



HOW TO PROTECT BAMBOO BUILDINGS FROM RAT INFESTATION

Bamboo is a traditional building material in many developing countries^a and has a long history of usefulness. In South-East Asia, for instance, bamboo poles are often used to build the framework of walls and roofs of huts, and split bamboo is used for covering walls. As with other building materials, however, the traditional structure of simple bamboo huts provides ample space for rats to nest.

Unfortunately, it is hardly possible to construct all parts of a house in such a way as to make it completely rat-proof. One method of prevention is to make sure that all the places where nesting is possible are well visible and easy to inspect. In this article, Jules Janssen⁺ looks at the three most likely areas for rats to build nests (Figure. 1), and suggests improvements in their construction which should reduce the chances of infestation and allow for easier inspection.

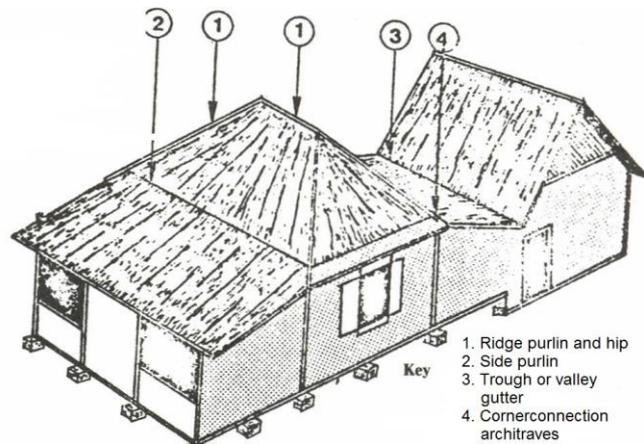


Figure 1. Main areas rat infestation.

Side purlin

- I. The potential rat-nesting areas can be seen in Fig. 2a:
- II. The open hollow rafters and ceiling joists.
- III. The cavity between the double bamboo walls.
- IV. The space along the first ceiling joist alongside the side purlin.
- V. The end of the binder protruding from the wall.

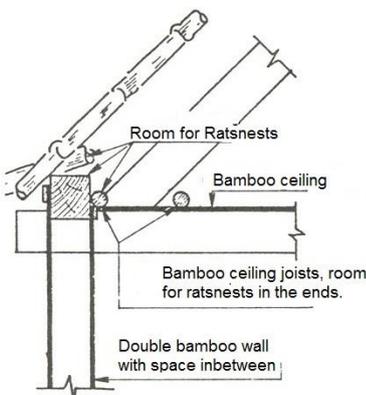


Figure 2a. Side purlin – wrong method.

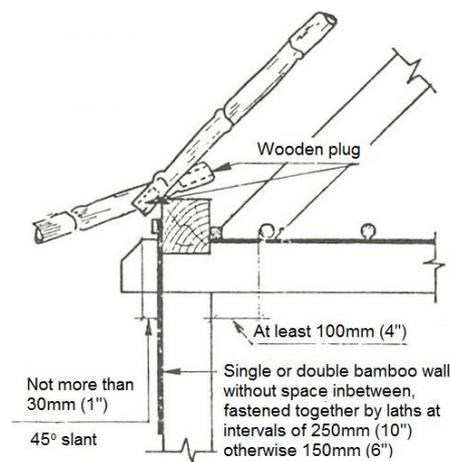


Figure 2b. Side purlin – right method.

Improvements (Fig. 2b and c)

- i. The ends of the hollow rafters should be sealed by well fitting, nailed wooden plugs.
- ii. To prevent rats from nesting between the double bamboo walls, they should be placed close together. If they are to be attached by laths, then the distance between the laths should not exceed 250 mm (10").

When other fastening methods are used, the distance should not exceed 150 mm (6").

- (iii) The first ceiling joist should be placed at least 100 mm (4") from the side purlin. The ceiling can be attached to the side purlin by securely-fitting laths.
- (iv) The top side of the binder should not protrude from the wall for more than 30 mm (1"). If it does, then it should be sawn off at an angle of 45°.

