

**CITY OF MEMPHIS – STANDARD CONSTRUCTION SPECIFICATIONS**  
**SECTION 02741 FLEXIBLE PAVEMENT- ASPHALTIC CONCRETE SURFACE**

**PART 1 – SCOPE**

This work shall consist of an asphaltic concrete pavement constructed in one or more layers for surface course(s) and binder course(s). The binder course may also be used as a leveling or bushing course. Binder course shall consist of a hot mixture of aggregate and asphalt prepared in a hot bituminous mixing plant. The binder course shall be constructed on a prepared subgrade, subbase, or base conforming to the lines, grades, thicknesses, and cross-sections shown on the Plans or as directed by the Engineer. The surface course shall consist of an asphaltic concrete pavement composed of a mixture of coarse aggregate, fine aggregate, mineral filler, and asphalt cement, constructed on a prepared roadbed in conformity with the lines, grades, thicknesses, and cross-sections shown on the Plans or directed by the Owner.

**PART 2 – MATERIALS AND EQUIPMENT**

2.01 MATERIALS

A. Asphalt Cement. Asphalt cement shall conform to the requirements of ASSHTO M 226, Table 2, for the grade specified. Unless otherwise directed, asphalt shall be Viscosity Grade AC-20.

B. Course Aggregate. Course aggregate (aggregate retained on the No. 4 sieve) shall be crushed stone meeting the quality requirements of ASTM D 692 with the following exceptions:

1. Crushed limestone shall have a sodium sulfate soundness loss not exceeding 9 percent.
2. For Mix No. 1, material retained on the No. 4 sieve shall have a maximum of 20 percent elongated pieces (length greater than five times the average thicknesses).
3. For Mix No. 2, the aggregate shall contain no more than 5 percent soft or nondurable particles.
4. For Mix No. 3, the aggregate shall contain no more than 5 percent soft or nondurable particles.

C. Fine Aggregate. The fine aggregate shall consist of natural sand consisting of hard, clean, tough grains which will have a maximum loss of 12 percent when subjected to the sodium sulfate soundness test.

D. Composition of Mixtures.

1. Asphaltic Concrete Surface, Mix No. 1, shall be laid in one course to the thickness shown on the Plans.
2. Asphaltic Concrete Binder, Mix No. 2, shall be laid in one or more courses to the thicknesses shown on the Plans. Mix No. 2 may also be used as a leveling course or bushing course.
3. Asphaltic Concrete Binder, Mix No. 3 shall be laid in one or more courses to the thickness shown on the plans.
4. The composition of the mixes shall be as follows:

Total Percent Passing by Weight

<u>Sieve Size</u>	<u>Mix No. 1</u>	<u>Mix No. 2</u>	<u>Mix No. 3</u>
2"	100	100	100

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1-1/2"	100	100	90 - 100
3/4"	100	100	65 - 90
3/8"	76 - 96	65 - 95	-----
No. 4	51 - 76	45 - 70	30 - 55
No. 8	36 - 60	25 - 50	20 - 45
No. 30	16 - 40	12 - 30	8 - 25
No. 100	3 - 12	2 - 12	2 - 12
No. 200	2 - 8	1 - 6	1 - 6

5. The proportions of the total mixture, in percent by weight, shall be as follows:

<u>Courses</u>	<u>Combined Mineral Aggregate</u>	<u>Asphalt Cement</u>
Mix No. 1, Surface	92.0 – 96.0	4.0 – 8.0
Mix No. 2, Binder	93.0 – 97.5	2.5 – 7.0
Mix No. 3, Binder	93.0 – 97.5	2.5 – 7.0

6. It is the intent of this Section of the Specifications that the above described mixes shall conform to the following mixtures specified in the Tennessee Department of Transportation Standard Specifications for Road and Bridge construction.

Mix No. 1 – Section 411, Asphaltic Concrete Surface (Hot Mix), Aggregate Grading E.

Mix No. 2 – Section 307, Bituminous Plant Mix Base (Hot Mix), Aggregate Grading C.

Mix No. 3 – Section 307, Bituminous Plant Mix Base (Hot Mix), Aggregate Grading B.

7. For multiple layer construction, succeeding layers shall not be laid until the previous layer has cooled sufficiently to support the construction equipment

8. When Mix No. 1 is to be used as a surface for traffic lanes, the mineral aggregate shall be composed of not less than 50 percent nor more than 55 percent crushed limestone and not more than 50 percent nor less than 45 percent natural sand. When Mix No. 1 is used for surfacing of shoulders or other non-traffic lane construction, the mineral aggregate may be composed entirely of limestone, including screening and manufactured sand, but in no case shall the mineral aggregate for this construction consist of less than 50 percent limestone. The natural sand shall be so graded that not more than 5 percent will be retained on the No. 4 sieve.

**2.02 EQUIPMENT**

All equipment necessary for the satisfactory performance of this construction shall be on the Project and approved before work will be permitted to begin. The equipment shall meet the requirements of Specification Section 02710.4 Paragraph 2.03.

**PART 3 – CONSTRUCTION REQUIREMENTS**

**3.01 GENERAL**

The general construction requirements for surface and binder courses shall be as prescribed in the applicable portions of Specification Section 02710.4 Paragraphs 3.01 – 3.11.

