:1 ratio.	Criteria presented as minimum values for fine aggregate passing the #4 (4.75 mm) sieve.

Notes:
(1) If less than 25% of a given layer is within 4 inches (100 mm) of the anticipated top surface, the layer may be considered to be below 4 inches (100 mm) for mixture design purposes. **(2)**This criterion does not apply to #4 (4.75 mm) nominal maximum size mixtures.

E. Aggregate Source Properties.
The coarse mineral aggregate utilized in SUPERPAVE HMA mixtures shall be clean, crushed rock consisting of the angular fragments obtained by breaking and crushing shattered natural rock. It shall be free from dirt or other objectionable materials. The coarse aggregate, including RAP if used in the mixture, shall be tested for conformance with the following Source Property requirements:

- Toughness as Determined by: Los Angeles Abrasion (AASHTO T 96)
- Soundness as Determined by: Soundness (AASHTO T 104)
- Deleterious Materials as Determined by: Clay Lumps & Friable Particles (AASHTO T 112)
- Specific Gravity (AASHTO T 8)

Testing for each of the Source Properties shall be performed for each SUPERPAVE HMA mixture design developed for the project. The Source Property test results shall be submitted with the LTMF for each SUPERPAVE HMA mixture. The Contractor shall provide samples of each aggregate material from each stock pile, a minimum of forty-five (45) days prior to production for each LTMF to the Department for LTMF verification prior to SUPERPAVE HMA production. The requirements for each of the Source Properties are as indicated in Table 455.3 below.

Table 455.3 - Aggregate Source Property Requirements

Source Property Test	Limit
Toughness (AASHTO T 96)	Maximum Loss < 30 %
Soundness (AASHTO T 104)	Maximum Loss < 10 %
Deleterious Materials (AASHTO T 112)	Maximum Permissible < 0.5 %

F. SUPERPAVE Aggregate Gradation and Specific Gravity Requirements.
The combined aggregate blend for each SUPERPAVE HMA mixture shall conform to the Gradation Control Point requirements specified in Table 455.6 below. The results of the selected optimum Design Aggregate Structure shall be plotted on a 0.45 Power Chart and included with the LTMF.
The combined aggregate gradation shall be classified as coarse-graded when it passes below the Primary Control Sieve (PCS) control point as defined in Table 455.4. All other gradations shall be classified as fine graded.
The specific gravity of each coarse and fine aggregate component shall be determined in accordance with AASHTO T 85 and T 84 respectively, and the specific gravity of the mineral filler shall be determined in accordance with AASHTO T 100. The individual aggregate specific gravities shall be included with the LTMF. The Contractor shall provide samples of each aggregate material a minimum of forty-five (45) days prior to production for each LTMF to the Department for verification of the selected optimum Design Aggregate Structure and specific gravity of each stock pile.

Table 455.4 - Gradation Classification

PCS Control Point for Mixture Nominal Maximum Aggregate Size % Passing					
Nominal Maximum Aggregate Size	1-1/2" (37.5 mm)	1" (25.0 mm)	3/4" (19.0 mm)	1/2" (12.5 mm)	3/8" (9.5 mm)
Primary Control Sieve	3/8" (9.5 mm)	#4 (4.75 mm)	#4 (4.75 mm)	#8 (2.36 mm)	#8 (2.36 mm)
PCS Control point (% Passing)	47	40	47	39	47

G. Gyratory Compaction Criteria.
Each SUPERPAVE HMA mixture shall be designed and controlled during production using an approved Gyratory Compactor which meets the requirements of AASHTO T 312. Compaction shall be in accordance with the requirements of AASHTO T 312. The density of each SUPERPAVE HMA mixture shall be evaluated at the initial number of gyrations ($N_{initial}$), the design number of gyrations (N_{design}), and the maximum number of gyrations (N_{max}). The gyratory-compacted specimens for each LTMF shall meet the density requirements specified in Table 455.5 below.

H. Volumetric Design Requirements.
Each SUPERPAVE HMA mixture shall be designed in accordance with the volumetric mixture design specifications contained in AASHTO M 323 and procedures contained in AASHTO R 35, as modified herein. Each HMA mixture LTMF shall be tested for conformance with the following volumetric properties:

- Air Voids at N_{design} (V_a)
- Voids in the Mineral Aggregate at N_{design} (VMA)
- Voids Filled with Asphalt at N_{design} (VFA)
- Fines to Effective Asphalt Ratio ($P_{0.075}$ / P_{be})

The volumetric property test results shall be submitted with the LTMF for each SUPERPAVE HMA mixture. The required minimum or maximum criteria for each of the volumetric property tests are specified in Table 455.6 below.

Table 455.5A - Standard SUPERPAVE HMA Design Requirements

Traffic Level	Design ESALs	Number of Gyrations by Superpave Gyratory Compactor			Percent Density of Gmm from HMA Specimen			Voids Filled with Asphalt (VFA)* Based on Nominal Maximum Aggregate Size					
	(million)	Nini	Ndes	Nmax	Nini	Ndes	Nmax	#4 (4.75 mm)	3/8" (9.5 mm)	1/2" (12.5 mm)	3/4" (19.0 mm)	1" (25.0 mm)	1-1/2" (37.5 mm)
1	< 0.3	6	50	75	δ 91.5	96.0	δ 98.0	70 – 80	70 – 80	70 – 80	70 – 80	67 – 80	64 – 80
2	0.3 to < 3	7	75	115	δ 90.5	96.0	δ 98.0	65 – 78	65 – 78	65 – 78	65 – 78	65 – 78	64 – 78
3	3 to < 10	8	100	160	δ 89.0	96.0	δ 98.0	75 – 78	73 – 76	65 – 75	65 – 75	65 – 75	64 – 75
4	10 to < 30	8	100	160	δ 89.0	96.0	δ 98.0	75 – 78	73 – 76	65 – 75	65 – 75	65 – 75	64 – 75
5	ε 30	9	125	205	δ 89.0	96.0	δ 98.0	75 – 78	73 – 76	65 – 75	65 – 75	65 – 75	64 – 75

*The VFA values contained in Table 455.5A have been modified from AASHTO M 323 to ensure adequate PG Asphalt Binder content in each SUPERPAVE HMA mixture.

Table 455.5B - Modified SUPERPAVE HMA Design Requirements

Traffic Level	Design ESALs	Number of Gyrations by Superpave Gyratory Compactor			Percent Density of Gmm from HMA Specimen			Voids Filled with Asphalt (VFA)* Based on Nominal Maximum Aggregate Size					
	(million)	Nini	Ndes**	Nmax	Nini	Ndes	Nmax	#4 (4.75 mm)	3/8" (9.5 mm)	1/2" (12.5 mm)	3/4" (19.0 mm)	1" (25.0 mm)	1-1/2" (37.5 mm)
1	< 0.3	6	50	75	δ 91.5	96.0	δ 98.0	70 – 80	70 – 80	70 – 80	70 – 80	67 – 80	64 – 80
2	0.3 to < 3	7	65	95	δ 90.5	96.0	δ 98.0	65 – 78	65 – 78	65 – 78	65 – 78	65 – 78	64 – 78
3	3 to < 10	8	80	120	δ 89.0	96.0	δ 98.0	75 – 78	73 – 76	65 – 75	65 – 75	65 – 75	64 – 75
4	10 to < 30	8	80	120	δ 89.0	96.0	δ 98.0	75 – 78	73 – 76	65 – 75	65 – 75	65 – 75	64 – 75
5	ε 30	9	100	160	δ 89.0	96.0	δ 98.0	75 – 78	73 – 76	65 – 75	65 – 75	65 – 75	64 – 75

*The VFA values contained in Table 455.5B have been modified from AASHTO M 323 to ensure adequate PG Asphalt Binder content in each SUPERPAVE HMA mixture.
**The N_{design} gyration levels are selected based on depth from final pavement surface. When 75% or more of the depth of a pavement layer is greater than four (4) inches (100 mm) below the final pavement surface, that pavement layer shall be designed at the next lower Design Traffic Level in Table 455.5B.

Table 455.6 - Gradation and Volumetric Requirements

	SUPERPAVE HMA Mixture Nominal Maximum Aggregate Size											
Sieve	#4 (4.75 mm)		3/8" ((9.5 mm)		1/2" (12.5 mm)		3/4" (19.0 mm)		1" (25.0 mm)		1-1/2" (37.5 mr	
	CONTROL POINTS		CONTROL POINTS		CONTROL POINTS		CONTROL POINTS (5)		CONTROL POINTS		CONTROL POIN	
Inches	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max (%)	Min (%)	Max
2	-	-	-	-	-	-	-	-	-	-	100	
1.5	-	-	-	-	-	-	-	-	100	-	90	1(
1	-	-	-	-	-	-	100	-	90	100	-	9
¾	-	-	-	-	100	-	90	100	-	90	-	
½	100	-	100	-	90	100	-	90	-	-	-	
3/8	95	100	90	100	-	90	-	-	-	-	-	
#4	90	100	-	90	-	-	-	-	-	-	-	
#8	-	-	35	67	31	58	26	49	19	45	15	4
#16	30	60	-	-	-	-	-	-	-	-	-	
#30	-	-	-	-	-	-	-	-	-	-	-	
#50	-	-	-	-	-	-	-	-	-	-	-	
#100	-	-	-	-	-	-	-	-	-	-	-	
#200	6	12	2	10	2	10	2	8	1	7	0	(
PB	-		-	-	-	-	-	-	-	-	-	
VMA (3)	17.0		16.0		15.0		14.0		13.0		12.0	
Va (%)	4.0		4.0		4.0		4.0		4.0		4.0	
VFA	Per Table 455.5 ± 5 off LTMF		Per Table 455.5 ± 5 off LTMF		Per Table 455.5 ± 5 off LTMF		Per Table 455.5 ± 5 off LTMF		Per Table 455.5 ± 5 off LTMF		Per Table 455.5 ± LTMF	
Gse	LTMF value		LTMF value		LTMF value		LTMF value		LTMF value		LTMF value	
Gmm	LTMF value		LTMF value		LTMF value		LTMF value		LTMF value		LTMF value	
ust/Pbe(2)	0.9 – 2.0		0.6 - 1.2		0.6 - 1.2		0.6 - 1.2		0.6 - 1.2		0.6 - 1.2	
Mixture Temp	265 - 325F(1)		265 - 325F (1)		265 - 325F (1)		265 - 325F (1)		265 - 325F (1)		265 - 325F (1	
PCS (4)			Sieve #8	47	Sieve #8	39	Sieve #4	47	Sieve #4	40	Sieve 3/8"	4

(1) Based on the final design PG Asphalt Binder certification. (2) Dust is considered to be the percent of material passing the #200 (75 µm) sieve. The calculated effective asphalt content (Pbe) shall be used for this calculation. (3) Voids in Mineral Aggregates shall be computed as specified by AASHTO R 35. (4) If the aggregate gradation passes beneath the PCS Control Point specified in Table 455.4, the dust-to-binder ratio range may be increased from 0.6-1.2 to 0.8-1.6 at the Engineer's discretion. (5) When used as a Surface Course under OGFC the Min % for the #8 (2.36 mm) Sieve should be 40.

I. Evaluation of LTMF for Moisture Sensitivity.
Each SUPERPAVE HMA mixture type, for both mix designs (Standard Superpave HMA - Table 455.5A and Modified Superpave HMA - Table 455.5B), shall be tested by the Contractor for Moisture Sensitivity in accordance with the requirements of AASHTO T 283. The compacted specimens for each LTMF shall exhibit a minimum tensile strength ratio of 80% as determined by AASHTO T 283. A minimum tensile strength ratio of 80% is required. The use of approved anti-stripping agents (either liquid or mineral) can be used to meet this requirement. If an anti-strip agent is required, it shall be included in the Contractor's cost.

The Moisture Sensitivity test results shall be submitted with the LTMF for each SUPERPAVE HMA mixture type. The Department will perform testing of the Moisture Sensitivity prior to SUPERPAVE HMA production as part of the verification of each LTMF.

J. Evaluation of LTMF for Rutting and Moisture Susceptibility.
Each SUPERPAVE LTMF that is designed for traffic levels two (2) through five (5) will be tested by the Department for rutting and moisture susceptibility using; the Hamburg Wheel Tracking Device in accordance with AASHTO T 324, the Asphalt Pavement Analyzer (APA) in accordance with AASHTO T 340, and AASHTO T 283. Each LTMF may also be evaluated by the Department using the Asphalt Mix Performance Tester (AMPT).

K. Evaluation of Plant Produced HMA for Rutting and Moisture Susceptibility.
Loose mixture plant produced Superpave HMA samples will be obtained during production and tested by the Department for rutting and moisture susceptibility using; the Hamburg Wheel Tracking Device in accordance with AASHTO T 324, the Asphalt Pavement Analyzer (APA) in accordance with AASHTO T 340, and AASHTO T 283. Each sample may also be evaluated by the Department using the Asphalt Mix Performance Tester (AMPT).

The Study samples will be drawn from either a split sample of each randomly obtained Department Acceptance sample or from separate random samples obtained by the Department. The Contractor shall also provide a split sample from each random QC sample if requested by the Department. Each sample will be clearly marked to indicate that it is from a Standard Superpave Mixture (S) or from a Modified Superpave Mixture (M).

Delete Subsection 450.66A. - Laboratory Verification of HMA Mix Design and replace with the following:

455.43 Verification of Laboratory Trial Mix Formula (LTMF)

The Contractor shall submit a LTMF with supporting documentation, a minimum of forty-five (45) days prior to production, to the Engineer with samples of blended aggregate material and PG Asphalt Binder. An adequate amount of the blended aggregate material and PG Asphalt Binder shall be supplied in order to verify the LTMF selected for production (proposed JMF). If the Engineer is unable to verify the Contractor's LTMF in accordance with the LTMF Verification Limits in Table 455.7, then the Engineer will work with the Contractor to resolve the verification issue(s). **The Contractor shall not proceed with production and placement of the Control Strip (Section 450.66B.) until the LTMF is verified by the Engineer.**

Table 455.7 - SUPERPAVE HMA LTMF Verification Limits

Properties	LTMF Verification Limit
Asphalt Binder Content (P_b)	Target ± 0.3 percent
Gradation Passing #4 (4.75 mm) and Larger Sieves	Target ± 6.0 percent
Gradation Passing #8 (2.36 mm) Sieve	Target ± 5.0 percent
Gradation Passing #16 (1.18 mm) to #50 (0.30 mm) Sieve	Target ± 3.0 percent
Gradation Passing #100 (0.15 mm) Sieve	Target ± 2.0 percent
Gradation Passing #200 (75 μm) Sieve	Target ± 1.0 percent
Max. Theo. Specific Gravity (G_{mm})	Target ± 0.02
Air Voids (V_a)	Target ± 1.0 percent
Voids in Mineral Aggregate (VMA)	Target ± 1.0 percent
Voids Filled With Asphalt (VFA)	Target ± 5.0 percent
Bulk Specific Gravity (G_{mb})	Target ± 0.022

COMPENSATION

The Pay Adjustment provisions included in Subsection 450.92 - Pay Adjustment shall be applied to items under this contract.

D. Hot Mix Asphalt.
Each Hot Mix Asphalt pavement course will be paid for at the contract unit price per ton (Megagram) of in-place mixture under the HMA Pay Items specified in Subsection 455.93. Payment shall include sweeping the underlying surface, transportation, delivery, placement including providing a Material Transfer Vehicle (MTV), and compaction of each HMA pavement course in accordance with Subsection 450.54 through Subsection 450.58.

All sawcutting required for transverse joints or longitudinal joints in accordance with Subsection 450.57 shall also be included in the contract unit price for each HMA pavement course.

All Contractor efforts related to the Gyratory Compaction Study, including; Superpave HMA LTMF design and verification, HMA production Quality Control, HMA placement Quality Control, and all other activities associated with the Study shall be compensated under the contract unit price for Item 450.90 - Contractor Quality Control.

455.93	Payment Items	Payment Unit
450.10	Open Graded Friction Course - Polymer Modified (OGFC - P)	Ton (Megagram)
455.21	SUPERPAVE Surface Course - 4.75 (SSC - 4.75)	Ton (Megagram)
455.22	SUPERPAVE Surface Course - 9.5 (SSC - 9.5)	Ton (Megagram)
455.23	SUPERPAVE Surface Course - 12.5 (SSC - 12.5)	Ton (Megagram)
455.24	SUPERPAVE Surface Course - 19.0 (SSC - 19.0)	Ton (Megagram)
455.31	SUPERPAVE Intermediate Course - 12.5 (SIC - 12.5)	Ton (Megagram)
455.32	SUPERPAVE Intermediate Course - 19.0 (SIC - 19.0)	Ton (Megagram)
455.41	SUPERPAVE Base Course - 25.0 (SBC - 25.0)	Ton (Megagram)
455.42	SUPERPAVE Base Course - 37.5 (SBC - 37.5)	Ton (Megagram)
455.51	SUPERPAVE Leveling Course - 4.75 (SLC - 4.75)	Ton (Megagram)
455.52	SUPERPAVE Leveling Course - 9.5 (SLC - 9,5)	Ton (Megagram)
455.60	SUPERPAVE Bridge Surface Course - 9.5 (SSC-B - 9.5)	Ton (Megagram)
455.61	SUPERPAVE Bridge Surface Course - 12.5 (SSC-B - 12.5)	Ton (Megagram)
455.70	SUPERPAVE Bridge Protective Course - 9.5 (SPC-B - 9.5)	Ton (Megagram)
455.71	SUPERPAVE Bridge Protective Course - 12.5 (SPC-B - 12.5)	Ton (Megagram)

460.20 General

This type of pavement shall be composed of mineral aggregate, mineral filler and bituminous material. The pavement shall be constructed in courses as shown on the plans and as directed on the prepared or existing base in accordance with these specifications and in close conformity with the lines, grades, compacted thickness, and typical cross section shown on the plans.

460.21 Composition and Compaction Acceptance Tests

Where plant inspection is maintained, the material will be considered acceptable for use when the specified tests from samples obtained at the production plant indicate conformance to M3.11.09.

Pavement density shall be determined as outlined in M3.11.09.

The bituminous mixture and the labor for obtaining these samples in the field shall be furnished without charge by the Contractor. The samples shall be taken in accordance with AASHTO T230-68.
Materials

460.40 General

Materials shall meet the requirements in the following Subsection of Division III, Materials:

Mineral Aggregate	M3.11.04
Mineral Filler	M3.11.05
Bituminous Materials	M3.11.06

Construction Methods

460.60 General

The Engineer may require the Contractor to remove and replace at his own expense, any defective mix not conforming to the specified job mix formula within the stipulated tolerances; on the basis of the Department testing. Samples of the actual mixture in use will be taken as many times daily as necessary and the mixtures shall be maintained uniform for the project as specified herein. The Engineer may suspend further approval for use of the Plant mixtures in Department work if the mixtures are not uniformly furnished as specified; until any necessary changes have been made so that the mixtures do conform to the specified requirements.

If, at any time before the final acceptance of the work, any soft, imperfect places or spots shall develop in the surface all such places shall be removed and replaced with new materials and then compacted until the edges at which the new work connects with the old become invisible.

Grade control survey shall conform to Subsection 5.07. The Contractor shall furnish, set, and maintain all line and grade stakes necessary to guide the automated grade control equipment. Where required these control stakes shall be maintained by the Contractor and used throughout the operations, from the grading of the sub-base material up to and including the final layers of the pavement.

"With prior approval of the Engineer and with no increase in cost, a plant may substitute a limited amount (up to 1000 tons per project) of binder mix for black base. The substitution will be only within the station limits, locations, depths and tonnage as stated by the Engineer".

The Contractor will supply an approved dial type thermometer with a temperature range of 50 degrees to 500 degrees F, and an infrared pistol thermometer for each paving machine in operation on the project. The infrared pistol thermometer shall be Fahrenheit or Celsius selectable and conform to the following requirements:

Portable and battery operated	Accuracy of +/- 2%
Repeatability of +/- 5 degrees F	Emissivity preset at 0.95
LCD display to nearest 1 degree	Temperature operating range 0 to 750 degrees F

The thermometers will remain the property of the Contractor upon completion of the project.

Under normal conditions, where more than one course of bituminous concrete is to be constructed, the use of the string line for grade control may be eliminated or discontinued after the construction of the initial layer of bituminous concrete. For resurfacing projects, where only one course of bituminous concrete is to be constructed, the use of the string line for grade control

may be eliminated. The use of an approved "ski" may then be substituted for the string line where lines and grades are found to be satisfactory by the Engineer.

The bid price shall include the cost of milling a minimum 36" wide keyway to the depth of the overlay to provide a smooth transition at the joint.

Temporary adjusting of driveway aprons during the project shall be done by the Contractor under the direction of the DPW Director, or his representative. Temporary adjusting of driveways shall include the removal of temporary materials placed at driveway and roadway transitions that were placed to ease the transition from existing pavement to new/restored areas of pavement. Temporary adjusting of driveway aprons will be paid under item 15 By Hand Bituminious Concrete.

Tar paper shall be used to protect existing surface and for easier removal of temporary transitions in preparation for placement of bituminous concrete.

460.61 Transportation and Delivery of Mixtures

The mixtures shall be transported from the plant to the work in vehicles previously cleaned of all foreign materials. During transportation of the mixture from the plant to the spreader on the work, each load shall be fully covered at all times, without exception, with canvas or other suitable material of sufficient size and thickness to furnish complete protection. The mixture shall not be transported such a distance that segregation of the ingredients takes place or that any crust is formed on the surface, bottom or sides of said mixture which will not crumble or flatten out when the mixture is dumped or shall otherwise be deleterious to the mixture in place on the roadway.

The vehicles for transporting the mixture shall be tight and the inside of the bodies shall be evenly and lightly coated with a suitable thin oil or approved soap solution, but no excess of lubricant shall be allowed to accumulate in low spots in the body.

During paving operations, the Contractor shall provide continuous radio communication between the plant and the project to ensure immediate response due to breakdowns, emergencies such as accidents, and to insure the best quality results possible.

When necessary, proper insulation of the vehicles transporting the mixture shall be made to insure that the mixture is delivered for placing at the proper temperature.

The dispatching of trucks from the plant shall be so arranged that all material which is to be delivered at or on the road surface during any day may be placed and shall have received final compaction before nightfall of the same day; unless artificial light, satisfactory to the Engineer, is provided.

The temperature of the mixture when delivered at the project site will be governed by the air temperature in the shade and away from artificial heat as follows, within a tolerance of plus or minus 20 degrees F:

Normal Layered Construction

Air Temperature	Project Delivery Temperature
35 degrees F	300 degrees F
40 degrees F	290 degrees F
65 degrees F	280 degrees F
90 degrees F or over	275 degrees F

Deep Lift Paving (3 inches and over)

Air Temperature	Project Delivery Temperature
35 degrees F	280 degrees F
40 degrees F	270 degrees F
65 degrees F or over	260 degrees F

460.62 Tack Coat

When it is required that the existing hardened surface shall be utilized as a base for the new pavement, a tack coat of bituminous material of the kind and grade shown on the plans shall be uniformly applied by mechanical means to the present surface, at the rate of application and by the method indicated on the plans or as directed by the Engineer, immediately prior to laying the bottom course of the new pavement. The tack coat shall be applied by self propelled asphalt distributor with recirculation bars so that the entire surface to be overlaid will be covered.

When and if the surface is in a condition which, in the Engineer's judgment, is unsatisfactory for the direct placement of the surface course; it shall be sprayed as specified above with tack coat in the amount and by the method directed by the Engineer.

When a tack coat is required and its need is found to be the direct fault of the Contractor the surface shall be treated with a tack coat as directed by the Engineer and the entire cost for such treatment shall be borne by the Contractor.

The existing surface shall be cleaned of all foreign matter and loose material and shall be dry before the tack coat is placed.

460.63 Spreading and Finishing

The equipment for spreading and finishing shall be mechanical, self powered pavers, capable of spreading and finishing the mixture true to line, grade, width, and crown by means of fully automated controls for both longitudinal and transverse slope.

The pavers shall be equipped with hoppers and distributing screws of the reversing type to place the mixture evenly in front of adjustable screeds. They shall be equipped with a quick and efficient steering device and shall have reverse as well as forward traveling speeds.

The pavers shall employ mechanical devices such as equalizing runners, straight edge runners, evener arms or other compensating devices to adjust the grade and confine the edges of the mixture to true lines. They shall be capable of spreading the mixture without segregation in layers to the depths and widths required. They shall be equipped with blending or joint leveling devices for smoothing and adjusting all longitudinal joints between adjacent strips or courses of the same thickness.

The screed shall be adjustable for profile and shall have an indicating level attached.

An approved device will be required for heating the screed to the temperature required for the laying of the mixtures without pulling or marring.
The term "screed" includes any "strike-off" device operated by cutting, crowding, or other practicable action, which is effective on the mixtures at permissible workable temperatures without tearing, shoving, or gouging and which produces a finished surface of the evenness and texture required.

The pavers employed on projects requiring in excess of 15,000 tons shall be capable of operating by the use of a sensing grid for operation to a string line and matching shoe for joints.

The paver shall be provided with a "ski" which may be employed for paving on the previously laid Bituminous Concrete Base, or binder as directed or permitted by the Engineer.

The paver employed on deep lift construction shall be capable of satisfactorily feeding the mix without intermittent stopping during the discharge of the mix from the trucks into the paving machine.

If during construction it is found that the spreading and finishing equipment in use leaves tracks or indented areas, or produces other permanent blemishes in the pavement which are not satisfactorily corrected by the scheduled operations; the use of such equipment shall be discontinued and other satisfactory spreading and finishing equipment shall be provided by the Contractor.

The mixtures shall be placed and compacted only at such times as to permit the proper inspection and checking by the Engineer.

The mixtures shall only be placed in the work when they can be efficiently and satisfactorily placed by the methods stipulated herein. Unless otherwise permitted by the Engineer for special particular conditions, only machine methods of placing shall be used.

The construction of bituminous concrete pavement shall terminate November 15th and shall not be resumed prior to April 1st, except as determined and directed in writing by the Engineer depending upon the necessity and emergency of attendant conditions, weather conditions, and location of the project.

When the air temperature falls below 50 degrees F, extra precautions shall be taken in drying the aggregates, controlling the temperatures of the materials, placing, and compacting the mixtures.

No mixture shall be placed unless the breakdown and intermediate rolling can be completed by the time the material has cooled to 170 degrees F, and provided that the density of the completed pavement attains at least 95% of the laboratory compacted density.

The mixtures shall be placed only upon approved surfaces that are clean from foreign materials and dry; and when weather conditions are suitable. The Engineer may however, at the entire responsibility of the Contractor, permit work to continue when overtaken by sudden rain, but only with material which may be in transit from the plant at the time, and then only when the temperature of the mixture is within the temperature limits specified and existing surface on the roadway is not excessively wet.

A tack coat shall be applied where required as per Subsection 460.62.

The bituminous concrete shall be placed in courses as shown on the plans, as specified and as directed by the Engineer.

When an existing surface or new base upon which the bottom course is to be placed contains unsatisfactory irregularities, in the Engineer's judgment, such irregularities shall be eliminated by an adequate placing and compaction of mixture so as to furnish a surface with true contour and grade before placing any specified course of mixture.

The contact surfaces of bridge curbings, manholes, catch basins or other appurtenant structures in pavement shall be painted thoroughly with a thin uniform coating of bitumen (Specification RS-1) just before any mixture is placed against them.

Special attention shall be given to proper testing of the surface of each course with a straightedge. The finished surfaces shall be even and uniform throughout. (See Subsection 460.67 for "Testing Surfaces.")

Any mixture which becomes loose or broken, mixed with dirt, or in any way defective shall be removed and replaced with new mixture which shall be compacted to conform to the surrounding area. Areas of one square foot or more showing an excess of bitumen shall be removed and replaced.
The methods of spreading the bituminous concrete mixtures shall be as follows:

Machine Spreading – All mixtures shall be deposited in an approved mechanical spreader and immediately spread thereby; and then struck off in a uniform layer to the full width required and of such depth that each course, when compacted, shall have the required thickness and shall conform to the grade and cross section contour specified.

The mixture shall be deposited in the center of the hoppers and care exercised to avoid overloading and spilling. The pavers shall operate, while the mixture is being spread, at a speed which will produce a uniform surface texture.

Immediately after any course is screeded and before roller compaction is started, the surface shall be checked, any irregularities adjusted, any accumulation from the screed removed by rake or lute, and all fat spots in any course removed and replaced with satisfactory material. Irregularities in alignment and grade along outside edges shall be corrected by the addition or

removal of mixture before the edges are rolled. Indiscriminate casting of mix on the new screeded surface, where irregularities are not evident, shall not be permitted.

All edges shall be true and uniform.

Hand Spreading – Spreading by hand methods will be permitted only for particular locations in the work which because of irregularity, inaccessibility or other unavoidable obstacles do not allow mechanical spreading and finishing.

460.64 Compaction

After the paving mixture has been properly spread, initial compaction shall be obtained by the use of power rollers of approved design and weight per inch width of roller. The rollers shall be steel wheeled supplemented with pneumatic-tired rollers where required, or where permitted by the specifications, vibratory rollers.

Steel wheel rollers for initial and intermediate rolling shall have a weight of not less than 240 pounds per inch width of tread.

Pneumatic-tired rollers, when conditions warrant, shall be provided with devices capable of varying tire pressures. When the mixture being spread by each paver requires more than the minimum number of steel wheel rollers, at least one (1) of the additional rollers for each paver shall be a pneumatic-tired roller, except where the use of a vibratory roller is permitted. When using a pneumatic-tired roller, care shall be taken in that initial rolling by the steel wheel roller is restricted to one pass where upon the pneumatic-tired roller shall immediately follow the initial steel wheel rolling.

Vibratory rollers may be used on base, binder and surface courses subject to the conditions set forth herein. Vibratory rollers to be used may be of the single drum type with pneumatic tire drive wheels or the double steel drum type with vibratory mechanism in one or both drums. All vibratory rollers shall have a static weight of at least eight tons and shall be equipped with an automatic disconnect device to disconnect the vibratory mechanism when the roller is not in motion. They shall also be equipped with a manual over-ride device to disconnect the vibratory mechanism if the automatic device should fail.

All vibratory rollers shall also be equipped with the following equipment:

A large and clearly visible roller speed indicator; an amplitude setting indicator and a frequency setting indicator. They shall also have instructional plates attached which shall include operational instructions and recommended amplitude and frequency settings. A vibratory tachometer shall also be provided with each roller for use by the Engineer.

Vibratory rollers shall not be used on bridges or other structures and their use in urban areas may be restricted. They shall not be used on thin overlays one (1) inch or less in thickness, except that vibratory rollers of the double drum type may be used in a static condition to compact such overlays, provided that when so operated they shall be able to obtain the degree of density and smoothness required to conform to the specifications.

When vibratory rollers are used for the compaction of base and binder material they shall be operated at a high amplitude setting and a low frequency setting in the range of 1500 to 1700 VPM. When used for the compaction of surface courses they shall be operated at a low amplitude setting at a minimum frequency setting of at least 2200 VPM or higher, if a higher frequency setting is recommended by the manufacturer of the roller. The use of a vibratory roller incapable of being operated at a frequency setting of at least 2200 VPM will not be permitted on surface courses. No deviation from this latter requirement will be allowed. In compacting surface courses a vibratory roller shall not be operated at a speed in excess of three (3) miles per hour.

A vibratory roller shall be operated with the vibration drum or drums in the direction of the paver and the vibrating action of the roller shall be completely shut off during change of direction. Due care shall be exercised to start the vibratory action only when the roller is in motion. During the rolling of layered pavement, in order to prevent creeping and aggregate crushing, care shall be taken not to exceed two (2) passes with the vibrator in action. For deep lift pavements, these passes shall normally not exceed two (2) in each direction, except that the number of vibratory passes in either direction may be varied in order to obtain the required density.

The final rolling of all courses shall be performed at a mix temperature, time and a steel wheeled roller of sufficient weight to allow for final smoothing of the surface.

The use of a vibratory roller may be suspended by the Engineer if, in his opinion, satisfactory results are not being obtained and no further amount of mix shall be spread in such case until a sufficient number of approved rollers are on the project site to satisfy compaction requirements.

A plate shall be attached to each conventional roller which shall show the ballasted and unballasted weight per inch of tread.

The number of rollers required shall be governed by the tonnage of hot-mix being placed daily. A sufficient number shall be provided to compact the mixture in accordance with the specifications. The number of passes required may be varied and shall be governed by the compaction results. The Engineer may require that a stand-by roller by provided if in his opinion it is necessary in the event of a breakdown.

