Revise this Section by deleting and inserting text to meet Project-specific requirements.

SECTION 321216 - ASPHALT PAVING

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

Asphalt paving.

Asphalt curbs.

Asphalt traffic-calming devices.

* + - * 1. Related Requirements:

Retain subparagraphs below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.

[**Section 024116 "Structure Demolition"**] for demolition and removal of existing asphalt pavement.

Section 310000 "Earthwork” for subgrade preparation, fill material, separation geotextiles, unbound-aggregate subbase and base courses, and aggregate pavement shoulders.

* + - 1. REFERENCE STANDARDS
				1. American Association of State Highway and Transportation Officials

AASHTO M 29 - Standard Specification for Fine Aggregate for Asphalt Mixtures

AASHTO M 140 - Standard Specification for Emulsified Asphalt

AASHTO M 208 - Standard Specification for Cationic Emulsified Asphalt

AASHTO M 288 - Standard Specification for Geosynthetic Specification for Highway Applications

AASHTO M 320 - Standard Specification for Performance-Graded Asphalt Binder

AASHTO R 97 - Standard Practice for Sampling Asphalt Mixtures

AASHTO T 245 - Standard Method of Test for Resistance to Plastic Flow of Asphalt Mixtures Using Marshall Apparatus.

* + - * 1. Asphalt Institute

AI MS-2 - Asphalt Mix Design Methods

AI MS-22 - Construction of Hot Mix Asphalt Pavements

* + - * 1. ASTM International

ASTM D242 - Standard Specification for Mineral Filler for Asphalt Mixtures

ASTM D977 - Standard Specification for Emulsified Asphalt

ASTM D979 - Standard Practice for Sampling Bituminous Paving Mixtures

ASTM D1188 - Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples

ASTM D2027 - Standard Specification for Cutback Asphalt (Medium-Curing Type)

ASTM D2041 - Standard Test Method for Theoretical Maximum Specific Gravity and Density of Asphalt Mixtures

ASTM D2397 - Standard Specification for Cationic Emulsified Asphalt

ASTM D2726 - Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Asphalt Mixtures

ASTM D2950 - Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods

ASTM D3141 - Standard Specification for Asphalt for Undersealing Portland-Cement Concrete Pavements

ASTM D3381 - Standard Specification for Viscosity-Graded Asphalt Binder for Use in Pavement Construction

ASTM D3549 - Standard Test Method for Thickness or Height of Compacted Asphalt Mixture Specimens

ASTM D3666 - Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials

ASTM D3910 - Standard Practices for Design, Testing, and Construction of Slurry Seal

ASTM D6373 - Standard Specification for Performance Graded Asphalt Binder

ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements

ASTM D6927 - Standard Test Method for Marshall Stability and Flow of Asphalt Mixtures

* + - * 1. New York State Department of Transportation (NYS DOT)

DOT 300 – Bases and Subbases

DOT 400 – Hot Mix Asphalt

DOT 600 – Incidental Construction

DOT MM 5.16 - Asphalt Mixture Design And Mixture Verification Procedures

Use article below only in lump sum contracts. Contracts with unit prices will have their own adjustment in the cost computation Section. Consult cost control for price adjustment values at final submission.

* + - 1. ASPHALT PRICE ADJUSTMENT
				1. The State can require, or the Contractor may request evaluation and possible adjustment of the price of asphalt providing the actual price differs by more than 20 percent from the contract baseline price of asphalt. For the purposes of determining if contract price adjustments are warranted the following baseline prices have been set for this contract:

Top Course: $<**insert price>** per ton.

Binder Course: $<**insert price**>\_per ton.

Base Course: $<**insert price**> per ton.

