



# Reinforced Autoclaved Aerated Concrete (RAAC) Decking Safety Alert

## Introduction

The collapse of a school roof in 2019 prompted the Standing Committee on Structural Safety (SCOSS—now called CROSS) to issue a **safety alert**<sup>1</sup> for buildings built using the same reinforced autoclaved aerated concrete (RAAC) planks.

The report concludes that the concrete planks in question, which were popular in construction between the 1960s and 1980s, although since the publication of the report RAAC planks have been discovered in roof construction dating from the 1990's, and are much weaker than traditional concrete due to the way they are made.

The latest expert investigation and assessment of **RAAC Reinforced Autoclaved Aerated Concrete (RAAC) panels: Investigation and assessment**<sup>2</sup> has been undertaken by the Institution of Structural Engineers who concluded *'Assessments of buildings with RAAC panels are recommended to include a balance of risks for the continued use of the building against the benefit of strengthening or replacement of the panels. The assessment should include a robust risk assessment and include consideration to the on-going monitoring and future management of the RAAC panels. The failure of the panels which resulted in the SCOSS Alert was a sudden failure and could be an indication that it was due to a brittle shear failure at or close to the bearing. Based on this a cautious approach to the assessment of RAAC panels is recommended and assessments should only be undertaken by a Chartered Structural Engineer with experience in the investigation and assessment of reinforced concrete structures.'*

Roofing contractors and manufacturers that carry out condition surveys on flat roofs are in a prime position to alert building owners to the risks of RAAC planks being present on a building, especially occupied public buildings such as a school or hospital.



Figure 1: RAAC plank with visible stress cracks

## Inspection of RAAC planks during a roof survey

The 1996 BRE IP 10/96 Reinforced autoclaved aerated concrete planks designed before 1980 outlines a preliminary inspection procedure. RAAC planks are typically 300 - 750 mm wide and 100 - 250 mm deep, with spans of up to about six metres. They typically have a slight chamfer to each edge and often have arc-shaped stripes across the face. The colour varies from white to pale grey.

If planks are visible from the underside, then it is important to inspect these for warning signs of fatigue or deterioration which could include visible cracks (*particularly in the vicinity of the end supports*), evidence of water ingress and corrosion, rust staining or spalling.

Roofs that exhibit excessive deflection, or rainwater ponding, may also be a potential indicator of the presence of RAAC planks. Although this is not a reliable form of assessment as a sagging roof could also be an indicator of overloading or structural deterioration to other roof types. Any external inspections should always be undertaken from a safe location with the necessary safety equipment.

## Next steps if RAAC planks are present in the roof construction

If it is suspected that RAAC planks are present, then it's important to report this to the building owner immediately, highlighting the SCOSS safety alert, recommending that they seek the advice of an appropriately experienced Chartered Structural Engineer. A risk assessment of the space beneath a roof will need to be carried out immediately to ascertain the level of risk dependent on the function of the space. A classroom for example will be a higher risk than an unoccupied storeroom.

The use of the space beneath the roof may need to be discontinued until the roof has been strengthened or replaced.



**Figure 2:** RAAC Plank supported by structural steel



**Figure 3:** RAAC plank on steelwork who is visible stress fracture



**Figure 4:** RAAC plank with exposed aerated concrete



**Figure 5:** RAAC planks visible from inside the building

In all cases where RAAC planks are identified in the roof construction, an appropriately experienced Chartered Structural Engineer should be appointed at the earliest opportunity to carry out a structural inspection of the RAAC planks.

For further clarification on this subject please contact the **NFRC helpdesk**<sup>3</sup>.



### Further information

<sup>1</sup> A safety alert:

[www.cross-safety.org/sites/default/files/2019-05/failure-reinforced-autoclaved-aerated-concrete-planks.pdf](http://www.cross-safety.org/sites/default/files/2019-05/failure-reinforced-autoclaved-aerated-concrete-planks.pdf)

<sup>2</sup> Reinforced Autoclaved Aerated Concrete (RAAC) panels: Investigation and assessment:

[www.istructe.org/resources/guidance/reinforced-autoclaved-aerated-concrete-guidance/](http://www.istructe.org/resources/guidance/reinforced-autoclaved-aerated-concrete-guidance/)

<sup>3</sup> NFRC helpdesk:

[helpdesk@nfrco.co.uk](mailto:helpdesk@nfrco.co.uk)

Information on Reinforced Autoclaved Aerated Concrete (RAAC)–Local Government Association:

[local.gov.uk/topics/housing-and-planning/information-reinforced-autoclaved-aerated-concrete-raac](http://local.gov.uk/topics/housing-and-planning/information-reinforced-autoclaved-aerated-concrete-raac)

Reinforced autoclaved aerated concrete in roofing in schools–GOV.UK ([www.gov.uk](http://www.gov.uk)):

[www.gov.uk/government/publications/reinforced-autoclaved-aerated-concrete-in-roofing-in-schools](http://www.gov.uk/government/publications/reinforced-autoclaved-aerated-concrete-in-roofing-in-schools)

Reinforced Autoclaved Aerated Concrete planks–The Institution of Structural Engineers ([istructe.org](http://istructe.org)):

<https://www.istructe.org/get-involved/study-groups/reinforced-autoclaved-aerated-concrete-planks/>

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