

Resilient Moduli and Structural Layer Coefficient of Fly Ash-Stabilized Recycled Asphalt Base

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ABSTRACT

A proven method of converting conglomerate pavement sections into durable roads is by recycling old asphalt pavement and base course into new roadbase using a process called Full-Depth Cold In-Place Recycling (CPR). In CPR, existing asphalt pavement sections are pulverized in-place to full pavement depths, mixed with Class C fly ash and appropriate water content and compacted into a roadbase in a single process.

A demonstration of this process on approximately 2.5 miles of roadway consisting of two different segments was conducted in August 2004. After one year, falling weight deflectometer (FWD) tests were conducted at different locations on the demo roads. The deflection bowls measured in the FWD tests were analyzed to back-calculate the resilient moduli of the roadbase, which were found to be 63 ksi and 93 ksi on the two segments, respectively. These moduli were utilized to estimate the structural layer coefficient - a measure of the relative ability of a unit thickness of a material to function as a structural component of the pavement. It may also be used to calculate the structural number needed for the design of layer thicknesses. The estimated layer coefficient values, which were found to be 0.26 and 0.22, compare favorably with the AASHTO design requirement of 0.14 for the layer coefficient of flexible pavement granular base.

This paper describes the findings of the demonstration project and presents an analysis of the FWD data to obtain the resilient moduli and structural layer coefficients of the stabilized roadbases.

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