

Ted's News

December 2018

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Robinia Playground Equipment

Robinia, a timber that is not native to Australia, has been gaining some popularity for use in external applications. Over recent months I have been contacted twice about badly splitting robinia playgrounds. In my opinion, in an Australian setting, there are better choices than robinia for playground equipment. I base this on its general durability, the use of juvenile wood, potential for splintering and higher shrinkage than alternatives. [Here is some info on robinia.](#)



Consider the durability issue alone. Great claims are made about the durability of this species but they are based on European environment hence this should ring alarm bells. The four-tier durability scale used in Australia is different from that used in Europe and the UK. For instance, the UK uses a 5 tier system where it ranks Douglas fir as being a Durability 3 species meaning it is moderately durable with a life expectancy of 10 to 15 years. In Australia the same timber is a Durability 4 and in ground it is only suitable for 0 to 5 years. This table, from my latest book [External Timber Furniture](#) shows the different life expectancy of mature wood (not the juvenile wood sold in playgrounds) under different international ratings. I can find no evidence that Robinia's durability has been tested in Australia and, without that, it is quite likely a Durability 3 In Ground. Until someone responsible buries a number of pieces in the ground in various sites around the country and measures the decay

over time we are only guessing. [Here is a link to a paper on different international durability standards](#)

| Class | 1 | 2 | 3 | 4 | 5 |
|----------------------------------|---------------------------------------|----------|----------|----------|-------|
| | Probable life in years ^[1] | | | | |
| Aust above ground ^[2] | > 40 | 15 to 40 | 7 to 15 | 0 to 7 | |
| Aust in ground ^[3] | > 25 | 15 to 25 | 5 to 15 | 0 to 5 | |
| UK ^[4] | >25 | 15-25 | 10-15 | 5-10 | <5 |
| EU ^[5] | > 5 | 3 to 5 | 2 to 3 | 1.2 to 2 | < 1.2 |
| China ^[6] | > 9 | 6 to 8 | 2 to 5 | < 2 | |
| Japan ^[7] | > 9 | 7 to 8.5 | 5 to 6.5 | 3 to 4.5 | < 2.5 |
| Malaysia ^[8] | > 10 | 5 to 10 | 2 to 5 | < 2 | |
| Bangladesh ^[9] | > 3 | 2 to 3 | 1 to 2 | < 1 | |
| Tanzania ^[10] | > 10 | 5 to 10 | 2 to 5 | 1 to 2 | < 1 |
| Brazil ^[11] | > 8 | 5 to 8 | 2 to 5 | < 2 | |
| USA ^[12] | ? | ? | ? | ? | |
| Canada | ? | ? | ? | ? | |

Different International durability scales. Note the references are at the bottom of this newsletter

I have also seen images of this timber simply concreted into the ground yet you shouldn't do this even with ironbark and it is a true Durability 1 in Ground timber. If you have robinia posts set in concrete on items with significant weight and height, unless they are supported with a secondary bracing element you should check for decay immediately and, dare I say, consider removing these items.

New Publication on Slip Resistance

WoodSolutions have issued a new technical design guide entitled Slip Resistance and Wood Pedestrian Surfaces

Wood and wood products provide excellent solutions for walkways, decking, boardwalks, ramps, bridges and similar applications. For optimum performance, slip resistance and the suitability of the chosen material must be considered. This new WoodSolutions technical design guide is an introduction to the factors that should be considered

Basically it says what we have been saying all along, that if you are doing a weather exposed timber deck you need a rough sawn surface to get sufficient grip.

Go to the Wood Solutions website, log on and download.



This May Make a Steel Joist Work



Badly rusted steel joist



Broken screws in steel joists

Last Month I drew attention to the use of steel joists and the problems associated with them with this link to [Bluescope Steel's Technical Bulletin CTB-13 Corrosion With Timber](#). Your only response should be, "How do I do it well with timber?" You will find that in my [LifePlus Decking Guide for only \\$22](#). The new guidelines for triple grips and

joist hangers require stainless steel in the same areas we are using these lightly galvanised C and Z sections and box sections. I am not naïve enough to think practice will change so is it possible to make it succeed.

