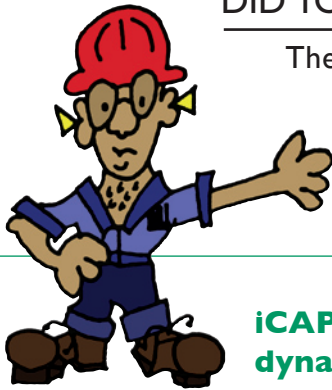


DID YOU KNOW?

The CASE METHOD just turned 40!



iCAP™ - A new wave for dynamic testing

Garland Likins and Frank Rausche

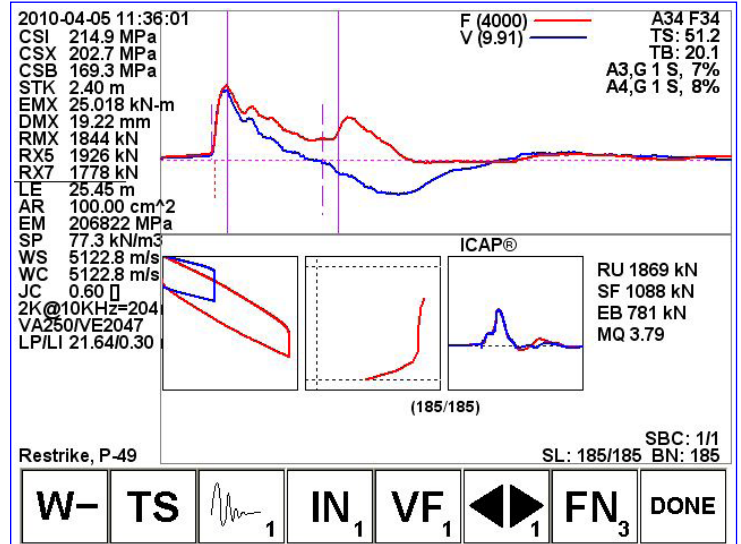
Dynamic testing with the Pile Driving Analyzer® (PDA) is state-of-the-practice to assess deep foundation capacity. Its widespread use underscores the importance of having a system that reduces turnaround time for issuing recommendations, contains testing costs and outputs dependable results.

It is often easier to take measurements during pile driving or restrike testing than to analyze dynamic testing data with a reliable method. Measurement without analysis is, however, insufficient. For this reason, documents such as the American Association of State Highway and Transportation Officials Load and Resistance Factor Design (LRFD) Bridge Design Specifications (AASHTO 2010), Eurocode 7, the Australian Standard Piling Code AS2159 and the Brazilian Piling Code NBR 13208 either recommend signal matching, mandate it or allow for more favorable design parameters when it is performed. The only documented signal matching program with a significant database of correlations with static load tests is CAPWAP®, the “gold standard” of dynamic pile data analysis.

Decades ago, a highly specialized engineer traveled from the field to the office, then spent hours at a computer interacting with the CAPWAP program. The final report could take several days. As computers have become more powerful, the time required to complete the analysis has dramatically decreased. The CAPWAP software also has matured to the point where it offers the engineer a variety of automatic features that speed up the interactive analysis. This has encouraged many PDA engineers to perform CAPWAP signal matching on their laptops in the field, immediately following data acquisition.



PDA model PAX running SiteLink™



iCAP as seen on the screen of the PAX. Graphs, counterclockwise from top, are: Measured Signals; Simulated Static Load Test; Force in Pile Load Distribution and Signal Match

Pile Dynamics is now going a step further, and revolutionizing the data interpretation process with the introduction of iCAP. iCAP performs a fully automated signal matching analysis in real time, during pile driving.

iCAP instant signal matching leverages 40 years of continued improvement and development of the globally-accepted CAPWAP logic. With no user interaction, iCAP extracts the soil behavior from dynamic measurements, computes capacity at the time of the test, and produces a simulated static load test graph. All this is done in real time during testing.

iCAP provides reliable and instant capacity results. There is, however, a basic difference between the “gold standard” CAPWAP and iCAP. The interaction between the engineer and the CAPWAP software adds an often essential layer of engineering know-how to the analysis. On the other hand, the fully automated iCAP responds to researchers’ call for a unique solution, to the contractor’s need for immediate answers and to the specifications requirements for signal matching.

Wireless data transmission from the sensors to the PDA simplifies and speeds the testing process by allowing the sensors to be attached to the pile prior to lifting the pile into the leads. SiteLink technology saves time and money by enabling field personnel to operate a PDA model PAX while the testing engineer receives data in the office and controls the test in real time, through the internet. By combining the advantages of wireless data acquisition and SiteLink with iCAP’s instant answers, the user of a PDA model PAX is equipped to meet the ever increasing demands of quick turnaround and reliable pile load testing and monitoring results.