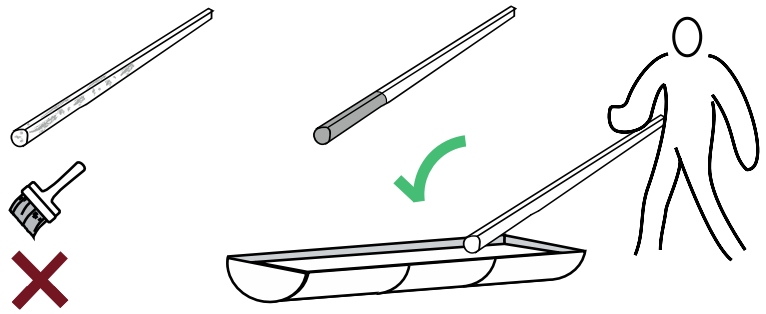
Shelter and Non-Food Items (NFI)
Sector Working Group Nigeria

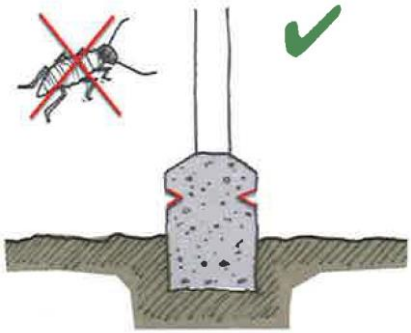
Safe building rules

Advice for the construction of shelters

Prepare the timber poles with adequate anti-termite treatment

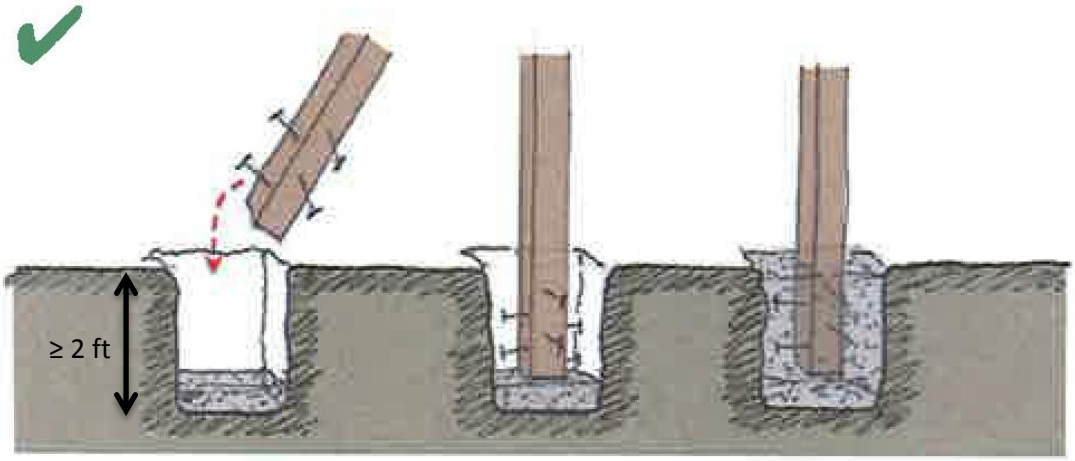


Dip the timbers in sump oil, rather than painting. Soak up to 3 ft. Prepare the dip tank from a barrel cut in half.



Using a physical barrier, e.g. an incision in the concrete base (if any) can increase protection

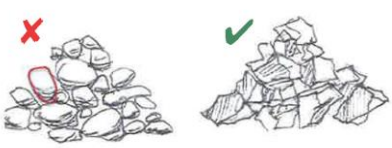
Foundation of timber poles



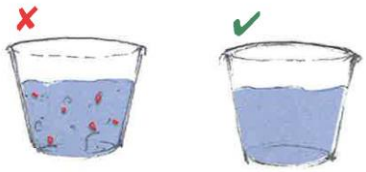
1) Dig a hole of at least 2ft, with straight walls
2) Place a hard base of stones or concrete
3) Fill with concrete of appropriate strength if available

Right aggregates for the concrete

Coarse sand should be sieved to remove stones and dust. If from a dirty or seawater source, it should be washed.



Use crushed rocks instead of rounded river stones, unless broken (for sharp edges).



