Newsletter 58

Confidential Reporting on Structural Safety (CROSS)

This month we highlight a report from the latest CROSS newsletter raising further issues with defective RAAC planks in flat roofs.

908: Failure of RAAC planks in schools

Report

Having read the May 2019 SCOSS Alert on *Failure of Reinforced Autoclaved Aerated Concrete (RAAC) Planks*, a structural engineer has contacted CROSS to share their experience of working on projects with RAAC planks. In 2017, they were asked to investigate an RAAC roof which had collapsed in a school. Luckily, there was no one in the classroom at the time of the collapse.

According to the reporter, the cause of the collapse was a shear failure due to inadequate bearing following some structural alterations made by the school. The failure was triggered by outfall gutters becoming blocked, which allowed ponding of water on the roof to quickly build up during a storm. The reporter carried out a full structural survey of the school and found numerous other signs of progressing defects similar to those highlighted in the SCOSS Alert.

In 2019, the reporter was asked to investigate the partial failure of an RAAC plank at another school. Temporary props were installed to prevent collapse of the RAAC planks. The reporter carried out a full structural survey of the school and again found numerous defects in the planks, which were mainly related to historic roof leaks which caused the reinforcement in the planks to corrode and thus lose bond with the concrete.

The reporter is now frequently encountering RAAC planks in school roofs and their experience suggests that these planks are becoming more defective with time. They have also found that many schools do not even know that their roofs are constructed using RAAC planks and are therefore not aware of the risks.

CROSS Panel comments

In a departure from our usual practice, this report was published in advance of the newsletter due to the possible urgency of the issues.

It is one of several that was received following the publication of the SCOSS Alert on *Failure of RAAC Planks* in May 2019. These confirm that there are considerable areas of roofing consisting of RAAC planks in use in public buildings in the UK. It appears that not all of these have been identified, so structural engineers and building professionals need to be aware of the situation and, when possible, check for RAAC on large flat roofs built around the 1960s–80s.

Box 1. What is RAAC?

Autoclaved aerated concrete (AAC) is different from normal dense concrete. It has no coarse aggregate, and is made in factories using fine aggregate, chemicals to create gas bubbles, and heat to cure the compound. It is relatively weak with a low capacity for developing bond with embedded reinforcement.

When reinforced (reinforced AAC: RAAC) to form structural units, the protection of the reinforcement against corrosion is provided by a bituminous or a cement latex coating, which is applied to the reinforcement prior to casting the planks. The reinforcement mesh is then introduced into the formwork and the liquid AAC mix added.

> **"[THE REPORTER'S] EXPERIENCE SUGGESTS THAT THESE PLANKS ARE BECOMING MORE DEFECTIVE WITH TIME**

The Local Government Association, the Department of Health and Social Care, and the Department for Education have advised owners to check their premises and make inspections to ensure that they know what they own, and if RAAC is suspected, to have structural assessments made.

It is not surprising that schools do not know the composition of the structures in their buildings. By way of explanation, a description of RAAC is given in **Box 1**.

An interest group has been set up to monitor the situation and to recommend further research into the extent and nature of the problems. The group will be interested to hear of further experiences and anyone looking for more information should contact **structures@structural-safety.org**.

Full newsletter

Newsletter 58 also contains the following reports:

- →| 904 Structural issues with cladding
- →| 882 Post-tensioned slab failure
- →| 886 Unconservative design of flat slab
- →| 906 Missing punching shear reinforcement
- →| 873 Propping of post-tensioned slabs
- →| 911 Suspended ceiling replacement in high-rise block
- →| 915 Crane outrigger loads underestimated due to misuse of software
- →| 889 Dangerous substitution of lintels on domestic projects

Read the newsletter in full at bit.ly/CROSS_NL_58

WHAT IS CROSS?

Confidential Reporting on Structural Safety (CROSS) is a confidential reporting scheme established to capture and share lessons learned from structural safety issues which might not otherwise have had public recognition, with the aim of preventing future failures.

Analysis of the reported safety issues can provide insight into how the safety concerns or events occurred and spur the development of measures to improve safety.

SUBMIT A REPORT

Submit a report to CROSS at www.structural-safety.org/confidential-reporting/submit-report/.

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