

# Underground Construction I

sewer, and other projects, thus any one industry will not be affected dramatically. The Obama Administration sold the program politically, giving the perception that most of this money was to be used to "Rebuild America," but this is not the case and has hurt the image of the construction industry.

A more important strategy for owners to have is to define the program, educate the industry on the program, secure the funding, design the projects, award the construction contracts (they can be bid/build or design/build) and then build the projects in a continuous manner eliminating the years of delays between the steps caused by deficiencies in the political process. The New Jersey Transit ARC Program is an excellent example of how an owner was able to professionally expedite a program from conception to construction. Major tunnel programs have been announced that should continue to keep the industry strong in 2010 and 2011, i.e. Washington Department Of Transportation's Alaskan Way Highway Tunnel, District of Columbia's Water And Sewer Authority Combined Sewer Overflow (CSO) Program, San Francisco Public Utility Commission's water tunnels, and the City of Columbus, Ohio, CSO Program

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The major challenges for the underground heavy construction industry in 2010 and 2011 are as follows:

- ❖ Maintaining the funding sources for the construction of the major underground projects planned during this period
- ❖ Finding the trained people necessary to design and construct complex infrastructure projects; billion-dollar contracts require a special management level
- ❖ Recruiting young people to enter the civil-engineering field of study to enable companies to grow and staff future requirements
- ❖ Having sufficient equity in the surety industry to bond the major construction projects on a competitive basis
- ❖ Seeing that small contractors and subcontractors have access to lines of credit to allow them to participate in this market; the absence of which is currently a major problem.

In summary the underground industry will continue to be strong, as we are project driven and there are currently many large projects that will extend beyond 2011 and many new projects will be tendered that will allow companies to grow or at the least remain viable in the upcoming years. Due to the political instability of the current administration the construction industry will be very cautious in expanding. Investments will be made on a project-specific basis whereby the payback must occur under the contract secured. With this business environment one realizes how important it is to have experienced and skilled people in all sectors of the business. ❖

## Project Spotlight

### Building on Soft Ground



In 2008 the proposed Sacramento School of Engineering & Sciences was planned for a site with soft soils and a high water table beside the Sacramento River in Sacramento, California. The property was in a low-lying area, zero to 5 ft above mean sea level. The soil was 3 to 4 ft of stiff clay, underlain by

very soft clay and sandy silt to 50 ft below ground, which precluded conventional foundation approaches.

The idea was to create five, 8,000-sq-ft, one and two story, wood/steel-framed classroom buildings and a 16,000-sq-ft steel-braced frame library. The geotechnical engineer, LFR, was asked to provide a solution that met stringent Division of the State Architect (DSA) parameters for bearing capacity, settlement, lateral and uplift loads, and to incorporate a foundation that causes minimal disruption to surrounding residential neighbors.

To support the foundation, McCarthy Building Companies, the general contractor, hired Farrell Design/Build to install more than 500 Rammed Aggregate Pier® (RAP) elements. Nearly 10 percent of these were uplift RAP elements designed to resist net tension loads at shearwalls.



Because the DSA is committed to creating high-performance educational facilities, once the state architects examined the Geopier® System, the practicality, strength and environmentally friendly aspects of this Intermediate Foundation® technology won them over.

Saving the school district money was another plus to using RAP elements. ❖