

CALIFORNIA COUNCIL OF TESTING & INSPECTION AGENCIES

Laboratory Internal Auditing ASTM C 78-02 *Standard Test Method for Flexural Strength of Concrete
(Using Simple Beam with Third-Point Loading)*

Company Name:	Company Address:
Telephone No.:	
Completed by:	Signature:

1.00 APPARATUS	Ref	Yes	No	N/A	Comments
1.1 Can the testing machine provide a continuous loading in one stroke without shock or interruption?	4.1				
1.2 Can the testing apparatus maintain the specified span length and distance between load-applying blocks and support blocks constant within ± 0.05 in.?					
1.3 Is the ratio of the distance between the point of application of the load and the point of application of the nearest reaction to the depth of the beam equal to 1.0 ± 0.03 ?					
1.4 Is the height of the load-applying and support blocks less than 2 in.?					
1.5					

2.00 TESTING	Ref	Yes	No	N/A	Comment
2.1 Is the test span within 2 % of being three times its depth as tested?	5.1				
2.2 Are the sides of the specimen at right angles with the top and bottom?	5.1				
2.3 Are all sides smooth and free of scars, indentations, holes or inscribed identification marks?	5.1				
2.4 Do the specimens conform to all requirements of Test Methods C 42 or Practices C31 or C192	5.1				
2.4 Is the testing technician certified as an ACI Technician – Grade II or certified by an equivalent written and performance test program?	5.2				

3.00 PROCEDURE	Ref	Yes	No	N/A	Comments
3.1 Are the specimens being cured the same as cylinders as specified in C31?					C31 (10.1.3.2)
3.2 For the last 20 h prior to testing are the specimens being stored in water saturated with calcium hydroxide?					C31 (10.1.3.2)
3.3 Is the temperature the water $73 \pm 3^\circ\text{F}$?					C31 (10.1.3.2)
3.4 Are the specimens still moist at the time of testing? Surface drying of the specimens results in a reduction in the measured flexural strength!	6.1				C31 (10.1.3.2)
3.5 With the specimen in place for testing is the top surface the molded side as cast and centered on the supporting blocks?	6.2				

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3.6 For saw cut beams is the top surface as tested, the top or bottom surface as cut from the parent material?	6.2				
3.7 With the specimen loaded to 3 to 6% of estimated load are there any gaps between the specimen and the load-applying or support blocks greater than 0.004 in. over a length of 1 in. or more?	6.2				
3.8 Are gaps in excess of 0.015 in. eliminated by grinding or capping only?	6.2				
3.9 Leather shims used to eliminate gaps in excess of 0.004 in shall be of uniform _ in. thickness, 1 to 2 in. width, and shall extend across the full width.	6.2				
3.10 Has the specimen been loaded continuously and without shock at a constant rate to the breaking point?					
3.11 Has the load rate been calculated					
3.12 For a 6 X 6 beam is the loading rate between 1500 to 2100 #/min.?					
4.00 MEASUREMENT OF SPECIMEN AFTER TEST	Ref	Yes	No	N/A	
4.1 Are the measurements being taken across a fractured face?					
4.2. Are the measurements taken at each edge and the center point then averaged?					
5.00 CALCULATIONS	Ref	Yes	No	N/A	
5.1 If the fracture initiated in the tension face within the middle third of the span length has the following equation been used? $R = PL/bd$					
5.2 If the fracture occurred in the tension face outside the middle third of the span by NOT more than 5 % of the span has the following equation been used? $R = 3Pa/bd$					
5.1 If the fracture occurred in the tension face outside the middle third of the span length by more than 5 % of the span length has the specimen been discarded?					
6.00 REPORT	Ref	Yes	No	N/A	
6.1 Does the report contain the following:	9.1				
a.) Identification number	9.1.1				
b.) Average width to the nearest 0.05 in.	9.1.2				
c.) Average depth to the nearest 0.05 in	9.1.3				
d.) Span length in inches.	9.1.4				
e.) Maximum applied load in pound-force	9.1.5				
f.) Modulus of rupture calculated to the nearest 5 psi	9.1.6				
g.) Curing history and apparent moisture condition of the specimen at the time of test	9.1.7				
h.) Note if specimens were capped, ground or if leather shims were used.	9.1.8				
i.) Note whether specimens were sawed or molded and defects	9.1.9				
j.) Age of specimens	9.1.10				

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	Yes	No	N/A		
7.00 PRECISION AND BIAS					
7.1 Has the laboratory participated in proficiency testing	10.1				
7.2 Single operator coefficient of variation is 5.7 %. Therefore, the results of two tests should not differ from each other by more than 16 %	10.1				
7.3 The multi-laboratory coefficient of variation is 7.0 %. Therefore, the results of two different laboratories should not differ from each other by more than 19 %	10.1				

Prepared by CCTIA Subcommittee (Laboratory Internal Auditing LIA) Terry Egland (Chairman)