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Rate Dependence of Penetration in Sandy Soils STEPHAN BLESS, New York University, MEHDI OMIIDVAR, Manhattan College, ABDELAZIZ ADS, MAGUED ISKANDER, New York University, NEW YORK UNIVERSITY COLLABORATION — In our previous APS paper on sand penetration, we reported on penetration of rods at relatively high velocity. Data were consistent with a Poncelet-type equation, and they provided good calibration for the Poncelet drag that mainly influences high velocity effects, but poor resolution of the velocity-independent term that is due to strength and friction. Now we have complemented those studies with both low impact velocity and “static” penetrometer data, which provide excellent resolution for the low speed penetration resistance. We find that the penetration resistance for inertial and driven rod penetration depends on depth-squared until full embedment. This is apparently due to side friction which dominates end bearing strength. However, simple depth-dependent friction force model cannot explain these results with reasonable values of friction coefficient.

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