



Eich cyf/Your ref
Ein cyf/Our ref

27 November 2017

STRUCTURAL DESIGN OF CLADDING SYSTEMS

The purpose of this letter is to make you aware of a risk that has been identified with certain types of cladding system. It is expected that the guidance which follows, developed by the Department for Communities and Local Government in England, has or will be issued by the other administrations in due course.

It has been brought to our attention that External Wall Insulation (EWI) systems with a rendered (or brick slip) finish may in some circumstances be vulnerable to deterioration resulting in parts of the cladding system falling from buildings.

We are not aware of any injuries arising from this problem, but it is important that you note the following information and take appropriate action to ensure the safety of your tenants and people moving around the buildings for which you are responsible. There is no suggestion in this instance that the overall structural safety of buildings is compromised.

Structural design of cladding systems

All cladding systems need to be designed to resist pressure from predicted wind loads in the location and at the height that they are installed. The fixing system holding the cladding system on to the wall must be adequately designed to deal with predicted loads, including the weight of the cladding system itself. Guidance on how to achieve this is provided in paragraphs 3.3-3.8 of Approved Document A (Structure) of the Building Regulations. This includes undertaking suitable design calculations.

Design calculations for EWI systems typically include safety factors to ensure that even where an installation is not perfect, or in the event that unusual circumstances

occur (such as high winds), the system will remain safe. This information should be available from system manufacturers. However, evidence submitted to Government suggests that in some circumstances these safety factors are being eroded by inadequate design (structural calculation methodologies) and / or poor installation.

Where inadequate design and / or installation reduces safety factors, cladding systems are more vulnerable to damage from high wind speeds, to other installation defects such as poor water-tightness (which can lead to insulation becoming water-logged and heavier as a result) and to variations in the design and installation quality of mechanical or adhesive fixings. These potential defects increase the risk of cladding becoming detached from the building and falling from height, and this in turn poses risks to life safety. With rendered, or brick slip EWI cladding systems there is a heightened risk of the render or brick slip layer detaching from the insulation underneath where these defects are present.

Government is aware of a small number of instances where inadequate design and / or inadequate installation has resulted in cladding falling from tall buildings. Building owners should therefore consider the following actions:

Which buildings could be affected

It is good practice to periodically check the condition of any EWI system (see note **Annex A**) on any building of any height and all building owners should consider the need to undertake such checks as part of their maintenance and management plan.

Due to the nature of the problems that have been identified this advice is particularly relevant for tall buildings subject to high wind loading due to high wind speeds. Specifically this advice should be followed if you own a building which;

- Has been clad or over clad with an EWI system; and
- Is over 18 metres in height; and
- Particularly if the building is in an exposed location.

If not undertaken recently, building owners should consider an immediate audit or review of the buildings for which they are responsible identifying their height, construction, location and wind exposure to identify if the buildings fit into the above categories. It is likely that you will need to seek expert advice from a suitably qualified person such as a Chartered Structural Engineer or Chartered Building Surveyor. A link to the relevant section of Institute of Structural Engineers and RICS websites are provided below:

<https://www.istructe.org/finding-a-structural-engineer/notice-to-building-owners>

www.ricsfirms.com

There is no prescribed definition of an exposed location but typically this would include buildings in an elevated or hill-top location, sea side locations, areas where the surrounding terrain will not provide sheltering from wind, or a combination of

these factors. In dense cities, funnelling will need to be considered, which could increase the wind effect.

New External Wall Insulation installations

In order to ensure risks are mitigated in future installations, the Welsh Government has written to all Building Control Bodies and schemes highlighting the need to ensure adequacy of structural design and installation in accordance with the requirements of the Building Regulations – the relevant circular letter can be found at the link below;

<http://gov.wales/topics/planning/buildingregs/circulars/building-regulation-circular-wgc015-2017/?lang=en>

Existing Rendered External Wall Insulation

Steps also need to be taken to assess existing installations. It is recommended that for relevant buildings, assessment should be undertaken to reassure building owners of the structural integrity of their EWI cladding systems. Visual condition inspections may still be advisable for owners of buildings of any height with a cladding EWI system (see below).

In general, the key steps for building owners are as follows (further guidance is provided at Annex A) however building owners should also take their own professional advice;

- Undertake a visual recorded survey of cladding condition including checking that waterproofing is adequate and that the cladding and insulation is not absorbing moisture (which can increase risk of structural failure). Cladding systems are likely to fail gradually rather than catastrophically, meaning that ongoing visual inspection will also be important in identifying any at risk cladding systems in the longer term.
- Obtain design records, construction details, structural calculations, EWI system specifications, system certification for the system, and appoint suitable expert advisors to assess the adequacy of the design and installation.
- On the basis of both of the above, establish what further non-invasive or invasive investigations are needed to confirm that the cladding is installed in a way which can safely resist likely wind-loading and dead loads.
- If necessary, commission remedial work to address inadequacies in the design or installation of the system. Also consider mitigating measures to protect people moving around the outside of the building until those works are complete.
- Consider what ongoing inspection regime is advisable.

The UK Government is working with the building safety Independent Expert Advisory Panel and the Standing Committee on Structural Safety (SCOSS) and in co-ordination with the devolved administration to assess whether further guidance on the structural design, installation and maintenance of EWI systems is necessary.

Maintenance and alterations

Building owners with rendered EWI systems also need to review procedures for making alterations or additions to walls where this involves fixing to or making holes in the surface. Maintenance manuals for EWI systems should provide further detail on specific considerations in relation to each type of system.

In general, wherever work is undertaken, care must be taken to ensure that fixings or penetrations (such as fixing of a satellite dish, hanging basket, washing line or penetrations for cables or pipes) are sealed with a durable finish and do not permit water to enter into the cladding system.

Next steps

We have written to all local authorities and housing associations. We will also write to organisations representing private sector building owners. Local authorities should also consider circulating this advice to other tall building owners in their area.

Where building owners identify that their building may have inadequate design or poor installation of EWI systems, they should contact enquiries below so that the issues can be logged.

Welsh Government is currently considering its longer term data needs on tall/exposed buildings, I will write again if further advice or guidance is considered necessary.

Enquiries

Any enquiries on this Letter should be addressed to enquiries.brconstruction@wales.gsi.gov.uk

Yours faithfully,



Francois Samuel
Head of Building Regulations