

Designing Concrete Structures:

Acceptance of Concrete Compressive Strength Test Results According to ACI 318M-14



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Reported by ACI Committee E702

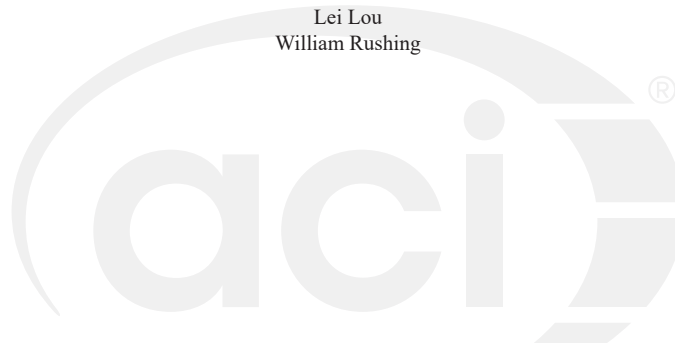
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ACI E702.3M-18 Designing Concrete Structures: Acceptance of Concrete Compressive Strength Test Results According to 318M-14.

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Example Problem: Acceptance of Concrete Compressive Strength Test Results According to ACI 318-14M, “Building Code Requirements for Structural Concrete and Commentary.”

Problem Statement

Evaluate if concrete is acceptable based on compressive strength cylinder test results. The project specification states that the concrete compressive strength is required to be 24 MPa at 28 days.

Given Information

Table 1 provides a set of 15 test results performed on 150 x 300 mm cylinders at 28 days.

Table 1

Test	Cylinder 1 (MPa)	Cylinder 2 (MPa)
1	28.27	29.79
2	29.79	28.89
3	29.72	29.72
4	30.47	30.20
5	28.96	28.68
6	29.30	26.27
7	26.75	27.85
8	24.61	25.37
9	24.61	22.13
10	26.06	26.06
11	25.37	20.55
12	22.75	25.79
13	23.92	22.13
14	19.10	18.96
15	22.06	23.99

Assumptions

	Reference
Sampling frequency is adequate; the minimum frequency is: a. Once a day for a given class b. Once for every 110 m³ c. Once each 460 m² of surface area for slabs or walls	ACI 318M, 26.12.2.1(a)
Samples are taken on a random basis – concrete was not to be sampled due to appearance, convenience, or other biased criteria	ACI 318MR, 26.12.2.1(a)
Each set of cylinders was cast from a different batch of concrete	ACI 318MR, 26.12.2.1(a)
No water was added to the concrete after the samples were taken	ACI 318MR, 26.12.2.1(a)
Qualified field testing technicians performed the tests on the fresh concrete	ACI 318M, 26.12.1.1(c)
Qualified laboratory technicians performed all required laboratory tests	ACI 318M, 26.12.1.1(d)