

Attaching a verandah to a straw bale house

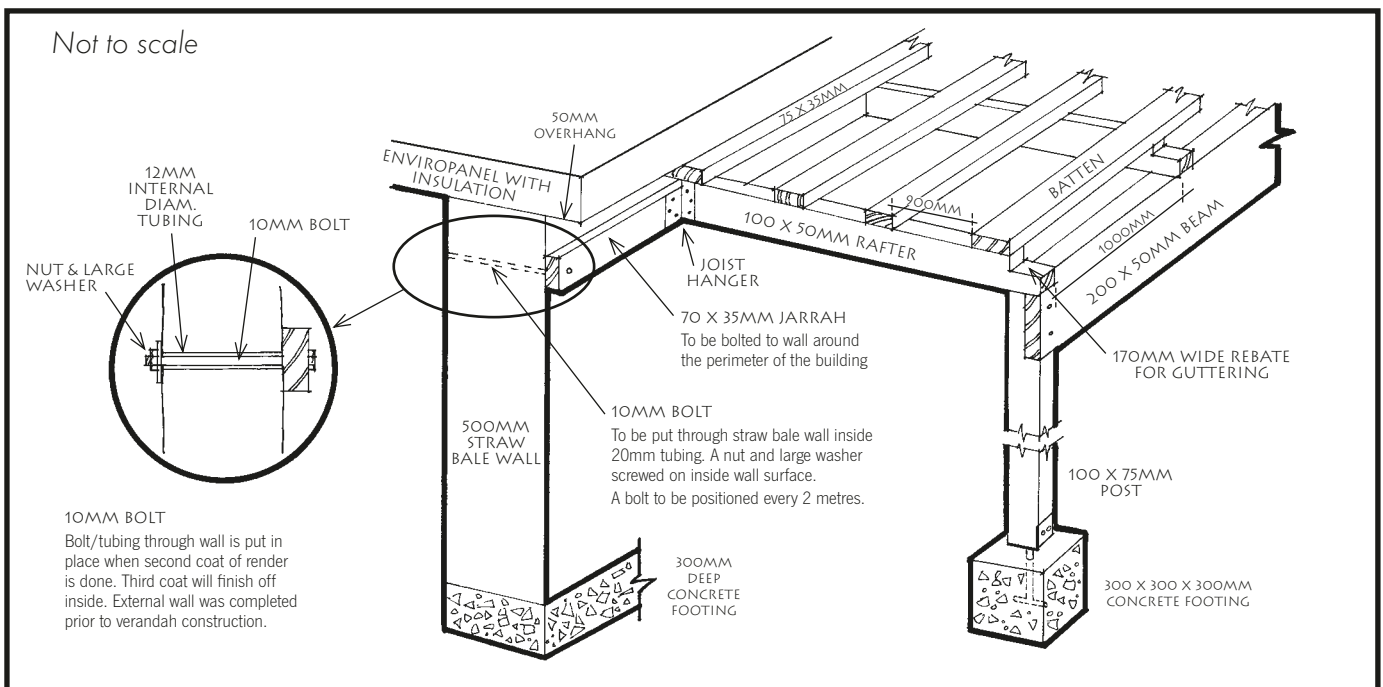
BY BRUCE GIBBS



I am building a straw bale house on four hectares near Toodyay in WA, as time and funds allow, while still living and working in Perth.

Having completed the external straw bale walls and fitted the roof, it was time to think about verandahs. As I have used *Enviropanel* for the roofing and have no eaves, there was nothing to attach the verandah framing timbers to. I wanted the verandah to be a continuation of the roof line, but without the added cost of running the *Enviropanel* out over the verandah, where it was not needed. I also did not like the expense of an independently framed structure, requiring additional footings and in ground posts. So what did I do?

Verandahs go all the way around the house, 3m wide and framed with recycled jarrah.





Firstly, I attached lengths of 70 x 35mm recycled jarrah to the walls to provide support from the house end.

