



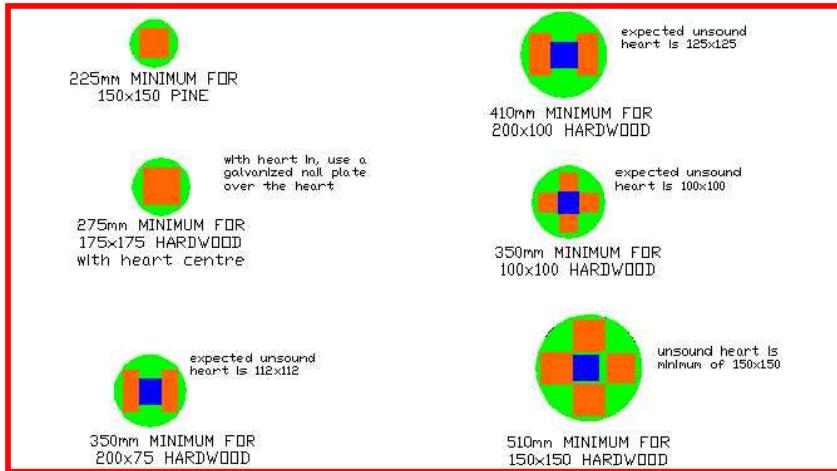
Outdoor Structures Australia

Practical solutions that enhance community design projects

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EXTERNAL TIMBER DESIGN NOTE

No. 3 August 2002 – Correct Use of Heart in Hardwood



The inner heartwood (wood within 50 mm of the pith) of Australian hardwoods is usually less durable and softer than the outer heartwood. Under AS 2082 heart is only permitted in structural timber when the size is at least 175x175mm. (Designers should be

aware of and resist attempts by some suppliers to provide 150x150 with heart in.) The above image shows the size of log needed to cut various sizes of sawn timber. It is obvious that large cross sections free of heart are very difficult to supply.



Compared to the quality of the saw log presently available, the 200x100 bollard we regularly use requires a relatively large log, which, in turn, makes the timber, cost comparatively expensive. If heart can be used, the log size decreases dramatically. 150mm with heart in can be cut from plantation thinnings 225mm diameter but when free of heart it requires at least 510mm Logs this size are scarce and often carry a lot of fault so the number of suitable logs is even less. In Australia, large quantities of timber are cut for landscaping which have no restriction on the amount of heart included. These are loosely called *sleepers*. Some people use sleepers for landscaping bollards. Bollards made from low-grade timber can deteriorate quickly. The bollard on the left, which emulates our heart free product, was only three months old.

OSA does not use timber under 175x175 with heart in the centre though there may be a small amount of heart on the edge of the 200x100. OSA grades the timber so that major defects are set in the ground.

Larger bollards, say 200x200, are visually very effective but the heart causes major problems. The outside of the timber is shrinking while the inside stays the same size as there is no moisture loss. This causes the post to split down one side and across the top.



The images above are from a project OSA refused to supply as the specification was inadequate. We would have only supplied them with a metal cap and an expansion groove down the length. The client, as often happens, took the lower price option and now the bollards are badly torn down the length and top with gaps so big that children can catch their fingers. OSA has now supplied the client with a metal cap fitted but the unsightly tear remains.

The problem of splitting is not avoided by using recycled timber. Large sizes are too big to season effectively and when the original timber is re-sawn it can behave just like a piece of new timber and is likely to split much to the frustration of the owner. We saw a case early in 2002 of recycled 200x200 turpentine which shrunk almost 10% in a few months.



The post on the left is 150x150 with the heart in the centre. Because the heart is much softer than the surrounding true wood, the centre decays as the image shows. A metal cap protects this soft timber from decay and also restrains the top and helps minimise the splitting.

The cap on the right, a standard OSA product, is smaller than the post as it is designed to allow for a sawing tolerance of +9mm or – 3mm for sizes 200mm and over. (sizes under 200mm have a tolerance of + or – 3mm).

The images above should make one question why would you ever use heart centre landscaping? But when used

properly it will age graciously and is environmentally sound. This heart centre timber can be cut from regrowth and plantation timber, which has considerable attraction to local government specifiers and environmentalists. Even though my living is from hardwoods I have difficulty putting prime old growth hardwood into landscaping. There are three points necessary for successfully using heart in hardwood:

- The top must be capped as mentioned;
- An expansion groove, a saw cut made up the full length of the bollard is required. This cut allows the post to flex on an unobtrusive line rather than tear randomly down one side; and,
- The timber must be one of a very limited range of species that have historically been proven to work. A blanket durability 1 or 2 specification is fraught with problems. Speak to OSA about their recommendations.

OSA is very happy to work with you on developing your landscaping ideas and supply anywhere in the world.



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TIMBER STRUCTURES OR VISIT OUR WEBSITE - www.outdoorstructures.com.au***