



**TOTAL BUILDING**  
Engineering  
S o l u t i o n s

## Information Booklet - Balconies & Balustrades

### TOPICS:

- ▲ Key Issues in Balcony/Balustrade Works
  - ▲ Balconies & Balustrade Details
- ▲ When are works required on balconies?
  - ▲ Balcony & Balustrade  
Maintenance Checklist





# INTRODUCTION TO BALCONY AND BALUSTRADE RECTIFICATION WORKS



**IN STRATA COMPLEXES, BALCONIES AND BALUSTRADES OFTEN REQUIRE THE MOST EXTENSIVE AND EXPENSIVE REMEDIAL WORK, SO IT'S IMPORTANT TO HAVE A GOOD UNDERSTANDING OF THE ISSUES INVOLVED.**

Knowing what the signs of concrete spalling are, what needs to be done, and how to be safe will save you time, money, and a great deal of stress. The risk of serious injury is increased when it comes to balconies so they tend to be more important than most building features to maintain.

This information booklet aims to assist individual lots owners, Owners Corporations, and Strata Managers, to better understand the structure of balconies and to know what to be on the lookout for in terms of deterioration and instability to be safer and smarter in your strata complex.

First, here are five important things to remember before beginning balcony works:

**Understanding and investigating are important:** While there are many issues which can plague balconies (concrete spalling, water ingress, incorrect drainage, cracking, efflorescence, rusting etc.) all of them generally converge and require rectification when they get to the stage of affecting the structural integrity of the balcony. It's important to understand all the balcony issues, and be familiar with the details explained in this booklet. Make sure every detail is investigated not only by appropriately qualified consultants, but by you first.

**Rusting & efflorescence are not necessarily signs of deterioration:** Rust stains and efflorescence are two of the most common stains on concrete balconies that worry owners and residents, because they are highly visible, but they should not necessarily incite concern. Although rust stains can sometimes indicate a greater internal issue, remember that tie wires can often find their way to the surface of the concrete and rust, and this doesn't affect the integrity of the structure. And, like rust stains, efflorescence is unsightly, but unlike rust, efflorescence is harmless. It is the draining away of salt water which dries and leaves a white trail (see Figure 2, p. 9).

**Know your scope of works:** Prepare a detailed scope of works prior to going to tender so the contractor carrying out the works is accountable and variations or surprises are kept to a minimum. This also makes prices for different contractors easily comparable. We can provide the Scope of Works for you/your contractor if you need. For more detail on the steps from scope of works through to remediation, read the 'Steps to Success' on our website [www.tb resolutions.net.au//Steps-to-Success.php](http://www.tb resolutions.net.au//Steps-to-Success.php)).

**You can complete other building works at the same time:** Balcony remediation projects require scaffolding, which is very expensive, so it's wise to get organised and consider other works that require the scaffolding such as painting, window cleaning/replacement, brick tie repairs or gutter cleaning. Get these done to save money, and then it's also during an already-allocated remediation period so occupants aren't inconvenienced further at another time of year.

**Careful contractor selection is essential:** When choosing the contractor after tender take your time and remember to ask - Are they licensed for the entire remediation works period, and do they have the correct and up-to-date insurances in place?







# Key Issues

**Concrete Spalling:** One of the main issues affecting balconies and balustrades is the deterioration of the steel reinforcement bars within the concrete slab from the inside. This is called concrete spalling or 'concrete cancer' because, like cancer, the problem is not obvious initially, and as it advances, the treatment becomes increasingly difficult and costly. Flaking and cracking of concrete, and corrosion are often signs of decay. Small cracks may look harmless but water can get through any gaps and joints, creating internal damage. The image on the next page is an example of concrete spalling where the steel reinforcement has eroded away.

Contributions to concrete spalling can be faulty concrete specification/design, incorrect placement of reinforcement resulting in inadequate concrete cover where the bar is too close to the surface, or lack of a protective surface where either the waterproof membrane has failed or no protective coating was applied to prevent the ingress of carbonation-causing chemicals. Luckily, it is entirely avoidable by good building design and high quality protective coatings.

