

Payment will be made under:

Item No.	Pay Item	Pay Unit
4041000	Cold Mix Asphalt Binder Course	Ton

## SECTION 405

### COLD MIX ASPHALT SURFACE COURSE

**405.01 Description.** This work shall consist of a surface course composed of mineral aggregate and asphalt material, mixed in an approved plant and constructed on a prepared surface in accordance with these specifications and conforming to the lines, grades, dimensions, thickness, and typical cross-section shown on the plans or as otherwise specified.

#### MATERIALS

**405.02 Asphalt Material.** The asphalt material to be used in the mix shall conform to the following cited specifications:

RC 250, RC 800, or RC 3000 - - - - - AASHTO M 81  
MC 250, MC 800, or MC 3000 - - - - - AASHTO M 82

Asphalt binder (PG64-22) may be blended with a cut-back asphalt or a liquefier provided a quality mix is produced. Also, a cut-back asphalt emulsion may be used provided an excellent mix results.

**405.03 Mineral Aggregate.** The mineral aggregate shall meet the requirements as specified in Subsection **401.03**.

**405.04 Composition of Asphalt Surface Course.** The mineral aggregate and the asphalt material shall be combined in such proportions that the composition by weight of the finished mixture shall be within the range limits shown in the

following tables except as noted:

### Composition Limits of Cold Mix Asphalt Surface Courses

Gradation Requirements			
Sieve Designation	Percentage by Weight Passing		
	Type 1	Type 2	Type 3
3/4 inch	100	100	--
1/2 inch	97-100	97-100	--
3/8 inch	75-95	80-100	100
No 4	60-80	50-75	90-100
No. 8	43-63	40-63	70-100
No. 30	23-39	14-39	28-60
No. 100	8-17	2-22	4-26
No. 200	2-8	0-12	2-10
Note: For Type 3, the amount between any two consecutive sieves smaller than 3/8 inch shall be not less than 3%.			

Percent of Total Mixture			
	Type 1	Type 2	Type 3
Bitumen	4.2-6.8	4.2-6.8	5.0-8.0

Marshall Stability, lbs.			
	Type 1	Type 2	Type 3
Minimum	600	600	--

Asphalt binder (PG64-22) will be used in design of mix to check Marshall Stability on the approved job mix.

The above composition limits are master ranges of tolerance. Except for Type 3, a closer control meeting the requirements as specified in Subsection **401.04** will be required. An asphalt content will be set for Type 3 and a plus or minus variation of 0.4% will be permitted from the set value.

### EQUIPMENT

**405.05 Equipment.** The plant used in the manufacture of

the bituminous mixture and all equipment shall conform to the applicable requirements specified in Subsections **401.06** through **401.14**. Plants different from the types specified in Section **401** may be approved for use provided a uniform and satisfactory mixture is produced.

## CONSTRUCTION REQUIREMENTS

**405.06 Plant Inspection.** Plant inspections shall meet the requirements of Subsection **401.15**.

**405.07 Weather Restrictions.** The provision for weather restrictions shall be as specified in Subsection **401.17**.

**405.08 Preparation of Aggregate.** The aggregate, if wet, shall be surface dried in the drier specified herein before mixing.

**405.09 Preparation of Bituminous Mixture.** The dried aggregate shall be combined in the mixer in the proportionate quantities of each fraction of aggregate required and thoroughly mixed dry. The bituminous materials may be introduced into the mixture in several component parts provided that the finished mixture and the resulting asphalt binder shall meet the requirements of these specifications. A small percentage of liquefier may be added when necessary to keep the mixture soft and workable until it is spread on the roadway.

The bituminous mixture must have uniform softness and be in such condition at the time of delivery at destination that it can be handled satisfactorily without heating when the temperature is 40°F and above and will not harden when stored outside in a stockpile. It must be capable of withstanding traffic without displacement or raveling immediately after being spread on the roadway and rolled.

