SECTION 320116 - FLEXIBLE PAVING REHABILITATION

This Section includes methods for milling or heating and removing, remixing, and replacing existing asphaltic concrete.

Preliminary evaluation of existing asphaltic concrete should be performed prior to editing this Section.

1. GENERAL
	* + 1. SUMMARY
				1. Section Includes:

[**Heating,**] [**scarifying,**] [**cold milling**,] [**remixing, placing, and compacting**] existing asphaltic concrete [**and placing and compacting new top course**].

* + - * 1. Related Sections:

Section 321723 - Pavement Markings.

Section 321216 - Asphalt Paving.

Section <**\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_\_**>: Removal [**and storage**] of existing parking bumpers.

* + - 1. REFERENCES

List reference standards included within text of this Section. Edit the following for Project conditions.

* + - * 1. Asphalt Institute:

AI MS-19 - Basic Asphalt Emulsion Manual.

Delete paragraph if Project does not include LEED/Sustainability requirements.

* + - * 1. ASTM International:

ASTM C1371 - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.

ASTM C1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.

ASTM E408 - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.

ASTM E903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.

ASTM E1918 - Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.

ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

* + - 1. SUBMITTALS

Only request submittals needed to verify compliance with Project requirements.

* + - * 1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
				2. Manufacturer’s installation instructions shall be provided along with product data.
				3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
				4. Product Data: Submit manufacturer’s name and brand name for [**asphalt rejuvenating agent,**] [**asphalt emulsion,]** [**asphalt filler,**][**geotextile,**] [**and**][**asphalt top course**].

USE PARAGRAPH BELOW WITH EPD REQUIREMENT WHEN PROJECT ESTIMATE IS $1M OR MORE.

* + - * 1. Submit an Environmental Product Declaration (EPD) from the manufacturer for each asphalt mix within this specification section, if available. A statement of the contractor’s good faith effort to obtain the EPD shall be provided if not available.

Manufacturer-provided EPDs must be Product Specific Type III (Third-Party Reviewed), in adherence with ISO 14025 *Environmental labels and declarations*, ISO 14044 *Environmental management – Life cycle assessment*, and ISO 21930 *Core rules for environmental product declarations of construction products and services.*

* + - * 1. Equipment: Submit list of equipment intended for use on the Work.
				2. Procedures: Submit schedule of intended removal, [**remixing, and rolling**] [**and top course placement**] procedures.
			1. SUSTAINABLE DESIGN SUBMITTALS

Delete article if Project does not include LEED/sustainability requirements.

* + - * 1. Manufacturer's Certificate: Certify products meet or exceed specified sustainable design requirements.

Edit material certifications list to suit products specified in this Section and Project sustainable design requirements.

Sustainable Sites Certificates:

Certify paving materials solar reflectance index.

Materials Resources Certificates:

Certify recycled material content for recycled content products.

Certify source for regional materials and distance from Project site.

* + - * 1. Product Cost Data: Submit cost of products to verify compliance with Project sustainable design requirements. Exclude cost of labor and equipment to install products.

Provide cost data for the following products:

Edit list of material cost data to suit products specified in this Section and Project sustainable design requirements.

Products with recycled material content.

Regional products.

* + - 1. QUALITY ASSURANCE

Use this article to specify compliance with overall reference standards affecting all products and installation included in this Section.

* + - * 1. Perform Work according to New York State Department of Transportation standards.
				2. Asphalt Filler & Emulsion: Comply with the applicable requirements of DOT Section 400 - Hot Mix Asphalt.
				3. Geotextile:

Manufacturing Quality Control (MQC) test results shall be provided upon request.

Geotextiles shall be subject to sampling and testing to verify conformance with this specification. Sampling for testing shall be in accordance with ASTM D 4354.

Acceptance shall be in accordance with ASTM D 4759 based on testing of either conformance samples obtained using Procedure A of ASTM D 4354, or based on manufacturer’s certifications and testing of quality control samples obtained using Procedure B of ASTM D 4354.

* + - * 1. Sewn Seams (if required):

For seams that are to be sewn in the field, provide at least a 6 foot length of sewn seam for sampling by the Director’s Representative before the geotextile is installed.

For seams that are sewn in the factory, the Director’s Representative shall obtain samples of the factory seams at random from and roll of geotextile that is to be used on the project.

