

Ted's News

March 2018

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Controlling Gaps in T&G Flooring



The best laid floor I have seen in recent years was not in Australia but in Hungary. The flooring was Jarrah and was laid by an Hungarian craftsman who had learnt his trade working on million dollar homes in Sydney. What made this floor so good was on site acclimatisation. After the house was at lockup the timber was placed in strip i.e. with 25 mm gaps between the layers for air flow and then the heating was turned on for a month. The floors I saw that were put down by this man did not show any gapping to talk of. For the owners, acclimatisation was a small price to pay for flooring that will reward them with a distinctive home and years of pleasure.

Can you imagine this happening in Australia? I did see it happen once and it was in a home that went on to win Australian Quality Home of the Year but it wasn't straightforward. The acclimatised timber was laid without a gap from bottom plate to bottom plate, it took in some moisture and pulled the joists off the bearers! This brings us to the subject of "unit shrinkage"

The Problem Stated



Damage to walls from expanding timber - Image courtesy of Colin Mackenzie

Everyone keeps saying that timber is a natural product but too often it is something that is said without working through what the consequences of that are. This is particularly the case with wide flooring. Once the timber is kiln dried it doesn't remain at a fixed dimension but grows and shrinks as it takes in moisture and gives it off over the year as the humidity changes. You would expect to be dealing with a 3 percent change in moisture and even up to 5 percent over the year. The moisture variation can be even more with air conditioning. The flooring will change dimension at a known rate for every percentage change of moisture content and that rate is called "Unit Shrinkage". For spotted gum, the Unit Shrinkage value is 0.38%. It is primary school maths (at least when I went to school, probably grade 12 now). So, for an ex 150 mm wide board finishing 130 mm cover, the expected movement would be $130 \times 0.38\% \times 3$ which is about 1.5 mm.

[Before you specify another metre of flooring you need to read this Timber Note on the Equilibrium Moisture Content of timber from what was the old Queensland Forestry Department.](#)

I used to make flooring this wide but, before I machined a single metre, I made sure I had the client sign a warning that the flooring **will** gap and **must** be acclimatised on site. Not wanting your wide boards to move is being like King Canute trying to turn back the tide. Sealing the board all round slows, but does not stop, movement. Irrespective of the flooring size, you must work with the timber by providing expansion gaps hidden by the skirting. You also need to provide an expansion joints across the width of the floor (approx. 10 mm) if it is more than 6 m wide or alternatively intentionally gap the floor 1.5mm every 800-1000 mm.



What makes gapping worse is the micro-climate that is created directly in front of large sliding glass doors. (Not too many fireplaces in Queensland but they have the same issue). Now, we know what happens when we lock up our cars on a summer day and it is the same sort of thing with houses, It can get very hot just inside the door and bakes the timber causing it to shrink further in that area. (Image courtesy of Colin Mackenzie) Personally, in my old age, I would not have anything less than double glazing if I were building again because the Queensland heat is getting too oppressive and double glazing really is becoming a necessity. It would help the floor too.

Ralph Bailey, a respected and experienced Brisbane architect who I spoke to about the question of gapping said "I think however that people have to be realistic - timber moves with weather changes and is a natural product. My Iron bark tongue and groove floor has some gaps between boards particularly where sun on the western elevation heats the room and where sunlight reaches the floor under the rollup blinds in the afternoon. I'd rather have real timber with its problems and accept them than any of the alternatives of veneered composite boards or laminate timber look or vinyl timber look."

What is the solution?



There is no mystery to the solution, narrow boards! The table to the right shows the amount of movement that you must expect for each size board. But you are asking? 36 mm cover? When the mining towns were being built in western Queensland I used to see the quotes come through for ex 50 mm flooring, the only answer to the dryness of the west. The image above shows the floor in our family home built in 1966. My dear dad, may the Good Lord rest his soul, wanted the best floor he could make and that was, in his opinion, a mixed species hardwood floor ex 2" (52mm). Even now the gapping is imperceptible and is result stunning.

Ex	T&G-Cover	3%-movement
50-mm	36-mm	0.4mm
75-mm	62-mm	0.7-mm
100-mm	83-mm	1.0-mm
150-mm	130-mm	1.5-mm
200-mm	176-mm	2.0-mm