To secure these, I drilled a hole through the straw bale walls using a length of 12mm (internal diameter) tubing with a serrated edge, attached to a drill. Just before the tube came out through the other side of the wall, I used a separate piece of tubing to create an exit hole, while also creating an indent for a large washer and nut to be fitted without protruding.

Top: Before the verandahs were fitted. Note the insulated Enviropanel roofing.

Left: Verandah framing completed.

Opposite pg: Wall support visible below roof.

Once the hole was drilled, a wall-width length of tube was pushed into the hole. The pre-drilled 70x35mm timber was placed against the wall, with a 10mm threaded bolt pushed through the timber and wall (inside the tubing) and finished off with a large washer and nut. This attachment method was repeated every 2m.

I then fitted 100 x 75mm posts on supports in the 300 x 300 x 300mm concrete footings, placed 3m from the edge of the house. Beams (200x50mm) and rafters (100x50mm), spaced at 1m intervals and attached with joist hangers to the house end, followed. The outside edges of the rafters have a recess to allow for the gutters. This was

What the experts say

Angus Stephen

Bruce has provided us with an interesting solution to his situation. After reviewing his article, photographs and sketch, a couple of issues sprung to mind. I spoke to Bruce about these, and discovered that he had used quite an interesting method of construction.

Bruce's house is an infill straw bale building, with a steel frame to resist the termites that are active in his area. The steel frame comprises 50 x 50mm square hollow section posts at approximately 2m centres, with a 150 x 100 rectangular hollow section ring beam.

When installing his bales, Bruce used a construction method that I have seen mentioned in books but have not witnessed – he laid the bales like bricks, with a sand and cement bed between the courses! As with all 'green' brickwork, temporary bracing was used until the mortar bed cured. He did not use any system to compress the bales – be it wire, strapping, threaded rod or stakes driven between the courses of bales. Baling twine was used to tie bales to posts and beams.

Bruce then rendered with a cement-based render, up to 60mm thick in places. The only netting used was around the window and door openings. I am personally no fan of cement render on straw bale for reasons to do with permeability, longevity of the encased bales and the embodied energy in cement, but it is important background information in this case.

The verandah roof falls about 20mm over the three-metre span. There is no flashing at the junction between the main roof and the verandah roof, or between the walls and verandah roof at the gable ends, with the

ends of the corrugated 'valleys' turned up with pliers. Bruce indicated that to date, wind blown rainwater has not run down the outside of his walls, even on the northern and western elevations which cop the worst of the weather over in his part of the world.

However, be mindful that your standard corrugated profile is designed for a minimum 7 degree pitch, and that flashing the junctions between roofs and walls is a requirement of the Building Code of Australia.

I was keen to clarify what Bruce meant by a 'large washer.' I was pleased to discover that this was, in fact, a piece of 6mm plate steel approximately 75 x 75mm. This plate was recessed into the bale and rendered over. No mesh or similar was incorporated for possible crack control occurring where different materials meet, but Bruce indicated that no cracking has occurred at these points to date.

I thought the use of the tube with a serrated edge to cut the hole through the bale was a very clever solution to allow him to accurately locate the threaded rod. My gut reaction is that 900mm or 1200mm spacings of the threaded rod (instead of 2m) would probably be more appropriate over the life of the building, and I would have been tempted to try and incorporate a piece of 70 x 35mm hardwood on both sides of the wall.

Angus Stephen of Angus Constructions offers a broad range of services from assisting the owner builder to full project construction, focused on delivering comfortable, practical and energy efficient homes with a high quality finish. Angus is also the Secretary/Treasurer of the Australasian Straw Bale Building Association. 02 4869 3950, 0400 887 870, angusstephen@bigpond.com

Lance Kairl

It would always be the preferred option to fix to structural posts or beams, the top plate in the straw bale wall, or the roof fascia. Bolts through the straw bale wall may move ever so slightly with wind gusts and dislodge render covering the nut on the inside of the wall.

Always remember to design to hold structures down as well as up, as wind gusts will always apply lift. On that note, it is wise to follow the guidelines in the Building Code of Australia, or build to the plans and specifications as defined by your designer and engineer, worked out for your building and approved by your council.