Each roller shall be operated by a competent, experienced roller operator and shall be kept in as nearly continuous operation as practicable while work is underway. The mixture shall be rolled longitudinally, diagonally and transversely as may be necessary to produce the required contour for surface. Longitudinal rolling shall start at the side and proceed toward the center of the pavement, except on superelevated curves where the rolling shall begin on the low side and progress to the high side, overlapping on successive trips by at least 12 inches. The rolling shall be continued and so executed that all roller marks, ridges, porous spots and impressions are eliminated and the resulting surface has the required grade and contour. The motion of the rollers shall at all times be slow enough to avoid any displacement of the hot mixture. Any displacement or marring of the surface occurring as a result of reversing the direction of the rollers, or from any other cause, shall be corrected. To prevent adhesion with the mixture, the wheels of the steel rollers shall be kept lightly moistened with water but excess water will not be permitted. The use of oil for this purpose will not be allowed.

To prevent "rolloff" of the pavement edges and longitudinal joints on deep lift paving, the outer 8 inches +/- of the deep lift mixture shall be left unrolled until the temperature of the mix ranges between 150 degrees F and 180 degrees F, where upon it shall be compacted by the steel roller.

Along curbs, structures and all places not accessible with a roller, the mixture shall be thoroughly compacted with mechanical tamping devices. The surface of the mixture after compaction shall be smooth and true to the established line and grade.

The densities of the completed pavement shall be not less than 95% of the density obtained from Laboratory compaction of a mixture composed of the same materials in like proportions. Laboratory compaction will be performed by Department Standard Methods.

460.65 Joints

Placing of the mixture shall be as nearly continuous as possible and the roller shall pass over the unprotected end of the newly placed mixture only when the placing of the course is to be discontinued for such length of time as would permit the mixture to attain initial stability. In all such cases, including the formation of joints as here specified, provision shall be made for proper bond with the new surface for the full specified depths of the courses.

All transverse joints, all longitudinal joints of the surface course and all longitudinal joints in the Dense Binder Course under Open Graded Friction Course or Open Graded Friction Course-Modified shall be treated prior to laying the next lane of bituminous concrete as follows:

The joint shall be coated with a hot poured rubberized asphalt sealant meeting the requirements of Federal Specification Number SS-S-1401.

When using pavers in tandem, the use of the hot poured rubberized asphalt sealer may be omitted at the discretion of the Engineer, if the temperature of the mixture at the longitudinal joint does not fall below 200 degrees F prior to the placement of the adjacent mat. No re-heating of the joint shall be permitted.

The hot poured rubberized asphalt shall be applied to the joints from a double jacketed heating kettle with a positive drive gear pump that is connected to a suitable applicator. The nozzle of the applicator shall be set to deliver sufficient sealant to effectively bond and seal the transverse and longitudinal paving joint between two (2) adjacent lanes of bituminous concrete.

Longitudinal and transverse joints shall be made in a careful manner, well bonded and sealed, and true to line and grade. Where and as directed, transverse joints for all courses and longitudinal joints for the top course placed under this or previous contracts shall be cut back to expose the full depth of the course and, when the laying of the course is resumed, the exposed edge of the joint shall be treated as above.

In making joints along any adjoining edge such as a curb, gutter or an adjoining pavement, and after the mixture is placed by the mechanical spreader, just enough of the hot material shall be placed by hand method to fill any space left open. These joints shall be properly "set-up" with the back of a rake at the proper height and level to receive the maximum compaction. The work of "setting-up" these joints shall be performed only be competent workmen.

Where and as directed, the first width of any course shall be placed not less than one foot wider than the first width of top course, and successive widths of top and as any other courses shall be so placed that there will be at least a one foot overlap between the joints in the top course and the other course.

The rolling of the successive widths of courses shall overlap and shall be performed so as to leave smooth, uniform joints and cross sections.

460.66 Pavement on Bridges

The bituminous concrete mixtures for protective course paving on bridges shall consist of "Dense Mix" as specified hereinbefore for such mix and work performance requirements. The mixtures shall be treated with an approved antistripping compound as specified under M3.10.0.

The protective course over any area shall be placed within 24 hours after the membrane waterproofing over the area has been placed unless exception is granted by the Engineer.

No vehicular traffic shall be permitted over any bare membrane waterproofing except as provided for under Subsection 965.62C.

The top course of pavement on bridges shall consist of "Top Course" and be placed only after the curbing and edging are in place in the work.

460.67 Testing Surfaces

The plane of the finished surfaces of the base courses and/or binder course and the top course of compacted mixtures, shall be tested with a 16-foot straightedge, except that a 10-foot straightedge may be used on vertical curves. The straightedge shall be carefully applies immediately after first compaction by rolling and, from then on, as may be necessary until and after the final compaction of the material in place. The straight edge shall be held in successive positions parallel to the road centerline and in contact with the road surface; and the entire area checked from one side to the other of the pavement. Any irregularities which vary ¼ of an inch from a true finished surface shall be corrected.
Any irregularities which vary ¼ of an inch or more from a true finished surface or 3/8 of an inch or more from a true surface in base or binder courses shall be corrected.

The top course of resurfaced streets which contain manhole covers, water gate boxes, etc., shall be tested as specified hereinbefore except that a ten (10) foot straightedge shall be used. Any irregularities which vary more than ¼ of an inch from a true finished surface shall be corrected.

Irregularities which may develop before the completion of rolling and while the material is still workable, may be remedied by loosening the surface mixture and removing or adding material as necessary. Should any unsatisfactory irregularities or defects remain after final compaction the defective work shall be corrected by removing and replacing with new material, as specified, to form a true and even surface. All minor surface projections, joints and minor honeycombed surfaces shall be ironed out smoothly to grade, as may be directed.

Adequate and approved straightedges shall be furnished and used by the Contractor with supervision and inspection by the Engineer. The Contractor shall provide or designate a competent employee whose duty shall be to carefully use the straightedge to check the compacted surfaces.

The entire cost for furnishing adequate and approved straightedges with the use of same and the repair or removal and replacement of pavement, as may be required by the Engineer, shall be borne by the Contractor as part of the payment made to him for the relevant contract items.

460.68 Opening to Traffic

No vehicular traffic or loads shall be permitted on the newly completed pavement until adequate stability has been attained and the material has cooled sufficiently to prevent distortion or loss of fines. If the climatic or other conditions warrant it, the period of time before opening to traffic may be extended at the discretion of the Engineer.

COMPENSATION

460.80 Method of Measurement

Bituminous concrete 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.

Bitumen used for tack coat, if required by plans or specifications or ordered by the Engineer, will be measured as specified in Subsection 468.80.

Measurement for sealing of longitudinal joints in bituminous concrete shall be by the linear foot of joint sealed.

460.81 Basis of Payment

The tonnage of bituminous concrete, determined as provided above, will be paid for at the contract unit price per ton of the kind of bituminous concrete required, complete in place.

Bitumen as specified herein to be paid for as tack coat, if required, will be paid for at the contract unit price per gallon under the item for Tack Coat, complete in place.

Sealing of longitudinal joints in bituminous concrete will be paid for at the unit bid price and shall be complete payment for sealing the edge of the previously laid mat with hot poured rubberized asphalt sealer and all incidentals required to complete the item.

460.82 Payment Items

Class I Bituminous Concrete Pavement, Type I-I	Ton
Tack Coat	Gallon

TRAFFIC CONTROL

The Contractor shall be responsible for payment of police details required. The Contractor shall be responsible for organizing all necessary police details and/or their cancellation. The Contractor shall pay any costs incurred due to his/her failure to cancel police details. The Contractor shall provide and maintain all traffic control devices necessary to secure their work area in accordance with the Manual on Uniform Traffic Control Devices. The Town may order additional safety measures if insufficient safety devices are being employed. In such instances, the Contractor shall erect in place said safety devices immediately. The cost of all traffic controls and police details shall be included in the unit price of the item stated in the bid proposal.

End

Item 12B – Tack Coat: Bitumen for tack coat shall meet the requirements of Section M3.11.06 of the Standard Specifications:

M3.11.06 Bituminous Materials

The asphalt cement for the mixture shall be the grade designated by the Engineer and shall conform to the requirements of M3.01.0. When required an approved anti stripping additive conforming to M3.10.0 shall be added to the asphalt cement.

Bituminous material for the tack coat on the existing surface, where required and specified, shall consist of either emulsified asphalt, grade RS-1 conforming to M3.03.0 or cutback asphalt, grades RC-70 or RC-250 conforming to M3.02.0.

For any bituminous mixture containing RAP the Contractor shall submit in addition to the Job Mix Formula, the amount and type of asphalt modifier to be added to the mixture to restore the asphalt properties of the RAP to a level that is reasonably consistent with the requirements of current specifications for new asphalt. The restored asphalt when recovered by the Abson Method from the recycled mixture shall have a minimum penetration at 77 degrees F of 50 and a maximum absolute viscosity at 140 degrees F of 8000 poises.

The asphalt modifier shall be a material that is chemically and physically compatible with asphalt cement and have a minimum flash point (COC) of 450 degrees F. If asphalt cement is used as the modifier, it shall be grade AC-5 or AC-10 and shall meet the requirements of M3.01.0.

Method of Measurement:

Tack Coat will be measured per gallon.

Basis of Payment:

The unit bid price is per gallon and shall include all labor, materials and equipment necessary to complete the work.

End

Item 13 – Pulverize and Reshape Existing Bituminous Concrete Pavement: Pulverize and reshape existing bituminous concrete pavement shall meet the following requirements:

Description

This work shall consist of scarifying, pulverizing, reshaping, compacting, and fine grading of the existing bituminous concrete roadway pavement, including berms and shoulders, and base course material to the limits shown on the Contract Drawings and as specified by the Engineer, to form an asphalt stabilized roadway base course.

Materials and Equipment

The asphalt stabilized base course material shall be a uniform mixture of existing pulverized pavement conforming to the following gradation requirements:

Sieve	Percent Passing
2 inch	100
1-1/2 inch	70 – 100
3/4 inch	50 – 85
#4	30 – 55
#50	8 – 24
#200	3 – 10

The above being gradation requirements for M2.01.7 Dense Graded Crushed Stone for Sub-Base of the Standard Specifications.

Where necessary, aggregate of the gradation needed shall be incorporated into the fine grading operation to obtain specified requirements.

It is the responsibility of the Contractor to assure that the equipment/construction methods he intends to use are capable of achieving the gradation specified hereinbefore for the asphalt stabilized base course material.

The attention of Contractors submitting Proposals is directed to that portion of the project specifications which state that the Contractor, if requested, must demonstrate to the Owner or the Engineer the ability of his crew(s) and equipment to comply with the specification requirements and to do so at the rate of production consistent with the time allowed under the contract.

Construction Methods

The Contractor shall begin all operations by saw cutting a straight edge at every transition joint and at every intersecting road. The existing road pavement shall then be scarified beginning and ending at the saw cut lines The scarified pavement shall be mixed with the base course material existing in the roadway foundation. The Contractor shall ensure that all existing pavement within the limits of work is pulverized, including the pavement around manholes, catch basins, castings, gate boxes, service boxes, and any other existing structures. The mixture of scarified pavement and base course material shall be crushed simultaneously by a traveling hammer mill so that the

friction heat generated from the crushing operation will allow the asphalt content of the scarified pavement to coat the fines of the existing base course material. The simultaneous crushing shall blend the asphalt and existing base course material into a homogenous mass, utilizing the asphalt acquired from the existing pavement as a stabilizer which shall bond the material together when compacted. The compacted asphalt stabilized base course resulting from this procedure shall have a thickness equal to twice the depth of the existing bituminous concrete pavement, but not less than six (6) inches.

After the material has been thoroughly worked it shall be shaped and graded to the required lines and grades as directed by the Engineer. Water shall be applied during the operation to ensure optimum moisture content as the time of compaction. The restored cross-section shall be thoroughly compacted into a dense consolidated mass with density of not less than 95% of the maximum dry density of the material as determined by Standard ASTM D-1557, D (Proctor Test) at optimum moisture content. The finished pavement shall be tested for smoothness and accuracy of grade and if any portion is found to lack required smoothness or accuracy, such portion shall be rescarified, reshaped, recompacted, and otherwise manipulated until the required smoothness and accuracy are obtained. The finished surface of the asphalt stabilized base course shall be even and true to the proposed lines and grades determined by the Engineer within a tolerance of ¼ inch above or below the required cross sectional elevations and to a maximum irregularity not exceeding ¼ inch under a 10 foot line longitudinally. The Contractor is responsible for all finish grades.

During this construction operation, care shall be taken by the Contractor to ensure that castings, gate boxes, and service boxes which fall within the limits of the roadway to be pulverized are not damaged. Any castings and/or service or gate boxes damaged as a result of the Contractor's negligence during this operation shall be replaced at his own expense. The Contractor will determine which castings and/or gate and service boxes must be removed and plated or depressed before the pulverization process begins. The work described in this paragraph shall be considered incidental to the project and no additional payment shall be allowed for that work.

During pulverization operations, the Contractor shall assume full responsibility for the protection of all structures and utilities, public or private, including services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, catch basins, manholes, electric and telephone cables, and cesspools. The Contractor shall take measures to protect all such structures and utilities from damage of any kind. Any damage resulting from the Contractor's operations shall be repaired or replaced by the Contractor as directed by the Engineer at the Contractor's expense.

Where directed by the Engineer, asphalt stabilized base course material in excess of the required lines and grades shall be excavated, loaded, and transported to other locations within the project area for use as base course material and/or backfill for various items of work of this contract. Any excess asphalt stabilized base course material not utilized at another location shall be properly disposed of outside of the project area by the Contractor at a location acceptable to the Engineer.
Where additional material is required for the restored cross section to meet proposed lines and grades, this material will be furnished by the owner.

The Contractor shall apply Calcium Chloride for dust control to all non-paved areas once pavement is scarified and reshaped.

Temporary adjusting of driveway aprons and transitions to existing pavement at adjoining streets during the project shall be done by the Contractor under the direction of the DPW Director, or his representative. The work shall be considered incidental to the project and no additional payment shall be allowed therefore.

Measurement

The quantity of pulverized and reshaped existing pavement is to be measured in the number of square yards of pavement pulverized in accordance with these specifications and as directed by the Engineer.

Payment

The unit price per square yard bid for this item, Pulverize and Reshape Existing Bituminous Concrete Pavement shall constitute full compensation for furnishing all labor, materials, tools, and equipment necessary to prepare an asphalt stabilized base course ready for placement of a new bituminous concrete pavement as specified hereinbefore including: scarifying and pulverizing the existing bituminous concrete pavement and base course material, and reshaping, compacting and fine grading the resulting asphalt stabilized base course, and dust control.

No adjustment to the unit price bid shall be allowed for varying the depths of existing bituminous concrete pavement encountered in constructing the asphalt stabilized base course in accordance with these specifications.

Compensation for excavating, loading, transporting and placing at other locations and/or disposing of excess asphalt stabilized base course material as specified hereinabove shall be included in the unit price bid for this item of work and no additional payment shall be allowed therefore.

Removal and resetting of castings and/or gate and service boxes to facilitate the work shall be at the Contractor's own expense and no additional payment shall be made therefore, unless the adjustment is in excess of 12", in such case the Contractor will be paid under Item 16A, 16B, or 17.

Any frames and grates or covers, gate boxes, and/or service box repair sleeves and lids lost or damaged by the Contractor's operations shall be replaced at the Contractor's expense in accordance with Sections 18A, 18B and 19 of these Specifications, and Municipal Standards, and no additional payment will be allowed therefore.

Any utilities and/or structures damaged due to the Contractor's negligence during the construction operations shall be repaired or replaced by the Contractor at his own expense and no additional payment shall be made for any work associated with such repair or replacement.

TRAFFIC CONTROL

The Contractor shall be responsible for payment of police details required. The Contractor shall be responsible for organizing all necessary police details and/or their cancellation. The Contractor shall pay any costs incurred due to his/her failure to cancel police details. The Contractor shall provide and maintain all traffic control devices necessary to secure their work area in accordance with the Manual on Uniform Traffic Control Devices. The Town may order additional safety measures if insufficient safety devices are being employed. In such instances, the Contractor shall erect in place said safety devices immediately. The cost of all traffic controls and police details shall be included in the unit price of the item stated in the bid proposal.

MATERIAL DISPOSAL

The Contractor, at no additional cost to the Town, shall dispose of all material that has been removed from each location.

End

Item 14 – Bituminous Concrete Berm: Bituminous Berm shall meet the requirements of Section 470 of the Standard Specifications and the following detail:

SECTION 470
CLASS I BITUMINOUS CONCRETE BERMS

470.20 General

Bituminous concrete berms shall consist of Class I Bituminous Concrete, Type I-1, in accordance with the details of design as shown on the plans.

Materials

470.40 Composition of Mix

The materials to be incorporated in the mix and the composition of the mix shall conform to the relative requirements of Section M3.11.00 for either top course or dense mix.

Construction Methods

470.60 Foundation

The foundation or bituminous concrete berms shall be as shown on the plans or as directed, conforming to the requirements for the particular type of berm specified.

470.61 Placing of Mixture

The mixture shall be placed and compacted with a machine acceptable and approved by the Engineer for the type of berm required.

Compensation

470.80 Method of Measurement

The quantity of bituminous concrete berms will be measured by the ton complete in place. The quantity shall be determined only by weight slips that have been properly countersigned by the Engineer at the time of delivery.

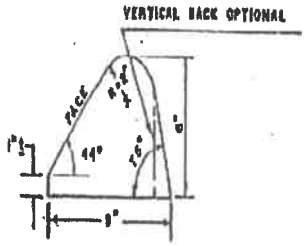
470.81 Basis of Payment

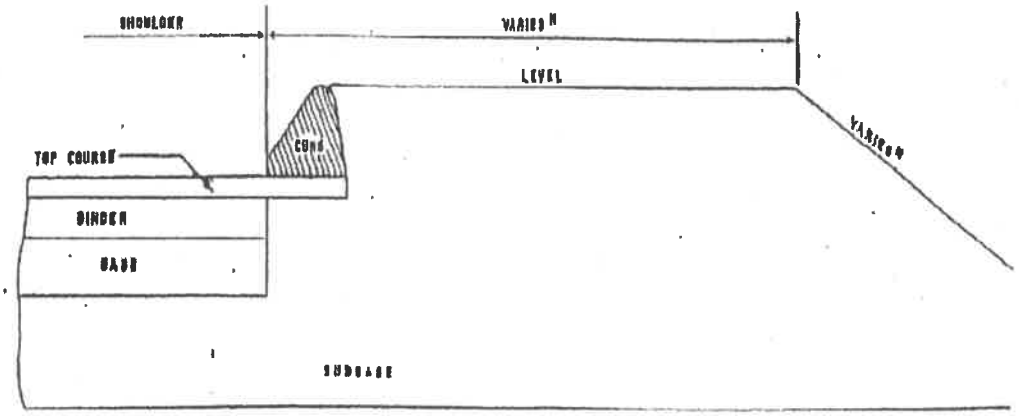
Class I Bituminous Concrete Berms will be paid for at the contract unit price per ton under the item for Class I Bituminous Concrete Berms, complete in place.

470.82 Payment Items

Class I Bituminous Concrete Berm, Type A Ton

BITUMINOUS CONCRETE CURBS





METHOD OF SETTING-TYPICAL FOR ALL TYPES

NOTE:
K SEE TYPICAL SECTIONS FOR PROJECT.

14-2

TRAFFIC CONTROL

The Contractor shall be responsible for payment of police details required. The Contractor shall be responsible for organizing all necessary police details and/or their cancellation. The Contractor shall pay any costs incurred due to his/her failure to cancel police details. The Contractor shall provide and maintain all traffic control devices necessary to secure their work area in accordance with the Manual on Uniform Traffic Control Devices. The Town may order additional safety measures if insufficient safety devices are being employed. In such instances, the Contractor shall erect in place said safety devices immediately. The cost of all traffic controls and police details shall be included in the unit price of the item stated in the bid proposal.

End

Item 15 – By Hand Bituminous Concrete: By Hand Bituminous Concrete, used in driveway, walk areas, and temporary access shall be furnished and placed in accordance with Section 701 of the Standard Specifications:

SECTION 701
SIDEWALKS AND BITUMINOUS CONCRETE DRIVEWAYS

Description

701.20 General

This work shall consist of the construction of bituminous concrete sidewalks and bituminous concrete driveways in accordance with these specifications and in close conformity with the lines and grades shown on the plans or established by the Engineer.

Materials

701.40 General

Materials shall meet the requirements specified in the following Subsections of Division III, Materials:

Gravel Borrow	M1.03.0 (Type b)
Preformed Expansion Joint Filler	M9.14.0
Bituminous Concrete Mixture (* Dense Mix Table A)	M3.11.03

* Maximum size of coarse aggregate shall be 3/8 inch and maximum allowable percentage of wear as determined by the L.A. Abrasion Test (AASHTO – T96) shall be 35%.

Construction Methods

701.60 General

Subgrade – The subgrade for the sidewalks and driveways shall be shaped parallel to the proposed surface of the walks and driveways and thoroughly compacted. All depressions occurring shall be filled with suitable material and again compacted until the surface is smooth and hard.

Foundation – After the subgrade has been prepared, a foundation of gravel shall be placed upon it. After being compacted thoroughly, the foundation shall be at least 8 inches in thickness and parallel to the proposed surface of the walk.

701.62 Bituminous Concrete Sidewalks

Forms – Where walls, curbing or other suitable permanent supports are not present, satisfactory forms shall be installed to assist in securing proper alignment and adequate compaction of the base and surface courses.

Placing Bituminous Concrete – The bituminous concrete walk surface shall be laid in 2 courses to a depth after rolling of 2-1/2 inches. The bottom course shall be 1-1/4 inches in thickness, and its surface after rolling shall be 1-1/4 inches below and parallel to the proposed grade of the finished surface. The top course shall be 1-1/4 inches in thickness after rolling.

Unless otherwise directed, the walk shall have a pitch of 3/16 of an inch per foot of width to provide for proper drainage.

The courses shall be constructed in accordance with the applicable requirements of Section 460 and the following provisions:

Spreading Mixture – The mixture shall be dumped, as needed, in wheel barrows or an approved steel dump sheets outside the areas on which it is to be placed. It shall then be immediately distributed into place by means of shovels and raked into a uniformly loose layer to the full width required and of such depth that, when the work is completed, it shall conform to the grade and surface contour required.

Rolling – The surface shall be rolled with a self-propelled tandem roller weighing not less than 3 tons and not more than 5 tons. In places inaccessible to a power roller, compaction shall be obtained by means of mechanical rammers or by hand tampers weighing not less than 50 pounds and having a tamping face not exceeding 100 square inches.

Testing Surface – When tested with a 10-foot straightedge placed parallel to the center line of the courses, there shall be no deviation from a true surface in excess of ¼ of an inch.

701.63 Bituminous Concrete Driveways

No forms will be required.

Sawcutting and removing existing driveway bituminous concrete – It may be necessary to sawcut and remove existing driveway bituminous concrete to match the new surface. The town will determine the driveways for which this is necessary and the vendor shall perform the necessary work.

Tack coat - When it is required that the existing hardened surface shall be utilized as a base for the new pavement, a tack coat of bituminous material of the kind and grade shown on the plans shall be uniformly applied by mechanical means to the present surface, at the rate of application and by the method indicated on the plans or as directed by the Engineer, immediately prior to laying the bottom course of the new pavement. The tack coat shall be applied by self propelled asphalt distributor with recirculation bars so that the entire surface to be overlaid will be covered.

When and if the surface is in a condition which, in the Engineer's judgment, is unsatisfactory for the direct placement of the surface course; it shall be sprayed as specified above with tack coat in the amount and by the method directed by the Engineer.

When a tack coat is required and its need is found to be the direct fault of the Contractor the surface shall be treated with a tack coat as directed by the Engineer and the entire cost for such treatment shall be borne by the Contractor.

The existing surface shall be cleaned of all foreign matter and loose material and shall be dry before the tack coat is placed.

Placing Bituminous Concrete – The Bituminous Concrete driveway surface shall be laid in 2 courses to a depth, after rolling, of 2-1/2 inches unless otherwise designated on the plans. The bottom course shall be 1-1/4 inches in thickness, and its surface, after rolling, shall be 1-1/4 inches below and parallel to the proposed grade of the finished surface. The top course shall be 1-1/4 inches in thickness after rolling.
Spreading Mixture – The Mixture shall be spread with an approved spreader. In areas not accessible to a spreader, the mix shall be placed as specified for bituminous concrete sidewalks (Section 701.62).

Rolling - The surface shall be rolled with a self-propelled tandem roller weighing not less than 3 tons nor more than 5 tons, or an approved roller as designated by the Engineer.

Testing Surface – When tested with a 10-foot straightedge placed parallel to the center line of the courses, there shall be no deviation from a free surface in excess of ¼ inch.

Compensation

701.80 Method of Measurement

Bituminous concrete walks will be measured by the ton.

Bituminous Concrete Driveways will be measured by the ton.

Gravel borrow will be measured by the cubic yard as specified in Subsection 150.80.

Fine Grading and Compacting (in subgrade areas) will be measured by the square yard.

701.81 Basis of Payment

Bituminous concrete for the walk surface will be paid for at the contract unit price per ton under the item for Bituminous Concrete Walk Surface, complete in place.

Bituminous Concrete Driveways will be paid for at the contract unit price per ton under the item for Bituminous Concrete Driveways, complete in place.

Gravel will be paid for at the contract unit price per cubic yard under Item 7, Gravel Borrow.

701.82 Payment Items

Bituminous Concrete Walk Surface and Bituminous Concrete Driveway Ton

TRAFFIC CONTROL

The Contractor shall be responsible for payment of police details required. The Contractor shall be responsible for organizing all necessary police details and/or their cancellation. The Contractor shall pay any costs incurred due to his/her failure to cancel police details. The Contractor shall provide and maintain all traffic control devices necessary to secure their work area in accordance with the Manual on Uniform Traffic Control Devices. The Town may order additional safety measures if insufficient safety devices are being employed. In such instances, the Contractor shall erect in place said safety devices immediately. The cost of all traffic controls and police details shall be included in the unit price of the item stated in the bid proposal.

End

Item 16A – Catch Basins and Manholes, Adjust to Grade: Catch Basins and Manholes, Adjust to Grade shall be in accordance with Section 220 of the Standard Specifications except that bituminous collars shall be used and that work under this item shall include any change in line or grade of 12 inches or less: and

Item 16B – Catch Basins and Manholes, Remodeling: Catch Basins and Manholes Remodeling shall be in accordance with Section 220 of the Standard Specifications and that work under this item shall include any change in line or grade greater than 12 inches.

SECTION 220
ADJUSTMENT AND REMODELING OF DRAINAGE STRUCTURES

Description

220.20 General

This work shall consist of removing, replacing and adjusting the masonry and casting of present structures, as required, to conform to newly proposed line and grade changes; to change in type of structure, or changes in type of castings; all in accordance with these specifications and in close conformity with the lines and grades shown on the plans or established by the Engineer.

Materials

220.40 Materials

Such materials as will be required shall conform to Subsection 201.40.

Construction Methods

220.50 General

When the line or grade, or both the line and grade of the structure requires a change of 12 inches or less the structure shall be adjusted to line and grade. The masonry shall be removed to such depth as directed by the Engineer and new masonry shall be constructed to conform to the proposed design, and in conformity with the requirements of the applicable parts of Section 201.

When a change in type of structure is required, as converting a basin to a manhole, the masonry shall be removed to such depth as directed by the Engineer and new masonry shall be constructed to conform to the proposed design.

The new masonry construction, replacing of castings, backfilling around structures, and other incidental work shall be as specified in Section 201.

New or existing catch basins and manholes that are designated to be removed and reset or adjusted to line or grade, which are located in roadway pavement areas shall have bituminous concrete collars constructed around them. The bituminous concrete collars shall conform to the details of design shown in the Department's Standards for Bituminous Concrete Collars.

220.61 Protection of Work

The Contractor will be held responsible for the protection of the castings. Any frames, grates or covers damaged in any manner during the progress of the construction shall be replaced with new castings by the Contractor, at his expense.

Prior to the actual removal of the present castings a count will be made and recorded of all castings which are in satisfactory condition for reuse. The Contractor shall supply the number of castings recorded in the initial count, when they are required for reuse or when they are to be removed from the project by the Owner.

220.80 Method of Measurement

Adjustment of structures to line or grade or both line and grade when the change is 12 inches or less, will be measured in place by the unit each, complete and approved.

When the adjustment of structures to line or grade or both line and grade is greater than 12 inches, the structure will be included in the item for structures remodeled.

Structures changed in type will be measured in place by the unit each, complete and approved.

Structures remodeled will be measured in place by the unit each, complete and approved.

Transportation, delivery and installation of all castings will be included in the contract unit bid price for the kind of structure involved.

220.81 Basis of Payment

Adjustment of structures to line and/or grade or both line and grade when the change is 12 inches or less will be paid for at the contract unit price each under the Item 16A Catch Basins & Manholes, Adjust to Grade.

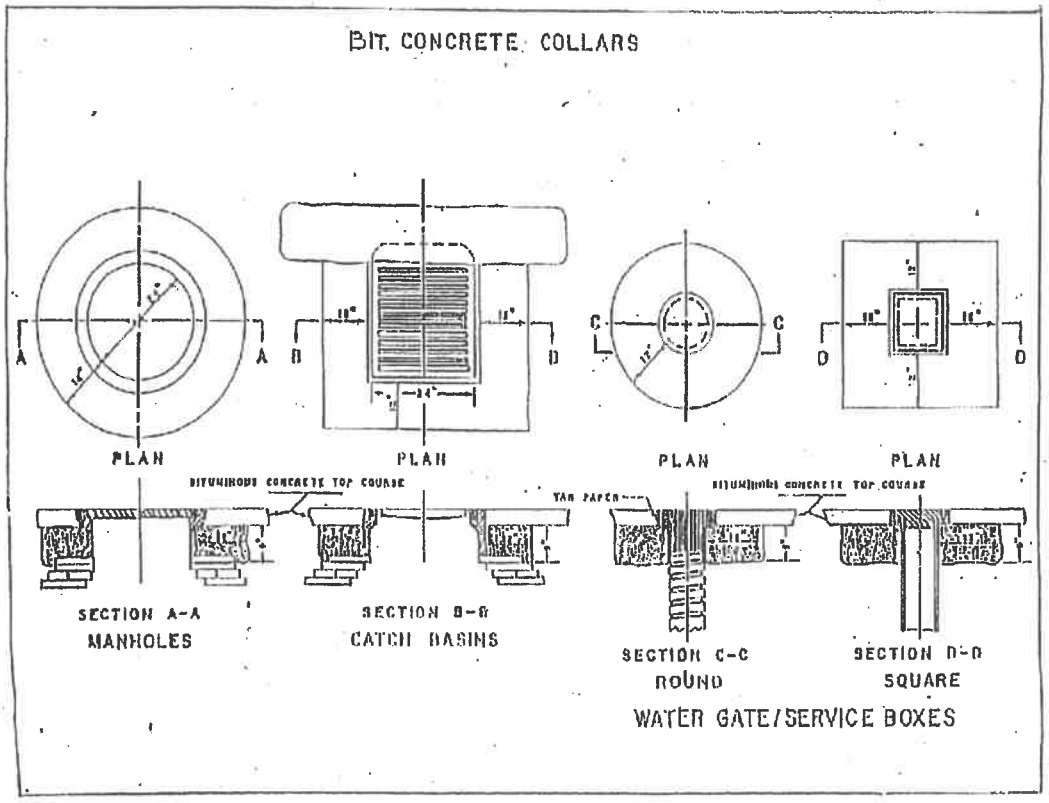
Structures remodeled will be paid for at the contract unit price under the Item 16B Catch Basins & Manholes, Remodeled.

220.82 Payment Items

Structure Adjusted	Each
Structures Remodeled	Vertical feet (VF)

* Pipe or appurtenance size will be included as part of the item number in order to differentiate between the sizes.

Catch basins and manholes which are located in roadway pavement areas shall have bituminous concrete collars constructed around them. The bituminous concrete collars shall conform to the Massachusetts Department of Public Works Construction Standard, except in place of cement concrete masonry, use bituminous concrete binder course material. The bituminous concrete binder shall be rolled and tamped as directed by the Engineer.



TRAFFIC CONTROL

The Contractor shall be responsible for payment of police details required. The Contractor shall be responsible for organizing all necessary police details and/or their cancellation. The Contractor shall pay any costs incurred due to his/her failure to cancel police details. The Contractor shall provide and maintain all traffic control devices necessary to secure their work area in accordance with the Manual on Uniform Traffic Control Devices. The Town may order additional safety measures if insufficient safety devices are being employed. In such instances,

the Contractor shall erect in place said safety devices immediately. The cost of all traffic controls and police details shall be included in the unit price of the item stated in the bid proposal.

MATERIAL DISPOSAL

The Contractor, at no additional cost to the Town, shall dispose of all material that has been removed from each location.

End

Item 17 – Water and Gas Gate Box Adjusted: Water Gate Box Adjusted shall be in accordance with Subsection 301.60H of the standard specifications, except that bituminous concrete collars shall be used.

