

BUILDING FAILURES

Weathertightness issues are often thought to be limited to a certain type of house, built of a certain material, at a certain time. However Building Surveyors are seeing failures across all types of buildings.

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Failures have been found in all types of buildings. We have seen failures in buildings built any time over the last 25 years, some as recently as the last couple of years. While some materials are more problematic, no materials are immune from poor design choices or being used incorrectly. Brick houses are often thought to be safe but Alexander and Co recently inspected a serious failure in a house clad with bricks.

The release of the new E2/AS1 in July 2005 did not mark the end of building failure.

Other problems usually found

Even the term 'leaky buildings' is misleading. It has become a metaphor for a much wider problem. Buildings are not failing just because of water entry. Water entry is a catalyst that gets a remedial process started after which numerous other failures are almost always discovered.

Structural and fire rating problems are very common. It is surprising just how much structural steel built into buildings is tacked into place with no bolts attached to any part of it.

Serious defects with drainage are also common. As well we currently have two large commercial buildings that show a failure of Building Code Clause E3 *Internal moisture*, rather than E2 *External moisture*.

Knowledge and experience missing

Much is made of the term 'cowboy' builders but this deflects attention and marginalises the problem. Generally contractors want to do a good job and do not set out to cause misery to others. However, there is a chronic lack of knowledge and experience at all levels in the industry and these building failures are the result.



Was wood.

Interestingly everyone seems to think it is someone else who has insufficient knowledge or experience.

Recently a very senior person in the building industry told me that a particular building had no problems with water entry. He knew this because there were no external or internal indicators – no mould on the inside, no stained paint, no dripping water, no wet carpet, no musty smell, no flaking paint and only a few cracks on the outside. 'There was no problem,' he declared, 'Repairs are unnecessary'. However we had already conducted an investigation and knew of extensive water entry and timber decay. The owner proceeded with repairs and saw the amount of timber decay within the wall as it was pulled apart. They saw the parts of the structure that had been merely tacked together and had started to droop. These would have failed within the next few years.

They saw how dangerous the deck balustrade had become.

Some people think there is no problem because they do not know how to recognise it. They also seem unwilling to acknowledge the role of the Building Surveyor, a profession New Zealanders had not heard of 10 years ago.

Targeted repairs often miss the cause

Perhaps the best evidence of this lack of knowledge is the frequency and magnitude of repeat failures that we find. Currently we have four large multi-unit sites where targeted repairs were attempted some years ago and now the owners are back where they started, but resolving to fix the building properly this time. Unfortunately, one of these buildings is now in such bad condition that demolition is the most economical option.

Those promoting targeted repairs often fail to understand the mechanisms behind building failure. There is a reason that we build with drained cavities today: basically absorbent claddings fixed directly to timber framing do not work. Too much water is transferred from the absorbent claddings to the timber framing and the transfer process does not rely on cracks or nail holes.

Changes need knowledge

To overcome the incidence of building failure, and the huge costs that it causes, everyone in the building industry must seek to understand more about building technology, the basic science behind what they are doing. Some random thoughts to start the process:

1. Preservative treatment is *not* an alternative to keeping timber products dry!
2. Question the methods of contractors who have been 'doing it that way for 20 years'. Those methods may no longer apply.

3. Paint does *not* completely stop cementitious products from absorbing water.
4. Cold bridging can cause condensation in very inconvenient places.
5. Polystyrene's high coefficient of expansion may cause problems if other materials used with it expand differently.
6. Drained cavity systems offer less drying capacity than ventilated cavities.
7. Are you sure about the function you are expecting of the wall underlay.
8. Backings for modified plasters may need different support and fixings than stucco.
9. As materials absorb water, the water vapour resistance increases. ❖



Other problems are usually discovered during remedial work. Was this deliberate or an error of co-ordination and management.



Poor specification and application of paint can result in corrosion that is very difficult to repair. Also, finishing the waterproofing onto the steel of the balustrade is unlikely to be successful.