

FIELD TRIAL OF
GRAVEL STABILIZATION METHODS

Route 1, Van Buren, Maine
Construction Report
Technical Services Division
Experimental Construction 92-34
December, 1991

This is the construction report for a study designed for field verification of the findings contained in FHWA HP&R Study ME-90-92 entitled "A Review and Experimentation of Gravel Stabilization Methods" published July, 1990.

Prepared for.

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An Abstract of
MDOT Technical Report 90-2

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December 1991

Gravel stabilization is a potential method of improving the performance of weak base course aggregates. Previous research determined that soil-cement, asphalt, and calcium chloride stabilized sub-base aggregate were potentially appropriate stabilization methods in terms of constructability, improved strength, and improved durability. Thus, MDOT sponsored construction of a full-scale experimental highway section to evaluate the constructability and short term performance of these stabilization methods. The ability to predict field performance from laboratory tests was also evaluated.

Tests showed that loading, hauling, and grading the aggregate began the degradation process and that mixing and compaction further increased the fines content. Construction challenges inherent to each stabilization method were overcome during construction of the test section, but overcoming these difficulties in actual road construction will require planning. Based on Road Rater tests, soil cement provides the largest structural benefit, with asphalt providing a lesser benefit. Calcium chloride provided no discernible increase in strength compared to untreated control sections.

Strength tests were performed on field generated and laboratory generated samples using aggregate from the test section. The field generated soil-cement samples had significantly lower strengths than laboratory generated samples. Reasons for the disparity are discussed. Laboratory mixed Marshall samples produced nearly the same results as field mixed samples. Therefore, laboratory mixed samples can be used to predict the behavior of field mixed aggregates. CBR results from field generated calcium chloride stabilized samples were lower than laboratory mixed samples.

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