DIOHAS

Designers' Initiative Of Health And Safety

Meeting Record

Date	22nd November 2021 (Mon), 16:30-18:00
Venue	Video conference using Microsoft Teams
Chair	Paul Bussey
Author	-

Attendees	Name	Initial	Organisation
1	Paul Bussey (chair)	PB	AHMM
2	Alistair Soane (guest speaker)	AS	CROSS
3	Peter Wilkinson (guest speaker)	PW	CROSS
4	Gavin Bull	GB	HSE
5	Gary Burden	GB	PRP Architects
6	Martin Touška	MT	Rolfe Judd
7	Sarah Susman	SS	Scott Brownrigg
8	Peter Taylor	PT	Leslie Clark
9	Pav Singh	PS	Arcadis
10	Mark Reynolds	MR	Boundary Concepts Limited
11	Neil Molloy	NM	Levitt Bernstein
12	David Mulligan	DM	Metwork
13	Chris Ottaway	CO	Ottaway and Associates
14	Richard Price	RP	Sweco
15	Alain Speed	AS	PRP Architects
16	Jeffrey Tribich	JT	Tribich Consultancy
17	Lee Harvey	LH	Redline Fire Safety Consultancy
18	Billy Hare	BH	Caledonia University Glasgow
19	Richard Mills	RM	Reardon Smith Architects
20	Russell Smith	RS	Robinson Low Francis
21	Nick Panayiotou	NP	P&P Architects Ltd.
22	Peter Hegarty	PH	Chapman Taylor
23	Sneha Holis	SH	AHMM
24	Goh Ong	GO	AHMM

NOTE ON COVID-19: Since 23rd March 2020, all DIOHAS meetings will take place over video conference.

Speaker

Presentation Title: CROSS – Collaborative Reporting for Safer Structures

Background:

CROSS collects confidential data on the concerns of structural engineers, fire professionals, and others on structural safety and fire safety. Commentary and advice is published on reported concerns and events so that lessons can be learned. The talk will describe how the system operates and how it influences behaviour and performance. There will be examples of failures and near misses including some recent reports building problems and fires. For more information see www.cross-safety.org

Guest speakers:

Alastair Soane BSc PhD CEng FICE FIStructE
Director of Structural-Safety the group encompassing CROSS (Confidential reporting on structural safety) and SCOSS (Standing committee on structural safety). Extensive experience on UK and International construction projects. Structural safety expert. Previously engaged on major nuclear projects. Member of the Ethics Committee of the Royal Academy of Engineering, the Advisory Group on Temporary Structures, IStructE Committees, and visiting professor of civil engineering at Liverpool University.

Peter Wilkinson EngD CEng FIFireE CSci MIScT
Dr Peter Wilkinson is an experienced fire engineer, whose time is an interesting mixture of conducting fire engineering assignments and fire risk assessments for a wide variety of clients, as well as helping to develop the fire engineering profession through CROSS, the Institution of Fire Engineers and BSI standards development work.

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Details

Link to the recording of the meeting:
https://youtu.be/yyl6avTLZDs

CROSS

Collaborative Reporting for Safer Structures

Alastair Soane and Peter Wilkinson

DIOHAS - November 2021

Overview

- CROSS purpose and aims
- The confidential reporting process, what can be reported and the benefits
- The safety information CROSS provides and where to find it
- Fire

About CROSS

CROSS

COLLABORATIVE REPORTING
FOR SAFER STRUCTURES

CROSS scheme timeline

1976

- SCOSS founded by the IStructE & ICE
- **1995** HSE join to support CROSS

CROSS scheme timeline

- SCOSS founded by the IStructE & ICE
- **1995** HSE join to support CROSS

- Voluntary confidential reporting system launched
- Based on safety reporting in aviation (designed by NASA)

