

Cementation Effects in Frictional Materials

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ABSTRACT

Cementation effects are studied on the basis of three series of drained triaxial compression tests on compacted soil, soil-cement, and mortar. The frictional materials have the same gradation curve and the same water content, and the specimens are produced using the same compactive effort and have nearly the same initial, total density. The only difference between the three sets of specimens is the amount of cement exchanged with inert rock flour. Increasing cement contents produces increasing cohesion and tensile strength as well as increasing friction angle at low confining pressures. The curvature of the failure envelopes increases with cementation, and the failure envelopes are parallel at medium confining pressure,. At high confining pressures, they cross each other such that the compacted soil becomes stronger than the two cemented soils. Analyses of the strengths show that this behavior can be explained in terms of the different compressibilities and different rates of dilation observed for the three frictional materials.

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