PETRIFOND News

since 1960

Specializing in piling, caissons, shoring, underpinning, slurry walls, slurry trenches and including concept and execution.

PROJECT : WEST SIDE CSO TUNNEL PROJECT
PORTLAND, OR. USA

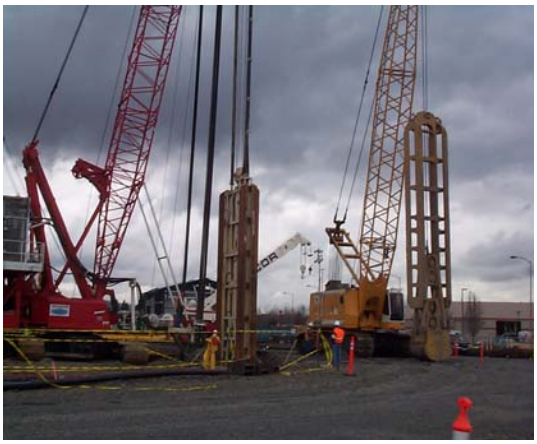
DESCRIPTION: Diaphragms were used to support six deep shafts to permit the mining of large diameter tunnels with a slurry shield TBM 16-ft in diameter, 120 ft below ground surface in alluvial deposits. A total of 220,000 s. f. of structural diaphragm wall was installed as follows:

PUMP STATION:	129-ft ID; 4-ft thick, 200-ft deep
CONFLUENT:	52-ft ID; 4-ft thick, 165-ft deep
NICOLAI:	59-ft ID; 3.5-ft thick, 155-ft deep
UPSHUR:	39-ft ID; 3.0-ft thick, 155-ft deep
CLAY:	52-ft ID; 3.0-ft thick, 155-ft deep
ANKENY:	39-ft ID; 3.0-ft thick, 131-ft deep

SCHEDULE: The project was started in November 2002 and completed on time for the critical start of the TBM, in April of 2003.

GROUND CONDITIONS: The project ground conditions generally consist of four deposits, namely fill, alluvium, gravel alluvium and Troutdale.

CHALLENGES: This project had several logistic and technical challenges which were overcome successfully. To highlight a few, the diaphragm wall verticality of 0.5% was by far the greatest challenge. Also, maintaining trench stability in the loose to very loose gravel formations was another.



To overcome the verticality issue, the excavation equipment was equipped with real time verticality read-out equipment, which provided the field personnel data for a quick response.

Excavation equipment consisted of Leffer Clamshell buckets, which excavated the Alluvium and Gravel Alluvium Formations. This tool was equipped with JEAN LUTZ verticality and rotation monitoring technology, providing instant read-outs. The Casagrande Hydromill, was used to excavate the hard and difficult Troutdale Formation and provided accurate verticality data with its own technology.

The trench stability and fluid loss challenges, within the loose gravel formations, were resolved with the aid of a heavy bentonite slurry and the introduction of fines placed at the trench bottom.

PARTICIPANTS:
OWNER: City of Portland, Bureau of Environmental Services
ENGINEER: Parsons Brinckerhoff
CONSTRUCTION MANAGER: Jacobs Associates
GENERAL CONTRACTOR: Impregilo-Healy Joint Venture
SPECIALTY CONTRACTOR: Bencor-Petrifond-Pacchiosi JV

PETRIFOND FOUNDATION: 8320 Saint Lawrence Boulevard, Montreal, Quebec, H2P 2M3, Canada
email: paganuzi@petrifond.com **website:** www.petrifond.com
Telephone: 514) 387-2838 **Fax:** (514) 387-9684