The Institution of Structural Engineers

ice Institution of Civil Engineers

HSE

www.cross-safety.org

CROSS scheme timeline

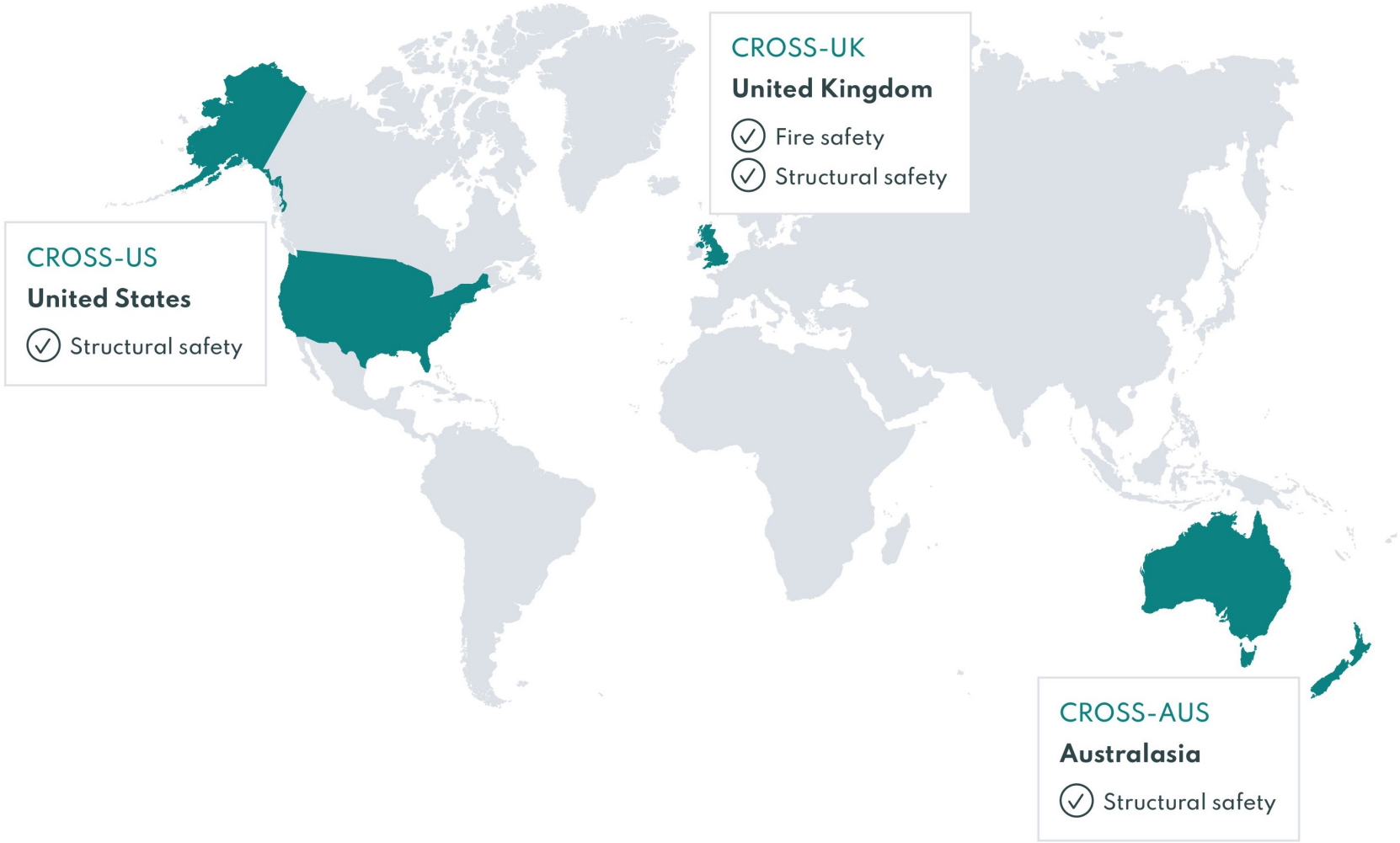
- SCOSS founded by the IStructE & ICE
- **1995** HSE join to support CROSS

- Voluntary confidential reporting system launched
- Based on safety reporting in aviation (designed by NASA)

- CROSS-UK expands into fire safety – supported by IFE
- Hackitt review recommendation
- Relaunch supported by DLUHC

The Institution of Structural Engineers
ice Institution of Civil Engineers
HSE
IFE The Institution of Fire Engineers

CROSS international network



The reporting process – how and what to report

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How the reporting process works

Key principles:

- Confidential & secure
- Simple & transparent
- Easy to access
- Expert insight

Expert Panel Members

Engineers

- Civil & structural
- Fire
- Blast & resilience
- Forensic / expert witness
- Nuclear

