The right moves – Part 2

Jerry Tyrell concludes his two-part analysis of movement management with some timely advice about fixing cracks.

CPD Academy is a series of 'lessons in print' for Building Connection *readers to help you improve your trade skills and business know-how so that you can keep your edge in today's competitive market. Sydney consultant Jerry Tyrrell, a co-founder of Tyrrells Property Inspections, shares his insights into the basic principles of building practice – what to do, what not to do and where to go to find out more.*

Cracking is the most common call-back contactors get. Often customers mistakenly think that a crack means the building is going to fall down. You know it's not. So you need to be supportive but confident of what you are advising.

The reality is that cracks happen. More than 90% of cracks I see are no problem and patching is best left until the next repaint. Hairline cracking never needs fixing. Even haphazard shrinkage cracking in properly compacted and poured slabs is generally OK – so long as you have cut joints and haven't added water during placement. The 10% of cracks which are serious and do need fixing need careful assessment or you'll be back again and again to fix them.

Last issue, I set out the reasons why buildings move and therefore crack. If you really understand why cracking happens it is more likely you can talk authoritatively to your client and provide positive advice about what you will do and why you are doing it. So please review that article.

And in future, tell clients at the end of the job to expect movement cracks, with all the other warnings such as termite risk or keeping balcony drains clean.

How bad is the cracking?

If most cracking isn't serious, how do you know when it is? Builders need to get scientific and sometimes forensic about complaints regarding cracking. Otherwise, it is too easy to do work you don't need to.

Few experts are concerned by any crack less than 3mm unless it is:

- Diagonal or straight through masonry, eg: bricks or blocks rather than in mortar joints; or
- Unexpected, such as when cracks occur in the middle of a plasterboard sheet.

These same experts become very concerned when cracks are larger than 5mm, worsen over time, are associated with subsidence/deflection/bowing/bulging and/or affect use or function of the building, i.e. windows stick, floors are not level, etc.

Try to maintain the client's confidence and get crack assessment right by working out how serious cracks are step by step. Here's what I recommend:

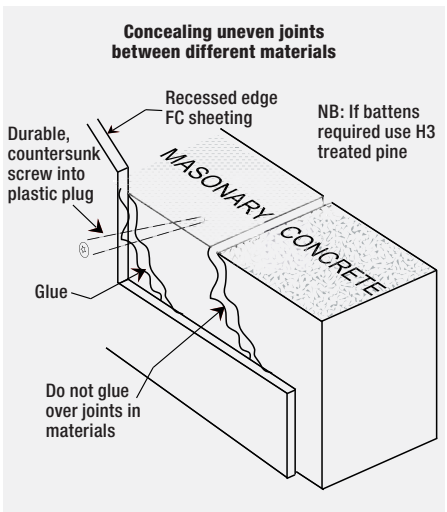
STEP 1 – Respond to the client's concerns quickly and positively. DO NOT be defensive. DO NOT miss an agreed appointment. DO what you say you are going to do, or let the client know if you change your mind

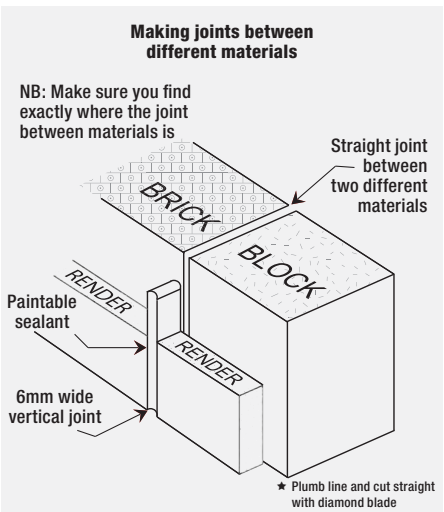
STEP 2 – Assess the severity of the cracking. The table below has some rules of thumb (some of my views are contrary to those in the Crack Classification section of the Footing Code – I reckon a crack wider than 3mm looks pretty horrible and is generally hard to handle).

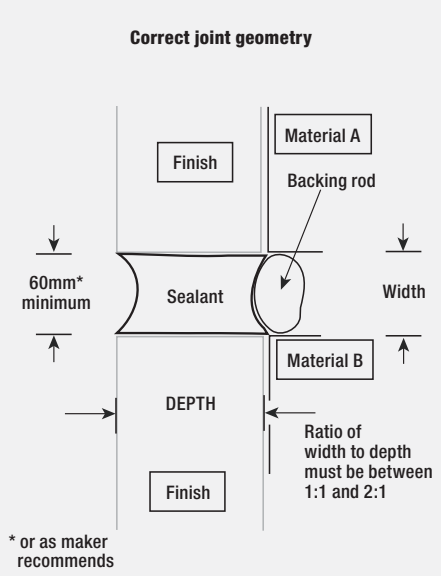
STEP 3 – Work out what is causing any unusual or unexpected cracking. This might mean chatting to (if less than 5mm) or seeking formal advice from (if wider than 5mm) the design engineer. You need to take special interest in his advice on major loads or stresses in the structure.

