



Case Study: Interstate 65 Paving Project; Indiana



intelliRock™ provided Gohmann Asphalt & Construction with documentation of compliance with strength criteria, and it helped ensure that cold weather concrete placements were within temperature specifications, thus helping to earn the company a significant bonus.

Project Background

In 2002, Gohmann Asphalt & Construction Inc. was awarded a performance contract by the Indiana Department of Transportation (INDOT) to pave a section of Interstate 65 between mile marker 4.5 and 7. The bid specifications for the pavement called for a thickness of 375 millimeters (14.8 inches) and a width of 7.2 meters (7.87 yards).

The performance specifications associated with this job were based on the degree of deviation from key specifications, one of which was 7-day strength. Staying within the acceptable range of deviation from these specifications could earn Gohmann a bonus, but if the deviation were too great, penalties would result. For this project, INDOT specifications required 550-flexural strength to open pavement to construction traffic. To receive 100 percent payment, Gohmann had to achieve 570-flexural strength within seven days, and eligibility for a bonus required that concrete attain 650-flexural strength within 28 days.



Thermocouple-based System Woes

On previous projects with performance specifications, Gohmann had used thermocouple-based systems to estimate concrete placement strength. His experience with the systems had not been trouble-free. He experienced many of the problems related to the use of such systems, such as thermocouple wires breaking during and after concrete placement and damage to the external units from accidents, vandalism or weather.

In 2002, Gohmann Bridge Division Manager Roy Zimmerman learned about the intelliRock system. Based on ACI and ASTM standards for using the maturity method of estimating concrete strength, the intelliRock system estimates the strength within the structure, not a specimen. Zimmerman introduced others in the division to intelliRock, including Mike Kaelin, Concrete Lab and QC/QA Supervisor at Gohmann.

Project Time Constraints

The specifications for this project required Gohmann to complete 50 percent of the paving by December 31, 2002, and the remaining 50 percent during 2003. Work was begun on the northbound lanes, but by October 15, 2002, only 15 percent of the paving had been complete. To complete the work on time, without sacrificing any bonuses, or incurring penalties, Gohmann would have to place a lot of concrete during colder weather.

INDOT specifications state that concrete placement could only occur when the ambient air temperature was 35 °F (1.67 °C) and rising, and concrete operations had to cease when the ambient air temperature was 37 °F (2.78 °C) and falling.

To ensure that concrete placements were within temperature range specifications, Kaelin used the IntelliRock system to do temperature profiling. Using a hot water mix during November and December, concrete was leaving Gohmann's plant at 75 °F (23.9 °C). An IntelliRock logger was placed 100 feet from the end of each day's production run, a minimum of 18 inches from the edge. Kaelin and the INDOT inspectors were able to use the IntelliRock handheld reader to connect to the logger and get a real-time, in-place strength reading as well as temperature history.



Bonus Time

Using the IntelliRock system as part of the quality control/quality assurance process for this job, Gohmann averaged placing about 1200-1300 feet of pavement per day. 23,000 cubic yards of concrete were placed in the month of December 2002 alone. "We averaged 66 hours on turnaround – the time from placing the concrete with the IntelliRock logger embedded, to putting traffic back on it," Kaelin commented.

"We had traffic running on this pavement by January 15th [2003]. Without a system like IntelliRock, we would have been sitting around waiting on field-cured beams that do not retain heat and gain strength like the pavement will. It would have slowed the project down. Without IntelliRock, we most likely would still have been paving on January 15th, instead of traffic driving on it."

The IntelliRock system helped Gohmann successfully complete the first 50 percent of this project by December 31, 2003, earning Gohmann a significant bonus.

Since then, Joel Field, Concrete Paving Division Manager for Gohmann, won't bid a job without including the IntelliRock system as part of the bid. "Jobs where maturity is NOT part of the specification carry more risk." Field's enthusiasm for IntelliRock is a reflection of the paving division's attitude, which now pushes Kaelin's organization to quickly develop the maturity calibration curves it needs to implement IntelliRock on projects. "The skepticism turned around when we went from opening pavement in three to four days from field-cured breaks, to opening pavement in 27 hours in some cases, thanks to IntelliRock," concluded Kaelin.



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