**Drainage:** From the balcony/balustrade diagram (p. 8) you can see that a lot of elements are included to both allow water to drain away effectively (the hob, the drain, the spitter pipes), and to restrict water from penetrating the unit and the concrete slab (waterproof membranes). Drainage is exceptionally important for balconies, and lots of issues occur if it fails. Most balconies have one of the following drainage mechanisms installed:

- ▲ Drain connected to a downpipe
- ▲ Drain connected to a downpipe with spitters (see diagram, p. 8)
- ▲ Spitters only as primary drainage
- ▲ No downpipe or spitters (no hob)

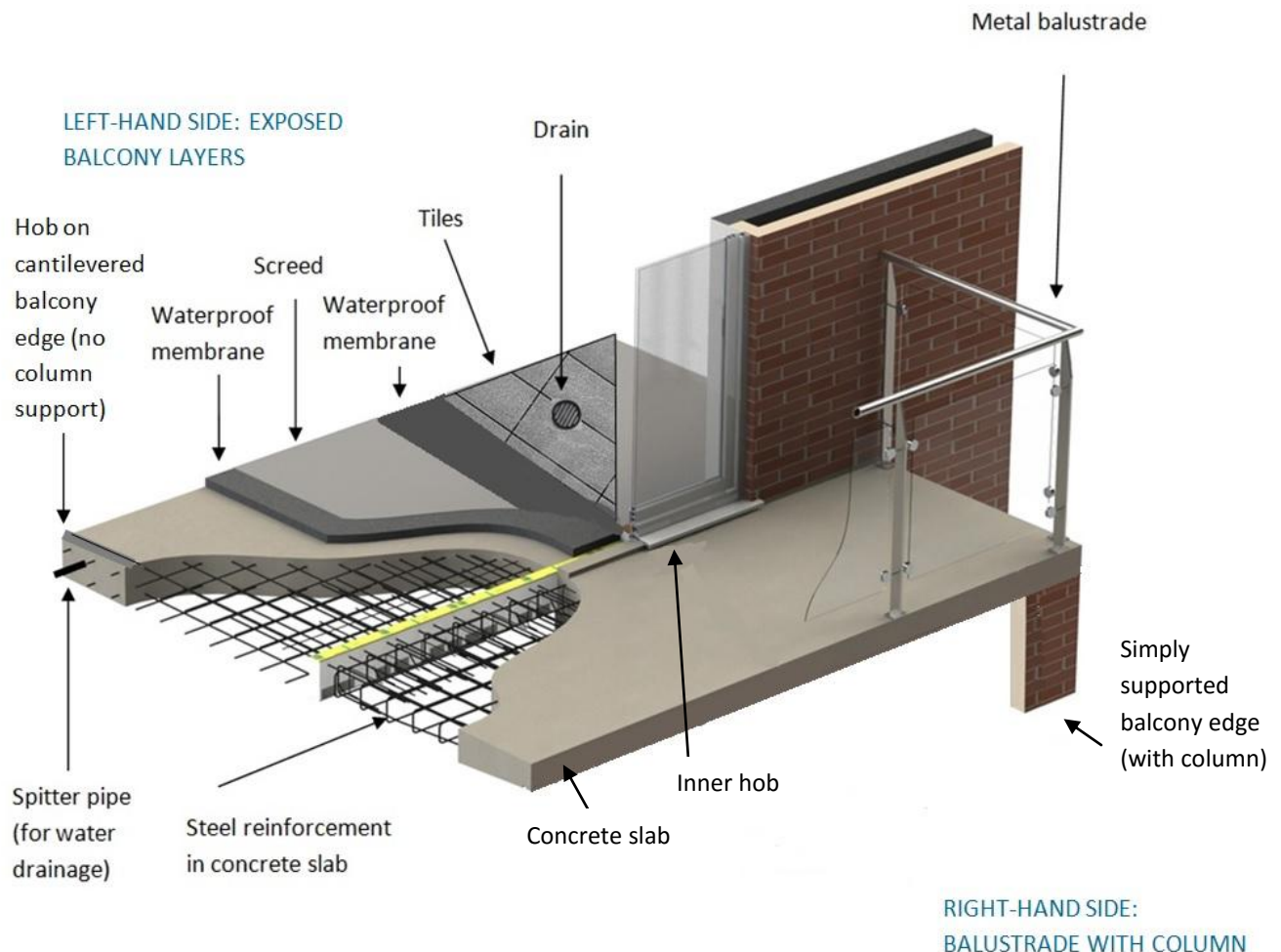
If your balconies don't have a hob (see p. 8 diagram) or any drains then stormwater simply pours off the edge. This is common in older style buildings, but for more modern designs drainage is highly recommended. Most modern designs incorporate a drain leading to a downpipe, and additional spitters that literally 'spit' extra water out from the edge of the balcony.







