



# TOWN OF WESTWOOD COMMONWEALTH OF MASSACHUSETTS

## ATTACHMENT A SPECIAL PROVISIONS

### Miscellaneous Paving – Pavement Management Program – 2021 Westwood, Massachusetts

#### **SCOPE OF WORK**

The work under this contract includes, but is not necessarily limited to, providing all necessary labor, materials, and equipment required to provide cleaning, general preparation, resetting/adjusting of utility castings, pavement milling, installation of an overlay course, installation of a stamped asphalt median, pavement markings, and all other specified and incidental work on Pond Lane, Clapboardtree Street, High Rock Street, and Hartford Street.

All work done under this contract shall be in conformance with the Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges dated 2021, Massachusetts Department of Transportation Construction Standard Details dated October 2017, the latest Manual on Uniform Traffic Control Devices for Streets and Highways with Massachusetts Amendments, the latest Public-Right-of-Way Accessibility Guidelines (PROWAG), and the latest United States Access Board's ADA and ABA accessibility guidelines will govern. **Please note: Each pay item shall conform to the Massachusetts Department of Transportation Standard Specifications and to the provided Special Provisions provided in this Bid Document.**

The General Conditions, Supplementary Conditions and these Special Provisions shall take precedence over the General Requirements of Division 1 of the Standard Specifications of the Massachusetts Department of Transportation (MassDOT).

The Contractor is responsible to secure staging area(s) for storing construction equipment and materials for construction as incidental to this project. No separate payment shall be made.

#### **WORK SCHEDULE**

Work on this project is restricted to a normal eight-hour day, five-day week, with the Contractor and all Subcontractors working on the same shift. No work shall be done on this Contract on Saturdays, Sundays or holidays or on the day before or the day after a long weekend which involves a holiday without prior approval by the Town of Westwood.

No work that will disrupt travel on the existing roadways (lane closures, lane shifts, trenching, etc.) shall be done before 7:00 AM and after 3:00 PM. A minimum of one lane in each direction will be maintained at all times (7:00 AM to 3:00 PM) with the exception of brief periods approved by the Town. Pedestrian access on all sidewalks shall be maintained at all times. The normal hours of



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operation shall be dictated by the Town. A written request shall be issued by the Contractor for any deviation to hours of operation for approval by the Town. Bids should not assume that any requests shall be granted.

The Contractor shall submit an updated project schedule to the Town weekly or as requested by the Town during construction period for review and approval.

No work shall be allowed on the Memorial Day Weekend or Fourth of July weekend.

The Contractor shall submit an updated project schedule to the Town weekly or as requested by the Town during construction period for review and approval.

The Contractor shall work continuously on the project until all work included in the contract is complete. The project shall be completed within 120 days from notice to proceed.

### **AUDIO-VIDEO RECORDING**

The Contractor shall provide all labor, materials, and equipment necessary to furnish high quality color audio and video recording of the existing pre-construction conditions of the project area as specified herein.

The Contractor shall submit to the Engineer / Town one original and one copy of a continuous color audio video DVD recording or other format as requested by the Town. The recording shall be submitted to and approved by the Town prior to any construction activity.

The Town reserves the right to reject the audio-video recording because of poor quality, unintelligible audio, or uncontrolled pan or zoom. Any recording rejected by the Engineer / Town shall be re-recorded at no additional cost. Under no circumstances shall construction begin until the Town has received and accepted the audio-video recordings.

The taping shall be performed by a qualified, establish audio-video recording firm knowledgeable in construction practices and experienced in the implementation of established inspection procedures. This task shall be completed with a representative from the Engineering Division. Notice shall be provided to the engineering division at least 48 hours prior to anticipate videotaping efforts.

The cost of this task shall be considered incidental to this project. No additional compensation shall be requested to the Town.



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### **PUBLIC SAFETY AND CONVENIENCE**

**The Contractor shall provide necessary access for fire apparatus and other emergency vehicles through the work zones to abutting properties at all times.**

**Sweeping and cleaning of surfaces beyond the limits of the project to clean up material caused by spillage or vehicular tracking during the various phases of the work shall be considered as incidental to the work being performed under the Contract and there will be no additional compensation.**

**The Contractor shall make his own investigation to assure that no damage to existing structures, drainage lines, traffic signal conduits, and other utilities will occur as a result of his operations.**

**The Contractor shall notify "Mass. DIG SAFE" and procure a DIG SAFE number of each location prior to disturbing ground in any way.**

**"DIG-SAFE" Call Center: Telephone 1-888-344-7233**

### **PROTECTION OF UNDERGROUND FACILITIES**

The Contractor, in constructing or installing facilities alongside or near sanitary sewers, storm drains, water or gas pipes, electric or telephone conduits, poles, sidewalks, walls, vaults or other structures shall, at his expense, sustain them securely in place, cooperating with the officers and agents of the various utility companies and municipal departments which control them, so that the services of these structures shall be maintained. The Contractor shall also be responsible for the repair or replacement, at his own expense, of any damage to such structures caused by his acts or neglect, and shall leave them in the same condition as they existed prior to commencement of the work. In case of damage to utilities, the Contractor shall promptly notify the utility owner and shall, if requested by the Engineer or Town, furnish labor and equipment to work temporarily under the utility owner's direction in providing access to the utility. Pipes or other structures damaged by the operation of the Contractor may be repaired by the Department or by the utility owner that suffers the loss. The cost of such repairs shall be borne by the Contractor, without compensation therefore. The Contractor shall be borne the responsibility and cost to coordinate if a pole needs to be secure in place while construction is in progress.

