

THE **Owner Builder**

BE INSPIRED – REAL STORIES ABOUT REAL OWNER BUILDERS

205 – FEBRUARY/MARCH 2018

\$9.50



STRAW BALE ♦ EARTH PLASTER ♦ STONE ♦ KIT HOME ♦ RETROFITTING

Book extract

Excerpted from **Weaving Walls: A wattle & daub cottage**
A Thannal Documentation Project



Wattle & daub

It is the collaboration of woven strong fibres, such as bamboo, with a layer of well balanced soil. The wattle (split bamboo) is woven into mat like panels much like a basket weave. The wall thus formed is a lattice to which a layer of the earth mix, i.e. daub, is plastered on to make it opaque.

Wattle and daub has been practiced since the concept of a dwelling arose. It is the easiest technique known to man that can be constructed from potential wattle in the surrounding and a little bit of soil. It is the most plausible method of making a shelter.

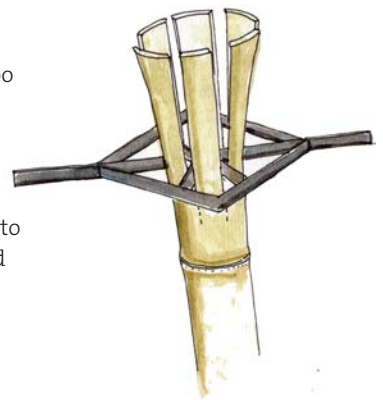
FEATURES OF WATTLE & DAUB

It reduces area required to construct a wall there by increasing the area of the dwelling. Easy to construct, wattle & daub doesn't need nails or screws to weave, since weaving itself is a tool. It is self reliant, i.e. it does not need external binding for it to stay in place. The walls are light weight as wattles, but the daubing enhances their strength. Wattle can be woven the way we want in all dimensions, hence a flexible material with design. They make excellent partition walls.

SPLITTING BAMBOO

Bamboo is split using a bamboo splitter. The centre of the splitter is aligned with the centre of the bamboo to be split, and is hammered along the length.

Before using the split bamboo to weave the wattle, they are treated in the same boric-borax solution.



Wattle walls

COMPONENTS

There are two components of the wattle; the posts and the weaving fibres. The posts are the vertical members that are set into the base, which can be at the plinth level masonry or cob. The weaving fibres like bamboo splits are then looped alternately along the guide posts. The wattle and frames used are bamboo splits owing to the availability of bamboo in site. Although wattle & daub does not have much self-weight, the inclination to the wall made it essential to design appropriate frame to be able to withstand any jerks.

THE SPLITS

The split bamboo used was woven along the frames while they were still wet from the Boric-Borax Treatment (For bamboo treatment, you may refer to 'Bamboo Harvesting and Treatment'). This allows the scope for creating fine curved walls easily without the fear of them snapping. The edges of the building were rounded to prevent any sharp bends, as it is difficult to turn bamboo on its own!

Weaving Walls

Used with permission from Thannal Hand Sculpted Homes. www.thannal.com

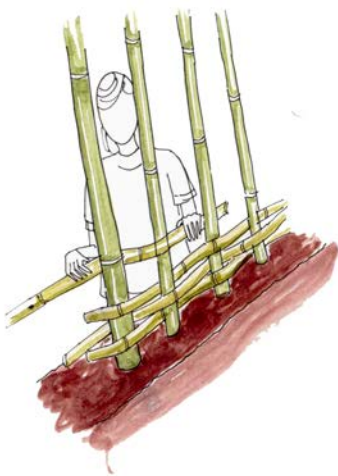
Sections, diagrams, photos and page numbers referred to are as included in the book, and not necessarily in the extract.

