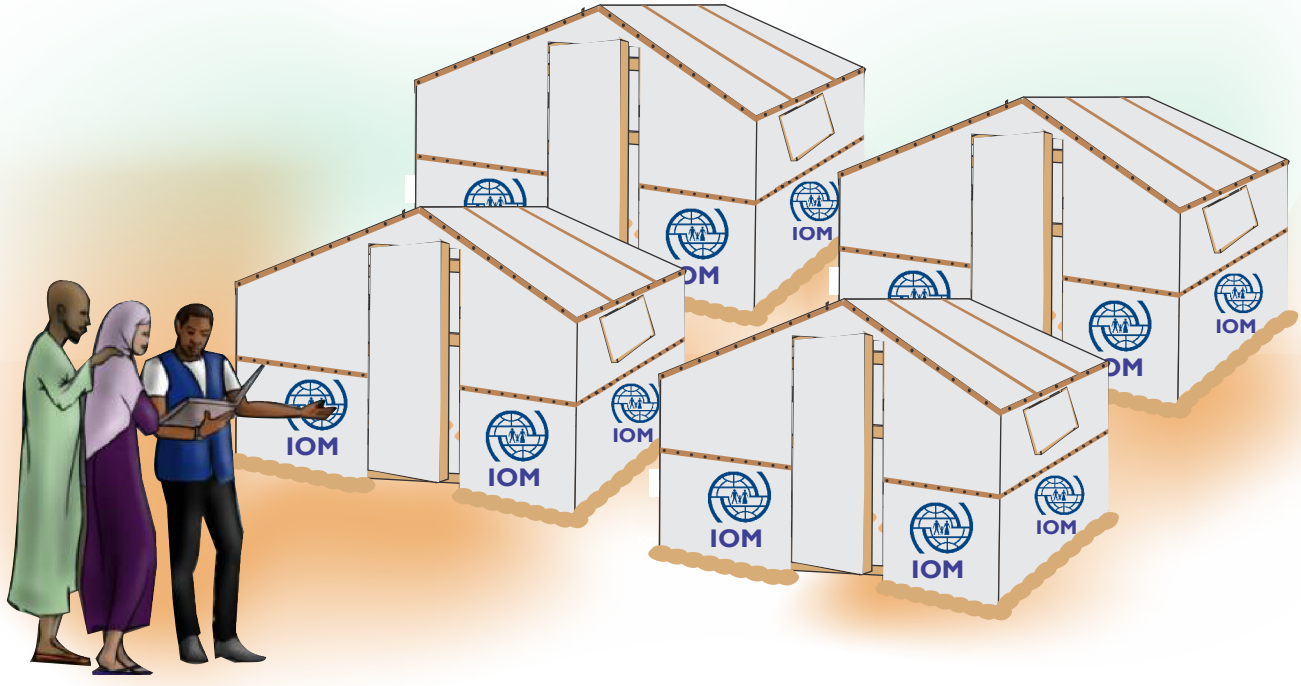
International Organization for Migration (IOM)
The UN Migration Agency

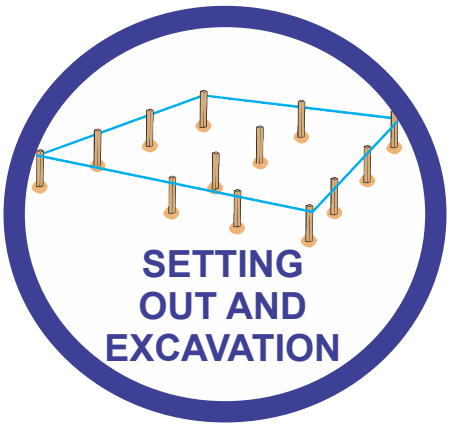
MANUAL FOR THE CONSTRUCTION OF BAMA TYPE SHELTERS

North-East Nigeria



Disclaimer: These tip sheets are intended to promote good construction pratices for repairs, upgrades or in preparing emergency and makeshift shelters to withstand strong winds and mitigate the risk of (localised) flooding. They should be used to aid the sensitisation conducted by site facilitators or site committees to raise awareness of displaced individuals and contractors, and shall not be simply distributed without adequate sensitisation.

