

Abstract Submitted
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Impact and Penetration in a Synthetic Cohesive Soil MEHDI OMIDVAR, Manhattan College, STEPHAN BLESS, ABDELAZIZ ADS, MAGUED ISKANDER, New York University — Investigation of the response of geotechnical materials to impact and penetration can be aided by use of transparent soil surrogates. There are many examples of this technique for study of granular soils. We report on use of a transparent surrogate for clay, a cohesive soil. The transparent medium was a Laponite colloid. Experiments involving low velocity penetration (intended to simulate torpedo anchors) and a penetrometer were conducted. There were variations in nose shape and shank cross section. Conical noses and round shank cross sections resulted in increased penetration. For a given geometry, penetration resistance was found to be essentially constant, with no velocity dependence but significant depth dependence. Penetration resistance is mainly due to end bearing strength, as opposed to lateral friction. The penetration resistance did not sensibly depend on rate for a change in rate of almost three orders of magnitude. DIC instrumentation revealed that flow around the penetrator is mainly along the shaft from the front to the rear.

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