Trough gutter

This also applies to valley gutters. (Valley gutters slope, trough gutters have a horizontal base). These gutters occur when two roof surfaces meet.

- i. When the boards supporting the gutter are incorrectly placed, rats have an excellent opportunity for nesting under the zinc guttering (Fig. 3a).
- ii. Hollow bamboos that are not properly connected to the gutter purlin or the valley are prime targets for rats (Fig. 3a).

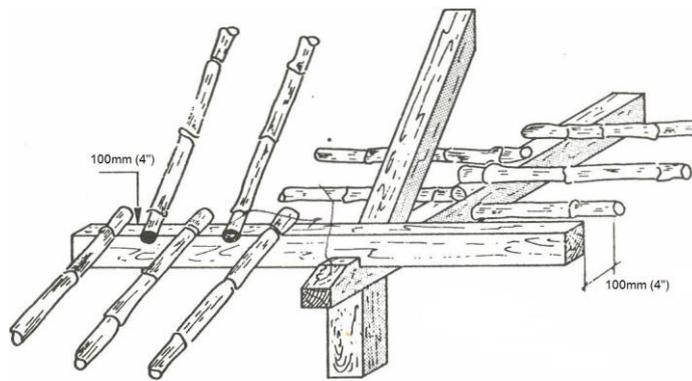


Figure 2c. Side purlin – correct method front view.

Improvements (Fig. 3b and 3c)

- i. The improved figure (3b) applies to bamboo and wooden rafters. Bamboo rafters should be carefully sealed by well-fitting nailed wooden plugs. This construction allows for easy inspection because previously hidden areas cannot be seen, and there is no longer a gap between the zinc and the wooden supports.
- ii. Fig. 2c applies to wooden rafters only. These should be no more than 50 mm (2") wide and not less than 2" thick. The side surfaces of the roof should be whitewashed over a width of at least 750 mm (2' 6") on both sides of the valley for better rat control as these places are usually rather dark.

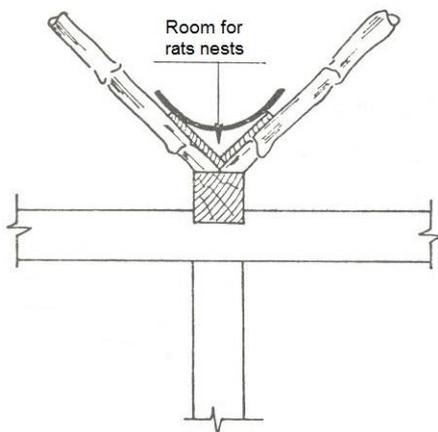


Figure 3a. Wrong way to build a trough gutter.

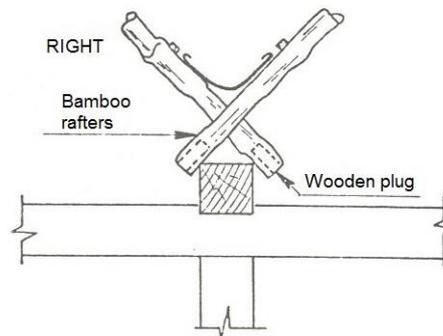


Figure 3b. Correct way in which to build a trough gutter using bamboo rafters.

technical brief

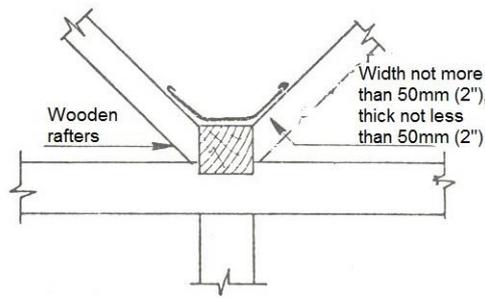


Figure 3c. Correct construction of trough gutters using wooden rafters.

