



WSDOT SOP 730

Correlation of Nuclear Gauge Densities with Hot Mix Asphalt (HMA) Cores

1. Gauge-core correlation shall be required for statistical evaluation of degree of asphalt compaction.
 - a. For each combination of gauge and job mix formula.
 - b. For direct transmission and for back scatter modes (when used).
 - c. If gauge is recalibrated.
2. A new gauge correlation is not required.
 - a. For different contracts if JMF and gauge are the same.
 - b. For a change in bases (i.e., surfacing to overlay).
 - c. When the job mix formula has been adjusted in accordance with Section 9-03.8(6)A of the *Standard Specifications*.
3. Gauge correlation is based on 10 density determinations and 10 cores taken at corresponding locations. Gauge densities shall be determined in accordance with WSDOT FOP for WAQTC TM 8. Cores should be taken no later than the day following paving and before traffic has been allowed on roadway. The sites for correlation cores do not have to be record density locations and therefore consideration should be given to selecting sites out of the travel way.

Note1: If a core becomes damaged, it may be eliminated from the average.

Note2: Cores may be taken sooner than the day after paving by cooling the pavement to allow for hardening of the HMA to prevent damage to the core when taking the sample. Water, ice, or even dry-ice would be expedient means to cool the pavement. Nitrogen gas or CO₂ uses as replacement drilling fluids may also be involved.

4. Obtain a pavement core from each of the test sites in accordance with WSDOT SOP 734. The core shall be taken in between the two nuclear gauge footprints. If direct transmission was used, locate the core at least 1 in. (25 mm) away from the edge of the drive pin hole.
5. Core densities shall be determined in conformance with AASHTO T 166 Bulk Specific Gravity of Compacted Bituminous Mixtures Using Saturated Surface-Dry Specimens.
6. Correlation factor shall be determined to 0.001 using Standard Form 350-112: Correlation Nuclear Gauge to Core Density, or other comparable forms.

