Roach Gets Concrete Results

FOCUS:
Trenching Underground
A County Materials tester checks the readings of concrete poured for one of the piers at the new U.S. 10 north of Stevens Point. Embedded microchips help workers more accurately monitor the concrete’s curing.

**Concrete Testing Goes High Tech**

They reach toward the sky like concrete trees, these 30 piers that dot the path of the emerging U.S. Highway 10 traversing the Wisconsin River and low-lying areas north of Stevens Point. Soon they will all be connected by massive concrete bridge girders.

In the project’s earlier stages, workers braved winter winds and temperatures to measure, pour and test some of the roughly 3,600 cubic yards of ready-mix concrete that composes the footings, piers and pier caps that will support the bridge.

County Materials will supply more than 15,000 cubic yards of ready-mix concrete for the entire project. That’s more than twice the 6,000 cubic yards the company supplied for the McCleary Bridge connecting Wausau and Rib Mountain. It would cover the playing surface of Green Bay’s Lambeau Field to a depth of more than 7 feet.

The Wisconsin Department of Transportation (WisDOT) is expanding 31 miles of U.S. 10 between Highway 13 near Marshfield and Interstate 39 north of Stevens Point. The new four-lane highway will bypass several small communities, as well as downtown Stevens Point. Construction began in 2006 and is scheduled to finish in 2012.

Making workers’ jobs a little easier is an alternate technology employed by...
Concrete Testing Goes High Tech

A ready-mix truck rolls past a pier as workers lay the foundation for the new U.S. 10 north of Stevens Point. County Materials will supply more than 15,000 cubic yards of poured concrete for the project.

County Materials on the project. Computer chips called maturity testing loggers, embedded in the concrete, allow testers to hook up a handheld monitor to measure the structure's internal temperature.

This helps workers gauge the rate at which the concrete cures, allowing them to know of the concrete in pounds per square inch (psi) the concrete can support. The strength, or psi rating, increases as the concrete cures.

When it reaches 2,500 psi, workers can remove the forms, and at 3,500 psi, they can remove the cold-weather protection. For the U.S. 10 project, the final psi rating will be 4,000.

Previously, the only method by which contractors could gauge concrete's curing rate was to pour separate test cylinders alongside a project to replicate the structure. The cylinders, which typically require 10 to 12 days to cure to the approved psi levels, are not true representations of a bridge pour. With maturity testing, cure rate readings are extremely accurate and can speed up a project significantly.

"It's an additional tool to determine concrete's strength," said Mike Hammitt of County Materials. "It reduces the time contractors must wait to remove forms from 10 days to three and a half. So that benefits the contractors — and ultimately the taxpayer, in that they save so much on time and labor — and the DOT benefits by getting a more accurate record of temperature readings as the concrete cures."

Maturity testing technology is now being used by Lunda Construction and Zenith Tech, Inc., the contractors doing the current Stevens Point and Wausau area bridge projects.

County Materials operates 30 locations serving the Midwest. The family-owned, American company is an industry leader in the manufacture and distribution of concrete block, brick, stone, ready-mix, hollow-core, pipe, pavers, retaining walls, and aggregate finishing products.