If, as the work progresses, it is found that any of the utility structures are so placed as to render it impracticable, in the judgment of the Engineer or the Town, to do the work called for under this Contract, the Contractor shall protect and maintain the services in such utilities and structures and the Owner will, as soon thereafter as reasonable, cause the position of the utilities to be changed or take such other actions deemed suitable and proper.



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If live service connections are to be interrupted by excavations of any kind, the Contractor shall not break the service until new services are provided. Abandoned services shall be plugged off or otherwise made secure.

Full compensation for furnishing all labor, materials, tools, equipment and incidentals for doing all the work involved in protecting or repairing property as specified in this section, shall be considered included in the prices paid for the various Contract items of work and no additional compensation will be allowed therefore.

### NOTICE TO OWNERS OF UTILITIES

*(Supplementing Subsections 5.05, 7.13 and 7.18)*

Written notice shall be given by the Contractor to all public service corporations or officials owning or having charge of publicly or privately owned utilities in the project vicinity of the Contractor's intention to commence operations affecting such utilities at least two weeks in advance of the commencement of such operations, and the Contractor shall at that time file a copy of such notice with the Engineer / Town.

The Contractor shall also be responsible for notifying the Town of Westwood, in writing, at least two weeks in advance of commencement of work. The Contractor shall also coordinate with the Town, as required, throughout the duration of the project, so that all the Town utilities may be located and all required permits may be obtained.

The Contract Plans indicate the approximate location of known utilities in the vicinity of the work. The accuracy and completeness of the information is not guaranteed.

Any damage to these utilities caused by negligence of the Contractor shall be repaired by the Contractor at their own expense and as accepted by the Engineer / Town.

It is the intent of these Special Provisions that the Contractor having been given due notice hereof will safeguard the utilities during construction and shall assume liability for damage, relieving the Town of Westwood from any liability.

A list of public and private utilities can be found on the MassDOT website at:  
<https://www.mass.gov/info-details/utility-contacts-by-district-and-municipality>

Select District 6 on top of the webpage, select Westwood, and then locate the utility. The Contractor shall inform the following officials in each area that he assigned to work:

Superintendent, Department of Public Works or Town Engineer, Superintendent, Water and Sewer Department,  
Police and Fire Department, Electric Department



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Town officials are shown on the following website:

<https://www.mass.gov/lists/massachusetts-city-and-town-websites>

The following are the names of owners and representatives of the principal utilities affected, but completeness of this list is not guaranteed:

### ELECTRIC

Eversource Electric  
50 Duchaine Blvd  
New Bedford, MA, 02745  
Contact: Richard Comeau  
Telephone: 508-441-5881

### GAS

Enbridge  
8 Wilson Way  
Westwood, MA 02090  
Contact: Kathy Aruda  
Telephone: 508-938-7728

Eversource Gas  
157 Cordaville Road, 3113  
Southborough, MA 01772  
Contact: Jeffrey Evans-Mongeon  
Telephone: 508-305-6970

### TELEPHONE

Verizon  
385 Myles Standish Boulevard  
Taunton, MA 02780  
Contact: Karen Mealey  
Telephone: 508-828-6437

### WATER

Dedham-Westwood Water District  
P.O. Box 9137  
Dedham, MA 02027  
Contact: Stephen Locke  
Telephone: 781-329-7090

### SEWER

Westwood DPW - Sewer  
50 Carby Street  
Westwood, MA 02090  
Contact: Todd Korchin  
Telephone: 978-251-2578

MWRA  
2 Griffin Way  
Chelsea, MA 02150  
Contact: Kevin McKenna  
Telephone: 617-222-3361



## TOWN OF WESTWOOD COMMONWEALTH OF MASSACHUSETTS

### NATIONAL GRID EMERGENCY TELEPHONE NUMBERS

#### GAS:

Emergency: 1-800-233-5325

New Service: 1- 877-696-4743

Customer Support: 1-800-732-3400

#### ELECTRIC:

Outage/ Emergency: 1-800-465-1212

New Service: 1-800-375-4730

Customer Support: 1-800-322-3223

### EVERSOURCE EMERGENCY TELEPHONE NUMBERS

#### GAS:

Outage/ Emergency: 800-592-2000

New Service: 866-678-2744

Customer Support: 800-592-2000

#### ELECTRIC:

Outage/ Emergency: 800-592-2000 or 844-726-7562 New Service: 1-888-633-3797 (1-888-need pwr)

Customer Support: 1-800-340-9822

### **PRICE ADJUSTMENT**

NOTICE: In accordance with MGL Chapter 303 Section 60 and Chapter 86 of the Acts of 2008, this contract shall be subject to the provisions relative to energy escalation. A price adjustment for liquid asphalt and Portland cement shall be made on a monthly basis when the monthly change exceeds +/- 5 percent. Base prices for this contract shall be the New Method period prices posted on the MassDOT website at the following link for the month of the Contract bid opening:

[MassDOT Contract Price Adjustments | Mass.gov](#)

See Attachment B for further details on the monthly price adjustments for hot mix asphalt (HMA) mixtures and diesel fuel and gasoline.