Weaving wattle

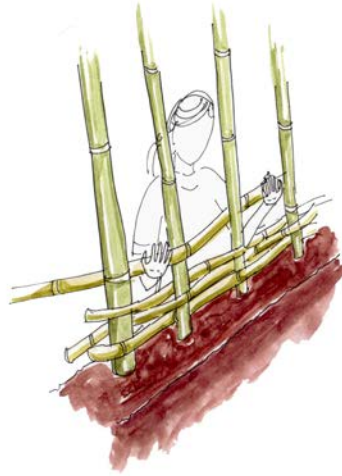
LEANING POST IN COB

To keep the posts for the wattle at an inclination they were placed deep into the cob. This can be done with ease while the cob has still not completely dried. To keep the posts in place, horizontal bamboo beams were placed with slits wedged in either side. By doing this the bamboo vertical was rooted perfectly at the bottom.

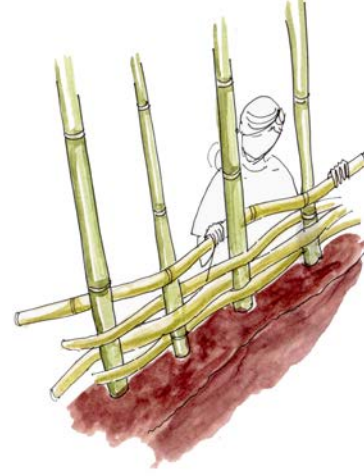
The top of the post was secured in position by tying it with the members of the roof with a rope. The little gaps that the posts and the rafters created were sealed with half bamboo splits.



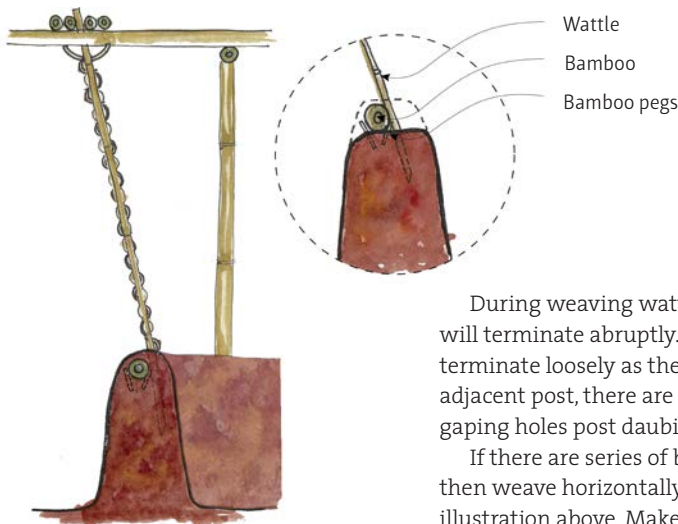
Step 1: After placing the verticals you can start weaving the wattle. Place the posts at comfortable distances. Pull and push the bamboo split carefully while driving it around.



Step 2: Repeat the process while weaving along the second post only make sure it is pulled along the alternate direction.



Step 3: Pull-push the split again along the other direction. Alternating these weaves will create strong walls and enable efficient daubing.



During weaving wattle, you will come across a situation where the bamboo weave will terminate abruptly. We should be careful at bends and corners. Never let weaves terminate loosely as the corners. Also if you manage to just secure the split into an adjacent post, there are chances of this coming loose and snapping out thereby creating gaping holes post daubing!

If there are series of bamboo splits left unwoven, knit vertical bamboo pieces, and then weave horizontally along them with smaller bamboo pieces as shown in the illustration above. Make sure the verticals are carefully secured.

