

## STATE OF THE ART OF MICROMECHANICAL MODELING OF ASPHALT CONCRETES

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### *ABSTRACT*

The paper presents an overview of the state of the art of modeling the micromechanical behavior of asphalt concretes in the 100-200  $\mu\text{m}$  resolution range. It covers, Imaging techniques used to capture and process the microstructure of asphalt concretes; Techniques for modeling the visco-elasto-plastic behavior of binders/mastics using laboratory data; Techniques for modeling contact behavior between mastic-mastic, mastic-aggregate and aggregate-aggregate particles; Finite Element Method (FEM) and Discrete Element Method (DEM) modeling techniques implementing these models in simulating dynamic and creep behavior of asphalt concretes; Validation of these models and limitations of the current technology.

This paper summarizes work carried at Washington State University and the University of Texas – San Antonio between 1998 and the present.

*KEY WORDS:* Asphalt concrete, imaging, microstructure, FEM, DEM