Legal

- Insurance & warranty
- Lawyer

Contractors

Products & Testing

Transport

- Highways England
- Network Rail

Fire & Rescue Officer

Regulators & Government

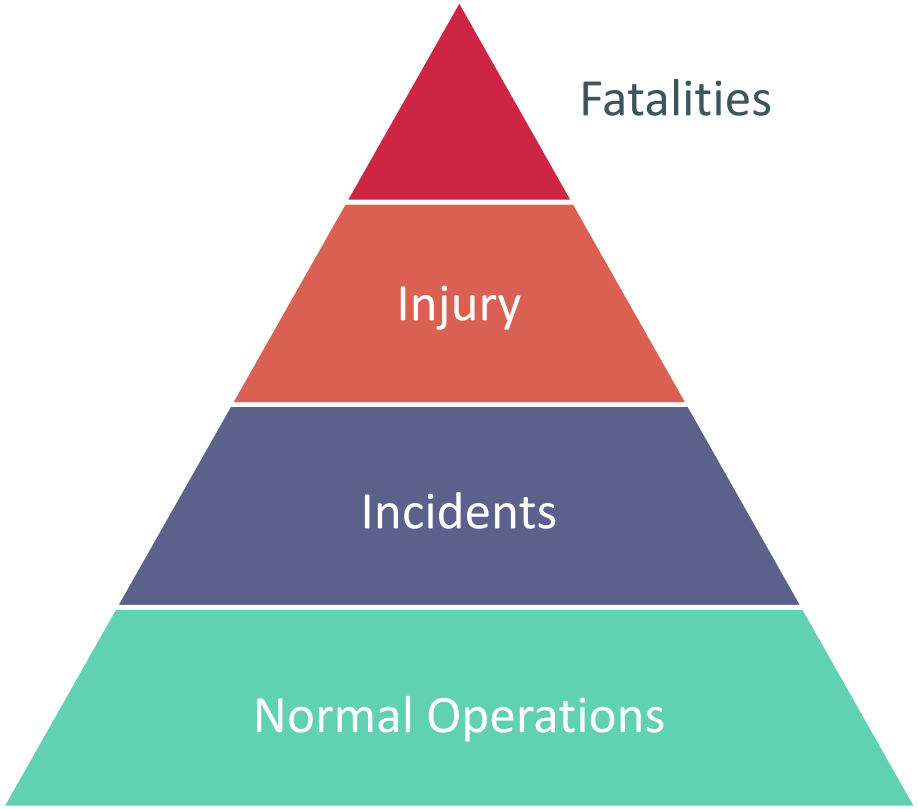
- MHCLG
- Building Control
- HSE

Early careers members

Pyramid of risk

Regulatory Authorities

CROSS



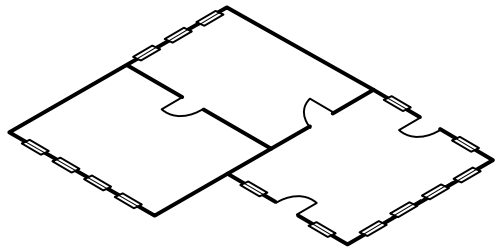
Precursors

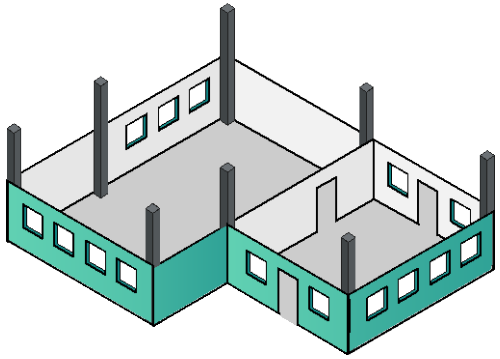
Diagram courtesy of ASRS

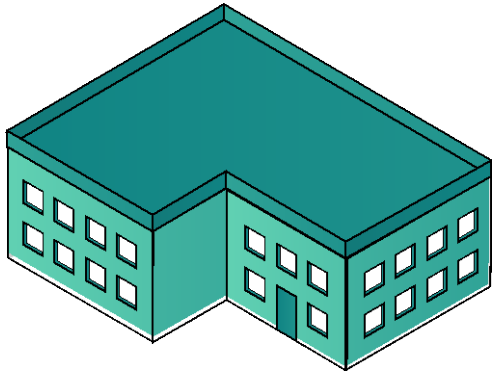
What can be reported?

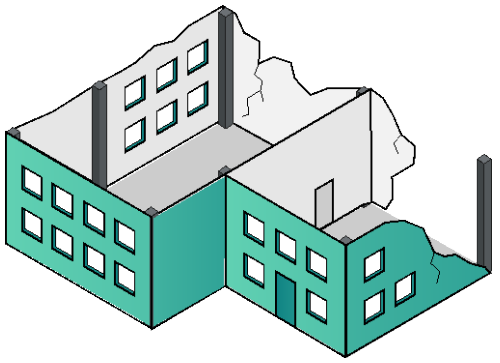
Fire and structural safety

Design | Construction | Operation or occupation | End of life

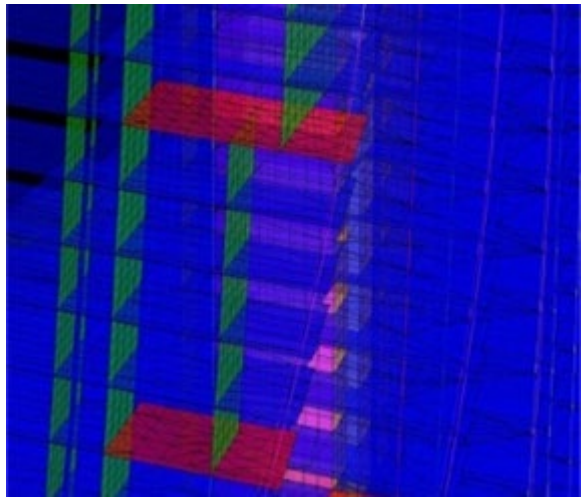








From design to demolition



CROSS needs your reports

Architects & designers

Regulators & Government

Fire & Rescue Officers

Asset owners & managers

Contractors & builders

All professionals who work with buildings and other structures

Surveyors

Engineers

You!

Academia & research

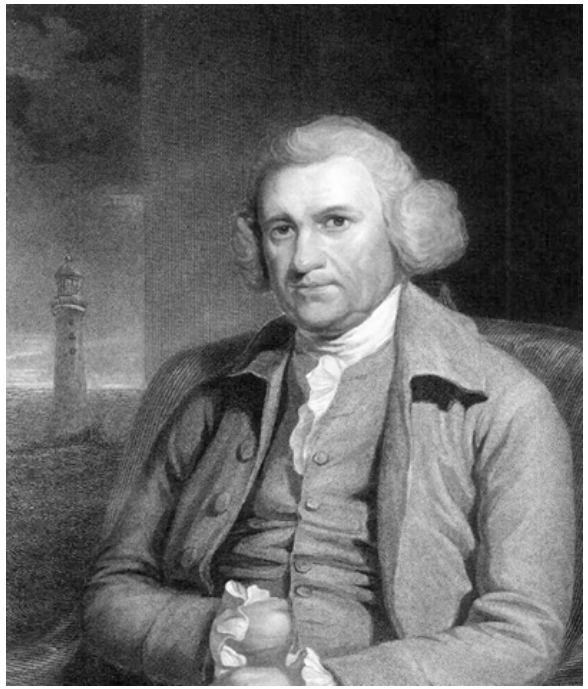
Manufacturers & suppliers

Legal

Benefits of safety reporting

Make structures safer and ultimately save lives and reduce injuries

- Promotes culture change
- Identifies shortfalls & pre-cursors
- Improves competence
- Lessons learned shared
- Informs regulatory & industry activities
- Assists with horizon scanning