Setting Gates and Hydrants – Gates and gate boxes shall be set in the pipe lines as directed. Care shall be taken to see that the spigot ends are securely seated in the bell ends. Blocking or supports of a permanent nature shall be placed under each valve to insure against settlement. The blocking or permanent supports shall conform to Owner's Specifications. Each gate shall be tightly closed before being placed in the line and shall remain so until the joints on each side are completely made. Gate boxes shall be set for all gates. They shall be carefully fitted together and to the gate and securely held during backfilling. The earth around them shall be thoroughly tamped in place and the cover set to the finished grade.

New gate and service boxes, and existing gate and service boxes that are designated to be removed and reset or adjusted to line or grade, which are located in roadway pavement areas shall have bituminous concrete collars constructed around them. The bituminous concrete collars shall conform to the details of design shown in the Department's Standards for Bituminous Concrete Collars.

It shall be the responsibility of the Contractor to notify and work with the NSTAR Gas Company on all structures belonging to the Gas Company. Notification shall be in writing or by FAX 24 hours in advance of actual work. No payment shall be made by the Town for adjustments to Gas Company access gates.

Hydrants shall be properly supported and held plumb while the joints are being made and during backfilling. One cubic foot of crushed stone or screened gravel stone shall be placed as directed to drain each hydrant drip. The hydrants shall be satisfactorily braced near the bottom of the stem.

Gates and hydrants for asbestos-cement pipe shall have special ends adaptable to the pipe or necessary adapters shall be furnished.

TRAFFIC CONTROL

The Contractor shall be responsible for payment of police details required. The Contractor shall be responsible for organizing all necessary police details and/or their cancellation. The Contractor shall pay any costs incurred due to his/her failure to cancel police details. The Contractor shall provide and maintain all traffic control devices necessary to secure their work area in accordance with the Manual on Uniform Traffic Control Devices. The Town may order additional safety measures if insufficient safety devices are being employed. In such instances, the Contractor shall erect in place said safety devices immediately. The cost of all traffic controls and police details shall be included in the unit price of the item stated in the bid proposal.

MATERIAL DISPOSAL

The Contractor, at no additional cost to the Town, shall dispose of all material that has been removed from each location.

Method of Measurement:

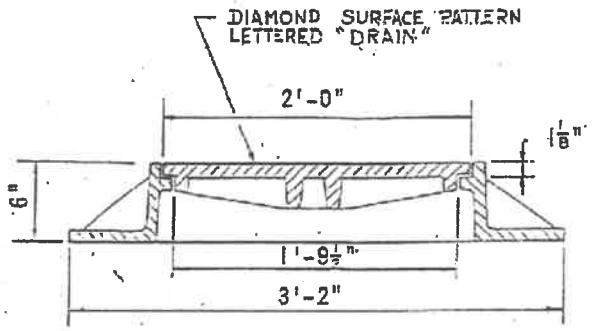
Water Gate Box Adjusted will be measured per each.

Basis of Payment:

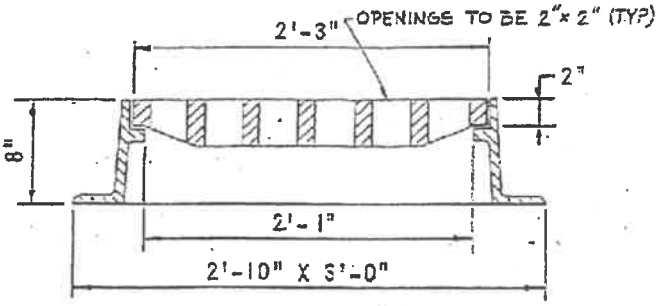
The unit bid price is per each and shall include all labor, materials and equipment necessary to complete the work.

End

Item 18 – Frames and Grates or Covers: Frames and Grates or Covers shall conform to the requirements of AASHTO-M105, Class 30, and to the standard details shown below.



MANHOLE FRAME AND COVER
LeBARON NO. LT 103 OR EQUAL



CATCH BASIN FRAME AND GRATE
LeBARON NO. LF 278 OR EQUAL

19-1

Method of Measurement:

Frames & Grates or Covers will be measured per each.

Basis of Payment:

The unit bid price is per each and shall include all labor, materials and equipment necessary to complete the work.

End

Item 19 – Cement Concrete for Sidewalks (Cubic Yard)

Description

This work shall consist of furnishing cement concrete for the construction of concrete sidewalks and concrete sidewalks at driveways.

Materials

Cement concrete for sidewalks shall be air-entrained Class D (4,000 psi, ¾ inch, 610) in conformance with the requirements of Section M4.02.00 of the Standard Specifications.

M4.02.00 Cement Concrete

Cement concrete shall be composed of specified proportions by weight of cement, aggregates, water and approved additives to form a homogeneous composition.

Cement concrete shall be designated by class according to strength, cement factor, coarse aggregate size, contained air content, slump, and by weight for light weight concrete. The classes of concrete to be used shall be designated on the plans or in the specifications for the particular work. The Contractor will furnish to the Engineer, for approval, a specific job mix formula for the particular uniform combination of materials and sources of supply to be used on each project complete with test results from trail batches. A new job mix formula shall be supplied anytime any source of material has been changed.

Classifications of Concrete Mixes

Class 28-Day Compressive Strength	Minimum Cement Content (Pounds Per Cubic Yard for Coarse Aggregate)		
	1-1/2 inch	3/4 inch	3/8 inch
2500 psi	425	470	520
3000 psi	470	520	565
3500 psi	520	565	610
4000 psi	565	610	660
5000 psi	660	705	760
% Entrained Air (+/- 1.0%)	5.0	6.0	7.0

All concrete shall contain a water reducing admixture.

Concrete which will be subjected to conditions of severe exposure will be minimum Class 4000 psi with air-entrained content of 7.0 +/- 1.0% when so specified.

The use of an approved additive other than air entraining (AASHTO-M154) or water reducer (AASHTO-M194, Type A) shall require written approval of the Engineer and additives shall not

affect a change in the minimum cement content. The minimum cement content can be changed only with the prior written approval of the Engineer.

Method of Measurement:

Cement Concrete for Sidewalks will be measured per cubic yard.

Basis of Payment:

The unit bid price is per cubic yard and shall include all labor, materials and equipment necessary to complete the work.

End

Item 20 – Bituminous Concrete Excavation by Cold Planer (Square Yard)

Description

The work under this Item shall be in accordance with the relevant provisions of Section 120 of the Standard Specifications and as amended herein.

This work shall consist of preparing a foundation surface by way of cold planing. The depth of cold planing shall vary as directed by the Engineer. The surface will be ready to accept a new wearing course of bituminous concrete materials. The foundation surface shall be cold planed to the proper grade and cross-section as shown on the plans or as directed by the Engineer, so as to allow for 1-1/2 inch surface course to be placed. The planed surface shall provide a smooth riding surface, free from gouges, continuous grooves, ridges, oil film and other imperfections of workmanship, and shall have a uniform surface appearance.

Temporary adjusting of driveway aprons during the project shall be done by the Contractor under the direction of the DPW Director, or his representative. Temporary adjusting of driveway aprons will be paid under Item 15 By Hand Bituminous Concrete.

Equipment

The equipment shall have an integral and reclaiming means to immediately remove material being cut from the surface of the roadway and discharge and 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. The 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.

The Contractor shall also have the necessary auxiliary grinding or milling machinery to perform the required trim cutting to reduce the amount of hand labor necessary to prepare the roadway foundation.

Construction Methods

The bituminous surface being cold planed and profiled shall be removed to the depth, width, grade and cross-section as noted on the Contract Drawings or as directed by the Engineer.

Where the new bituminous concrete overlay abuts the existing bituminous pavement, a neat straight line shall be cut with suitable power-driven equipment before commencing with pavement removal for the transition with a cold-planing machine. It is the intention of this operation and the obligation of the Contractor to produce a uniform straight line and smooth transition at the joint between the new and existing pavement. Suitable line controls shall be established by the Contractor to guide the cutting operations.

The Contractor shall protect the cut edges of the pavement from damage and edge breakdown resulting from the construction operations. Any edge breakdown resulting from the Contractor's operations after the final cut is made shall be corrected at the Contractor's expense.

After cold planing the road surface the Contractor shall be responsible for placing bituminous concrete "collars" around any structure that poses a hazard for motorists. This will also protect the structure from possible damage by a passing vehicle prior to the construction of the top course of bituminous concrete pavement. This work shall be accomplished under the direction of the Director of Public Works, or his authorized representative. This work shall be accomplished the same day that the cold planing occurs. The Contractor shall also be responsible for the removal of the collars prior to the construction of the top course of bituminous concrete pavement. Payment for this work shall be covered under item #15, By Hand Bituminous Concrete.

Temporary adjusting of driveway aprons or cross roads at intersections during the project shall be done by the Contractor under the direction of the Director of Public Works, or his authorized representative. Loose material, such as millings, may be used only when approved by the Director of Public Works, or his authorized representative. The Contractor may be required by the Director of Public Works, or his authorized representative, to use bituminous concrete to temporarily adjust driveway aprons or cross roads at intersections if warranted by conditions. The Contractor shall also be responsible for the removal of these materials prior to the construction of the top course of bituminous concrete pavement. Payment for this work shall be covered under item #15, By Hand Bituminous Concrete.

If the road surface is found to have areas with severe cracking, alligator cracking, or any other defect after cold planning that may reflect through the new paved surface, or otherwise compromise the new paved surface, then the Director of Public Works, or his authorized representative, may require the Contractor to cut, remove, and pave those areas with bituminous concrete before the top course of bituminous concrete is constructed. Payment for this work shall be covered under item #15, By Hand Bituminous Concrete.

On roadways with cold plane depth deeper than 2", the Contractor is required to remove and plate existing structures before the cold planing process begins for a more suitable road for cold planing and to increase vehicular safety. This work will be paid for under items 16A, 16B, & 17.

All cold planing wastes shall be properly loaded by the Contractor and hauled to disposal areas.

Any cold planing wastes not loaded onto trucks by conventional methods shall be removed by self-propelled power sweepers, vacuums, hand sweepers or any other method necessary to leave a suitable pavement for a bituminous overlay. Accumulation of the milling wastes on the roadway or sidewalk areas will not be permitted. The pavement shall be left clean and dust free to the satisfaction of the Engineer. This cleaning operation shall take place at the end of every cold planing operation or as directed by the Engineer.

Compensation

The quantity of bituminous concrete excavation by cold planer to be paid for, shall be the actual number of square yards of pavement cold planed.

The unit price per square yard bid for Item 20, Bituminous Concrete Excavation by Cold Planer shall include full compensation for establishing edge line control; for protection of cut edges; for

cold-planing; for disposal of excess material; and for furnishing all materials, labor, equipment, tools, supplies and incidentals necessary to complete the work.

Removal and resetting of castings and/or gate and service boxes to facilitate the work shall be at the Contractor's own expense and no additional payment shall be made therefore, unless the adjustment is in excess of 12", in such case the Contractor will be paid under Item 16A, 16B, or 17.

TRAFFIC CONTROL

The Contractor shall be responsible for payment of police details required. The Contractor shall be responsible for organizing all necessary police details and/or their cancellation. The Contractor shall pay any costs incurred due to his/her failure to cancel police details. The Contractor shall provide and maintain all traffic control devices necessary to secure their work area in accordance with the Manual on Uniform Traffic Control Devices. The Town may order additional safety measures if insufficient safety devices are being employed. In such instances, the Contractor shall erect in place said safety devices immediately. The cost of all traffic controls and police details shall be included in the unit price of the item stated in the bid proposal.

MATERIAL DISPOSAL

The Contractor, at no additional cost to the Town, shall dispose of all material that has been removed from each location.

End

Item 21 – Shoulder Grading (square yard)

Description

The Contractor shall be responsible for grading the shoulder of roads that were recently paved/reconstructed. The Contractor shall supply all equipment, personnel, and labor to transport the necessary materials from the supplier, spread, grade, and seed (if necessary) the edge of road to blend with the new edge of road and existing, abutting conditions. The Town will pay for the necessary materials to accomplish the work; however, it is the Contractor's responsibility to transport the materials from the supplier to the site.

TRAFFIC CONTROL

The Town shall be responsible for payment of police details required. The Contractor shall be responsible for organizing all necessary police details and/or their cancellation. The Contractor shall pay any costs incurred due to his/her failure to cancel police details. The Contractor shall provide and maintain all traffic control devices necessary to secure their work area in accordance with the Manual on Uniform Traffic Control Devices. The Town may order additional safety measures if insufficient safety devices are being employed. In such instances, the Contractor shall erect in place said safety devices immediately. The cost of all traffic controls shall be included in the unit price of the item stated in the bid proposal.

Method of Measurement:

Shoulder Grading will be measured per square yard.

Basis of Payment:

The unit bid price is per square yard and shall include all labor, materials and equipment necessary to complete the work.

End

Item 22 – Latex Modified Asphalt Emulsion Stone Chip Seal (Square Yard)

Description

The work performed under this specification shall include all necessary labor, material and equipment to place stone seal surface treatment with emulsion and latex. It is requested that this process be bid with three options: (1) Single application of either 3/8 or ½ inch diameter stone, (2) Double application using ½ inch and 3/8 inch diameter stone in two lifts, and (3) Single application of Rubber Chip. An asphalt shim shall be installed as directed by the Director of Public Works, or his designated agent, and shall be paid for under Item 22D.

Performance

The Town of Hopkinton will not award this item or work unless the Contractor furnishes satisfactory evidence of his/her ability and experience to perform this work, and that he/she has sufficient capital and equipment to enable him/her to prosecute the work successfully and to complete it within the time frame to be stipulated by the Engineer. The Contractor shall not sublet any portion of this work, and will own all equipment used to complete such work. As part of the bid, the Contractor must submit a list of six similar and successfully completed jobs, whose relevance to the proposed job shall be deemed by the Engineer. The name, address, and telephone number of a contact person involved with each of these projects must be included so they can be investigated prior to the award of the contract.

Should the successful bidder for this work perform in an unsatisfactory manner as determined by the Engineer, the remaining work may be offered to the next lowest responsible and responsive bidder without rebidding the entire amount of work remaining.

Materials

Emulsion – Anionic R.S.-2 or Cationic C.R.S.-2 conforming to ASTM D977-98 or D2397-98, respectively.

Latex Rubber Additive – It is required that the latex be added at the bulk emulsion facility. All latex shall be added in-line through an approved in-line mixing apparatus before entering the colloid mill. The latex may be added to the soap line or the A.C. line, as necessary, to ensure complete and balanced blending. Unless otherwise directed, the latex will be added at the rate of 3 gallons per one hundred gallons of emulsion. The emulsion manufacturing plant must be open to inspection by the Engineer.

Stone Chip – Crushed stone shall consist of durable crushed stone consisting of the angular fragments obtained by breaking and crushing quarry stone; and free from dust and a detrimental quantity of soft, thin, flat or other objectionable pieces.

3/8 inch Crushed Stone - % by Weight Passing Through

Gradation:	½ inch	100%
	3/8 inch	65% - 90%
	#4	0% - 8%
	#8	8% - 4%
	#16	0% - 2%

1/2 inch Crushed Stone - % by Weight Passing Through

Gradation:	5/8 inch	100%
	½ inch	85% - 100%
	3/8 inch	15% - 45%
	#4	0% - 15%
	#8	0% - 5%

Stone shall be treated at a rate of 1-1/2 to 3 gallons per ton using a cutback asphalt MC-30, MC-70 or asphalt emulsion CSS-1H, or SS-1H mixed thoroughly with a front end loader or by plant mixer. Sufficient stone shall be treated and stockpiled on location for the entire project. A paved stockpile area for the stone will be allocated by the Town of Hopkinton Department of Public Works Highway Division at their yard located at 83 Wood Street. The emulsion manufacturer may amend or substitute the above specifications after testing of the stone for compatibility with the emulsion. All substitutions, amendments or deletions must be made in writing to the Contractor for inspection and approval by the Engineer.

Equipment

The equipment used by the Contractor shall include, but not be limited to, one or more of the following:

Aggregate Spreading Equipment – Aggregate Spreading Equipment shall be self-propelled, that can be adjusted to control and spread accurately the given amounts of cover aggregate per square yard. It shall be mounted on pneumatic tires and with a width of spread not less than ten (10) feet. Cut-off plates shall be provided to permit the width of spread to be reduced in increments of six (6) inches or one (1) foot from the maximum width of twelve (12) feet to six (6) inches. The unit shall be capable of spreading aggregate of maximum one and one half (1-1/2) inch size at any rate desired from three (3) to fifty (50) pounds per square yard of surface covered without contact of the wheels of the spreader with the treated surface until the aggregate has been spread. A hopper of a minimum capacity of five (5) tons, integral with the spreader unit, shall be provided to receive the aggregate from transporting vehicles, without the wheels of such vehicles coming in contact with the uncovered bitumen of the road surface. Two (2) conveyor belts shall supply aggregate from the hopper to the element which spreads the aggregate on the road's surface. Power shall be provided to propel the spreader at a uniform rate of movement on gradients up to six (6) percent.

Self-Propelled Roller – Self-Propelled Roller shall be of the rubber tire and/or rubber coated vibratory drum type suitable for rolling bituminous pavements and shall have a total compacting

width of not less than sixty (60) inches. The gross weight shall be adjustable within the range of two hundred (200) to three hundred (300) pounds per linear inch of compacting width. The operating weight shall be as directed by the Engineer.

Distributor – The Distributor(s) shall contain suitable mechanical circulating and heating appliances which will provide a uniform approved temperature of the entire mass of the material. It shall be capable of applying bituminous material in accurately measured quantities at any rate from one-tenth (1/10) to two (2) gallons per square yard of surface with any length of spray bar ordered to a maximum of twenty (20) feet, and maintaining a uniform rate of distribution for the entire load regardless of change in gradient or direction of the road. The design and size of spray nozzles and construction of the pressure system shall provide a sufficient and uniform fan-shaped spray throughout the entire length of the moveable spray bar at all times while operating, which spray will be uniform and completely cover the portion of surface receiving the application. Each distributor shall be equipped with the following:

A tachometer, front and rear
A thermometer
A measuring stick graduated in gallons
A strainer in the discharge line to prevent clogging
Attached hand gun and hose
Pouring Pot

Other Equipment – Trucks and rubber tired front end loader(s) in sufficient number to supply the chip spreader at all times.

Construction Methods

The Town of Hopkinton Department of Public Works Highway Division will sweep the roadway pavement surface clean prior to the start of stone sealing operations. This sweeping operation will be performed before work begins with a power sweeper. It is the responsibility of the Contractor to coordinate all sweeping and sealing operations with the Engineer.

Immediately before application of the liquid asphalt, the Contractor shall clean all surfaces with a power blower equipped with a minimum eight (8) horsepower engine.

The Contractor shall place tar paper shields over the existing catch basin, manhole and water gate castings prior to application of the liquid asphalt and remove them immediately after final rolling. The tar paper shields shall be discarded in an approved container and shall be properly disposed of by the Contractor out of the project area.

Sealing operations shall be performed only when the existing pavement surface is dry; there is no fog; there is no rain predicted for the work day; and the atmospheric and pavement temperatures are above 45 degrees F and rising.

Sealing operations over bituminous pavements and/or leveling course(s) constructed under this contract shall NOT commence until the pavements and leveling courses have been complete and in place for a minimum of thirty (30) calendar days.

The latex modified asphalt emulsion shall be sprayed uniformly at the rate of three-tenths (0.3) to three and one-half tenths (0.35) of a gallon per square yard. The temperature of the emulsion at the time of application shall be not less than one hundred thirty degrees Fahrenheit (130 F), nor more than one hundred eighty degrees Fahrenheit (180 F).

Stone chips shall be spread at the rate of twenty (20) to twenty-five (25) pounds per square yard over the emulsion immediately after application. *No bituminous material shall be down more than ten (10) minutes before it is covered with seal aggregate.* Spreading shall be done uniformly with aggregate spreading equipment. The exact quantities of materials, both emulsified asphalt and stone, may be varied as directed to meet specific field conditions without adjustment to the contract unit price.

Rolling shall be done with self-propelled rubber tire and/or rubber-coated vibratory drum type rollers *immediately* following the application of cover aggregate. The rollers shall be operated at a speed that will not displace the aggregate. Rolling shall continue until the aggregate is uniformly distributed and keyed into the bituminous material as directed.

The Contractor shall provide and maintain close supervision and inspection by qualified personnel to ensure that rates of application and amount of rolling are being adhered to.

The Contractor will remove and dispose of excess aggregate and aggregate swept from the streets by means of a power sweeper after completion of the stone seal application. Excess aggregate removal operations are not scheduled to commence until three days after application of the chip seal. Excess aggregate so removed will become the property of the Contractor and the Contractor must dispose of properly. Excess aggregate deliverd and not used will remain the property of the Contractor and the Contractor must dispose of properly.

Measurement and Payment

Latex modified asphalt emulsion stone chip seal will be measured by the square yard and the quantity paid for shall be the number of square yards as determined by the Engineer by the actual area of pavement covered, complete in place and accepted.

The unit price per square yard bid for item #22A & 22B, Latex Modified Asphalt Emulsion Stone Chip Seal, shall constitute full compensation for furnishing all labor, materials, tools and equipment necessary for the chip seal cover as specified hereinbefore, including latex modified asphalt emulsion, crushed stone aggregate, sweeping and disposing of excess aggregate, and for all other work incidental thereto.
Rubber Chip

SPECIFICATIONS FOR ASPHALT-RUBBER SURFACE TREATMENT WITH AGGREGATE COVER

STRESS ABSORBING MEMBRANE - SAM
STRESS ABSORBING MEMBRANE INTERLAYER - SAMI
0395

This specification covers requirements for materials, manufacture, and application of asphalt-rubber as a stress absorbing membrane (SAM) or a stress absorbing membrane interlayer (SAMI). This specification shall consist of an application of a combined reacted mixture of hot paving grade asphalt and ground rubber followed immediately with a cover material.

1.0 BASE MATERIALS

1.1 Asphalt Cement

Asphalt cement for the asphalt-rubber mixture shall be PG 58-28 OR PG 64-28, complying with the requirements of appropriate state or local specifications. The grade selected shall be based on laboratory testing by the asphalt-rubber supplier.

1.2 Anti-stripping Agent

If required by the job-mix formula to produce appropriate water resistance, an anti-stripping agent that is heat stable and approved for use by the Agency shall be incorporated into the asphalt-rubber material at the dosage required by the job-mix formula (up to 1.0% by weight of asphalt). It shall be added to the asphalt cement prior to blending with the granulated rubber.

1.3 Rubber

The granulated rubber shall be vulcanized rubber product from the ambient temperature processing of scrap, pneumatic tires. The granulated rubber shall meet the following gradations: No substitutions will be accepted.

Sieve Size	% Passing
2.00 mm, (#10)	100
1.18 mm, (#16)	90 – 100
0.60 mm, (#30)	25 – 75
0.18 mm, (#80)	0 - 20

The use of rubber of multiple types from multiple sources is acceptable provided that the overall blend of rubber meets the gradation requirements. The length of the individual rubber particles shall not exceed 3 mm, (1/8"). The rubber shall be accepted by certification from the rubber supplier.

1.4 Aggregate

The aggregate shall conform to the requirement of appropriate state or local specifications for crushed stone. Crushed gravel stone will not be permitted. Percentage of wear as determined by the Los Angeles Abrasion Test (AASHTO-T96) shall be a maximum of 30. The aggregate shall be pre-heated to a temperature between 93°C and 149°C, (200°F and 300°F), and be pre-coated with 0.4% to 0.8% (by weight of aggregate) of AC-10 or AC-20 asphalt cement prior to application. It is recommended that the gradation of the aggregate meet the following limits:

Sieve Size	% Passing – Nominal Size	
	9.5 mm, (3/8")	12.5 mm, (1/2")
15.8 mm, (5/8")	100%	100%
12.5 mm, (1/2")	100%	85 – 100%
9.5 mm, (3/8"	85 – 100%	15 – 45%
4.75 mm, (#4)	0 – 25%	0 – 15%
2.36 mm, (#8)	0 – 5%	0 – 5%
0.30 mm, (#50)	0 – 2%	0 – 2%
0.075 mm, (#200)	0 – 2%	0 – 2%

1.5 Materials Testing

A minimum of 60 days prior to construction the Agency or contractor (if asphalt-rubber supplier is acting as a sub-contractor) shall send a representative sample of the asphalt cement and the aggregate proposed for use to the asphalt-rubber supplier for testing. Testing for stripping and asphalt content to determine and assure that appropriate characteristics are achieved when blended with the granulated rubber will be performed.

2.0 ASPHALT-RUBBER MIXING AND REACTION

2.1 Mixing and Reaction

The percent of rubber shall be 20 +/- 3% as indicated by the mixture design for specific project requirements by weight of total mixture, that is, by total weight of asphalt cement, plus granulated rubber. The exact granulated rubber content shall be determined by the mix design submitted by the asphalt-rubber supplier based on laboratory testing.

The temperature of the asphalt shall be between 177°C and 218°C, (350°F and 425°F), at the time of addition of the granulated reclaimed rubber. The asphalt and rubber shall be combined and mixed together in a blender unit and reacted in the distributor for a period of time as required by the mix design. The temperature of the asphalt-rubber mixture shall be above 163°C, (325°F), during the reaction period.

2.2 Delays

When a job delay occurs after full reaction, the asphalt-rubber may be allowed to cool. The asphalt-rubber shall be reheated slowly just prior to application, but not to a temperature exceeding 191°C, (375°F). An additional quantity of granulated rubber or additive not exceeding 3% by volume of the hot asphalt-rubber mixture may be added after reheating.

2.3 Viscosity

Viscosities shall be run, by the asphalt-rubber supplier, on each blended load of asphalt-rubber using a Haake-type field viscometer. The viscosity of the final product shall be in the range of 1,000 to 3,500 centipoise.

3.0 EQUIPMENT

3.1 Mechanical Blender

A mechanical blender for proper proportioning and thorough mixing of the asphalt-cement and granulated rubber is required. This unit shall be equipped with: an asphalt totaling meter (liters or gallons); a flow rate meter (liters per minute or gallons per minute); a positive displacement auger to feed the rubber properly to mixing chamber at the specified rate; and a static motionless mixer. Blender will have a separate rate; and a static motionless mixer. Blender will have a separate asphalt cement feed pump and finished product pump to maximize production. Blender shall be capable of providing 100% proportional mix at any given time during the blending cycle and documentation from the manufacturer, supporting this, shall be submitted to the awarding authority if requested.

3.2 Distributor Truck

On projects exceeding 31.8 metric tons, (35 tons), of liquid asphalt rubber, at least two pressure-type bituminous distributor trucks in good condition will be required. The distributor shall be equipped with an internal heating device capable of heating the material evenly up to 218°C, (425° F); an internal mixing unit capable of maintaining a proper mixture of asphalt cement and granulated rubber; have adequate pump capacity to maintain a high rate of circulation in the tank and to spray the asphalt-rubber at a viscosity of 1,000 to 3,500 centipoise; have adequate pressure devices and suitable manifolds to provide constant positive cut-off to prevent dripping from the nozzles. Distributor shall be equipped with an electronically controlled computerized compensation unit for controlling application rates at various width and speed changes. The application unit shall have electronic controls and a digital read out installed and operated from the inside of the cab of the distributor. The distribution bar on the distributor shall be fully circulating. Any distributor that produces a streaked or irregular distribution of the material shall be promptly repaired or removed from the project.

Distributor equipment shall include a tachometer, pressure gauges, volume measuring devices, and a thermometer for reading temperature of tank contents. Controls for spray bar shall be located in cab of truck, for controlling width and rate of spray of product. It shall be so constructed that uniform applications may be made at the specified rate per square meter with a tolerance of plus or minus 0.2 liters per square meter, (0.05 gal. / sq. yd).

A "bootman" shall accompany the distributor and ride in a position so that all spray bar nozzles are in his full view and readily accessible for unplugging.

3.3 Hauling Equipment

Trucks for hauling cover material shall be rear discharge conveyor-fed or "live bottom" trucks and shall be equipped with a device to lock onto the hitch at the rear of the chip spreader to prevent aggregate spillage.

Sufficient hauling vehicles will be available to ensure continuous operation of the distributor and chip spreader.

3.4 Aggregate Spreader

The aggregate spreader shall be hydrostatically driven and self propelled. It must be equipped with a hydraulically controlled variable adjustable head that is capable of spreading stone in widths from 1.4 to 5.4 meters, (4.5 to 18 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 on any grade from 0 - 6%. The spreader shall be equipped with an integral hopper with a minimum capacity of 4.5 metric tons, (5 tons), of stone which shall be filled by trucks in a manner which ensures that the truck tires never come in contact with 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.

3.5 Pneumatic-Tired Roller

Two (2) self-propelled, multiple wheel, pneumatic-tired rollers shall be used and shall weigh between 6.5 and 10.9 metric tons, (7 and 12 tons), each roller shall have a total compacting width of at least 1.4 meters, (56 inches), have a minimum tire pressure of 414 kPa, (60 psi), and be equipped with a watering system.

3.6 Steel-Wheel Roller

One (1) self-propelled, 2-axle (tandem) steel-wheel roller shall be used and shall weigh between 7.3 and 10.9 metric tons, (8 and 12 tons), and be equipped with scrapers, wetting pads and watering system. Combination pneumatic and steel drum-type rollers are acceptable, as one unit only.

4.0 CONSTRUCTION PROCEDURES

4.1 Preparation

Potholes, other areas of pavement failure, and major depressions in the existing pavement surface shall be repaired by the owner with asphalt concrete. A leveling course shall be placed on planed, milled or existing surface by the owner, if required.

Immediately prior to application of the asphalt-rubber, the surface shall be thoroughly cleaned by sweeping. Contractor shall be responsible for covering all utility irons just prior to application and uncovering after aggregate is spread.

4.2 Seasonal and Weather Limitations

The asphalt-rubber shall not be applied when weather conditions are unfavorable to obtaining a uniform spread. Construction shall proceed only when the atmospheric temperature is at least 10°C, (50°F), and rising. No water shall be present on the road surface.

4.3 Application

The asphalt-rubber mixture shall be applied at a temperature of 170° to 215°C, (338°F to 419°F), at a rate of 2.5 to 2.9 liters per square meter, (0.55 to 0.65 gallons per square yard). Exact rate to be determined by the aggregate gradation, traffic volume and pavement condition.

Longitude joints shall be reasonably true to line and parallel to centerline. Where any construction joint occurs, the edges shall be broomed back and blended so there are no gaps and the elevations are the same, and free from ridges and depressions. Longitudinal joints shall be overlapped from 10.2 to 15.2 centimeters, (4 to 6 inches).

During application, adequate provision shall be made to prevent marring and discoloration of adjacent pavements, structures, vehicles, foliage or personal property.

4.4 Aggregate Application

The application of aggregate shall follow as close as possible behind the application of the hot asphalt-rubber which shall not be spread further in advance of the aggregate spread that can be immediately covered. Construction equipment or other vehicles shall not drive on the uncovered asphalt-rubber. The hot pre-coated aggregate shall be spread uniformly by a self-propelled spreader at a rate of spread directed by the Agency, generally between 16.3 to 21.7 kilograms per square meter, (30 to 40 pounds per square yard). Any deficient areas shall be covered with additional material.

4.5 Rolling

A minimum of three (3) rollers shall be used for aggregate compaction into the hot asphalt-rubber. Two rollers must be pneumatic-tired and one must be steel-wheel. Rolling shall commence immediately following spread of aggregate. There shall be at least three coverage's by the pneumatic-tired rollers to embed the aggregate particles firmly into the asphalt-rubber. A coverage shall be as many passes as are necessary to cover the entire width being spread with a pass being one movement of a roller in either direction. Additional coverage of the steel-wheel roller will follow. Water shall be applied to the tires or wheels as required to limit sticking of the asphalt-rubber and aggregate to the rollers.

4.6 Sweeping

When the maximum amount of aggregate has been embedded into the asphalt-rubber and the pavement has cooled, all loose material shall be swept or otherwise removed. This will be done at a time and in a manner which, will not displace any embedded aggregate or damage the asphalt-rubber. Pre and post sweeping is the responsibility of the owner unless bid as a separate bid item.

5.0 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

5.1 SAM OR SAMI

Stress Absorbing Membrane or Stress Absorbing Membrane Interlayer will be measured by the square meter / square yard and shall be the actual number of square meters / square yards applied. Price per square meter / square yard shall be full compensation for all labor, materials and equipment required to complete the work in accordance with these specifications.

5.2 Other Work

Measurement of and payment for other work such as patching, leveling, sweeping and crack sealing shall be bid as separate item(s).

PRICE ADJUSTMENT

A fluctuating price will be required for this bid to allow for price adjustments based on the period price of asphalt cement posted by the Mass. Highway Department. The price adjustment will be based on the variance in price for the asphalt cement component only from the Base Price to the Current Period Price, NEW METHOD, as posted on the Mass. Highway Website: www.mass.gov/ (Type in asphalt prices in search box.)

Base price for this bid will be $_____ per ton of asphalt cement.

