



Whittenberg monitors Water Quality Treatment Center wall pours with *intelliRock*

Real-time alerts from *intelliRock* help keep the pours within temperature differential and maximum core temperature specifications.



Derek R. Guthrie Water Quality Treatment Center

*A project with many mass pours monitored by *intelliRock* for compliance with the project's thermal control plan. In addition to remote, real-time temperature and temperature gradient monitoring, *intelliRock* alerts the contractor via text message if a pour's maximum core temperature or the temperature differential exceeds the specified maximum.*

The Situation

The Metropolitan Sewer District in Louisville, Kentucky is currently expanding the Derek R. Guthrie Water Quality Treatment Center (WQTC) to handle significant amounts of wet weather flow. The construction of this new wet weather flow treatment facility involves many mass pours of concrete and the need to monitor compliance with the thermal plan developed for these pours. The Engiuis *intelliRock* II Concrete Temperature Monitoring System is providing remote, real-time temperature and temperature gradient monitoring of each mass pour on this project. The *intelliRock* system is also sending text messages to the contractor's mobile phone if a pour's maximum core temperature or the temperature differential is exceeded, enabling quick resolution of the situation.

Project Scope

Whittenberg Construction Company is the contractor for the \$49 million pump station package for the new facility, which includes:

- A new influent screening facility to meet greater peak demand.

- A new influent pumping station with a capacity of 200 MGD.
 - A new short-term, 427,000-gallon detention basin.
 - The conversion of the existing influent pumping station to a new wet weather pumping station.
- Projected completion is December 31, 2011.

Many of these structures are 80-feet underground and consist of walls poured in sections varying in height from 12 to 20 feet and from 10 to 40 feet in width. The thickness of these walls is between four and seven feet. "We're using *intelliRock* to monitor the core temperature of any wall over four feet thick," says Shawn Rankin, Project Manager with Whittenberg Construction Company. *intelliRock* alerts Shawn via text message if a pour exceeds the 150 F° maximum allowable core temperature. The system logs temperature data in a format that is uninterrupted and unalterable, giving all stakeholders who need to review it complete confidence in the integrity of the data.



intelliRock sensors are placed in the center and face of each wall pour to monitor the temperature differential.

Real-time alerts to out-of-spec conditions

"Per project specifications, we had to maintain a 35 F° maximum differential for any mass pour over four feet thick," adds Shawn. "We place two *intelliRock* sensors in the center of each wall pour and two on the face and the readings let us calculate the temperature differential. We pour sections of walls sequentially, both vertically and horizontally. We have to strip the forms to move them up to pour the next vertical section as well as the next horizontal section. There have been a couple of times we experienced the temperature differential exceeding the specification maximum

after stripping forms. In these situations, I received a text message alert from *intelliRock*, so we were able to quickly add insulation to stay within specifications."

Remote temperature data retrieval

Shawn used *intelliRock* Wireless to remotely retrieve temperature data from the *intelliRock* sensors. "I have the *intelliRock* wireless base station in my office. Beyond starting the sensors at the pour site using the handheld reader, I didn't have to go to the structure to get data. The system worked as advertised and made monitoring more convenient." Shawn stored the project's temperature data in a spreadsheet, which he would send to the design engineer every 24 hours.

Workflow acceleration data

The *intelliRock* system also provides Shawn information to help keep workflow moving by letting him know when conditions are met that allow him to cease monitoring. These conditions are:

- The hottest part of the concrete, which is typically the center, has to start cooling.
- The concrete must be at least three days old.
- The hottest portion of the concrete must cool to within 35 F° of the ambient air temperature.

Shawn knows with certainty when his obligation to insulate and monitor a structure is complete because he is using *intelliRock*.

This project is the first time Shawn has used the *intelliRock* system. "If I have a similar specification or mass concrete project in the future, I would use it again," Shawn concludes.

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– Shawn Rankin, Project Manager, Whittenberg Construction Company