STEP 4 – Work out the best way to fix it – once and for all.

- Fill it
- Seal it
- Make joint, eg: control joints in larger areas of exterior tiles ➤







Types of cracking and solutions		
Status	**Size**	**Action**
Cosmetic and reparable	Hairline/minor < 1mm Concealed < 2mm NB: > 1mm cracks in concrete slabs could allow termite entry.	Owner should fix these during next redecoration. Recurrence is possible if fixed too early, eg: while construction moisture is still present.
Cosmetic and manageable. Recurrence possible.	Visible < 3mm	Contractor should assess the cause of cracking, make or conceal joints, and make good. Monitor – if there is a risk of continued structural movement, i.e. shrink/swell of soil under shallow footing.
Cosmetic – excessive but manageable. Recurrence likely.	Visible < 5mm Larger components (tiles/sheets) cracked.	Assess the cause. Seek engineering advice. Detail a joint that will accept the likely movement.
Structural – excessive. Structural failure likely (but rarely will a building fall down)	> 5mm, doors/windows affected, floors not level. Obvious damage to numerous components. Cracks more than 5mm are BIG (building owner will usually be left with the risk of unsightly cracking recurring).	Seek immediate advice from an engineer. Investigate further, eg: excavate footing. Strategise remedial works. Major remedial works likely.

- Re-detail or correctly locate existing movement joints
- Cover it – moulding, painted fabric, dry lining.

STEP 5 – Work out when to fix it. This is often the most difficult stage, as owners think you should fix everything immediately. But remember, as I've said previously, 90% of cracks are usually best left until the owner repaints. So you may need to improve your skills when talking to clients. Explain that:

1. They should fix hairline cracking during the next repaint.
2. You will fix larger, unexpected cosmetic cracks and carefully make good affected finishes, but clients should monitor the same cracks and advise of, but not overreact to, any recurrence.
3. You will obtain expert advice if cracking is considered to be structural and undertake rectification in accordance with expert advice, which may include advice to delay repairs.
4. They may need to accept some obvious, but well detailed, movement joints.

STEP 6 – Remind clients of the facts:

1. Twelve months is a good test for likely movement in their building.
2. Most shrinkage and movement will have happened during this 12-month period.
3. They should be reassured by your visit, explanation and planned remedial works. ➤

DISASTER SYMPTOMS

Some movement can be pretty serious. Here are a few things to look out for:

1. Cracking of render where joint was planned between different materials.
2. Cracks in sheet joints of a large ceiling without expansion joints.
3. Crushing of bearing points of beams.
4. Distortion of walls/windows at upper floor openings in brick veneer walls where allowance for shrinkage is inadequate.
5. Lifting/drummy tiles due to excessive expansion of clay tiles.
6. Doming of timber flooring or, at worst, masonry walls pushed out by floor expansion.

Conclusion

The good news is that knowledge about movement is getting better among builders and designers. But one main problem might remain. Consumers don't always trust what you tell them about how/when you can fix cracks. That's why you might need to refer to the OFT Guide to Standards and Tolerances.

In the meantime, here are some tips to use if you are 'under the pump':

1. Most cracks occur in the first 12 months and usually never get any worse.
2. Common cracks in cornices or crazing in render finishes do not need any action.
3. Cracks between concrete and masonry will not go away unless you make a proper joint – see Part 1.
4. Proper joint geometry is always important. (Use backing rods behind sealant joints to maintain sealant thickness at half the joint width – 1 in 2 rule.)
5. Really unexpected movement in properly built buildings needs immediate referral to the design engineer.
6. Don't get caught up in a witch hunt. Please act promptly and leave clients with answers and a timeline so they do not talk to someone else who discredits or stops you from doing what you are proposing.
7. Refer to my Crack Repair Data Sheet, which I can email to readers on request. Contact details below. ■

Jerry has over 30 years' experience as a labourer, tradesman, contractor, architect, mediator, building consultant and author, and has been involved with the inspection and building of more than 60,000 properties (including 30,000 timber pest inspections and 3,000 disputes).

Email your thoughts or experiences to Jerry Tyrrell at jwtyrrell@tyrrells.com

Next issue: Green + durable = minimal climate change.