

KALKASKA COUNTY ROAD COMMISSION

SPECIAL PROVISION
FOR
ACCEPTANCE OF HMA MIXTURE

KCRC: JSLR

02/15/16

Description.

This special provision provides acceptance-testing requirements for use on this project. The HMA mixture and mixture quality assurance and acceptance shall conform to section 501 of the Michigan Department of Transportation 2012 Standard Specifications for Construction except where modified herein. The MDOT HMA Production Manual, current edition, applies to this work.

Submittals.

Submit a mix design previously approved by MDOT (or equivalent independent verification approved by the Engineer) from within 1 year of the project start date, for the Engineer's review and approval. The Contractor shall not place any HMA without an approved mix design by the Road Commission.

Materials.

Aggregates, mineral filler (if required), and asphalt binder shall be combined as necessary to produce a mixture proportioned within the master gradation limits called for in the project and meeting the uniformity tolerances listed in Table 1 and the quality assurance testing tolerances in Table 2 of this special provision. The master gradation range is to be used for establishing mix design only. Topsoil, clay, or loam shall not be added to aggregates which are to be used in plant mixed HMA mixtures.

Asphalt Binder.

Liquid asphalt binder shall be a Performance Graded (PG) binder as specified in the bid requests and/or approved by the Road Commission.

Air Voids.

Design air voids will be 4.0% and shall be regressed to 3.0% in production by the addition of virgin liquid asphalt.

Recycled Asphalt Pavement (RAP).

RAP is limited to Tier 1. The binder grade shall be PG 58-28.

Tier 1 - (0% to 17% RAP binder by weight of the total binder in the mixture). No binder grade adjustment is required to compensate for the stiffness of the asphalt binder in RAP.

Construction.

After the job-mix-formula is established, the aggregate gradation and the binder content of the HMA mixture furnished for the work shall be maintained within the Range 1 uniformity tolerance limits permitted for the job-mix-formula specified in Table 1. However, if deviations are predominantly either below or above the job-mix-formula, the Engineer may order alterations in the plant to bring the mixture to the job-mix-formula. If two consecutive aggregate gradations on one sieve, or binder contents as determined by the field tests, are outside Range 1 but within Range 2 tolerance limits, the Contractor shall suspend all operations. Contract time will continue during these times when the plant is down. Before resuming any production, the Contractor shall propose, for the Engineer's approval, all necessary alterations to the materials or plant so that the job-mix-formula can be maintained. The Engineer, after evaluating for effects on AWI and mix design properties, will approve or disapprove such alterations.

At no time shall the asphalt binder content fall below 5.0% regardless of the tolerance listed.

Random liquid asphalt binder samples will be taken by the Road Commission. The Road Commission reserves the right to test any or all samples taken.

The crushed particle content of the aggregate used in the HMA mixture shall not be more than 10 percentage points above or below the crushed particle content used in the job-mix-formula nor less than the minimum specified for the aggregate in the project documents.

The Road Commission will perform quality assurance sampling and testing, using the sampling and testing option selected by the Road Commission. Mixture QA testing will be performed at the Contractor's facility, using the Contractor's equipment, at no additional cost to the Owner. Quality control measures to ensure job control are the responsibility of the Contractor. Quality assurance and acceptance testing will be as follows:

1. Sampling

Acceptance sampling and testing will be performed by the Road Commission using the sampling method and testing option selected by the Road Commission. Each day of production, random samples will be obtained for each mix type. Acceptance testing will be performed at a frequency specified by the Road Commission.

2. Mixture Testing

Mixture samples will be tested to verify gradation, binder content and volumetric properties.

3. Density

Pavement density may be measured by the Road Commission, with a Nuclear Density Gauge or by 6 inch core sampling. The G_{mm} from the JMF will be used for the density control target. The in place density of the HMA mixture shall be at least 92.0% of the density control target. In place density will be calculated by averaging a minimum of four QA density test locations.

Table 1: Uniformity Tolerance Limits for HMA Mixtures

Parameter	TOP & LEVELING COURSE	
	* Range 1	Range 2
% Passing # 8 and Larger Sieves	± 5.0	± 8.0
% Passing # 30 Sieve	± 4.0	± 6.0
% Passing # 200 Sieve	± 1.0	± 2.0
*This range allows for normal mixture and testing variations. The mixture shall be proportioned to test as closely as possible to the Job-Mix-Formula.		

Table 2: HMA Quality Assurance Testing Tolerances (±) from the JMF

Parameter	Double Test per Lot (c)	Lot Average
Air Voids	1.00%	0.60%
Voids in Mineral Aggregate VMA (a)	1.20%	0.75% (b)
Maximum Specific Gravity (G _{mm}) (a)	0.019	0.012
Binder Content (a) (d)	0.50%	0.35%
a. Parameters with target values b. Or less, determined by VMA value in contract documents c. “Double Tests per Lot” refers to any two subplot tests in any one lot d. Binder content shall not fall below 5.0% at any time regardless of the tolerance listed		

Rejected Mixtures.

1.

Gradation

If for any one mixture, two consecutive aggregate gradations on one sieve as determined by field tests exceed the uniformity tolerance of Range 2 under Table 1, or do not meet the minimum requirements for crushed particle content specified in the project documents, the mixture will be rejected. If such mixtures are placed in a pavement, the remaining portions of the failing field samples (split sample) will be sent to an independent laboratory to confirm the field test results. If the laboratory’s results do not confirm the field test results and there are no price adjustments required due to test failures on the asphalt binder, then no price adjustments will be made for the mixture involved. If the laboratory’s results confirm the field test results and if, in the Engineer’s judgment, the defective mixture can remain in place and there are no price adjustments required due to test failures on the asphalt binder, the contract unit price for the defective mixture involved, as determined from field tests, will be decreased on the following basis:

The contract unit price for material outside of Range 2 or with a crushed particle content below that specified in the project documents will be decreased 25 percent.

If three consecutive aggregate gradations on one sieve, or asphalt binder contents as determined by field tests are outside Range 1 but within Range 2 tolerance limits, the mixture produced from the time the third sample was taken until the gradation, or asphalt binder content is corrected back into Range 1 will be decreased in contract unit price by 10 percent. Field tests indicating that mixtures are subject to the 10 percent penalty will be confirmed in the same manner as mixtures subject to the 25 percent penalty as described herein.

If a liquid asphalt binder sample does not meet the required specification, the mix produced from the point of the last liquid asphalt binder sample meeting specification to the failed sample shall be considered defective and shall be replaced at the sole expense of the contractor. This may also result in the termination of the contract and/or the right to bid on any future work.

2. Volumetric Properties

Acceptability tolerance for Air Void, VMA G_{mm} and Binder Content are shown in Table 2. Material produced outside of Table 2 tolerance limits will be rejected.

3. Pavement Density

A negative 10% adjustment in the HMA mixture unit contract price will be imposed on the lot or subplot if either the lot pavement density (average of all lot gauge readings or core results) is less than 92%, but equal to or greater than 91%; or if 2 or more readings or cores in any given subplot are less than 91%.

A negative 25% adjustment in the HMA mixture unit contract price will be imposed on the lot or subplot if either the lot pavement density (average of all lot gauge readings or core results) is less than 91%, but equal to or greater than 90%; or if 2 or more readings or cores in any given subplot are less than 90%.

If any subplot has an average density of less than 90%, the Contractor shall remove and replace the entire subplot at no cost to the owner.