SHELTER CONSTRUCTION TIPS

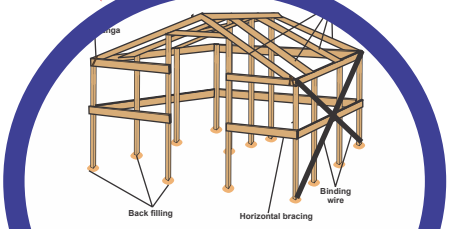


SETTING OUT AND EXCAVATION

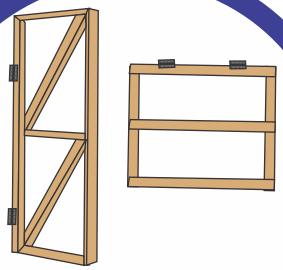
HEALTH AND SAFETY

COVERING

TIMBER PREPARATION AND TREATMENT



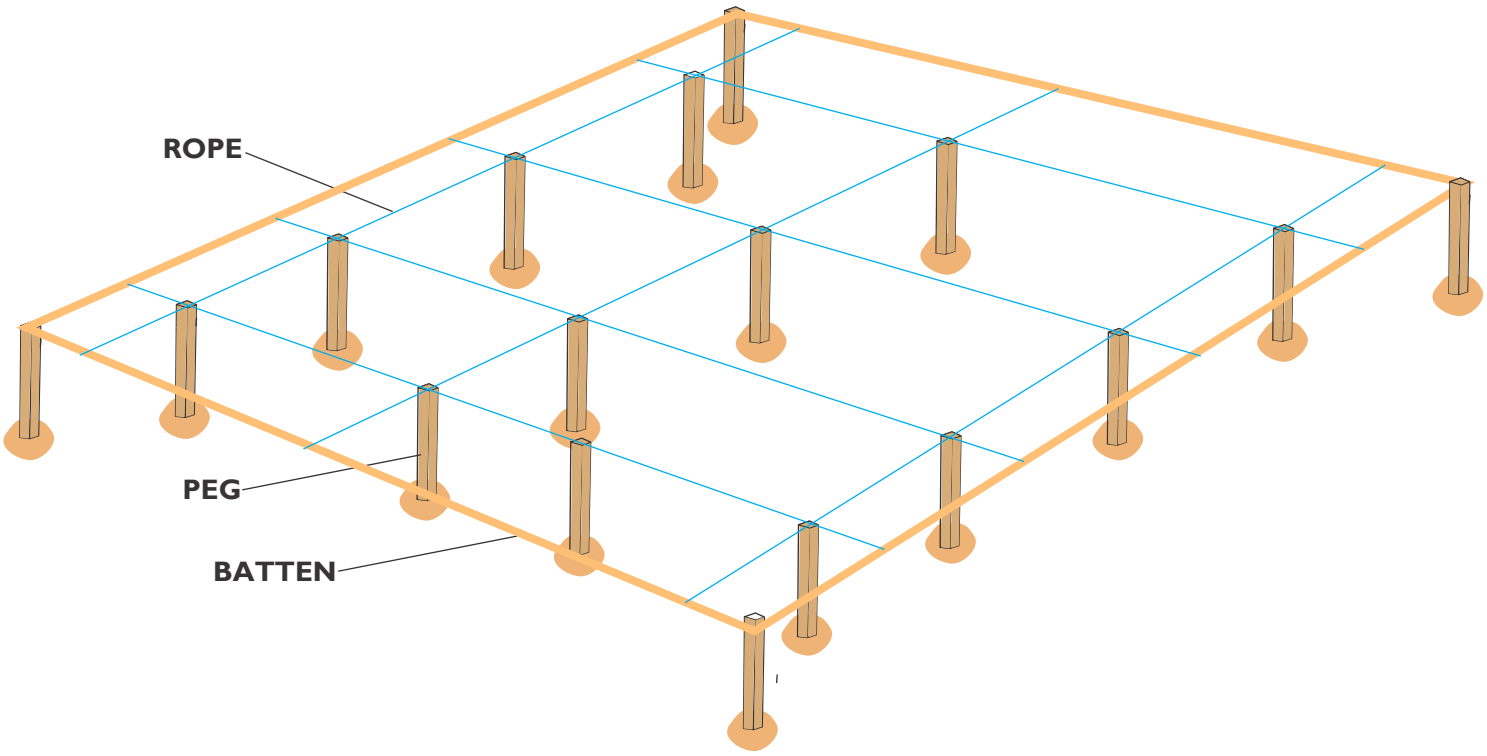
FRAME CONSTRUCTION



OPENINGS

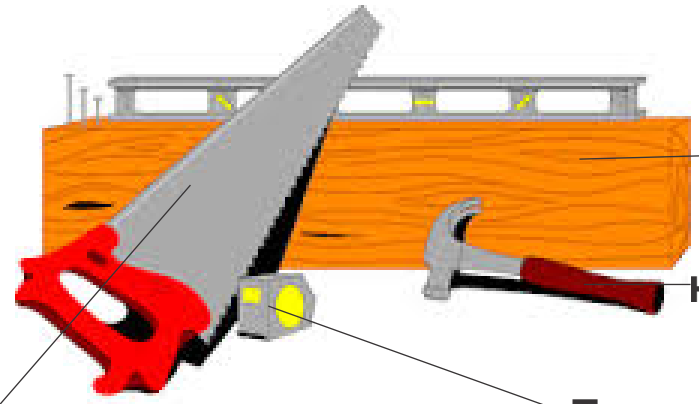
- HEALTH AND SAFETY KITS ARE IMPORTANT AND SHOULD BE WORN DURING CONSTRUCTION.
- CARE SHOULD BE TAKEN TO AVOID ACCIDENTS.
- WHERE APPLICABLE, ENVIRONMENTAL CONCERNS SHOULD BE IMPLEMENTED

SETTING OUT AND EXCAVATION



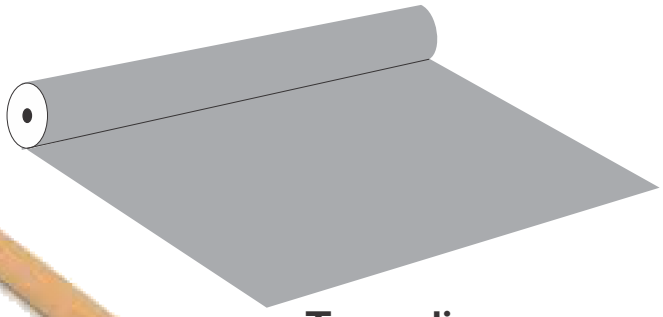
Using ropes and pegs the perimeter and points to be dug are measured and marked. the 13 marked points are then dug with the pickaxe

