ABSTRACT

An ongoing project supported by the USA National Cooperative Highway Research Program (NCHRP) under the Transportation Research Board (TRB) of the National Academy of Science (NAS), is aimed at rewriting AASHTO Deep Foundation Specifications for the year 2001. The AASHTO specifications are traditionally observed on all federally aided projects and generally viewed as a national code of US Highway practice, hence influencing the construction of all the deep foundations of highway bridges throughout the USA.

The new code is based on Load and Resistance Factor Design (LRFD) principles with resistance factors obtained from probabilistic analysis of data. A large database (PD/LT2000) is the backbone of the dynamic methods' performance evaluation. This database originated with the work presented by Paikowsky et al. (1994), Paikowsky and LaBelle (1994), and additional information acquired since.

A summary and careful evaluation of the large database is presented, detailing the performance of various dynamic methods when compared to static load testing to failure. The parameters that control the accuracy of the dynamic predictions are analyzed, suggesting the importance of certain mechanisms associated with the pile penetration and the dynamic simulations.

The controlling parameters and the statistical analyses are then utilized for the development of resistance factors to be recommended for the new specifications.