**3.02 PREPARATION OF BASE OR EXISTING SURFACE**

The designated surface upon which asphalt concrete courses are to be placed shall meet the applicable requirements of Specification Sections 02720, 02710.1, 02710.2, 02710.3, 02710.4 and 02710.5 and be thoroughly cleaned of all dirt and other foreign or loose matter prior to the application of the Tack Coat or Prime Coat, as specified in Specification Section 02710.4 Paragraph 3.03.

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**3.03 THICKNESS AND SURFACE REQUIREMENTS**

Thickness shall be controlled during the spreading operations by frequent measurements taken of freshly spread mixture to establish a relationship between the uncompacted and compacted material. This thickness shall remain in conformity with that specified on the Plans. The surface of all courses shall meet the requirements specified under Specification Section 02710.4, Part 3 "Construction Requirements" and when tested in accordance with the provisions of Specification Section 02710.4 Paragraph 3.10, the deviation of the surfaces from the testing edge of the straightedge shall not exceed 1/4 inch for Mix No. 1 or 3/8 inch for Mix No. 2 and Mix No. 3.

**3.04 MANHOLE ADJUSTMENTS**

Drainage and sanitary sewer manholes owned by the City shall be adjusted and set at final grade by the Contractor as necessary for compliance with the Plans. Adjustments of City owned manholes shall be as specified in Section 02532 or 02634 (sewer or drain) of these Specifications. Manholes, valve boxes, and other utility structures not owned by the City but within the right-of-way of the project shall be adjusted as necessary by the owner of such facilities. The Contractor shall be responsible for notifying other owners of any required adjustments and for the accomplishment of that work by the owner of such facilities according to the project schedule.

**3.05 TRAFFIC AND MAINTENANCE**

The Owner will determine when the surface course has sufficient compaction and has cured sufficiently to allow construction equipment, slow moving local traffic, or normal traffic to use the completed surface.

**PART 4 – MEASUREMENT**

**4.01 ASPHALTIC CONCRETE SURFACE AND BINDER COURSES.**

The accepted quantities of asphaltic concrete surface Mixes No.1, 2, and 3 will be measured for payment by the square yard in place at specified thickness.

**4.02 ASPHALTIC CONCRETE BUSHING COURSE**

When Mix No. 2 is used as a "bushing" or leveling course and the thickness cannot be accurately controlled, measurement for payment will be by the ton as determined by weight tickets.

**4.03 CONDITIONING OF EXISTING SURFACE, REPLACE WITH MIX NO. 2**

When bituminous mixtures are to be placed upon existing concrete or bituminous pavements that require cutting out of the existing street and subgrade as specified in Specification Section 02710.4 Paragraph 3.02, the removed material shall be replaced with asphaltic Mix No. 2. Measurement for payment will be by the ton of asphaltic concrete Mix No. 2 used for replacement material with the weight determined by weight tickets.

**4.04 GENERAL**

Manhole adjustments will be measured and paid for in accordance with Specification Section 02532 (sewer), Payment Item 02532-01 or Specification Section 02634 (drain), Payment Item 02634-01.

**PART 5 – PAYMENT**

**5.01 ASPHALTIC CONCRETE SURFACE AND BINDER COURSES**

The accepted quantities of asphaltic concrete surface Mixes No. 1, 2 and 3 will be paid for at the contract unit price per square yard for the thickness specified which price will be full compensation for all materials, prime coat, tack coat, blotting sand, mixing, hauling, spreading, compacting, and maintaining the surface or binder course until final acceptance, complete in place.

**5.02 ASPHALTIC CONCRETE BUSHING COURSE**

The accepted quantities of asphaltic concrete Mix No. 2 when used as a "bushing" or leveling course will be paid for at the contract unit price per ton, which price will be full compensation for all materials, prime coat, tack coat, blotting sand, mixing, hauling, spreading, and compaction until acceptance, complete in place.

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5.03 CONDITIONING OF EXISTING SURFACE, REPLACE WITH MIX NO. 2

The accepted quantities of asphaltic concrete Mix No. 2 when used to replace unsatisfactory material cut out of the existing street and subgrade as specified in Specification Section 02710.4 Paragraph 3.02 will be paid at the contract unit price per ton, which price shall be full compensation for removal of existing street surface, base, subbase, and subgrade material and for furnishing, placing, and compacting Mix No. 2 until acceptance, complete in place.

5.04 PAYMENT WILL BE MADE UNDER:

<u>Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
02741.01	Asphaltic Concrete Surface and Binder Courses	Square Yard
02741.01.01	Asphaltic Concrete Surface, Mix No. 1 ____ “ Thickness	Square Yard
02741.01.02	Asphaltic Concrete Binder, Mix No. 2 ____ “ Thickness	Square Yard
02741.01.03	Asphaltic Concrete Binder, Mix No. 3 ____ “ Thickness	Square Yard
02741.02	Asphaltic Concrete Bushing Course, Mix No. 2	Ton
02741.03	Conditioning of Existing Surface, Replace with Mix No. 2	Ton

**END OF SECTION 02741**