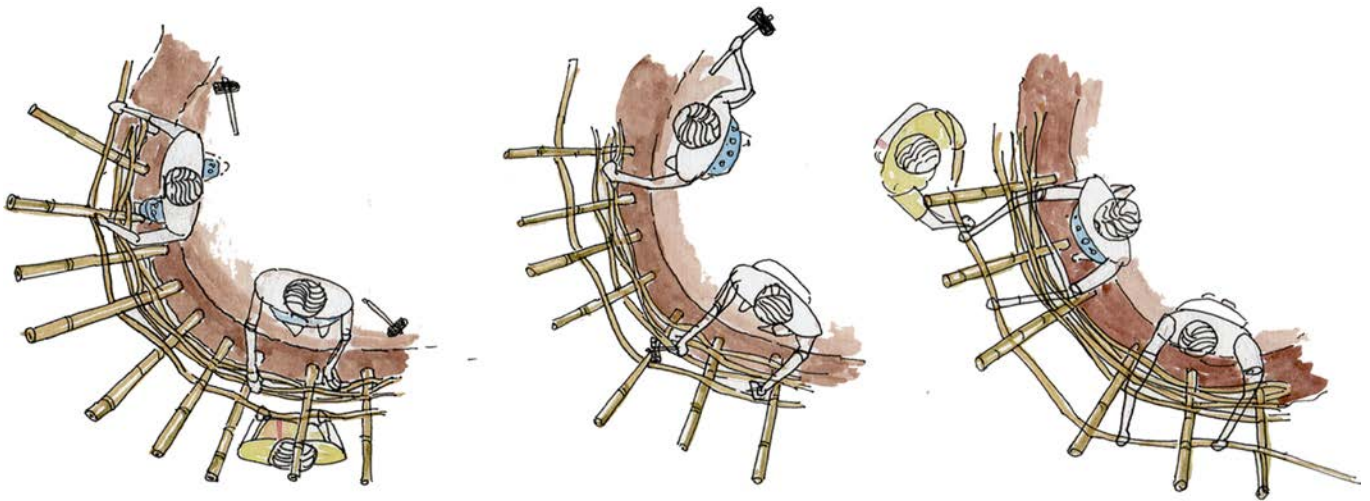
Book extract (cont'd)

Wattle in corners

CORNERS

Corners of a wall of any material are the most critical part of a building. The joinery and the masonry has to be intelligently designed to ensure that there no cracks whatsoever in the future. While weaving wattle, we have to be extra cautious with how we deal with the weave at the corners. The fact that wattle & daub is not loadbearing allows us to explore its flexibility, however that does not excuse us from taking precautions.

The wattle was not just curved but also sloped outwards from the cob base, for which the frame members are closely spaced at the base letting them gradually spread at the top end to form a smooth curve. The corners are the toughest to wattle as the walls are inclined and the spacing between the posts diminishes towards the bottom. Weaving is extremely difficult if not impossible at the corners.



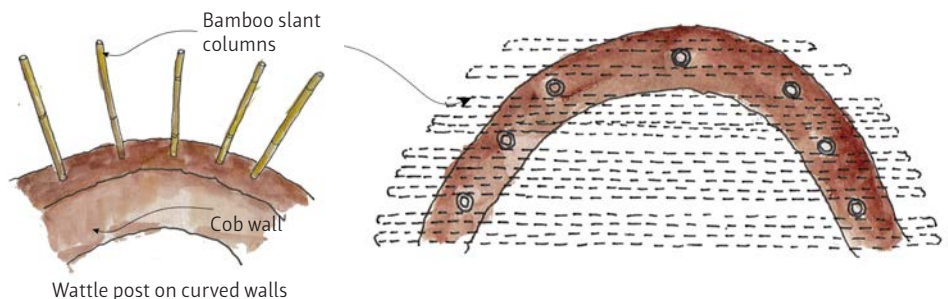
Step 1: The wattle weaving was started from the top where there was more room for weaving the wattle.

Step 2: The bamboos were gradually hammered down without heavy jerks to prevent either the weave or the post from breaking.

Step 3: Care was taken to hammer the bamboos as close together as possible. Then the next wattle was woven.

WATTLE IN CURVED WALLS

The main bamboo posts for the wattle frames were placed at close proximity the curves as the curvilinear shape will not be achieved while weaving if they are sparsely placed. As you can see in the figure on the extreme right, the posts are placed into the cob equidistantly. The spacing between them is small towards the bottom whereas it goes on increasing in different directions as it goes on top.



