VERMONT
AGENCY OF TRANSPORTATION

FACT SHEET

Reclaimed Stabilized Base-Stabilizing Agent Selection & Design

PROJECT TITLE

Reclaimed Stabilized Base-Stabilizing Agent Selection & Design

STUDY TIMELINE

07/01/2019 – 06/30/2021

INVESTIGATORS

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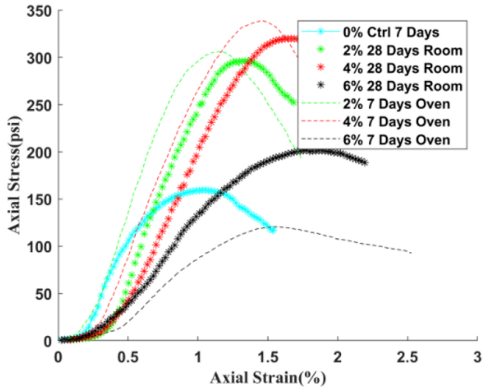
KEYWORDS

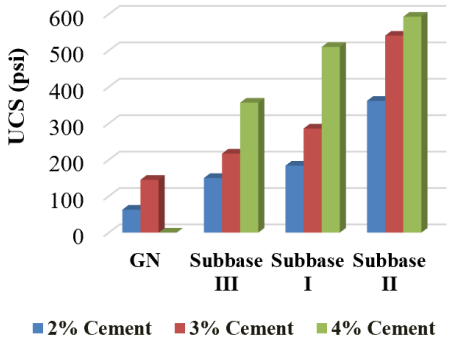
Base Stabilization, Full Depth Reclamation (FDR) Liquid Calcium Chloride.

More information about the VTrans Research Program, including additional Fact Sheets, can be found at: http://vtrans.vermont.gov/planning/research

Introduction

The objective of this research was to investigate the effect of different stabilizing agents and sub-base gradation on the performance of reclaimed stabilized base projects and provide guidelines for selection of the type and percentage of the stabilizing agent tailored to local environmental conditions and aggregate resources.





Methodology or Action Taken

The research work included laboratory testing of different mix designs as well as the Finite Element Analysis for a wider range of mix designs and pavement structures. Samples of three different gradations of subbase materials treated with cement, asphalt emulsion, and liquid calcium chloride were prepared and tested for strength gain. The range of strength gain and the optimum percentage of additive to be used corresponding to each gradation and stabilizing agent were determined.

Conclusions

The effect of aggregate size on the strength properties of the stabilized specimens were determined. Reducing the gravel content below 45% significantly compromises the strength.

The range of strength gain for cement, Liquid Calcium Chloride and Asphalt emulsion were established. The optimum additive content for liquid Calcium Chloride and asphalt emulsion determined to be 4% and for cement it was 2-3 % by the weight of aggregate. Standard sample preparation and curing procedures (7days in oven at 40°C and 28 days at room temperature) for Liquid Calcium Chloride were proposed.

Potential Impacts and VTrans Benefits

The results of this research project will provide the VTrans with guidelines for the scoping phase of the projects to determine applicability and/or benefits of RSB for the project as well as the mix-design recommendations.