Ropes



Shovel

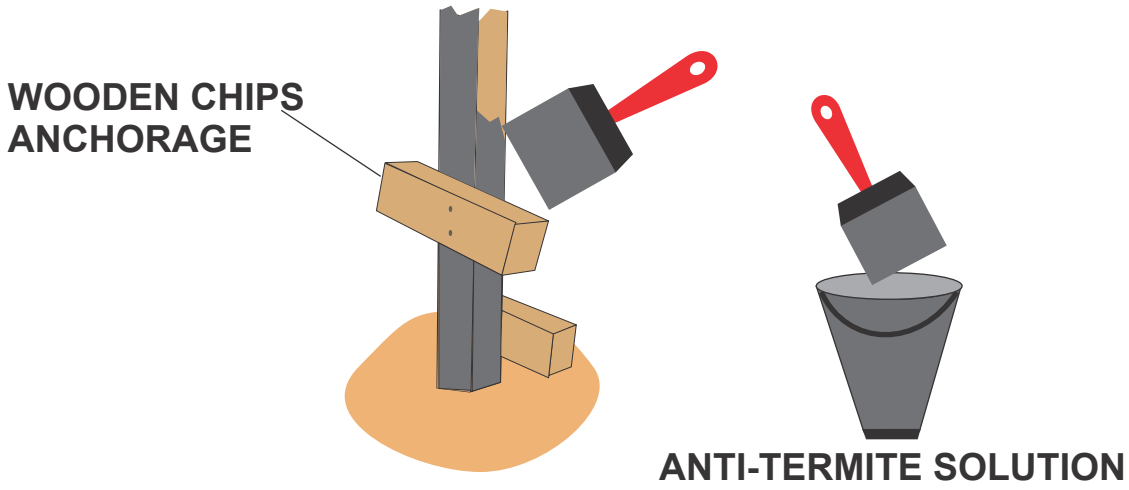
Pickaxe



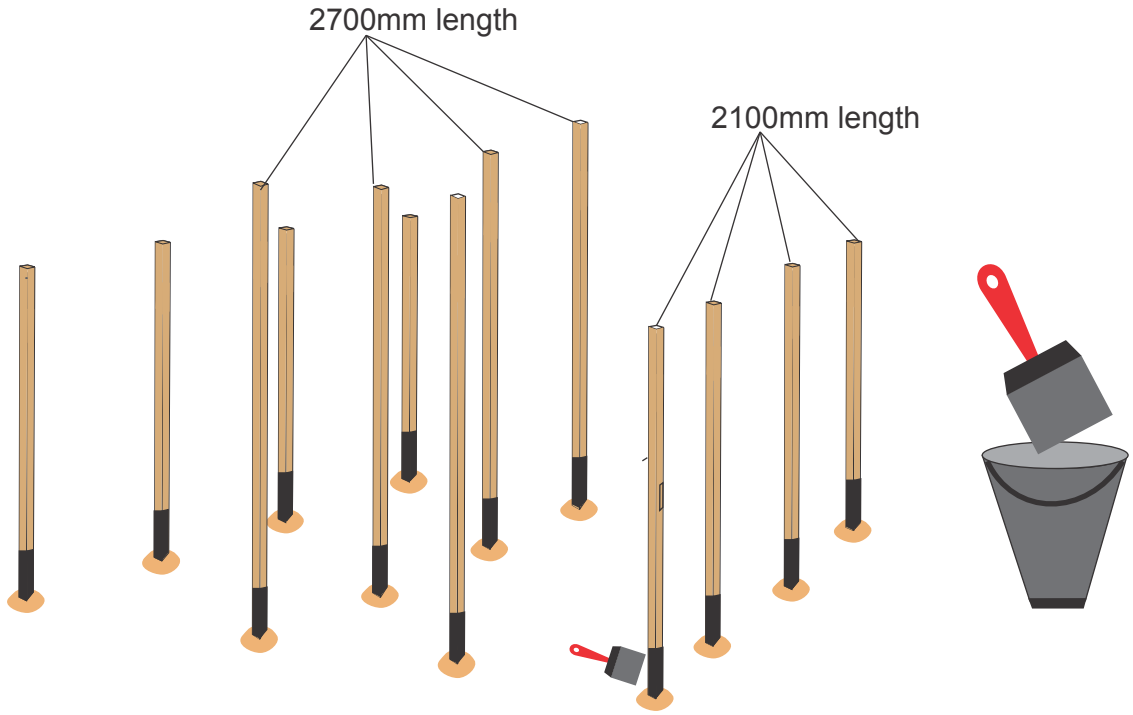
Tarpaulin

Tools should be shared among households to encourage communal collaboration

TIMBER PREPARATION AND TREATMENTS

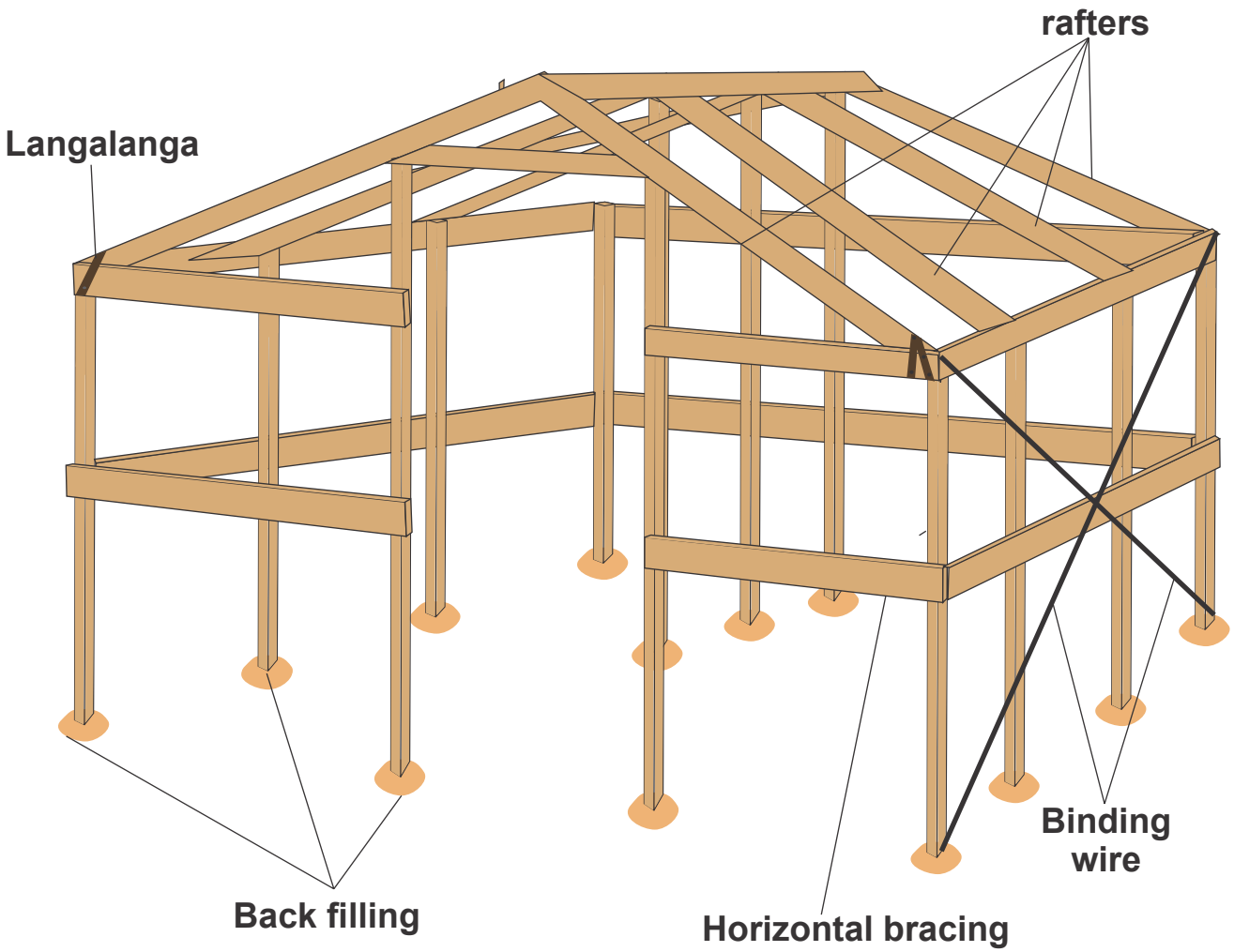


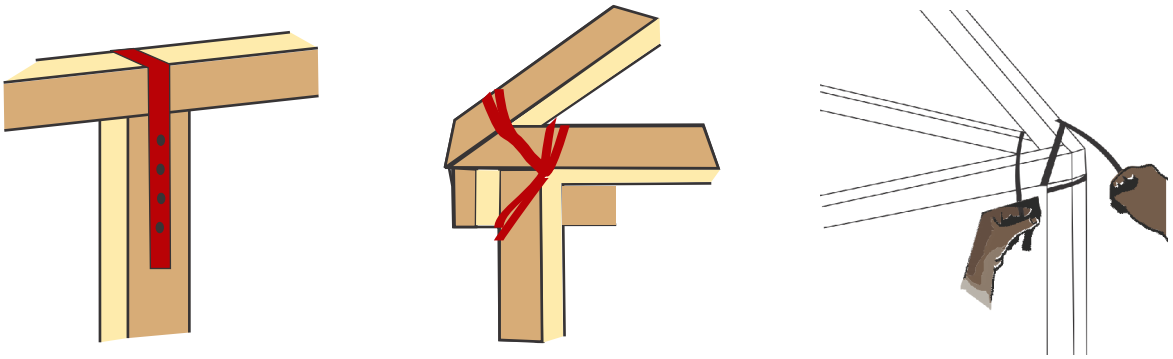
The brush is used to apply anti-termite Solution to the timber 600mm from the base



The timber members are sawn to lengths of 2100mm for perimeter columns and 2700

FRAME CONSTRUCTION





Use metal straps (langa langa), binding wires and ropes to tie well the roof structure.