# TOWN OF WESTWOOD COMMONWEALTH OF MASSACHUSETTS

## ITEM 415.2

## PAVEMENT FINE MILLING

## SQUARE YARD

Work under this item shall conform to the relevant provisions under Section 400 of the standard specifications and the following:

The contractor shall be responsible for the transport and disposal of material milled from the existing road in this project. The contractor shall bear all costs associated with the milling, collection, transport, and disposal of the milled material from this project. The disposal shall be performed in accordance with all applicable local, state, and federal laws and/or regulations.

All required sawcutting in the existing pavement at all limits of work shall be considered incidental to the cost of this item.

### METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 415.2 shall be measured and paid for at the Contract unit price per square yard, complete in place, which price shall include all labor, materials, equipment, sawcutting, and incidentals required to complete the work.



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## ITEM 450.53

## SUPERPAVE LEVELING COURSE – 12.5 (SLC – 12.5)

TON

Work under this item shall conform to the relevant provisions under Section 400 of the standard specifications and the following:

The work under this item shall consist of placing a leveling course in areas of rutting or in areas where adjustments to the roadway grade are needed to achieve adequate drainage prior to placing surface courses. The contractor shall place a leveling course in areas as determined by the Town or Engineer. Prior to placing the leveling course, the contractor shall spread suitable tack coat emulsion meeting the material requirements of the Standard Specifications to ensure a proper bond between the leveling course and existing pavement. The tack coat must be applied by a truck or trailer to ensure even spreading at the appropriate rate.

Tack coat will be used at a rate of 0.08 GAL/SY prior to placement of the leveling course unless directed not to do so by the Town or Engineer.

Tonnage shall be determined by weight slips submitted to the Town or Engineer. This number will also be verified by the inch per square yard method of determining tonnage (inches of approved thickness, multiplied by square yard unit measurement, multiplied by the volume-to-weight conversion factor of 0.056 tons/inch/square yard).

### METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 450.53 shall be measured and paid for at the Contract unit price per ton, complete in place, which price shall include all labor, materials, equipment and incidentals required to complete the work.







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### ITEM 450.54

### HOT MIX ASPHALT SPEED HUMP

EACH

Work under this item shall conform to the relevant provisions under Section 400 of the standard specifications and the following:

The work under this under item shall include the removal and disposal of the existing speed humps within the project limits and furnishing and installation of new speed humps in-kind. Speed humps are to be installed in accordance with the Speed Hump Details provided in the drawings.

All required sawcutting in the existing pavement at all limits of speed hump work shall be considered incidental to the cost of this item.

### METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 450.54 shall be measured and paid for at the contract bid price per each, which price shall be full compensation for all labor, equipment, materials, sawcutting, and all incidentals necessary to complete the work to the satisfaction of the Engineer.



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**ITEM 470.**

**HOT MIX ASPHALT BERM**

**TON**

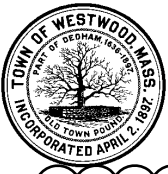
Work under this item shall conform to the relevant provisions under Section 470 of the standard specifications and the following:

All required sawcutting of existing pavement required to install HMA berm shall be considered incidental to the cost of this item.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Item 470 shall be measured and paid for at the Contract unit price per ton, which price shall include all labor, materials, equipment, sawcutting, and incidentals required to complete the work.





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**ITEM 697.1**

**SILT SACK**

**EACH**

Work under this item shall conform to the relevant provisions of Section 670 of the Standard Specifications, Section 227 of the Supplemental Specifications and the following:

The work under this item includes the furnishing, installation, maintenance and removal of a reusable fabric sack to be installed in drainage structures for the protection of wetlands and other resource areas and the prevention of silt and sediment from the construction site from entering the storm water collection system. Devices shall be ACF Environmental (800)-448-3636; Reed & Graham, Inc. Geosynthetics (888)-381-0800; The BMP Store (800)-644-9223; or approved equal.

**CONSTRUCTION**

Silt sacks shall be installed in retained existing and proposed catch basins and drop inlets within the project limits and as required by the Engineer.

The silt sack shall be as manufactured to fit the opening of the drainage structure under regular flow conditions, and shall be mounted under the grate. The insert shall be secured from the surface such that the grate can be removed without the insert discharging into the structure. The filter material shall be installed and maintained in accordance with the manufacturer's written literature and as directed by the Engineer.

Silt sacks shall remain in place until the placement of the pavement overlay or top course and the graded areas have become permanently stabilized by vegetative growth. All materials used for the filter fabric shall become the property of the Contractor and shall be removed from the site.

The Contractor shall inspect the condition of silt sacks after each rainstorm and during major rain events. Silt sacks shall be cleaned periodically to remove and disposed of accumulated debris as required. Silt sacks, which become damaged during construction operations, shall be repaired or replaced immediately at no additional cost to the Department.

When emptying the silt sack, the contractor shall take all due care to prevent sediment from entering the structure. Any silt or other debris found in the drainage system at the end of construction shall be removed at the Contractors expense. The silt and sediment from the silt sack shall be legally disposed of offsite. Under no condition shall silt and sediment from the insert be deposited on site and used in construction.

All curb openings shall be blocked to prevent stormwater from bypassing the device.

All debris accumulated in silt sacks shall be handled and disposed of as specified in Section 227.