Single Stone Seal:
Current Price minus Base Price divide by 238 (Gal. in ton emulsion) x .66 (asphalt in Gal. emulsion) x .42 Gal. / SY (application rate) =Adjustment per square yard.

Double Stone Seal:
Current Price minus Base Price divide by 238 (Gal. in ton emulsion) x .66 (asphalt in Gal. emulsion) x .80 Gal. / SY (application rate) =Adjustment per square yard.

20% Asphalt Rubber Surface Treatment:
Current Price minus Base Price divide by 235 (Gal. Asphalt in ton) x .8 (Asphalt minus rubber content) x .60 Gal. / SY (application rate) = Adjustment per square yard.

The town of Hopkinton seeks a single Contractor to perform Bituminous Concrete Shim and Rut Filling, Item 22D, to ensure a homogeneous finished product, proper coordination of work, and quality control. As such, the cost of this item will be added to Items 22A, 22B, and 22C and an award will be made for those combined totals. The town of Hopkinton will not award a separate contract solely for Item 22D. Item 22D shall be measured by the ton and the quantity paid for shall be the number of tons on the weight slips of actual material in place properly countersigned by the Engineer.

The Town of Hopkinton will award one single contract to one contractor for item 22A combined with 22D, one single contract to one contractor for item 22B combined with item 22D, and one single contract to one contractor for item 22C combined with item 22D. The award will be based on the lowest price for the combined total of the bid price for each item multiplied by the estimated quantity. Quantities are only estimated for bidding purposes and actual quantities will vary. Actual quantities will be billed by the successful bidder for the actual unit prices bid.

TRAFFIC CONTROL

The Contractor shall be responsible for payment of police details required. The Contractor shall be responsible for organizing all necessary police details and/or their cancellation. The Contractor shall pay any costs incurred due to his/her failure to cancel police details. The Contractor shall provide and maintain all traffic control devices necessary to secure their work area in accordance with the Manual on Uniform Traffic Control Devices. The Town may order additional safety measures if insufficient safety devices are being employed. In such instances, the Contractor shall erect in place said safety devices immediately. The cost of all traffic controls and police details shall be included in the unit price of the item stated in the bid proposal.

End

Item 23 – Wood Beam and Post Guard Rail (Linear Foot)

Description

This work shall consist of the construction of wood beam and post guard rail in accordance with these specifications, the details shown on the enclosed sketch plan and as directed by the Town of Hopkinton Department of Public Works Highway Division Manager. The construction of the guard rail shall include the assembly and erection of all component parts and materials complete at the locations designated by the Town of Hopkinton Department of Public Works Division Manager.

Material

Wood rails and posts shall be of select structural Douglas Fir or select structural Longleaf Yellow Pine, well seasoned, straight grained, free of loose and unsound knots, and of the following nominal dimensions and finish:

Post – 8 inch by 6 inch by 6 feet long/rough sawn

Rails – 4 inch by 12 inch by 12 feet long (typical)/planed smooth.
4 inch by 12 inch by 6 feet 4 inches long (outer rail)/planed smooth

Wood rails and posts shall be treated in conformance with AASHTO-M133, except that only material meeting current EPA and DEP regulations will be allowed. The minimum rate of retention of preservative will be 0.60 pounds per cubic foot for post and 0.40 pounds per cubic foot for rails.

All bolts, nuts and washers used in assembling and erecting the rail shall be galvanized and conform to the requirements of ASTM-A307-97. Galvanizing shall be by the hot-dip process to conform to the requirements of AASHTO-M111. Bolts, nuts, and washers are to be of the 5/8 inch diameter size.

Construction Methods

Posts shall be set plumb in hand or mechanically dug holes, then backfilled with acceptable material placed in layers and thoroughly compacted. Spacing of posts shall be 6 feet as noted on the details.

Rails shall be erected so as to form a smooth continuous rail conforming to the dimensions shown on details. All bolts shall be drawn up as tightly as possible without damaging (splintering) the surrounding wood surface.

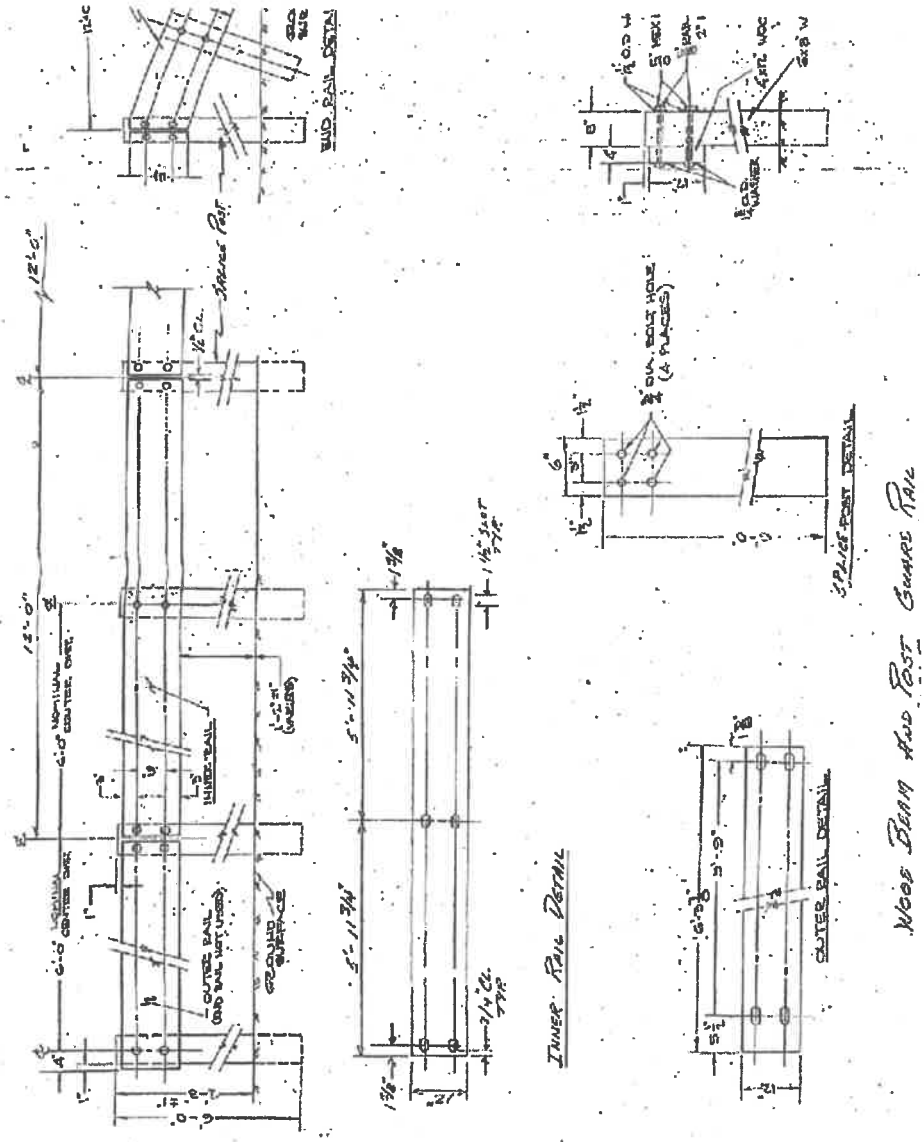
Measurement and Payment

Wood beam and post guard rail will be measured along the top edge of the rail element from center to center of end posts. The unit price bid for item #24 shall be full compensation for all labor, materials, tools, and equipment required to construct the wood guard rail with posts and

hardware including, but not limited to, all excavation and backfilling operations and materials, assembly of the various guard rail elements, and all other items incidental thereto.

TRAFFIC CONTROL

The Contractor shall be responsible for payment of police details required. The Contractor shall be responsible for organizing all necessary police details and/or their cancellation. The Contractor shall pay any costs incurred due to his/her failure to cancel police details. The Contractor shall provide and maintain all traffic control devices necessary to secure their work area in accordance with the Manual on Uniform Traffic Control Devices. The Town may order additional safety measures if insufficient safety devices are being employed. In such instances, the Contractor shall erect in place said safety devices immediately. The cost of all traffic controls and police details shall be included in the unit price of the item stated in the bid proposal.


END RAIL DETAIL
INNER RAIL DETAIL
WOOD BEAM AND POST GUARD RAIL
SPLICE POST DETAIL
OUTER RAIL DETAIL
GROUND SURFACE

End

Item 24 – Steel Beam and Wood Post Guard Rail (Linear Foot) and

Item 25 – Terminal Section (Each)

Description

This work shall consist of the construction of steel beam with wood post guard rail in accordance with these specifications, the details shown on the attached detail sheets and as directed by the Town of Hopkinton Department of Public Works Highway Division Manager. The construction of the guard rail shall include the assembly and erection of all component parts and materials complete at the locations designated by the Town of Hopkinton Department of Public Works Highway Division Manager.

Materials

Materials, construction, methods and compensation shall be in conformance with the applicable provisions and requirements of Section 601 of the Standard Specifications.

Section 601
Highway Guard

Description

601.20 General

This work shall consist of the construction of highway guard rail and highway guard rail end treatments in accordance with these specifications and in close conformity with the lines and grades shown on the plans or established by the Engineer.

Highway Guard Steel Beam, Type SS – The construction of guard rail shall include the assembly and erection of all components parts and materials complete at the locations shown on the plans, or as directed.

Materials

601.40 General

Materials shall meet the requirements specified in the following Subsection of Division III, Materials:

Steel Beam Highway Guard	M8.07.0
Steel Beam Highway Guard End Treatments	M8.07.1

The Contractor shall provide the Engineer with copies of the Manufacturer's documentation including installation drawings for end treatments for all guard rail components and end

treatments indicating acceptance by the Federal Highway Administration as meeting the requirements of NCHRP Report 350, Test Level 3, for the conditions at the intended location. The Contractor shall provide a detailed list of all of the system components for maintenance purposes. No work shall commence under these items until the Engineer has received all documentation.

Construction Methods

601.50 Posts

Posts shall be set plumb, in hand or mechanically dug holes, or driven, then backfilled with acceptable material placed in layers and thoroughly compacted.

If driven, the post shall be provided with suitable driving caps and equipment used which will prevent battering or injury of posts. Posts damaged or distorted as a result of driving shall be removed and replaced with approved posts.

Guard posts to be set in areas of proposed bituminous concrete surfacing shall be erected prior to laying the bituminous concrete.

601.61 Spacing of Posts

Posts shall be spaced 6 feet 3 inches as measured from center of post to center of post.

601.62 Steel Beam Rail

The rail shall be erected so as to form a smooth continuous rail conforming to the required line and grade. The rail element shall be spliced by lapping in the direction of the traffic or by other approved methods. The holes in the rail element nearer the posts shall be slotted to facilitate erection and to permit expansion. The rail shall make full contact at each splice.

All bolts, except where otherwise required at expansion joints shall be drawn tight. Bolts through expansion joints shall be drawn up as tightly as possible without being too tight to prevent the rail elements from sliding past one another longitudinally.

601.63 Guard Rail End Treatments

The flared end and tangent end treatments shall be capable of being connected to the standard steel beam highway guard W beam-single faced or a special steel beam highway guard transition beam. The tangent end treatment shall be in line with and connected to the standard steel beam highway guard W beam-single faced or a steel beam highway guard transition beam without needing an offset or flare function properly.

The end treatment system shall be installed in accordance with the manufacturer's specifications and recommendations.

Compensation

601.80 Method of Measurement

Steel beam highway guard will be measured along the top edge of the rail element from center to center of end posts.

Single faced steel beam terminal sections will be considered as a unit.

Guard rail posts, offset brackets and panels will be measured as a unit each when paid individually. Single and double faced steel beam terminal sections will be measured as a unit each.

Buried ends will be measured as a unit 37.5 feet in length.

Leading and trailing ends will be measured as individual units 25 feet in length.

Bridge rail to highway guard rail transitions will be measured as individual units 20 feet 8 inches in length.

Steel beam highway guard Flared Eng Treatments and Tangent End Treatments will be measured as a unit for installation of the total length of need from the end to the center of the last post of steel beam highway guard.

601.81 Basis of Payment

Highway guard will be paid for at the contract unit price per linear foot.

Single faced steel beam terminal sections will be paid for at the contract unit price each under items for Terminal Section.

The construction of all highway guard rail items shall include the assembly and erection of all components, parts and materials complete at the intended locations.

Highway guard rail will be paid for at the contract price per linear foot, complete in place, including posts, brackets, panels and connecting hardware.

Guard rail posts, offset brackets and panels will be paid for at the contract unit price each.

Buried ends, leading and trailing ends and bridge rail to highway guard rail transitions will be paid for at the contract unit price each.

Steel beam highway guard flared and treatments and tangent end treatments will be paid for at the contract unit price each.

M8.07.0 Steel Beam Highway Guard Type SS

The materials for this work shall conform to the following requirements:

Fabrication – All metal work shall be fabricated in the shop. No punching, cutting or welding shall be done in the field. Holes for special details in exceptional cases may be made in the field when approved but such holes shall be drilled. Field punching may be permitted, if approved by the Engineer, after it has been demonstrated that such punching will not result in damage to the surrounding metal. Fabrication shall include all operations such as shearing, cutting, punching, forming, drilling, milling, bending, welding and riveting. Components of bolted assemblies shall be galvanized separately before assembly. When it is necessary to straighten any sections after galvanizing, such work shall be performed without damage to the zinc coating.

Galvanized surfaces that are abraded or damaged at any time after application of the zinc coating shall be repaired by thoroughly wire brushing the damaged areas and removing all loose and cracked coating after which the cleaned areas shall be painted with two (2) coats of paint, high zinc dust content, conforming to the requirements of M7.04.11.

Steel Posts – Steel posts and channel members for anchor posts shall be fabricated from new structural steel sections conforming to the dimensions and design shown on the plans. All posts, including end anchor posts, and anchor posts for use at driveways, shall be steel "H" sections.

All holes drilled in the galvanized post sections shall be cleaned and painted, before bolts are installed, with two coats of paint, high zinc dust content, conforming to M7.04.11.

Structural steel shall conform to the requirements of AASHTO-M183, except that copper bearing steel will not be required. Galvanizing shall meet the requirements of AASHTO-M111. Each member shall be stamped with AASHTO designation and the amount of galvanizing per square foot of surface area.

Posts may be of the conventional Hot Rolled Structural Shape or of the Welded Type as approved by the Town of Hopkinton Department of Public Works.

Wood Posts – The Posts and Offset Blocks shall be rough sawn (unplaned) with nominal dimensions as indicated on the plans and with tolerances of 1 inch in length and ¼ inch in width and thickness. All holes in the Posts and Offset Blocks shall be drilled prior to the application of the preservative.

The timber used for Wood Posts and Offset Blocks shall be of the same species. The Stress Grade shall be 1000 psi or more, extreme fiber in bending.

Testing for Stress Grade shall be in accordance with the Northeastern Lumber Manufacturers Association Inc., Northern Hardwood and Pine Manufacturers Association, Inc., Southern Pine Inspection Bureau, West Coast Lumber Inspection Bureau, or the Western Wood Products Association, Standard Grading Rules. If another Timber Association is proposed, it must receive the approval of the Town of Hopkinton Department of Public Works before it will be considered or accepted.

Prior to treatment, all Posts and Offset Blocks shall be seasoned, conditioned and completely machined in accordance with AWPA Standard M1.

Posts and Offset Blocks shall be treated with either pentachlorophenol, chromated copperarsenate (CCA) or ammoniacal copper arsenate (ACA). Treatment shall be full length under pressure by the empty-cell or full-cell process in accordance with AWPA Standards C1 and C4. The preservatives, minimum retention thereof and applicable AWPA standards are listed in the following table:

Preservative	Retention lbs/cu ft of Post	AWPA Standards
Pentachlorophenol	0.60	P8, P9
ACA	0.60	P5
CCA, Type A	0.60	P5
CCA, Type B	0.60	P5
CCA, Type C	0.60	P5

When water borne preservatives are used, temperature requirements, as stipulated in Section 2.221 of AWPA Standard C1, shall be closely regulated. Species of wood that are difficult to penetrate shall be incised in accordance with Section 2.2 of AWPA Standard C6. No unnecessary cutting of treated posts will be allowed after treatment. All posts and blocks with surfaces damaged by cutting, drilling or any other cause shall be field treated with a hot preservative solution in accordance with AWPA Standard M4. Preservatives used for this purpose shall be the same as those used for the basic treatment and shall conform to the same specifications.

Certificates of compliance and certificates of inspection for each lot of Wood Posts and Offset Blocks must be presented before any Posts are installed. The certificates bearing the approved inspection agencies verification must specify the species.

The certificates of inspection and compliance do not signify mandatory acceptance of the entire lot. The Engineer still has the option of rejecting Posts or Offset Blocks (included in any particular lot) that he may consider sub-standard because of unsound knots and shakes, excessive checking or other defects that may be detrimental to the structural integrity of the posts or offset blocks.

The fabricator shall retain a Department approved Agency to inspect and certify the treated Posts and Blocks in accordance with these specifications and AWPA Standard M2.

All treated Posts shall be marked in accordance with AWPA Standards M1 and M6. (The mark is to include the identifying lot number). The Post shall also be stamped with the Inspector's identification. The mark is to be placed on an upper side of the Post and located so that it is not obstructed by the offset blocks, rails, or any other appurtenances. The Inspector's stamp shall be legibly hammer-stamped on the head of the post, in accordance with AWPA Standard M2 and the above.

Rail Element and Terminal Sections – The steel rail element and terminal sections shall conform to AASHTO-M180, Class A, (base metal thickness = 0.105 in.), Type 2 with the following additions:

The length of the railing shall be according to the plans and not over 13 feet 6-1/2 inches.

Each end of the steel rail for every stretch of guard shall be fitted with a terminal section as shown on the plans. The terminal section shall have the same splice detail as the rail.

The projecting heads of all connection and splice bolts shall be rounded and shallow so that no appreciable projection will obstruct a vehicle sliding along the rail.

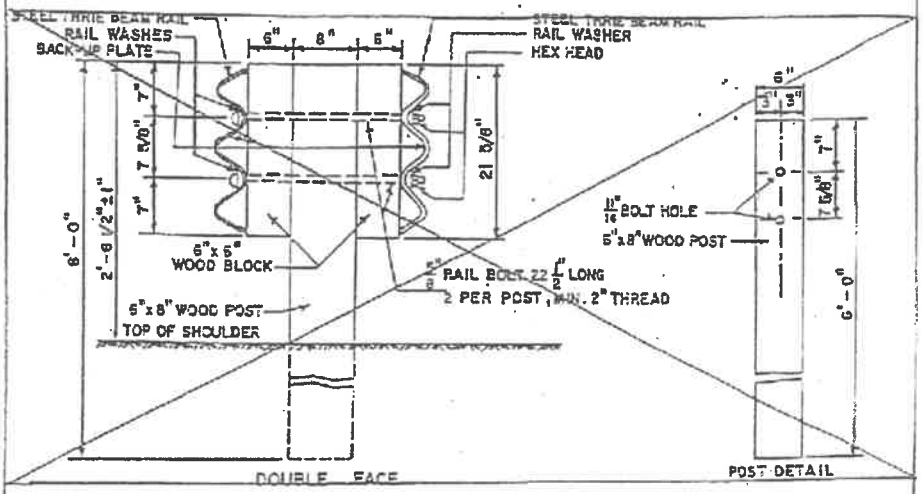
Where railing is to be constructed on curves which have a radius of 150 feet or less, the rail elements shall be fabricated to the proper radius with the road side of the rail either concave or convex as required.

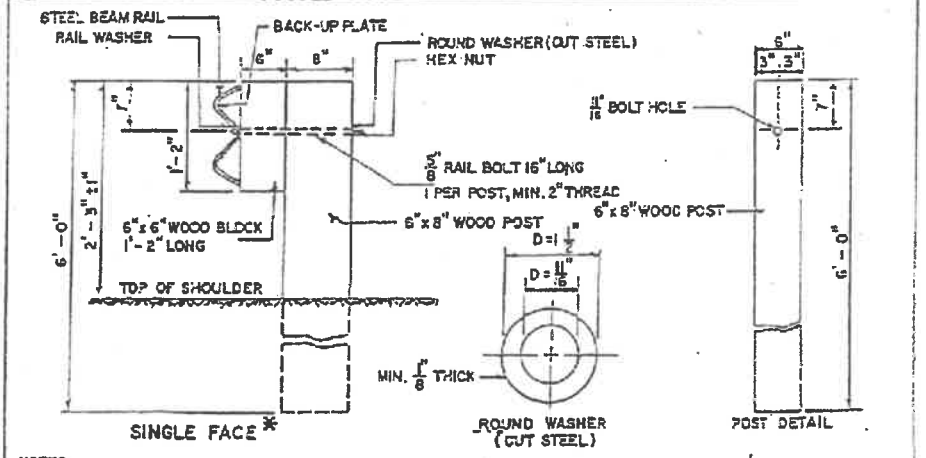
Bolts, Nuts and Washers – All bolts, nuts and washers used in the assembling and erecting the rail shall conform to the requirements of ASTM-A307 and shall be of the size shown on the plans. They shall be designed to develop the required joint strength. Galvanizing shall be by the hot-dip process to conform to the requirements of AASHTO-M111.

TRAFFIC CONTROL

The Contractor shall be responsible for payment of police details required. The Contractor shall be responsible for organizing all necessary police details and/or their cancellation. The Contractor shall pay any costs incurred due to his/her failure to cancel police details. The Contractor shall provide and maintain all traffic control devices necessary to secure their work area in accordance with the Manual on Uniform Traffic Control Devices. The Town may order additional safety measures if insufficient safety devices are being employed. In such instances, the Contractor shall erect in place said safety devices immediately. The cost of all traffic controls and police details shall be included in the unit price of the item stated in the bid proposal.

STEEL BEAM GUARD RAIL WITH WOOD POST



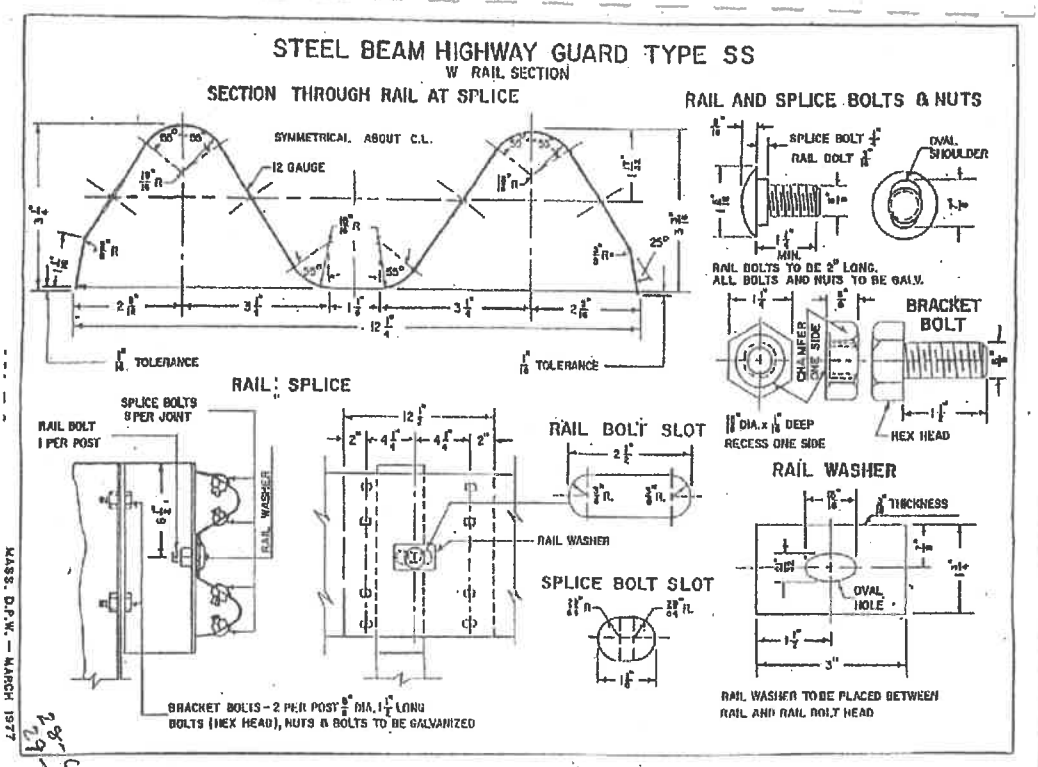


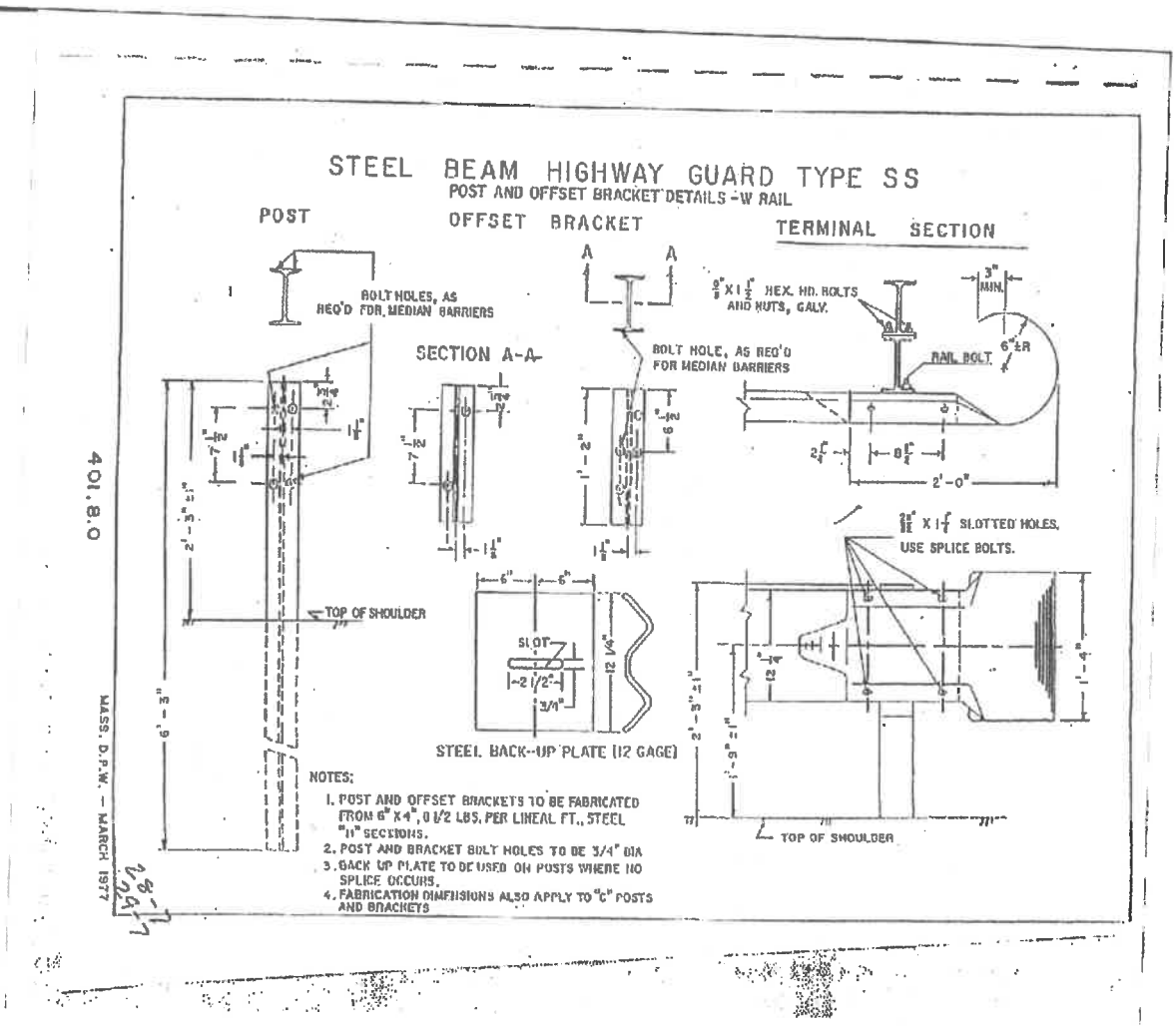
NOTES:
1. POST SPACINGS, APPROACH END & TRAILING ENDS ARE SIMILAR TO THOSE SHOWN FOR STEEL "H" POSTS.
2. ALL NUTS, BOLTS & WASHERS ARE TO BE GALVANIZED.
3. ALL MATERIALS & DIMENSIONS OF FITTINGS NOT SHOWN ABOVE ARE TO BE SIMILAR TO THE CORRESPONDING ELEMENTS SHOWN FOR STEEL "H" POSTS.
4. TERMINAL SECTIONS FOR DOUBLE FACE & SINGLE FACE GUARD RAIL ARE SHOWN ON DRAWING 401.6.0, 401.8.0.
5. ALL SPLICES ARE TO BE MADE AT POSTS.
6. FOR THE TYPE OF WOOD AND WOOD TREATMENT, OTHER MATERIALS & METHODS OF CONST., SEE SPECIFICATION & SPECIAL PROVISIONS.
7. FOR DETAILS OF SLOT IN BACK-UP PLATE SEE 401.7.0 AND 401.8.0.
8. BACK-UP PLATE IS PLACED BEHIND RAIL ELEMENTS AT INTERMEDIATE POSTS i.e. NON SPLICE LOCATION.
9. STEEL POSTS ARE TO BE SUBSTITUTED AT THE SAME BID PRICE, FOR CERTAIN WOOD POSTS IN A WOOD POST RUN WHEN CEMENT CONCRETE EMBEDMENT IS REQUIRED.

*. WHEN PLACED IN MEDIAN CHANGE TO THRIE BEAM, AND CHANGE HEIGHT TO 2'-6 1/2" ±1".

28-5
29-5

MASS. D.P.W. — MARCH 1977


STEEL BEAM HIGHWAY GUARD TYPE SS
W RAIL SECTION
SECTION THROUGH RAIL AT SPLICE
SYMMETRICAL ABOUT C.L.
12 GAUGE
TOLERANCE
TOLERANCE
RAIL AND SPLICE BOLTS & NUTS
SPLICE BOLT
RAIL BOLT
OVAL SHOULDER
MIN.
RAIL BOLTS TO BE 2" LONG.
ALL BOLTS AND NUTS TO BE GALV.
BRACKET BOLT
CHAMFER ONE SIDE
DIA. x DEEP RECESS ONE SIDE
HEX HEAD
RAIL SPLICE
SPLICE BOLTS 8 PER JOINT
RAIL BOLT 1 PER POST
RAIL WASHER
RAIL BOLT SLOT
RAIL WASHER
SPLICE BOLT SLOT
RAIL WASHER
THICKNESS
OVAL HOLE
RAIL WASHER TO BE PLACED BETWEEN RAIL AND RAIL BOLT HEAD
BRACKET BOLTS - 2 PER POST DIA. LONG
BOLTS (HEX HEAD), NUTS & BOLTS TO BE GALVANIZED
MASS. D.P.W. - MARCH 1977


STEEL BEAM HIGHWAY GUARD TYPE SS
POST AND OFFSET BRACKET DETAILS - W RAIL
POST
OFFSET BRACKET
TERMINAL SECTION
BOLT HOLES, AS REQ'D FOR MEDIAN BARRIERS
SECTION A-A
BOLT HOLE, AS REQ'D FOR MEDIAN BARRIERS
5/8" X 1 1/2" HEX. HD. BOLTS AND NUTS, GALV.
3" MIN.
RAIL BOLT
6" ±R
2'-0"
13/16" X 1 1/4" SLOTTED HOLES, USE SPLICE BOLTS.
TOP OF SHOULDER
SLOT
STEEL BACK-UP PLATE (12 GAGE)
NOTES:
1. POST AND OFFSET BRACKETS TO BE FABRICATED FROM 6" X 4", 8 1/2 LBS. PER LINEAL FT., STEEL "H" SECTIONS.
2. POST AND BRACKET BOLT HOLES TO BE 3/4" DIA
3. BACK UP PLATE TO BE USED ON POSTS WHERE NO SPLICE OCCURS.
4. FABRICATION DIMENSIONS ALSO APPLY TO "C" POSTS AND BRACKETS
MASS. D.P.W. - MARCH 1977
401.8.0

End

Item 26 – Rehabilitation of Existing Bituminous Concrete Sidewalk

Description

The work under this item shall consist of sawcutting existing bituminous concrete sidewalk, removing the existing sidewalk surface, and furnishing new bituminous concrete for construction of sidewalks. Existing limits of sidewalk shall be maintained, unless otherwise noted by the Town. Limits of sidewalk rehabilitation shall be determined by the Town.

Architectural Access Board Tolerances

The Contractor is hereby notified that they are ultimately responsible for constructing all sidewalks in strict compliance with the current AAB/ADA rules, regulations and standards.

All construction elements herein are controlled by 521CMR – Rules and Regulations of the Architectural Access Board.

