OUTDOOR STRUCTURES AUSTRALIA

Outlasts and Outperforms

July 2011 Newsletter

Contents

Specifications for Recycled Timber

Increasingly we find designers are specifying recycled timber. This may be to get green points for a public building or for the more nebulous but still important "warm and fuzzy" feeling that comes through doing something that is perceived as being responsible.

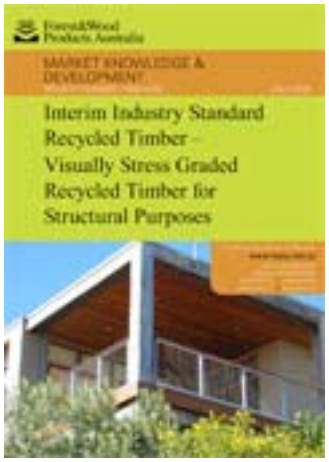
While it is very easy to write the word "recycled" there are some serious structural implications that need to be thought through. But as I started writing on this matter I was questioning whether this is a relevant enough topic for a newsletter?

Quite unexpectedly I then received a phone call from a very frustrated builder about a job that had gone wrong in a southern state without a *Timber Utilisation and Marketing Act.* He explained how a wall with 200 sq m specified in recycled spotted gum shiplap cladding had shrunk so badly that, in places, the top of the board was completely clear of the shiplap. So, with the draft of this newsletter in hand he now understands the problem that has happened. The young builder urged me to stress upon our readers how important moisture content is even with recycled timber. Struggle through this newsletter, and I have to admit it probably is a struggle, and you have the blessing of knowing beforehand how to avoid what boils down to *Timber Design 101.*

Based on problems I have seen in the field, my opinion is that the interim standard for structural recycled timber (see links below), while having many strengths, also has serious limitations, to the extent that it should have a major revision. In fact, we do not believe this Interim Industry Standard should be used at all for some structural products. Some tweaking is also needed for the decorative standard. This is not surprising as they are after all **INTERIM** standards.

For applications such as handrail and decking the normal requirements of AS2082 F22 (face only for the decking) should apply. I have seen 100x100 recycled box heart (illustrated) used as structural bridge handrail and was

Interim Industry Standard Project PN06 1039 Decorative recycled



Interim Industry Standard Project PN06 1039 Structural Recycled

failing. This product was never considered suitable for rails with new timber. A standard that can be called upon as an authority that permits this (if indeed it does) needs to be modified.

I showed the picture of the decking with a large defect (above) to an "authority" in the timber industry fresh from England and asked how long would it last. His could see no problem. He grabbed AS 5604 Timber Natural durability ratings and looked up Table 1 and said "40 years". His boss came in at that point and looked at the same picture and said 4 to 5 years. That would be my expectation. It is not good enough for a product that is much dearer than new timber (about 20-25 year life expected).

Worn out timber used to construct new access bridge

What follows is comment on the Interim Industry Standards for recycled timber and where you, as designers, need to be cautious and, if necessary, specify outside of that standard.

Unsuitable recycled timber used as decking

Scope 1.1 of PN06.1039 <u>Structural</u> Standard
Appendix F of PN06.1039 (structural) shows applications that have limited human contact such as rafters and posts which we see as a good application for recycled timber. The designers' reasons for choosing recycled in these applications remains primarily aesthetic. There will be little eff'ect from weathering. The scope however does not restrict their application in areas where structural and safety issues must over ride aesthetics.

Preservative Treatment 2.7 of PN06.1039 <u>Structural</u> Standard
Most recycled timber is taken from either:

- 50 year old (plus) bridge timber where the sapwood has already decayed a long time ago and therefore there is no advantage in treating.
- Old powerpoles where the sapwood has already been treated and nothing more can be done. They will be CCA treated and, unless all sapwood is removed, you are probably running afoul of the intent if not the letter APVMA restrictions when using it.
- Internal timbers with sapwood that is not lyctus susceptible. The outside of this timber has "case hardened" and will not treat using normal treatment cycles. Few will be aware of this.

Unseasoned cladding shrunk out of lap

Designers can be left with a false sense of security that they are specifying something useful if they include reference to treatment. This could see internal timbers used externally because someone has inappropriately stamped them H5.

Bridge handrail made from 100x100 heart centre

Scope of 1.1 (a) PN06.1039 <u>Decorative</u> Standard
Flooring is covered under the decorative standard, not the structural standard. Surely flooring is primarily structural unless the wording is changed to "flooring laid over a structural substrate".

Seasoning in section 3 2.3 PN06.1039 Decorative Standard
For a standard covering flooring, the wording covering moisture content is not as clear as I would like. It says in 3.3.2 This Standard does not impose any specific moisture content requirements on these members thinking of large cross section members. Because of safety concerns with bare feet, let alone the issue of shrinkage, we believe flooring should be supplied strictly in accordance with the Product Specification of AS2796 Timber Hardwood Sawn and Milled Products.

