

## SEPTEMBER 9 2009 MEETING

Wednesday, September 9,, 2009  
5:00 - 6:30 pm

### TECHNICAL PROGRAM

#### Timber Piling Design

**Speaker:** Dean Matthews of Dean Matthews Associates of Mercer Island, WA, Tel. No. 800-410-2070

#### PRESENTATION SUMMARY

To an audience of about 75 at the HESS Club, Dean Matthews, a principal with Matthews Associates, who is a licensed professional engineer and architect in the state of Washington presented, "Timber Piling Design."

Mr. Matthews slide presentation, on behalf of the Timber Piling Council, showed the latest research and usages of timber piles. He said the Timber Piling Council provides technical information, and promotes the use of timber piles in the construction industry.

Mr. Matthews said the first recording of information on placing a log vertically into soft or unsuitable soil for a structural support is credited to Neolithic tribes around 6,000 years ago, in what is now Switzerland. Mr. Matthews also pointed out around 1620 B.C., the Romans built a timber bridge spanning the Tiber River which lasted over 1,000 years. Some roads and aqueducts were supported on timber piles. They were still in good condition 1,900 years later. Venice's buildings are founded on timber piles, built around 1000 AD.



Mr. Matthews noted 90% of timber piles in North America today are Southern Pine, the balance is Douglas fir. Of Southern Pine piles, 95% are treated with Chromated Copper Arsenic (CCA). For more information on wood treatment, see Western Wood Preservers Institute's web site is: [www.wwpinstitute.org](http://www.wwpinstitute.org).

Mr. Matthews said the sustainability for this system is good as the US has the same amount of forest acreage as it did 100 years ago. Also it takes less energy to produce timber piles than it does for other pile types.

Mr. Matthews said that piles are generally associated with difficult foundation conditions and weak sub-surface soils. Because the piles are the core of the tree trunk, the allowable stresses are high. For example, the normal allowable bending stress is 2400 psi for timber piles. The pile diameter follows the normal tree trunk diameter with a taper of about 1 inch per 10 ft. The smallest part of the pile (pile tip) is typically 8 inch diameter and varies from 7 inch to 9 inch. Southern pine pile lengths can be purchased up to 75 ft. long and occasionally 85 ft. piles are available.

The new ASTM standard, D7381, provides the protocol for developing stress tests while ASTM D1143 is used for load testing. The piles can be designed by the various pile design methods available for other piles. Monitoring during driving by GRL is also available for timber piles. More information is freely available by downloading the Timber Pile Design and Construction Manual at: <http://www.timberpilingcouncil.org/>.

To download Mr. Matthews' slide presentation, [click here](#).