The AAB Rules and Regulations specify maximum slopes and minimum dimensions required for construction acceptance. There is no tolerance allowed for slopes greater than the maximum slope. There is also no tolerance allowed for dimensions less than the minimum dimensions.

Materials

Bituminous concrete shall conform to the requirements of Section M3.11.00 of the Standard Specifications.

Bitumen for tack coat shall conform to the requirements of Section M3.11.06 of the Standard Specifications.

Construction Methods

Existing bituminous concrete sidewalks shall be sawcut at all limits determined by the Town. Sawcuts shall be performed in accordance with Section 482 of the Standard Specifications.

After sawcuts are performed, the existing bituminous concrete sidewalk shall be removed and legally disposed of, in accordance with Section 120 of the Standard Specifications. The Contractor shall then notify the Town to schedule an inspection of the existing sub-base material. If the existing sub-base material is determined, by the Town, to be inadequate for re-use, than it shall be replaced with 8 inches of new gravel. New gravel shall be in accordance with, and paid for under Item 7 within this Contract. Gravel shall be compacted and graded in accordance with Section 170 of the Standard Specifications. Sidewalks shall have a 1.5% pitch sloped towards the roadway for drainage, unless otherwise noted by the Town.

Bituminous concrete sidewalk surface shall be installed in accordance with Section 701 of the Standard Specifications.

Bituminous concrete sidewalk surface shall be placed in 2 courses to a total compacted depth of 2.5 inches. The base course shall be 1.5 inches compacted thickness. The top course shall be 1.0 inch compacted thickness.

Prior to placement of the top course, bitumen for tack coat shall be applied on the base course, along all sawcut lines. Bitumen for tack coat shall be applied at a rate of 0.05 GAL/SY.

The courses shall be constructed in accordance with the applicable requirements of Section 460 of the Standard Specifications and the following provisions:

Spreading Bituminous Concrete – The bituminous concrete shall be dumped, as needed, in wheel barrows or by an approved method. The bituminous concrete shall then be immediately distributed into place, by an approved method, of such depth that, when the work is completed, the bituminous concrete shall conform to the grade, depth, and surface contour required.

Rolling – The new sidewalk surface shall be rolled with a self-propelled tandem roller weighing not less than 1-1/2 tons and not more than 5 tons. In places inaccessible by a power roller, compaction shall be obtained by means of mechanical rammers or by hand tampers weighing not less than 50 pounds and having a tamping face not exceeding 100 square inches.

Testing Surface – When tested with a 10-foot straightedge placed perpendicular to the center line of the courses, there shall be no deviation from a true surface in excess of ¼ of an inch.

Measurement & Payment

Rehabilitation of Existing Bituminous Concrete Sidewalk shall be measured for payment by the square foot of new sidewalk installed.

Rehabilitation of Existing Bituminous Concrete Sidewalk shall be paid for at the respective contract unit price per square foot, which price shall include sawcutting existing pavement, removal of existing bituminous sidewalk, grading and compaction of gravel, bituminous concrete, bitumen for tack coat, and all equipment, labor, testing, and incidental costs to complete the work.

Gravel, if used, shall be measured and paid for under Item 7- Gravel, within this contract.

Traffic Control

The Contractor shall be responsible for payment of police details required. The Contractor shall be responsible for organizing all necessary police details and/or their cancellation. The Contractor shall pay any costs incurred due to his/her failure to cancel police details. The Contractor shall provide and maintain all traffic control devices necessary to secure their work area in accordance with the Manual on Uniform Traffic Control Devices. The Town may order additional safety measures if insufficient safety devices are being employed. In such instances, the Contractor shall erect in place said safety devices immediately. The cost of all traffic controls and police details shall be included in the unit price of the item stated in the bid proposal.

End

Item 27 – Deleted Item

End

Item 28 – Infra-Red Patching of Semi-Permanent Repairs

Infra-red patching of semi-permanent repairs shall meet the following specifications:

The area to be heat treated shall be swept clean.

An approved infra-red heater shall be applied long enough to soften the pavement to a depth of two (2) inches, without causing oxidation.

The softened area shall be raked to a workable condition. Additional bituminous concrete wearing surface shall be applied at a temperature of 260 degrees F (300 degrees F when the air temperature drops below 40 degrees F) as required to achieve grade level.

The heated area shall be sufficiently compacted to achieve a density approximately equal to the surrounding pavement.

Asphalt emulsion (RS-1-260 or equivalent) shall be applied, using a brush or spray, to seal the joint between the heated material and the surrounding pavement. The surface of the emulsion seal shall be covered with sand or stone dust. The excavation area shall be left in a neat and presentable condition.

TRAFFIC CONTROL

The Contractor shall be responsible for payment of police details required. The Contractor shall be responsible for organizing all necessary police details and/or their cancellation. The Contractor shall pay any costs incurred due to his/her failure to cancel police details. The Contractor shall provide and maintain all traffic control devices necessary to secure their work area in accordance with the Manual on Uniform Traffic Control Devices. The Town may order additional safety measures if insufficient safety devices are being employed. In such instances, the Contractor shall erect in place said safety devices immediately. The cost of all traffic controls and police details shall be included in the unit price of the item stated in the bid proposal.

Method of Measurement:

Infra-Red Patching of Semi-Permanent Repairs will be measured per square foot.

Basis of Payment:

The unit bid price is per square foot and shall include all labor, materials and equipment necessary to complete the work.

End

Item 29 – Cold-In-Place Recycling of Asphalt Pavement

ITEM 1

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

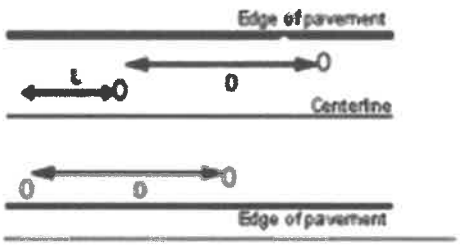


Diagram 1a – Staggered (offset) sampling.

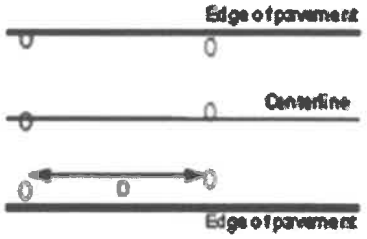


Diagram 1b – Crossroad sampling.

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

a) At least 15% of the cores shall be in the shoulder, if the shoulder is getting recycled. b) 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

a) At least 25% of the cores shall be in the shoulder, if it is getting recycled, or

within 3 feet of gutter.

b) At least 25% of the cores shall be on or within 3 feet of centerline.

Residential Streets

a) 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.

b) 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).

c) 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 2

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 3

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:

Sieve Size	Percent Passing
1 ½"	100
1"	95 to 100

b) Stabilizing Agent (***ITEM 4***)

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 5***)

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.

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) in a single pass to the depth shown on the plans, specified in the contract or directed by the Engineer. The minimum mechanical power rating of this machine shall be 900 horsepower.

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 2 (a).

4) Use of a heating device to soften the pavement is not permitted.

d) Asphalt Foaming and Mixing Unit

1) Processed RAP shall be mixed with the foamed asphalt stabilizing agent and water in a mixing unit which shall be the milling machine cutter housing. The system shall be capable of producing a uniformly blended, homogenous recycled pavement mixture.
2) The foamed 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 machine shall have two separate systems for adding foamed asphalt and water with each system having a full-width spray bar with a positive displacement pump interlocked to the machine's ground speed to insure that the amount of foamed asphalt and water being added is automatically adjusted with changes to the machine's forward speed.
4) Each additive shall have its own spray bar equipped with individual valves capable of being turned off as necessary to minimize foamed asphalt and water dosing overlap on subsequent passes.
5) The foaming system must meet the following requirements:

- The foamed asphalt shall be produced at the spray bar in individual expansion chambers into which both the hot asphalt binder and water are injected under pressure through individual and separate orifices that promote atomization. The rate of addition of water into the hot asphalt binder shall be kept at a constant rate (percentage by mass of asphalt binder) by a computerized system.
- The machine shall be equipped with an inspection test nozzle that produces a representative sample of foamed asphalt. Test nozzle shall be an exact replica of the foamed asphalt spray bar nozzles.
- The system shall have an electrical heating system capable of maintaining the temperature of all foamed asphalt flow components at the optimal foaming temperature and above 320°F. ▪ The machine shall utilize a single asphalt binder feed line installed between the recycler and

the supply tanker. Circulating systems that incorporate a return line to the supply tanker shall not be used.

- The foam injection system must have a continual self-cleaning feature enabled during the process to ensure all injectors are operational.

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.

5) Any trimming and clearing of low tree branches and brush removal that may impede operations or mobilization of CIR vehicles and equipment will be the responsibility of the owner.

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 6 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) Keyways and Miscellaneous Milling as a Day Rate

Cutting keyways and miscellaneous milling to provide a smooth transition from the new hot mix paving over the CIR layer to the existing pavement at side roads, intersections, project limits, etc. are to be performed by the paving contractor. In the event the Owner prefers this keyway and miscellaneous milling to be done by the CIR contractor, this work will be performed and paid on a daily rate basis in accordance with bid ***ITEM 15***, "Keyways and Miscellaneous Milling." The daily rate shall include all milling equipment and labor to perform the work but exclude trucking (by Owner or to be paid by the hour, bid ***ITEM 6***) and shall exclude traffic control.

n) 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.

6. 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 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.

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. 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, and the years of said work.

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 12 – Structure Rebuild for every foot beyond the initial one foot.

ITEM 13
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 14

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

ITEM 6 "Trucking" at a unit rate of per hour, per truck.

TRAFFIC CONTROL

The Contractor shall be responsible for payment of police details required. The Contractor shall be responsible for organizing all necessary police details and/or their cancellation. The Contractor shall pay any costs incurred due to his/her failure to cancel police details. The Contractor shall provide and maintain all traffic control devices necessary to secure their work area in accordance with the Manual on Uniform Traffic Control
Devices. The Town may order additional safety measures if insufficient safety devices are being employed. In such instances, the Contractor shall erect in place said safety devices immediately. The cost of all traffic controls and police details shall be included in the unit price of the item stated in the bid proposal.

End

Item 30 – Modified Asphalt Crack Sealing

A. SCOPE OF WORK

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 with modified asphalt as described below, and vegetation removal and sterilization of cracks where necessary.

B. MATERIAL

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

(1) The asphalt binder shall consist of a blend of neat asphalt binder and chemically modified crumb rubber (CMCR) that meets the following specifications:

- PG 64-34 or PG 70-34 after modification
- Viscosity of not more than 3PaS at 300 degrees F
- Modification at a minimum shall consist of 5% CMCR and the maximum particle size for the CMCR shall be 80 mesh (#80 sieve)
- The performance grade of the neat asphalt binder shall not exceed a PG 58-XX
- The asphalt supplier shall provide testing for the neat asphalt binder and modified asphalt binder in accordance with AASHTO M320

(2) Fiber reinforcing materials shall be short-length polyester fibers having the following properties:

Length*	0.25in.+0.02
Elongation at Break; ASTM D2256-90	38%
Melting Point; ASTM D3418-82	>475 degrees F (246 degrees C)
Crimps/Inc; ASTM D3937-90	None
Cross Section	Round
Denier; ASTM D1577-90	4.5 Nominal dpf
Tensile Strength; ASTM D2256-90	>70,000 psi
Diameter	0.0085 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

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.

C. EQUIPMENT

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

1) Air Compressor: Air compressors shall be portable and 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.

(2) 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.

(3) Melter: The unit used to melt or maintain 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 degrees 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 degrees F. and 550 degrees F. and must be capable of pumping an 8% fiber content blend.

D. 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 degrees F. and 3,000 foot/second velocity to eliminate all vegetation, dirt, moisture and seeds. All debris removed from the cracks shall be removed from the pavement surface immediately by means of a power sweeper, hand or air broom.

(b) General: No crack sealant material shall be applied in wet cracks or where frost, snow or ice is present nor when ambient temperature is below 25 degrees F.

E. PREPARATION AND PLACEMENT OF SEALANT

(1) The asphalt-fiber compound shall be thoroughly mixed for a minimum of one hour before application can begin. Whenever material is added to the tank, sealing operations shall be suspended for 1 hour to allow for the minimum required mixing time. Minimum application temperature shall be 320 degrees F.

(2) 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 boiler slag aggregate shall be broadcast over the cracks to prevent sealant from being picked up.

F. 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 engineer in charge.

G. PERFORMANCE

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

(2) 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").

(3) The contractor must submit the following with his bid proposal:

- A list of six (6) jobs which he has successfully completed, giving the name and the address of these projects so they can be investigated prior to the award of the contract.
- The trade name of the crack sealant the bidder intends to use.
- The manufacturer of the crack sealant the bidder intends to use.

(4) The Owner will require the contractor to successfully perform a 200 foot test strip in the field prior to commencing work under the contract.

(5) Manufacturer's certificate of material compliance will be furnished to the Owner certifying conformance to the above material specifications.

H. MEASUREMENT AND PAYMENT

(1) The unit of measure for the work may be any of the following:

- Gallon
- Linear Foot
- Square Yard
- Day
- Lump Sum

The unit of measure will be determined by the awarding authority and set forth in the bid documents. Payment shall be at the unit price bid in the proposal and shall be full compensation for furnishing, preparing, placing the material specified and furnishing of all labor, equipment and incidentals for the satisfactory completion of this item.

TRAFFIC CONTROL

The Contractor shall be responsible for payment of police details required. The Contractor shall be responsible for organizing all necessary police details and/or their cancellation. The Contractor shall pay any costs incurred due to his/her failure to cancel police details. The Contractor shall provide and maintain all traffic control devices necessary to secure their work area in accordance with the Manual on Uniform Traffic Control Devices. The Town may order additional safety measures if insufficient safety devices are being employed. In such instances, the Contractor shall erect in place said safety devices immediately. The cost of all traffic controls and police details shall be included in the unit price of the item stated in the bid proposal

End

Item 31 – DELETED ITEM

End

Item 32 – Deleted Item

End

Item 33 – Street Sweepings Disposal

Disposal of street sweepings shall conform to the following specifications:

1. The Contractor shall submit two per ton prices for:
    a. Disposal of street sweepings delivered by the town of Hopkinton, and
    b. Pick up of street sweepings at the DPW garage on Wood Street (loaded by the DPW) and hauled by the vendor to its disposal site and disposal of street sweepings
2. The Contractor shall take ownership and responsibility for the appropriate disposal for street sweepings when delivered or loaded by the DPW.
3. The Contractor shall have proper authorization to receive street sweepings.
4. All street sweepings shall be disposed of an in appropriate manner.

Method of Measurement:

Street Sweeping Disposal will be measured per ton.

Basis of Payment:

The unit bid price is per ton and shall include all labor, materials and equipment necessary to complete the work.

End

Item 34 – Catch Basin Cleaning and Material Disposal

Article 1. Summary of Work and Contract Record
1.1 Provide Catch Basin Cleaning and Inspection for approximately 2,600 catch basins on various Town roads owned by the Town.

Article 2. Technical Specifications
2.1 The Bidder should list prices as "Catch Basin Cleaning and Material Disposal" as specified on Bid Schedule.

2.2 The Contractor shall verify, after completion of work, the exact number of catch basins cleaned and the volume of spoils removed.

2.3 The Bidder shall not establish any minimum order requirement. Services shall begin within 14 business days from receipt of a Notice to Proceed.

2.4 The Contractor shall name a company representative to handle service, billing, delivery, and Notice to Proceed problems.

2.5 No substitutes will be accepted unless the Owner provides approval in writing to the Contractor.

Article 3. Equipment Specifications
3.1 The Contractor shall supply sufficient equipment to remove the accumulated dirt, refuse and other debris from approximately 2,600 catch basins. A preconstruction meeting will be held at which time the Notice to Proceed will be given to the Contractor. Work is required to begin within 14 days of Notice to Proceed, given by the Owner.

Basin cleaners shall be a minimum of 18" orange peel bucket type capable of cleaning basins to within 4 inches of the bottom. Additional bucket of smaller size must be available for cleaning off-set structures. Consideration will be given to proposals using other type of equipment. Basin cleaners shall be capable of hauling and disposing of basin debris. Basin cleaners shall be kept clean and in good operating condition throughout the Contract Period.

3.2 The Contractor shall supply sufficient emergency lighting and signage, reading "MAINTENANCE VEHICLE, MAKES FREQUENT STOPS", or approved equal wording mounted on the rear of the equipment.

Article 4. Registration and Ownership
4.1 All equipment shall be properly registered in accordance with the motor vehicle laws of the Commonwealth of Massachusetts. The successful Bidder shall have proof of ownership or lease agreement for the equipment required to fulfill the Contract.

Article 5. Obligations of the Town (Owner)
5.1 The Town will provide parking spaces within Employee Parking area for equipment; however, it will not assume liability for any damages or thefts.

5.2 The Owner will provide to the Contractor maps of the streets where catch basin cleaning is proposed, which include catch basin locations. The individual locations of catch basins to be cleaned under this Contract will be indicated during the preconstruction meeting.

5.3 The Owner will provide inspection forms to the Contractor, which are to be filled out prior to the cleaning of each catch basin.

6.4 The Owner shall have the right to terminate the services of the Contractor at any time during the period of the contract for any reason with 30 days' notice. The Owner shall be responsible for any bills owed to the successful bidder only until the date of termination and only for satisfactory delivery of labor, materials, equipment, and delivery and shall not be responsible for any additional fee or charges.

Article 6. Obligations of the Contractor

6.1 The Contractor is responsible to clean each basin to the bottom. All walls will be scraped, with the residual fill being removed to a minimum of 4" from the bottom when leveled. At the completion of each cleaning, the basin lid, frame and surrounding area shall be swept.

6.2 The Contractor is responsible for the hauling and disposal of basin debris. Final disposal of these materials will be in accordance with all local, state and federal laws and will be the sole responsibility of the Contractor. The Contractor must submit copies of all disposal records from a facility property permitted, through the Massachusetts Department of Environmental Protection (DEP) to accept Catch Basin debris. No payments will be processed without signed, dated disposal forms from the permitted facility stating disposal quantity, date, and location.

6.3 The Contractor shall supply all vehicles and catch basin cleaning equipment. All vehicles and equipment shall be registered with the Registry of Motor Vehicles, inspected and insured. Operators of equipment employed in the prosecution of this contract shall hold all licenses required for the safe and legal operation of the vehicle and equipment used. Specifically, a current Hoisting Machinery License in accordance with M.G.L. c. 146, § 53 shall be held by the operator of cleaning equipment.

6.4 Once mobilized, the Contractor shall prosecute the Contract without delay and schedule work in such a way as to not demobilize or delay for any period of time. The Contractor shall satisfactorily clean all of the catch basins which the Contractor has been instructed to clean until such time that they have been inspected by the DPW. The Contractor shall maintain the program as agreed upon, subject to severe weather conditions. The Contractor shall have sufficient backup equipment available in the event of breakdowns.

6.5 The Contractor shall have a supervisor or foreman available to direct operations and report to the DPW with any problems and progress as necessary and/or required by the DPW.

Article 7. Reporting

7.1 The Contractor will be supplied by the Owner with catch basin location maps and a computer tablet for the online electronic data collection. The data will be entered to a web based inspection form and stored electronically so that it can be downloaded daily by the Owner. The tablet will be used for data collection only and will be delivered back to the Owner at the end of the contract in the same condition or must be repaired or replaced by the

contractor. The data entered into the online inspection form will generate the number of basins cleaned and inspected. This data will be used to determine quantity for payment as follows:

7.1.1 Locations and number of basins cleaned and inspected;

7.1.2 Locations and number of basins where cleaning was not required (no payment will be made for previously clean basins);

7.1.3 Locations and number of basins unable to be cleaned (no payment will be made for basins not cleaned) and a description as to why;

7.1.4 Locations of basins inspected and cleaned or where cleaning was not required (no payment will be made for previously clean basins), which were not shown on the Owner's maps;

7.1.5 The completion of the online inspection form provided by the Owner for each basin cleaned or inspected;

7.2 The catch basin location maps, tablet and training on the use of the online software will be provided to the contractor during the preconstruction meeting.

TRAFFIC CONTROL

The Contractor shall be responsible for payment of police details required. The Contractor shall be responsible for organizing all necessary police details and/or their cancellation. The Contractor shall pay any costs incurred due to his/her failure to cancel police details. The Contractor shall provide and maintain all traffic control devices necessary to secure their work area in accordance with the Manual on Uniform Traffic Control Devices. The Town may order additional safety measures if insufficient safety devices are being employed. In such instances, the Contractor shall erect in place said safety devices immediately. The cost of all traffic controls and police details shall be included in the unit price of the item stated in the bid proposal.

Method of Measurement:

Catch Basin Cleaning & Material Dispostal per each catch basin.

Basis of Payment:

The unit bid price is per each and shall include all labor, materials and equipment necessary to complete the work.

End

Item 35 - Street Painting

The Contractor shall supply the necessary labor, equipment, and paint to paint the following:

- 4" Double Yellow Centerline (LF)
- 4" White Edgeline (LF)
- 4" Miscellaneous White and Yellow Detail & Parking Lines (LF)
- Directional Arrows (EA)
- 8' "ONLY" (EA)
- 3' "STOP" (EA)
- 8' "SCHOOL" (EA)
- Running Child Symbol (EA)
- 12" White Crosswalk and Stop Lines (LF)
- Reflective Glass Beads MassDOT Specifications (LBS)

The Contractor shall use low VOC Paint.

Method of Measurement:

Street Painting will be measured as follows:

4" Double Yellow Centerline per Linear Foot
4" White Edgeline per Linear Foot
4" Miscellaneous White & Yellow Detail & Parking Line Per Linear Foot
Directional Arrows per Each
8" "Only" per Each
3" "STOP" per Each
8" "SCHOOL" Per Each

Basis of Payment:

The unit bid price is as follows:

4" Double Yellow Centerline per Linear Foot
4" White Edgeline per Linear Foot
4" Miscellaneous White & Yellow Detail & Parking Line Per Linear Foot
Directional Arrows per Each
8" "Only" per Each
3" "STOP" per Each
8" "SCHOOL" Per Each

The unit bid price shall include all labor, materials and equipment necessary to complete the work.

The Contractor shall be paid by the unit cost bid for each item. The Contractor shall not charge premiums, extra costs, nor set a minimum quantity for the work but shall perform the requested work by the Town at the unit cost bid for each item.

End

Town of Hopkinton Department of Public Works
Bid Schedule

Item #	Description	Unit	At Vendor's Plant	Delivered	Complete In Place
1	Deleted Item	-	-	-	-
2	Deleted Item	-	-	-	-
3	Crushed Gravel *See Note in Legend*	Ton	_____ (unit price) _____ (Travel Distance) ____$2.43_____ (Per Mile Cost) _____ (Total Cost) Unit Price + Travel Distance x Per Mile cost	_____ (unit price)	NA
4	Stone - 1-1/2 inch *See Note in Legend*	Ton	_____ (unit price) _____ (Travel Distance) ____$2.43_____ (Per Mile Cost) _____ (Total Cost) Unit Price + Travel Distance x Per Mile cost	_____ (unit price)	NA
5	Stone - 3 inch *See Note in Legend*	Ton	_____ (unit price) _____ (Travel Distance) ____$2.43_____ (Per Mile Cost) _____ (Total Cost) Unit Price + Travel Distance x Per Mile cost	_____ (unit price)	NA
6	Fill *See Note in Legend*	Cubic Yard	_____ (unit price) _____ (Travel Distance)	_____ (unit price)	NA

			____$2.43_____ (Per Mile Cost) _____ (Total Cost) Unit Price + Travel Distance x Per Mile cost		
7	Gravel *See Note in Legend*	Cubic Yard	_____ (unit price) _____ (Travel Distance) ____$2.43_____ (Per Mile Cost) _____ (Total Cost) Unit Price + Travel Distance x Per Mile cost	_____ (unit price)	NA
8	Loam *See Note in Legend*	Cubic Yard	_____ (unit price) _____ (Travel Distance) ____$2.43_____ (Per Mile Cost) _____ (Total Cost) Unit Price + Travel Distance x Per Mile cost	_____ (unit price)	NA
9	Deleted Item	-	-	-	-
10	Bituminous Concrete	Ton	_____ (unit price)	NA	NA
11	Cold Patch	Ton	_____ (unit price)	NA	NA
	Note to Bidders: The town of Hopkinton will award one single bid to one contractor for items 12A through 20 based on the cumulative bid price for each item multiplied by the estimated quantity. Quantities are only estimated for bidding purposes and actual quantities will vary. Actual quantities will be billed by the successful bidder for the actual unit prices bid below. ***For items 12A through 20 multiply the Estimated Quantity by your unit price and enter the value below.***	-	-	-	-

12A	Placement of Bituminous Concrete Estimated Quantity = 5,500 Tons __5,500___ x $_____ = $_____ (Est. Quant) (Unit Price)	Ton	NA	NA	_____ (unit price)
12B	Tack Coat Estimated Quantity = 1,500 Gal __1,500___ x $_____ = $_____ (Est. Quant) (Unit Price)	Gallon	NA	NA	_____ (unit price)

Item #	Description	Unit	At Vendor's Plant	Delivered	Complete In Place
13	Pulverize & Reshape Existing Bituminous Concrete Pavement Estimated Quantity = 15,000 SY __15,000__ x $_____ = $_____ (Est. Quant) (Unit Price)	Square Yard	NA	NA	_____ (unit price)
14	Bituminous Concrete Berm Estimated quantity = 150 Tons ___150____ x $_____ = $_____ (Est. Quant) (Unit Price)	Ton	NA	NA	_____ (unit price)
15	By Hand Bituminous Concrete Estimated Quantity = 100 Tons ___100____ x $_____ = $_____ (Est. Quant) (Unit Price)	Ton	NA	NA	_____ (unit price)
16A	Catch Basins & Manholes, Adjust to Grade Estimated Quantity = 40 Ea ____40____ x $_____ = $_____ (Est. Quant) (Unit Price)	Each	NA	NA	_____ (unit price)
16B	Catch Basins & Manholes, Remodeled Estimated Quantity = 25 Ea ____25____ x $_____ = $_____ (Est. Quant) (Unit Price)	Vertical Ft	NA	NA	_____ (unit price)
17	Water Gate Box Adjusted Estimated Quantity = 25 Ea ____25____ x $_____ = $_____ (Est. Quant) (Unit Price)	Each	NA	NA	_____ (unit price)
18	Frames & Grates or Covers Estimated Quantity = 25 Ea ____25____ x $_____ = $_____ (Est. Quant) (Unit Price)	Each	NA	NA	_____ (unit price)
19	Cement Concrete for Sidewalks Estimated Quantity = 500 CY ____500___ x $_____ = $_____ (Est. Quant) (Unit Price)	Cubic Yard	NA	NA	_____ (unit price)

20	Bituminous Concrete Excavation by Cold Planer Estimated Quantity = 15,000 SY __15,000__ x $_____ = $_____ (Est. Quant) (Unit Price)	Square Yards	NA	NA	_____ (unit price)
	Cumulative Bid Price for items 12A through 20 $_____ (In numbers) $_____ (In words)	-	-	-	-

Item #	Description	Unit	At Vendor's Plant	Delivered	Complete In Place
21	Shoulder Grading	Square Yard	NA	NA	_____ (unit price)
	Note to Bidders: The town of Hopkinton will award one single contract to one contractor for item 22A combined with 22D, one single contract to one contractor for item 22B combined with item 22D, and one single contract to one contractor for item 22C combined with 22D. The award will be based on the lowest price for the combined total of the bid price for each item multiplied by the estimated quantity. Quantities are only estimated for bidding purposes and actual quantities will vary. Actual quantities will be billed by the successful bidder for the actual unit prices bid below. ***For items 22A through 22D multiply the Estimated Quantity by your unit price and enter the value below.***	-	-	-	-
22A	Latex Modified Asphalt Emulsion with Single Chip Seal Estimated Quantity = 24,000 s.y. __24,000___ x $_____ = $_____ (Est. Quant) (Unit Price)	s.y.	NA	NA	_____ (unit price)
22B	Latex Modified Asphalt Emulsion with Double Chip Seal Estimated Quantity = 1,500 Gal __24,000___ x $_____ = $_____ (Est. Quant) (Unit Price)	s.y.	NA	NA	_____ (unit price)

22C	Latex Modified Asphalt Emulsion with Rubber Chip Estimated Quantity = 1,500 Gal __24,000___ x $_____ = $_____ (Est. Quant) (Unit Price)	s.y.	NA	NA	_____ (unit price)
22D	Bituminous Concrete Shim for Rut Filling ___650____ x $_____ = $_____ (Est. Quant) (Unit Price)	Ton	NA	NA	_____ (unit price)
23	Wood Beam & Post Guardrail	Linear Foot	NA	NA	_____ (unit price)
24	Steel Beam & Wood Post Guardrail	Linear Foot	NA	NA	_____ (unit price)
25	Terminal Section	Each	NA	NA	_____ (unit price)
26	Rehabilitation of Existing Bituminous Concrete Sidewalks	Square Foot	NA	NA	_____ (unit price)
27	Deleted Item	-	-	-	-
28	Infra-red Patching of Semi-Permanent Repairs	Square Foot	NA	NA	_____ (unit price)
29	Cold-In-Place Recycling of Asphalt Pavement ***PLEASE USE THE BID TAB BELOW***				
30	Modified Asphalt Crack Sealing	Gallon	NA	NA	_____ (unit price)
31	Deleted Item	-	-	-	-
32	Deleted Item	-	-	-	-
33	Street Sweepings Disposal	Ton	NA	Delivered by Town to Facility _____ (unit price)	NA
34	Catch Basin Cleaning & Material Disposal	Per CB	NA	NA	_____ (unit price)
35	Street Painting	-	-	-	-
	4" Double Yellow Centerline	LF	NA	NA	_____ (unit price)
	4" White Edgeline	LF	NA	NA	_____ (unit price)
	4" Misc. White & Yellow Detail & Parking Line	LF	NA	NA	_____ (unit price)

	Directional Arrows	EA	NA	NA	_____ (unit price)
	8' "ONLY"	EA	NA	NA	_____ (unit price)
	3' "STOP"	EA	NA	NA	_____ (unit price)
	8' "SCHOOL"	EA	NA	NA	_____ (unit price)
	Running Child Symbol	EA	NA	NA	_____ (unit price)
	12" White Crosswalks and Stop Lines	LF	NA	NA	_____ (unit price)
	Reflective Glass Beads MassDOT Spec.	LBS	NA	NA	_____ (unit price)

Item #	Description	Unit	Complete In Place
29	**Cold-In-Place Recycling of Asphalt Cement** ***Prices based on 25,000 Square Yards Treated for bidding purposes only and actual quantities will vary***	-	
29.1	Core Sampling	DAY	
29.2	Mix Design	EA	
29.3	Cold In Place Recycling Including Fog Seal	SY	
29.4	Liquid Asphalt Stabilizing Agent	GAL	
29.5	Portland Cement Stabilizing Agent	TON	
29.6	Trucking – minimum body size 14 CY (per hour per truck)	HR	
29.7	Pre-milling (see footnote)	SY	
29.8	Pave RAP or Aggregate Ahead of Recycler	SY	

29.9	Gravel for Base Repair	CY	
29.10	Hot Mix Asphalt for Base Repair	TON	
29.11	Adjust Manholes/Catch Basins for CIR	EA	
29.12	Structure Rebuild for CIR	VF	
29.13	Adjust Water Gates/Small Structures for CIR	EA	
29.14	Backing Up Edge of Road	LF	
29.15	Keyways and Miscellaneous Milling	DAY	

Legends & Notes:

NA = Not Applicable

Price bid for Item 12A "Placement of Bituminous Concrete" includes furnishing, delivery and placement of bituminous mixture.

Note: The Town of Hopkinton does not bind itself to purchase any specified amount or quantity of any bid item.

Note: For all items that can be bid using an "At vendor's plant" the bid price must add a cost of $2.43 per mile of total travel distance (to the bidder's plant and back). The purpose is to evaluate the lowest responsible and eligible bidder by accounting for the Town's costs of picking the materials up at the bidder's plant. The total travel distance must be determined by GoogleMaps from the Town of Hopkinton DPW Headquarters located at 83 Wood Street, Hopkinton, MA 01748 to the Vendor's Plant.

Signature Page

I/We the undersigned as bidder declare that I/We have read and understand the scope of work and conditions of this contract. Further, I/We propose and agree to supply the material as specified in the contract documents in the manner therein provided and in accordance with the requirements of the Department of Public Works therein set forth and I/We will accept the prices quoted herein as full compensation therefore.

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

Bids must include, at a minimum, Bid Schedule, Signature Page, Certificate of Non-Collusion, State Tax Certification Form, Bid Bond, and Acknowledgement of Receipt of any and all Addendums.

