Department of Civil Engineering and Geological Sciences

Challenges and Innovation in Civil and Environmental Engineering

Tacoma Narrows Caisson Anchoring

Dennis F. Murphy
Retired, President of Kiewit Engineering Company

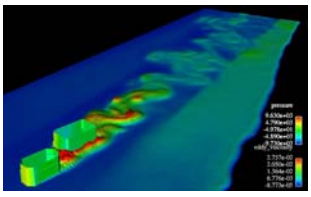
Thursday, March 27, 2008

6:00pm – 7:15pm
138 DeBartolo Hall

The second Tacoma Narrows bridge was built alongside the first Tacoma crossing and was opened to traffic in 2007. Caisson construction represented one of the highest risk items in the entire design/build scenario.

The original bridge, made famous as "Galloping Gertie", was, at the time it opened in 1940, the third longest suspension bridge in the world. The superstructure of the first bridge collapsed in a relatively minor windstorm within 4 months of its opening. It was rebuilt in 1950. The foundation of the new bridge, like the old, consisted of two deep concrete caissons which were constructed while floating and then sunk into the sea bottom using open dredge well techniques.

Tidal currents in this narrow body of water create very fast currents which, when combined with the proximity of the old bridge structure, made for a difficult and risky mooring system. This presentation addresses the construction engineering solutions utilized in safely mooring the floating caissons while they were constructed in the Narrows. As such it concentrates mostly on hydraulic issues. A second, future presentation will address geotechnical and structural aspects of the anchor component design, actual caisson construction, ballasting and eventual penetration of same into the sea floor.



Tea, coffee, pastries and an opportunity to meet the speaker will take place at 5:30pm in the CE/GEOS office-conference room, Fitzpatrick 156