

THE CONSTRUCTION RESOURCE

ENR

Engineering News-Record

OCTOBER 14, 2013 ■ enr.com




McGRAW HILL CONSTRUCTION
 McGRAW HILL FINANCIAL

#ENR0010364107/6#PM40012501
 XX349(L)
 00002
 00047
 LE8 FAURE
 XYPEX CHEMICAL CORPORATION
 13731 MAYFIELD PL
 RICHMOND BC V6V 2B9

**MARKET RECOVERY
 SPURRED
 BY PRIVATE-
 SECTOR
 GROWTH**
 (p. 55)

Form, Function and Sustainability for a College Campus

Coastline Community College in Newport Beach, Calif., is the newest campus of the Coast Community College District. The facility, designed by LPA, Inc., has a unique exterior profile (see section cover image), which is a direct response to the challenge of creating a

campus environment on a 3.9-acre site with 66,000 sq ft of programmed space.

The solution to this challenge was to go vertical, with a three-story stacked-classroom structure. The two upper floors of the building are laterally offset, creating the open-air courtyard at level two while

the first floor is land-locked, providing an anchor to resist the high horizontal seismic and wind forces of the upper floors. Each of the levels changes direction slightly as the building increases in height. The entire building leans seven degrees away from the sea, necessitating that the vertical concrete columns and walls be constructed to resist the permanent overturning loads from the building above.

T.B. Penick & Sons, Inc. performed the structural concrete work on the project, including architectural walls, polished finished floor and cast-in-place decks. A concrete structural system was selected for its ability to resist gravity and seismic loads and also to provide a durable architectural finish in the seaside environment. Additionally, the system plays a crucial role in the energy efficiency of the building. When left exposed, concrete's thermal mass can regulate temperature in both the interior spaces and the large semi-enclosed patio.

The Newport Beach Campus is designed to serve technology-savvy and globally conscious students who want to actively participate in their education and be aware of their natural environment. ■

INTEGRAL

XYPEX

Concrete Waterproofing by Crystallization™

When blended into the concrete at the time of batching, **Xypex Admix** produces a non-soluble crystalline formation that seals capillary pores and micro-cracks to create an impermeable structure. The result? Foundations, tanks, pools, shotcrete and precast are waterproofed as they are placed.



READYMIX

PRECAST

SHOTCRETE

1.800.961.4477

xypex.com



T.B. Penick completed concrete work for the Coastline Community College in Newport Beach, Calif.

PHOTO BY COSTEA PHOTOGRAPHY, INC.

Below-Grade Waterproofing Upgrade

A vital component of the Wisconsin Dept. of Transportation's (WisDOT) multimillion dollar, multiyear I-94 North-South Freeway safety reconstruction is the \$270-million Mitchell Interchange realignment. Designed by Milwaukee Transportation Partners, the realignment included three cut-and-cover tunnels that span over 2,000 ft. Engineers called for 48-in. drilled secant pile shafts that would act as retaining walls along the tunnel edges and minimize the need to

excavate in the confined space around the interchange.

Because of the high water tables in the area, the tunnel design had to consider impermeability methods to prevent water seepage in and around the tunnel walls. The design team specified a crystalline waterproofing additive to be used at the secant pile interface joints.

Crews first applied a slurry coat of Xypex Concentrate along each of the secant pile interface joints, followed by a Xypex Concentrate Mortar to form a crystalline waterproofing "cove" seal between the piles at the joint interface. A slurry coating was then applied to help create a seal between the secant piles. Finally, a wet-mix shotcrete enhanced with Xypex Admix C-500 was placed directly over the secant piling with a minimum cover of 8 in. (20 cm) specified.

The walls of the Mitchell Island Interchange Tunnel were effectively waterproofed with no visible leaks. ■



Application of Xypex slurry coat at secant pile interface joint



Plan B Engineering designed a temporary construction elevator and landing complex for the Empire State Building.

Climbing the Empire State Building

Most people would be hard pressed to say which is larger, the Empire State Building or its fame. That is, unless they had stood on its seventh floor roof and looked up. At that point, the word "skyscraper" is truly defined. To provide access to the building during renovations, Plan B Engineering, Thornton Tomasetti and All-Safe, LLC designed and installed a temporary construction elevator attached to the outside of the building that was strong enough to withstand the wind load while minimizing disturbance to the stone cladding of the landmark building. To make the system safe for workers, inhabitants, tourists and the structure, Plan B Engineering designed a temporary footing with a braced frame to set the elevator framing—a moment-resisting frame to stand off the face of the building while anchored to the existing building column—above the sidewalk. In addition, the hoist ties had vibration-damping elements built in to the tie arm to reduce vibrations transmitted to the building structure.

To solve the challenge of accessing the building's several setbacks beginning with 30 ft at the seventh floor and extending to 65 ft on the upper floors, Plan B designed "run backs" or causeways that extend from the door of the elevator to the face of the building. ■



Excellence in Painting and Flooring Services



770.491.6000
www.bakerpaint.com

4205 1st Avenue, Suite 300
Tucker, GA 30084

LEFT PHOTO COURTESY OF XYPEX; RIGHT PHOTO COURTESY OF PLAN B ENGINEERING