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## ITEM 697.1 (Continued)

### METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 697.1 shall be measured and paid at the Contract unit price per each, complete in place, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

No separate payment shall be made for removal and disposal of the sediment from the insert, regardless of the frequency of removal and disposal, but all costs in connection therewith shall be included in the Contract unit price bid.



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**ITEM 702.**

**HOT MIX ASPHALT SIDEWALK OR DRIVEWAY**

**TON**

Work under this item shall conform to the relevant provisions under Section 702 of the standard specifications and the following:

All required sawcutting of existing driveway or sidewalk pavement at all limits of work shall be considered incidental to the cost of this item.

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT**

Item 702. shall be measured and paid for at the Contract unit price per ton, which price shall include all labor, materials, equipment, sawcutting, and incidentals required to complete the work.



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### ITEM 706.9

### TEXTURIZED DECORATIVE PAVEMENT

### SQUARE YARD

The work under this Item shall be in accordance with Section 860 of Standard Specifications for Highways and Bridges and the following: The work under this Item shall include preparation of the pavement surface in conjunction with the application of one or more courses of a polymer modified flexible cement surfacing material that may be used as a complete light, durable, skid resistant, composite wearing surface, or textured and colored on sections of pavement to simulate hand laid brick and/or conventional masonry where shown on the plans or as directed by the Engineer.

This work shall be for the proposed median at the Pond Street/Clapboardtree Street Intersection and labeled as “stamped asphalt median” on the plans. The color shall be brick red and the pattern shall be standard size cobblestone arranged in a running bond, brick orientation.

### PREPARATION

The areas to be surfaced with the specified material(s) must be structurally sound and may consist of either asphalt or cement concrete. When these material(s) are intended for application on a newly paved asphalt surface a curing period will be required to ensure that no concentration of oils are present. A suitable approved pavement heater may be employed to expedite curing when a delayed work schedule is not advisable.

Surface preparation will then be performed in the following general manner:

The pavement surface is to be thoroughly cleaned by approved methods removing all contaminants that may prevent proper adhesion of the new surfacing material(s). A suitable approved pavement heater shall be employed where surface oils, fuel and the like exist on the surface, to remove these incompatible materials. New bituminous concrete shall be added as necessary, thermally bonded to the pavement and compacted to achieve a density equal to the surrounding or adjacent pavement. No work shall be initiated until the surface condition conforms to manufacturer recommended standards for both structure and cleanliness.

All applications shall be installed in a neat and uniform manner by approved methods. The Contractor will be responsible for furnishing and placing a sufficient number of safety cones together with caution tape to adequately protect all work zones, and to insure the orderly flow of vehicular and pedestrian traffic.

Residues resulting from this element of the work shall be immediately removed from the jobsite(s) and must be disposed of in a proper manner. There will be no additional compensation for the disposal of



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### **ITEM 706.9 (Continued)**

excess or unused materials. Pavement sections where the surfacing work is incomplete must be left in a neat and clean condition, satisfactory to the Engineer at the end of each workday.

### **INSTALLATION**

Contractor shall be responsible for the preparation, placement and patterning of the polymer modified flexible surfacing material(s) for all applications according to the manufacturer's guidelines and subject to the approval of the Engineer. When required, this composite paving material shall be uniformly and homogeneously formulated with color stable pigments and surface textured to simulate hand laid brick and/or masonry.

A simulated mockup consisting of the color(s) and pattern(s) as selected by the Engineer and the Town, will be constructed, within a designated section of the overall work area, at least five working (5) days prior to the initiation of this phase of construction. The mockup site will be determined by the Engineer. Weather permitting and only with approval of the completed sample section, the work shall begin. The cost of the mockup shall be included in the unit price for this item and shall encompass a minimum surface area of 3'x3'.

A working knowledge of the specialized technology contained within these specifications is required. Only certified applicators may be employed for this work. In the event that this material and/or surfacing system constitutes or is claimed to constitute proprietary technology subject to U.S. Patent protection, the Contractor will be required to furnish written evidence satisfactory to the Owner that he/she is an accredited, authorized and/or licensed installer of the patented material/process.

The installation phase of this work shall be performed in the following general manner:

Using manufacturer prescribed methods and equipment as described herein, the Contractor shall properly blend and mix the water, polymer modified cement, aggregate and pigments (color will be selected by the Town) to achieve the desired consistency. The polymer shall be an acrylic based material furnished in an aqueous emulsified state to prevent the loss of internal strength and bond which may result in cohesive and adhesive failure. The measuring and mixing operation shall be capable of producing a workable, consistent, homogeneous mixture for the intended application. Only then shall the Contractor apply the composite to the surface of a hardened, structurally sound bituminous concrete pavement as directed.

Using specialized equipment and tools as necessary the desired ultra-thin composite mixture shall be sufficiently and uniformly applied to the surface. The finished material must be capable of being spread to a consistent build thickness of as little as .0625 inches per layer. Segregation of the mixed material shall be avoided. Should this condition present itself the material and/or application must be corrected immediately or replaced, as determined by the Engineer. When this newly constructed ultra-thin finish



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### **ITEM 706.9 (Continued)**

is applied over bituminous concrete it shall provide a flexible, fuel, skid and UV resistant surface, which results in a reduction of susceptibility to natural oxidation.

No material shall be applied when precipitation is present or imminent inclement weather will prevent proper curing. No material may be allowed to exceed the workability limitations of the composite mixture.

