OUTDOOR STRUCTURES AUSTRALIA

Outlasts and Outperforms

September 2011 Newsletter

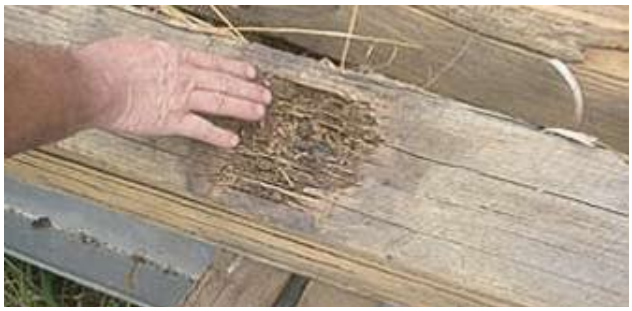
Contents

Malthoid a Mixed Blessing

We take a “belt and braces” approach to ensuring maximum joist life in our Boardwalks. The “belt” is to fully predrill for the screws in a staggered alignment. (We recommend staggering 8mm either side of the centre line thus forcing a 75mm joist be used). The “braces” is the use of Malthoid dampcourse so, if there is any minor splitting, moisture does not enter the joist and cause decay. We have been recommending and still do recommend Malthoid as the dampcourse for the sole reason that it is more reasonably priced than other dampcourses.

Boardwalk by OSA with Malthoid on top of joists and CN emulsion on top of the Malthoid

Our practice is to place the Malthoid on the joist after all other construction has been completed but just prior laying the deck. The Malthoid goes directly against the joist and a liberal coat of CN emulsion is added to the top of the Malthoid. The emulsion works as a water repellent between the dampcourse and the decking. The deck is then secured with 14# stainless screws.



Area around vertical through bolt where Malthoid held water next to the wood bearer causing the cross bearers to decay in 8 years

With this method of construction there are no oversize holes for bolts going through the Malthoid, only undersize screw holes and the tar in the Malthoid seals around these. The dampcourse seals the top of the joist so well that you have to chip it off to remove it. This adhesion happens very quickly as there is no movement in the joists to speak of. It is so effective in boardwalks that I had come to see it as a panacea for all ills and the mental jump to using it on all timber structures is a logical one.

8 year old deck and cross bearers removed due to decay in bearers with Malthoid still showing.

Road bridge images courtesy Dan Tingley, Wood Research & Development

It was drawn to my attention by Prof. Dan Tingly at the Small Bridge Conference that the use of Malthoid in road bridges is actually counterproductive. Here its use

can be very different to that on boardwalks as **oversize** holes pass through the dampcourse unlike with the screws which are **undersize**. These oversize holes allow moisture to pass through and sit between the Malthoid and the item it is meant to protect. This enhances rather than delays degrade. This effect is compounded as with all the movement in a vehicle bridge you do not get the adhesion to the timber that you find in a boardwalk. The dampcourse itself is also likely to degrade with the movement.

So we continue recommending the use of Malthoid in boardwalks but designers need to be diligent to ensure there are no oversize holes passing through the dampcourse. We would recommend that the product not be used where there is movement and where oversize holes cannot be avoided e.g., timber bridges with traffic. In those cases a liberal coating of CN emulsion would be more effective.

Links
Professor Tingley's presentation from the Small Bridge Conference (This is a large file)
https://www.yousendit.com/transfer.php?action=batch_download&batch_id=UnlCSlJ5OC9CSm8wTVE9PQ

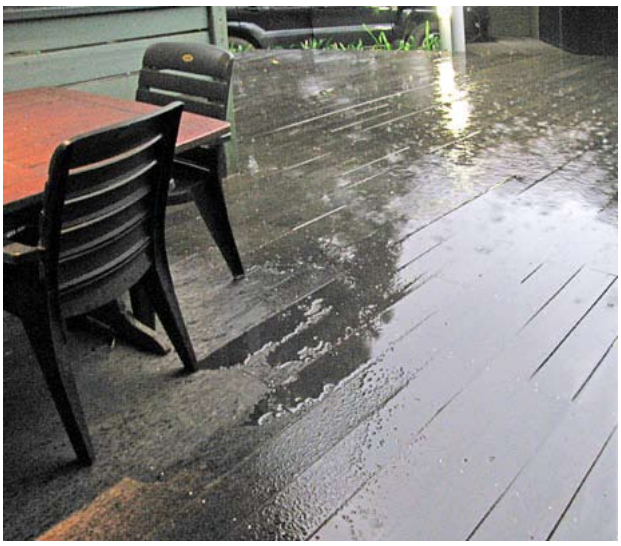
Keeping ahead of the Solicitors: More on Decking Gaps