Bids include Addenda numbered _____ _____ _____ _____ _____ _____

This bid expires March 1, 2024
(PLEASE TYPE ALL INFORMATION EXCEPT SIGNATURE(S))

For the Contractor

_____
Company Name

_____
Street Address

_____
Company Phone Number(s)

_____
Company Fax Number(s)

_____
Signature & Title

_____
Please TYPE Name & Title

_____
Date

CERTIFICATE OF NON-COLLUSION
(This form MUST be submitted with Bid)

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

By: _____

Title: _____

STATE TAX CERTIFICATION FORM
(This form MUST be submitted with Bid)

All providers of goods or services to any agency of the Commonwealth of Massachusetts or of any subdivisions shall be required to attest that he/she is in compliance with all the laws of the Commonwealth of Massachusetts. The form of attestation shall also provide space for the provider to furnish his/her:

1. Social Security Number or;
2 Federal Identification Number

It should be noted that submission of a Social Security Number or Federal Identification Number is purely voluntary.

The attestation shall be in the following form:

TAX COMPLIANCE CERTIFICATION

Pursuant to M.G.L. c. 62C, sec. 49A, I certify under the penalties of perjury that, to the best of my knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

_____

Signature of person submitting bid or proposal

_____

Name of Business

Town of Hopkinton Department of Public Works Prevailing Wage Rates
(see following pages)

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

MAURA HEALEY
Governor

KIM DRISCOLL
Lt. Governor

LAUREN JONES
Secretary

MICHAEL FLANAGAN
Director

Awarding Authority: TOWN OF HOPKINTON

Contract Number: **City/Town:** HOPKINTON

Description of Work: Placement of bituminous concrete, catch basin cleaning, general road construction, crack sealing, street sweeping disposal, street painting

Job Location: Various

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- **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 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, the 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. The annual update requirement is not applicable to 27F "rental of equipment" contracts. **The updated wage schedule must be provided to all contractors, including general and sub-contractors, working on the construction project.**
- 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 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 a sub-contractor.
- Apprentices working on the project are required to be registered with the Massachusetts Division of Apprentice Standards (DAS). Apprentices must keep their apprentice identification card on their persons 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 DAS regardless of whether they are registered with another federal, state, local, or private agency must be paid the journeyworker's rate.**
- Every contractor or subcontractor working on the construction project must 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. For a sample payroll reporting form go to 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.
- Contractors must obtain the wage schedules from awarding authorities. 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.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may file a complaint with the Fair Labor Division of the office of the Attorney General at (617) 727-3465.

Issue Date: 01/25/2023 **Wage Request Number:** 20230124-055

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$35.95	$13.41	$16.01	$0.00	$65.37
(3 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.02	$13.41	$16.01	$0.00	$65.44
(4 & 5 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.14	$13.41	$16.01	$0.00	$65.56
ADS/SUBMERSIBLE PILOT *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2020	$103.05	$9.40	$23.12	$0.00	$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR *LABORERS - ZONE 2*	12/01/2022	$37.91	$9.10	$16.64	$0.00	$63.65
	06/01/2023	$38.81	$9.10	$16.64	$0.00	$64.55
	12/01/2023	$39.71	$9.10	$16.64	$0.00	$65.45
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2022	$37.31	$9.35	$16.89	$0.00	$63.55
	06/01/2023	$38.21	$9.35	$16.89	$0.00	$64.45
	12/01/2023	$39.11	$9.35	$16.89	$0.00	$65.35
	06/01/2024	$40.44	$9.35	$16.89	$0.00	$66.68
	12/01/2024	$41.77	$9.35	$16.89	$0.00	$68.01
	06/01/2025	$43.16	$9.35	$16.89	$0.00	$69.40
	12/01/2025	$44.54	$9.35	$16.89	$0.00	$70.78
	06/01/2026	$45.98	$9.35	$16.89	$0.00	$72.22
	12/01/2026	$47.42	$9.35	$16.89	$0.00	$73.66
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. *HEAT & FROST INSULATORS LOCAL 6 (BOSTON)*	12/01/2020	$38.10	$12.80	$9.45	$0.00	$60.35
ASPHALT RAKER *LABORERS - ZONE 2*	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2022	$36.81	$9.35	$16.89	$0.00	$63.05
	06/01/2023	$37.71	$9.35	$16.89	$0.00	$63.95
	12/01/2023	$38.61	$9.35	$16.89	$0.00	$64.85
	06/01/2024	$39.94	$9.35	$16.89	$0.00	$66.18
	12/01/2024	$41.27	$9.35	$16.89	$0.00	$67.51
	06/01/2025	$42.66	$9.35	$16.89	$0.00	$68.90
	12/01/2025	$44.04	$9.35	$16.89	$0.00	$70.28
	06/01/2026	$45.48	$9.35	$16.89	$0.00	$71.72
	12/01/2026	$46.92	$9.35	$16.89	$0.00	$73.16
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.63	$14.25	$16.05	$0.00	$83.93
	06/01/2023	$54.88	$14.25	$16.05	$0.00	$85.18
	12/01/2023	$56.13	$14.25	$16.05	$0.00	$86.43
	06/01/2024	$57.43	$14.25	$16.05	$0.00	$87.73
	12/01/2024	$58.88	$14.25	$16.05	$0.00	$89.18
	06/01/2025	$60.18	$14.25	$16.05	$0.00	$90.48
	12/01/2025	$61.63	$14.25	$16.05	$0.00	$91.93
	06/01/2026	$62.93	$14.25	$16.05	$0.00	$93.23
	12/01/2026	$64.38	$14.25	$16.05	$0.00	$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.63	$14.25	$16.05	$0.00	$83.93
	06/01/2023	$54.88	$14.25	$16.05	$0.00	$85.18
	12/01/2023	$56.13	$14.25	$16.05	$0.00	$86.43
	06/01/2024	$57.43	$14.25	$16.05	$0.00	$87.73
	12/01/2024	$58.88	$14.25	$16.05	$0.00	$89.18
	06/01/2025	$60.18	$14.25	$16.05	$0.00	$90.48
	12/01/2025	$61.63	$14.25	$16.05	$0.00	$91.93
	06/01/2026	$62.93	$14.25	$16.05	$0.00	$93.23
	12/01/2026	$64.38	$14.25	$16.05	$0.00	$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER *LABORERS - ZONE 2*	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER *LABORERS - ZONE 2*	12/01/2022	$37.91	$9.10	$16.64	$0.00	$63.65
	06/01/2023	$38.81	$9.10	$16.64	$0.00	$64.55
	12/01/2023	$39.71	$9.10	$16.64	$0.00	$65.45
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2022	$37.31	$9.35	$16.89	$0.00	$63.55
	06/01/2023	$38.21	$9.35	$16.89	$0.00	$64.45
	12/01/2023	$39.11	$9.35	$16.89	$0.00	$65.35
	06/01/2024	$40.44	$9.35	$16.89	$0.00	$66.68
	12/01/2024	$41.77	$9.35	$16.89	$0.00	$68.01
	06/01/2025	$43.16	$9.35	$16.89	$0.00	$69.40
	12/01/2025	$44.54	$9.35	$16.89	$0.00	$70.78
	06/01/2026	$45.98	$9.35	$16.89	$0.00	$72.22
	12/01/2026	$47.42	$9.35	$16.89	$0.00	$73.66
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
BOILER MAKER *BOILERMAKERS LOCAL 29*	01/01/2023	$47.37	$7.07	$20.31	$0.00	$74.75
	01/01/2024	$48.12	$7.07	$20.60	$0.00	$75.79

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *BOILERMAKER - Local 29*

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	$30.79	$7.07	$13.22	$0.00	$51.08
2	65	$30.79	$7.07	$13.22	$0.00	$51.08
3	70	$33.16	$7.07	$14.23	$0.00	$54.46
4	75	$35.53	$7.07	$15.24	$0.00	$57.84
5	80	$37.90	$7.07	$16.25	$0.00	$61.22
6	85	$40.26	$7.07	$17.28	$0.00	$64.61
7	90	$42.63	$7.07	$18.28	$0.00	$67.98
8	95	$45.00	$7.07	$19.32	$0.00	$71.39

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	$31.28	$7.07	$13.22	$0.00	$51.57
2	65	$31.28	$7.07	$13.22	$0.00	$51.57
3	70	$33.68	$7.07	$14.23	$0.00	$54.98
4	75	$36.09	$7.07	$15.24	$0.00	$58.40
5	80	$38.50	$7.07	$16.25	$0.00	$61.82
6	85	$40.90	$7.07	$17.28	$0.00	$65.25
7	90	$43.31	$7.07	$18.28	$0.00	$68.66
8	95	$45.71	$7.07	$19.32	$0.00	$72.10

Notes:

Apprentice to Journeyworker Ratio:1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) *BRICKLAYERS LOCAL 3 (LOWELL)*	08/01/2022	$57.01	$11.49	$21.65	$0.00	$90.15
	02/01/2023	$58.21	$11.49	$21.65	$0.00	$91.35
	08/01/2023	$60.26	$11.49	$21.65	$0.00	$93.40
	02/01/2024	$61.51	$11.49	$21.65	$0.00	$94.65
	08/01/2024	$63.61	$11.49	$21.65	$0.00	$96.75
	02/01/2025	$64.91	$11.49	$21.65	$0.00	$98.05
	08/01/2025	$67.06	$11.49	$21.65	$0.00	$100.20
	02/01/2026	$68.41	$11.49	$21.65	$0.00	$101.55
	08/01/2026	$70.61	$11.49	$21.65	$0.00	$103.75
	02/01/2027	$72.01	$11.49	$21.65	$0.00	$105.15

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

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

Effective Date - 08/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$28.51	$11.49	$21.65	$0.00	$61.65
2	60	$34.21	$11.49	$21.65	$0.00	$67.35
3	70	$39.91	$11.49	$21.65	$0.00	$73.05
4	80	$45.61	$11.49	$21.65	$0.00	$78.75
5	90	$51.31	$11.49	$21.65	$0.00	$84.45

Effective Date - 02/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$29.11	$11.49	$21.65	$0.00	$62.25
2	60	$34.93	$11.49	$21.65	$0.00	$68.07
3	70	$40.75	$11.49	$21.65	$0.00	$73.89
4	80	$46.57	$11.49	$21.65	$0.00	$79.71
5	90	$52.39	$11.49	$21.65	$0.00	$85.53

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.05	$14.25	$16.05	$0.00	$83.35
	06/01/2023	$54.29	$14.25	$16.05	$0.00	$84.59
	12/01/2023	$55.53	$14.25	$16.05	$0.00	$85.83
	06/01/2024	$56.81	$14.25	$16.05	$0.00	$87.11
	12/01/2024	$58.25	$14.25	$16.05	$0.00	$88.55
	06/01/2025	$59.53	$14.25	$16.05	$0.00	$89.83
	12/01/2025	$60.97	$14.25	$16.05	$0.00	$91.27
	06/01/2026	$62.25	$14.25	$16.05	$0.00	$92.55
	12/01/2026	$63.69	$14.25	$16.05	$0.00	$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CAISSON & UNDERPINNING BOTTOM MAN *LABORERS - FOUNDATION AND MARINE*	12/01/2021	$42.33	$9.10	$17.72	$0.00	$69.15
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING LABORER *LABORERS - FOUNDATION AND MARINE*	12/01/2021	$41.18	$9.10	$17.72	$0.00	$68.00
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN *LABORERS - FOUNDATION AND MARINE*	12/01/2021	$41.18	$9.10	$17.72	$0.00	$68.00
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR *LABORERS - ZONE 2*	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
CARPENTER *CARPENTERS -ZONE 2 (Eastern Massachusetts)*	09/01/2022	$45.18	$8.68	$19.97	$0.00	$73.83
	03/01/2023	$45.78	$8.68	$19.97	$0.00	$74.43

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *CARPENTER - Zone 2 Eastern MA*

Effective Date - 09/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.59	$8.68	$1.73	$0.00	$33.00
2	60	$27.11	$8.68	$1.73	$0.00	$37.52
3	70	$31.63	$8.68	$14.78	$0.00	$55.09
4	75	$33.89	$8.68	$14.78	$0.00	$57.35
5	80	$36.14	$8.68	$16.51	$0.00	$61.33
6	80	$36.14	$8.68	$16.51	$0.00	$61.33
7	90	$40.66	$8.68	$18.24	$0.00	$67.58
8	90	$40.66	$8.68	$18.24	$0.00	$67.58

Effective Date - 03/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.89	$8.68	$1.73	$0.00	$33.30
2	60	$27.47	$8.68	$1.73	$0.00	$37.88
3	70	$32.05	$8.68	$14.78	$0.00	$55.51
4	75	$34.34	$8.68	$14.78	$0.00	$57.80
5	80	$36.62	$8.68	$16.51	$0.00	$61.81
6	80	$36.62	$8.68	$16.51	$0.00	$61.81
7	90	$41.20	$8.68	$18.24	$0.00	$68.12
8	90	$41.20	$8.68	$18.24	$0.00	$68.12

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 $30.71/ 3&4 $36.93/ 5&6 $56.82/ 7&8 $63.06

Apprentice to Journeyworker Ratio:1:5

CARPENTER WOOD FRAME *CARPENTERS-ZONE 3 (Wood Frame)*	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 - 04/01/2022

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

Effective Date - 04/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$14.50	$7.21	$0.00	$0.00	$21.71
2	60	$14.50	$7.21	$0.00	$0.00	$21.71
3	65	$15.70	$7.21	$0.00	$0.00	$22.91
4	70	$16.91	$7.21	$0.00	$0.00	$24.12
5	75	$18.12	$7.21	$3.80	$0.00	$29.13
6	80	$19.33	$7.21	$3.80	$0.00	$30.34
7	85	$20.54	$7.21	$3.80	$0.00	$31.55
8	90	$21.74	$7.21	$3.80	$0.00	$32.75

Notes:
% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 $17.86/ 3&4 $20.22/ 5&6 $27.57/ 7&8 $29.94

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING *BRICKLAYERS LOCAL 3 (LOWELL)*	01/01/2023	$49.45	$12.75	$22.74	$0.87	$85.81
	07/01/2023	$50.59	$12.75	$22.74	$0.87	$86.95
	01/01/2024	$51.73	$12.75	$22.74	$0.87	$88.09

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *CEMENT MASONRY/PLASTERING - Lowell*

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.73	$12.75	$15.49	$0.00	$52.97
2	60	$29.67	$12.75	$22.74	$0.62	$65.78
3	65	$32.14	$12.75	$22.74	$0.62	$68.25
4	70	$34.62	$12.75	$22.74	$0.62	$70.73
5	75	$37.09	$12.75	$22.74	$0.62	$73.20
6	80	$39.56	$12.75	$22.74	$0.62	$75.67
7	90	$44.51	$12.75	$22.74	$0.62	$80.62

Effective Date - 07/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$25.30	$12.75	$15.49	$0.00	$53.54
2	60	$30.35	$12.75	$22.74	$0.62	$66.46
3	65	$32.88	$12.75	$22.74	$0.62	$68.99
4	70	$35.41	$12.75	$22.74	$0.62	$71.52
5	75	$37.94	$12.75	$22.74	$0.62	$74.05
6	80	$40.47	$12.75	$22.74	$0.62	$76.58
7	90	$45.53	$12.75	$22.74	$0.62	$81.64

Notes:

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

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR *LABORERS - ZONE 2*	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95

For apprentice rates see "Apprentice- LABORER"

CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$54.68	$14.25	$16.05	$0.00	$84.98
	06/01/2023	$55.95	$14.25	$16.05	$0.00	$86.25
	12/01/2023	$57.23	$14.25	$16.05	$0.00	$87.53
	06/01/2024	$58.55	$14.25	$16.05	$0.00	$88.85
	12/01/2024	$60.03	$14.25	$16.05	$0.00	$90.33
	06/01/2025	$61.36	$14.25	$16.05	$0.00	$91.66
	12/01/2025	$62.83	$14.25	$16.05	$0.00	$93.13
	06/01/2026	$64.16	$14.25	$16.05	$0.00	$94.46
	12/01/2026	$65.64	$14.25	$16.05	$0.00	$95.94

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
COMPRESSOR OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$35.08	$14.25	$16.05	$0.00	$65.38
	06/01/2023	$35.90	$14.25	$16.05	$0.00	$66.20
	12/01/2023	$36.72	$14.25	$16.05	$0.00	$67.02
	06/01/2024	$37.57	$14.25	$16.05	$0.00	$67.87
	12/01/2024	$38.52	$14.25	$16.05	$0.00	$68.82
	06/01/2025	$39.37	$14.25	$16.05	$0.00	$69.67
	12/01/2025	$40.32	$14.25	$16.05	$0.00	$70.62
	06/01/2026	$41.18	$14.25	$16.05	$0.00	$71.48
	12/01/2026	$42.13	$14.25	$16.05	$0.00	$72.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) *PAINTERS LOCAL 35 - ZONE 2*	01/01/2023	$56.06	$8.65	$23.05	$0.00	$87.76
	07/01/2023	$57.26	$8.65	$23.05	$0.00	$88.96
	01/01/2024	$58.46	$8.65	$23.05	$0.00	$90.16
	07/01/2024	$59.66	$8.65	$23.05	$0.00	$91.36
	01/01/2025	$60.86	$8.65	$23.05	$0.00	$92.56

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$28.03	$8.65	$0.00	$0.00	$36.68
2	55	$30.83	$8.65	$6.27	$0.00	$45.75
3	60	$33.64	$8.65	$6.84	$0.00	$49.13
4	65	$36.44	$8.65	$7.41	$0.00	$52.50
5	70	$39.24	$8.65	$19.63	$0.00	$67.52
6	75	$42.05	$8.65	$20.20	$0.00	$70.90
7	80	$44.85	$8.65	$20.77	$0.00	$74.27
8	90	$50.45	$8.65	$21.91	$0.00	$81.01

Effective Date - 07/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$28.63	$8.65	$0.00	$0.00	$37.28
2	55	$31.49	$8.65	$6.27	$0.00	$46.41
3	60	$34.36	$8.65	$6.84	$0.00	$49.85
4	65	$37.22	$8.65	$7.41	$0.00	$53.28
5	70	$40.08	$8.65	$19.63	$0.00	$68.36
6	75	$42.95	$8.65	$20.20	$0.00	$71.80
7	80	$45.81	$8.65	$20.77	$0.00	$75.23
8	90	$51.53	$8.65	$21.91	$0.00	$82.09

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN *LABORERS - ZONE 2*	12/01/2022	$43.33	$9.10	$17.57	$0.00	$70.00
	06/01/2023	$44.33	$9.10	$17.57	$0.00	$71.00
	12/01/2023	$45.58	$9.10	$17.57	$0.00	$72.25

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR *LABORERS - ZONE 2*	12/01/2022	$44.33	$9.10	$17.57	$0.00	$71.00
	06/01/2023	$45.33	$9.10	$17.57	$0.00	$72.00
	12/01/2023	$46.58	$9.10	$17.57	$0.00	$73.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS *LABORERS - ZONE 2*	12/01/2022	$44.08	$9.10	$17.57	$0.00	$70.75
	06/01/2023	$45.08	$9.10	$17.57	$0.00	$71.75
	12/01/2023	$46.33	$9.10	$17.57	$0.00	$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER *LABORERS - ZONE 2*	12/01/2022	$44.33	$9.10	$17.57	$0.00	$71.00
	06/01/2023	$45.33	$9.10	$17.57	$0.00	$72.00
	12/01/2023	$46.58	$9.10	$17.57	$0.00	$73.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR *LABORERS - ZONE 2*	12/01/2022	$44.08	$9.10	$17.57	$0.00	$70.75
	06/01/2023	$45.08	$9.10	$17.57	$0.00	$71.75
	12/01/2023	$46.33	$9.10	$17.57	$0.00	$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER *LABORERS - ZONE 2*	12/01/2022	$43.33	$9.10	$17.57	$0.00	$70.00
	06/01/2023	$44.33	$9.10	$17.57	$0.00	$71.00
	12/01/2023	$45.58	$9.10	$17.57	$0.00	$72.25
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.05	$14.25	$16.05	$0.00	$83.35
	06/01/2023	$54.29	$14.25	$16.05	$0.00	$84.59
	12/01/2023	$55.53	$14.25	$16.05	$0.00	$85.83
	06/01/2024	$56.81	$14.25	$16.05	$0.00	$87.11
	12/01/2024	$58.25	$14.25	$16.05	$0.00	$88.55
	06/01/2025	$59.53	$14.25	$16.05	$0.00	$89.83
	12/01/2025	$60.97	$14.25	$16.05	$0.00	$91.27
	06/01/2026	$62.25	$14.25	$16.05	$0.00	$92.55
	12/01/2026	$63.69	$14.25	$16.05	$0.00	$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2020	$68.70	$9.40	$23.12	$0.00	$101.22
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2020	$49.07	$9.40	$23.12	$0.00	$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2020	$73.60	$9.40	$23.12	$0.00	$106.12
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2020	$103.05	$9.40	$23.12	$0.00	$135.57
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*	09/04/2022	$45.59	$12.20	$17.50	$0.00	$75.29

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *ELECTRICIAN - Local 96*

Effective Date - 09/04/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$18.24	$12.20	$0.55	$0.00	$30.99
2	43	$19.60	$12.20	$0.59	$0.00	$32.39
3	48	$21.88	$12.20	$14.18	$0.00	$48.26
4	55	$25.07	$12.20	$14.63	$0.00	$51.90
5	65	$29.63	$12.20	$15.27	$0.00	$57.10
6	80	$36.47	$12.20	$16.22	$0.00	$64.89

Notes:

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

Apprentice to Journeyworker Ratio:2:3***

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

Apprentice - *ELEVATOR CONSTRUCTOR - Local 4*

Effective Date - 01/01/2022

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

Notes:

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

Apprentice to Journeyworker Ratio:1:1

ELEVATOR CONSTRUCTOR HELPER *ELEVATOR CONSTRUCTORS LOCAL 4*	01/01/2022	$45.93	$16.03	$20.21	$0.00	$82.17

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2022	$36.81	$9.35	$16.89	$0.00	$63.05
	06/01/2023	$37.71	$9.35	$16.89	$0.00	$63.95
	12/01/2023	$38.61	$9.35	$16.89	$0.00	$64.85
	06/01/2024	$39.94	$9.35	$16.89	$0.00	$66.18
	12/01/2024	$41.27	$9.35	$16.89	$0.00	$67.51
	06/01/2025	$42.66	$9.35	$16.89	$0.00	$68.90
	12/01/2025	$44.04	$9.35	$16.89	$0.00	$70.28
	06/01/2026	$45.48	$9.35	$16.89	$0.00	$71.72
	12/01/2026	$46.92	$9.35	$16.89	$0.00	$73.16

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	11/05/2022	$48.67	$14.25	$16.05	$0.00	$78.97
	05/01/2023	$49.91	$14.25	$16.05	$0.00	$80.21
	11/01/2023	$51.15	$14.25	$16.05	$0.00	$81.45
	05/01/2024	$52.39	$14.25	$16.05	$0.00	$82.69
	11/01/2024	$53.68	$14.25	$16.05	$0.00	$83.98
	05/01/2025	$55.12	$14.25	$16.05	$0.00	$85.42
	11/01/2025	$56.41	$14.25	$16.05	$0.00	$86.71
	05/01/2026	$57.85	$14.25	$16.05	$0.00	$88.15
	11/01/2026	$59.14	$14.25	$16.05	$0.00	$89.44
	05/01/2027	$60.57	$14.25	$16.05	$0.00	$90.87
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	11/01/2022	$50.22	$14.25	$16.05	$0.00	$80.52
	05/01/2023	$51.47	$14.25	$16.05	$0.00	$81.77
	11/01/2023	$52.72	$14.25	$16.05	$0.00	$83.02
	05/01/2024	$53.97	$14.25	$16.05	$0.00	$84.27
	11/01/2024	$55.27	$14.25	$16.05	$0.00	$85.57
	05/01/2025	$56.72	$14.25	$16.05	$0.00	$87.02
	11/01/2025	$58.02	$14.25	$16.05	$0.00	$88.32
	05/01/2026	$59.47	$14.25	$16.05	$0.00	$89.77
	11/01/2026	$60.77	$14.25	$16.05	$0.00	$91.07
	05/01/2027	$62.22	$14.25	$16.05	$0.00	$92.52
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	11/01/2022	$24.31	$14.25	$16.05	$0.00	$54.61
	05/01/2023	$25.05	$14.25	$16.05	$0.00	$55.35
	11/01/2023	$25.78	$14.25	$16.05	$0.00	$56.08
	05/01/2024	$26.51	$14.25	$16.05	$0.00	$56.81
	11/01/2024	$27.27	$14.25	$16.05	$0.00	$57.57
	05/01/2025	$28.12	$14.25	$16.05	$0.00	$58.42
	11/01/2025	$28.88	$14.25	$16.05	$0.00	$59.18
	05/01/2026	$29.73	$14.25	$16.05	$0.00	$60.03
	11/01/2026	$30.49	$14.25	$16.05	$0.00	$60.79
	05/01/2027	$31.34	$14.25	$16.05	$0.00	$61.64
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER *ELECTRICIANS LOCAL 96*	09/04/2022	$45.59	$12.20	$17.50	$0.00	$75.29
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINT/COMMISSIONING *ELECTRICIANS LOCAL 96*	09/04/2022	$45.59	$12.20	$17.50	$0.00	$75.29
For apprentice rates see "Apprentice- ELECTRICIAN"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIREMAN (ASST. ENGINEER) *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$43.54	$14.25	$16.05	$0.00	$73.84
	06/01/2023	$44.56	$14.25	$16.05	$0.00	$74.86
	12/01/2023	$45.57	$14.25	$16.05	$0.00	$75.87
	06/01/2024	$46.63	$14.25	$16.05	$0.00	$76.93
	12/01/2024	$47.81	$14.25	$16.05	$0.00	$78.11
	06/01/2025	$48.87	$14.25	$16.05	$0.00	$79.17
	12/01/2025	$50.04	$14.25	$16.05	$0.00	$80.34
	06/01/2026	$51.10	$14.25	$16.05	$0.00	$81.40
	12/01/2026	$52.28	$14.25	$16.05	$0.00	$82.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2022	$25.23	$9.35	$16.89	$0.00	$51.47
	06/01/2023	$25.98	$9.35	$16.89	$0.00	$52.22
	12/01/2023	$25.98	$9.35	$16.89	$0.00	$52.22
	06/01/2024	$27.01	$9.35	$16.89	$0.00	$53.25
	12/01/2024	$27.01	$9.35	$16.89	$0.00	$53.25
	06/01/2025	$28.09	$9.35	$16.89	$0.00	$54.33
	12/01/2025	$28.09	$9.35	$16.89	$0.00	$54.33
	06/01/2026	$29.21	$9.35	$16.89	$0.00	$55.45
	12/01/2026	$29.21	$9.35	$16.89	$0.00	$55.45
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FLOORCOVERER *FLOORCOVERERS LOCAL 2168 ZONE I*	03/01/2022	$49.93	$8.68	$20.27	$0.00	$78.88

Apprentice - *FLOORCOVERER - Local 2168 Zone I*

Effective Date - 03/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.97	$8.68	$1.79	$0.00	$35.44
2	55	$27.46	$8.68	$1.79	$0.00	$37.93
3	60	$29.96	$8.68	$14.90	$0.00	$53.54
4	65	$32.45	$8.68	$14.90	$0.00	$56.03
5	70	$34.95	$8.68	$16.69	$0.00	$60.32
6	75	$37.45	$8.68	$16.69	$0.00	$62.82
7	80	$39.94	$8.68	$18.48	$0.00	$67.10
8	85	$42.44	$8.68	$18.48	$0.00	$69.60

Notes: Steps are 750 hrs.
% After 10/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)
Step 1&2 $32.94/ 3&4 $39.66/ 5&6 $60.32/ 7&8 $67.10

Apprentice to Journeyworker Ratio:1:1

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FORK LIFT/CHERRY PICKER *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.63	$14.25	$16.05	$0.00	$83.93
	06/01/2023	$54.88	$14.25	$16.05	$0.00	$85.18
	12/01/2023	$56.13	$14.25	$16.05	$0.00	$86.43
	06/01/2024	$57.43	$14.25	$16.05	$0.00	$87.73
	12/01/2024	$58.88	$14.25	$16.05	$0.00	$89.18
	06/01/2025	$60.18	$14.25	$16.05	$0.00	$90.48
	12/01/2025	$61.63	$14.25	$16.05	$0.00	$91.93
	06/01/2026	$62.93	$14.25	$16.05	$0.00	$93.23
	12/01/2026	$64.38	$14.25	$16.05	$0.00	$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$35.08	$14.25	$16.05	$0.00	$65.38
	06/01/2023	$35.90	$14.25	$16.05	$0.00	$66.20
	12/01/2023	$36.72	$14.25	$16.05	$0.00	$67.02
	06/01/2024	$37.57	$14.25	$16.05	$0.00	$67.87
	12/01/2024	$38.52	$14.25	$16.05	$0.00	$68.82
	06/01/2025	$39.37	$14.25	$16.05	$0.00	$69.67
	12/01/2025	$40.32	$14.25	$16.05	$0.00	$70.62
	06/01/2026	$41.18	$14.25	$16.05	$0.00	$71.48
	12/01/2026	$42.13	$14.25	$16.05	$0.00	$72.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) *GLAZIERS LOCAL 35 (ZONE 2)*	01/01/2023	$45.56	$8.65	$23.05	$0.00	$77.26
	07/01/2023	$46.76	$8.65	$23.05	$0.00	$78.46
	01/01/2024	$47.96	$8.65	$23.05	$0.00	$79.66
	07/01/2024	$49.16	$8.65	$23.05	$0.00	$80.86
	01/01/2025	$50.36	$8.65	$23.05	$0.00	$82.06

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *GLAZIER - Local 35 Zone 2*

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.78	$8.65	$0.00	$0.00	$31.43
2	55	$25.06	$8.65	$6.27	$0.00	$39.98
3	60	$27.34	$8.65	$6.84	$0.00	$42.83
4	65	$29.61	$8.65	$7.41	$0.00	$45.67
5	70	$31.89	$8.65	$19.63	$0.00	$60.17
6	75	$34.17	$8.65	$20.20	$0.00	$63.02
7	80	$36.45	$8.65	$20.77	$0.00	$65.87
8	90	$41.00	$8.65	$21.91	$0.00	$71.56

Effective Date - 07/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.38	$8.65	$0.00	$0.00	$32.03
2	55	$25.72	$8.65	$6.27	$0.00	$40.64
3	60	$28.06	$8.65	$6.84	$0.00	$43.55
4	65	$30.39	$8.65	$7.41	$0.00	$46.45
5	70	$32.73	$8.65	$19.63	$0.00	$61.01
6	75	$35.07	$8.65	$20.20	$0.00	$63.92
7	80	$37.41	$8.65	$20.77	$0.00	$66.83
8	90	$42.08	$8.65	$21.91	$0.00	$72.64

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

HOISTING ENGINEER/CRANES/GRADALLS *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.63	$14.25	$16.05	$0.00	$83.93
	06/01/2023	$54.88	$14.25	$16.05	$0.00	$85.18
	12/01/2023	$56.13	$14.25	$16.05	$0.00	$86.43
	06/01/2024	$57.43	$14.25	$16.05	$0.00	$87.73
	12/01/2024	$58.88	$14.25	$16.05	$0.00	$89.18
	06/01/2025	$60.18	$14.25	$16.05	$0.00	$90.48
	12/01/2025	$61.63	$14.25	$16.05	$0.00	$91.93
	06/01/2026	$62.93	$14.25	$16.05	$0.00	$93.23
	12/01/2026	$64.38	$14.25	$16.05	$0.00	$94.68

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *OPERATING ENGINEERS - Local 4*

Effective Date - 12/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$29.50	$14.25	$0.00	$0.00	$43.75
2	60	$32.18	$14.25	$16.05	$0.00	$62.48
3	65	$34.86	$14.25	$16.05	$0.00	$65.16
4	70	$37.54	$14.25	$16.05	$0.00	$67.84
5	75	$40.22	$14.25	$16.05	$0.00	$70.52
6	80	$42.90	$14.25	$16.05	$0.00	$73.20
7	85	$45.59	$14.25	$16.05	$0.00	$75.89
8	90	$48.27	$14.25	$16.05	$0.00	$78.57

Effective Date - 06/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$30.18	$14.25	$0.00	$0.00	$44.43
2	60	$32.93	$14.25	$16.05	$0.00	$63.23
3	65	$35.67	$14.25	$16.05	$0.00	$65.97
4	70	$38.42	$14.25	$16.05	$0.00	$68.72
5	75	$41.16	$14.25	$16.05	$0.00	$71.46
6	80	$43.90	$14.25	$16.05	$0.00	$74.20
7	85	$46.65	$14.25	$16.05	$0.00	$76.95
8	90	$49.39	$14.25	$16.05	$0.00	$79.69