Dealing with corrosion

I have always had good results with PPG products and they provided this specification for a recent proposed project. "For this scenario we would normally specify [Amerlock 400](#) @ 125µm dry film thickness, preferably applied to sweep blasted galvanising, following prep as below.

Surfaces contaminated with oils, salts, acids or other chemicals shall be cleaned by a degreasing or washing procedure (as per AS 1627.1) prior to abrasive cleaning. Lightly sweep abrasive blast in accordance with in accordance with AS1627.4 Appendix D and AS/NZS 2312.2:2014 para 7.5.3.2 using a blasting pressure less than 40psi (275kPa) and an inert grit such as garnet to achieve a uniform matt appearance, without severely damaging the existing galvanised coating. It is important that this procedure be performed carefully to ensure that no more than 10µm micron of zinc is removed. Remove preparation residue. Blast cleaned surfaces shall be primed as soon as practical after preparation and before the surface deteriorates or becomes contaminated.

Or

Surfaces contaminated with oils, salts, acids or other chemicals shall be cleaned by a degreasing or washing procedure (as per AS 1627.1). For small areas sand lightly, ensuring all gloss is removed. For larger areas clean the surface by either low pressure blasting with a sand/water slurry or high pressure water spray while scuffing with a long bristle broom to remove all gloss. Avoid scuffing back to bare metal. Remove all preparation residue. Prepared surfaces shall be primed as soon as practical and before the surface deteriorates or becomes contaminated

Care of course should be taken when fastening timber decking (or anything!) to the coated steel. Any drilling through the steel will expose unprotected HDG steel unless sealed appropriately during the fastening process.

Dealing with breaking screws

[Lysaght's Quika-floor guide](#) is vague when it comes to fixing decking to their joists but One Steel's Duragal flooring system is precise. The [Duragal Flooring system](#) says "The use of screws to attach timber decking to joists on external decks and verandahs is not recommended." Its solution is "External timber decking can be nailed to both 1.6 and 2.0mm DuraGal Joists. When using hardwood or treated timber decking, the best results to date have been obtained from the Duo-fast® Coil nailing

tool and also a Max® Coil nailing tool with 38mm long 304 stainless steel hardened twist nails." I did get similar verbal advice from Lysaghts some time ago.

For maintenance, screws are much better but self drilling screws often break over time when used in this application as the hardened steel cannot take the flexing. You need the hardened steel to drill and tap the steel but you need the flexibility of stainless not to break. In a bushfire zone a hardened steel nail will not take the effect of fire. A good answer is the [bi metal decking screw from Simpson Strong-Tie](#) that has a hardened tip welded to a stainless shank. Don't just assume the screw being used is suitable as it probably was purchased on price, not specification.

Dealing with attack on sealing strips from decking oil

Duragal recognises the importance of insulating the joist top from timber. It sees this more of an issue with treated pine but has not picked up on the increased acidity of some treatments and the natural acidity of some species such as blackbutt. Their manual advises "Do not use solvent borne decking oils or paints because these solvents may be detrimental to the barrier tapes recommended in this brochure." Tanacoat is a solvent based oil. Norton Flashtak is recommended for the ends and would solve issues with decking oils along its length as well but at what cost. Byuteflash would be more economical.

It is a lot of fuss when an F17 spotted gum joist will be trouble free for a long, long time and probably be far more economical.

Free CPD Sessions



Here I am having a "spirited" time delivering Designing for Decks for Durability at the offices of BSPN Architecture earlier this month.

Why avail yourself of a free CPD course sponsored by Wilson Timbers/Outdoor Structures Australia (OSA) are meeting the cost of delivering CPD sessions in your office? Simply because they are very good and the free offer will end early in 2019. Here are two references received this month:

From a recipient at Cornell Engineers: We started with Ted's Timber 101 class. It really was a great talk. Can totally recommend it to all engineers, designers and architects.