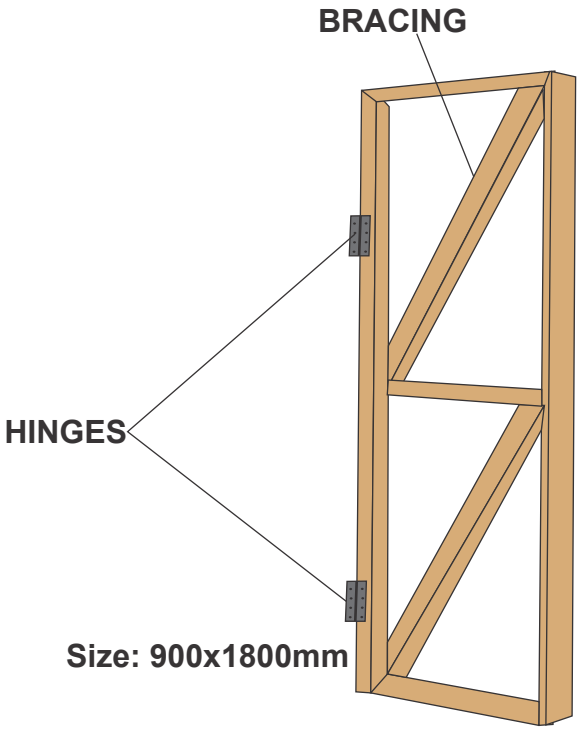
I. Erect pillars in each of the holes ensuring each one goes 600mm below the ground

ii. Backfill all the holes

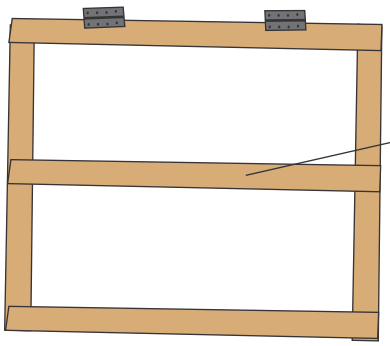
iii. Connect vertical and horizontal support

