CAPWAP®

CAPWAP® Signal Matching Software

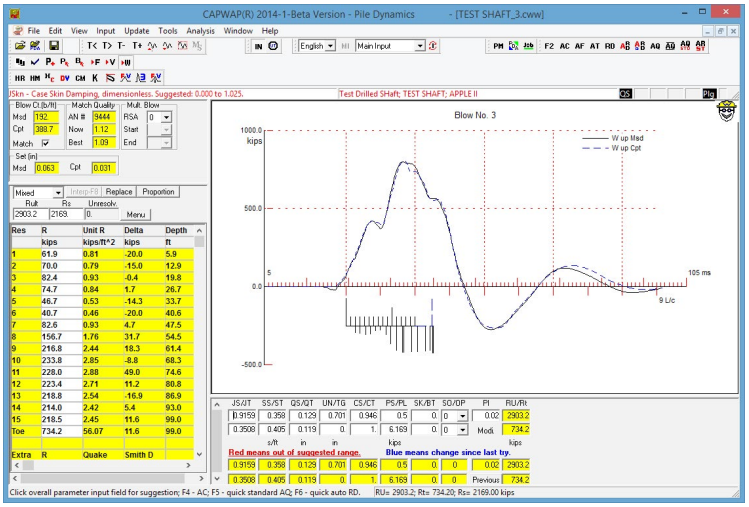
Estimates total bearing capacity of both driven piles and cast-in-situ shafts

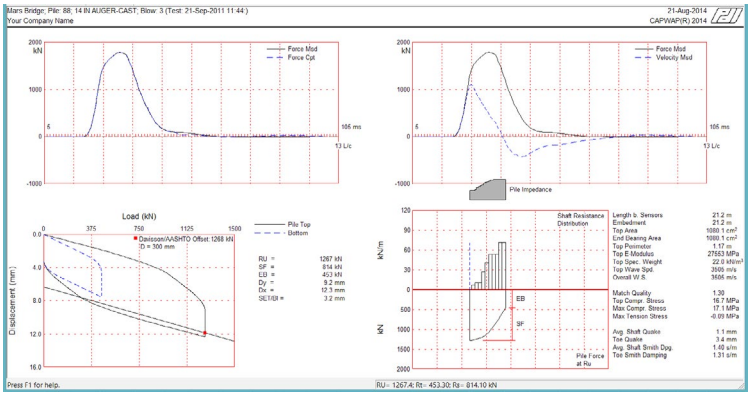
Analytical. Measured. Trusted.

Forces and velocities occurring along a pile during ram impact are complementary quantities, related to each other by pile characteristics and soil parameters. CAPWAP (Case Pile Wave Analysis Program) is a signal matching software program that uses force and velocity data measured by the Pile Driving Analyzer® system to:

- Calculate static soil resistance including both magnitude and distribution along the shaft
- Calculate static end bearing
- Calculate stresses at any point along the pile
- Simulate a static load test in compression and tension (uplift)
- Predict the instantaneous load displacement behavior of the tested pile

CAPWAP analyzes not only data obtained during PDA testing of driven piles, but also of drilled shafts (bored piles) and augered-cast-in-place or continuous flight auger piles.





CAPWAP output includes:

- Simulated static test
- Resistance distribution
- Forces and stresses along the shaft
- Damping and quake along shaft and at toe
- Measured and computed forces and velocities
- Maxima of displacement, velocity and transferred energy along the shaft
- CASE Method results

CAPWAP has special tools to analyze Cast-in-Situ and Other Concrete Piles:

- Variation of time increment and/or wave speed
- Calculation and display of modified pile models, their volume, mechanical properties and wave speed
- Automatic pile impedance adjustment

CAPWAP® Pile & Soil Model

CAPWAP models the pile as a series of continuous uniform sections (characteristics model) and the soil based on a greatly expanded Smith approach. CAPWAP models the deep foundation as a series of 1 m long uniform segments with elastic properties as default. Pile damping, splices, non-uniformities and multiple pile or shaft materials may be modeled. The soil resistance is typically lumped into individual resistance forces at 1 or 2 m intervals with elastoplastic static, linearly viscous and mass related dynamic properties. Radiation damping is represented by an additional mass and dashpot. It is also possible to model up to two additional toes, useful for certain non-uniform piles or to approximate a hyperbolic toe resistance behavior. Other options include Residual Stress Analysis for end of drive situations and Multiple Blow Analysis to analyze restrike tests.

CAPWAP Help Features

CAPWAP helps the user during input and as the user adjusts the large number of variables that affect the signal matching process.

- Convenient input data quality checks
- Automatic signal matching options
  - Comprehensive automatic matching procedures based on expert logics:
    - AC- Auto CAPWAP
    - Built in iCAP® routine
  - Special signal matching procedures for best groups of variables and targets:
    - Selected group of variables
    - Resistance distribution
    - Toe parameters check
    - Static resistance - damping exchange
    - Shaft and toe resistance exchange
    - Options for automatic pile impedance adjustment for Cast-in-Situ piles
- Options to help input composite and non-uniform piles such as concrete filled pipe and tapered piles which have nonlinear variation of cross section area
- For cast-in-situ piles, automatic calculation of area of each pile model segment based on filed measured volumes
- Extensive expert help system
- Match quality indicators that encourage progress towards a best match
- Prevention of output of extremely poor matches
- Warning indicators

The background manual completely covers theory, models and recommended procedures. A training class helps prepares the software novice. Continuing technical support from Pile Dynamics is available to all registered users.

Pile Dynamics, Inc. (PDI) is the world leader in developing, manufacturing and supplying state of the art QA/QC products and systems for the deep foundations industry. The company is headquartered in Cleveland, Ohio, USA, with offices and representatives worldwide. For additional information visit us at www.pile.com or contact info@pile.com today.

- CAPWAP finds the set of soil parameters that best matches the dynamic measurements of pile force and velocity, either automatically or interactively
- Calculations can be performed in English, SI or Metric units.
- CAPWAP licenses are available with hardware or software locks
- CAPWAP is to be operated by a person with an engineering degree from an institution of higher learning with additional preparation by Pile Dynamics or its representatives