Personal benefits

For individuals

- Continuous learning and development
- Improve your knowledge of safety
- Keep up to date with emerging safety issues
- Protect the reputation of your organisation
- Protect your career
- Protect your well being

The safety information CROSS shares

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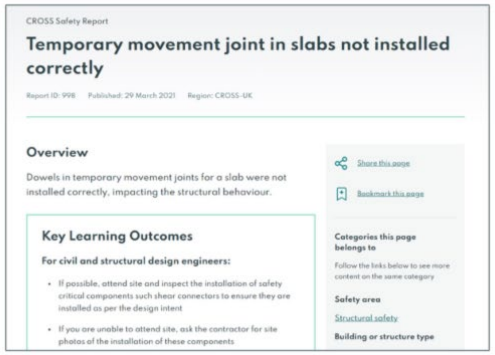
FOR SAFER STRUCTURES

www.cross-safety.org

Safety information we provide

CROSS Safety Reports


CROSS Safety Report

Temporary movement joint in slabs not installed correctly

Report ID: 998 Published: 29 March 2021 Region: CROSS-UK

Overview

Dowels in temporary movement joints for a slab were not installed correctly, impacting the structural behaviour.

Key Learning Outcomes

For civil and structural design engineers:

- If possible, attend site and inspect the installation of safety critical components such shear connectors to ensure they are installed as per the design intent
- If you are unable to attend site, ask the contractor for site photos of the installation of these components

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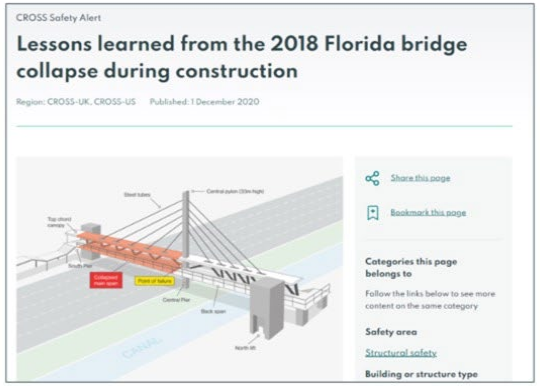
Safety area

Structural safety

Building or structure type

CROSS Safety Alerts


CROSS Safety Alert

Lessons learned from the 2018 Florida bridge collapse during construction

Region: CROSS-UK, CROSS-US Published: 1 December 2020

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Safety area

Structural safety

Building or structure type

CROSS Theme Pages


CROSS Theme Page

Safety of structures in the climate emergency

Region: CROSS-UK, CROSS-AUS, CROSS-US

In the current climate emergency and the race to achieve zero emissions, we must ensure our structures remain safe as we develop and implement any climate-motivated innovation or change of approach.

This Theme Page will be used to both collate content around this topic and to allow professionals to share safety issues for others to learn from.

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Safety area

Fire safety

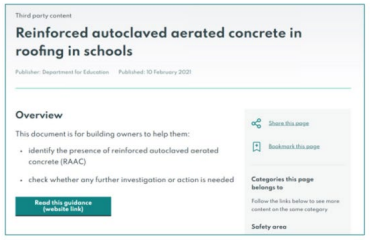
Structural safety

Design

Sustainability

Content type

Third party content


Third party content

Reinforced autoclaved aerated concrete in roofing in schools

Publisher: Department for Education Published: 10 February 2021

Overview

This document is for building owners to help them:

- identify the presence of reinforced autoclaved aerated concrete (RAAC)
- check whether any further investigation or action is needed

Read this guidance (website link)

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Categories this page belongs to

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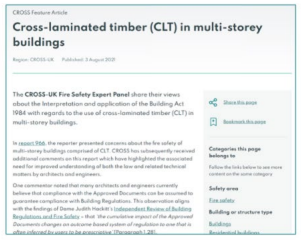
Safety area

CROSS Feature Articles


CROSS Feature Article

Cross-laminated timber (CLT) in multi-storey buildings

Region: CROSS-UK Published: 3 August 2021

The **CROSS-UK Fire Safety Expert Panel** share their views about the interpretation and application of the Building Act 1984 with regards to the use of cross-laminated timber (CLT) in multi-storey buildings.

In report 966, the reporter presented concerns about the fire safety of multi-storey buildings comprised of CLT. CROSS has subsequently received additional comments on this report which have highlighted the associated need for improved understanding of both the law and related technical matters by architects and engineers.

One commentor noted that many architects and engineers currently believe that compliance with the Approved Documents can be assumed to guarantee compliance with Building Regulations. This observation aligns with the findings of Dame Judith Hackitt's Independent Review of Building Regulations and Fire Safety – that 'the cumulative impact of the Approved Documents changes on an outcome based system of regulation to one that is often inferred by users to be prescriptive (Paragraph 1.28).

