

# DEM SIMULATION FOR IDENTIFYING SIGNIFICANT FACTORS AFFECTING HMA COMPACTION

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Compaction is one the most important factors that affect the performance of an HMA pavement. Many parameters affect the effective compaction of HMA. Experimental approach to identify the critical factors that affect compaction is very costing and difficult to control. Simulation of the compaction process could help identity these factors and show how they affect compaction in an effective and fundamental way. This paper presents DEM (Discrete Element Method) simulation of the compaction process. An elasto-plastic contact model and the microstructural properties are incorporated in the simulation to predict the load transfer and the motion between contact particles. How gradation and the maximum size of aggregates, the layer thickness, the mixture laydown temperature, the rolling speed and the compaction time affect compaction are investigated and the results are presented.

Key Words: HMA Compaction, DEM Simulation, Microstructure

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