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For enquiries, please contact:
Building Engineering Group (#12-01)
Tel: 1800 342 5222 (1800-DIAL-BCA)
or use our Online Feedback Form at:
<https://www.bca.gov.sg/feedbackform/>

Dear Sir/Madam

USE OF TEMPERATURE-MATCHED CURING OF CONCRETE SPECIMENS

Objective

This circular aims to raise awareness in the industry on the use of Temperature-Matched Curing of concrete specimens for determination of early age in-situ compressive strength of concrete.

Background

2 Concrete strength is a critical parameter for determination of various construction works, such as determining the timing to strike formwork as well as for verifying the design. Test specimens of concrete cubes or cylinders are sampled from fresh concrete for determination of compressive strength of the concrete. These test specimens are normally cured in water at the standard temperature before testing. It should be noted that such curing method does not represent the actual strength development of in-situ concrete.

3 It is noted that conventional curing of test cubes/cylinders which serve as quality control specimens often underestimate the strength development of in-situ concrete, particularly in its early stages. This discrepancy arises because the temperature rise in the control specimens is typically much lower than that of the in-situ concrete.

Temperature-Matched Curing (TMC)

4 Given that there is industry interest in more realistic methods for estimating early-age in-situ concrete strength, we wish to highlight that such provisions are available in BS 1881-130 Testing concrete – Method for temperature-matched curing of concrete specimens.

5 BS 1881-130 describes a method for curing concrete cubes or cylinders which follow the concrete temperature at a pre-selected position in a concrete element (i.e. temperature-matched curing). Guidance on recording the temperature history at other positions in a concrete element is also given.

6 TMC is a method that provides a more accurate estimation of early-age in-situ concrete strength. Key features of TMC include:

- (i) matching the temperature of curing concrete specimens (cubes or cylinders) with the temperature of the in-situ concrete; and
- (ii) storing test specimens in a controlled environment where temperature can be adjusted based on monitored in-situ temperature data.

7 TMC would be effective in situations where determination of early-age strength is critical, such as:

- (i) determining formwork striking times for vertical and soffit elements;
- (ii) determining the appropriate timing for pre-stressing operations; and
- (iii) assessing when a structural member can safely bear all, or part of its working load.

8 It is an option that can be considered to benefit from a more accurate estimation of concrete strength. We would be glad to hear from project teams embarking on this initiative and the Qualified Person (Supervision) can contact BCA via FormSG at: <https://go.gov.sg/use-of-tmc>.

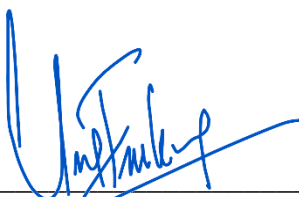
For Clarification

9 We would appreciate it if you could bring the content of this circular to the attention of your members. Should you need clarification on this matter, you may call our hotline at 1800 342 5222, or use our Online Feedback Form at: <https://www.bca.gov.sg/feedbackform/>.

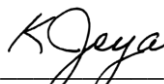
Yours faithfully



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