

## SECTION 405 - ROAD MIX BITUMINOUS PAVEMENT

**405.01 Description.** This work includes constructing one (1) or more courses \*| of road mix bituminous pavement utilizing in-place material or imported \*| material on a prepared surface according to the contract. |

**405.02 Materials.**

**(A) Bituminous Material.** Bituminous material for road mix bituminous pavement shall be a liquid asphalt, conforming Section 702 - Bituminous \*| Material. |

**(B) Aggregate.** Aggregate for road mix bituminous pavement shall \*| conform to Section 703 - Aggregates. |

**405.03 Construction Requirements.**

**(A) Weather Limitations.** The Contractor shall do construction of road \*| mix bituminous pavement only when the surface is dry and the atmospheric \*| temperature is above sixty (60) degrees Fahrenheit. |

**(B) Equipment.** The equipment used by the Contractor shall include \*| scarifying, mixing, spreading, finishing and compacting equipment, and a \*| distributor and heater for the bituminous material. |

The Contractor shall design, equip, maintain, and operate the \*| distributor so that the Contractor may apply the bituminous material at \*| constant heat uniformly on variable widths of surface up to fifteen (15) \*| feet at readily determined and controlled rates from 0.05 to 2.0 gallons \*| per square yard, with uniform pressure, and with an allowable variation \*| from specified rate not to exceed 0.02 gallon per square yard. The \*| distributor shall include a tachometer, pressure gages, accurate volume \*| measuring devices or a calibrated tank, and a thermometer for measuring \*| temperatures of the tank contents. Also, the Contractor shall equip the \*| distributor with a power unit for the pump, and full the pump, and full \*| circulation spray bars adjustable laterally and vertically. The \*| Contractor shall provide a hose and nozzle attachment for use in \*| spotting skipped areas and areas inaccessible to the distributor. |

The Contractor may use travel or stationary mixing plants or an \*| acceptable equipment. \*|

Rollers shall conform to Subsection 401.03(B)(4) - Rollers. |

**(C) Preparation of Surface.** When aggregate to be mixed with bituminous \*| binder consists of in-place material on the roadbed, the Contractor \*| shall scarify the area designated for treatment to the specified depth. \*| The Contractor shall process the material such that the maximum \*| dimension of the resulting in-place material shall not exceed the \*| specified size. The Contractor shall spread, shape, and thoroughly \*| recompact the material loosened below the required depth in advance of \*|

the mixing operations. The Engineer will not allow additional \*|  
compensation for such work. \*|

In advance of mixing operations, the Contractor shall blade the \*|  
processed in-place material into uniform windrows of equal size on each \*|  
side of the area to be surfaced or into a windrow on one side if the area \*|  
is adequate, after which the Contractor shall prepare the exposed surface \*|  
according to Subsection 203.02(C) - Subgrade Preparation. \*|

Where material other than the existing in-place material is to be \*|  
used, the Contractor shall prepare the surface to receive the road mix \*|  
bituminous pavement as provided under other applicable sections of the \*|  
contract. \*|

The Contractor shall apply prime coat, when specified, according to \*|  
Section 408 - Prime Coat. \*|

**(D) Placing Aggregates.** The Contractor shall prepare the aggregates \*|  
consisting of material other than that in-place uniformly on the prepared \*|  
surface by the use of spreader boxes, or other acceptable mechanical \*|  
spreading devices. When two (2) or more sizes of aggregates are used, \*|  
the Contractor shall place the aggregates of each size in the proper \*|  
quantity to provide for surfacing of the required width and thickness. \*|  
The Contractor shall windrow the aggregates of each size into a uniform \*|  
section, after which the Contractor shall mix them until they are \*|  
uniformly blended and then spread over the road surface. \*|

The Contractor shall spread the processed in-place material over the \*|  
prepared surface as accepted by the Engineer. \*|

If the surface moisture of the aggregate exceeds two (2) percent of \*|  
the dry weight of the aggregate, the Contractor shall turn the aggregate \*|  
by blades or disc harrows or otherwise aerated until its moisture content \*|  
is reduced to two (2) percent or less. In special cases when the \*|  
aggregate is unusually porous, the Contractor may spread the liquid \*|  
asphalt at the discretion of the Engineer, when laboratory tests indicate \*|  
that such increased moisture content will not produce an unstable \*|  
mixture. The Contractor shall then spread the aggregate smoothly and \*|  
uniformly over the surface ready for the application of bituminous \*|  
material, except that when traveling mixing plant is used, the Contractor \*|  
shall place the aggregate into a uniform cross section. \*|

When permitted, the Contractor may use an acceptable additive in \*|  
lieu of aerating and drying the aggregate. The additive shall permit \*|  
suitable coating of the wet aggregate and shall prevent the bituminous \*|  
coating from stripping in the presence of water. \*|

**(E) Application of Bituminous Material.** The Contractor shall distribute \*|  
the bituminous material uniformly in successive applications, in such \*|  
quantities and intervals as ordered. The mixing equipment shall \*|

immediately follow the distributor after each application of bituminous material to partially mix the aggregate and the bituminous material.