Hand applications will be utilized for smaller sections when a color distinction and/or surface pattern is required. Patterned applications intended to resemble masonry will be constructed in two (2) layers and colors in accordance with the design drawings or as otherwise directed by the Town.

Finish patterns and colors may only be applied after the first course has adequately cured.

Once the newly finished surfaces have cured sufficiently, the application area may be opened to vehicular and/or pedestrian traffic. Any residue resulting from this work shall be removed and disposed of in a proper manner. The completed work area is to be left in a neat and clean condition, satisfactory to the Engineer.

The Contractor shall take reasonable precautions and steps during construction to prevent bodily harm or injury or damage to adjacent structures such as curbing, sidewalks, drainage, or water supply facilities. If during the execution of the work, the Contractor, through willfulness or carelessness, permits or causes any damage to public or private property, the cost of repair or replacement shall be the responsibility of the Contractor at no expense to the Town.

The Contractor shall maintain minimum ten (10) foot vehicular travel lanes at all times during this operation unless otherwise approved.

### **MATERIALS**

The composite material(s) used for this polymer modified thin surfacing system must support a documented performance history satisfactory to the Town that is compatible with the functions and characteristics detailed within these specifications. This material must also be able to demonstrate long term adhesion, flexibility and abrasion resistance characteristics, scrub ability, as well as color stability, chemical and fuel resistance.

The Contractor will be required to furnish to the Engineer five (5) applications that have been placed on main thoroughfares, complete with contact information and locations using the material(s) as specified herein. The ultra-thin layer polymer composite(s) used on these projects must support a documented





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### ITEM 706.9 (Continued)

history of field performance and integrity for the type of work described herein for a minimum period of five (5) years. No waiver of this condition will be allowed.

The composite material shall be flexible with form stability which is compatible with existing bituminous pavements and be formulated using polymer modifications as necessary to suit local traffic and climate conditions. The specified polymer modified composite material(s) when mixed and cured in accordance with manufacturer's guidelines shall demonstrate the physical properties outlined in the following table.

### MATERIAL PROPERTIES

<u>Physical Properties</u>	<u>Test Method</u>	<u>Minimum Test Value</u>
Compressive Strength	ASTM C 39	3,100 PSI
Solar Reflectivity Index	ASTM E1918 ASTM C 1549	>29
Shear Bond Adhesion	ASTM C 1583	>250 PSI
Skid Resistance (mixed)	ASTM E-274	>40
Tensile Strength	ASTM C 190	615 PSI (3.9 MPa)
Freeze-Thaw Scaling Resistance	ASTM C672-98	0

### MATERIAL COMPONENTS

Water. The water used in mixing these composite(s) shall be of potable quality and free from soluble salts.

Chemical Admixtures/pigments. All chemical admixtures shall be introduced during the manufacturing process. Pigments may only be added on site to achieve a particular color quality or tint preference as directed.

Surface Sealer. A suitable approved surface sealer, if required, may be applied to the polymer modified composite(s) to provide additional protection in fueling areas, or to prevent surface efflorescence when colors are utilized.

Material Verification. Upon request the Contractor shall provide a Certificate of Analysis (COA) for the polymer emulsion, aggregate and aggregate dry blend verifying that the materials meet the specific requirements outlined herein.

Questionable product with just cause may be subjected to all of the specified testing procedures. All material testing will be conducted by a third party independent certified laboratory acceptable to the Engineer, and will be the financial responsibility of the Contractor. Samples failing in any test category



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### **ITEM 706.9 (Continued)**

will result in immediate rejection of the material from further consideration or use and may disqualify the contractor from this phase of the work.

Material(s) furnished pursuant to this work shall not be harmful to humans or the environment and must possess a Design for the Environment (DfE) as designated by the United States Environmental Protection Agency (EPA).

No payment will be rendered for any work until a manufacturer's certificate of compliance has been furnished by the Contractor. A Material Safety Data Sheet (MSDS) will also be required before any work is initiated.

### **EQUIPMENT**

Contractor must have access to and be familiar with the specialized machinery and tools necessary to perform the procedures as outlined and contained within these technical specifications. These items shall include but not be limited to dedicated surfacing equipment designed exclusively for use in applying thin layer polymer modified composite(s), appropriate trucks, air compressors, miscellaneous dispensers, mixers, applicators, heaters, cutters and/or specialized tools etc.

To ensure optimum work site efficiency and project safety considerations, multiple crews may be required when hand applications or custom patterns as described previously are necessary.

### **MOBILIZATION**

Construction of these flexible ultra-thin surfaces shall commence within twenty-four (24) hours of written notification to proceed as issued by the Contractor. Work shall commence within this timeframe without regard to the number of mobilizations that may be required by the Engineer to complete this work.

Due to the logistical complications inherent to this type of specialized construction, and given the general project size, scope, schedule and public safety concerns, the Contractor may not assume that a single mobilization will be sufficient to complete this entire phase of the work required in a safe and orderly fashion. No separate payment will be made for any additional mobilization or demobilization as may be necessary to complete the project.



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### ITEM 706.9 (Continued)

#### GUARANTEE / WARRANTY

The Contractor shall warranty all applications from defects resulting from improper workmanship and faulty or inferior materials for a minimum period of three (3) years. All defective materials and/or substandard work will be corrected or replaced within the warranty period as directed by the Engineer.

#### METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 706.9 Texturized Decorative Pavement will be measured for payment by the Square Yard, completed in place.

