



Mueser Rutledge Consulting Engineers



Above left: Artist's rendering of the completed building. Lower left: Largest triple auger rig used in the USA was imported from Japan by contractor for this project. Mast height is 118 feet. Above: Placing steel sheet pile into the upper portion of the soil-cement-bentonite mix. Sheet piling was braced with tiebacks for excavation support.

CalPERS Headquarters Expansion

Sacramento, CA

The CalPERS (California Public Employees' Retirement System) Headquarters Expansion project is a six story high-tech "green" office complex with two levels of underground parking. The new building features impressive architecture including a multi story glass tree in the center atrium. Construction began on the two block site in October 2001. Construction at this site poses many civil engineering challenges and several US construction "firsts." The project's design and construction was managed by Turner Construction Company.

The two-level basement that encompasses the two-block site is the first of this scale constructed in Sacramento. It is considered deep for Sacramento's high groundwater table and flotation of the four and six story buildings had to be prevented and the site had to be protected from the underground water flow. Mueser Rutledge Consulting Engineers designed designed tiedown anchors to prevent flotation of the building complex and a deep barrier for groundwater control, which incorporated the sheeting and tiebacks for temporary excavation support. The perimeter wall seals into a thin low-permeability strata 125 feet below street level. It yielded 120 gallons per minute inflows with 21 ft head difference across the barrier.

This type of deep groundwater barrier, constructed by deep soil mixing and incorporating steel sheeting in the upper 55 feet, has never before been constructed in the USA. Because of the barrier depth, the soil-mix contractor imported the largest triple auger machine ever used in the US specifically for this project. It reached depths of 130 feet. The barrier performed successfully, providing a dewatered excavation 25 feet below the groundwater table in a deep gravel deposit without drawing a contamination plume to the site. The barrier reduced construction dewatering discharge from 9500 gpm to 50 gpm and is a part of the permanent basement flood control system.