

## SECTION 31

### ASPHALT CONCRETE - GENERAL

#### 31.1 DESCRIPTION

- A. General:** This work consists of constructing asphalt concrete pavement using a hot or warm mix asphalt (HMA or WMA).

Asphalt concrete type is designated as Type I or Type II according to 31.3.

**B. Related Work:**

Section 32	Asphalt Concrete - Class E
Section 35	Prime, Tack, Fog Seal and Flush Seal Coats
Section 37	Asphalt Surface Treatment
Section 38	Recycled Asphalt Pavement (RAP)
Section 39	Cold Mix Asphalt Concrete
Section 41	Utility Trench Resurfacing
Section 115	Aggregates for Asphalt Concrete
Section 116	Aggregates for Asphalt Surface Treatments
Section 118	Asphalt Material
Section 203	Submittals

#### 31.2 MATERIALS

- A. Composition of Mixtures:** The asphalt concrete shall be composed of a mixture of aggregate and asphalt. The several aggregate fractions shall be combined in such proportions that the resulting mixture meets the gradation requirements of the specifications.

The operation of the plant shall not commence until the Contractor has furnished the Engineer, in writing, a job mix formula established by a certified testing laboratory meeting the criteria for the class of asphalt concrete specified. After the job mix formula is established, the mixture shall conform within the range of tolerances for that class of asphalt concrete.

The job mix formula testing for each class of asphalt concrete used shall be updated annually by a certified testing laboratory at the beginning of the construction season and used for that construction season only.

A change in sources of materials will require a new job mix formula to be established before the new material is used. When unsatisfactory results or other conditions make it necessary, the Engineer may require the Contractor to furnish a new job mix formula, as established by a certified testing laboratory.

- B. Aggregates:** Aggregates shall meet the applicable requirements of Section 115.
- C. Asphalt:** Asphalt, of the type specified in the job mix formula, shall meet the applicable requirements of Section 118 or as called for in the Detailed Specification.

### 31.3 CONSTRUCTION REQUIREMENTS

- A. Weather and Seasonal Limitations:** Asphalt concrete shall only be constructed or placed when the underlying surface material is dry and unfrozen. Asphalt concrete shall not be placed when weather conditions prevent proper handling, compaction, or finishing. Temperature and seasonal limitations are as follows except as allowed by the Engineer:

MINIMUM AIR TEMPERATURES AND SEASONAL LIMITATIONS				
Compacted Thickness	Surface Course		Subsurface Course & Shoulder Courses	
	Min. Temp	Seasonal Limits	Min. Temp.	Seasonal Limits
1 in. or less	45° F	May 1 to Nov. 1	Not Allowed	Not Allowed
Over 1 in. to 2 in.	40° F	May 1 to Nov. 1	Not Allowed	Not Allowed
Over 2 in. to 3 in.	35° F	May 1 to Nov. 1*	35° F	April 15 to Nov. 1*

\*Without written permission from the Engineer

#### B. Equipment:

- 1. Requirements for All Plants:** All plants shall meet the requirements of SDDOT Standard Specifications for Roads and Bridges, current edition, Section 320.3.B.1. Blade laid asphalt shall not be allowed.
- 2. Pavers:** Pavers shall meet the requirements of SDDOT Standard Specifications for Roads and Bridges, current edition, Section 320.3.B.5.
- 3. Rollers:** Rollers shall meet the requirements of SDDOT Standard Specifications for Roads and Bridges, current edition, Section 320.3.B.6.

The use of fuel oil or other petroleum solvents to prevent "pickup" will not be permitted. Measures shall be taken to prevent oil, grease, or fuels from being dropped on the mat surface.

#### C. Preparation of the Mineral Aggregate:

- 1. Stockpiling Aggregate:** Stockpiling Aggregate shall meet the requirements of SDDOT Standard Specifications for Roads and Bridges, current edition, 320.3.C.1
- 2. Stockpile Tests:** Stockpile Tests shall meet the requirements of SDDOT Standard Specifications for Roads and Bridges, current edition, 320.3.C.2.

