DEPARTMENT OF CIVIL ENGINEERING AND GEOLOGICAL SCIENCES
UNIVERSITY OF NOTRE DAME

Fall 2009 Seminar Series

CHALLENGES AND INNOVATION IN CIVIL AND ENVIRONMENTAL ENGINEERING

Building a 6-Mile Long Submarine: Large Diameter Tunneling Below the Water Table in Portland, Oregon

Bill Mariucci
Area Manager – Underground District,
Kiewit Construction Company

Wednesday, October 7, 2009
129 DeBartolo Hall
4:30pm

The $426 million East Side CSO Tunnel Project located in Portland, Oregon is the most significant component of the largest public works program ever attempted by the City of Portland. The primary purpose of the project is to collect and divert combined storm water and sanitary flows from entering the east side of the Willamette River within the city limits. Through a series of large-diameter shaft structures and surface-based pipelines, flows are intercepted in the existing outfall system and directed to a 22-foot diameter tunnel located approximately 150-feet below the ground surface. Diverted water is then stored in the tunnel and pumped to surface plant facilities where it is treated and returned to the river. The overall length of the tunnel is 6-miles and seven major shaft structures have been constructed along the alignment.

Innovative methods are required to construct the facilities below up to 100-feet of water pressure including slurry wall construction, pressurized-face tunneling, and micro-tunneling performed in dense urban environments. A precast segmental lining is used as the permanent tunnel structure and required the casting of over 48,000 individual pieces to allow a concurrent mining and lining operation. **Once completed, the east side tunnel will be the largest and longest slurry tunnel completed in North America.** Other critical scopes of work included a mile of surface open-cut pipelines, more than a dozen tie-in structures to existing systems, a spoils handling system to accommodate over 1 million cubic yards of excavated material to a barge load-out facility on the river, and extensive site preparation, support facilities, and logistical challenges.

Bill Mariucci *is an Area Manager with the Kiewit Company's underground and tunneling district located in Portland, OR. Bill has over 25 years of heavy civil construction experience with Kiewit and has been involved with major projects in New York, Chicago, Las Vegas, Dallas, and San Juan, Puerto Rico. Most recently, Bill has served as the on-site Project Director for the City of Portland's East Side Combined Sewer Overflow Project in Oregon. Bill graduated from the University of Kansas in 1981 with a Bachelor's Degree in Civil Engineering and currently serves on the Board for the International Rapid Excavation and Tunneling Committee. He resides in Portland with his spouse Claire and their four children – two who attend the University of Notre Dame.*

Come meet the speaker and have some cookies and milk before the seminar, 4pm in 156 Ftizpatrick