

Cold In-Place Recycling of Asphalt Pavements Using Self-Cementing Fly Ash: Field and Laboratory Study

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ABSTRACT

County and local roads account for nearly 3 million miles of all roadways in the United States. These roads often consist of what are called low-volume flexible or built-up pavements, best described as conglomerates of base course and wearing course of chip seal or other asphalt overlays that have been built up over many years. Performance of these roads is typically inconsistent because of the diversity of materials used in their construction. In addition, many of these roads often go without any maintenance at all because of budgetary constraints.

A proven method of converting conglomerate pavement sections into durable roads that last many more years is by recycling old asphalt pavement and base course into new roadway using a process called Full-Depth Cold In-Place Recycling (CPR) with self-cementing fly ash. Cold in-place recycled pavement (CPR) is similar to subgrade stabilization, in that self-cementing fly ash is used as the cementing agent to stabilize granular materials. Existing asphalt pavement sections in need of repair/rehabilitation are pulverized in-place to full pavement depths, mixed with self-cementing (Class C) fly ash and appropriate water content and compacted into base course in a single process. Up to 12 inches of a conglomerate pavement section may be pulverized in one pass and then stabilized in a second pass. To complete the process, a new wearing surface is laid on the recycled section.

In this paper we present the results of a preconstruction testing program consisting of existing material characterization and laboratory mix design, as well as a construction testing program consisting of field pulverized material characterization and field evaluation of pavement performance indicators.

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