

## ACI 301 SPECIFICATIONS FOR STRUCTURAL CONCRETE

### REQUIREMENTS WITH RESPECT TO THE SUBMITTAL OF EXISTING FIELD-TEST DATA IN SUPPORT OF MIX-DESIGN SUBMITTALS

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In order to meet a project's specific performance and design requirements, ACI 301, Section 4.2.3, provides for the use of a production facility's records of field-tests as a part of the concrete-mix proportioning process.

The provision permits a mix-designer to calculate the *standard deviation* within these test results to gain an indication of the consistency of a production facility's level of quality. This standard deviation measure is used in the computation of *the required average strength ( $f'_{cr}$ )*. This is the minimum compressive strength that must be achieved by the production facility when testing mixtures specifically formulated to meet a project's specific performance and design requirements.

In determining a production facility's level of quality, the ACI Specification permits the use of data from concrete mixtures installed on other projects. These data are the strength records of *field-tests* gathered from a mix of the *same class*, and with a declared design strength *within 1000 psi* (plus or minus) of the strength specified for the work of the proposed project.

Whereas clause 4.1.2.4 allows field-test records of a similar mix to be used as *the basis* for selecting proportions it does not permit the submittal of such field-test data as a direct substitution for the proportioning process required to develop a mixture conforming with a project's specified requirements. Moreover, strength is only one of several design criteria required by a project's specifications.

Final documentation supporting achievement of the *required average strength* of a project's mix is permitted to be gathered from either:

- *If available, field-test data for one mixture using the same materials and conditions* as the project's mix (clause 4.2.3.4.a)
- *Trial mixtures* (clause 4.2.3.4.b)
- *..... ,calculate the actual average compressive strength* (clause 4.2.3.6)

In the interests of expedience, but strictly at the General Contractor's volition, Rangaswamy and Associates Inc. may permit the values of the *actual average compressive strengths* of the concrete placed at the current project site to be an acceptable alternative procedure. Contractors must understand the possible risks inherent with this procedure, since remedies, acceptable to RAI, will be sought to rectify in-place mixtures subsequently determined to be below strength, or otherwise deficient.