If seams are to be sewn in both directions, samples of seams from both directions shall be provided.

For seams that are field sewn, the seams sewn for sampling shall be sewn using the same equipment and procedures as will be used for the production seams.

Do not expose geotextiles to elements over 14 days between installation and placement of cover.

* + - 1. ENVIRONMENTAL REQUIREMENTS
				1. Do not perform Work when weather conditions will not permit successful completion of the Work.
				2. Adhere to the seasonal and temperature limitations specified in DOT Section 402-3.01.
1. PRODUCTS
	* + 1. FLEXIBLE PAVEMENT SURFACING RECOVERY

Delete article if recycling will not be used. In this article, list recyclers acceptable for this Project.

* + - * 1. Recyclers:

<\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_>.

<\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_>.

<\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_>.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

* + - * 1. Furnish materials according to New York State Department of Transportation standards, Section 417.
				2. SUSTAINABILITY CHARACTERISTICS

Delete paragraph if Project does not include LEED/Sustainability requirements. Edit sustainable design requirements to suit content of this Section and Project sustainable design requirements.

* + - * 1. Sustainable Sites Characteristics:

Sustainable design requirements permit combination of shading, open grid pavements, and minimum SRI values.

Paving Surfaces: Minimum solar reflectance index (SRI) of 29, calculated according to ASTM E1980.

Reflectance: Measured according to ASTM E903, ASTM E1918, or ASTM C1549.

Emittance: Measured according to ASTM E408 or ASTM C1371.

* + - * 1. Materials and Resources Characteristics:

Recycled Content Materials: Furnish materials with maximum available recycled content [**including:**] [**.**]

List materials specified in this Section required to have recycled content.

<\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.>

Regional Materials: Furnish materials extracted, processed, and manufactured within 500 miles of Project site [**including:**] [**.**]

List materials specified in this Section required to be regional materials.

<\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.>

* + - 1. MATERIALS
				1. Virgin Mix Materials: Furnish according to New York State Department of Transportation standards.
				2. Asphalt Filler: DOT Table 702-2 Asphalt Cements, Material Designation 702-0700.
				3. Asphalt Emulsion Tack Coat: DOT Section 702, Table 702-9, Material Designation 702-90.
				4. Asphalt Concrete Top Course:

Driveways and gutters: 6.3 Top Course HMA

Large parking lots and access roads: 12.5 Top Course HMA

* + - * 1. Geotextile For Pavement Overlay:

PETROMAT® 4599 or PETROMAT PLUS-WHITE 4599, by Propex Operating Company, LLC, Chattanooga, Tennessee, 37419 USA, (800) 621-1273.

TruPave Engineered Paving Mat by TenCate Geosynthetics North America, Pendergrass, Georgia, 30567, USA, (800) 685-9990

GlasPave Paving Mat by Tensar International Corporation, Alpharetta, Georgia, 30009, USA, (800) 836-7271.

US 90P by US Fabrics, Inc., Cincinatti, Ohio, 45227, USA, (800) 518-2290.

Approved equivalent.

* + - * 1. Geotextile For Control Joint or Crack Bridging:

Mirafi MTK Paving Fabric by TenCate Geosynthetics North America, Pendergrass, Georgia, 30567, USA, (800) 685-9990.

Approved equivalent.

Delete paragraph if Project does not include LEED/Sustainability requirements. Sustainable design requirements permit combination of shading, open grid pavements, and minimum SRI values.

Select paving material performance appropriate to applicable Project LEED rating system.

* + - * 1. Paving Surfaces: Minimum solar reflectance index (SRI) of [**29**] [**30**], calculated according to ASTM E1980.

Reflectance: Measured according to ASTM E903, ASTM E1918, or ASTM C1549.

Emittance: Measured according to ASTM E408 or ASTM C1371.

* + - 1. EQUIPMENT

Only include the following detailed description of equipment when necessary for Project conditions. The first paragraph below describes composite piece of equipment capable of one pass operation; the subsequent two paragraphs identify individual equipment.

* + - * 1. Recycling Equipment: Type for intended purpose as follows:

Self-propelled; with automated mix controls.

Capable of processing <**\_\_\_\_\_\_\_\_**> sq. yd. of surface per day.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

* + - * 1. Heated Asphalt Remixer: Type for intended purpose as follows:

Self-propelled; wheel base sufficient to maximize leveling action.

