ACI 117M-10

(metric)

Specification for Tolerances for Concrete Construction and Materials (ACI 117M-10) and Commentary

An ACI Standard

Reported by ACI Committee 117

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Specification for Tolerances for Concrete Construction and Materials and Commentary

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Specification synopsis: This specification provides standard tolerances for concrete construction and materials. This document is intended to be used by specification writers and ACI committees writing standards as the reference document for establishing tolerances for concrete construction and materials.

Commentary synopsis: This report is a commentary on the "Specifications for Tolerances for Concrete Construction and Materials (ACI 117M)." It is intended to be used with ACI 117M for clarity of interpretation and insight into the intent of the committee regarding the application of the tolerances set forth therein.

Keywords: architectural concrete; concrete; construction; drilled piers; formwork; foundation; mass concrete; pier; precast concrete; prestressed concrete; reinforced concrete; reinforcement; specification; splice; tilt-up concrete; tolerances.

ACI 117M Specification and Commentary are presented in a side-by-side column format, with code text placed in the left column and the corresponding commentary text aligned in the right column. To distinguish the specification from the commentary, the specification has been printed in Helvetica, which is the typeface for this paragraph.

The Commentary is printed in Times Roman, which is the typeface for this paragraph. Commentary section numbers are preceded by the letter "R" to distinguish them from specification section numbers. The commentary is not a part of ACI Specification 117M-10.

ACI 117M-10 supersedes ACI 117-06 and was adopted March 1, 2010 and published July 2010.

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INTRODUCTION

SPECIFICATION

COMMENTARY

This commentary pertains to "Specifications for Tolerances for Concrete Construction and Materials (ACI 117M-10)." The purpose of the commentary is to provide an illustrative and narrative complement to the specification; it is not a part of the specification.

No structure is exactly level, plumb, straight, and true. Tolerances are a means to establish permissible variation in dimension and location, giving both the designer and the contractor limits within which the work is to be performed. They are the means by which the designer conveys to the contractor the performance expectations upon which the design is based or that the project requires. Such specified tolerances should reflect design assumptions and project needs, being neither overly restrictive nor lenient.

Necessity rather than desirability should be the basis of selecting tolerances.

As the title "Specifications for Tolerances for Concrete Construction and Materials (ACI 117M)" implies, the tolerances given are standard or usual tolerances that apply to various types and uses of concrete construction. They are based on normal needs and common construction techniques and practices. Specified tolerances at variance with the standard values can cause both increases and decreases in the cost of construction.

Economic feasibility—The specified degree of accuracy has a direct impact on the cost of production and the construction method. In general, the higher degree of construction accuracy required, the higher the construction cost, and the lower the degree of construction accuracy, the higher the cost of required repairs.

Relationship of all components—The required degree of accuracy of individual parts can be influenced by adjacent units and materials, joint and connection details, and the possibility of the accumulation of tolerances in critical dimensions.

Construction techniques—The feasibility of a tolerance depends on available craftsmanship, technology, materials, and project management.

Compatibility—Designers are cautioned to use finish and architectural details that are compatible with the type and anticipated method of construction. The finish and architectural details used should be compatible with achievable concrete tolerances.