Insurers are getting more and more precise about the claims they pay out, and I can foresee the day when an unapproved verandah, or parts of the house it damages, may not be covered.

Another point to bear in mind is the roof or verandah pitch (slope). Roof cladding is designed to function best within the manufacturers specified angle range. Corrugated roofing iron is best suited to a pitch of greater than 7 degrees, less than this and it may leak at the overlapping joints.

Confirm with your supplier or designer that what you are using is suitable for a pitch any less than this. Flat roofs will have more water on them during rain, as it cannot flow off quickly enough, and this adds considerably to the weight; you may require different verandah timbers supporting it.

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topped with 75 x 35mm battens, spaced 900mm apart. Sheet metal roofing is still to be fitted, with the same profile as the *Enviropanel*, and will be fixed with tek screws.

The wall attachment was done once the second coat of render had been applied internally, and the external render was complete. The third coat of internal render finished off the small holes that resulted. This method has proved successful, and is very strong. ■

Construction tip

Even if you initially plan to build a pergola without roof cladding, it is a good idea to design the footings to a size that will allow for the additional loads created by cladding, in case you change your mind in the future. Pergola construction is covered in detail in 'The Australian Decks & Pergolas Construction Manual' by Allan Staines. See Bookshop pg 71 for more details.



• Enviropanel

This consists of two layers of corrugated steel roofing, bonded each side of about 75mm of expanded foam. It is incredibly strong and can span over 7 metres without framing. It appears that the product is no longer available.

Similar products are: Ritek Custom Roof Panels (www.ritek.net.au, 07 5472 2540), Austral Insulation WA Econodeck (www.australinsulation.com.au, 08 9249 4022), Bondor Equideck (www.bondor.com.au, 1300 300 099).

Other fixing methods

There are a number of ways of attaching things to straw bale walls. If you think of it during the design process, you can insert wooden fastening points into the wall itself as the bales are laid. This can be as simple as a wooden plug to allow for the attachment of lightweight fittings like pictures and bookshelves, to a more robust ladder arrangement that is sandwiched between two layers of bales for heavy items like kitchen cupboards.

Another option is to include S-shaped metal 'hangers' that fit over the top of the top-plate, leaving a holder exposed on the outside for placement of a horizontal wooden beam.

A separate frame for the verandah would be more costly, especially in concrete, but would not involve any penetration of the straw bale walls.

When using the bolt-through option, as Bruce has done, it is a good idea to use large plywood backers on the nut side. Before rendering over them, make sure you tighten the nut again. These will spread the load over a much larger area and should reduce the possibility of cracking.

Coming events...

NSW WORKSHOPS

GUDHARA HOLISTIC
SANCTUARY

MARULAN, SOUTHERN
HIGHLANDS

Mud Brick and Cob Construction 2 - 4 November

Make mud bricks and create an organic building with cob over this weekend. Includes twin share accommodation, meals and materials. Facilitator - Peter Hickson. \$495.

Permaculture Skills Workshop 1 - 2 December

Learn permaculture techniques and discover new skills for planning your backyard. Twin share accommodation and meals included. Facilitator - Jill Cockram. \$395.

Your Role in Climate Change 8 December (10am - 4pm)

Connect with nature and each other to make empowered choices on climate change. Concessions available. Facilitator - Ruth Rosenhek. \$75 includes lunch and afternoon tea. 02 4841 163, www.gudhara.org.au

VIC HOUSE TOUR

DAYLESFORD
SUNDAY 28 OCTOBER 2PM

90 minute tour of owner-built lime rendered straw bale home, passive solar design, totally self-sustaining. \$15 each, Small group.

Bookings and info Kim 03 9557 4889

TAS SUSTAINABLE LIVING EXPO

HOBART CITY HALL
20 - 21 OCTOBER

An annual event showcasing environmentally sustainable products and practices to help people live more lightly on the Earth. Displays, talks, workshops, kids' space, café.

03 6234 5566

www.sustainablelivingtasmania.org.au

Coming Events cont'd next page