Item 706.9 Texturized Decorative Pavement will be paid for at the Contract unit price per Square Yard, which price shall include all labor, materials, equipment, mobilization, expansion joint filler, sawcutting, mockup and incidental costs required to complete this work including ancillary preparation of the pavement. No payment deductions will be made for structures within the work area such as manholes, catch basins or water covers.



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<b><u>ITEM 864.07</u></b>	<b><u>PAVEMENT ARROW AND LEGENDS (EPOXY)</u></b>	<b><u>SQUARE FOOT</u></b>
<b><u>ITEM 868.06</u></b>	<b><u>6 INCH REFLECTORIZED WHITE LINE (EPOXY)</u></b>	<b><u>LINEAR FOOT</u></b>
<b><u>ITEM 868.12</u></b>	<b><u>12 INCH REFLECTORIZED WHITE LINE (EPOXY)</u></b>	<b><u>LINEAR FOOT</u></b>
<b><u>ITEM 869.06</u></b>	<b><u>6 INCH REFLECTORIZED YELLOW LINE (EPOXY)</u></b>	<b><u>LINEAR FOOT</u></b>
<b><u>ITEM 869.12</u></b>	<b><u>12 INCH REFLECTORIZED YELLOW LINE (EPOXY)</u></b>	<b><u>LINEAR FOOT</u></b>

Work under these items cover white and yellow epoxy reflectorized pavement striping material that is sprayed onto the pavement. Following a surface application of glass beads and upon drying, the resultant marking is a reflectorized stripe of specified thickness and width that is capable of resisting deformation by traffic. Work under these items shall conform to the relevant provisions of Section 860 of the Standard Specifications and the following:

**MATERIAL REQUIREMENTS**

**Regular-Dry Epoxy Suggested Suppliers**

**BRAND NAME**

**SUPPLIER/LOCATION**

Epoplex LS50

Epoplex - Stonhard Inc.  
Maple Shade, NJ

Hotline TM 8212 (Part A White)  
Hotline TM 8213 (part A Yellow)  
Hotline TM 8214 (Part B Hardener or Converter)

Baltimore Paint and Chemical Co.  
Division of Sherwin-Williams  
Baltimore, MD  
Edison, NJ

Lumiline,  
Lumiline II

Accent Stripe, Inc.  
Orchard Park, NY

Poly-Carb Mark 55.3

Poly-Carb Inc.  
Solon, OH

Super Lifeline II, III

Linear Dynamics  
Ball Ground, GA

Thermopoxy Series 100  
Part A (Series 101 White)  
Part A (Series 102 Yellow)  
Part B (Series 103)

Technical Coatings Corp.  
Alpharetta, GA



# TOWN OF WESTWOOD COMMONWEALTH OF MASSACHUSETTS

## ITEMS 864.07 through 869.12 (Continued)

### Epoxy Material

- Composition

The epoxy resin composition shall be specifically formulated for use as a pavement marking material and for hot-spray application at elevated temperatures. The type and amounts of epoxy resins and curing agents shall be at the option of the manufacturer, providing the other composition and physical requirements of this specification are met.

The epoxy marking material shall be two-component (Part A and Part B), 100% solids type system formulated and designed to provide a simple volumetric mixing ratio (e.g., two volumes of Part A to one volume of Part B).

The epoxy marking material shall be supplied as either a regular-dry or a slow-dry material. Regular-dry may be used for all marking patterns. Slow-dry material is intended for marking hatchlines, edgelines, and other marking patterns located out of the general path of traffic.

All acceptances of uninstalled epoxy marking material shall expire six (6) months after the date of manufacture.

Part A of both white and yellow shall conform to the following requirements:

#### **PERCENT BY WEIGHT OF PART A**

WHITE	Pigment - 18 Minimum, Titanium Dioxide (ASTM D476, Type II) Epoxy Resin - 75 to 82
YELLOW	Pigment - 18 Minimum, Titanium Dioxide (ASTM D476, Type II) 5 Minimum, Organic Yellow, Epoxy Resin – 73 to 77

The entire pigment composition shall consist of either titanium dioxide or titanium dioxide and organic yellow. No extender pigments are permitted. Yellow pigment shall be lead-free.

The epoxy content of the epoxy resin in Part A will be tested in accordance with ASTM D 1652 and calculated as the weight per epoxy equivalent (WPE) for both white and yellow. The epoxy content will be determined on a pigment free basis. The epoxy content (WPE) shall meet a target value provided by the manufacturer and approved by the Department. A  $\pm 50$  tolerance will be applied to the target value to establish the acceptance range.



# TOWN OF WESTWOOD COMMONWEALTH OF MASSACHUSETTS

## ITEMS 864.07 through 869.12 (Continued)

The amine value of Part B shall be tested in accordance with ASTM D2074(2) to determine its total amine value. The total amine shall meet a target value provided by the manufacturer and approved by the Department. A  $\pm 50$  tolerance will be applied to the target value to establish the acceptance range. The manufacturer may specify an alternate test method for determining the amine value subject to the approval of the Town.

- Physical Properties of Mixed Components (Part A and Part B).

Unless otherwise noted, all samples are to be prepared tested at an ambient temperature of  $23 \pm 2^\circ\text{C}$ .

**a. Color**

Yellowness Index (ASTM D-1925).