- 3. **Proportioning of Aggregates:** Proportioning of Aggregates shall meet the requirements of SDDOT Standard Specifications for Roads and Bridges, current edition, 320.3.C.4.
- D. **Preparation of the Mixture:** Preparation of the Mixture shall meet the requirements of SDDOT Standard Specifications for Roads and Bridges, current edition, 320.3.D.
- E. **Transportation and Delivery of the Mixture:** Transportation and Delivery of the Mixture shall meet the requirements of SDDOT Standard Specifications for Roads and Bridges, current edition, 320.3.E.

All loads shall be tarped.

- F. **Blade Laid Asphalt Concrete:** Blade laid asphalt is not allowed.
- G. **Tacking, Spreading, and Compacting:** Tacking, Spreading and Compacting shall meet the requirements of SDDOT Standard Specifications for Roads and Bridges, current edition, 320.3.G.
  - 1. **Specified Density Method:** Specified Density Method shall meet the requirements of SDDOT Standard Specifications for Roads and Bridges, current edition, 320.3.G.1.
  - 2. **Specified Roller Coverages:** Specified Roller Coverages shall meet the requirements of SDDOT Standard Specifications for Roads and Bridges, current edition, 320.3.G.2.

- H. **Asphalt Patching:** Asphalt Patching work shall comply with the requirements herein and as follows:

- 1. **Minimum Patch Depth:** Unless specified otherwise, all permanent asphalt patches shall be placed to a minimum depth of five (5) inches. Should existing pavement depths be greater than five (5) inches, the permanent patch shall match the depth of the existing pavement or as directed by the Engineer.
- 2. **Minimum Patch Width:** Minimum patch width shall be two feet (curbside) or the initial saw width for the proposed trench width plus two feet (one foot on each side of the initial saw cut -See Section 41).

All mainline, permanent patches equal to or greater than eight feet in width and longer than 40 feet shall be placed with a paving machine. The use of tow-behind pavers is prohibited.

- 3. **Surface Tolerance:** The patch surface shall be tested with a ten foot straightedge. The maximum permissible surface deviation shall be one-quarter inch in ten feet. The measurements will be made parallel to traffic and up to within one foot of the edge of the existing pavement. Deviation within one foot of the existing pavement shall be no greater than that measured on the adjacent existing pavement.

Areas that exceed the permissible deviation shall be subject to corrective action as directed by the Engineer.

Any corrective measures shall produce a structurally sound, smooth riding surface.

4. Concrete streets with asphalt overlays shall be replaced as described in Section 41. Asphalt overlay thickness shall match existing thickness and shall extend at least six (6) inches beyond edges formed by new and existing concrete paving.

The asphalt shall be tapered at a maximum 10:1 slope longitudinally on each side of any drainage pans and on any areas of existing streets where the overlay begins or ends.

The edges of the new asphalt overlay patch shall be tapered to meet the gutter lip as indicated on the standard detail sheet in the plans.

Under certain conditions where localized ponding problems exist on the existing pavement, the Engineer may require the Contractor to overlay all the way to the face of the curb.

5. If hot-mix asphalt will not be available for a significant period, the Contractor shall place a temporary cold mix patch or overlay as directed by the Engineer

The Engineer shall determine if placement of the cold mix is necessary. The cold mix shall conform to Section 39.

When hot-mix asphalt becomes available, the Engineer will issue written notice to the Contractor to begin placing the pavement asphalt within ten (10) working days of receiving the notice.

6. Measurement and payment for the asphalt patching shall be in accordance with the section pertaining to the class of asphalt concrete being bid.

Measurement and payment for cold mix shall be in accordance with Section 39, COLD MIX ASPHALT CONCRETE.

