

Field Acceptance of Air Content, Slump and Temperature of Fresh Concrete

The Preconstruction Conference should cover the importance of testing in accordance with ASTM and ACI requirements. Also, the field acceptance of fresh concrete should be discussed. The ready-mixed concrete producer will normally provide this information at the Preconstruction Conference, but concrete contractors should also be aware of the Project Requirements. ACI 301 “Specifications for Structural Concrete” and ASTM C94 “Standard Specifications for Ready Mixed Concrete” are referenced in nearly every project specification. And when ACI 301 is referenced it requires a copy of ACI SP-15, Field Reference Manual, which includes both ACI 301 and ASTM C94, to be kept in the contractor’s field office.

The main point to be made at the Preconstruction Conference is that the concrete can’t be rejected on the basis of a single test of air content, slump or temperature. ACI 301 and ASTM C94 both require an additional check test to be performed if the first test fails to meet specification requirements. The concrete can only be rejected if both the first test and the subsequent check test fail. Without two tests, the concrete may be improperly rejected, leading to disputes about who pays for the rejected concrete.

The appropriate provisions from ACI 301-10 are shown below. To obtain a copy of both ACI 301 and ASTM C94, go to www.concrete.org and purchase ACI SP-15: Field Reference Manual. This will include both documents and by keeping this reference at the job site you will comply with ACI 301 requirements.

Excerpts from ACI 301-10

1.6.7 Field acceptance of concrete

1.6.7.1 Air content—If the measured air content at delivery is greater than the upper limit of 4.2.2.7.b, a check test of air content will be performed immediately on a new sample from delivery unit. If the check test fails, the concrete has failed to meet the requirements of this Specification. If the measured air content is less than the lower limits of 4.2.2.7.b, adjustments will be permitted in accordance with ASTM C94/C94M, unless otherwise specified. If the check test of the adjusted mixture fails, the concrete has failed to meet the requirements of this Specification.

1.6.7.2 Slump—If the measured slump at delivery is greater than specified in 4.2.2.2, a check test will be performed immediately on a new sample from delivery unit. If the check test fails, the concrete is considered to have failed to meet the requirements of this Specification. If the measured slump is less than specified in 4.2.2.2, adjustments will be permitted in accordance with ASTM C94/C94M, unless otherwise specified. If the check test of the slump of the adjusted mixture fails, the concrete is considered to have failed to meet the requirements of this Specification.

1.6.7.3 Temperature—If the measured concrete temperature at delivery is not within the limits of 4.2.2.6, or as otherwise specified, a check test will be performed immediately at a new location in the sample. If the check test fails, the concrete is considered to have failed to meet the requirements of this Specification.