* + - * 1. If the actual price paid by the Contractor is more than 120% of the baseline price, the adjustment will be calculated as follows, with this adjusted value being credited to the contractor: Price adjustment = actual tonnage X {actual price paid - (1.2 X baseline price)}.
				2. If the actual price paid by the Contractor is less than 80% of the baseline price, the adjustment will be calculated as follows, with this adjusted value being credited to the State: Price adjustment = actual tonnage X {(0.8 X baseline price) - actual price paid}.
			1. UNIT PRICES

Retain this article if Work specified in this Section is measured and paid for under the provisions of unit prices. Do not include amounts. Insert descriptions of items in Part 2 or 3 to provide information affecting the cost of the Work that is not included under the unit price.

* + - * 1. Work of this Section is affected by <**Insert name of unit price**>.
			1. PREINSTALLATION MEETINGS

Retain "preinstallation conference" paragraph below if work of this Section is extensive or complex enough to justify a conference.

* + - * 1. Preinstallation Conference: Conduct conference at [**Project site**].

The attendance at this meeting will include Contractor’s Paving Superintendent, Chief Inspector or Paving Inspector(s), asphalt plant representative, density gauge operator, depending on the compaction method used, and work zone traffic control (WZTC) competent person (if applicable).

Retain subparagraph below if additional requirements are necessary. Insert additional requirements to suit Project.

Review methods and procedures related to asphalt paving including, but not limited to, the following:

Review proposed sources of paving materials, including capabilities and location of plant that will manufacture asphalt.

Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.

* + - 1. SUBMITTALS
				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: Include manufacturer / provider / plant name, product name, technical data and tested physical and performance properties.

Paving geotextile.

Including specifications, MSDS as required, adhesion type and rate, and installation instructions.

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. Asphalt Designs:

Certification, by authorities having jurisdiction, of approval of each asphalt design proposed for the Work.

Batch plant name, NYSDOT Plant Number, and location of asphalt plant for each asphalt design proposed for the Work.

Asphalt Mix Design Test results that are less than 6 months old for each mix proposed for the Work.

* + - * 1. Samples for Verification: For the following product, in manufacturer's standard sizes unless otherwise indicated:

Paving Geotextile: 12 by 12 inches minimum.

* + - * 1. Qualification Data: For [**paving-mix manufacturer**] [**and**] [**testing agency**].

Retain "Material Certificates" paragraph below to require submittal of material certificates from manufacturers. Retain option if permitting use of recycled materials, which is standard practice.

* + - * 1. Material Delivery Tickets for pavement materials including the following information

Ticket Number.

Plant Identification.

Project Name.

Mix Type.

Quantity of material in vehicle.

Date and Time.

[Statement that mixes containing recycled materials will perform equal to mixes produced from all new materials.]

* + - * 1. Field quality-control reports.
			1. QUALITY ASSURANCE
				1. Manufacturer Qualifications: A paving-mix manufacturer registered with and approved by the NYS Department of Transportation. <Insert requirement>.

Retain "Testing Agency Qualifications" paragraph below if contractor or manufacturer selects testing agency or if contractor is required to provide services of a qualified testing agency in "Field Quality Control".

* + - * 1. Testing Agency Qualifications: Qualified in accordance with ASTM D3666 for testing indicated.
				2. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of NYS Department of Transportation Standard Specifications for asphalt paving work.

Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

* + - 1. FIELD CONDITIONS
				1. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, or if rain is imminent or expected before time required for adequate cure.
				2. Discontinue paving when surface temperatures fall below requirements listed in DOT Table 404-1 unless otherwise specified in the General Conditions of this Contract or as directed by the Director’s Representative.
				3. Pavement is restricted by dates listed in the General Conditions.
1. PRODUCTS
	* + 1. AGGREGATES
				1. All aggregate used in design mixes shall be as specified in NYS DOT Specification Section 401-2.02 B; Coarse Aggregate Type F2 Conditions.
			2. ASPHALT MATERIALS
				1. Asphalt: Use aggregate and PG binder from suppliers listed in the NYS DOT’s Approved List for Fine and Coarse Aggregates and Performance Graded (PG) Binders and Warm Mix Technology for Asphalt Paving respectively. Mineral filler shall meet the requirements of NYS DOT Section 703-08.