- I. **Maintenance:** The Contractor shall be responsible for the maintenance of the work during construction and until final acceptance. Maintenance shall include protection and repair of the prepared base course, tack coat, wearing surface mat, shoulders, and seal course. Rich or bleeding areas, breaks, raveled spots, or other nonconforming areas in the wearing surface or base shall be corrected during such maintenance period.
- J. **Traffic Control:** Allowing traffic to travel over the roadway will not be permitted until the surface has been thoroughly compacted and cooled sufficiently to resist marking or distortion.

Where traffic is to be maintained by means of part-width construction, the Contractor shall control traffic by the use of identified flaggers. The Contractor shall schedule work so traffic will not be inconvenienced by long one-way lanes.

**K. Density Tests/Frequency:** The Contractor is responsible for asphalt density tests. The asphalt tests shall be understood to be incidental work associated with the several classes of asphalt concrete, except when there is a bid item for asphalt compaction testing, per each test included in the Bidder's Proposal or as otherwise specified in the detailed specifications. The Contractor shall submit the following test data for each class of asphalt concrete:

- One (1) Standard Density at the start of paving each day and each time the mix or source of material is changed;
- One (1) Rice Density test at the start of paving each day and each time the mix or source of material is changed;
- The minimum requirement is two (2) in-place, non-destructive (nuclear gauge) density tests per day, for every 200-ton lot of mainline paving mix per lift.
- The minimum requirement is two (2) in-place, non-destructive (nuclear gauge) density tests per day, for every 250 square yards of asphalt patching per lift.

When paid by the City, these field asphalt core density tests will be measured in accordance with Section 31.4.B - Compaction Samples and paid for in accordance with Section 31.5.B

All sampling and testing shall be done by certified testing laboratory personnel, and all test results shall be submitted to the Engineer.

Failing Standard Density tests and Rice Density tests shall result in an adjustment of the warranty period and the contract unit price in accordance with the following table for all classes of asphalt concrete:

Amount of Deviation	0% to -1%	-1% to -2%	-2% to -3%	-3% to -4%	Greater than -4%
Amount of Unit Price Deduction	0% to 5%	5% to 10%	10% to 20%	20% to 30%	Remove & Replace
Additional Warranty Period	1 year	2 years	3 years	4 years	NA

Note: The amount of deviation shall be the difference between the specified density and the average of all densities for that class of asphalt concrete if this average is less than the specified density.

The City reserves the right to order additional tests. The Contractor shall pay for those additional tests that fail to meet specified density, and the City will pay for those additional tests that do meet the specified density.

In addition to this testing, the Contractor may be required to remove and test in-place asphalt concrete to determine field densities by sawing or coring samples from areas to be determined by the Engineer.

The Engineer or his representative shall be present for all field sampling and lab testing performed for the Contractor. Failure to notify the City of pending sampling or testing could result in rejection of submitted data and re-testing by in-place methods.

All test results shall be received by the Engineer before payment for pavement exceeds seventy-five percent (75%) of the total quantity.

#### 31.4 METHOD OF MEASUREMENT

- A. Asphalt Concrete, Various Classes/Incidental Paving:** Asphalt Concrete, Various Classes will be measured to the nearest one-tenth (0.1) ton, material weight. The mixture of mineral aggregate and asphalt for mat will be weighed after mixing, and no deduction will be made for the weight of the asphalt included in the mixture.

Deduction will not be made for material removed from temporary approaches.

- B. Compaction Core Samples:** The measurement of core samples will be by actual count of those samples ordered and accepted by the Engineer for testing purposes.

#### 31.5 BASIS OF PAYMENT

- A. Asphalt Concrete, Various Classes/Incidental Paving:** The accepted quantities of Asphalt Concrete, Various Classes, will be paid for at the contract price per ton, complete, in place, subject to deductions noted herein. Contractor shall provide Engineer with valid weigh tickets for asphalt concrete, furnished and installed. Weigh tickets shall be delivered to the Engineer within 48 hours of placement. Tickets delivered after 48 hours will not be valid and will not be paid for.
- B. Compaction Core Samples** (where required): Will be paid for at the contract price per each.

**END OF SECTION**