



Smart Concrete™ Passes South Dakota DOT Test with Flying Colours

Mobile Sensor-based Technology to be a ‘Standard’ on Major Concrete Projects for Leading Ready-Mix Supplier and Major Contractor

Industry Leader

Established in 1952, Concrete Materials prides itself on setting the quality and innovation benchmark that other suppliers to the heavy/highway construction industry follow. The company is quick to examine and implement new methods, materials, and technologies for delivering quality solutions and materials. While cost is always a consideration, the need for solutions that improve operational efficiency by reducing dependence on skilled labor has become a significant driver.

Skills Shortage Creates Challenges

According to the Sioux Falls Development Corporation, there aren't enough workers to meet the demands of the fast-growing city. With an unemployment rate below 3%, many businesses including construction companies are struggling to find skilled labor.

A challenging employment climate, coupled with a large interstate project that had a particularly demanding paving schedule roughly two years ago, motivated Concrete Materials to look for innovative new methods.

“We had to start looking outside-the-box and find ways to help our customers do things more efficiently,” confirms Jim Simunek, Ready Mix Sales, Concrete Materials. “By luck, we just happened to come across wireless sensors from Giatec at a major convention [in January 2017],” he adds.

Transformational Concrete Solution

Specifically, waterproof sensors are used in an industry transforming, mobile-based technology product called Smart Concrete™ that's offered by Giatec to ready-mix suppliers. Called “the next wave in concrete maturity” by some users,

About

Concrete Materials is the largest ready-mix supplier in Sioux Falls with a commitment to providing the highest quality materials to construction companies in eastern South Dakota and surrounding states.

Visit: www.concretematerialscompany.com

Challenge

- Shortage of skilled construction workers driving the need for superior efficiencies on large projects

Solution

- Test the use of SmartConcrete™ on a major highway project with South Dakota's Department of Transportation (DOT) and T&R Inc., a major contractor

Results

- Test verified accuracy of Smart Concrete sensors
- Reduced number of traditional cylinder tests by DOT
- Contractor realized important new efficiencies
- Smart Concrete will be a standard product on future big projects by Concrete Materials and T&R

sensors are installed on the concrete formwork before pouring. A downloadable app from the ready-mix producer gives the contractor real-time temperature and maturity monitoring from the jobsite.

The primary appeal to contractors is the opportunity to reduce or eliminate the need for field cure cylinders; and in so doing lower their labor costs while accelerating a pour schedule to realize important schedule efficiencies. For ready-mix suppliers, Smart Concrete provides a proven way of differentiating their business while introducing an important, value-added upsell opportunity with attractive margins.

Highway 100 Test Project

In July 2017, Concrete Materials approached one of its primary customers, T&R Contracting with a proposal to test, Smart Concrete on a large scale divided highway project. The test also needed the direct involvement of the Department of Transportation (DOT) because the wireless sensor technology had never been used before in the state of South Dakota. The objective was to use the Highway 100 project to verify whether the Smart Concrete sensors were accurate.

Brad Tiede, Project Engineer with DOT confirms that the test involved casting four concrete cylinders and placing a wireless sensor in one. "When the sensor reported a compression strength of 4,000 psi, we would break open the other cylinders to get an average strength," says Tiede. The test confirmed that the Smart Concrete sensor was within ten percent of what the average psi reading was, indicating the concrete had reached "good strength".

Time and Labor Savings

Normally, on a project of this scale, DOT's inspectors would make four cylinders and break one at seven days, fourteen days, and again at twenty-eight days – with a back-up cylinder available for the last break. The Smart Concrete test resulted in a decision by DOT to reduce cylinder testing to one per month. While it's hard to quantify the time and labor savings from eliminating these traditional tests Tiede confirms, that "not having to do those cylinder breaks freed up our inspectors for other tasks."

T&R Contracting also observed significant value from the use of Smart Concrete on the test project. "It's definitely a benefit eliminating the need for a DOT inspector to come out and check strength," says T&R's Ryan Gulbrandson. "If we're paving on a Monday, I can buzz out there myself on a Sunday and confirm whether the strength is good to go on Monday, update the info which is shared immediately to our field team thorough the app - instead of waiting for DOT to give us approval," he adds.

Gulbrandson also believes that during the prime construction season, "when it's hotter outside", the sensor technology will "carry that heat and get to strength faster than it will in a traditional seventy-degree lab." Depending on how many phases, and the number of pours, he says "you may be able to save days on some jobs and weeks on others" – recognizing that every job will be different.

Smart Concrete Becomes a 'New Standard'

Having passed the DOT of South Dakota's inspection test with flying colours, Concrete Materials and T&R Contracting are excited about the prospect of using Smart Concrete on other state road and infrastructure projects. "Going forward, Smart Concrete will be a standard in our big paving projects," says Simunek.



Completed Concrete Highway

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Since the Highway 100 test project, Concrete Materials has used Giatec's sensors on a hospital project, and they have many other commercial contractors that are using the Smart Concrete product.

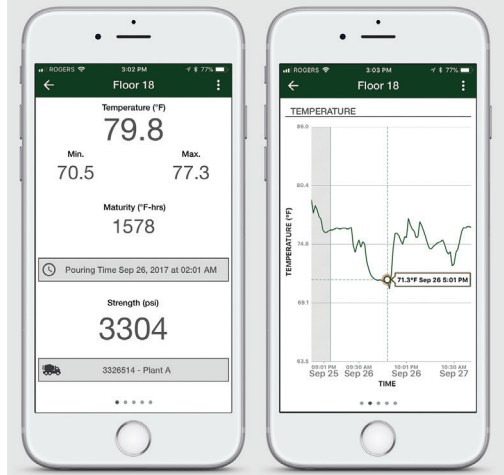
Finally, "I believe it [Smart Concrete] gives us a competitive advantage over our competitors in this market by giving our customers firsthand, real-time information," says Simunek. For contractors, he says that using the product will enable them to achieve better profitability by reducing their schedules. "We will definitely be using Smart Concrete going forward," he concludes.

About Giatec

Giatec Scientific Inc. is a leading provider of advanced concrete testing solutions to the global construction industry. By combining wireless concrete sensors and mobile apps, Giatec's unique smart monitoring solutions provide invaluable real-time information on concrete properties.

Our knowledge-based solutions include laboratory devices, non-destructive testing equipment, and wireless sensors for the accurate assessment of various parameters including concrete electrical resistivity, permeability, rebar corrosion potential and corrosion rate, as well as wireless monitoring of concrete temperature, maturity and humidity.

Contractors, builders, and ready-mix providers in over 70 countries use Giatec's smart monitoring solutions to save time, reduce their labour investment, energy and material costs while measurably increasing the profitability of their building projects.



Obtain and share temperature and strength results in real-time with the Smart Concrete™ mobile app.

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