I was reminded recently of the importance of maintaining bolt edge clearances. The picture on the left sOne of my readers asked me to share a concern with you. Last month we spoke about keeping out of the clutches of the solicitors through minimizing the decking gap. Too narrow a gap can be as big an issue. I have copied his words almost exactly:

Just back from a weeks holiday to Kingaroy, Bunya Mts and Hervey Bay. At Bunya, the rental house we stayed in had a timber deck, about 135mm cover. Boards were hard butted together and no gap to allow water to drain.

It was probably laid with a gap originally but in this moist rainforest environment, boards expanded and stayed expanded. When we had the storm last week you can see from the pics that the water just ponded and was still ponded the next day.

Another issue was because the deck stays wet for a long time, green mould had occurred on the surface and is as slippery as an ice skating ring when wet and very dangerous. I reported this to the property managers because I nearly came a gutsa when getting more firewood to keep warm, even knowing it was slippery.



Decking without a gap is a safety hazard

Thought this could be a good practical topic to discuss in your newsletter. i.e. design gaps for the environment and the as laid timber. MC.

If 136mm wide timber is dried to 10% MC and then put in a very moist environment and rises to say 16% the timber will expand over 3mm, a nail diameter which was probably the spacer in the first place. (Spotted gum moves 0.4% of its cross section for every % change in moisture content). Always consider the micro environment. A narrow board would have helped here.

Eclipse Bollards in Stock

A few years ago I go sick and tired of designers ringing me up complaining that they had specified my bollards only to find I was supplying a very inferior product. Of course what was happening was the contractor was going to the local timber yard, purchasing landscaping sleepers, putting a sloped top on them and hay presto they had an equivalent to an OSA bollard. Well not quite.

I went to a leading firm of landscape Architects and asked them to design ranges of bollards that were hard to copy. From this the Eclipse range has taken the interest of designers. Of the seven available in this range the E4 and E7 are all that people are specifying.

We used to make the steel for the E4 to order but this caused delays. Now we are carrying a limited stock of them and should be able to respond quicker to your needs.

E4 Eclipse Bollard (modified for wires)

E7 Eclipse bollard newly installed

Links

For the full range of eclipse bollards:

http://www.outdoorstructures.com.au/ls_bollards_eclipse.php

For a warning about substitution:

http://www.outdoorstructures.com.au/ls_product_substitution.php

Boardwalk Projects

Images are now at hand for two projects that are unusual because of their excellence or some aspect of their design.

Project: Fleays Wildlife Park Boardwalk View Project Gallery	
Asset Owner:	Department of Environment & Resource Management
Contractor:	Condev Construction Pty Ltd
Engineers:	Opus International Consultants (Australia) Pty Ltd
Decking timber:	Outdoor Structures Australia

The old boardwalk on the approach to Fleays Wildlife Park committed just about every sin that it was possible to commit when designing a boardwalk. I used to cringe when I walked on it. When the time came to replace it nothing could be saved. (OSA's philosophy is to design the substructure of a boardwalk so well that it only needs the decking replaced at the time of refurbishment). The construction contract for the replacement boardwalk was awarded to Condev Construction.

The scope of works comprised two parts. The first, to construct a new access ramp from the lower car park, leading up to the entrance of the wildlife sanctuary. An elevation of approximately 9.5 metres with 153 lineal metres of timber decking and switchbacks.

