

## **321100 ASPHALT FLEXIBLE PAVING**

### **1.1 SUMMARY**

#### **A. Section Includes:**

1. Asphalt materials.
2. Aggregate materials.
3. Aggregate base.
4. Asphalt paving base course, binder course, and wearing course.
5. Asphalt paving overlay for existing paving.
6. Surface slurry.

### **1.2 REFERENCE STANDARDS**

#### **A. American Association of State Highway and Transportation Officials:**

1. AASHTO M17 - Standard Specification for Mineral Filler for Bituminous Paving Mixtures.
2. AASHTO M29 - Standard Specification for Fine Aggregate for Bituminous Paving Mixtures.
3. AASHTO M140 - Standard Specification for Emulsified Asphalt.
4. AASHTO M208 - Standard Specification for Cationic Emulsified Asphalt.
5. AASHTO M288 - Standard Specification for Geotextile Specification for Highway Applications.
6. AASHTO M320 - Standard Specification for Performance-Graded Asphalt Binder.
7. AASHTO M324 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
8. AASHTO MP1a - Standard Specification for Performance-Graded Asphalt Binder.

#### **B. Asphalt Institute:**

1. AI MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot- Mix Types.
2. AI MS-19 - Basic Asphalt Emulsion Manual.
3. AI SP-2 - Superpave Mix Design.

#### **C. ASTM International:**

1. ASTM C1371[-2004a] - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
2. ASTM C1549[-2004] - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
3. ASTM D242 - Standard Specification for Mineral Filler for Bituminous Paving Mixtures.

4. ASTM D692 - Standard Specification for Coarse Aggregate for Bituminous Paving Mixtures.
5. ASTM D946 - Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction.
6. ASTM D977 - Standard Specification for Emulsified Asphalt.
7. ASTM D1073 - Standard Specification for Fine Aggregate for Bituminous Paving Mixtures.
8. ASTM D1188 - Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples
9. ASTM D2027 - Standard Specification for Cutback Asphalt (Medium-Curing Type).
10. ASTM D2397 - Standard Specification for Cationic Emulsified Asphalt.
11. ASTM D2726 - Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures.
12. ASTM D2950 - Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods.
13. ASTM D3381 - Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.
14. ASTM D3515 - Standard Specification for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.
15. ASTM D3549 - Standard Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens.
16. ASTM D3910 - Standard Practices for Design, Testing, and Construction of Slurry Seal.
17. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
18. ASTM E408[-1971(1996)e1] - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
19. ASTM E903[-1996] - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
20. ASTM E1918[-1997] - Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
21. ASTM E1980[-2001] - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces. D. PENNDOT Publication 408, Latest Edition.

## 1.7 AMBIENT CONDITIONS

- A. Do not place asphalt mixture between November 1 and March 1 without specific consent of owner.
- B. Do not place asphalt mixture when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.

- C. Ideally, asphalt mixture shall be placed when temperature is not more than 15 degrees F less than initial mixing temperature. At no time will asphalt mixture be placed when material temperature is less than 200 degrees F.
- D. Compaction shall be completed before mix temperature cools to 185 degrees F.

## 2.2 ASPHALT PAVING MATERIALS

- A. Asphalt Cement: In accordance with PENNDOT Publication 408.
- B. Aggregate for Base Course Mix: In accordance with PENNDOT Publication 408.
- C. Aggregate for Wearing Course Mix: In accordance with PENNDOT Publication 408.
- D. Fine Aggregate: In accordance with PENNDOT Publication 408.
- E. Mineral Filler: Finely ground particles of limestone, hydrated lime or other mineral dust, free of foreign matter.
- F. Primer: In accordance with PENNDOT Publication 408.
- G. Tack Coat: In accordance with PENNDOT Publication 408.
- H. Reclaimed Asphalt Pavement (RAP): Processed material obtained by milling or full depth removal of existing asphalt concrete pavements.

