

OUTDOOR STRUCTURES

Outlasts and outperforms

February 2013 Newsletter

Written by Ted Stubbersfield for

INFRASTRUCXION PTY LTD

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Dear Reader

[New Definition of 1 in 100 Flood](#)



Tent Hill Creek in Flood Jan 2013. This creek flows into the Lockyer Creek and then down to Brisbane River.

Many of my readers will know that the Lockyer Valley, my home region, flooded

again. Unfortunately there were two fatalities when foreign workers drove into flooded creeks.

While most of Australia talks about 1 in 100 year floods we in the Lockyer are now talking about 1 in 100 week flood events. In some areas the flooding was far worse than 2011 but fortunately Grantham, hit so badly two years ago, was not much of an issue. The flood waters just came up and receded as normal. The headwaters of our creeks are utterly devastated! One creek has moved half a kilometre!! There was rainfall of 600 mm recorded in the hills that feed our creeks. Gatton, where I live and Infrastruxion is situated was high and dry as always

Hopefully the powers that be will think about replacing the infrastructure properly instead of just reinstating. It needs some creative thinking this time around.

UV is Higher in Southern Hemisphere



Recently we were speaking to a sign writer who was lamenting how he had his fingers burned with some UV resistant fabric on which he printed a large sign. This fabric had a five year warranty but it failed after only one year. When he went back to his supplier it turned out that yes, it did have a five year warranty but only for the northern hemisphere!! Is there a difference? A friend told me years ago that timber lasted a lot longer in the northern hemisphere and it appears that is the case. Why?

Apparently the earth's orbit takes countries in the southern hemisphere (Australia obviously included) closer to the sun in our summertime than countries in the northern hemisphere are during their summer. At the risk of simplifying a complex matter "In New Zealand, the peak UVI is about 14 (and at corresponding North latitudes it is about 10)". Another scientific paper said, "The UV climatology in the Southern Hemisphere is different from that in the

Northern Hemisphere, with a series of spectroradiometer measurements finding the biologically effective UV to be approximately 40% higher in the mid southern latitudes compared to the corresponding northern latitudes".

What does this mean for you?

1. The image above shows the damaging effects of the sun to timber in the tropics compared to the areas in shade. You need to use the most durable timbers - no vague specifications that include blackbutt, You need to use the highest grades. You get all that when you use genuine Deckwood. Finally you need to use our Tanacoat which incorporates a UV blocker.
2. With all the new resins, glues and treatment options that we are seeing coming into the market place, you will need to ask the questions about testing of these products in Australian conditions. How many times have you been told a product is UV stabilised only to see it crumble, break and/or fade away long before it should have? or was promised it would last.
3. Another very important lesson is to mistrust northern hemisphere testing for performance in Australia. I was approached by a company selling a treated timber product new to the Australian market and I was told, "The architects are loving it". "It is durability class one" they added. That particular treatment was not approved under Australian Standards and the testing was done in the UK which is nowhere near as demanding as in Australia. We have heard that the same product has not performed well in Australia when independent testing was done. Be very careful. When someone knocks on your door with a new treated product, demand evidence of Australian testing.

Feel free to look at the links below showing the research on UV levels in the southern hemisphere compared to the northern hemisphere.

References

https://www.niwa.co.nz/sites/default/files/import/attachments/Liley_2.pdf

<http://www.photobiology.com/UVR98/wongrev/index.htm>

Avoid Substitution

I am aware of two commercial projects where Deckwood (or equal) has been specified but our product was substituted with low grade material and are likely going to have to be replaced. I know of a number more where the timber should be replaced. Treat substitutions very carefully. I would like to shout from the rooftops where they are but we must protect the guilty.

Here are two previous newsletters dealing with attempted copies and substitution.

http://www.outdoorstructures.com.au/pdf/osa_newsletter_05_12.pdf

http://www.outdoorstructures.com.au/pdf/osa_newsletter_02_12.pdf

3D (additive manufacturing) Seminar review



Dr. Jennifer Loy, Convenor 3D Design, Queensland College of Art, Griffith University with Sam Canning Researcher and Lecturer, QCA Griffith University with 3D printed bollard cap samples.



