

THE IMPORTANCE OF SLABS

In as much as concrete foundations are required to support the entire structure above it, the importance of dimensional accuracy in a concrete slab cannot be understated.

An uneven or dimensionally incorrect slab will have a negative effect on the frames and trusses above; problems that often reveal themselves in various ways.

When investigating reports of sagging girders, I have found that the cause, in the vast majority of cases, can be attributed to installation.

By installation, I do not just mean the frames or trusses but also the slab.

Fortunately, there is good quality of work amongst builders who regularly attend training seminars and constantly strive to improve construction practices but there remain others who continue to perpetuate bad habits through ignorance.

IMPORTANCE OF SET OUT

Fabricators produce frames and trusses that are 'made to measure'.

When the dimensions of a slab do not match the drawings problems arise.

If for example, the slab is short the prefabricated wall frame may end up projecting past the edge of the slab and only be partially supported.

In turn, it is then more difficult to install fixing anchors with adequate edge distance clearance and the brick cavity space is often compromised.

Conversely, if the walls are fabricated on site and follow inaccurate slab dimensions, it creates structural problems for the trusses, such as insufficient bearing, bearing on overhang or incorrect bearing location.

In one case I investigated, there was a run of standard trusses spanning between two girders at either end.

I found gaps of up to 30mm between the truss heel and the girder bottom chord in the bracket simply because the wall frames were set out wrong, forcing the girders into the wrong location.

As a result of such poor fitting (see photo), the bracket rotated and twisted the girder bottom chord after

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the roof tiles and ceiling were installed, causing the girder to "snake" and deflect badly.

The resulting costly rectification could have been avoided if simple steps had been taken to check the slab and frame set out in the first place.

IMPORTANCE OF LEVELS

There are many problems uneven slab levels can cause.

If walls are of unequal height at both ends of a truss the ceiling level is affected; giving the visual impression those lintels or trusses have sagged.

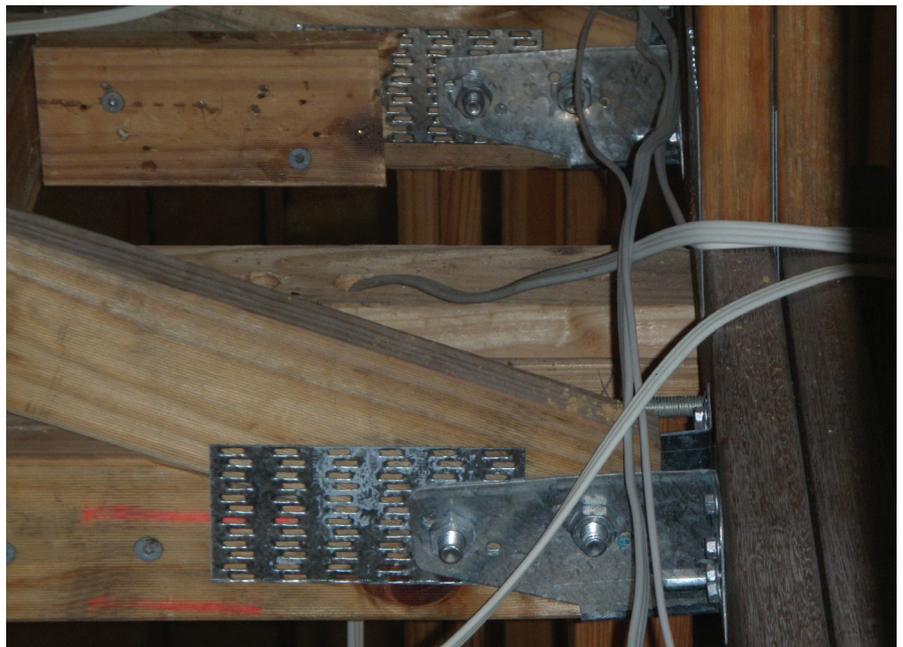
Some builders are under the misguided impression that concrete layers using electronic laser levels produce infallible work.

This is wishful thinking as a number of things could still go wrong:-

1. Lasers need calibration - incorrect or neglected calibration will create mistakes.
2. Formwork must be set out accurately.
3. Formwork must be securely braced as movement can occur when the concrete is poured.

Ideally, all formwork should be double checked by the site foreman before concrete is poured and once again after it is laid to be certain of dimensions and level.

If the slab is not right, the offending



If trusses are supported by an internal wall, it is very important for every wall to be of the same height.

If an external wall were too high or internal wall too low, the truss would not receive any support from the internal wall until it has sagged from overstress.

In reverse, if an external wall were too low or internal wall too high, the truss would rock about the middle and will also become overstressed under load.

area should be rectified before wall frames are erected.

A concrete layer who has been hit in the hip pocket will soon take note of the error of his ways.

The frame installer should not have to accept or fix mistakes that are not of his making.

So the next time a wall frame, door, window, lintel or truss appears not to fit perfectly, include a slab inspection in your checklist.

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