Fortunately the Industry Standard does refer back in 3.1 (a) to AS2796 but requires the supplier to remember back a few clauses (a concern in itself) and cross reference standards. We have always found this a little dangerous. You will be amazed at the number of calls we get from manufacturers asking *"what does the standard say".*

Interestingly, if our southern friend who has severe shrinkage in his cladding had followed the fine print in the Industry Standard he would have initially seen (as mentioned) that the Industry Standard makes reference to AS 2796 Timber - Hardwood - Sawn and Milled Products. The scope of that standard specifically mentions dressed "cladding". He could have seen that AS1684 The Timber Framing Code (which is a companion document to the Building code) calls up AS 2796.

The framing code mentions specific products e.g. flooring, and though cladding is not specifically mentioned neither is it excluded. So through a convoluted path it is very likely the protection against the use of unseasoned cladding eventually comes under an Act of Parliament. It is a bit complicated for a poor old sawmiller like me, I just know it is unconscionable (at least mine) to supply unseasoned timber for chamfer boards when everything you know says it should be seasoned. Note that weatherboards are an unseasoned product.

2.3.1 Moisture Content Small End-Section Timber, Structural Standard
In this section, seasoned timber is specified for small end-sections, *"at least 90 percent of the pieces being graded shall have a moisture content of not more than 15 percent and no piece shall have a moisture content greater than 18 percent."*

Small end section is defined as less than 0.012 m2 (e.g. 200 mm x 50 mm). These moisture contents are far too high for anything other than decking laid with a small gap. Spotted gum shrinks 0.38% of its cross section for every percentage change of moisture content. 150mm wide shrinking from 18% to 10% has 4.5mm movement and almost 3mm for 15% down to 10%.

A note to this clause in the Industry Standard says *"The requirements of State timber marketing acts (QLD and NSW) may be more stringent than those in this Standard".* Our southern builder has no act to call up and I am afraid, for our Queensland readers, our government in its wisdom has repealed the act. ***Be very careful.***

Shrinkage in Large End Section Timber
The standard only mentions shrinkage in small end section timber, but what about large end sections? I had a designer ring me about a problem he had with some recycled 200x200 Durability 1 in ground bollards. He was supplied with turpentine which quickly shrunk a full 10% leaving finger traps between the caps and the post (a potential litigation issue) as well as being unsightly.

There is an expectation that timber cut from old girders/piles is seasoned when instead it acts just like green off saw timber. Round timber is simply too large in its cross section to season. If say 200mm decking is cut from turpentine piles it will shrink at least 20mm and probably more and take the deck well outside of that permitted under the disability code. This is not theoretical, I know where it has happened!

I believe that shrinkage has to be addressed very clearly when you are dealing with recycled timber. Contact me if you have any questions.

Links

Interim Standard Recycled Timber (decorative)

http://www.timber.org.au/resources/FWPA_Recycled_Products_WEB.pdf

Interim Standard Recycled Timber (structural)

http://www.timber.org.au/resources/FWPA_Recycled_Structural_WEB.pdf

Fixing instructions for timber cladding

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

Revision to Shelter Sheds

Following the recommendation of one of our major shelter shed customers, we are reducing the clearance under the roof beam of the Hume (hip), Gregory (gable) and Lindsay (lean to) shelters to 2.2 metres from 2.5. The advantage of the higher shelter is that it has sufficient clearance for someone riding a bike. We can still produce the higher shelter to order. If you have downloaded the AutoCad blocks from our website please delete them. We will have replacement blocks up soon.

The Hume 6x4m is being extended to 6.4x4m We found we were cutting back material and could offer a slightly larger shelter for the same price.

Gregory Shelter

Lindsay Shelter

Hume Shelter

Supply of Dressed Pencil Round Framing

Since the demise of Ford Timbers you may have wondered where to obtain your dressed pencil rounded framing. We have been processing (dressing and treating) large quantities of locally produced hardwood for Wilson Timbers. We have been very impressed with the quality of this product. It is the ideal match for our LifePlus decking. This product is exclusively spotted gum unlike the previous company who we understand may have used mixed species of different shrinkage and durability,

The contact for this product is Nigel Shaw 07 3277 1988 or go to the online store www.wilsontimbers.com

Ted is writing a book

In this day when we have enough trouble getting people to read I am bucking the trend and actually writing a book. I am getting on in years and can see the time when I will leave the industry. I would like to write down a lot of what we have learnt here at OSA. Timber is not that hard if you have some commonsense but a little help is always useful. I have started to write on timber preservation. I have a good amount written so far and it has all been checked by my friends in the industry and government.

While this book will probably never see the light of day I plan to continue with it. I would appreciate any images you might have showing problems and misuse of treated timber. I have plenty of images of good uses, after all I photograph all our major jobs.

The document is at a stage that it is useful to read. It will guide you through a standard which asks for treatments that cannot be achieved. Contact me for a draft if you require it.

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

Regards

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