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) *SHEETMETAL WORKERS LOCAL 17 - A*	08/01/2022	$53.66	$14.11	$26.64	$2.83	$97.24
	02/01/2023	$55.31	$14.11	$26.64	$2.83	$98.89
	08/01/2023	$57.01	$14.11	$26.64	$2.83	$100.59
	02/01/2024	$58.71	$14.11	$26.64	$2.83	$102.29
	08/01/2024	$60.46	$14.11	$26.64	$2.83	$104.04
	02/01/2025	$62.21	$14.11	$26.64	$2.83	$105.79
	08/01/2025	$64.06	$14.11	$26.64	$2.83	$107.64
	02/01/2026	$66.01	$14.11	$26.64	$2.83	$109.59
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) *ELECTRICIANS LOCAL 96*	09/04/2022	$45.59	$12.20	$17.50	$0.00	$75.29
For apprentice rates see "Apprentice- ELECTRICIAN"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC (TESTING AND BALANCING - AIR) *SHEETMETAL WORKERS LOCAL 17 - A*	08/01/2022	$53.66	$14.11	$26.64	$2.83	$97.24
	02/01/2023	$55.31	$14.11	$26.64	$2.83	$98.89
	08/01/2023	$57.01	$14.11	$26.64	$2.83	$100.59
	02/01/2024	$58.71	$14.11	$26.64	$2.83	$102.29
	08/01/2024	$60.46	$14.11	$26.64	$2.83	$104.04
	02/01/2025	$62.21	$14.11	$26.64	$2.83	$105.79
	08/01/2025	$64.06	$14.11	$26.64	$2.83	$107.64
	02/01/2026	$66.01	$14.11	$26.64	$2.83	$109.59
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) *PIPEFITTERS LOCAL 537*	03/01/2021	$57.94	$11.70	$20.24	$0.00	$89.88
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC *PIPEFITTERS LOCAL 537*	03/01/2021	$57.94	$11.70	$20.24	$0.00	$89.88
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS *LABORERS - ZONE 2*	12/01/2022	$37.91	$9.10	$16.64	$0.00	$63.65
	06/01/2023	$38.81	$9.10	$16.64	$0.00	$64.55
	12/01/2023	$39.71	$9.10	$16.64	$0.00	$65.45
For apprentice rates see "Apprentice- LABORER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2022	$37.31	$9.35	$16.89	$0.00	$63.55
	06/01/2023	$38.21	$9.35	$16.89	$0.00	$64.45
	12/01/2023	$39.11	$9.35	$16.89	$0.00	$65.35
	06/01/2024	$40.44	$9.35	$16.89	$0.00	$66.68
	12/01/2024	$41.77	$9.35	$16.89	$0.00	$68.01
	06/01/2025	$43.16	$9.35	$16.89	$0.00	$69.40
	12/01/2025	$44.54	$9.35	$16.89	$0.00	$70.78
	06/01/2026	$45.98	$9.35	$16.89	$0.00	$72.22
	12/01/2026	$47.42	$9.35	$16.89	$0.00	$73.66
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
INSULATOR (PIPES & TANKS) *HEAT & FROST INSULATORS LOCAL 6 (BOSTON)*	09/01/2022	$53.85	$13.80	$17.14	$0.00	$84.79

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

Effective Date - 09/01/2022

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

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER *IRONWORKERS LOCAL 7 (WORCESTER AREA)*	09/16/2022	$51.29	$8.25	$26.70	$0.00	$86.24

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *IRONWORKER - Local 7 Worcester*

Effective Date - 09/16/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$30.77	$8.25	$26.70	$0.00	$65.72
2	70	$35.90	$8.25	$26.70	$0.00	$70.85
3	75	$38.47	$8.25	$26.70	$0.00	$73.42
4	80	$41.03	$8.25	$26.70	$0.00	$75.98
5	85	$43.60	$8.25	$26.70	$0.00	$78.55
6	90	$46.16	$8.25	$26.70	$0.00	$81.11

Notes:

Apprentice to Journeyworker Ratio:1:4

JACKHAMMER & PAVING BREAKER OPERATOR *LABORERS - ZONE 2*	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
LABORER *LABORERS - ZONE 2*	12/01/2022	$37.16	$9.10	$16.64	$0.00	$62.90
	06/01/2023	$38.06	$9.10	$16.64	$0.00	$63.80
	12/01/2023	$38.96	$9.10	$16.64	$0.00	$64.70

Apprentice - *LABORER - Zone 2*

Effective Date - 12/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$22.30	$9.10	$16.64	$0.00	$48.04
2	70	$26.01	$9.10	$16.64	$0.00	$51.75
3	80	$29.73	$9.10	$16.64	$0.00	$55.47
4	90	$33.44	$9.10	$16.64	$0.00	$59.18

Effective Date - 06/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$22.84	$9.10	$16.64	$0.00	$48.58
2	70	$26.64	$9.10	$16.64	$0.00	$52.38
3	80	$30.45	$9.10	$16.64	$0.00	$56.19
4	90	$34.25	$9.10	$16.64	$0.00	$59.99

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2022	$36.56	$9.35	$16.89	$0.00	$62.80
	06/01/2023	$37.46	$9.35	$16.89	$0.00	$63.70
	12/01/2023	$38.36	$9.35	$16.89	$0.00	$64.60
	06/01/2024	$39.69	$9.35	$16.89	$0.00	$65.93
	12/01/2024	$41.02	$9.35	$16.89	$0.00	$67.26
	06/01/2025	$42.41	$9.35	$16.89	$0.00	$68.65
	12/01/2025	$43.79	$9.35	$16.89	$0.00	$70.03
	06/01/2026	$45.23	$9.35	$16.89	$0.00	$71.47
	12/01/2026	$46.67	$9.35	$16.89	$0.00	$72.91

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

Effective Date - 12/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$21.94	$9.35	$16.89	$0.00	$48.18
2	70	$25.59	$9.35	$16.89	$0.00	$51.83
3	80	$29.25	$9.35	$16.89	$0.00	$55.49
4	90	$32.90	$9.35	$16.89	$0.00	$59.14

Effective Date - 06/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$22.48	$9.35	$16.89	$0.00	$48.72
2	70	$26.22	$9.35	$16.89	$0.00	$52.46
3	80	$29.97	$9.35	$16.89	$0.00	$56.21
4	90	$33.71	$9.35	$16.89	$0.00	$59.95

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER *LABORERS - ZONE 2*	12/01/2022	$37.16	$9.10	$16.64	$0.00	$62.90
	06/01/2023	$38.06	$9.10	$16.64	$0.00	$63.80
	12/01/2023	$38.96	$9.10	$16.64	$0.00	$64.70
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER *LABORERS - ZONE 2*	12/01/2022	$37.16	$9.10	$16.64	$0.00	$62.90
	06/01/2023	$38.06	$9.10	$16.64	$0.00	$63.80
	12/01/2023	$38.96	$9.10	$16.64	$0.00	$64.70
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER *LABORERS - ZONE 2*	12/01/2022	$37.25	$9.10	$16.70	$0.00	$63.05
	06/01/2023	$38.15	$9.10	$16.70	$0.00	$63.95
	12/01/2023	$39.05	$9.10	$16.70	$0.00	$64.85
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER *LABORERS - ZONE 2*	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: MASON TENDER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2022	$36.81	$9.35	$16.89	$0.00	$63.05
	06/01/2023	$37.71	$9.35	$16.89	$0.00	$63.95
	12/01/2023	$38.61	$9.35	$16.89	$0.00	$64.85
	06/01/2024	$39.94	$9.35	$16.89	$0.00	$66.18
	12/01/2024	$41.27	$9.35	$16.89	$0.00	$67.51
	06/01/2025	$42.66	$9.35	$16.89	$0.00	$68.90
	12/01/2025	$44.04	$9.35	$16.89	$0.00	$70.28
	06/01/2026	$45.48	$9.35	$16.89	$0.00	$71.72
	12/01/2026	$46.92	$9.35	$16.89	$0.00	$73.16
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
LABORER: MULTI-TRADE TENDER *LABORERS - ZONE 2*	12/01/2022	$37.16	$9.10	$16.64	$0.00	$62.90
	06/01/2023	$38.06	$9.10	$16.64	$0.00	$63.80
	12/01/2023	$38.96	$9.10	$16.64	$0.00	$64.70
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER *LABORERS - ZONE 2*	12/01/2022	$37.16	$9.10	$16.64	$0.00	$62.90
	06/01/2023	$38.06	$9.10	$16.64	$0.00	$63.80
	12/01/2023	$38.96	$9.10	$16.64	$0.00	$64.70
This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR *LABORERS - ZONE 2*	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2022	$36.81	$9.35	$16.89	$0.00	$63.05
	06/01/2023	$37.71	$9.35	$16.89	$0.00	$63.95
	12/01/2023	$38.61	$9.35	$16.89	$0.00	$64.85
	06/01/2024	$39.94	$9.35	$16.89	$0.00	$66.18
	12/01/2024	$41.27	$9.35	$16.89	$0.00	$67.51
	06/01/2025	$42.66	$9.35	$16.89	$0.00	$68.90
	12/01/2025	$44.04	$9.35	$16.89	$0.00	$70.28
	06/01/2026	$45.48	$9.35	$16.89	$0.00	$71.72
	12/01/2026	$46.92	$9.35	$16.89	$0.00	$73.16
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
MARBLE & TILE FINISHERS *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	08/01/2022	$45.29	$11.49	$20.37	$0.00	$77.15
	02/01/2023	$46.25	$11.49	$20.37	$0.00	$78.11
	08/01/2023	$47.89	$11.49	$20.37	$0.00	$79.75
	02/01/2024	$48.89	$11.49	$20.37	$0.00	$80.75
	08/01/2024	$50.57	$11.49	$20.37	$0.00	$82.43
	02/01/2025	$51.61	$11.49	$20.37	$0.00	$83.47
	08/01/2025	$53.33	$11.49	$20.37	$0.00	$85.19
	02/01/2026	$54.41	$11.49	$20.37	$0.00	$86.27
	08/01/2026	$56.17	$11.49	$20.37	$0.00	$88.03
	02/01/2027	$57.29	$11.49	$20.37	$0.00	$89.15

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

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

Effective Date - 08/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.65	$11.49	$20.37	$0.00	$54.51
2	60	$27.17	$11.49	$20.37	$0.00	$59.03
3	70	$31.70	$11.49	$20.37	$0.00	$63.56
4	80	$36.23	$11.49	$20.37	$0.00	$68.09
5	90	$40.76	$11.49	$20.37	$0.00	$72.62

Effective Date - 02/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.13	$11.49	$20.37	$0.00	$54.99
2	60	$27.75	$11.49	$20.37	$0.00	$59.61
3	70	$32.38	$11.49	$20.37	$0.00	$64.24
4	80	$37.00	$11.49	$20.37	$0.00	$68.86
5	90	$41.63	$11.49	$20.37	$0.00	$73.49

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS,TILELAYERS & TERRAZZO MECH *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	08/01/2022	$59.17	$11.49	$22.31	$0.00	$92.97
	02/01/2023	$60.37	$11.49	$22.31	$0.00	$94.17
	08/01/2023	$62.42	$11.49	$22.31	$0.00	$96.22
	02/01/2024	$63.67	$11.49	$22.31	$0.00	$97.47
	08/01/2024	$65.77	$11.49	$22.31	$0.00	$99.57
	02/01/2025	$67.07	$11.49	$22.31	$0.00	$100.87
	08/01/2025	$69.22	$11.49	$22.31	$0.00	$103.02
	02/01/2026	$70.57	$11.49	$22.31	$0.00	$104.37
	08/01/2026	$72.77	$11.49	$22.31	$0.00	$106.57
	02/01/2027	$74.17	$11.49	$22.31	$0.00	$107.97

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

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

Effective Date - 08/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$29.59	$11.49	$22.31	$0.00	$63.39
2	60	$35.50	$11.49	$22.31	$0.00	$69.30
3	70	$41.42	$11.49	$22.31	$0.00	$75.22
4	80	$47.34	$11.49	$22.31	$0.00	$81.14
5	90	$53.25	$11.49	$22.31	$0.00	$87.05

Effective Date - 02/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$30.19	$11.49	$22.31	$0.00	$63.99
2	60	$36.22	$11.49	$22.31	$0.00	$70.02
3	70	$42.26	$11.49	$22.31	$0.00	$76.06
4	80	$48.30	$11.49	$22.31	$0.00	$82.10
5	90	$54.33	$11.49	$22.31	$0.00	$88.13

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.05	$14.25	$16.05	$0.00	$83.35
	06/01/2023	$54.29	$14.25	$16.05	$0.00	$84.59
	12/01/2023	$55.53	$14.25	$16.05	$0.00	$85.83
	06/01/2024	$56.81	$14.25	$16.05	$0.00	$87.11
	12/01/2024	$58.25	$14.25	$16.05	$0.00	$88.55
	06/01/2025	$59.53	$14.25	$16.05	$0.00	$89.83
	12/01/2025	$60.97	$14.25	$16.05	$0.00	$91.27
	06/01/2026	$62.25	$14.25	$16.05	$0.00	$92.55
	12/01/2026	$63.69	$14.25	$16.05	$0.00	$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.05	$14.25	$16.05	$0.00	$83.35
	06/01/2023	$54.29	$14.25	$16.05	$0.00	$84.59
	12/01/2023	$55.53	$14.25	$16.05	$0.00	$85.83
	06/01/2024	$56.81	$14.25	$16.05	$0.00	$87.11
	12/01/2024	$58.25	$14.25	$16.05	$0.00	$88.55
	06/01/2025	$59.53	$14.25	$16.05	$0.00	$89.83
	12/01/2025	$60.97	$14.25	$16.05	$0.00	$91.27
	06/01/2026	$62.25	$14.25	$16.05	$0.00	$92.55
	12/01/2026	$63.69	$14.25	$16.05	$0.00	$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 2) *MILLWRIGHTS LOCAL 1121 - Zone 2*	01/02/2023	$41.92	$8.58	$21.57	$0.00	$72.07

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *MILLWRIGHT - Local 1121 Zone 2*

Effective Date - 01/02/2023

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

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

Apprentice to Journeyworker Ratio:1:4

MORTAR MIXER *LABORERS - ZONE 2*	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS) *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$24.37	$14.25	$16.05	$0.00	$54.67
	06/01/2023	$24.94	$14.25	$16.05	$0.00	$55.24
	12/01/2023	$25.51	$14.25	$16.05	$0.00	$55.81
	06/01/2024	$26.11	$14.25	$16.05	$0.00	$56.41
	12/01/2024	$26.77	$14.25	$16.05	$0.00	$57.07
	06/01/2025	$27.37	$14.25	$16.05	$0.00	$57.67
	12/01/2025	$28.03	$14.25	$16.05	$0.00	$58.33
	06/01/2026	$28.62	$14.25	$16.05	$0.00	$58.92
	12/01/2026	$29.29	$14.25	$16.05	$0.00	$59.59
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$29.57	$14.25	$16.05	$0.00	$59.87
	06/01/2023	$30.27	$14.25	$16.05	$0.00	$60.57
	12/01/2023	$30.96	$14.25	$16.05	$0.00	$61.26
	06/01/2024	$31.68	$14.25	$16.05	$0.00	$61.98
	12/01/2024	$32.48	$14.25	$16.05	$0.00	$62.78
	06/01/2025	$33.20	$14.25	$16.05	$0.00	$63.50
	12/01/2025	$34.00	$14.25	$16.05	$0.00	$64.30
	06/01/2026	$34.72	$14.25	$16.05	$0.00	$65.02
	12/01/2026	$35.52	$14.25	$16.05	$0.00	$65.82
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.05	$14.25	$16.05	$0.00	$83.35
	06/01/2023	$54.29	$14.25	$16.05	$0.00	$84.59
	12/01/2023	$55.53	$14.25	$16.05	$0.00	$85.83
	06/01/2024	$56.81	$14.25	$16.05	$0.00	$87.11
	12/01/2024	$58.25	$14.25	$16.05	$0.00	$88.55
	06/01/2025	$59.53	$14.25	$16.05	$0.00	$89.83
	12/01/2025	$60.97	$14.25	$16.05	$0.00	$91.27
	06/01/2026	$62.25	$14.25	$16.05	$0.00	$92.55
	12/01/2026	$63.69	$14.25	$16.05	$0.00	$93.99

Classification For apprentice rates see "Apprentice- OPERATING ENGINEERS"	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PAINTER (BRIDGES/TANKS) *PAINTERS LOCAL 35 - ZONE 2*	01/01/2023	$56.06	$8.65	$23.05	$0.00	$87.76
	07/01/2023	$57.26	$8.65	$23.05	$0.00	$88.96
	01/01/2024	$58.46	$8.65	$23.05	$0.00	$90.16
	07/01/2024	$59.66	$8.65	$23.05	$0.00	$91.36
	01/01/2025	$60.86	$8.65	$23.05	$0.00	$92.56

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$28.03	$8.65	$0.00	$0.00	$36.68
2	55	$30.83	$8.65	$6.27	$0.00	$45.75
3	60	$33.64	$8.65	$6.84	$0.00	$49.13
4	65	$36.44	$8.65	$7.41	$0.00	$52.50
5	70	$39.24	$8.65	$19.63	$0.00	$67.52
6	75	$42.05	$8.65	$20.20	$0.00	$70.90
7	80	$44.85	$8.65	$20.77	$0.00	$74.27
8	90	$50.45	$8.65	$21.91	$0.00	$81.01

Effective Date - 07/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$28.63	$8.65	$0.00	$0.00	$37.28
2	55	$31.49	$8.65	$6.27	$0.00	$46.41
3	60	$34.36	$8.65	$6.84	$0.00	$49.85
4	65	$37.22	$8.65	$7.41	$0.00	$53.28
5	70	$40.08	$8.65	$19.63	$0.00	$68.36
6	75	$42.95	$8.65	$20.20	$0.00	$71.80
7	80	$45.81	$8.65	$20.77	$0.00	$75.23
8	90	$51.53	$8.65	$21.91	$0.00	$82.09

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

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

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.48	$8.65	$0.00	$0.00	$32.13
2	55	$25.83	$8.65	$6.27	$0.00	$40.75
3	60	$28.18	$8.65	$6.84	$0.00	$43.67
4	65	$30.52	$8.65	$7.41	$0.00	$46.58
5	70	$32.87	$8.65	$19.63	$0.00	$61.15
6	75	$35.22	$8.65	$20.20	$0.00	$64.07
7	80	$37.57	$8.65	$20.77	$0.00	$66.99
8	90	$42.26	$8.65	$21.91	$0.00	$72.82

Effective Date - 07/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.08	$8.65	$0.00	$0.00	$32.73
2	55	$26.49	$8.65	$6.27	$0.00	$41.41
3	60	$28.90	$8.65	$6.84	$0.00	$44.39
4	65	$31.30	$8.65	$7.41	$0.00	$47.36
5	70	$33.71	$8.65	$19.63	$0.00	$61.99
6	75	$36.12	$8.65	$20.20	$0.00	$64.97
7	80	$38.53	$8.65	$20.77	$0.00	$67.95
8	90	$43.34	$8.65	$21.91	$0.00	$73.90

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

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

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.51	$8.65	$0.00	$0.00	$31.16
2	55	$24.76	$8.65	$6.27	$0.00	$39.68
3	60	$27.01	$8.65	$6.84	$0.00	$42.50
4	65	$29.26	$8.65	$7.41	$0.00	$45.32
5	70	$31.51	$8.65	$19.63	$0.00	$59.79
6	75	$33.77	$8.65	$20.20	$0.00	$62.62
7	80	$36.02	$8.65	$20.77	$0.00	$65.44
8	90	$40.52	$8.65	$21.91	$0.00	$71.08

Effective Date - 07/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.11	$8.65	$0.00	$0.00	$31.76
2	55	$25.42	$8.65	$6.27	$0.00	$40.34
3	60	$27.73	$8.65	$6.84	$0.00	$43.22
4	65	$30.04	$8.65	$19.06	$0.00	$57.75
5	70	$32.35	$8.65	$19.63	$0.00	$60.63
6	75	$34.67	$8.65	$20.20	$0.00	$63.52
7	80	$36.98	$8.65	$20.77	$0.00	$66.40
8	90	$41.60	$8.65	$21.91	$0.00	$72.16

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

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

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.78	$8.65	$0.00	$0.00	$31.43
2	55	$25.06	$8.65	$6.27	$0.00	$39.98
3	60	$27.34	$8.65	$6.84	$0.00	$42.83
4	65	$29.61	$8.65	$7.41	$0.00	$45.67
5	70	$31.89	$8.65	$19.63	$0.00	$60.17
6	75	$34.17	$8.65	$20.20	$0.00	$63.02
7	80	$36.45	$8.65	$20.77	$0.00	$65.87
8	90	$41.00	$8.65	$21.91	$0.00	$71.56

Effective Date - 07/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.38	$8.65	$0.00	$0.00	$32.03
2	55	$25.72	$8.65	$6.27	$0.00	$40.64
3	60	$28.06	$8.65	$6.84	$0.00	$43.55
4	65	$30.39	$8.65	$7.41	$0.00	$46.45
5	70	$32.73	$8.65	$19.63	$0.00	$61.01
6	75	$35.07	$8.65	$20.20	$0.00	$63.92
7	80	$37.41	$8.65	$20.77	$0.00	$66.83
8	90	$42.08	$8.65	$21.91	$0.00	$72.64

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

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

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.81	$8.65	$0.00	$0.00	$30.46
2	55	$23.99	$8.65	$6.27	$0.00	$38.91
3	60	$26.17	$8.65	$6.84	$0.00	$41.66
4	65	$28.35	$8.65	$7.41	$0.00	$44.41
5	70	$30.53	$8.65	$19.63	$0.00	$58.81
6	75	$32.72	$8.65	$20.20	$0.00	$61.57
7	80	$34.90	$8.65	$20.77	$0.00	$64.32
8	90	$39.26	$8.65	$21.91	$0.00	$69.82

Effective Date - 07/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.41	$8.65	$0.00	$0.00	$31.06
2	55	$24.65	$8.65	$6.27	$0.00	$39.57
3	60	$26.89	$8.65	$6.84	$0.00	$42.38
4	65	$29.13	$8.65	$7.41	$0.00	$45.19
5	70	$31.37	$8.65	$19.63	$0.00	$59.65
6	75	$33.62	$8.65	$20.20	$0.00	$62.47
7	80	$35.86	$8.65	$20.77	$0.00	$65.28
8	90	$40.34	$8.65	$21.91	$0.00	$70.90

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2022	$36.56	$9.35	$16.89	$0.00	$62.80
	06/01/2023	$37.46	$9.35	$16.89	$0.00	$63.70
	12/01/2023	$38.36	$9.35	$16.89	$0.00	$64.60
	06/01/2024	$39.69	$9.35	$16.89	$0.00	$65.93
	12/01/2024	$41.02	$9.35	$16.89	$0.00	$67.26
	06/01/2025	$42.41	$9.35	$16.89	$0.00	$68.65
	12/01/2025	$43.79	$9.35	$16.89	$0.00	$70.03
	06/01/2026	$45.23	$9.35	$16.89	$0.00	$71.47
	12/01/2026	$46.67	$9.35	$16.89	$0.00	$72.91
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
PANEL & PICKUP TRUCKS DRIVER *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$35.78	$13.41	$16.01	$0.00	$65.20
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) *PILE DRIVER LOCAL 56 (ZONE 1)* For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2020	$49.07	$9.40	$23.12	$0.00	$81.59
PILE DRIVER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2020	$49.07	$9.40	$23.12	$0.00	$81.59

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PILE DRIVER - Local 56 Zone 1*

Effective Date - 08/01/2020

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

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

Apprentice to Journeyworker Ratio:1:5

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

Apprentice - *PIPEFITTER - Local 537*

Effective Date - 03/01/2021

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

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

Apprentice to Journeyworker Ratio:**

PIPELAYER *LABORERS - ZONE 2*	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
PIPELAYER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2022	$36.81	$9.35	$16.89	$0.00	$63.05
	06/01/2023	$37.71	$9.35	$16.89	$0.00	$63.95
	12/01/2023	$38.61	$9.35	$16.89	$0.00	$64.85
	06/01/2024	$39.94	$9.35	$16.89	$0.00	$66.18
	12/01/2024	$41.27	$9.35	$16.89	$0.00	$67.51
	06/01/2025	$42.66	$9.35	$16.89	$0.00	$68.90
	12/01/2025	$44.04	$9.35	$16.89	$0.00	$70.28
	06/01/2026	$45.48	$9.35	$16.89	$0.00	$71.72
	12/01/2026	$46.92	$9.35	$16.89	$0.00	$73.16

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
PLUMBERS & GASFITTERS *PLUMBERS & GASFITTERS LOCAL 12*	09/04/2022	$63.49	$14.07	$18.36	$0.00	$95.92
	02/26/2023	$65.19	$14.07	$18.36	$0.00	$97.62
	09/03/2023	$66.94	$14.07	$18.36	$0.00	$99.37
	03/03/2024	$68.74	$14.07	$18.36	$0.00	$101.17
	09/01/2024	$70.54	$14.07	$18.36	$0.00	$102.97
	03/02/2025	$72.34	$14.07	$18.36	$0.00	$104.77

Apprentice - *PLUMBER/GASFITTER - Local 12*

Effective Date - 09/04/2022

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

Effective Date - 02/26/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$22.82	$14.07	$6.63	$0.00	$43.52
2	40	$26.08	$14.07	$7.52	$0.00	$47.67
3	55	$35.85	$14.07	$10.24	$0.00	$60.16
4	65	$42.37	$14.07	$12.04	$0.00	$68.48
5	75	$48.89	$14.07	$13.85	$0.00	$76.81

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

Apprentice to Journeyworker Ratio:**

PNEUMATIC CONTROLS (TEMP.) *PIPEFITTERS LOCAL 537*	03/01/2021	$57.94	$11.70	$20.24	$0.00	$89.88
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
PNEUMATIC DRILL/TOOL OPERATOR *LABORERS - ZONE 2*	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2022	$36.81	$9.35	$16.89	$0.00	$63.05
	06/01/2023	$37.71	$9.35	$16.89	$0.00	$63.95
	12/01/2023	$38.61	$9.35	$16.89	$0.00	$64.85
	06/01/2024	$39.94	$9.35	$16.89	$0.00	$66.18
	12/01/2024	$41.27	$9.35	$16.89	$0.00	$67.51
	06/01/2025	$42.66	$9.35	$16.89	$0.00	$68.90
	12/01/2025	$44.04	$9.35	$16.89	$0.00	$70.28
	06/01/2026	$45.48	$9.35	$16.89	$0.00	$71.72
	12/01/2026	$46.92	$9.35	$16.89	$0.00	$73.16
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
POWDERMAN & BLASTER *LABORERS - ZONE 2*	12/01/2022	$38.16	$9.10	$16.64	$0.00	$63.90
	06/01/2023	$39.06	$9.10	$16.64	$0.00	$64.80
	12/01/2023	$39.96	$9.10	$16.64	$0.00	$65.70
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2022	$37.56	$9.35	$16.89	$0.00	$63.80
	06/01/2023	$38.46	$9.35	$16.89	$0.00	$64.70
	12/01/2023	$39.36	$9.35	$16.89	$0.00	$65.60
	06/01/2024	$40.69	$9.35	$16.89	$0.00	$66.93
	12/01/2024	$42.02	$9.35	$16.89	$0.00	$68.26
	06/01/2025	$43.41	$9.35	$16.89	$0.00	$69.65
	12/01/2025	$44.79	$9.35	$16.89	$0.00	$71.03
	06/01/2026	$46.23	$9.35	$16.89	$0.00	$72.47
	12/01/2026	$47.67	$9.35	$16.89	$0.00	$73.91
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
POWER SHOVEL/DERRICK/TRENCHING MACHINE *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.63	$14.25	$16.05	$0.00	$83.93
	06/01/2023	$54.88	$14.25	$16.05	$0.00	$85.18
	12/01/2023	$56.13	$14.25	$16.05	$0.00	$86.43
	06/01/2024	$57.43	$14.25	$16.05	$0.00	$87.73
	12/01/2024	$58.88	$14.25	$16.05	$0.00	$89.18
	06/01/2025	$60.18	$14.25	$16.05	$0.00	$90.48
	12/01/2025	$61.63	$14.25	$16.05	$0.00	$91.93
	06/01/2026	$62.93	$14.25	$16.05	$0.00	$93.23
	12/01/2026	$64.38	$14.25	$16.05	$0.00	$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.63	$14.25	$16.05	$0.00	$83.93
	06/01/2023	$54.88	$14.25	$16.05	$0.00	$85.18
	12/01/2023	$56.13	$14.25	$16.05	$0.00	$86.43
	06/01/2024	$57.43	$14.25	$16.05	$0.00	$87.73
	12/01/2024	$58.88	$14.25	$16.05	$0.00	$89.18
	06/01/2025	$60.18	$14.25	$16.05	$0.00	$90.48
	12/01/2025	$61.63	$14.25	$16.05	$0.00	$91.93
	06/01/2026	$62.93	$14.25	$16.05	$0.00	$93.23
	12/01/2026	$64.38	$14.25	$16.05	$0.00	$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$35.08	$14.25	$16.05	$0.00	$65.38
	06/01/2023	$35.90	$14.25	$16.05	$0.00	$66.20
	12/01/2023	$36.72	$14.25	$16.05	$0.00	$67.02
	06/01/2024	$37.57	$14.25	$16.05	$0.00	$67.87
	12/01/2024	$38.52	$14.25	$16.05	$0.00	$68.82
	06/01/2025	$39.37	$14.25	$16.05	$0.00	$69.67
	12/01/2025	$40.32	$14.25	$16.05	$0.00	$70.62
	06/01/2026	$41.18	$14.25	$16.05	$0.00	$71.48
	12/01/2026	$42.13	$14.25	$16.05	$0.00	$72.43
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
READY-MIX CONCRETE DRIVER *TEAMSTERS 170 - Dauphinais (Bellingham)*	01/01/2023	$26.40	$10.26	$4.75	$0.00	$41.41
	12/01/2023	$27.00	$10.76	$5.45	$0.00	$43.21
	01/01/2024	$27.00	$10.76	$5.45	$0.00	$43.21
	12/01/2024	$27.60	$11.26	$6.15	$0.00	$45.01
	01/01/2025	$27.60	$11.26	$6.15	$0.00	$45.01
RECLAIMERS *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.05	$14.25	$16.05	$0.00	$83.35
	06/01/2023	$54.29	$14.25	$16.05	$0.00	$84.59
	12/01/2023	$55.53	$14.25	$16.05	$0.00	$85.83
	06/01/2024	$56.81	$14.25	$16.05	$0.00	$87.11
	12/01/2024	$58.25	$14.25	$16.05	$0.00	$88.55
	06/01/2025	$59.53	$14.25	$16.05	$0.00	$89.83
	12/01/2025	$60.97	$14.25	$16.05	$0.00	$91.27
	06/01/2026	$62.25	$14.25	$16.05	$0.00	$92.55
	12/01/2026	$63.69	$14.25	$16.05	$0.00	$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RIDE-ON MOTORIZED BUGGY OPERATOR *LABORERS - ZONE 2*	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.05	$14.25	$16.05	$0.00	$83.35
	06/01/2023	$54.29	$14.25	$16.05	$0.00	$84.59
	12/01/2023	$55.53	$14.25	$16.05	$0.00	$85.83
	06/01/2024	$56.81	$14.25	$16.05	$0.00	$87.11
	12/01/2024	$58.25	$14.25	$16.05	$0.00	$88.55
	06/01/2025	$59.53	$14.25	$16.05	$0.00	$89.83
	12/01/2025	$60.97	$14.25	$16.05	$0.00	$91.27
	06/01/2026	$62.25	$14.25	$16.05	$0.00	$92.55
	12/01/2026	$63.69	$14.25	$16.05	$0.00	$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) *ROOFERS LOCAL 33*	08/01/2022	$48.53	$12.28	$19.45	$0.00	$80.26
	02/01/2023	$49.78	$12.28	$19.45	$0.00	$81.51
	08/01/2023	$51.28	$12.28	$19.45	$0.00	$83.01
	02/01/2024	$52.53	$12.28	$19.45	$0.00	$84.26
	08/01/2024	$54.03	$12.28	$19.45	$0.00	$85.76
	02/01/2025	$55.28	$12.28	$19.45	$0.00	$87.01
	08/01/2025	$56.78	$12.28	$19.45	$0.00	$88.51
	02/01/2026	$58.03	$12.28	$19.45	$0.00	$89.76

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *ROOFER - Local 33*

Effective Date - 08/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.27	$12.28	$5.21	$0.00	$41.76
2	60	$29.12	$12.28	$19.45	$0.00	$60.85
3	65	$31.54	$12.28	$19.45	$0.00	$63.27
4	75	$36.40	$12.28	$19.45	$0.00	$68.13
5	85	$41.25	$12.28	$19.45	$0.00	$72.98

Effective Date - 02/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.89	$12.28	$5.21	$0.00	$42.38
2	60	$29.87	$12.28	$19.45	$0.00	$61.60
3	65	$32.36	$12.28	$19.45	$0.00	$64.09
4	75	$37.34	$12.28	$19.45	$0.00	$69.07
5	85	$42.31	$12.28	$19.45	$0.00	$74.04