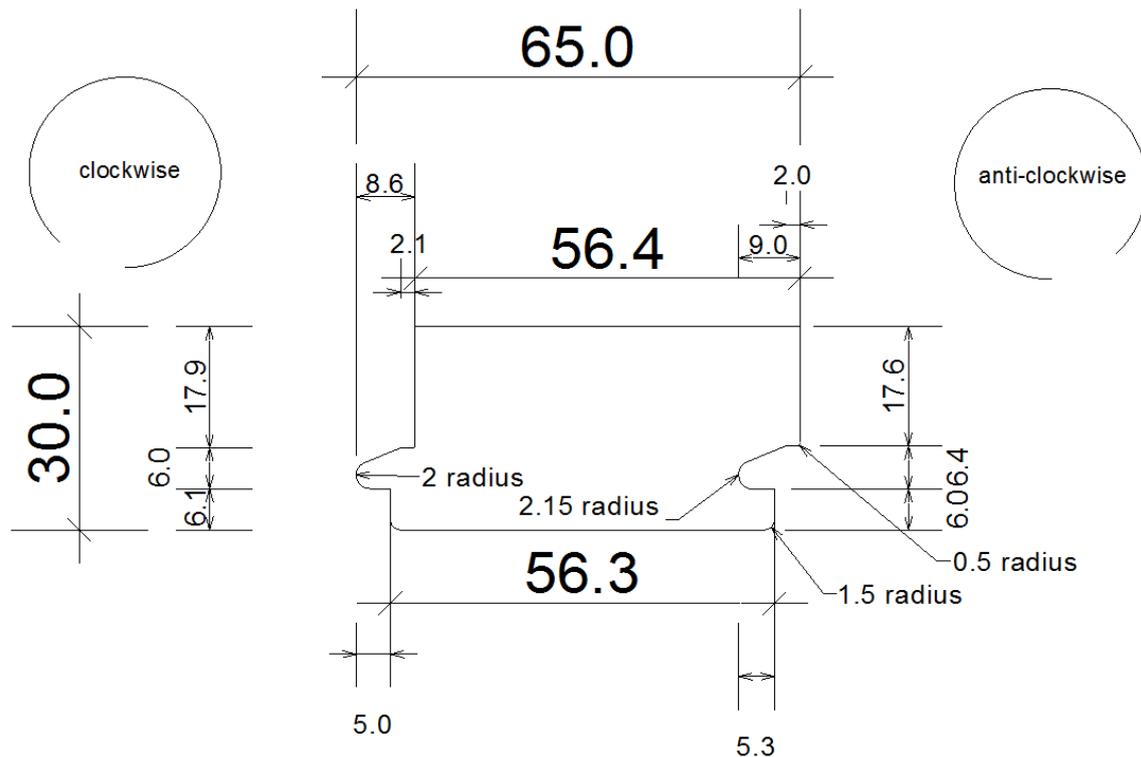
Now, people are going to protest, "We couldn't possibly spend two days extra laying the floor, look at the added cost," but there is no sympathy from me. In a high end home, frankly, that is nothing. The same people who would balk at this will pay a premium for the wide boards, (probably in the order of 10% for an ex 150 mm floor over an ex 100 mm). I would rather spend money on my floor than on features such as complex rooflines that will age the home quickly.

What I would do next time around

My present home has 83x19 face fixed brush box and crows ash floors but, lovely as they are, I would opt for something different next time. I would utilise sawmill recovery sizes and ideally ex 75x38 for which few markets exist. Its cubic metre rate would be very cost effective. If there was time to accumulate a custom cut size them I would reduce it to ex 75x31 and, if I was in dispute with my bank manager, 75x25. How much better for the timber to be in a floor than go down the chipper! This is when it is valid to have the warm and fuzzies. I would secret nail, but the profile would be to my copyright design to avoid the problems with secret nailing. Why the thicker floor? Because you can sand it without worries for the next

200 years. I would probably also include a micro-bevel on the top so normal and costly sanding is optional when new.

Below is a drawing (copyright) of the thickest version. Both the ex 38 and ex 31 mm would have offset tongues. Note the dimensions are to 0.1 mm, that is how accurately timber can be milled now. Would I go quite as narrow as my father? I would like to and if I had a million-dollar budget I would.



Design Copyright 2003 Rachel Stubbersfield

The Age of the Plyscrapper

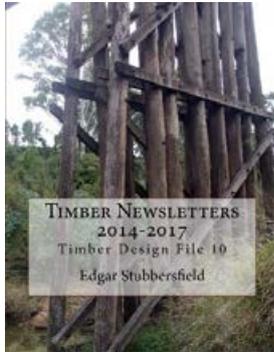


My Friend, Tony Neilson, who for many years was a publisher in the timber industry, now writes a newsletter about sustainability and includes magnificent images of his passion, birds but it is a lot more than just birds. The latest edition had an article entitled Plyscrapers. If you think that timber is yesterday's material, his article will open your eyes. [Here is the link.](#)

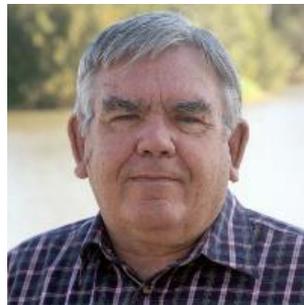
The image to the left is a rendering of Aurecon's new office at 25 King St, Brisbane on the RNA showground site. It will accommodate their 600 staff on four levels when they move in in late 2018. At 52 metres tall it will be the tallest engineered- timber building in Australia and the largest of its type by gross floor area in the world. [Read more about this impressive project.](#)

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Last Four Years of Newsletters Now Available



I have compiled the last four years newsletters into a new publication, replacing the edition that went up to 2016. If you have purchased the earlier book or the full set, you are welcome to upgrade to the new edition. Just [email me](#) for the free DropBox link. Hard copies can be purchased from Amazon - [here is the link](#).



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