

SHEAR STRENGTH BEHAVIOR OF SOILS REINFORCED WITH WEAK FIBERS

Chunling Li, M.ASCE¹; and Jorge G. Zornberg, F.ASCE²

Abstract: Soils reinforced with randomly distributed fibers will have higher shear strength and improved mechanical properties compared to unreinforced soil. Most of the previous research on fiber reinforcement focused on the behavior when the governing mode of failure is the pullout of fibers from a fiber matrix. In recent years, fibers with relatively low tensile strength (e.g., fibers made from recycled products or natural plant fibers) have been considered for soil reinforcement, but their mechanical response has not been studied extensively. In this paper, an experimental testing program is conducted using intentionally selected weak fibers (paper strip). The intention is not to demonstrate the usage of paper fibers as a reinforcement material, but to study the stress-strain behavior and shear strength envelope of fiber-reinforced soil when the governing mode of failure is fiber breakage.

Full reference:

Li, C., and Zornberg, J.G. (2019). "Shear Strength Behavior of Soils Reinforced with Weak Fibers." *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, September, Vol. 145, No. 09.

Link to file*:

[https://doi.org/10.1061/\(ASCE\)GT.1943-5606.0002109](https://doi.org/10.1061/(ASCE)GT.1943-5606.0002109)

*File may be downloaded for a fee from ASCE Library