The Contractor shall not spread the liquid asphalt over the quantity that the Contractor can mix with aggregate on the same day the liquid asphalt is applied. \*|

**(F) Mixing.** After the last application of bituminous material and partial mixing, the Contractor shall mix the entire mass of bituminous material and aggregate by blading the mixture from one side of the road to the other, or by manipulations producing equivalent results until the aggregate particles are coated with bituminous material, the whole mass has a uniform color and the mixture is free from fat or lean spots, balls or uncoated particles. During the mixing operations, the Contractor shall take care to avoid cutting into the underlying coarse or contaminating the mixture with earth or other extraneous matter. \*|

If the mixture shows excess, deficiency or uneven distribution of bituminous material, the Contractor shall correct the condition by adding aggregate or bituminous material as required and re-mixing. The Contractor shall blade, aerate, or manipulate the mixture that contains excessive quantities of moisture or volatile matter until the moisture and volatile content are reduced to the allowed quantity. The Contractor shall not spread the mix when the surface is unsatisfactory. \*|

At the end of each day's work, or when the work is interrupted such as weather conditions, the Contractor shall blade the loose material into a windrow, whether mixing is completed or not. The Contractor shall retain the loose material in a windrow until operations are resumed. \*|

When the Contractor has completed a mixing satisfactorily, the Contractor shall place the mixture into a windrow of uniform cross section. \*|

When traveling or stationary mixing plants are used, the same requirements regarding residual moisture and evaporation of volatiles given shall apply. Where plant mix methods are used, the Contractor shall dry, proportion, and mix the mineral aggregate with the bituminous binder according to Section 401 - Asphalt Concrete Pavement, except that the Engineer will not require separation of the mineral aggregate into sizes and storing in separate bins. \*|

**(G) Spreading, Compacting and Finishing.** The Contractor shall spread the material by a self-propelled, pneumatic-tired blade grader or a mechanical spreader of acceptable type. In spreading from the windrow, the Contractor shall take care to avoid cutting into the underlying base. \*|

After the material is spread, the Contractor shall roll the surface with steel-tired rollers. The Engineer may require the use of pneumatic rollers to supplement the steel-tired rolling. The Contractor shall roll the finish with a tandem roller. Rolling shall be parallel to the road centerline and shall commence at the outer edges of the road, overlapping the shoulders and progress toward the center, overlapping on successive passes by at least half (1/2) the width of the roller, except that on superelevated curves, rolling shall progress from the lower to the upper edge. Each pass shall terminate at least three (3) feet ahead or behind of the end of the preceding pass. During the compaction, the Contractor shall drag or blade the surface as necessary to fill ruts and to remove incipient corrugations or other irregularities. Rolling shall continue until the surface is uniform in texture and satisfactory compaction is obtained. The Contractor shall discontinue rolling whenever excessive pulverizing of the aggregate or displacement of the mixture begins to occur.

The maximum lift thickness of the road mixed material shall not exceed that specified in the contract.

While the Contractor is compacting and finishing the surface, the Contractor shall trim the edges neatly to line.

**(H) Surface Requirements.** The Engineer will test the surface using a ten (10) foot straightedge at selected locations. The variation of the surface from the testing edge of the straightedge between two (2) contact points with the surface shall not exceed three-sixteenth (3/16) inch. The Contractor shall correct the humps or depressions exceeding the specified tolerance by removing the defective portion and replacing the humps or depressions with new materials as specified.

**(I) Protection of Work.** The Contractor shall keep the traffic except those necessary for construction off the road mix surfacing until rolling and setting have taken place. When ordered by the Engineer, the Contractor shall use part-width construction methods to facilitate traffic.

**405.04 Method of Measurement.** The Engineer will measure the mineral aggregate for road mix bituminous pavement, consisting of in-place material on the roadbed, by the cubic yard in place according to the dimensions shown on the plans or ordered by the Engineer.

The Engineer will measure the mineral aggregate for road mix bituminous pavement, consisting of material other than that found in-place on the roadbed, by the ton according to Section 109 - Measurement and Payment, except that the Engineer will deduct the moisture over two (2) percent in the aggregate, based on dry weight of the aggregate, from the weighed tonnage.

The Engineer will measure the bituminous material for road mix bituminous pavement by the gallon or ton according to Section 109 - Measurement and Payment.

**405.05 Basis of Payment.** The Engineer will pay for the accepted quantities \*|  
of road mix bituminous pavement for at the contract unit price per gallon or \*|  
per ton for bituminous material and per ton or per cubic yard for the mineral \*|  
aggregate complete in place. \*

The contract unit price paid for the various items of work shall be full \*|  
compensation for preparing, mixing and compacting of the road mix bituminous \*|  
pavement the furnishing of labor, materials, tools, and equipment and doing |  
the work involved in constructing the road mix bituminous pavement.

The Engineer will make payment under: \*

<b>Pay Item</b>	<b>Pay Unit</b>
Aggregate for Road Mix Bituminous Pavement	Ton
Aggregate for Road Mix Bituminous Pavement	Cubic Yard
Bituminous Material for Road Mix Bituminous Pavement	Gallon
Bituminous Material for Road Mix Bituminous Pavement	Ton