Corner assembling of architraves^b

- i. It is quite common to find architraves of differing heights. In these cases, the ceiling joists are placed on the lower architrave and the difference is made up by a 'packing' lath placed on top of the rafters to reach the level of the top architrave (Fig. 4a). When a bamboo wall is built up to the level of the lath, the space between the lath and the lower architrave cannot be seen and the bamboo ceiling joists cannot be inspected. This provides a perfect opportunity for rats to build nests, unnoticed.

Improvements (Figs. 4b and c)

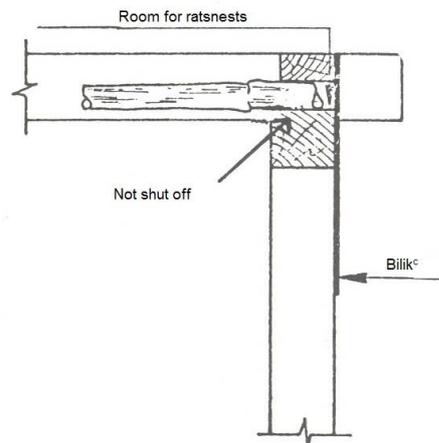


Figure 4a. Incorrect positioning of corner architraves.

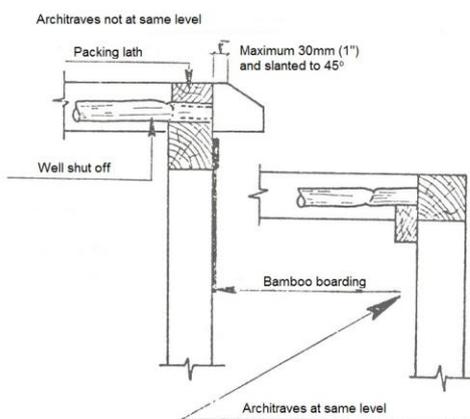


Figure 4b. Correct position for architraves.

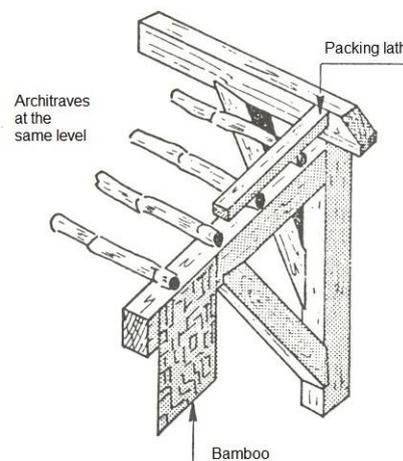


Figure 4c. Top view of correct positioning for architraves.

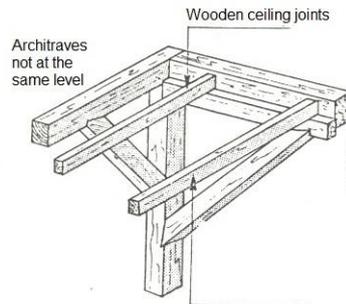


Figure 4d. Top view of correct positioning for architraves.

- i. The bamboo wall should only reach the level of the lower architrave. The ends of ceilings joists must be securely sealed off by well-fitting wooden plugs, and clearly visible.
- ii. If one of the architraves protrudes, then the projection should not be more than 30 mm (1") horizontally. If it is more, then it should be slanted at an angle of 45°.

In houses of better quality, architraves meet at the same level. The ceiling joists are then placed on a separate load-bearing beam, which is fine as long as the joists are wooden (Fig. 4d). If they are made of bamboo, they should be placed on the architraves themselves to allow for easy inspection.

It is important that the three structural areas described above are free from rats. Details of further improvements that can be made to simple houses to control rat infestation can be found in a book on bamboo by Jules Janssen. Dr Janssen has recently completed a thesis on 'Bamboo in Building Structures' and is also the editor of a publication on 'Rural Clinics in Tanzania'.

References and Further Reading

1. Bamboo – A series of articles on the use of bamboo in building construction. Jules Janssen
2. [Building with Bamboo](#) Jules Janssen Practical Action Publishing
3. [Bamboo Preservation](#) Jules Janssen

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