## 2.3 ASPHALT PAVING MIX

- A. Use dry material to avoid foaming. Mix uniformly.
- B. Base Course: Conforming to PENNDOT Publication 408 Superpave Asphalt Mix Design, HMA Base Course 25 mm mix, PG 64-22.
- C. Binder Course: Conforming to PENNDOT Publication 408 Superpave Asphalt Mix Design, HMA Binder Course 19 mm Mix, PG 64-22.
- D. Wearing Course: Conforming to PENNDOT Publication 408 Superpave Asphalt mix Design, HMA Wearing Course 9.5 mm mix, PG 64-22.
- E. Reclaimed Asphalt Content: Maximum 20 percent by weight.
- F. Paving Surfaces: Minimum solar reflectance index (SRI) of 29, calculated in accordance with ASTM E1980.

1. Reflectance: Measured in accordance with ASTM E903, ASTM E1918, or ASTM C1549.
2. Emittance: Measured in accordance with ASTM E408 or ASTM C1371.
3. Sealant: ASTM D6690, Type II or Type III; hot applied type.

### 3.1 EXAMINATION

- A. Verify utilities indicated under paving are installed with excavations and trenches backfilled and compacted.
- B. Verify compacted subgrade and subbase is dry and ready to support paving and imposed loads.
  1. Proof roll subbase with minimum of two perpendicular passes to identify soft spots.
  2. Remove soft subbase and replace with compacted fill as specified. Verify gradients and elevations of base are correct.
- C. Verify manhole frames and structures are installed in correct position and elevation.

### 3.3 DEMOLITION

- A. Saw cut and notch existing paving as indicted on Contract Drawings.
- B. Clean existing paving to remove foreign material, excess joint sealant and crack filler from paving surface.
- C. Repair surface defects in existing paving to provide uniform surface to receive new paving.

### 3.4 INSTALLATION

- A. Subbase:
  1. Aggregate Subbase: Install as specified in Section 02721, Aggregate Base Course.
  2. Prepare subbase in accordance with PENNDOT Publication 408, Latest Edition.
- B. Primer:
  1. Apply primer in accordance with PENNDOT Publication 408, Latest Edition.

C. Tack Coat:

1. Apply tack coat in accordance with PENNDOT Publication 408, Latest Edition.

D. Single Course Asphalt Paving:

1. Install Work in accordance with PENNDOT Publication 408, Latest Edition, Section 409.
2. Place asphalt within 24 hours of applying primer or tack coat.
3. Place asphalt wearing course thickness indicated on Contract Drawings.
4. Compact paving by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
5. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

E. Double Course Asphalt Paving:

1. Place asphalt binder course within 24 hours of applying primer or tack coat.
2. Place binder course to thickness indicated on Contract Drawings.
3. Place wearing course within 24 hours of placing and compacting binder course.
4. When binder course is placed more than 24 hours before placing wearing course, clean surface and apply tack coat before placing wearing course.
5. Place wearing course to thickness indicated on Contract Drawings.
6. Compact each course by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
7. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

F. Asphalt Paving Overlay

1. Apply tack coat to existing paving surface.
2. Place wearing course to thickness indicated on Contract Drawings.

3. Compact overlay by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
4. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

### 3.5 TOLERANCES

- A. Division 1 - Quality Requirements: Tolerances.
- B. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- C. Scheduled Compacted Thickness: Within 1/4 inch.
- D. Variation from Indicated Elevation: Within 1/2 inch.

### 3.6 FIELD QUALITY CONTROL

- A. Division 1 - Quality Requirements: Requirements for inspecting, testing.
- B. Division 1 - Execution Requirements: Requirements for testing, adjusting, and balancing.
- C. Take samples and perform tests in accordance with PENNDOT Publication 408, Latest Edition, Section 409.

### 3.7 PROTECTION

- A. Division 1 - Execution Requirements: Requirements for protecting finished Work.
- B. Immediately after placement, protect paving from mechanical injury for 16 hours or until surface temperature is less than 140 degrees F.