

## **COLD MIX SPECIFICATIONS**

### 1. DEFINITIONS

The term Director (Superintendent, etc.) shall mean the Director of Public Works of (municipality, state).

The term Designee shall mean an employee of (municipality, state) designated by the Director.

The term Contractor shall mean a professional company contracted by (municipality, state) to perform work under this agreement.

### 2. DESCRIPTION

Work under this contract shall consist of the Contractor furnishing equipment and materials to create a laboratory tested liquid asphalt and aggregate cold mix. The cold mix shall be processed through a pugmill, and follow a job mix formula submitted by the Contractor and approved by the Director or his/her Designee. Bid quantities are approximate only; payment shall be for the cost of materials and equipment.

### 3. MATERIALS

#### a. Liquid Asphalt

Liquid asphalt grades shall be: MS-4, CMS-2, HFMS-2, or MC-800. The type and grade of liquid asphalt shall be approved by the Director prior to commencing work.

#### b. Aggregate

The aggregates, to be purchased by the (municipality) or the Contractor, shall be in stockpiles located at the Highway Department or at another site deemed suitable by the Director. All aggregate shall be free from dust and thoroughly blended before stockpiling. The aggregate gradation shall conform to one of the mix design formulas in 3(c), as designated by the Director.

#### c. Composition of Mixture

The aggregate and asphalt shall be thoroughly mixed so that the asphalt material is uniformly distributed throughout and a minimum of 90% of the aggregate particles are uniformly coated when placed on the roadway.

Prior to commencing work, it shall be the responsibility of the Contractor

to submit to the Director one of the following mix designs.

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SIEVE SIZE	STABILIZE BASE	DENSE BINDER	DENSE T & L	DENSE TOP	OPEN BINDER	OPEN TOP
2"	100					
1 1/2"		100			100	
1"		95 - 100				
3/4"			100		90 - 100	
1/2"		60 - 90	90 - 100	100	30 - 100	100
3/8"				85 - 100	10 - 60	85 - 100
#4	25 - 65	30 - 70	30 - 75	50 - 90	0 - 25	10 - 50
#8		20 - 60	20 - 65	25 - 65	0 - 10	0 - 15
#30		8 - 35	8 - 35	8 - 35		
#50		3 - 20	3 - 20	3 - 20		
#200	0 - 100	0 - 3	0 - 3	0 - 3	0 - 2	0 - 2
% Bitumen	2.5 - 4.0	3.0 - 4.7	3.3 - 5.0	4.0 - 5.8	2.8 - 4.0	3.0 - 4.4
Gal/Ton Emulsion	10 - 14	11 - 17	12 - 38	14 - 21	10 - 14	11 - 16
Gal/Ton Cutback	7 - 14	8 - 13	9 - 14	11 - 16		

#### 4. MATERIAL QUANTITIES

The quantity of asphalt material to be used shall be in the range of 7 to 21 gallons per ton of aggregate. The Contractor will use lab tests to design specific material quantities to meet existing field conditions.

#### 5. EQUIPMENT

The equipment used by the Contractor shall include one or more of the following:

##### a. Pugmill

Mix shall be done with a rotating twin paddle shaft pugmill providing suitable pressure-kneading action in mixing. The hydraulically driven pugmill shall be able to mix material in a crossing pattern for more thorough mixing. Mixing by blading, shoveling and/or scooping will not be permitted. The mixer shall be a continuous traveling type pugmill designed to accurately proportion either by volume or by weight, so that when the aggregate and asphalt materials are incorporated in the mix a

thorough and uniform coating will result. The mixer shall be equipped to mechanically or electrically interlock the asphalt feed with the aggregate feed such that uniformity of the mixture is assured at all times.

The traveling pugmill mixer shall be provided with volumetric or other gauging equipment which shall be capable of providing accurate control at all times of the amount of aggregate entering the mixer per time interval. The mixer shall be equipped with a positive displacement metering system capable of totaling the quantity of asphalt material applied to the mixing chamber. The capacities of the cold feed bins shall be sufficient to maintain a continuous flow of material. Each bin shall have a mechanical device for uniform feeding of the aggregate. The mixer unit shall be approved by the Director or his/her designee prior to commencing any work.

b. Paver

The paver shall be equipped with automatic transverse slope and longitudinal grade screed controls. The paver shall be equipped with a screed that is fully extendible from 10 feet to 16 feet. The extender shall have independent slope control and on the go capabilities to change width and slope.

c. Roller

The roller shall have vibratory capacities to insure proper compaction.

## 6. CONTRACTORS REQUIREMENTS

a. The bidder shall own, operate and maintain a working laboratory at his/her plant. The laboratory shall be equipped with all equipment necessary to perform all specified tests on any liquid asphalt samples. The laboratory shall be operated by a full-time qualified technician and shall be available for use by any Highway personnel. The laboratory shall also include sufficient equipment to test aggregate and mixes.

b. The successful bidder shall employ experienced labor and shall furnish material and equipment for safe and proper operation. All work and operations called for on the part of the successful bidder shall be performed in a first class workmanlike manner, and in accordance with the best usages of the trade.

c. The bidder shall have a minimum of five (5) years experience in the production of the types of material specified to insure proper mixtures and satisfactory service. The vendor at the time of bidding shall own the equipment with which he intends to complete the contract, if so awarded.

## 8. PERFORMANCE

The (municipality) will not award this contract unless the Contractor furnishes satisfactory evidence of his/her ability and experience to perform this work, and

that he/she has sufficient capital and equipment to enable him/her to execute the work successfully and to complete it within the time names in the contract. As part of the bid, the Contractor must submit a list of six similar and successfully completed jobs, whose relevance to the proposed job shall be deemed by the (municipality). The name, address and telephone number of a contact person involved with each of these projects must be included so they can b investigated prior to the award of the contract.

#### 9. METHOD OF PAYMENT

The unit price bid per ton of cold mix shall include the cost of furnishing all liquid asphalt, the pugmill for mixing and all labor required related to the operations of the pugmill.

#### 10. GUARANTEE

Any material or workmanship found to be defective for up to one year from the date of acceptance by the Director shall be replaced by the Contractor at no cost to the (municipality). Upon notification of defective material or workmanship, the Contractor shall immediately replace such defective areas, unless otherwise instructed by the Director.