**405.10 Transportation and Delivery of Mixture.** The bituminous mixture shall be transported from the plant to the point of use in tight vehicles that have been previously

cleaned of all foreign materials.

**405.11 Conditioning of Existing Surface.** Conditioning of the existing surface shall be performed as specified in Subsection **401.25**.

**405.12 Application of Prime or Tack Coat.** Application of Prime Coat or Tack Coat shall be as specified in Subsection **401.28**.

**405.13 Spreading and Finishing.** Spreading and finishing operations shall be as specified in Subsection **401.29**.

**405.14 Compaction.** After spreading to the required cross-section, each lift shall be thoroughly and uniformly compacted.

Each roller shall be operated by a competent experienced roller operator and, while the work is underway, must be kept in continuous operation as nearly as practicable.

The initial rolling shall start soon after the mixture has been spread and shall progress at a rate that will furnish compaction to the satisfaction of the Engineer.

Straightedging and backpatching shall be done at any time after initial compaction has been accomplished.

Rolling shall start longitudinally at the sides and proceed gradually to the center of the pavement, overlapping on successive trips approximately one-half the width of the rear wheel. On superelevated sections, rolling shall progress from the lower to the upper edge of the pavement. Rolling shall continue until the entire surface has been rolled and roller marks eliminated. If the surface checks or cracks while being rolled, it may be necessary to postpone rolling to a later time when cracking will not occur.

The Engineer may require the surface course to be re-rolled at any time within two (2) weeks after it is laid.

The motion of the roller at all times shall be slow enough to avoid displacement of the mixture. Any displacement occurring as a result of reversing the direction of the roller, or from any other cause, shall be corrected at once by the use of rakes and the addition of fresh mixture if necessary.

To prevent adhesion of the mixture to the roller wheels, the wheels shall be kept properly moistened, but excess water will not be permitted. The use of oil will not be permitted.

Along forms, curbs, headers, walls and at other places not accessible to the roller, the mixture shall be thoroughly compacted with hand tamps or mechanical tampers that furnish equivalent compaction.

Under favorable conditions, when the Engineer deems advisable, public traffic shall be placed on the newly laid course.

The surface of the mixture after compaction shall be smooth and true to the established crown and grade. Any mixture that becomes loose and broken, mixed with dirt or in any way defective, shall be removed and replaced with fresh mixture, which shall be immediately compacted to conform to the surrounding area.

**405.15 Joints.** Joints shall meet the requirements and specifications of Subsection **401.32**.

**405.16 Protection of Surface.** The newly constructed surface shall be protected from traffic until the mixture has hardened sufficiently not to be distorted.

Parking shall not be permitted on the surface until it hardens so that the weight of the vehicles will not cause displacement. The surface course shall be kept clean and free from foreign material when the shoulders are being constructed.

**405.17 Surface Requirements.** Finished surfaces shall meet the requirements and specification in Subsection **401.35**.

**405.18 Plant Tickets.** Plant tickets shall meet the requirements specified in Subsection **401.37**.

**405.19 Method of Measurement.** The quantity of Cold Mix Asphalt Surface of the type specified shall be the number of tons weighed on approved scales and actually incorporated in the completed and accepted work.

Deductions will be made for all bituminous mixture wasted or lost due to the negligence of the Contractor, bituminous mixture applied in excess of the rate specified or directed in writing, and bituminous mixture applied beyond the limits of the work.

**405.20 Basis of Payment.** Cold Mix Asphalt Surface Course of the type specified measured as provided in Subsection **405.19** will be paid for at the contract unit price, which price and payment shall be full compensation for furnishing, mixing, hauling, placing, and compacting all materials including furnishing and application of tack and prime coats, and for all tools, equipment, labor, and incidentals necessary to complete the work.

Payment for this item includes all direct and indirect costs and expenses required to complete the work.

Payment will be made under:

Item No.	Pay Item	Pay Unit
405XXXX	Cold Mix Asphalt Surface Course (Type <i>(1, 2, or 3)</i> )	Ton