From a recipient at BSPN Architecture: Thanks for speaking with us again – your talks are always very informative.

There are only two conditions and these are that I can travel there and back in a day and that OSA be allowed to give a sales pitch. These are exactly the same presentations I would give if you paid. It sounds like a good deal to me. Here is a [link to the courses I have available](#). I suggest External Timber 101 would be a good start. The learning outcomes are:

- Know the resources needed for a successful design
- Understand the difference between pine, cypress and hardwood
- Understand the importance of selecting the right species
- Understand the importance of selecting the right part of the tree.
- Understand the importance of preservation
- Understand why natural feature must be limited

These are informative seminars with serious learning outcomes and, if required for CPD points, I can provide a test and a certificate. Call Stuart Madill on 0403 385 707 to arrange a free session and for paid add free talks call me on 0414770261 to arrange a convenient time for your "Ted talk".

Footbridge Fundamentals



Here I am delivering the topic *How to avoid problems with footbridges and bikeways* at my first footbridge fundamentals course at City of Gold Coast. The course covers the fundamentals of what to look for in the design, why a thorough specification at the tender process is important, what to look for when inspecting the structures and lessons learned from several case studies. Phone me on

0414 770 261 to arrange a session [or email](#). It is presented either a full day or two half days.

Content of bridge fundamentals course

Grading hardwood

How to avoid problems with footbridges and bikeways

Doing the inspection

Case histories

Lessons from London Millennium bridge

Berrinba Wetlands

3 bridges closer to my home

Sundry horror images

To have a single CPD session, *How to avoid problems with footbridges and bikeways* free in your office contact [Stewart Madill](#) of OSA on 0403 385 707. Same conditions as above.

[Need a Timber Consultant or Expert Witness?](#)

I have over 40 years' experience in the industry and can assist you with many of your timber needs.

Inspection – I can assess timber products on their performance, fitness for purpose or cause of failure. I also examine whether best practice was used in design and construction.

Grading - Quite literally, I have written the book on the subject

Design - I can provide detailed technical drawings and advice.

Reports - I have authored many books on timber and can prepare a report providing recommendations and practical instructions on to how to rectify issues.

Please note as I am now employed a Senior Timber Consultant with the firm BCRC all large and complex consultancies and requirements for an expert witness will be handled in conjunction with them. Existing consulting arrangements remain unchanged and I am also available to assist on small projects. For more information see www.bcrc.com.au

[References for Durability Table](#)

[1] A considerable degree of caution should be exercised with these expected life expectancies, particularly for unpainted horizontal surfaces.

[2] Standards Australia. *AS5604-2003 Timber—Natural durability ratings*. (Sydney: Standards Australia International Ltd, 2003) Table 1.

[3] Standards. AS5604 ..., Table 1.

[4] The durability classes in BS EN 350-1 are now termed DC1 to DC5. The service lives are from the Building Research Establishment's *A Handbook of Softwoods* last edition published in 1977, now out of print. Sycamore, Janet. *Pers Com*. 25 April 2018. There aren't separate classifications for in and above ground applications

[5] Stirling, Rod. *Natural Durability Classification Systems Used Around the World*. Paper presented at The International Research Group On Wood Protection conference, Beijing, China May 2009. Reference: IRG/WP 09-10694, 3

[6] Stirling. *Natural ...*, 5.

[7] [Stirling. *Natural ...*](#) [6]

[8] Stirling. *Natural ...*, 6.

[9] Stirling. *Natural ...*, 6.

[10] Stirling. *Natural ...*, 6.

[11] Stirling. *Natural ...*, 6.

[12] Timber durability Standards in the USA and Canada are less evolved than in Australia and Europe and there no standards for natural durability similar to AS5604. Stirling. *Natural ...*, 4-5.



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