Wattle post on curved walls

JOINERY WITH THE ROOFING MEMBERS

The posts of the wattles do not end in the same line, since it is a curve! Therefore it was a difficult to keep them in place. This is why these posts were tied with the horizontal roofing members. This helped maintain the distances between the posts and kept them in position.



Bottle in the wattle

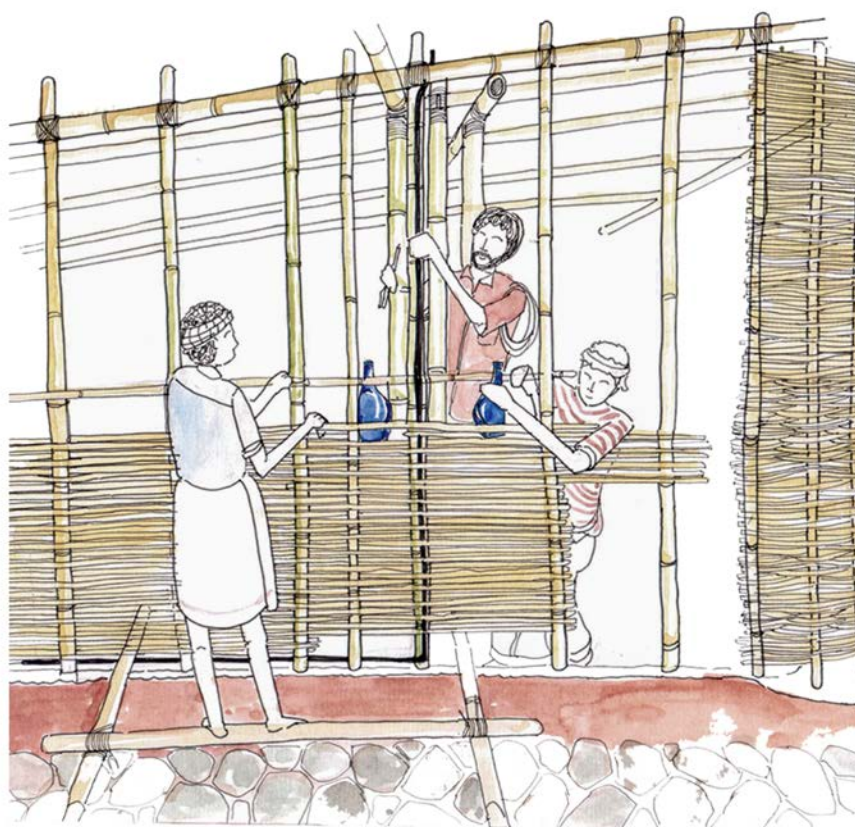
WATTLE WALL ENHANCEMENTS

While making a wattle wall we can embed many things into it to make the wall more expressive. We placed beautiful blue tinted glass bottles into the west side wall. The evening sun hits the glass bottles, which was the cottage with a hue of blue!

It is a very simple process, where you just need to weave around the bottle while you are placing it. Although we had to be careful while daubing; this was done without diminishing the size of the tinted glass.

We incorporated the electrical wiring while the wattles were woven. This can be done only if the gaps formed between the weaves are large enough to accommodate the wiring pipes. Since we had enough room for the wiring, which was later filled with the daub, we opted for an internal electrical wiring. It is, however, ideal to avoid doing this.

The electrical wiring can happen after a layer of daubing, as the daub is a good way to engulf the electrical pipes and also can be efficiently repaired in future. If you wish to incorporate electrical fittings in your wall, good insulation is the key. ♦



A PDF is available to purchase. Make a donation of US\$2 or more by using Paypal and making payment to info@thannal.com. Include a note that the donation is for the book PDF. They will send you a link to download the document via email.

www.thannal.com > Book