iv. Select space for doors and windows

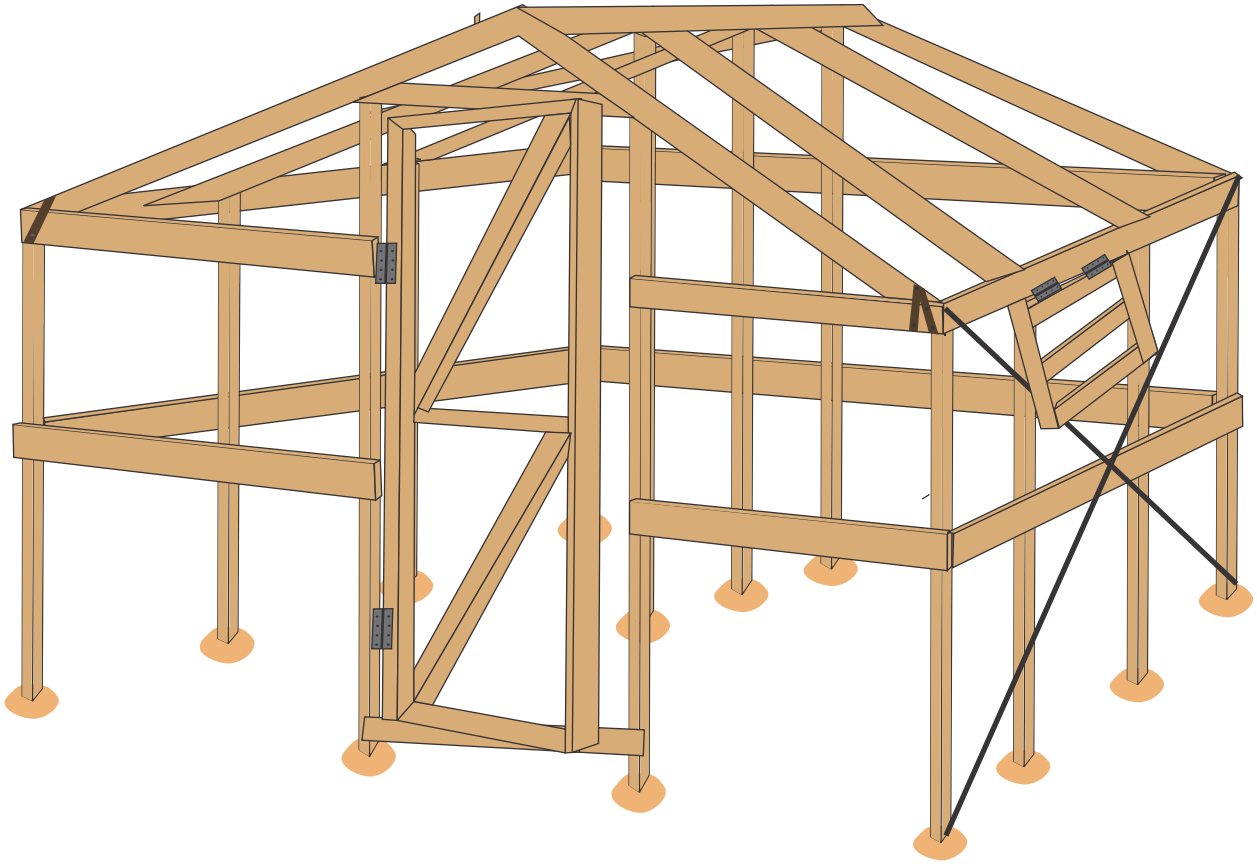
OPENINGS



DOOR FRAME



WINDOW FRAME

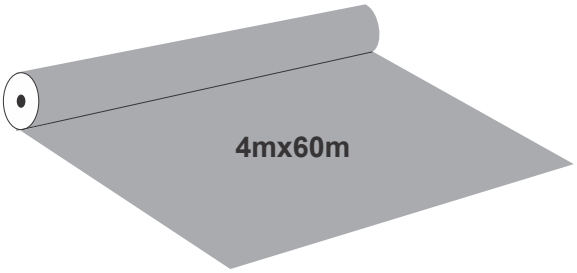


I. Erect pillars in each of the holes ensuring each one goes 600mm below the ground

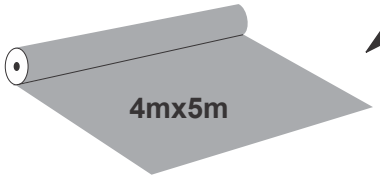
COVERING

Cut sequence for tarpaulin use

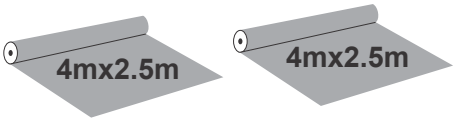
4mx60m full role of tarpaulin



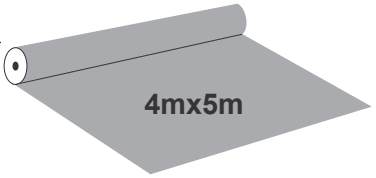
For each shelter, 3 rolls of 4mx5m are cut



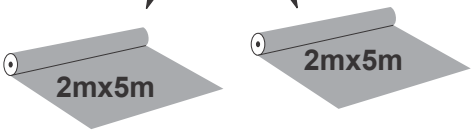
2 roles of 4mx2.5 are cut



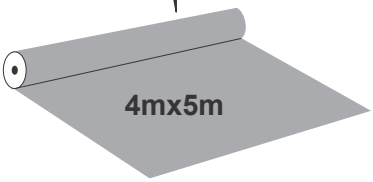
Fitted to front and back of shelter



2 roles of 2mx5m are cut

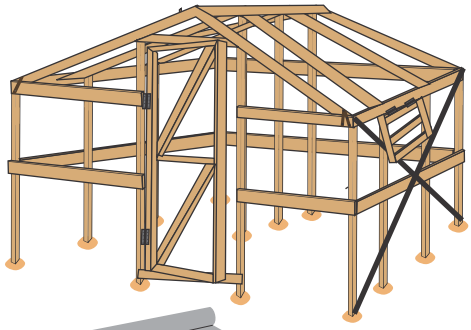


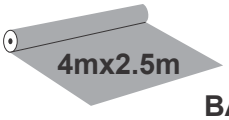
Fitted to right side and left side of shelter



