

STATE OF MAINE
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TRANSPORTATION RESEARCH DIVISION
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EXPERIMENTAL CONSTRUCTION 92-34

FIELD TRIAL OF GRAVEL STABILIZATION METHODS
ROUTE 1, CYR-VAN BUREN, MAINE

6TH INTERIM REPORT

INTRODUCTION

This experimental construction project was developed, designed, and inspected by personnel from the University of Maine, Civil Engineering Staff. The experimental project was constructed on and as a part of Project #2586 00. This was a complete reconstruction project 3.54 km (2.2 mi) in length. The experimental section contains 6 experimental base types and is 310 m (1020 ft) in length. The experimental section began at Station 1028+00 and ended at Station 1038+20. The test section consisted of 60 m (200 ft) segments of soil cement, asphalt, calcium chloride, modified, standard and one 6 m (20 ft) untreated section. The stabilized and control sections were located as follows:

Soil-Cement Stabilized	STA 1028+00 to 1030+00
Modified Subbase Control	STA 1030+00 to 1032+00
Asphalt Stabilized Section	STA 1032+00 to 1034+00
Untreated Section	STA 1034+00 to 1034+20
Calcium Chloride Stab. Section	STA 1034+20 to 1036+20
Standard Subbase Control	STA 1036+20 to 1038+20

The Soil Cement Stabilized section is a mixture of Modified Subbase (mentioned later) and 6 percent by weight of Type I Portland Cement.

The Modified Subbase Control section is standard subbase aggregate MDOT specification 703.06b Type D with a 5.1 cm (2 in) maximum aggregate size. This aggregate was used on all stabilized sections to facilitate blending of each treatment.

The Asphalt Stabilized section is a mixture of modified subbase and 4.5 percent of MS-4 Emulsified Asphalt

The Untreated section consists of Modified Subbase

The Calcium Chloride Stabilized section is a mixture of Modified Subbase and 2.8 l/m² (0.75 gal/yd²) of 35 percent liquid calcium chloride solution

The Standard Subbase Control section consists of standard subbase aggregate MDOT specification 703.06b Type D with a 15.2 cm (6 in) maximum aggregate size

Construction on this project started in September 1990 and was completed in the summer of 1991. A background of the stabilization agents, their uses, advantages and disadvantages is explained in the construction report titled "Experimental Construction 92-34" written in December 1991. This report also provided preliminary design results as well as test results obtained during construction. In addition to the test results a plan for long term monitoring was also included in Appendix G and reproduced for this report in Table I. Some of the features to be monitored are rutting and serviceability, such as roughness and overall performance. Strength measurements using pavement deflection was also suggested. Most of the evaluations can be performed with the Automatic Road Analyzer (ARAN) and Falling Weight Deflectometer test vehicles. Long term monitoring of the calcium chloride is specifically mentioned. For this phase they recommend boring test holes and sampling the base every 5th year to monitor the possibility of leaching calcium chloride.

RESULTS

This report covers the period of time from January 1998 thru December 1999. According to the test schedule in Table I, roughness, rut depths, pavement deflections and crack survey data were obtained.

ROUGHNESS MEASUREMENTS

The ARAN test vehicle was replaced in 1998. The new ARAN was used to measure roughness, this is an ASTM Class II profiler using lasers to measure the vehicle's height above the road surface and accelerometers to measure vertical forces caused by surface deformities. Measurements are recorded every two inches in each wheel path. Data was collected on May 17, 2000 and results are presented in Table II using International Roughness Index (IRI) values. Roughness values have increased in all sections with the exception of the south bound Soil Cement section which decreased nearly 31% since 1997.