1 ASPHALT CONCRETE COMPACTION
Revision 2
April 2, 2021

1-1 GENERAL

The following are recommendations that can be used to supplement, amend, or replace the local government agency's specifications for asphalt concrete compaction. This is not formatted as a standard special provision, amending either Caltrans specifications or the Greenbook, but is written as a generic guide specification. An agency can incorporate this generic guide specification into their special provisions or standard specifications, but the agency must format it to incorporate into their specifications or special provisions and remove any overlapping or contradictory specifications or special provisions.

1-1.01 General

Asphalt concrete, 1.2" (0.1') in thickness or greater after the completion of rolling, shall be compacted to not less than 92 percent and not more than 97 percent of the theoretical maximum density (TMD) as determined in accordance with AASHTO T 209 Method A.

1-1.02 Rollers

The Contractor shall furnish and operate a sufficient number and types of rollers to obtain the compaction specified by these specifications. Rollers shall be self-propelled and shall be equipped with a system that prevents HMA from sticking to the wheels. A parting agent may be used if it does not damage the HMA or impede the bonding of layers.

Do not use petroleum products such as kerosene or diesel fuel to release HMA from trucks, spreaders, or compactors.

1-1.03 Rolling Operations

Rolling shall commence at the lower edge and will progress toward the crown point, except that when compacting layers that exceed 4 inches in compacted thickness, and if directed by the Engineer, rolling shall commence at the center and shall progress outwards. Rolling shall be performed in a manner that cracking, shoving, and displacement are avoided.

For lifts greater than 4 inches in compacted thickness, rolling shall commence in the middle of the mat, after which the roller shall be gradually advanced to both edges. Supported edges (edges along concrete curbs and gutters, or headers) shall be rolled before unsupported edges. If approved by the Engineer, rolling of an unsupported edge may be delayed if the required density is achieved on the remainder of the mat after the completion of finish rolling.

1-1.04 Compaction

The Contractor shall demonstrate that their equipment and operation can achieve the required density on a test strip not less than 200-foot long and 12-foot wide in accordance with California Test 375 prior to receiving notice to proceed with paving. The Contractor is responsible for the quality control process necessary to achieve the required density.

The Engineer will determine the field density by a non-destructive nuclear asphalt testing device correlated on the test strip in accordance with California Test 375 (except the Engineer will use AASHTO T 209, Method A to determine the theoretical maximum density instead of calculating test maximum density) or by cores in accordance with California Test 308, Method A. Nuclear gauge testing devices will be re-correlated with cores whenever there is a change in lift thickness of 1/2 inch or greater, underlying material, materials source, or mix design. In case of dispute regarding field density, the Engineer will collect and test cores (3 cores per every lot that is in dispute) for in-place density measurement.

1-1.05 Acceptance

The project will be divided into lots of 1500 tons. If one day's production is less than 1500 tons that day's production will be a lot. If one day's production is one lot plus an additional amount, the additional work will be included in the last lot of 1500 tons. The Engineer will test each lot prior to acceptance. The Engineer will provide the Contractor the results of the nuclear gauge testing or core test results within one working day of completion of a paving lot. If the Engineer does not test the density of the lot, the reduced payment factor is 0.0.

The Engineer will calculate the percent of TMD to the nearest 0.1 percent for each calibrated nuclear gauge density reading or each core by dividing the in-place density by the TMD and multiplying by 100 percent. The mean percent of TMD will be used by the Engineer to determine compliance with the specification for each lot. If the percent of TMD does not comply with the specifications, the Engineer will accept the asphalt concrete compaction and take a payment deduction or not accept the lot as shown in the Table 1:

Table 1. Reduced Payment Factors for Percent of Maximum Theoretical Density

HMA-LG percent of maximum theoretical density	Reduced payment factor	HMA-LG percent of maximum theoretical density	Reduced payment factor
92.0	0.0000	97.0	0.0000
91.9	0.0125	97.1	0.0125
91.8	0.0250	97.2	0.0250
91.7	0.0375	97.3	0.0375
91.6	0.0500	97.4	0.0500
91.5	0.0625	97.5	0.0625
91.4	0.0750	97.6	0.0750
91.3	0.0875	97.7	0.0875
91.2	0.1000	97.8	0.1000
91.1	0.1125	97.9	0.1125
91.0	0.1250	98.0	0.1250
90.9	0.1375	98.1	0.1375
90.8	0.1500	98.2	0.1500
90.7	0.1625	98.3	0.1625
90.6	0.1750	98.4	0.1750
90.5	0.1875	98.5	0.1875
90.4	0.2000	98.6	0.2000
90.3	0.2125	98.7	0.2125
90.2	0.2250	98.8	0.2250
90.1	0.2375	98.9	0.2375
90.0	0.2500	99.0	0.2500
<90.0	Remove and replace	>99.0	Remove and replace

Revisions:

1. 12-07-20. Replace Table 1 with new table beginning reduced payment factor at 91.9%.
2. 4-02-21. Add use of AASHTO T 209 instead of test method density to California Test 375 under *Compaction*.