

Fire safety in occupied buildings during works: lessons from CROSS Safety Reports

Emma Shaw, Content & Engagement Manager at CROSS, draws on a series of recent reports to highlight fire-safety issues that may arise when works are carried out on occupied buildings.

In late November, a fire engulfed several high-rise buildings at the Wang Fuk Court apartment complex in Hong Kong, tragically resulting in at least 160 fatalities. The tower blocks were undergoing renovations when the fire began. While it is too early to comment on the exact cause or contributing factors, as an official investigation is under way, CROSS wishes to highlight a broader point regarding fire-safety risks in occupied buildings during works.

It is important that engineers and others working in the built environment remain aware of these risks. Most buildings will undergo refurbishments, upgrades or remediation during their lifetime, often while they are still occupied. Such works can introduce fire risks to occupants that were not anticipated in the original design and may not be adequately managed unless specifically addressed.

Recent CROSS Safety Reports have highlighted a pattern of fire safety in occupied buildings being compromised during works. Failures in contractor competence, building management, and the review of fire risk assessments may be exposing occupants to unnecessary danger.

Failure to maintain fire-safety systems

One of the most concerning trends is the failure to maintain fire-safety systems during building works. Contractors often underestimate, or even fail to recognise, the importance of critical systems. In some cases, for example, automatic opening vents (AOVs) – a type

of safety equipment – have been mistaken for standard windows.

The consequences of disabling or obstructing safety systems are serious:

CROSS Report 1336: Sprinkler system deactivated during construction works

<https://bit.ly/CROSS-1336>



This report describes how a fire spread uncontrolled in a large retail warehouse, resulting in major property loss. The sprinkler system had been deactivated.

CROSS Report 1380: Automatic Opening Vents covered during remediation work

<https://bit.ly/CROSS-1380>



CROSS Report 1347: Automatic Opening Vents not functional after two cladding remediations

<https://bit.ly/CROSS-1347>



These reports highlight instances where AOVs were covered or left non-functional after cladding remediation. As essential smoke-control systems, their impairment left occupants at risk.

Such failures often remain unnoticed until a fire occurs. To truly safeguard occupied buildings, we must ensure stringent oversight during construction and maintenance so that critical safety systems are preserved.

CROSS Safety Alert: Smoke vents rendered inoperable by building work

<https://bit.ly/CROSS-Alert-smoke-vents>



This alert draws attention to the safety risks associated with preventing the operation of smoke vents, particularly AOVs, by construction works on existing buildings. It should be read by all contractors, principal contractors, and scaffolders.

Other recurring issues include fire detectors being left covered after decoration works, and fire alarm zones remaining disabled after temporary shutdowns. In some hotels undergoing phased refurbishment, fire doors and compartmentation within staircases have been compromised, placing guests at unnecessary risk. Such oversights are not only dangerous in the present, but also undermine the resilience of the building for the future.

Fire risk assessment: a live document

A consistent theme across CROSS reports is the failure to update fire risk assessments during significant building works. Removing cladding or altering a sprinkler system clearly represents a major change, yet in too many cases, assessments have not been reviewed.

CROSS Report 1237: Responsible Person failed to react appropriately to a smoke control system failure
<https://bit.ly/CROSS-1237>



This report details how a Responsible Person failed to act appropriately when a smoke-control system malfunctioned, leaving residents' safety to chance.

CROSS Report 1153: The potential impact of scaffolding on fire safety
<https://bit.ly/CROSS-1153>



This report highlights that scaffolding erected outside residential buildings can have a direct impact on fire safety, yet risk assessments were not adjusted.

Two further examples illustrate the risks of premature occupation:

CROSS Report 1214: Student accommodation occupied before critical safety features commissioned
<https://bit.ly/CROSS-1214>



This report describes how a building was occupied before critical safety features were commissioned, based on a letter of comfort from the building control body.

CROSS Report 1169: Fire safety concerns for partially occupied Higher Risk Residential Buildings
<https://bit.ly/CROSS-1169>



This report raises similar concerns where the rush to move in compromised resident safety.

These examples underline the fact that fire risk assessments must remain 'live' documents. In the UK, the Regulatory Reform (Fire Safety) Order 2005 requires Responsible Persons to review and update assessments when there is reason to believe they are invalid, or when significant changes

occur. Failure to comply is both unsafe and unlawful. It also undermines efforts to create buildings that can safely adapt to change over their entire life cycle.

Summary

It is essential that engineers remain aware of the fire-safety risks that can emerge when buildings are refurbished, upgraded or otherwise altered while still occupied. A clear understanding of these issues, supported by rigorous oversight and effective risk management, is vital to protecting residents and maintaining safe buildings throughout their life cycle.

Readers are encouraged to review the related CROSS reports referenced in this article for further insights and guidance (www.cross-safety.org).

What is CROSS?

Collaborative Reporting for Safer Structures (CROSS) helps professionals to make structures safer by publishing safety information based on the reports it receives and information in the public domain. CROSS operates internationally in the UK, US, and Australasia. All regions cover structural safety, while CROSS-UK also covers fire safety.



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The secure and confidential safety reporting system allows professionals to share their experiences to help others.

Professionals can submit reports on safety issues related to buildings and other structures in the built environment. Reports typically relate to concerns, near misses or incidents. Find out more, including how to submit a safety report, at <https://bit.ly/cross-safety>. Your report will make a difference.