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Buildings

CROSS Theme Pages

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Examples

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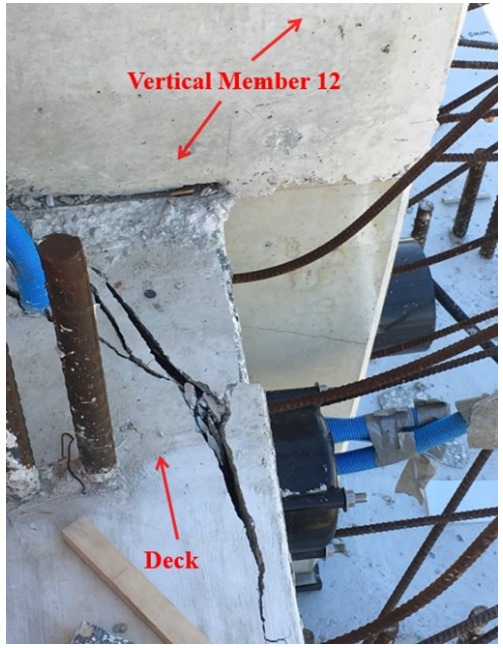
Balcony collapses

CROSS Safety Report

Florida bridge collapse 2018

CROSS Safety Alert

Cracks



Poor practice on temporary stages

CROSS Safety Report

Lack of stability

Precursors

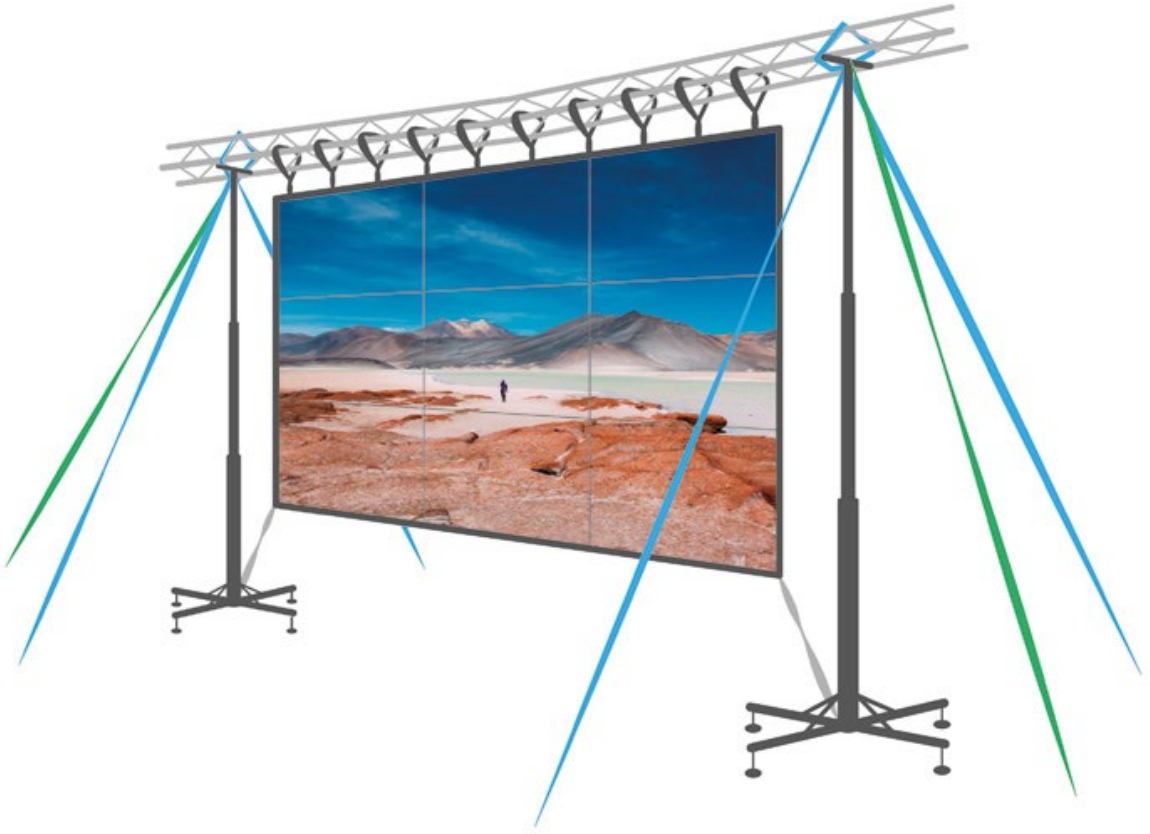
Lack of anchorage

Temporary stage structures

CROSS Safety Alert

Temporary cinema screen

CROSS Safety Alert



Structural stability/integrity of steel frame buildings

CROSS Safety Alert

Fifteen days before collapse

Collapsed structure

Inquiry into the construction of Edinburgh Schools

CROSS Safety Alert

Failure of reinforced autoclaved aerated concrete (RAAC) planks

CROSS Safety Alert

Building Safety Bill

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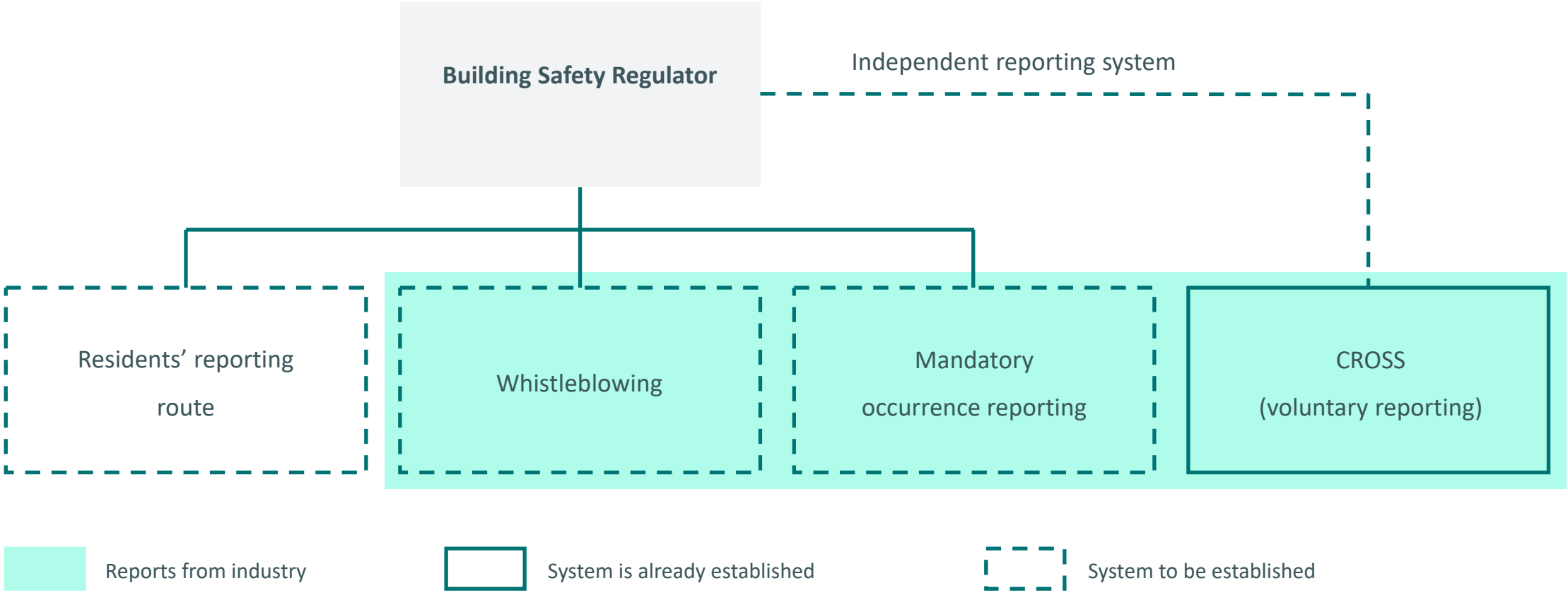
www.cross-safety.org