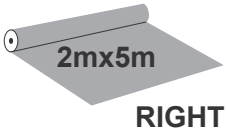
Roof covering

LEFT SIDE

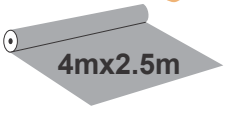




BACK SIDE



RIGHT SIDE



FRONT

COVERING

- Add battens to ensure that the tarpaulin is tightened
- Always use more than one nail for a connection
- The ends of the tarpaulin should be folded before nailing to avoid tearing

CONSTRUCTION OF BAMA TYPE SHELTERS (DIY)

ACTIVITIES(Do It Yourself)

1. Setting out and Excavation
2. Timber Preparation and Treatment
3. Frame construction
4. Openings
5. Covering
6. HSE for construction

1. SETTING OUT AND EXCAVATION

Materials: ropes, pickaxe, pegs, nails, hammer

a. Locate shelter position and space allotment: Assisted by CCCM staff and or Shelter Technical Supervisor
b. Marking: using ropes and pegs the perimeter and points to be dug are measured and marked. In all 13 points measuring 150x150mm and 600mm deep
c. The 13 marked points are dug with the pickaxe.

2. TIMBER PREPARATION AND TREATMENT

Materials: timber, anti-termite solution, nails, chips of wood, hammer, saw.

a. 50x100mm and 75x100mm timber horizontal and vertical struts selected
b. The timber members are sawn to lengths of 2100mm for perimeter columns and 2700mm for median strip columns
c. The wooden chips are nailed to the bottom of the struts to enhance soil friction and stability
d. The timber is dipped in anti-termite solution 1200mm to the base of the timber

3. FRAME CONSTRUCTION

Materials: timber, nails, hammer, saw, binding wire, 50mmx100mm vertical timber, 50x75mm for horizontal bracing and 50mmx100mm for doors and windows

a. Erect pillars in each of the 13 holes 2700mm for median posts and 2100mm for others ensuring each goes 600mm deep from natural ground level.
b. Backfilling of the holes is carried out to ensure the vertical supports are stable and aligned
c. 50mmx75mm are used as rafters and are joined with nails to the tie beam.
d. Mount up the 50mmx75mm for horizontal bracing

e. Cover the tarps
f. Create the doors and windows spaces.

4. OPENINGS
   Materials: timber, nails, hinges, hammer, saw, 50mmx100mm vertical timber, 50x75mm for horizontal bracing and 50mmx100mm for doors and windows

   a. DOORS: 1 Nos.
      I. Timber is cut to size 900x1800mm door frame with mortise edges.
      II. Two hinges are fitted to the door frame and the structural frame
      III. The door midsection is braced once horizontally connected to two diagonal 50x100mm
   b. WINDOWS: 3 Nos.
      i. Timber is cut to size 500x500mm door frame with mortise edges.
      ii. Two hinges are fitted to the window frame and the structural frame.
      iii. The midsection is braced horizontally
5. COVERINGS
   Materials: tarpaulin, binding wire, battens, hammer, nails, cutter and shovel
   a. Cut the tarpaulin 4m x 5m for each piece
   b. Use 3 pieces for each shelter
   c. Further divide one piece of 4m x 5m into two pieces of 2m x 5m
   d. Divide another 4m x 5m into two pieces of 4m x 2.5m
   e. Use the 2 nos. 2m x 5m on the left and right sides of the shelter
   f. Use the 2 nos. 4m x 2.5m on the front and back of the shelter
   g. Use the full size 4m x 5m as the roof covering
   h. Use the battens to hold the tarps at intervals, fastened with 40mm nails
   i. Open up the doors
   j. Backfill the tarps outside the shelters