

Island Emergency! Rockslide Isolates Community—ARES™ to the Rescue

geo
TALK



ARES™ Full-Height Panel System Speeds Reopening of Critical Highway after Rockslide

There are worse places to be marooned than the surfers' paradise of Waimea Bay on the Hawaiian Island of Oahu. But instead of wiggling his toes in the sand, Joe Bailey, Retaining Wall Systems Manager for Tensar Earth Technologies, Inc., was feeling the stress of working round-the-clock to help the local construction team install 14,000 square feet of the ARES™ Full-Height Panel Retaining Wall System (FHP) so a vital highway could be reopened in record time.

Two months earlier on March 6, 2000, about 20 cubic yards of rock split off a cliff and slammed into the blacktop of the Kamehameha Highway, cutting off access to homes, businesses, and tourist destinations on Waimea Bay's North Shore. Miraculously, no one was hurt. But before residents could celebrate their good fortune, a state geologist delivered bad news: the cliff was dangerous, and the highway had to be closed.

New Roadway the Only Answer

Closing the highway forced 12,000 commuters to circle the island to reach Honolulu and other destinations. As short trips turned into multi-hour expeditions, tempers flared and business profits began to suffer. By March 10, Governor Ben Cayetano had declared a state of emergency. Opening the road became a top priority.

Further examination of the area and the discovery of ancient burial caves soon ruled out cutting back the cliff face. Realigning the highway proved to be the quickest and most affordable option. The Hawaii Department of Transportation (HIDOT) specs called for moving the centerline out 25 feet and creating 1,400 feet of new roadway with two 11-foot-wide lanes and a grassy rock catchment area next to the cliff. A special 12-foot rock protection fence would safeguard vehicles while the road's bayside would be retained by 850 linear feet of ARES Retaining Wall System.

The state awarded the \$7.4-million contract to Goodfellow Brothers, Inc. on April 10 with targeted completion within 60 days. "It normally takes eight months or more to do this type of job," says Tom Hoen, Goodfellow Brothers Chief Engineer. "We couldn't make it if there were any weak links in our team." Besides Goodfellow and Tensar Earth Technologies, that team included Healy-Tibbitts Builders (the installation subcontractor), Earth Tech Corporation (consulting engineer), and Rocky Mountain Prestress (precasting and fabrication).



▲ Kamehameha Highway workers laying the geogrid behind the Full-Height Panels.

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of the way things turned out.

Tom Hoen
Chief Engineer
Goodfellows

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To expedite the schedule, Tensar Earth Technologies, Inc. air expressed its non-metallic reinforcing geogrid to Oahu. The island's acidic soil ruled out steel strips or grids. "Geogrid was the preferred material for these corrosive conditions," says Ardalon Nikou, Earth Tech Senior Project Manager.

Rocky Mountain Prestress was responsible for casting the full height and

Rocky Mountain Fitness was responsible for casting the full-height and base panels and transporting them to the job site. Each panel included embedded tab connections for full load transfer to the Tensar geogrid. "It was our first time using geogrid, but it meshed with our existing knowledge," says Mike Caron, General Manager. "That helped us finish production early—even with modifications and adjustments to the panels."



◀▲ Front and back views of an ARES Wall System.

Challenging Local Conditions Required Changes

Unexpected outcrops meant reengineering some base panels — a process normally taking one or two weeks. To meet the deadline, Tensar engineers put in long hours so submittals could be turned around in less than a day.

Along with rock, the installation contractor had to contend with marshy soil and groundwater. On many projects, these conditions would be a prescription for pumping and foundations. But at the Kamehameha highway, foundations were not required. In fact, the ARES System allowed installation of all the lower panels directly on the subgrade—even in areas with two to six feet of standing water. This saved time by eliminating pumping and the need for special environmental permits, according to Earth Tech's Nikou.

FHP—Nothing is Faster to Install

The schedule also benefited from the large size of the panels. Because the full-height panels averaged 17 feet tall by 9 feet wide, the entire retaining wall required only 100 units. If it had been built with traditional articulated panels, the installer would have been required to form and install up to 700 units. Bailey estimates the ARES panels cut installation time by at least one-third.

A Record Finish

Much to the relief of the North Shore, the close cooperation and hard work of the project participants paid off. Just 59 days after work started, the community, state officials, and crews celebrated the completion of the project with a party at nearby Waimea State Park. "It wasn't a normal job by any stretch," says Goodfellow's Hoen. "But with a good team and by working round-the-clock, we made it happen a day early and under budget. Everybody should be proud of the way things turned out."



*An attractive facing of choice is added
to each wall allowing it to be unique in
its own way* ▲▶