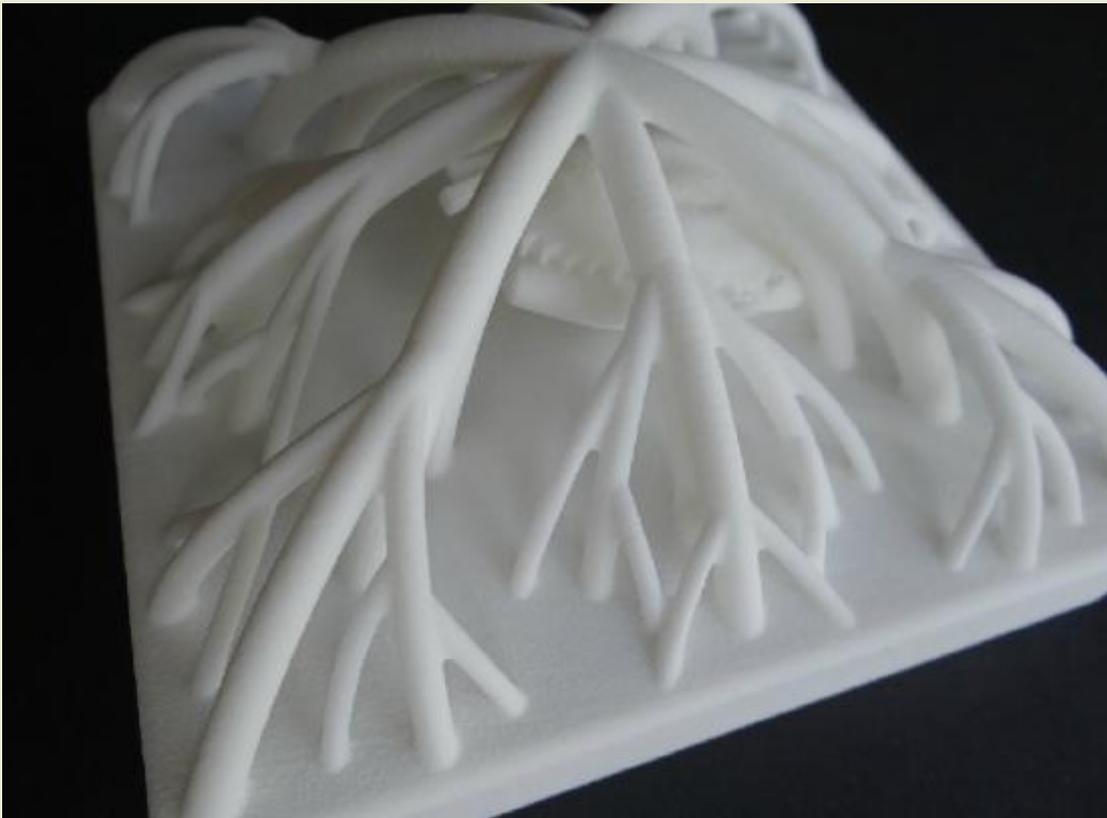
Sample bollard Caps 3D printed

I have heard it said that when Michelangelo carved David someone asked him how he did it. He is supposed to have replied, "Easy, I just chipped away the bits that weren't David". While I am sure it is not true it is a good example of "subtractive manufacturing", the type of manufacturing we are used to with all the restrictive rules of design that allow for the different methods of manufacture that exist. An good example is a titanium bracket in the aero industry which may weigh 1 kg but requires a 10 kg piece to start with. Additive manufacturing builds up an item from nothing (that is why it is called additive). That same titanium bracket may only need 1.3 kg of material if 3D printed.



Entry level 3D Printer with examples

3D printing as a rapid prototyping tool has been around for some years but 3D printing of actual products has only been a reality for about 5 years and has only been taught in universities in Australia for the last 3 years. One presenter told how they had to pay \$300,000 for their first machine (and there are a number of different processes that can be used) but now it was possible to purchase an entry level machine for between 1 to \$2,000, and these are machines that give a very credible performance. Required software that once cost tens of thousands of dollars is now available as freeware. Complexity, the enemy of normal manufacturing does not come with any penalty. Why wouldn't a design office have a 3D printer?



Take this example bollard cap that was inspired by mangrove roots. Consider how complex the geometry is, it would be quite impossible to fabricate this cap with normal methods. It is full of void. Notice also that there is a captive free moving component, a crab hiding in the roots. The complexity just isn't an issue

with this method of fabrication and it does not matter whether you want 1, 10 or 30. Also it could have just as easily have been printed in stainless steel. A lot more discipline will be required by the designer to maximise the design input so you minimise the amount of material required

One of the presenters told me that it can be 1/3 or 1/2 the price to print overseas as some Australian companies are still treating all the work like "rapid prototyping" with a charge out rate of material cost being multiplied 15. He though that within the next 3 years the same commercial pressures that you and I live under will force the price to materials multiplied by 3. There is no need for a significant price difference between Australia and overseas printers.

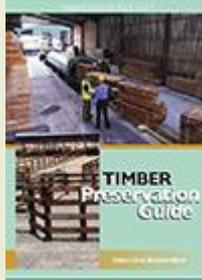
3D printing isn't the answer for everything but the ability to virtually throw away the design rule book is going to revolutionise design and manufacture and that is why it is being called a second industrial revolution. For many products, warehouses could almost become redundant.