The water used for concrete should be free of salt, algae or other organic or vegetable matter.

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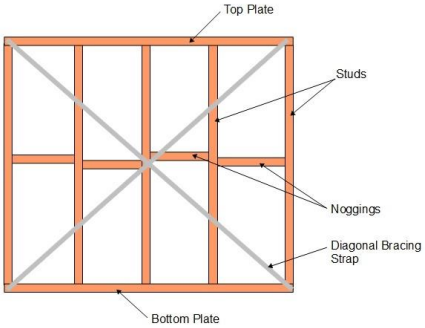
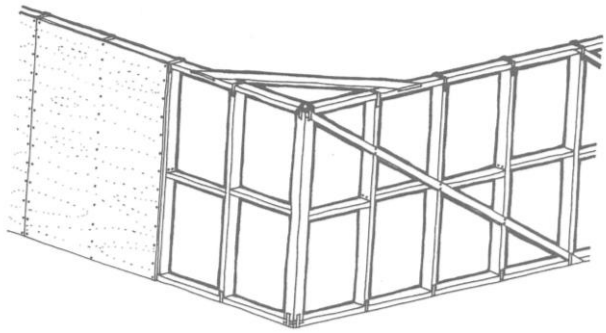
Bracing the structure with horizontal or diagonal elements

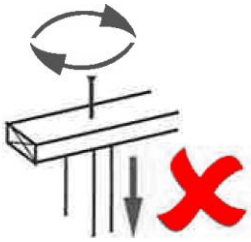
To resist horizontal forces such as strong winds, ensure that bracing is added to the structure: diagonal is much more effective than horizontal. Timber, ropes, metal cables or full panels can be used.



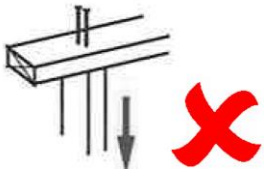


If using timber:
Ensure the bracing is on the inside of the shelter or aligned with the vertical studs.
Inside: this is easier to build and causes less damage to the tarpaulins wrapped outside. Ensure the quality of the nails (as they bear all the load).
Aligned (between studs): horizontal timbers should be placed at different levels to allow for proper nailing.

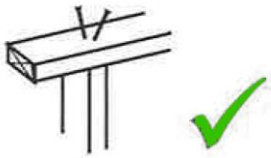
Ensure that the joints are well done and strong



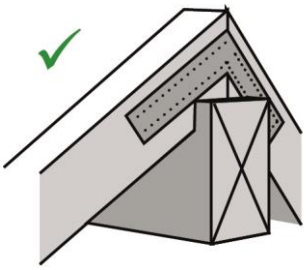
A single nail can easily twist or pull out



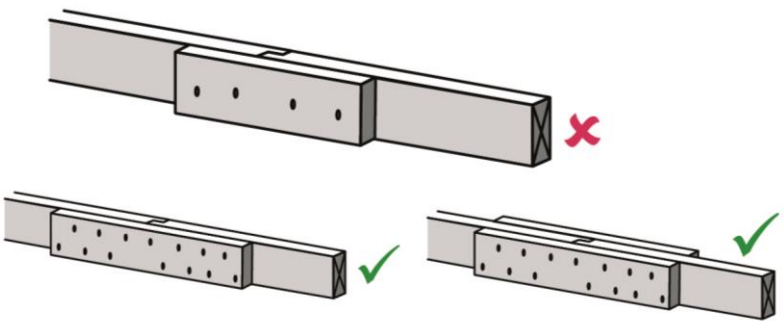
Two parallel nails can still pull out.



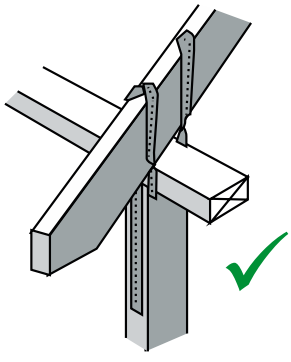
Two or more angled nails are strongest.



Good roofing detail with the use of a metal plate



Poor joints are short and poorly nailed (above).
One or two nailed plates with nails evenly distributed and at least ¾ deep are stronger.



Ensure that the roof is tied down with metal straps or wires