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March 2011

A User's Guide to Concrete Test Reports — Part 1

Portland Cement Concrete is probably the most common material found at a construction site....*The concrete test report* would probably be the second most common.

On a large project there could be hundreds of individual reports representing thousands of test specimens.

The data included in a concrete test report is used in specification compliance determination and can be used in quality control evaluations. Effective use of the data comes from a better understanding of the report process.

How Often Are Reports Issued?

Typically, reports are issued at 7 and 28 days.

The initial 7-day data is an indicator of the concrete potential compressive strength.

Once upon a time, the rule of thumb was that the 7-day result should be 66% to 75% of the concrete design strength. Today, however, with the expanded use of Supplementary Cementitious Materials (SCM's) the early age strength gain can be delayed. Ultimately, it is now the 28-day report provides the data needed to determine compliance with project speci-

cations and are used in statistical evaluations.

What Does the Report Tell Us?

When concrete is sampled for evaluation, the "plastic" properties of the test sample are determined and this data is included in the report. The concrete is tested for consistency (slump), air content and temperature. In some projects the density (unit



weight) of the concrete is required. The primary purpose of these tests is to verify compliance with project specified limits and can provide important data should there be non-compliant compression strengths.

The process of sampling and testing of concrete must comply with the project specifications and ASTM C172 sampling and testing as required in ASTM C31 for casting cylinders and ASTM C39 for compression strength tests.

The report should include:

- Project name and location, name and location of testing lab, and identification numbers of the test specimens.
- Ambient temperature at the job site.
- Location in project represented by sample.
- Date and time of the test and the name of the testing technician.
- Fresh concrete test results (slump, air content, and concrete temperature).
- Curing method at job site and laboratory.
- Compressive strength of each specimen to nearest 10psi.
- Type of fracture pattern and age of test for each specimen.

Additionally, relevant information on water and admixtures added at the job site should be included.

Effective evaluation of a project's concrete requires complete and competent testing and reporting. When the reports indicate non-compliant or erratic results, additional evaluation should be started.

Next month, Part 2 of this series will address how one interprets the data.

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SINCE



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F&R Provides CMT Services for the Greenbrier Casino Expansion

The construction of the new \$80 million, 102,000sf casino at The Greenbrier Resort in White Sulphur Springs, West Virginia presented numerous challenges — and Froehling & Robertson, Inc. was proud to be on the team that helped to make this amazing facility a reality.

The site was located almost entirely below-grade, presenting significant difficulties relative to seasonal fluctuations in the water table and during precipitation events. Furthermore, during the winter of 2010 — a period of peak construction — the area experienced some of the harshest snow and ice events on record.

Working seven days per week, F&R's team of inspectors were present on a continual basis to

assist the construction team.

Geotechnical Support

Initially, F&R performed a geotechnical evaluation of the project site and provided ge-



otechnical design and construction recommendations.

F&R performed a subsurface exploration that involved deep borings to analyze the planned building subgrade soils, as well as the potential for a high water table influencing construction and design of the finished

structure.

Inspection & Testing Support

When the project reached the construction phase, F&R provided special inspection services with a full-time presence. The owner demanded a very aggressive schedule that originally intended for the casino structure to be completed within 5 months of breaking ground.

F&R staffed an on-site laboratory with one to two full-time techni-

cians who provided daily inspections. The specific items that were addressed during construction were controlled fill, foundation subgrade evaluations, cast-in-place concrete, reinforcing steel, unit masonry assemblies, structural steel, and fire-proofing.

Scott Rohlf Elected to Carolinas EIA Board of Directors

F&R is pleased to announce that Raleigh Office Environmental Health and Safety Group Manager Scott Rohlf, CIH was elected to the 2011 Board of Directors for the Carolinas Environmental Information Association.

In this position, he will help to set policy for the trade group.

The group was originally formed in 1989 as the SC National Asbestos Council by a group of dedicated individuals striving to provide information about asbestos and the regulations sur-



rounding it. As the group grew, it became clear that other environmental concerns needed to

be addressed like lead based paint, indoor air quality, underground storage tank and hazardous waste issues. The group later adopted the national organization name change to Environmental Information Association.

The membership of the CEIA is comprised of professionals from a wide range of industries such as: building managers, consultants, contractors, government agencies, schools, and universities.