I have seen the future and it is as scary as it is promising. Some presenters touched on the ethical issues involved. What do you do when you can just as easily print a weapon and ammunition? (Yes they are working on it). The Frankenstein world of when you go and have a scan at age twenty, print a spare body and keep it in cold storage till you need it was mentioned as becoming a conceivable reality. What happens to the trades when, as is thought, in 20 years it will be less expensive to print your home than to build it. It is thought that printed homes could be a reality, but not an economic one in ten years.

For more information contact

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[Timber Preservation Guide Finished](#)



The Timber Preservation Guide is finally completed and professionally formatted. I have been selling far more of my Deck and Boardwalk Design Essentials than the Preservation Guide. I assume this is because people think treatment is simple. If it was I would not have spent hundreds of hours writing this guide to assist you. This guide will help you understand the interaction between good detailing and appropriate treatment. It will also help you avoid specifying and relying on treatments that simply cannot be achieved. The Deck guide does not cover treatment, intentionally. Check out the table of Contents

[Table of contents](#)

There are four ways to purchase the Timber Preservation Guide.

Using a Credit Card:

1. As a [Amazon Kindle eBook](#) for US\$33.00
2. As a [Amazon Paperback](#) for US\$33.00 + postage from US.
3. Not a member of Amazon? Purchase from [Createspace Estore](#) for US\$33.00 + postage from US.

Direct Deposit:

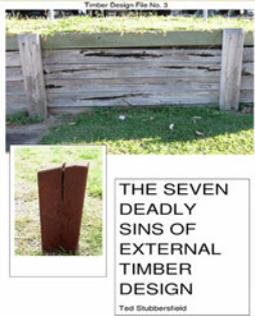
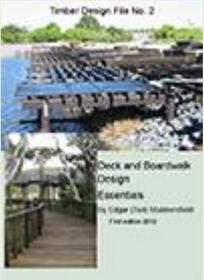
4. Paperback posted from Australia for quicker delivery \$37.50 + \$10.00 Express Postage (within Australia). Email edgarstubbbersfield@gmail.com or call 07 5462 5532 and we will advise payment details.

Already purchased a draft? Go to the Dropbox folder and download the latest file. Do not release the file outside of your office. I am only releasing the file to earlier customers.

There are two guides having their final edit. I am fairly well advanced on "Understanding AS2082."

The 7 Deadly Sins of Timber

Deck and Boardwalk Design

Design	Essentials
	
<p style="text-align: center;">Table of contents</p>	<p style="text-align: center;">Table of Contents</p>
<p style="text-align: center;">Order Guide</p>	<p style="text-align: center;">Order Guide</p>

All our guides can be seen at http://www.outdoorstructures.com.au/timber_guides.php

[Le Memento du Forestier update](#)

My portion of a second chapter I am writing with others this time for the publication Le Memento du Forestier is at the review stage. It deals with timber construction and I am dealing with timber with minimal processing.

[Consultancy Services by Ted Stubbersfield](#)

When I started offering my expertise on a consultancy basis I really wondered if you could make a living doing this. The more so as I was doing it for free to assist in obtaining orders. I am still wondering! But there is no doubt in my mind that you should be able to make a good living. The stories I am now hearing are frightening. You do not have to accept substandard material and performance. I am here to help you from the design stage through to final completion.

In our area of expertise, often it is the art that proves more important than the science. Weather exposed structures normally do not fail because of incorrect member size calculations, but because a myriad of small points of detail are not taken care of.

As a timber design assistant we offer:

- The provision of high quality technical guides on timber design. (accessed from our website on a pay per view or membership basis)
- The review of professional drawings to identify potential timber design issues that may impact service life
- The preparation of proposed AutoCAD cross sections of structures
- To be a sounding board for ideas
- Lectures and presentations

- The assessment of best practice in construction.

As a grader I can assist with grading for confirmation to a nominated grade but more importantly I can assess whether timber is graded to an appropriate grade. Often these are not the same thing.

Contact me on 07 54625532 or by email (edgarstubbbersfield@gmail.com) to discuss how I can be of assistance to your organisation.

Bridge Quote Requests

If there is any doubt that OSA make the best kit bridges in the country look at the [Berrinba Wetlands Project](#) . Not all bridges are equal. After encountering three bridges in one month that did not meet the Bridge Code I wrote the [May 2012 newsletter](#). Refer to it when assessing the suitability of quotes.

[Steel bridge Quotation Request Form](#)

[Timber Bridge Quotation Request Form](#)

More information:

If you have timber road/rail/heritage bridge issues,

we suggest you talk to:

Mr. Dan Tingley

Senior Engineer

Wood Research and Development

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Corvallis OR 97333

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