

An MND Statutory Board

In Collaboration With



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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

**JOINT BCA/ACES/IES CIRCULAR 2024**  
**PRE-CONSULTATION REQUIRED FOR THE USE OF REINFORCED AUTOCLAVED AERATED CONCRETE (RAAC) AS STRUCTURAL ELEMENTS IN BUILDING WORKS**

**Objective**

This circular is to advise Qualified Persons (QPs) for structural works that a pre-consultation with BCA is required if Reinforced Autoclaved Aerated Concrete (RAAC) is used as structural elements in building works.

**Background**

2 Autoclaved Aerated Concrete (AAC) is a form of lightweight concrete made with sand, cement, and/or lime, without coarse aggregates. It is produced by adding an expansion agent to the concrete mix to create air bubbles within it, making the concrete lighter. In Singapore, AAC is commonly used for non-structural purposes, such as non-load bearing partition walls in buildings.

3 In the United Kingdom, roof and floor panels constructed using RAAC were used in building construction from the 1950s until the mid-1990s<sup>1</sup>. Recent concerns have been raised about buildings with these RAAC panels, and professional bodies such as The Institution of Structural Engineers (IStructE)<sup>2</sup> have published documents highlighting the risks associated with these RAAC panels.

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<sup>1</sup> Reinforced Autoclaved Aerated Concrete (RAAC): Identification guidance by Department for Education (DfE), UK.

<sup>2</sup> Reinforced Autoclaved Aerated Concrete (RAAC) Investigation and Assessment – Further Guidance.

- 4 The reported concerns about these RAAC panels include<sup>1</sup>:
- (i) Rusting of embedded reinforcement leading to cracking and spalling.
  - (ii) Cracking, thought to be associated with moisture and temperature-related movements in the planks.
  - (iii) Excessive deflection due to creep.
  - (iv) Floor and roof planks tending to act independently, rather than as a single structural entity.

### Pre-consultation Requirement

5 In light of these concerns, RAAC should not be used as structural elements in building works without sufficient care and precautionary measures taken. QPs whose projects necessitate the use of RAAC as structural elements would be required to pre-consult with BCA on this matter. Pre-consultation with BCA is not necessary for non-structural applications. The project team should assess the suitability for such use.

6 There are several pertinent points in relation to the use of RAAC that may be of interest to QPs, and these are highlighted below for information:

- (i) Technical specification for RAAC – The applicable standard for RAAC is ‘BS EN 12602, Prefabricated reinforced components of autoclaved aerated concrete’. The standard describes the design principles and requirements for safety, serviceability and durability of RAAC. It also encompasses material performance requirements and conformity evaluation.
- (ii) Corrosion protection of reinforcement – The embedded structural reinforcement needs to be coated for corrosion protection.
- (iii) Water tightness – Where water tightness is required, the components shall be protected against penetration of water, e.g. by suitable rendering, coating, cladding or finishes.
- (iv) Minimum bearing length and welded transverse bar at support – IStructE recommends a minimum bearing length of 75mm and in addition, BS EN 12602 recommends at least one welded transverse bar within the support length of the component.
- (v) Deflection – Long term deflection of RAAC panels due to creep shall be calculated and assessed based on BS EN 12602.

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<sup>1</sup> SCOSS Alert, May 2019.

**For Clarification**

7 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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