Use paragraph below and modify asphalt types as required based on design drawings.

* + - * 1. Supply approved asphalt mixtures that meet the requirements of NYS DOT MM 5.16 *Asphalt Mixture Design and Mixture Verification Procedures*. Each mixture must be obtained from a single plant for the duration of the project. The following NYS DOT items only shall be utilized for this project:

6.3 Top Course Asphalt (Driveways, Gutters).

12.5 Top Course Top Course Asphalt (Large Parking Lots & Access Roads).

25.0 Binder Course Asphalt.

37.5 Base Course Asphalt.

Trueing & Leveling Course: DOT Table 404-1 *Mixture Selection for T&L Course.*

* + - * 1. Reclaimed Asphalt Pavement (RAP) shall meet the requirements of NYS DOT MM 5.16.

Use paragraph above or below as required.

* + - * 1. Asphalt Cement Tack Coat.
1. EXECUTION
	* + 1. EXAMINATION
				1. Verify that subgrade is dry and in suitable condition to begin paving.
				2. Proceed with paving only after unsatisfactory conditions have been corrected.
			2. PREPARATION
				1. Protection: Provide protective materials, procedures, and worker training to prevent asphalt materials from spilling, coating, or building up on curbs, driveway aprons, manholes, and other surfaces adjacent to the Work.

Retain first paragraph below for full-depth asphalt pavement.

* + - * 1. Subgrade compaction shall adhere to Section 310000.
			1. SURFACE PREPARATION
				1. Prepare existing surfaces in accordance with DOT Section 402-3.05, Conditioning of Existing Surface.
				2. Ensure that prepared subgrade has been proof-rolled and is ready to receive paving. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces.
			2. ASPHALT PLACEMENT
				1. Spread and Finish asphalt in accordance with DOT Section 404-3.06, Spreading and Finishing.
				2. Remove and restore paved areas that are defective or contaminated as delineated by the Director’s Representative at no additional cost to the State.
			3. JOINTS
				1. Asphalt joints shall be in accordance with DOT Section 404-3.09, Joints.
			4. COMPACTION
				1. Provide compaction of asphalt mixtures in general accordance with DOT Section 404-3.07, Compaction, Paragraph D, 80 Series Compaction Methods, specifically meeting the minimum requirements as shown in Table 404-3 Number of Passes.

The Director’s Representative may increase or decrease the number of passes to obtain adequate density of the compacted asphalt.

The Director’s Representative may also approve alternate compaction procedures where the specified procedures are not applicable.

Testing to be performed at the direction of and in locations chosen by the Director’s Representative. Target compaction is 95% (92% - 97% range is acceptable; as mixture maximum theoretical density).

* + - 1. ASPHALT CURBS

Retain this article if Asphalt Curbs are required.

* + - * 1. Construct asphalt curbs over compacted pavement surfaces. Apply a light tack coat unless pavement surface is still tacky and free from dust.

Revise "Asphalt Curbs" subparagraph below to insert designations of State or local DOT if mixes are different.

Asphalt Curbs: Same as pavement surface-course mix.

* + - * 1. Place asphalt to curb cross section indicated or, if not indicated, to local standard shapes, by machine or by hand in wood or metal forms. Tamp hand-placed materials and screed to smooth finish. Remove forms after asphalt has cooled.
			1. ASPHALT TRAFFIC-CALMING DEVICES

Retain this article only for site-formed, asphalt traffic-calming devices; revise to suit Project.

* + - * 1. Construct asphalt speed [**bumps**] [**humps**] [**cushions**] [**and**] [**tables**] over compacted pavement surfaces. Apply a tack coat unless pavement surface is still tacky and free from dust.

