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GN GUIDELINES NO.222

ANOTHER MITEK ADVANTAGE – JANUARY 2016

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When acceptable deflections are unacceptable

Individual expectations of deflections are extremely variable and very subjective. All too often when we receive a call about a beam or a truss that has failed, the caller actually means that it has sagged and it hasn't actually collapsed.

There is a little-known document issued by a group of state government departments called the *Guide to Standards and Tolerances*. This document usually surfaces when a situation requires legal advice. The deflection limits that it regards as acceptable are often quite a surprise to many.
For example a roof line is only deemed unacceptable if the variation exceeds 20 mm over 4 m and a cornice crack has to exceed 1 mm to be considered a defect.

The personal opinions of homeowners and builders are not always in line with these parameters. A problem arises when their expectations are not met, which is compounded when they discover the standard prescribed limits – which they don't agree with either.

One possible solution is to have a conversation between the supplier and customer before quotation to ensure that deflection expectations are agreed to before timber sizes and grades are determined.

A classic area of dispute is window heads. The Residential Timber Framed Construction standards document (AS1684) includes span tables for timber lintels. The document states that these are based on a maximum deflection ratio of L/300, whereas the guide's requirement for a 'straight' ceiling is 4 mm in 2 m, which equates to a much stricter L/500. So there's a clash between them when the ceiling level is taken literally to include the cornice line above the lintel.

Confused?! The National Construction Code (NCC) grants automatic approval for timber framing designed and constructed in accordance with AS1684 – so that limit should govern, right? However, some would argue, the ceiling framing should have been packed above the framing (effectively pre-cambering the top plate) to reduce the ceiling deflection above the window, or a stronger lintel should have been used to achieve the tighter tolerance.

A similar problem to this arises when contributory elements are not subjected to the same scrutiny as the components they support. For instance, in the guide, a slab has the same tolerance for level as timber framing (to support ceiling lining), that is maximum 4 mm in any 2 m length. We were recently asked to comment on the ceiling levels in a house adjacent to a wall.

The request from the supervisor was accompanied by a photograph of the slab below the wall in question, with a note inserted stating that the "Slab isn't too bad" (Figure 1).

In Figure 2 I added a straight line for guidance – you be the judge. The hump in the bottom plate should have been sufficient indication of a problem in the slab leading to a problem in the ceiling.

Adding to this fracas is a rising trend in pre-lining inspections by so-called 'building professionals' that basically constitute checking the frame and ceiling for 'straightness' with a 2 m long straight edge and a rocking motion and to blame the framing when anything untoward is observed. There is little notice taken of supporting conditions below, which may have influenced the outcome, nor of the (expected) ability of plasterers to exercise some effort and use their skill to level out any unevenness.

As a suggestion, to avoid post-construction conflicts, try and get clear guidance from the customer to ensure that they know what to expect for what they pay for, or conversely, to pay for what they require. There are still plenty of customers out there who are prepared to pay more for a higher quality job that goes beyond the requirements of guides and standards. T

Figure 1

Figure 2

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