

Choosing & Installing Big-Section Bridge & Wharf Timbers

Timberzoo stocks Recycled Bridge and Wharf beams and Decking timbers for re-use in new builds. Although the re-use initiative is driven by considerations of appearance and texture, important structural considerations remain to be discussed with designers.

Not all recycled beams are suitable for high load structural use. This limitation is due to the very nature of recycled timbers such as notches, rebates, bolt holes, fracture, weathering and the structural grade of the original beam.

As a general arrangement at Timberzoo, old beams with a good residual structural index are stacked in the front yard - while beams which are landscape grade or sleeper grade are kept in our rear yard. We have two stocklists - **Bridge Stocklist** and **Landscape Stocklist** - which you can request online at any time [here](#).

It is important to note that most reclaimed beams are rectangular in section size - not square. This is because a rectangular beam is a more efficient use of sawlog - and has more strength than square section per cubic metre of timber within the beam. The demand in the market, however, is for square section. While an increasingly design-savvy section of the market are content with found dimensions, square posts seem to satisfy a correct proportions gene in the minds of many owner-builders.

Square section can be resawn from old girders and piling in the round - but they are necessarily **boxed-heart** in character if dimension exceeds 125 x 125mm. There is no other way to supply large sections.

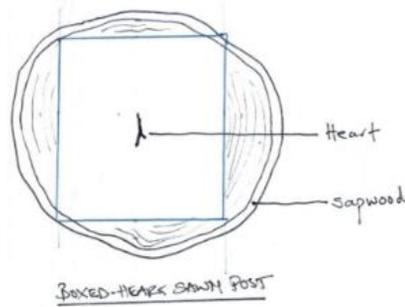
Boxed-heart (BH) sawn sections

Although older sawmillers remember a time when 200 x 200mm could be resawn **free-of-heart** (FOH), the industry has always produced BH posts for use in construction. Boxed-heart sections have a long tradition of use and can be widely employed in building and outdoor structures. Building practitioners and designers need to be aware that the presence of heart in the timber section -

- a) limits the strength of the post, and
- b) means that additional checking and movement is to be expected – unless the dimension is reclaimed.

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Reclaimed boxed-heart sizes may be better suited to some designs than resawn because although they will already show the outcomes of heart tension, distortion and drying, they will be stable in terms of future movement and shrinkage.



Heart is the dead centre of a sawlog often defined by a star fracture. It is the pith, corewood or growth heart of a living tree and is responsible for significant internal tension as the sawlog dries. It should not be confused with heartwood or truewood - which is the good stuff we all like.

In principle, milling a round girder to a square post should attempt to maximise the amount of heartwood retained around the heart. In the best case, the heart stays dead centre in the section and does not wander. The essential science of BH milling is balance. To contain the heart with an equal amount of heartwood on all sides. Even when only a small volume of wing timber is removed in milling, some tension will be released by the heart as it discovers there is less heartwood to contain or confine it.

At Timberzoo we cut old piling and girders to their maximum dimension yield in order to contain the heart. 300 x 300mm if the sawlog allows. If not - then 250 x 250mm - then 200 x 200mm. The preparation and slow drying of marine piling before milling, the time allowed to season in block stacks after milling, and the storage of posts in the critical first 12 months will minimise failure or extreme movement.

Acclimatisation of recycled girders

Apart from heart tension, the other evident movement is attributable to acclimatisation drying or seasoning. A post will require several months for a new surface (case) to find equilibrium MC with its environment. Even when dead, timber is a living thing. Case drying usually produces surface check on BH posts.

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A similar drying pattern applies to new or GOS timber posts. They can retain a reasonably high core moisture in service if the case is allowed to season slowly. They can be used after a few months of seasoning for most general construction purposes.

At Timberzoo we sell timber to you as recycled - reclaimed or resawn - and GOS - unseasoned and partially seasoned posts and beams. Inspect and choose timber lengths yourself. We spend considerable time with customers in the woodyard so informed selection can be made.

The best posts to use are DC1 species - Durability Class 1. They can be installed in-ground or on stirrups. DC1 and DC2 hardwoods are best for pergola beams. Less durable species are best suited to interior uses and shopfitting displays.

Treatment of your Remilled or GOS (Green-off-saw posts)

- a) All posts purchased already have end-grain sealed with EG sealant - a waxy membrane End-Grain sealant preventing rapid moisture loss from the ends of the posts. Everything to do with hardwood seasoning must be slow and gradual. Timber misbehaves during rapid drying events.



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- b) When you re-cut your posts apply EG Sealant immediately to the new end-grain surfaces. Especially for step-cuts or rebates to house beams and footings. These timber ends and haunches can develop serious checks if left unsealed and allowed to dry rapidly.
- c) Oiling of the timber surface of posts and beams with Sceneys decking oil also reduces drying rate of the timber case. This is especially advisable in Victorian and South Australian with their low humidity summers.



- d) For in-ground installations, paint the post end first with Digger Eco-Protecta to prolong service life in wet clay soils.