Building Safety Bill (England) 2021

- Consequence of Grenfell fire
- Systematic regulatory approach to prevent serious fires or structural failures
- Stringent requirements for over 7 storeys or 18m in height
- Make sure that new and existing buildings in England are;
    - designed and constructed to be safe and of a good standard, and
    - are operated and managed in a way that protects people from the spread of fire or structural failure

Overview of safety reporting systems



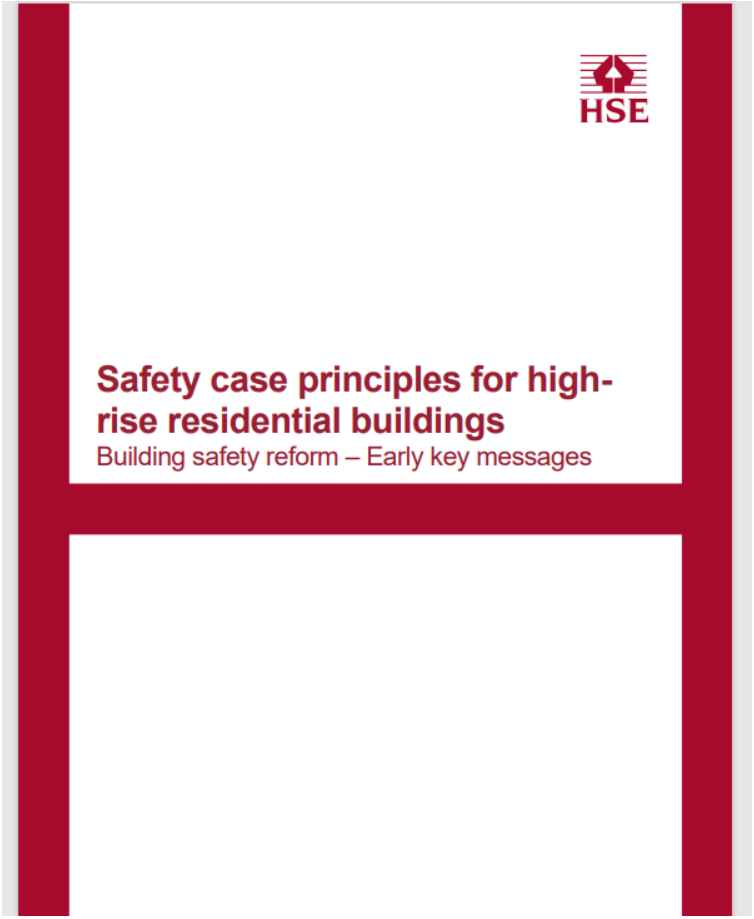
Safety cases

Hazard - something with the potential to cause harm or damage

Risk - is the likelihood that a person is harmed, or something is damaged in a certain way by a hazard

Safety case

- identify the hazards with the potential to cause harm
- assess how people will be harmed and how likely it is to happen
- make sure measures are in place that effectively reduce these risks and limit or mitigate the consequences



Safety case for an existing building

Image courtesy of Google Earth.

