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**A PERFORMANCE-BASED MIX DESIGN PROCEDURE FOR
COLD IN-PLACE RECYCLING BITUMINOUS MIXTURES AND
PAVEMENTS**

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ABSTRACT

The high cost and environmental impact of traditional pavement rehabilitation has led to an increase in the use of Cold In-Place Recycling (CIR) as an effective alternative to other rehabilitation strategies. However, currently there is not a universally accepted or standard mix-design for CIR. Therefore, this research has been undertaken with the objective to develop a new mix-design procedure for CIR through laboratory evaluation and limited field verification. The project focuses on partial-depth CIR using asphalt emulsions as the recycling agent. The modified Marshall mix-design recommended by the AASHTO Task Force No. 38 was evaluated and found to be inefficient. Therefore, a new volumetric mix-design has been developed utilizing the Superpave gyratory compactor and technology. It requires that specimens be prepared at densities similar to those found in the field. The performance of CIR mixtures prepared and constructed in accordance with the new mix-design have been evaluated in the laboratory as well as in the field.

KEY WORDS: Cold In-Place Recycling, Mix-Design, Superpave, Gyratory Compactor