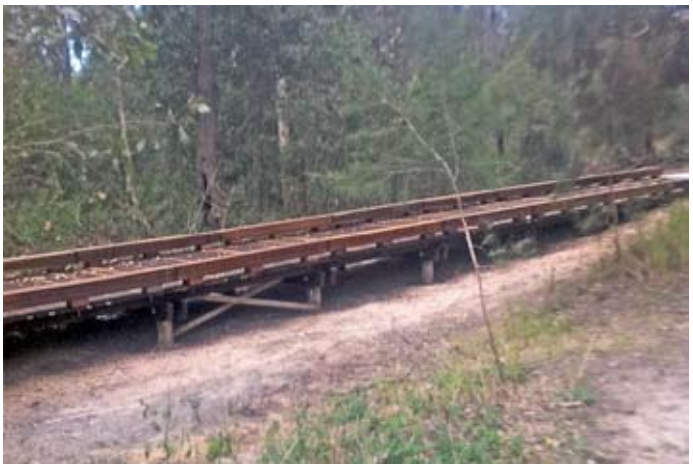
The second phase involved the replacement of the existing boardwalk that meanders through the natural mangroves for over half a kilometre. Outdoor Structures Australia's Deckwood was used throughout and the design of subframe was in keeping with our design guides and philosophy.

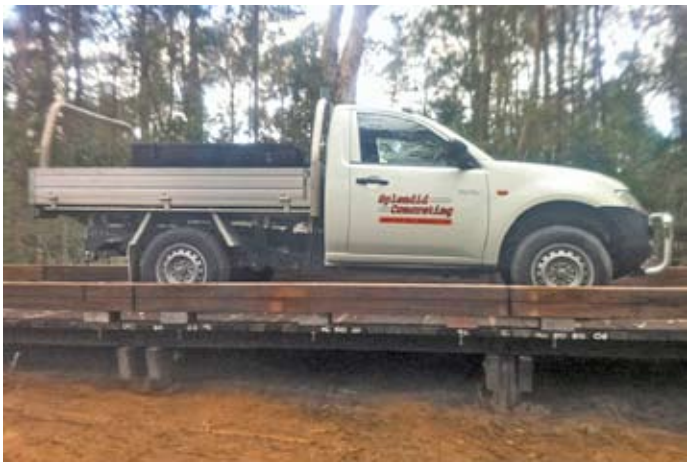
Undertaking construction in and around the park entailed dealing with environmentally sensitive ecosystems. Two of the biggest challenges encountered by Condev while working over the mangrove swamps and fish estuaries involved the demolition of the existing dilapidated boardwalk and sinking of concrete piers to support the proposed new boardwalk. These activities could only be undertaken during the low tides and while working off elevated catwalks so as to protect the mangroves. All materials, off-cuts and timber shavings had to be carried in and out of the mangroves by hand.

The overall use of rough sawn timbers, stone pitching and coloured concrete pathways engenders a harmonious vibe with the nature.

For more images see the project gallery at:
http://www.outdoorstructures.com.au/gallery.php?gid=109&SID=1

Project: Wearing Park Boardwalk View Project Gallery	
Featuring Boardwalk with 2.5 tonne vehicle capacity and High kerb for safety	
Asset Owner:	Logan City Council
Engineer:	Structerre Consulting Engineers
Prime Contractor:	T&H Leavi
Builder:	Splendid Concreting
Boardwalk Systems:	Outdoor Structures Australia





This boardwalk was unusual in that it needed to carry a 2.5tonne, 4 wheel drive fire vehicle. We prepared the drawings for the superstructure based on our standard systems and then emailed the AutoCAD drawing through to the engineer. He checked them and simply dropped the file into his drawings and then designed the site specific superstructure. With OSA preparing the layout the many points of detail we incorporate into our boardwalks were fully detailed.

With vehicle decks we like to adopt a high kerb for safety. This kerb is about 300mm high and uses our pioneer posts but treated to match the other timber. To take up the shrinkage on the kerbs and spacers, the kerb bolts used a volute washer under the nut. They should never need tightening.

Deckwood and Joistwood are used throughout.

More details can be seen on the project gallery: http://www.outdoorstructures.com.au/gallery.php?gid=108&SID=2

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 2010 Newsletter. Refer to the May OSA Newsletter when assessing the suitability of quotes.

See our Steel Bridge Quotation Request Form and our Timber Bridge Quotation Request Form

Steel Bridge Quotation Request Form

http://www.outdoorstructures.com.au/bridge_request.php?Mode=st

Timber Bridge Quotation Request Form

http://www.outdoorstructures.com.au/bridge_request.php

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
1760 SW 3rd Street,
Corvallis OR 97333

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Regards

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