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Partner Housing Australasia (Building) Incorporated

Report on Control of Termites in Affordable Housing in Aceh

This report has been prepared on behalf of **ELECTRONIC BLUEPRINT** by:



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Scope

This Technical Report deals with the reported problem of termite attack on the timber in new affordable housing in Aceh.

Limitation

It must be stressed that the solutions suggested in this report are based on forms of construction common in Australia, but have not yet been proven on site in Aceh.

References

Details of Australian practice are set out in AS 3660.1.

Various commercially available termite barriers are included on the following web site.

www.electronicblueprint.com.au.

Specific links are as follows:

www.electronicblueprint.com.au/suppliers/TERMseal.html

www.electronicblueprint.com.au/suppliers/ensystemex.html

Form of Construction

The following photographs show the typical form of construction in Aceh.



Generally a reinforced concrete ring beam is constructed on a rubble footing, which protrudes to just above the finished ground level. Reinforced columns and brickwork are constructed above. Sometimes the columns are constructed first. At other times, the brickwork is constructed first.

A concrete ring beam is constructed at the top, with steel column bars protruding. The bars are bent over and nailed to the bottom chord of the timber trusses.



Termite Entry

It has been advised that termites enter the footings and access the timber superstructure via the poorly compacted concrete in the columns around the reinforcement.

General Principal

The aim of most termite barriers is to force the termites to the surface of the structure where they are visible and can be easily eradicated. Some termite barriers also include chemicals that deter the termites from passing.

Other systems, involving chemical dosing and graded stone barriers, have not been reported herein, because of possible problems associated with their application and maintenance.

Option 1 - Barrier Above Footing

The most effective solution is to place a termite barrier immediately above the grouted rubble footing, but under the lower concrete ring beam. Such a barrier would need to extend from the outside of the footing under the ring beam and up the inside to beyond the level of the floor slab. In order to ensure that the barrier is properly seated, it would be necessary to grout the rubble footing and roughly finish the top (smooth enough to take the barrier), before placing the barrier and proceeding to construct the concrete ring beam.

Such a barrier need only be physical, but could also include chemical impregnation if this is available. Options are:

- Sheet metal barrier, similar to a metal flashing.
- Stainless steel mesh barrier, joined and fixed by resistant adhesive. Proprietary system - Termimesh.
- Non-toxic waterproof compound impregnated into a geotextile. Proprietary system - Term Seal.
- Internal non-woven fibre blanket impregnated with deltamethrin crystals (low toxicity to warm blooded animals) which both strongly repels and (where necessary) kills termites, bonded within casing layers, top plastic layer (200 microns), which doubles as a moisture vapour layer, and bottom plastic layer (50 microns) prevents termiticide leaching into soil. Proprietary system - Trithor Termite Protection.

Option 2 - Metal Sleeve at the Timber Truss Chord

The bottom chord of the truss could be fitted with a sealed metal sleeve, at the position of the seat on the columns, and isolating the tie-down bars.

This is to force the termites out into the open.

This will be less effective but probably cheaper than Option 1. It will require regular inspection of the superstructure.

Particular attention would need to be given to positions, such as gable ends, where there is continuous contact between the timber and the masonry / concrete.



Concluding Comments

- Option 1 is considered to be the most effective.
- A combination of Option 1 and Option 2 would provide added protection.
- A tightening of the workmanship and better compaction of the concrete will reduce termite attack.
- Chemical treatments can be employed in conjunction with the above options, **BUT MUST BE NON-TOXIC TO HUMANS AND ANIMALS.**