- What could go wrong?
- How could it go wrong?
- How significant the impact could be on:
  - the spread of fire
  - structural failure
  - cascading events

Catastrophes keep happening

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COLLABORATIVE REPORTING
FOR SAFER STRUCTURES

Mexico City bridge collapse

- Sudden collapse of rail bridge in May 2021
- Steel structure
- Construction problems
- Stud welding issues

Surfside building Miami

- Progressive collapse of 12 storey condominium in June 2021
- Reinforced concrete structure
- 40 years old
- Investigations ongoing by NIST

[Joe Raedle]/[Getty Images News] via Getty Images

Taiwan fire

Courtesy of Wikipedia Attribution: 高雄市政府

- 14 October 2021
- Fire in mixed-use 13 storey 40 year old building
- Most residents were senior citizens
- 46 deaths and 41 injuries

Building collapse in Nigeria

- 1 November 2021
- 21 story residential
- Reinforced concrete
- During construction
- Over 40 deaths

Astroworld festival crush in Texas

- 5 November 2021
- Crowd surge at a music event
- 8 deaths
- Such catastrophies have happened before

Key lessons

1. Similar issues recur.
2. Inadequate communications and a lack of responsibility.
3. Lack of competency at all levels is a recurring theme.
4. Deterioration and degradation in older structures coupled with a lack of maintenance.
5. Changes in architectural trends can have unforeseen consequences.
6. Poor understanding of computer analysis and design packages can lead to failures.
7. There is a shortage of structural engineers in industry leading to safety critical decisions being made by others.
8. Pressure on fees is creating potential problems for the future.
9. The unwillingness of clients to have designers inspect construction works is a worry.
10. Many reports talk of poor supervision on site.

Fire safety

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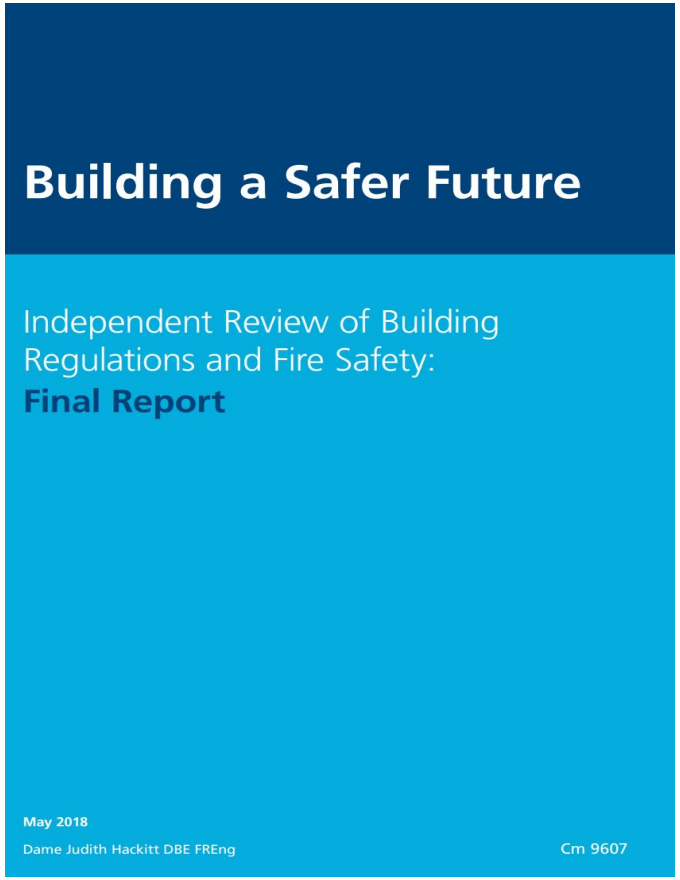
Grenfell Tower fire 2017

Building a Safer Future - Recommendation 1.4 c

'…the current CROSS scheme should be extended and strengthened…'



Hackitt review

- Recommendation that the CROSS scheme (Confidential Reporting on Structural Safety) should be extended and strengthened to cover all engineering safety concerns.
- With support funding from the Ministry of Housing, Communities & Local Government (MHCLG), on 29 March 2021 CROSS officially expanded its service to cover fire safety.

Fire safety reporting

- Reports received by independent informed body
- Initial analysis /evaluation
- Anonymised report sent to Fire Safety Expert Panel for comment
- Report and comments published
- Agreed taxonomy to support research/further future analysis
- Trend reporting
- Periodic reporting

Liverpool Echo Arena

CROSS Safety Alert

Car park.

Fire in multi-storey car parks

CROSS Safety Alert

Fire on separate levels. Image courtesy of Liverpool Fire and Rescue Services (MFRS).

Disintegration of floor slab. Image courtesy of MFRS.

Major safety defects in hospital

Report ID: 826

Overview

A number of construction defects were found in a hospital following the inspection of the external wall system.

This is one of a legacy of defects that are being found during surveys prompted by the failures identified by the Grenfell Tower tragedy.