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

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE *ROOFERS LOCAL 33*	08/01/2022	$48.78	$12.28	$19.45	$0.00	$80.51
	02/01/2023	$50.03	$12.28	$19.45	$0.00	$81.76
	08/01/2023	$51.53	$12.28	$19.45	$0.00	$83.26
	02/01/2024	$52.78	$12.28	$19.45	$0.00	$84.51
	08/01/2024	$54.28	$12.28	$19.45	$0.00	$86.01
	02/01/2025	$55.53	$12.28	$19.45	$0.00	$87.26
	08/01/2025	$57.03	$12.28	$19.45	$0.00	$88.76
	02/01/2026	$58.28	$12.28	$19.45	$0.00	$90.01
For apprentice rates see "Apprentice- ROOFER"						
SHEETMETAL WORKER *SHEETMETAL WORKERS LOCAL 17 - A*	08/01/2022	$53.66	$14.11	$26.64	$2.83	$97.24
	02/01/2023	$55.31	$14.11	$26.64	$2.83	$98.89
	08/01/2023	$57.01	$14.11	$26.64	$2.83	$100.59
	02/01/2024	$58.71	$14.11	$26.64	$2.83	$102.29
	08/01/2024	$60.46	$14.11	$26.64	$2.83	$104.04
	02/01/2025	$62.21	$14.11	$26.64	$2.83	$105.79
	08/01/2025	$64.06	$14.11	$26.64	$2.83	$107.64
	02/01/2026	$66.01	$14.11	$26.64	$2.83	$109.59

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

Effective Date - 08/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	$22.54	$14.11	$6.13	$0.00	$42.78
2	42	$22.54	$14.11	$6.13	$0.00	$42.78
3	47	$25.22	$14.11	$11.90	$1.54	$52.77
4	47	$25.22	$14.11	$11.90	$1.54	$52.77
5	52	$27.90	$14.11	$12.88	$1.65	$56.54
6	52	$27.90	$14.11	$13.13	$1.65	$56.79
7	60	$32.20	$14.11	$14.54	$1.83	$62.68
8	65	$34.88	$14.11	$15.52	$1.94	$66.45
9	75	$40.25	$14.11	$17.48	$2.16	$74.00
10	85	$45.61	$14.11	$18.94	$2.36	$81.02

Effective Date - 02/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	42	$23.23	$14.11	$6.13	$0.00	$43.47
2	42	$23.23	$14.11	$6.13	$0.00	$43.47
3	47	$26.00	$14.11	$11.90	$1.54	$53.55
4	47	$26.00	$14.11	$11.90	$1.54	$53.55
5	52	$28.76	$14.11	$12.88	$1.65	$57.40
6	52	$28.76	$14.11	$13.13	$1.65	$57.65
7	60	$33.19	$14.11	$14.54	$1.83	$63.67
8	65	$35.95	$14.11	$15.52	$1.94	$67.52
9	75	$41.48	$14.11	$17.48	$2.16	$75.23
10	85	$47.01	$14.11	$18.94	$2.36	$82.42

Notes:
Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

SPECIALIZED EARTH MOVING EQUIP < 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.24	$13.41	$16.01	$0.00	$65.66
SPECIALIZED EARTH MOVING EQUIP > 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.53	$13.41	$16.01	$0.00	$65.95
SPRINKLER FITTER *SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1*	10/01/2022	$65.56	$15.50	$22.10	$0.00	$103.16
	03/01/2023	$67.26	$15.50	$22.10	$0.00	$104.86
	10/01/2023	$69.01	$15.50	$22.10	$0.00	$106.61
	03/01/2024	$70.81	$15.50	$22.10	$0.00	$108.41
	10/01/2024	$72.61	$15.50	$22.10	$0.00	$110.21
	03/01/2025	$74.41	$15.50	$22.10	$0.00	$112.01

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

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

Effective Date - 10/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$22.95	$15.50	$9.60	$0.00	$48.05
2	40	$26.22	$15.50	$9.60	$0.00	$51.32
3	45	$29.50	$15.50	$9.60	$0.00	$54.60
4	50	$32.78	$15.50	$9.60	$0.00	$57.88
5	55	$36.06	$15.50	$9.60	$0.00	$61.16
6	60	$39.34	$15.50	$11.10	$0.00	$65.94
7	65	$42.61	$15.50	$11.10	$0.00	$69.21
8	70	$45.89	$15.50	$11.10	$0.00	$72.49
9	75	$49.17	$15.50	$11.10	$0.00	$75.77
10	80	$52.45	$15.50	$11.10	$0.00	$79.05

Effective Date - 03/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$23.54	$15.50	$9.60	$0.00	$48.64
2	40	$26.90	$15.50	$9.60	$0.00	$52.00
3	45	$30.27	$15.50	$9.60	$0.00	$55.37
4	50	$33.63	$15.50	$9.60	$0.00	$58.73
5	55	$36.99	$15.50	$9.60	$0.00	$62.09
6	60	$40.36	$15.50	$11.10	$0.00	$66.96
7	65	$43.72	$15.50	$11.10	$0.00	$70.32
8	70	$47.08	$15.50	$11.10	$0.00	$73.68
9	75	$50.45	$15.50	$11.10	$0.00	$77.05
10	80	$53.81	$15.50	$11.10	$0.00	$80.41

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

Apprentice to Journeyworker Ratio:1:3

STEAM BOILER OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.05	$14.25	$16.05	$0.00	$83.35
	06/01/2023	$54.29	$14.25	$16.05	$0.00	$84.59
	12/01/2023	$55.53	$14.25	$16.05	$0.00	$85.83
	06/01/2024	$56.81	$14.25	$16.05	$0.00	$87.11
	12/01/2024	$58.25	$14.25	$16.05	$0.00	$88.55
	06/01/2025	$59.53	$14.25	$16.05	$0.00	$89.83
	12/01/2025	$60.97	$14.25	$16.05	$0.00	$91.27
	06/01/2026	$62.25	$14.25	$16.05	$0.00	$92.55
	12/01/2026	$63.69	$14.25	$16.05	$0.00	$93.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.05	$14.25	$16.05	$0.00	$83.35
	06/01/2023	$54.29	$14.25	$16.05	$0.00	$84.59
	12/01/2023	$55.53	$14.25	$16.05	$0.00	$85.83
	06/01/2024	$56.81	$14.25	$16.05	$0.00	$87.11
	12/01/2024	$58.25	$14.25	$16.05	$0.00	$88.55
	06/01/2025	$59.53	$14.25	$16.05	$0.00	$89.83
	12/01/2025	$60.97	$14.25	$16.05	$0.00	$91.27
	06/01/2026	$62.25	$14.25	$16.05	$0.00	$92.55
	12/01/2026	$63.69	$14.25	$16.05	$0.00	$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TERRAZZO FINISHERS *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	08/01/2022	$58.09	$11.49	$22.34	$0.00	$91.92
	02/01/2023	$59.29	$11.49	$22.34	$0.00	$93.12
	08/01/2023	$61.34	$11.49	$22.34	$0.00	$95.17
	02/01/2024	$62.59	$11.49	$22.34	$0.00	$96.42
	08/01/2024	$64.69	$11.49	$22.34	$0.00	$98.52
	02/01/2025	$65.99	$11.49	$22.34	$0.00	$99.82
	08/01/2025	$68.14	$11.49	$22.34	$0.00	$101.97
	02/01/2026	$69.49	$11.49	$22.34	$0.00	$103.32
	08/01/2026	$71.69	$11.49	$22.34	$0.00	$105.52
	02/01/2027	$73.09	$11.49	$22.34	$0.00	$106.92

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

Effective Date - 08/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$29.05	$11.49	$22.34	$0.00	$62.88
2	60	$34.85	$11.49	$22.34	$0.00	$68.68
3	70	$40.66	$11.49	$22.34	$0.00	$74.49
4	80	$46.47	$11.49	$22.34	$0.00	$80.30
5	90	$52.28	$11.49	$22.34	$0.00	$86.11

Effective Date - 02/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$29.65	$11.49	$22.34	$0.00	$63.48
2	60	$35.57	$11.49	$22.34	$0.00	$69.40
3	70	$41.50	$11.49	$22.34	$0.00	$75.33
4	80	$47.43	$11.49	$22.34	$0.00	$81.26
5	90	$53.36	$11.49	$22.34	$0.00	$87.19

Notes:

Apprentice to Journeyworker Ratio:1:3

TEST BORING DRILLER *LABORERS - FOUNDATION AND MARINE*	12/01/2021	$42.58	$9.10	$17.72	$0.00	$69.40
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TEST BORING DRILLER HELPER *LABORERS - FOUNDATION AND MARINE* For apprentice rates see "Apprentice- LABORER"	12/01/2021	$41.30	$9.10	$17.72	$0.00	$68.12
TEST BORING LABORER *LABORERS - FOUNDATION AND MARINE* For apprentice rates see "Apprentice- LABORER"	12/01/2021	$41.18	$9.10	$17.72	$0.00	$68.00
TRACTORS/PORTABLE STEAM GENERATORS *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.05	$14.25	$16.05	$0.00	$83.35
	06/01/2023	$54.29	$14.25	$16.05	$0.00	$84.59
	12/01/2023	$55.53	$14.25	$16.05	$0.00	$85.83
	06/01/2024	$56.81	$14.25	$16.05	$0.00	$87.11
	12/01/2024	$58.25	$14.25	$16.05	$0.00	$88.55
	06/01/2025	$59.53	$14.25	$16.05	$0.00	$89.83
	12/01/2025	$60.97	$14.25	$16.05	$0.00	$91.27
	06/01/2026	$62.25	$14.25	$16.05	$0.00	$92.55
	12/01/2026	$63.69	$14.25	$16.05	$0.00	$93.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.82	$13.41	$16.01	$0.00	$66.24
TUNNEL WORK - COMPRESSED AIR *LABORERS (COMPRESSED AIR)*	12/01/2022	$54.81	$9.35	$18.42	$0.00	$82.58
	06/01/2023	$55.81	$9.35	$18.42	$0.00	$83.58
	12/01/2023	$57.06	$9.35	$18.42	$0.00	$84.83
	06/01/2024	$58.54	$9.35	$18.42	$0.00	$86.31
	12/01/2024	$60.01	$9.35	$18.42	$0.00	$87.78
	06/01/2025	$61.51	$9.35	$18.42	$0.00	$89.28
	12/01/2025	$63.01	$9.35	$18.42	$0.00	$90.78
	06/01/2026	$64.56	$9.35	$18.42	$0.00	$92.33
	12/01/2026	$66.06	$9.35	$18.42	$0.00	$93.83
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) *LABORERS (COMPRESSED AIR)*	12/01/2022	$56.81	$9.35	$18.42	$0.00	$84.58
	06/01/2023	$57.81	$9.35	$18.42	$0.00	$85.58
	12/01/2023	$59.06	$9.35	$18.42	$0.00	$86.83
	06/01/2024	$60.54	$9.35	$18.42	$0.00	$88.31
	12/01/2024	$62.01	$9.35	$18.42	$0.00	$89.78
	06/01/2025	$63.51	$9.35	$18.42	$0.00	$91.28
	12/01/2025	$65.01	$9.35	$18.42	$0.00	$92.78
	06/01/2026	$66.56	$9.35	$18.42	$0.00	$94.33
	12/01/2026	$68.06	$9.35	$18.42	$0.00	$95.83
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR *LABORERS (FREE AIR TUNNEL)*	12/01/2022	$46.88	$9.35	$18.42	$0.00	$74.65
	06/01/2023	$47.88	$9.35	$18.42	$0.00	$75.65
	12/01/2023	$49.13	$9.35	$18.42	$0.00	$76.90
	06/01/2024	$50.61	$9.35	$18.42	$0.00	$78.38
	12/01/2024	$52.08	$9.35	$18.42	$0.00	$79.85
	06/01/2025	$53.58	$9.35	$18.42	$0.00	$81.35
	12/01/2025	$55.08	$9.35	$18.42	$0.00	$82.85
	06/01/2026	$56.63	$9.35	$18.42	$0.00	$84.40
	12/01/2026	$58.13	$9.35	$18.42	$0.00	$85.90

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) *LABORERS (FREE AIR TUNNEL)*	12/01/2022	$48.88	$9.35	$18.42	$0.00	$76.65
	06/01/2023	$49.88	$9.35	$18.42	$0.00	$77.65
	12/01/2023	$51.13	$9.35	$18.42	$0.00	$78.90
	06/01/2024	$52.61	$9.35	$18.42	$0.00	$80.38
	12/01/2024	$54.08	$9.35	$18.42	$0.00	$81.85
	06/01/2025	$55.58	$9.35	$18.42	$0.00	$83.35
	12/01/2025	$57.08	$9.35	$18.42	$0.00	$84.85
	06/01/2026	$58.63	$9.35	$18.42	$0.00	$86.40
	12/01/2026	$60.13	$9.35	$18.42	$0.00	$87.90
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.24	$13.41	$16.01	$0.00	$65.66
VOICE-DATA-VIDEO TECHNICIAN *ELECTRICIANS LOCAL 96*	09/04/2022	$34.19	$12.20	$15.91	$0.00	$62.30

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

Effective Date - 09/04/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$17.10	$12.20	$4.27	$0.00	$33.57
2	55	$18.80	$12.20	$4.32	$0.00	$35.32
3	60	$20.51	$12.20	$15.50	$0.00	$48.21
4	65	$22.22	$12.20	$15.55	$0.00	$49.97
5	70	$23.93	$12.20	$15.60	$0.00	$51.73
6	75	$25.64	$12.20	$15.65	$0.00	$53.49
7	80	$27.35	$12.20	$15.70	$0.00	$55.25
8	85	$29.06	$12.20	$15.75	$0.00	$57.01

Notes:

Apprentice to Journeyworker Ratio:1:1

WAGON DRILL OPERATOR *LABORERS - ZONE 2*	12/01/2022	$37.41	$9.10	$16.64	$0.00	$63.15
	06/01/2023	$38.31	$9.10	$16.64	$0.00	$64.05
	12/01/2023	$39.21	$9.10	$16.64	$0.00	$64.95
For apprentice rates see "Apprentice- LABORER"						
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2022	$36.81	$9.35	$16.89	$0.00	$63.05
	06/01/2023	$37.71	$9.35	$16.89	$0.00	$63.95
	12/01/2023	$38.61	$9.35	$16.89	$0.00	$64.85
	06/01/2024	$39.94	$9.35	$16.89	$0.00	$66.18
	12/01/2024	$41.27	$9.35	$16.89	$0.00	$67.51
	06/01/2025	$42.66	$9.35	$16.89	$0.00	$68.90
	12/01/2025	$44.04	$9.35	$16.89	$0.00	$70.28
	06/01/2026	$45.48	$9.35	$16.89	$0.00	$71.72
	12/01/2026	$46.92	$9.35	$16.89	$0.00	$73.16
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
WASTE WATER PUMP OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.63	$14.25	$16.05	$0.00	$83.93
	06/01/2023	$54.88	$14.25	$16.05	$0.00	$85.18
	12/01/2023	$56.13	$14.25	$16.05	$0.00	$86.43
	06/01/2024	$57.43	$14.25	$16.05	$0.00	$87.73
	12/01/2024	$58.88	$14.25	$16.05	$0.00	$89.18
	06/01/2025	$60.18	$14.25	$16.05	$0.00	$90.48
	12/01/2025	$61.63	$14.25	$16.05	$0.00	$91.93
	06/01/2026	$62.93	$14.25	$16.05	$0.00	$93.23
	12/01/2026	$64.38	$14.25	$16.05	$0.00	$94.68
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER *PLUMBERS & GASFITTERS LOCAL 12*	09/04/2022	$63.49	$14.07	$18.36	$0.00	$95.92
	02/26/2023	$65.19	$14.07	$18.36	$0.00	$97.62
	09/03/2023	$66.94	$14.07	$18.36	$0.00	$99.37
	03/03/2024	$68.74	$14.07	$18.36	$0.00	$101.17
	09/01/2024	$70.54	$14.07	$18.36	$0.00	$102.97
	03/02/2025	$72.34	$14.07	$18.36	$0.00	$104.77
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Rental of Equipment - East						
(2 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$35.95	$13.41	$0.00	$0.00	$49.36
(3 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.02	$13.41	$0.00	$0.00	$49.43
(4 & 5 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.14	$13.41	$0.00	$0.00	$49.55
ADS/SUBMERSIBLE PILOT *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2020	$103.05	$9.40	$0.00	$0.00	$112.45
For apprentice rates see "Apprentice- PILE DRIVER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.63	$14.25	$0.00	$0.00	$67.88
	06/01/2023	$54.88	$14.25	$0.00	$0.00	$69.13
	12/01/2023	$56.13	$14.25	$0.00	$0.00	$70.38
	06/01/2024	$57.43	$14.25	$0.00	$0.00	$71.68
	12/01/2024	$58.88	$14.25	$0.00	$0.00	$73.13
	06/01/2025	$60.18	$14.25	$0.00	$0.00	$74.43
	12/01/2025	$61.63	$14.25	$0.00	$0.00	$75.88
	06/01/2026	$62.93	$14.25	$0.00	$0.00	$77.18
	12/01/2026	$64.38	$14.25	$0.00	$0.00	$78.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.63	$14.25	$0.00	$0.00	$67.88
	06/01/2023	$54.88	$14.25	$0.00	$0.00	$69.13
	12/01/2023	$56.13	$14.25	$0.00	$0.00	$70.38
	06/01/2024	$57.43	$14.25	$0.00	$0.00	$71.68
	12/01/2024	$58.88	$14.25	$0.00	$0.00	$73.13
	06/01/2025	$60.18	$14.25	$0.00	$0.00	$74.43
	12/01/2025	$61.63	$14.25	$0.00	$0.00	$75.88
	06/01/2026	$62.93	$14.25	$0.00	$0.00	$77.18
	12/01/2026	$64.38	$14.25	$0.00	$0.00	$78.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BULLDOZER/GRADER/SCRAPER *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.05	$14.25	$0.00	$0.00	$67.30
	06/01/2023	$54.29	$14.25	$0.00	$0.00	$68.54
	12/01/2023	$55.53	$14.25	$0.00	$0.00	$69.78
	06/01/2024	$56.81	$14.25	$0.00	$0.00	$71.06
	12/01/2024	$58.25	$14.25	$0.00	$0.00	$72.50
	06/01/2025	$59.53	$14.25	$0.00	$0.00	$73.78
	12/01/2025	$60.97	$14.25	$0.00	$0.00	$75.22
	06/01/2026	$62.25	$14.25	$0.00	$0.00	$76.50
	12/01/2026	$63.69	$14.25	$0.00	$0.00	$77.94
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$54.68	$14.25	$0.00	$0.00	$68.93
	06/01/2023	$55.95	$14.25	$0.00	$0.00	$70.20
	12/01/2023	$57.23	$14.25	$0.00	$0.00	$71.48
	06/01/2024	$58.55	$14.25	$0.00	$0.00	$72.80
	12/01/2024	$60.03	$14.25	$0.00	$0.00	$74.28
	06/01/2025	$61.36	$14.25	$0.00	$0.00	$75.61
	12/01/2025	$62.83	$14.25	$0.00	$0.00	$77.08
	06/01/2026	$64.16	$14.25	$0.00	$0.00	$78.41
	12/01/2026	$65.64	$14.25	$0.00	$0.00	$79.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$35.08	$14.25	$0.00	$0.00	$49.33
	06/01/2023	$35.90	$14.25	$0.00	$0.00	$50.15
	12/01/2023	$36.72	$14.25	$0.00	$0.00	$50.97
	06/01/2024	$37.57	$14.25	$0.00	$0.00	$51.82
	12/01/2024	$38.52	$14.25	$0.00	$0.00	$52.77
	06/01/2025	$39.37	$14.25	$0.00	$0.00	$53.62
	12/01/2025	$40.32	$14.25	$0.00	$0.00	$54.57
	06/01/2026	$41.18	$14.25	$0.00	$0.00	$55.43
	12/01/2026	$42.13	$14.25	$0.00	$0.00	$56.38
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2020	$68.70	$9.40	$0.00	$0.00	$78.10
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2020	$49.07	$9.40	$0.00	$0.00	$58.47
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2020	$73.60	$9.40	$0.00	$0.00	$83.00
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2020	$103.05	$9.40	$0.00	$0.00	$112.45
For apprentice rates see "Apprentice- PILE DRIVER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FORK LIFT/CHERRY PICKER *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.63	$14.25	$0.00	$0.00	$67.88
	06/01/2023	$54.88	$14.25	$0.00	$0.00	$69.13
	12/01/2023	$56.13	$14.25	$0.00	$0.00	$70.38
	06/01/2024	$57.43	$14.25	$0.00	$0.00	$71.68
	12/01/2024	$58.88	$14.25	$0.00	$0.00	$73.13
	06/01/2025	$60.18	$14.25	$0.00	$0.00	$74.43
	12/01/2025	$61.63	$14.25	$0.00	$0.00	$75.88
	06/01/2026	$62.93	$14.25	$0.00	$0.00	$77.18
	12/01/2026	$64.38	$14.25	$0.00	$0.00	$78.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$35.08	$14.25	$0.00	$0.00	$49.33
	06/01/2023	$35.90	$14.25	$0.00	$0.00	$50.15
	12/01/2023	$36.72	$14.25	$0.00	$0.00	$50.97
	06/01/2024	$37.57	$14.25	$0.00	$0.00	$51.82
	12/01/2024	$38.52	$14.25	$0.00	$0.00	$52.77
	06/01/2025	$39.37	$14.25	$0.00	$0.00	$53.62
	12/01/2025	$40.32	$14.25	$0.00	$0.00	$54.57
	06/01/2026	$41.18	$14.25	$0.00	$0.00	$55.43
	12/01/2026	$42.13	$14.25	$0.00	$0.00	$56.38
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
HOISTING ENGINEER/CRANES/GRADALLS *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.63	$14.25	$0.00	$0.00	$67.88
	06/01/2023	$54.88	$14.25	$0.00	$0.00	$69.13
	12/01/2023	$56.13	$14.25	$0.00	$0.00	$70.38
	06/01/2024	$57.43	$14.25	$0.00	$0.00	$71.68
	12/01/2024	$58.88	$14.25	$0.00	$0.00	$73.13
	06/01/2025	$60.18	$14.25	$0.00	$0.00	$74.43
	12/01/2025	$61.63	$14.25	$0.00	$0.00	$75.88
	06/01/2026	$62.93	$14.25	$0.00	$0.00	$77.18
	12/01/2026	$64.38	$14.25	$0.00	$0.00	$78.63

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *OPERATING ENGINEERS - Local 4*

Effective Date - 12/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$29.50	$14.25	$0.00	$0.00	$43.75
2	60	$32.18	$14.25	$0.00	$0.00	$46.43
3	65	$34.86	$14.25	$0.00	$0.00	$49.11
4	70	$37.54	$14.25	$0.00	$0.00	$51.79
5	75	$40.22	$14.25	$0.00	$0.00	$54.47
6	80	$42.90	$14.25	$0.00	$0.00	$57.15
7	85	$45.59	$14.25	$0.00	$0.00	$59.84
8	90	$48.27	$14.25	$0.00	$0.00	$62.52

Effective Date - 06/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$30.18	$14.25	$0.00	$0.00	$44.43
2	60	$32.93	$14.25	$0.00	$0.00	$47.18
3	65	$35.67	$14.25	$0.00	$0.00	$49.92
4	70	$38.42	$14.25	$0.00	$0.00	$52.67
5	75	$41.16	$14.25	$0.00	$0.00	$55.41
6	80	$43.90	$14.25	$0.00	$0.00	$58.15
7	85	$46.65	$14.25	$0.00	$0.00	$60.90
8	90	$49.39	$14.25	$0.00	$0.00	$63.64

Notes:

Apprentice to Journeyworker Ratio:1:6

LABORER *LABORERS - ZONE 2*	12/01/2022	$37.16	$9.10	$0.00	$0.00	$46.26
	06/01/2023	$38.06	$9.10	$0.00	$0.00	$47.16
	12/01/2023	$38.96	$9.10	$0.00	$0.00	$48.06

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *LABORER - Zone 2*

Effective Date - 12/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$22.30	$9.10	$0.00	$0.00	$31.40
2	70	$26.01	$9.10	$0.00	$0.00	$35.11
3	80	$29.73	$9.10	$0.00	$0.00	$38.83
4	90	$33.44	$9.10	$0.00	$0.00	$42.54

Effective Date - 06/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$22.84	$9.10	$0.00	$0.00	$31.94
2	70	$26.64	$9.10	$0.00	$0.00	$35.74
3	80	$30.45	$9.10	$0.00	$0.00	$39.55
4	90	$34.25	$9.10	$0.00	$0.00	$43.35

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER (HEAVY & HIGHWAY) *LABORERS - ZONE 2 (HEAVY & HIGHWAY)*	12/01/2022	$36.56	$9.35	$0.00	$0.00	$45.91
	06/01/2023	$37.46	$9.35	$0.00	$0.00	$46.81
	12/01/2023	$38.36	$9.35	$0.00	$0.00	$47.71
	06/01/2024	$39.69	$9.35	$0.00	$0.00	$49.04
	12/01/2024	$41.02	$9.35	$0.00	$0.00	$50.37
	06/01/2025	$42.41	$9.35	$0.00	$0.00	$51.76
	12/01/2025	$43.79	$9.35	$0.00	$0.00	$53.14
	06/01/2026	$45.23	$9.35	$0.00	$0.00	$54.58
	12/01/2026	$46.67	$9.35	$0.00	$0.00	$56.02

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

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

Effective Date - 12/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$21.94	$9.35	$0.00	$0.00	$31.29
2	70	$25.59	$9.35	$0.00	$0.00	$34.94
3	80	$29.25	$9.35	$0.00	$0.00	$38.60
4	90	$32.90	$9.35	$0.00	$0.00	$42.25

Effective Date - 06/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$22.48	$9.35	$0.00	$0.00	$31.83
2	70	$26.22	$9.35	$0.00	$0.00	$35.57
3	80	$29.97	$9.35	$0.00	$0.00	$39.32
4	90	$33.71	$9.35	$0.00	$0.00	$43.06

Notes:

Apprentice to Journeyworker Ratio:1:5

OILER (OTHER THAN TRUCK CRANES,GRADALLS) *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$24.37	$14.25	$0.00	$0.00	$38.62
	06/01/2023	$24.94	$14.25	$0.00	$0.00	$39.19
	12/01/2023	$25.51	$14.25	$0.00	$0.00	$39.76
	06/01/2024	$26.11	$14.25	$0.00	$0.00	$40.36
	12/01/2024	$26.77	$14.25	$0.00	$0.00	$41.02
	06/01/2025	$27.37	$14.25	$0.00	$0.00	$41.62
	12/01/2025	$28.03	$14.25	$0.00	$0.00	$42.28
	06/01/2026	$28.62	$14.25	$0.00	$0.00	$42.87
	12/01/2026	$29.29	$14.25	$0.00	$0.00	$43.54
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$29.57	$14.25	$0.00	$0.00	$43.82
	06/01/2023	$30.27	$14.25	$0.00	$0.00	$44.52
	12/01/2023	$30.96	$14.25	$0.00	$0.00	$45.21
	06/01/2024	$31.68	$14.25	$0.00	$0.00	$45.93
	12/01/2024	$32.48	$14.25	$0.00	$0.00	$46.73
	06/01/2025	$33.20	$14.25	$0.00	$0.00	$47.45
	12/01/2025	$34.00	$14.25	$0.00	$0.00	$48.25
	06/01/2026	$34.72	$14.25	$0.00	$0.00	$48.97
	12/01/2026	$35.52	$14.25	$0.00	$0.00	$49.77
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
OTHER POWER DRIVEN EQUIPMENT - CLASS II *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.05	$14.25	$0.00	$0.00	$67.30
	06/01/2023	$54.29	$14.25	$0.00	$0.00	$68.54
	12/01/2023	$55.53	$14.25	$0.00	$0.00	$69.78
	06/01/2024	$56.81	$14.25	$0.00	$0.00	$71.06
	12/01/2024	$58.25	$14.25	$0.00	$0.00	$72.50
	06/01/2025	$59.53	$14.25	$0.00	$0.00	$73.78
	12/01/2025	$60.97	$14.25	$0.00	$0.00	$75.22
	06/01/2026	$62.25	$14.25	$0.00	$0.00	$76.50
	12/01/2026	$63.69	$14.25	$0.00	$0.00	$77.94
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PANEL & PICKUP TRUCKS DRIVER *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$35.78	$13.41	$0.00	$0.00	$49.19
POWER SHOVEL/DERRICK/TRENCHING MACHINE *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.63	$14.25	$0.00	$0.00	$67.88
	06/01/2023	$54.88	$14.25	$0.00	$0.00	$69.13
	12/01/2023	$56.13	$14.25	$0.00	$0.00	$70.38
	06/01/2024	$57.43	$14.25	$0.00	$0.00	$71.68
	12/01/2024	$58.88	$14.25	$0.00	$0.00	$73.13
	06/01/2025	$60.18	$14.25	$0.00	$0.00	$74.43
	12/01/2025	$61.63	$14.25	$0.00	$0.00	$75.88
	06/01/2026	$62.93	$14.25	$0.00	$0.00	$77.18
	12/01/2026	$64.38	$14.25	$0.00	$0.00	$78.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.63	$14.25	$0.00	$0.00	$67.88
	06/01/2023	$54.88	$14.25	$0.00	$0.00	$69.13
	12/01/2023	$56.13	$14.25	$0.00	$0.00	$70.38
	06/01/2024	$57.43	$14.25	$0.00	$0.00	$71.68
	12/01/2024	$58.88	$14.25	$0.00	$0.00	$73.13
	06/01/2025	$60.18	$14.25	$0.00	$0.00	$74.43
	12/01/2025	$61.63	$14.25	$0.00	$0.00	$75.88
	06/01/2026	$62.93	$14.25	$0.00	$0.00	$77.18
	12/01/2026	$64.38	$14.25	$0.00	$0.00	$78.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$35.08	$14.25	$0.00	$0.00	$49.33
	06/01/2023	$35.90	$14.25	$0.00	$0.00	$50.15
	12/01/2023	$36.72	$14.25	$0.00	$0.00	$50.97
	06/01/2024	$37.57	$14.25	$0.00	$0.00	$51.82
	12/01/2024	$38.52	$14.25	$0.00	$0.00	$52.77
	06/01/2025	$39.37	$14.25	$0.00	$0.00	$53.62
	12/01/2025	$40.32	$14.25	$0.00	$0.00	$54.57
	06/01/2026	$41.18	$14.25	$0.00	$0.00	$55.43
	12/01/2026	$42.13	$14.25	$0.00	$0.00	$56.38
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ROLLER/SPREADER/MULCHING MACHINE *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.05	$14.25	$0.00	$0.00	$67.30
	06/01/2023	$54.29	$14.25	$0.00	$0.00	$68.54
	12/01/2023	$55.53	$14.25	$0.00	$0.00	$69.78
	06/01/2024	$56.81	$14.25	$0.00	$0.00	$71.06
	12/01/2024	$58.25	$14.25	$0.00	$0.00	$72.50
	06/01/2025	$59.53	$14.25	$0.00	$0.00	$73.78
	12/01/2025	$60.97	$14.25	$0.00	$0.00	$75.22
	06/01/2026	$62.25	$14.25	$0.00	$0.00	$76.50
	12/01/2026	$63.69	$14.25	$0.00	$0.00	$77.94
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
SPECIALIZED EARTH MOVING EQUIP < 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.24	$13.41	$0.00	$0.00	$49.65
SPECIALIZED EARTH MOVING EQUIP > 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.53	$13.41	$0.00	$0.00	$49.94
TRACTORS/PORTABLE STEAM GENERATORS *OPERATING ENGINEERS LOCAL 4*	12/01/2022	$53.05	$14.25	$0.00	$0.00	$67.30
	06/01/2023	$54.29	$14.25	$0.00	$0.00	$68.54
	12/01/2023	$55.53	$14.25	$0.00	$0.00	$69.78
	06/01/2024	$56.81	$14.25	$0.00	$0.00	$71.06
	12/01/2024	$58.25	$14.25	$0.00	$0.00	$72.50
	06/01/2025	$59.53	$14.25	$0.00	$0.00	$73.78
	12/01/2025	$60.97	$14.25	$0.00	$0.00	$75.22
	06/01/2026	$62.25	$14.25	$0.00	$0.00	$76.50
	12/01/2026	$63.69	$14.25	$0.00	$0.00	$77.94
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.82	$13.41	$0.00	$0.00	$50.23
VAC-HAUL/CATCH BASIN CLEANING *TEAMSTERS JOINT COUNCIL NO. 10 ZONE B*	12/01/2021	$36.24	$13.41	$0.00	$0.00	$49.65

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.