Asphalt Traffic-Calming Devices: Same as pavement surface-course mix.

Retain subparagraph below for existing pavement where height of traffic-calming device and speed of traffic warrant it or where this is local practice. Consult State or local DOT for advice.

Before installation, mill pavement that will be in contact with bottom of traffic-calming device. Mill to a depth of 1 inch from top of pavement to a clean, rough profile.

* + - * 1. Place and compact asphalt to cross section indicated, by machine or by hand in wood or metal forms. Tamp hand-placed materials and screed to smooth finish. Remove forms after asphalt has cooled.
			1. INSTALLATION TOLERANCES
				1. Pavement Thickness: Compact each course to produce thickness indicated within the following tolerances:

Retain thickness tolerances in "Base Course (and Binder Course)" and "Surface Course" subparagraphs below or revise to suit Project.

[**Base Course,**] [**Binder Course**] [**and**][**Surface Course**]: Plus or minus ¼ inch when the total nominal thickness indicated on the plans is 4 inches or less. Plus or minus ½ inch when the total nominal thickness is over 4 inches but not more than 8 inches. When the asphalt mixture is placed on newly constructed subbase material, an additional tolerance of ½ inch will be allowed both in the nominal thickness of the course placed directly on the subbase and the total pavement thickness.

* + - * 1. Pavement Surface Smoothness: Compact each course to produce surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

Revise "Base Course (and Binder Course)" or "Surface Course" subparagraph below to suit Project.

[**Base Course**] [**and**] [**Binder Course**]: [**1/4 inch**].

Surface Course: [**1/4 inch**].

Retain "Crowned Surfaces" subparagraph below if required.

Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is **[1/4]** inch.

Variations exceeding ¼ inch will be appropriately corrected or the pavement be removed and replaced at no additional cost to the State.

Retain "Asphalt Traffic-Calming Devices" paragraph below for site-formed, asphalt traffic-calming devices. Retain tolerance or revise to suit Project.

* + - * 1. Asphalt Traffic-Calming Devices: Compact and form asphalt to the shapes indicated and within a tolerance of plus or minus **[1/8]** inch of height indicated above pavement surface.
			1. FIELD QUALITY CONTROL

Retain "Testing Agency" paragraph below to identify who shall perform tests and inspections. If retaining second option, retain "Field Quality-Control Reports" paragraph in "Informational Submittals" article.

* + - * 1. Testing Agency: [**Director’s Representative will engage**] [**Engage**] a qualified testing agency to perform tests and inspections.
				2. Thickness: In-place compacted thickness of asphalt courses will be determined in accordance with ASTM D3549.
				3. Surface Smoothness: Finished surface of each asphalt course will be tested for compliance with smoothness tolerances.

Retain "Asphalt Traffic-Calming Devices" paragraph below for site-formed, asphalt traffic-calming devices.

* + - * 1. Asphalt Traffic-Calming Devices: Finished height of traffic-calming devices above pavement will be measured for compliance with tolerances.
				2. Density Testing: Testing agency will take samples of uncompacted paving mixtures and compacted pavement in accordance with [**ASTM D979**] [**or**] [**AASHTO T 168**].

Reference maximum theoretical density will be determined by averaging results from four samples of asphalt-paving mixture delivered daily to site, prepared in accordance with ASTM D2041, and compacted in accordance with job-mix specifications.

Density of compacted pavement will be determined by testing core samples in accordance with ASTM D1188 or ASTM D2726.

One core sample will be taken for every **[1000]** sq. yd. or less of installed pavement, with no fewer than three cores taken.

Field density of in-place compacted pavement may also be determined by nuclear method in accordance with ASTM D2950 and coordinated with ASTM D1188 or ASTM D2726.

* + - * 1. Replace and compact asphalt where core tests were taken.
				2. Remove and replace or install additional asphalt where test results or measurements indicate that it does not comply with specified requirements.

END OF SECTION 321216