MICHIGAN TEST METHOD
FOR
QUANTITATIVE MEASUREMENT OF HOT MIX ASPHALT (HMA) PAVEMENTS

1. Scope

This method shall be used to help assist the Contractor and Engineer in identifying segregation and taking corrective action to eliminate segregation when it is present in Hot Mix Asphalt (HMA) pavements.

2. Significance and use

2.1 This method requires the use of a nuclear density gauge and the MDOTMBITSEG2 computer program to assist in locating segregated areas and identifying limits of such areas. Contact the HMA Operations Unit at Construction Field Services for a copy of the MDOTBITSEG2 computer program. The HMA pavement materials shall be produced, transported, placed and compacted with the proper construction processes to provide uniform volumetric properties throughout the entire cross section of pavement.

2.2 This method may be used for:

2.2.1 Agency Acceptance Testing

2.2.2 Contractor Quality Control

2.2.3 Investigations

3. Equipment

3.1 Nuclear density gauge

3.2 MDOTMBITSEG2 computer program

4. Terminology

Segregation - Areas of Bituminous Pavement exhibiting non-uniform distribution of coarse and fine aggregate particles that is visually identifiable or can be identified by other methods.

Heavy Segregation - An area showing stone against stone, with little or no matrix visible.

Medium Segregation - An area showing significantly more stone than surrounding pavement with a lack of matrix.

5. Procedure

When heavy segregation is identified visually in the pavement by the Contractor or the Engineer, a set of six to fifteen one minute nuclear density measurements shall be taken by the Engineer in the segregated area, a similar set of readings shall also be taken in an adjacent non segregated area. The mean value of the density of the two areas shall be compared using MDOT's MBITSEG2 computer program. When it is determined that corrective action, as identified and recommended by the MDOTMBITSEG2 computer program, is needed, the Contractor shall implement corrective actions immediately and report them to the Engineer before the next day's paving begins. The Contractor shall also provide, in writing, the actions that will be taken to eliminate segregation. The Contractor, with the Engineer, shall closely monitor the in-place pavement when paving resumes. If, once paving resumes, heavy segregation is identified, the Contractor shall stop production and a complete evaluation of the manufacturing and paving process shall be completed. This evaluation shall follow the troubleshooting guide and suggested changes according to the equipment manufacturer's recommendations or the guide manual **AASHTO Segregation Causes and Cures for Hot Mix Asphalt.** Areas identified as heavy segregation by the MDOTMBITSEG2 computer program do not meet the Departments acceptance criteria for HMA pavement and full removal and replacement is required in these areas.

6. Measurement & Payment

No additional compensation will be made for corrective action required or operational changes to prevent segregation. This work will be considered as included in other contract items.