- cure 72 hours after sample preparation
- Take yellow index reading, XYZ C/2°, following 72 hour cure and preceding QUV
- Maximum index before QUV: 8.0
- Place sample in QUV for 72 hours
- Maximum index after QUV: 20

Typical White Standard	Typical Yellow Standard
X78.5	X52.7
Y81.1	Y48.1
Z90.4	Z7.6
Y14.7	

**b. Directional Reflectance**

The white epoxy composition (without glass spheres) shall have a daylight directional reflectance of not less than 84% relative to a magnesium oxide standard when tested in accordance with ASTM E1347.

The yellow epoxy composition (without glass spheres) shall have a daylight directional reflectance of not less than 55 % relative to a magnesium oxide standard when tested in accordance with ASTM E 1347.

**c. Drying Time (Laboratory)**

When tested in accordance with ASTM D711 as modified below, regular-dry epoxy marking material shall reach a no-pick-up time in 30 minutes or less.



## TOWN OF WESTWOOD COMMONWEALTH OF MASSACHUSETTS

### ITEMS 864.07 through 869.12 (Continued)

Under these same test conditions, slow-dry epoxy marking material shall reach a no-pick-up time in 60 minutes or less. A Bird Applicator or other suitable instrument shall be used to spread a nominal  $15 \pm 1$  mil thick wet film. Reflective glass spheres shall be immediately dropped onto the epoxy film at a rate of 18 pounds per gallon.

**d. Drying Time (Field)**

When installed at 77°F at the specified wet film thickness and reflectorized with glass spheres, regular-dry and slow-dry epoxy markings shall reach a no-track condition in approximately 30 minutes, and 60 minutes, respectively.

Dry to "no-tracking" shall be considered as the condition where no visual deposition of the epoxy marking to the pavement surface is observed when viewed from a distance of 50 feet, after a passenger car is passed over the line.

**e. Hardness**

The epoxy composition when tested in accordance with ASTM D2240 shall have a Shore D hardness of between 75 and 100. Samples shall be allowed to cure for not less than 72 hours nor more than 96 hours prior to testing.

**f. Infrared Spectrophotometer Analysis (ASTM D2621)**

Samples of Part A and Part B shall be analyzed by infrared spectrography. The spectrum of each component shall be a reasonable match to the spectrum of the original formulation accepted by the Department.

- Reflective Glass Spheres

Reflective glass spheres for drop-on application shall conform to the following requirements:

The glass spheres shall be colorless, clean, transparent, free from milkiness or excessive air bubbles, and essentially clean from surface scarring or scratching. They shall be spherical in shape and at least 80 % of the glass beads shall be true spheres when tested in accordance with ASTM is D-1155, Procedure A. The refractive index of the spheres shall be a minimum of 1.5 as determined by the liquid immersion method at 77°F. The silica content of the glass spheres shall not be less than 60%. The glass spheres shall have the following gradation when tested in accordance with ASTM D-1214.



# TOWN OF WESTWOOD COMMONWEALTH OF MASSACHUSETTS

## ITEMS 864.07 through 869.12 (Continued)

### DOUBLE DROP METHOD

TYPE I		TYPE II	
Sieve Opening	% Retained	Sieve Opening	% Retained
No. 10	0	No. 20	0 - 5
No. 12	0 - 5	No. 30	5 - 20
No. 14	5 - 20	No. 50	30 - 50
No. 16	40 - 80	No. 80	9 - 32
No. 18	10 - 40	No. 100	0 - 5
No. 20	0 - 5	Pan	0 - 2
Pan	0 - 2		

The glass spheres, Type I, shall be coated with a silane-type adherence coating to enhance embedding in and adherence to the applied binder film. The coated beads shall emit a yellow-green fluorescence when tested by the Danayl Chloride test procedure. The Type II glass spheres shall be treated with a moisture-proof coating. The beads shall show no tendency to adsorb moisture in storage and shall remain free of clusters and lumps. The beads shall flow freely from the dispensing equipment at any time when surface and atmospheric conditions are satisfactory for marking operations. The moisture-resistance of the glass spheres shall be determined on the basis of the following test:

Place one kilogram of spheres in a washed cotton bag having a thread count of approximately 52 per square inch (warp and woof) and immerse the bag in a container of water for 30 seconds. Remove the bag and force excess water from the sample by squeezing the bag. Suspend and allow to drain for two hours at room temperature (73 ± 2°F). Then mix the sample in the bag by shaking thoroughly. Pour the sample slowly into a clean, dry glass funnel having a stem 4 inches in length, with a 0.4 inch inside diameter stem entrance opening and a minimum exit opening of 0.25 inches. The entire sample shall flow freely through the funnel without stoppage. When first introduced into the funnel, if the spheres clog, it is permissible to lightly tap the funnel to initiate the flow.

Reflective glass spheres may be accepted at the job site on the basis of the manufacturer's certification, or they may be submitted to the Research and Materials Laboratory for testing.

