

## **HR-211 Performance of Randomly Oriented, Fiber Reinforced Roadway Soils**

**Key Words:** Soil reinforcement, Fiber reinforcement, Subgrade materials

### **ABSTRACT**

Several primary techniques have been developed through which soil -aggregate road material properties may be improved. Such techniques basically involve a mechanism of creating a continuous matrix system of soil and/or aggregate particles, interlocked through the use of some additive such as Portland cement, lime, or bituminous products. Details by which soils are stabilized vary greatly, but they are dependent on the type of stabilizing agent and nature of the soil, though the overall approach to stabilization has the common feature that improvement is achieved by some mechanism(s) forcing individual particles to adhere to one another. This process creates a more rigid material, most often capable of resisting the influx of water during freezing, loss of strength due to high moisture content and particle dispersion during thawing, and loss of strength due to migration of fines and/or water by capillary and pumping.

The study reported herein took a new and relatively different approach to strengthening of soils, i.e., improvement of roadway soils and/or soil-aggregate materials by structural reinforcement with randomly oriented fibers.

The purpose of the study reported was to conduct a laboratory and field investigation into the potential of improving (a) soil/-aggregate surfaced and subgrade materials, and (b) localized base course materials, through fibrous reinforcement. The study was also directed to determining (a) what type or types of fibers were effective as reinforcement agents, (b) were workable fibers commercially available, and (c) whether such fibers would be effectively incorporated with conventional construction equipment and employed in practical field applications.