Operational heater width of [**10**] feet minimum to [**12**] maximum; protective insulated hood over heated areas; heated, adjustable, direct flame heating not permitted.

Vibratory screed with hydraulic side extensions; [**two**] rows of scarifying teeth functioning independently, spring mounted and located above road surface to enable deep penetration when required.

Capable of processing <**\_\_\_\_\_\_\_\_**> sq yd. of surface per day.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

* + - * 1. Milling Unit: Type for intended purpose as follows:

Self-propelled; wheel base sufficient to maximize leveling action.

Capable of loosening pavement material to **[2]** inch depth.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

* + - * 1. Onboard Pug Mill: Type for intended purpose as follows:

Horizontal shaft, hydrostatically driven, heated mixer.

Capable of adding and remixing recycled material, rejuvenating agent, and virgin material to produce uniform mixture at required temperature.

* + - * 1. Compactor: Pneumatic tired roller for initial compaction; steel wheeled rollers required for additional compaction and smoothness. [**Oscillating screeds or tampers are not acceptable.**]
			1. RECYCLED MIX

Delete article if recycling will not be used.

* + - * 1. Remove random samples of existing pavement material; record sample location and perform testing.
				2. Establish mix design from test sample materials.
				3. Identify asphalt content, aggregate gradation curve, penetration value, viscosity of residual asphalt, and density.
				4. Establish recycling agent demand ratios; determine maximum stability curve to support demand ratios.
				5. Maintain minimum moisture content of **[3]** percent.
1. EXECUTION
	* + 1. PREPARATION
				1. Conditioning of existing pavement: Comply with DOT Section 633.

Mechanically sweep pavement surfaces immediately prior to commencement of Work. Clean pavement surfaces of loose foreign matter. Verify surfaces are dry.

Protect existing improvements, overhanging trees, and plant life from heat damage by individual shielding [**and water spray**].

Remove and store [manhole covers and frames] [catch basin covers and frames] <\_\_\_\_\_\_\_\_>.

* + - 1. REMOVAL
				1. Do not disfigure adjacent Work.
				2. Cold Milling: Comply with DOT Section 490.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

* + - * 1. Heat pavement surface uniformly by continuous movement of heated [**scarifier.**] [**miller.**] [**remixer.**] [**recycler.**]
				2. Execute removal to depth not less than [**1/2**] [**1**] [**1-1/2**] inch at each point across full width of surface without detrimental aggregate degradation.
			1. MIXING

Delete article if recycling will not be used.

* + - * 1. Mix removed material by spinning or tumbling action for asphalt rejuvenation.
				2. Blend recycled material, recycling agent, and virgin material in [**pug mill**] [**hopper**] according to DOT Section 417.
				3. Maintain mix temperature of remixed material, directly behind screed, as follows:

Air Temperature of 50 degrees F: 250 degrees F.

Air Temperature of 60 degrees F: 240 degrees F.

Air Temperature of 70 degrees F: 230 degrees F.

* + - 1. PLACING, ROLLING AND COMPACTING
				1. Applying Asphalt Emulsion Tack Coat: Comply with DOT Section 407-3.
				2. Geotextile: Comply with Manufacturer’s installation instructions and requirements.
				3. Apply top course as specified in DOT Section 402-3.05. Compact top course as specified in DOT Section 402-3.07.
				4. Recycled material:
1. Delete paragraph if recycling will not be used.

Discharge remixed material [**and added virgin material**] by heated vibratory precompactor.

Spread material in windrow for profiling and precompaction.

Compact by heated vibratory screed to uniform cross sectional thickness.

Complete compaction process within [**5**] minutes of removal.

Place mixed material to [thicknesses indicated] [**<insert permitted range of thickness>**].

* + - * 1. Roll and compact pavement materials to [**elevations existing before commencing the Work.**] [**elevations noted.**]
				2. Compact pavement by rolling. Do not displace or extrude pavement from position.
				3. Develop rolling with consecutive passes to achieve even and smooth finish, without roller marks.
				4. Reinstall [**manhole covers and frames**][**and**] [**catch basin covers and frames**].
			1. PROTECTION OF FINISHED WORK
				1. Do not permit traffic over surface for 2 hours.

END OF SECTION 320116