Abstract

The statnamic pile load test combines the advantages of both static and dynamic load tests. It is performed to test a pile's capacity and uses a rapid compressive loading method. The applied load, acceleration, and displacements are measured using load cells, accelerometers, and displacement transducers with a stationary laser reference. The statnamic device consists of a large mass, combustion chamber, and a catch system of some sort. The force applied to
the pile is produced by accelerating a mass upward. This is done by firing a rapid-burning propellant fuel within the combustion chamber, which applies equal force to the mass and to the pile. After the fuel is burned the gas port is opened, this allows the duration of the load pulse to be long enough to keep the pile in compression throughout the test (maintains rigid body). During the loading cycle, which is only a fraction of a second, over 2000 readings are taken of the load and displacement and the data are stored in a data-acquisition unit. The mass is caught as it falls by a gravel catch or mechanical tooth catch before it impacts the pile. The load–displacement curves generated are used to determine the equivalent static force from the measured statnamic force using the unloading point method.

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Keywords
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