- Packaging and Shipment

Epoxy pavement marking materials shall be shipped to the job site in strong, substantial containers. Individual containers shall be plainly marked with the following information:

1. Name of Product
2. Item Number





## TOWN OF WESTWOOD COMMONWEALTH OF MASSACHUSETTS

### ITEMS 864.07 through 869.12 (Continued)

3. Lot Number
4. Batch Number
5. Test Number
6. Date of Manufacture
7. Date of Expiration of Acceptance (6 months from date of manufacture)
8. The Statement (as appropriate): "Part A - Contains Pigment and Epoxy Resin," or "Part B - Contains Catalyst"
9. Quantity
10. Mixing Proportions, Application Temperature and Instructions
11. Safety Information
12. Manufacturer's Name and Address

Reflective glass spheres shall be shipped in moisture resistant bags. Each bag shall be marked with the name and address of the manufacturer and the name and net weight of the material.

### EQUIPMENT AND APPLICATION REQUIREMENTS

#### Striping Equipment

The equipment shall have a system capable of spraying the epoxy paint in the manufacturer's recommended proportions and be mounted on a truck of sufficient size and stability, and with an adequate power source to produce lines of uniform dimension and prevent application failure. It shall be capable of placing stripes on the left and right sides and of placing two intermittent lines simultaneously. It shall also be capable of applying glass beads at the rate of 25 pounds per gallon. All guns must be in full view of the operator at all times. The equipment shall be provided with a metering device to register the accumulated installed footage for each gun each day. Each vehicle shall include at least one operator who shall be a technical expert in equipment operations and epoxy application techniques.

Equipment shall have such a design that the pressure gauges for each proportioning pump are constantly visible to the operator at all times during its operation so that any fluctuation and pressure difference can be addressed immediately.

#### Surface Preparation

The pavement surface on which the epoxy paint material is placed shall be clean and dry. Existing traffic markings shall be removed by blasting or grinding. The curing compound on Portland cement concrete shall also be removed. Existing markings shall be removed so that at least 95% of the underlying pavement is visible. The abrasive material shall be removed from the pavement surface before the pavement is opened to uncontrolled traffic flow.



## TOWN OF WESTWOOD COMMONWEALTH OF MASSACHUSETTS

### ITEMS 864.07 through 869.12 (Continued)

#### Application

- Epoxy

The epoxy paint markings shall have a thickness of 25 mils  $\pm$  1mil, calculated without drop-on glass beads. All markings shall have uniform thickness with a uniform distribution of glass beads throughout the line width. The width of lines shall be as specified with a tolerance of 0.25 inch. Markings shall have sharp edges and cutoff at the ends.

- Glass Beads

The glass beads shall be applied by the double drop method, which requires that Type I and Type II reflective glass spheres be injected into or dropped onto the liquid epoxy marking. Each type shall be applied simultaneously, at a minimum rate of 10 to 13 pounds per gallon of resin with a minimum total application of 25 pounds per gallon. Type I beads shall be applied first, immediately followed by Type II beads. The beads shall adhere to the cured epoxy or all marking operations shall cease until corrections are made.

- Temperature Limitations

During marking operations, the pavement surface where the epoxy is to be placed shall have a minimum temperature of 40° F and the air temperature shall be at least 35° F. The pavement surface temperature, and the air temperature shall be determined at the start of each day of marking operation and at any time deemed necessary by the Engineer. The spraying temperatures shall be in accordance with the manufacturer's recommendations.

- Application Rates

Application rates will be checked by the Engineer at convenient intervals by comparing tallies of materials used to the length of lines placed. For initial application and occasionally during the course of work, the Engineer may also check application to a pre-weighed sheet specifically placed for test purposes. Drop-on spheres shall not be applied in this test.

- Protecting Newly installed Markings

Newly installed markings shall be protected from tracking during the setting period by one or more of the following methods:



## TOWN OF WESTWOOD COMMONWEALTH OF MASSACHUSETTS

### ITEMS 864.07 through 869.12 (Continued)

- 1) Cone off wet lines from traffic
- 2) Use a convoy of moving vehicles to prevent traffic from crossing wet lines
- 3) Saturate lines with glass beads to prevent tracking.

### METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Items 864.07, 868.06, 868.12, 869.06, and 869.12 shall be measured and paid for at the Contract unit price per linear foot, which price shall include all labor, materials, equipment and incidental costs required to complete the work.



# TOWN OF WESTWOOD COMMONWEALTH OF MASSACHUSETTS

## ITEM 999.

## POLICE SERVICES

## LUMP SUM

### GENERAL

The Contractor shall furnish police services required to direct traffic on existing roadways where traffic is maintained.

The Contractor shall provide such police officers as may be deemed necessary by either the Engineer and/or Town for the direction and control of all traffic traveling within and through the project area. The police officers shall be obtained from the Town Police Department as applicable. The police officers shall be paid by the Contractor at the prevailing rate of wages established by the Town of Westwood.

### ALLOWANCE FOR POLICE SERVICES

Allowances of Fifty Three Thousand Dollars (\$53,000.00) for the furnishing of police services has been included in all bids. This allowance is determined by multiplying the number of hours estimated as necessary by the prevailing hourly rate of wages established for such services. The Contractor shall submit certified copies of itemized bills of services rendered for review and approval by the Engineer and/or Town. The allowance will be adjusted to the actual amount paid for authorized and approved police services as stipulated and shall include other payments due to any legal requirements of the State and Federal governments.

### METHOD OF MEASUREMENT AND BASIS OF PAYMENT

The quantity to be paid for under this item shall be the actual amount paid by the Contractor to provide satisfactory police services as stipulated and required. Any overhead costs shall be included in the prices bid for the other items of the Contract.

\*\*\*\* END OF SPECIAL PROVISIONS \*\*\*\*