

SPECIAL PROVISION

REGARDING

INTELLIGENT COMPACTION (IC) FOR HOT MIX ASPHALT (HMA)

This specification covers the requirements for modification of standard HMA compaction equipment for the purpose of tracking and documenting location, stiffness (if applicable) and temperature. Compaction equipment and procedures shall meet all requirements listed in Standard Specifications sections **407.07** and **407.15** except as modified herein.

Global Positioning System (GPS) Requirements

Breakdown and intermediate rollers shall be equipped with GPS radio and receiver units to monitor the equipment locations and track the number of roller passes. GPS receivers shall utilize the Universal Transverse Mercator (UTM) or Tennessee State Plane coordinate system and have a survey tolerance of not greater than 3.0 in. (76.2 mm) in both the horizontal (x and y) directions. Once declared, the coordinate system utilized shall be the same for both rollers for the entire project.

GPS data shall be in the following format:

- Time: Military, local time zone, hhmmss.ss
- GPS: Latitude/Longitude, degrees/minutes ddmm.mmmmmmmm or decimal degrees dd.ddddddd
- Grid: Meters, 0.001 m

A technical representative from the IC equipment supplier shall be present for training and technical support at project startup and for the first three days (minimum) of construction.

Intelligent Compaction Measured Values (IC-MV)

Breakdown rollers shall be of the vibratory type and shall be equipped with accelerometers to measure the interaction between rollers and compacted HMA in order to evaluate the applied compaction effort. The output from the roller is designated as the Intelligent Compaction Measurement Value (IC-MV) which represents the stiffness of the materials based on the vibration of the roller drums and the resulting response from the underlying materials.

Temperature Measurement

Breakdown and intermediate rollers shall be equipped with non-contact temperature sensors for measuring pavement surface temperatures.

Integrated On-Board Documentation System

An on-board documentation system that is capable of displaying real-time color-coded maps of IC measurement values including the stiffness response values, location of the roller, number of roller passes, pavement surface temperatures, roller speeds, vibration frequencies and amplitudes of roller drums. The display unit shall be capable of transferring the data by means of a USB port. Data files shall be compatible with IC data analysis software Veda Alfa Version 8.0 or later, available at www.intelligentcompaction.com. Following each work day or shift, operators shall make daily data files available to TDOT materials and tests and project office personnel for review.

Basis of Payment

All costs of equipment and related additional expenses shall be bid under the following lump sum item:

<u>Item</u>	<u>Description</u>	<u>Unit</u>
407-07.01	INTELLIGENT COMPACTION EQUIPMENT	LS