



Q: Why adopt intelliRock?

A: Accuracy - Speed - Quality - Safety

In 1920 ASTM adopted Standard C31, "Practice for Making and Curing Concrete Test Specimens." Then, in 1927, ASTM published R.B Young's work questioning the cylinder method – questioning that persists to this day:

"The method needs drastic improvement. The standard cylinder is useful for selecting mix proportions; it is a poor procedure for quality control." - E. Cohen, President of ACI, 1972

"the idea that cylinders represent the in-situ concrete is incorrect and it prevents the development of more realistic and economic concepts." – Ramakrishnan, 1976

Fact: Cylinder strengths do not accurately depict the strength of the placement.

Why: Different (1) geometry (2) environmental conditions (3) handling of cylinders

(1) GEOMETRIC differences between the companion cylinders and the concrete placement cause significant differences in temperature history, and therefore different rates of strength gain. Volume traps heat. Cylinders contain a very small volume of concrete, but have a large surface area; this volume to surface area ratio retains less heat. This difference in thermal properties means that the companion cylinders develop strength at a different rate than the placement. The traditional cylinder process penalizes the project (owner and contractor) by not accounting for the additional temperature and corresponding strength gain, which costs time and money.

(2) ENVIRONMENTAL differences between the companion cylinders and the concrete placement significantly impact the rate of strength gain. The curing temperatures for lab-cured or field-cured cylinders rarely represent the curing conditions of the actual placement. The temperature history will be different due to differences in environmental conditions, geometry, thermal protection, and mass; therefore the rate of strength gain is different. At varying temperatures, any particular mix design has nominally the same strength gain curve. The key factor becomes how much time is needed to acquire a given amount of documented strength. Economic and safety considerations require that the determination of strength for construction activities be accurate, e.g. post-tensioning, early form removal, shoring etc.

(3) HANDLING of cylinders impacts the cylinder test results. Cylinders can be improperly prepared, handled, and/or tested, which may lead to low cylinder breaks that impact the job's schedule. Utilizing the intelliRock system minimizes some of the human error that is inherent in the traditional cylinder process. The intelliRock system provides the project with the highest level of data integrity available. The in-situ data is both **uninterruptible** and **unalterable**. All measured data is Microsoft Windows™ compatible, which simplifies documentation and communication.

Cylinders alone can misrepresent the strength of the in-place concrete. Developing and using a pre-placement strength/maturity curve allows one to predict concrete strength. This feeds the QA process by documenting the progression of construction activities. Whether the project is exposed to colder or warmer environments, utilizing the intelliRock system has a direct effect on a project's critical path. It also provides a field validation protocol for the quality control process and subsequent quality assurance construction decisions.

intelliRock provides accurate in-place concrete strength information, which is critical for optimum project flow and safety. Regardless of the shape of the concrete placement (e.g. drill shafts, columns, beams, caps, pavement, elevated decks or floors), documenting the in-situ strength is the key to enhancing the project's QC, QA and critical path. It is not uncommon for concrete operations to be safely completed days ahead of schedule compared to what would be accomplished using the traditional cylinder method. Finally, intelliRock provides the project with the highest level of data integrity available. Using the intelliRock system provides concrete facts and superior results.