Performance Examination - Concrete

Standard Method of Test for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading (AASHTO T 97-18) [ASTM C78 / C78M-18]

Candidate Name: _____ **NICET ID:** _____

Apparatus	Trial 1	Trial 2
Testing Machine Equipped with means of recording or holding peak value that indicates maximum load to 1% accuracy (when applied to specimen during test). Conforms to E4.		
Flexural Testing Apparatus All apparatus for making flexure tests of concrete shall be capable of maintaining the specified span length and distances between load-applying blocks and support blocks constant within ± 0.05 in. (± 1.0 mm).		
The ratio of the horizontal distance between the point of application of the load and the point of application of the nearest reaction to the depth of the beam shall be 1.0 ± 0.03.		
The load-applying and support blocks shall not be more than 2.50 in. (65 mm) high, measured from the center or the axis of pivot, and should extend entirely across or beyond the full width of the specimen. Each case-hardened bearing surface in contact with the specimen shall not depart from a plane by more than 0.002 in. (0.05 mm) and shall be a portion of a cylinder, the axis of which is coincidental with either the axis of the rod or center of the ball, whichever the block is pivoted upon.		
The angle subtended by the curved surface of each block shall be at least 45° (0.80 rad). The load-applying and support blocks shall be maintained in a vertical position and contact with the rod or ball using spring-loaded screws that hold them in contact with the pivot rod or ball. The uppermost bearing plate and center point ball may be omitted when a spherically seated bearing block is used, provided one rod and one ball is used as pivots for the upper load-applying blocks.		

Procedures	Trial 1	Trial 2
1. Protect specimen from loss of moisture.		
2. Turn test specimen on its side concerning its position as molded and center on bearing blocks.		
3. Center the loading system about the applied force.		
4. Bring the load-applying blocks in contact with the surface of the specimen at the third points and apply a load of between 3 and 6% of the estimated ultimate load.		
5. Check for gaps between the specimen and the load-applying or support blocks that exceed 0.004 in (0.10 mm) over a length of 1 in. (25 mm) or more.		
6. If a gap greater than 0.004 in. (0.10 mm) but not more than 0.015 in. (0.40 mm) exists over a length of 1 in. (25 mm) or more, correct the condition by capping or grinding, or by using leather shims extending the full width of the specimen at all specimen contact surfaces.		
7. If a gap greater than 0.015 in. (0.40 mm) exists over a length of 1 in. (25 mm) or more, remove the test specimen and correct condition by capping or grinding. Renew testing sequence at item 1.		
8. Determine the loading rate.		
9. Load the specimen continuously and without shock.		

Examiner Name: _____ **Examiner Signature**: _____ **Date:** _____

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Procedures (continued)	Trial 1	Trial 2
10. Apply the load at a rate which constantly increases the maximum stress between 125 and 175 psi/min (0.9 and 1.2 MPa/min) until rupture occurs.		
11. Take three measurements across each dimension at the failure plane (one at each edge and the center) to the nearest 0.05 in. (1 mm). Record average width, average depth, and line of fracture location at the section of failure.		
12. Calculate modulus of rupture.		
13. Report all pertinent data.		

First Attempt: Pass: _____ Fail: _____ **Second Attempt:** Pass: _____ Fail: _____

Comments:

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Examiner Name: _____ **Examiner Signature**: _____ **Date:** _____