

April 18, 2005

Roadbond Service Co.  
PO Box 5065  
Grandbury, Texas 76049

Attn. Mr. Steve Merritt

Re: Summary of Preliminary Laboratory Test Results  
Using Roadbond EN1

Dear Mr. Merritt;

As you requested, this letter summarizes the results of laboratory tests performed by Professional Service Industries, Inc. (PSI) on remolded samples of Fat CLAY (CH) soils treated with three percent Roadbond EN1 solution.

The samples tested were obtained from a project site located east of Austin, Texas where the Taylor Group formation is located at or near the ground surface. The samples were described as light brown/yellowish brown mottled with gray, Fat CLAY (CH). The plasticity of these soils was determined to be high as indicated by Atterberg Limit tests. Liquid limits ranged from 58 to 77 and plasticity indices (PI) ranged from 39 to 53.

Laboratory testing performed by PSI included determining the Maximum Dry Density and Optimum Moisture Content of two combined samples in accordance with ASTM D-698. Representative amounts of the samples were then prepared. One sample was brought to near the optimum moisture content with water while two other samples were brought to within approximately three (3) percent of the optimum moisture content with water, and then treated with Roadbond EN1 solution.

Three sets of samples, each containing three (3) separate samples, were remolded to approximately 95 percent of the Maximum Dry Density of the material. Sample Set No. 1 contained no Roadbond EN1 solution. Sample Set No. 2 contained three (3) percent Roadbond EN1 solution and the samples were remolded immediately after the introduction of the Roadbond EN1 solution. Sample Set No. 3 contained three (3) percent Roadbond EN1 solution and the samples were remolded 24 hours after the introduction of the Roadbond EN1 solution.

Shrinkage tests were performed on the samples by allowing each sample to air-dry for a period of eight (8) hours at approximately 72°F. Measurements were obtained on an hourly basis to determine the average height and average width of the samples. At the end of the eight (8) hour period, the samples were oven dried at 140°F and a final average measurement was recorded.

The results of the tests performed on the water conditioned samples (Sample Set No. 1) indicate that these samples had an average decrease in volume of 7.2% by airing drying. The results of the tests performed on the Roadbond EN1 samples (Sample Set No. 2) indicate that these samples had an average decrease in volume of 5.1% by air drying. The results of the tests performed on the Roadbond EN1 samples which cured for 24 hours prior to remolding (Sample Set No. 3) indicate that these samples had an average decrease in volume of 3.9% by air drying.

Unconfined compression strength tests were performed on a water conditioned sample and multiple Roadbond EN1 treated samples. The unconfined compressive strength of the water treated sample was 1.7 tons per square foot (tsf). The unconfined compressive strength of the Roadbond EN1 treated samples remolded immediately after the introduction of the solution was 2.2 tsf after four (4) hours and 3.6 tsf after 24 hours. The unconfined compressive strength of the Roadbond EN1 treated samples which cured for 24 hours prior to remolding, was 0.5 tsf after 24 hours, 0.7 tsf after seven (7) days, and 1.3 tsf, after 14 days.

The results of these preliminary laboratory tests indicate that volume decrease of the Roadbond EN1 treated samples was greater than the water conditioned samples. The laboratory tests results in regards to the unconfined compressive strength of the untreated and treated samples are somewhat inconclusive at this time. Additional testing, including swell testing, should be performed to better define the properties of the soils that have been treated with Roadbond EN1.

Based on our preliminary test results, it appears that soil treatment with Roadbond EN1 may make favorable improvements to high plasticity soils for reuse as Engineered FILL within building areas with regards to shrinkage. The overall effect of soils treated with Roadbond EN1 will most likely vary from site to site and at this stage, PSI has only limited information based on the soils obtained from a site, east of Austin, Texas.

PSI is interested in performing additional testing on soils treated with Roadbond EN1 and looks forward to a continued relationship with you. If you have any questions regarding the information presented in this letter, please contact our office.

If you have any questions or need additional information regarding the laboratory testing performed by PSI for this study, please contact our office.

Respectfully submitted;  
***Professional Service Industries, Inc.***

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