ACPA Position Paper
Methods of Concrete Strength Evaluation for Pavement Acceptance

Scope of this Position Paper

- This paper delineates the American Concrete Pavement Association member's opinions on the appropriate use of concrete strength tests for the acceptance of concrete pavement. The focus is on the common practices most currently in use (state-of-the-practice). For strength testing related to Performance Related Specifications (PRS), refer to ACPA Position Paper on PRS dated December 2, 1995.

State-of-the-Practice

- The most common methods for determining the strength of concrete pavement for acceptance are:
  - ASTM C39 "Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens."
  - ASTM C78 "Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third Point Loading)."

  These methods require specimens made in accordance with ASTM C31 "Practice for Making and Curing Concrete Test

- The specifying agency or its agent usually fabricates and tests the specimens with no involvement by the contractor.
- Contractors often fabricate and test specimens for process control.
- Contractor process control tests could be used for agency acceptance.

Strength Testing for Acceptance

- Strength testing for acceptance should be based on compressive tests, and every effort should be made to change project specifications to this end.
- Until such changes can be made to specifications requiring flexural tests, the contractor should perform or have significant contribution to the flexural acceptance testing.
- If compressive tests are used for acceptance, correlation to pavement design strength parameters should be made through agency experience or mix specific correlation.
- Mix specific correlation between compressive strength and design parameters are more accurate than generic correlation and should be used for large projects.
- Generic correlation between compressive strength and design parameters can be used for smaller projects.
- Opening to traffic should be based upon strength tests.

Referee Testing

- When the acceptance test specimens have been fabricated or tested in a questionable manner, referee testing should be done to determine or ensure the strength of the concrete.
- Referee testing should be done on the in-situ concrete.
- Contract provisions should clearly include referee testing provisions, including what and how the referee testing will be done.

Improvements in the Quality of Testing

- Every effort should be made to improve the quality of concrete strength testing, including education, certification and periodic evaluation of field and laboratory technicians and equipment of both contractor and agency-engaged personnel and facilities.
- Specific attention should be made to improving the quality of flexural testing.
- Research, evaluation and education of nondestructive procedures for determining concrete strength is strongly encouraged.

Partnering

- **The contractor and specifying agency (or agent) should actively partner to conduct the concrete strength testing for acceptance, including jointly fabricating and testing specimens**.

Approved by ACPA's Board of Directors
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