# Balcony Details



**Reinforced Concrete Slab:** The main structural component of the balcony is usually made of concrete reinforced with steel bars (although it is sometimes constructed of timber). Slabs that extend from the main structure *with* a column or wall on the outer edge are referred to as 'simply supported', otherwise they are 'cantilevered'.

**Waterproof Membrane:** Painted straight on the slab, and often again over the screed, these layers help to prevent water penetration to the concrete slab & unit.

**Screed & Tiles:** Tiles are installed on a bed of 'screed' to create adequate drainage.

**Hob:** A hob is a solid upturn anywhere around the edge of the balcony to control stormwater runoff, preventing water simply cascading off the edge.





Figure 1. Rusted reinforcement bars exposed by erosion in a sea-side location.



Figure 2. Efflorescence on a balcony edge in Sydney Eastern suburbs.



# When are Balcony / Balustrade Works Required?

There are number of significant reasons balcony works are required, including:

- ▲ When you or a building inspector have **found concrete spalling** (see the image below), or have determined that **the structure is dilapidated**, for safety it needs to be re-built.
- ▲ When the Owners Corporation voluntarily decides to **upgrade the balustrades to comply with the Building Code of Australia (BCA)** if the balustrades are low (<1000mm), or have elements that a child could stick their head through or climb onto, they do not comply.
- ▲ **If there are drainage issues** the water needs to drain effectively and this may require surface or invasive remedial work.
- ▲ **If the Owners Corporation decides to upgrade the balconies for aesthetic purposes** because balconies are the most visible and investment-worthy part of a building.











# Balcony & Balustrade Checklist

## Balustrade

- ☐ See if the handrail or balustrade feels loose. Do any of the sides shift when you apply a backwards-forwards pressure on them?
- ☐ Measure your balustrade height. If it is less than 1000mm high then it no longer complies with the BCA requirement and you should consider an upgrade for safety reasons, and also consider that this indicates other parts of the balcony made have aged and require upgrading.
- ☐ Find a ball approx. 125mm in diameter (such as a small soft football; imagine the size of a small child's head) and see if it fits through any open portions of the balustrade bulk. If it can fit through, your balustrade is not BCA compliant.
- ☐ If your balcony is 4 metres or more above ground, check if your balustrade has any horizontal elements that facilitate climbing between 150mm and 760mm. If you find any, your balustrade is not BCA compliant.

## Balcony

- ☐ If the balcony is a wooden structure, check if there are any beams that look to be sagging, cracking or warping.
- ☐ Check for water pooling, and diarise the weather at the time it appears.
- ☐ Look at the balcony from different angles and see if there are any signs of deflection. I.e. Is the balcony leaning?
- ☐ Examine the underside and edge of the balcony for rust stains or exposed steel reinforcement. (Remember that not all signs of rust are necessarily bad).
- ☐ Record any signs of concrete flaking off or cracking (the main indications of concrete cancer).
- ☐ Check for loose or broken floor tiles.
- ☐ Inspect the drainage system by checking to see if the spitter or drainage pipes have anything sticking out of them (twigs, leaves, etc., which may be blocking them).
- ☐ If you have any concerns about the above, make sure you have removed any heavy loads from the balcony, and restrict access (the balcony must be able to withstand loads in accordance with Australian Standards (AS1170)).



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