



Case Study: Dallas High-Five Interchange Project; Dallas, Texas



The IntelliRock system is keeping Zachry Construction Corporation on track to earn a large portion of \$11 million in bonus for early completion of the Dallas High Five Interchange.

Project Background

The Dallas High Five is a \$261 million Texas Department of Transportation (TxDOT) project to build a five-level interchange where I-635 and US 75 meet in Dallas. The existing interchange has a traffic count of 500,000 vehicles per day, making it one of the busiest interchanges in the country. Zachry Construction Corporation is the contractor. The project began on January 2, 2002 and is scheduled for completion in April 2007.

Terms of the contract include incentives to meet or beat the completion date. The maximum bonus is \$11 million, should Zachry complete the project in four years or less. To accelerate workflow, TxDOT specified the use of the concrete maturity method on this project.

This is the first project TxDOT contractually required the use of the maturity method to check concrete strength. At the same time concrete is placed in the formwork, one or more IntelliRock maturity loggers are placed in the concrete. The loggers calculate and record the maturity history and time-temperature profile. The corresponding strength of the structure is easily determined at any time from the maturity data provided by the logger in conjunction with previously determined strength-maturity relationship data. This timely information about the concrete's strength can accelerate the construction process and it also functions as a powerful QC/QA tool.

There are many steps in the traditional cylinder testing process that introduce potential errors that can result in low cylinder breaks. Over the life of the project, TxDOT estimates it will install approximately 8,000 IntelliRock loggers. The use of the IntelliRock system eliminates the opportunities for cylinder mishandling.

According to Jim Hunt, P.E., Director of Construction, Dallas District, TxDOT, "The structural segmental work on the project is where some of the most dramatic benefits of maturity occur. The original plans called for cast-in-place segments where it would take an average of 21 days for each segment to be completed." By changing to pre-cast segments using maturity, the IntelliRock system indicates the specified 2,500-psi is achieved in 10-12 hours. "It is phenomenal the rate at which they are able to complete work by pre-casting and using IntelliRock to tell when we really have strength."



The use of the IntelliRock system is helping the Dallas High Five project stay ahead of schedule. "We put maturity into the project because we knew it had the capability of streamlining the work," says Hunt. For TxDOT and the 500,000 vehicles per day that pass through the interchange, the IntelliRock system will help bring relief from traffic congestion years faster than could have been done otherwise. For Zachry, the use of maturity and IntelliRock has them on track to collect a large portion of \$11 million in early completion incentives.

"IntelliRock is the technology leader," concludes Hunt. "We really are satisfied with it."

intelliRock Advantages

Compared to other products evaluated for use with TxDOT jobs, the intelliRock system offered several advantages. First, the intelliRock loggers provide anytime, current data, while some products used inadequate power sources that failed before completion of the maturity cycle. Second, some products include only the loggers but not the software to calculate maturity based on the logger data. intelliRock is a complete, end-to-end solution that measures, gathers, and reports maturity data to estimate early concrete strength in real time. Third, unlike companies that make systems with external components, intelliRock loggers are placed inside the element itself where they can't be damaged or stolen.

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Dallas High Five Construction Site.

intelliRock Benefits and ROI

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