

**CITY OF COLUMBUS
PUBLIC SERVICE DEPARTMENT
TRANSPORTATION DIVISION**

**SUPPLEMENTAL SPECIFICATION 1542
IN PLACE DENSITY OF HOT-MIXED ASPHALT**

MARCH 3, 2003

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1542.01 Description. This supplemental supersedes the density requirements presented in section 401.151 of the City of Columbus, Construction and Material Specification. This work shall consist of obtaining in-place core samples of the compacted mix to verify the actual degree of compaction being obtained. On residential streets in Private Developments, the City will initially spot-check projects, approximately 25 percent, to ensure that proper compaction of the new pavement options are being accomplished. Once sufficient tests have been conducted to assure conformance, in-place density testing will be performed only if the City has reason to believe that proper compaction procedures are not being followed. On each of the projects evaluated, the first phase will consist of obtaining and testing (3) three core samples, randomly selected throughout the new pavement sections. If any of these samples fail to meet the full acceptance criteria set forth in Section 1542.03, a complete evaluation following the procedures of this supplemental shall be conducted. The Engineer may require additional spot-checks as necessary to assure compliance.

1542.02 Limitation On Use. Only surface and intermediate courses will be verified for density. Asphalt base courses will be required to follow the procedures specified in sections 401.12 and 401.15 of the Columbus Construction and Material Specifications. On City Projects when Item 416 Contractor Mix Design is specified, this supplemental shall become a requirement, and the sampling and acceptance procedures set forth in 1542.03 will be followed.

1542.03 Procedure. For each day's total production (combination of intermediate and/or surface course) that is greater than 250 tons but less than 1,000 tons, obtain 10 core samples. For each day's production greater than 1,000 tons, obtain 5 additional cores for each additional 500 tons or fraction thereof, not to exceed 20 samples in a given day. Unless specifically requested, no samples will be obtained if the total

tonnage is less than 250 tons. All samples will be obtained within 48 hours after placement, and subsequent testing completed within 24 hours thereafter. The average density (bulk specific gravity) of the cores for each layer will represent the area of pavement placed during that day's production. This density will then be correlated to the average Maximum Specific Gravity (MSG) of the mix, as determined daily by the laboratory inspecting the production facilities. If the production is 500 tons or less, only one (1) maximum specific gravity (MSG) test will be performed. If more than 500 tons are produced, one (1) morning and one (1) afternoon test will be performed for each day's production, for a total of two (2) tests. The average of the two samples will be used as the control data.

The City will determine compliance based on the criteria presented in table 1542.03-1.

Table 1542.03-1.

Above 98.0%	The Engineer will determine if the material warrants replacement.
98.0% to 97.0%	Extended Warranty, per 1542.06
96.9% to 93.0%	Full Acceptance
92.9% to 89.0%	Extended Warranty, per 1542.06.
Below 89.0%	The Engineer will determine if the material warrants replacement.

If the Engineer determines pavement replacement is justified, such replacement shall be made at no cost to the City.

1542.04 Mix Composition. Before production, submit for approval a job-mix formula (JMF) using the Marshall Mix Design method per the Asphalt Institute Manual (MS-2). Include all accompanying test data. The composition table for the required item is listed in the Columbus Construction and Material Specification (CCMS) and specifies the limits within which the JMF will be set.

The requirements set forth in items 401, 402, 404, 415 and 416 of the current CCMS are considered part of this supplemental specification and will be strictly followed.

1542.05 Testing. The maximum specific gravity "**MSG**" for all aggregate types shall be determined by AASHTO T 209 (Rice Method). Sampling and testing will be performed by the City or their representative.

The bulk specific gravity "**BSG**" of the extracted core samples shall be determined by ASTM D 2726. If the water bath for the Marshall specimens is not maintained at 25°C, then the correction factor (K) specified in ASTM D 2726 shall be used.

1542.06 Extended Warranty. In the event that an extended warranty is required, the period of the warranty will be for 5 years, commencing after final acceptance of the project. At any time during the 5-year period, if in the judgment of the City the pavement

has failed to meet design or specification requirements, the contractor shall remove and replace at his own expense. Contractor or Developer shall provide a bond, letter of credit or other form of surety acceptable to the City for the estimated cost of full replacement, unless otherwise approved by the Director.

1542.07 Acceptance Evaluation Cost. All cost involved in the acceptance evaluation, including testing and obtaining core samples will be charged against the Developer's deposit on Private Development Projects. On CIP projects, the Prime Contractor shall pay for the costs. The extracted cores samples will also be used to verify the thickness of the completed pavement.