

JUST THE FACTS

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Duration:

24 months

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Funding:

SPR

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SPECIAL POINTS
OF INTEREST:

- Problem Addressed
- Objectives of Research
- Methodology Used
- Implementation Potential

Evaluation of Cement and Fly Ash Treated RAP and Aggregates for Base Construction

PROBLEM

Many entities currently use recycled asphalt pavement (RAP) and other aggregates as base material, temporary haul roads, and in hot mix asphalt construction. Several states allow the use of RAP combined with cement for stabilized base course under both asphalt and concrete pavements. There is disagreement on how and what properties to test for cement treated RAP (CTRAP) for both asphalt and concrete pavement structures. This project will give the state agency the information needed to properly evaluate CTRAP and other aggregates.

OBJECTIVES

The objective of this project is to determine the feasibility of CTRAP, fly ash treated RAP (FTRAP), and cement and fly ash treated aggregates as a structural layer for both Portland cement concrete and hot mix asphalt pavements systems.

METHODOLOGY

Two sources of RAP, one gravel and one limestone, will be considered for this study. One source of cement, class C fly ash, and sand will be used throughout this study. Other aggregates to be tested will be Mexican limestone, blended calcium sulfate, limestone screenings, and possibly class B graded river gravel. All raw materials will be tested accordingly: The RAP and sand will be graded, and the cementitious materials will be analyzed for their respective chemical compositions. Hardened tests will include compressive strength at 7 and 28 days, flexural strength at 28 days, resilient modulus, and indirect tensile strength at 28 days.

Once the optimized mixtures have been determined, the effect of sand will be determined. Optimized mixtures will then be analyzed to discover the effect of compaction on strength and resilient modulus utilizing various laboratory compaction techniques.

IMPLEMENTATION POTENTIAL

It is foreseen that the results of this study will greatly assist in deciding whether or not to allow the use of stabilized RAP and other non-specification aggregates for base construction. It is envisioned that the use of RAP and non-specification aggregates will benefit the state economically by using a previously non-usable, cheaper material.



Figure 1
Cement stabilized limestone screenings