The risk of collapse of multi-storey CLT buildings during a fire

Report ID: 966

Overview

A reporter presents concerns about the fire safety of multi-storey buildings comprised of cross-laminated timber (CLT) structures.

These concerns suggest to them an unacceptable risk of collapse in the event of an uncontrolled fire.

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Report ID: 966

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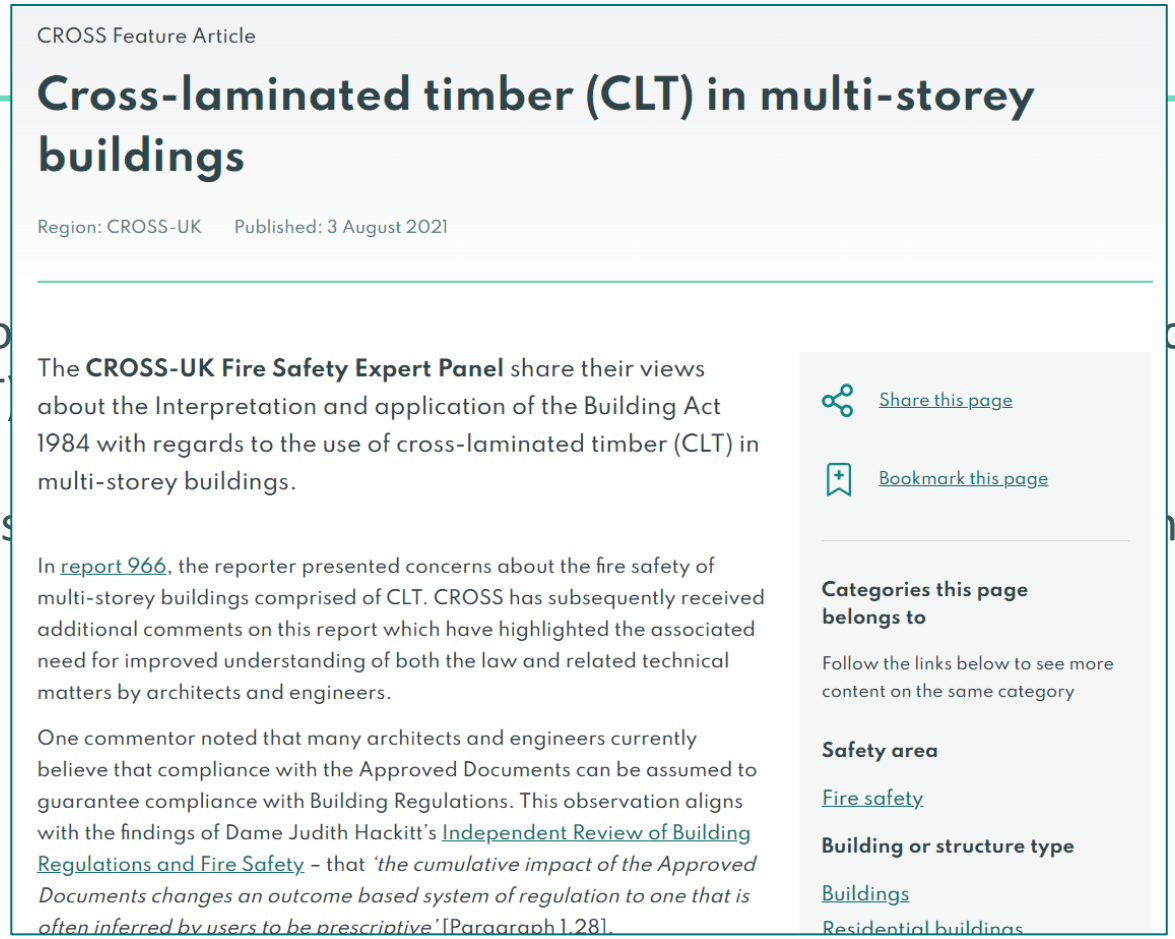

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Safety area

Fire safety

Building or structure type

Buildings

Residential buildings

Fire compartmentation detailing issues

Report ID: 1039

Overview

Two reports have been received concerning fire compartmentation detailing issues; one on the incorrect installation of fire batts and the other on the incorrect use of intumescent material.

Composite deck boards in common access balconies

Report ID: 1048

Overview

A reporter informs CROSS that decking boards formed of a composite material contributed to external fire development in a block of flats and rendered the means of escape and firefighting access unusable.

The report relates to buildings where the access to flats is by means of an external walkway, often referred to as a common access balcony, common balcony, or a balcony/deck approach.

Fire safety concern over green walls

Report ID: 976

Overview

This report discusses how building close down procedures that include isolating automated water systems might result in the drying out of green walls, thus presenting a significant fire hazard in external walls.

Stay up-to-date with CROSS

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www.cross-safety.org

CROSS account – sign up

bit.ly/cross-account

Get involved

- Keep up to date with emerging safety issues
- Use the information on our website to make structures safer
- Encourage others to join CROSS
- **Submit a report!** www.cross-safety.org/uk/submit-a-report-uk

Questions?

Create a CROSS account

- Go to bit.ly/cross-account
- Fill in your details and set your email preferences

SCAN ME

CROSS on social media

Twitter

@cross_safety

LinkedIn

Collaborative Reporting for Safer Structures (CROSS)