



Pile Dynamics, Inc.

Quality Assurance for Deep Foundations

Dynamic Formulae

Attempts to determine pile capacity using dynamic analysis date back to the 19th century, when a dynamic formula that considered the energy of the pile driving hammer and the set of the pile was developed to find bearing capacity. In the early 1940s the results of large study on dynamic formulas was published and discussed by very prominent engineers including Karl Terzaghi. Those scholars concluded that none of the formulas was accurate (see Likins, G. E., Fellenius, B. H., Holtz, R. D., March, 2012. Pile Driving Formulas: Past and Present - Full-Scale Testing and Foundation Design; ASCE Geo-Institute Geotechnical Special Publication No. 227; 737-753.) and recommended instead the use of static loading tests to determine pile capacity. Today dynamic formulas have largely been replaced by more accurate wave equation analyses and high strain dynamic testing, although formulas are still occasionally used in spite of their inaccuracies and the fact that they cannot predict stresses during driving.