

## ROADBOND EN 1 as the best and least expensive roadbase stabilizer

### STUDY NO. F-5; Non-Standard Stabilization

The U.S. Forest Service has tested approximately 30 different types of soil stabilizers and **ROADBOND EN 1** is the only patented soil stabilizer.

- There are 3 out of these 30 that they have more or less approved.
  - Of these 3, 1 costs approximately \$30,000.00 per mile and the other one costs approximately \$10,000.00 to 12, 000.00 per mile and requires the use of extra equipment.
  - **In this study it is stated that the third one, ROADBOND EN 1 costs approximately \$2,500.00 per mile and does not require added man power or extra equipment.**

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*The following is from this Study:*

*"Sulfonated D-limonene*

S-limonene (citrus stripper oil) is a by product of citrus processing used as a solvent or as an intermediary in organic synthesis by the chemical industry (12). Solvation with sulfuric acid produces a mildly corrosive acid which is environmentally harmless when diluted with water at the recommended ratios of 200:1 to 600:1. The autoionization capability of this solution provides for continuing renewal of hydrogen cations and limonene anions which can attack the clay lattice and mineral salts present in the aggregate mixture. Migration by osmosis has not been found extensive enough to consider in application and the solution must be intimately mixed with the aggregate to obtain an adequate reaction for stabilization. Following through mixing the moisture content is adjusted to optimum by adding water if necessary, and the aggregate is compacted to optimum density to provide a hard, durable, all weather surface with adequate traction for traffic.

**ROADBOND EN 1** is a sulfonated D-limonene distributed by C.S.S. Technology, Inc., 1-800-541-3348.

**ROADBOND EN 1**, a sulfonated D-limonene product was used in August of 1991 to stabilize two 500-foot sections of steep grade on the Jethro Road. These sections of coarse aggregate surfacing were noted for severe corrugations prior to the treatment.

- Sub-grade fines were scarified and mixed into the aggregate, and the **ROADBOND** solution was applied from a water truck to the aggregate mixture.
- Mixing was accomplished by blade and windrow, and construction equipment was used for compaction.
- The surface set up very hard, comparable to a bioenzyme stabilized surface, and has eliminated the corrugation problem since."