

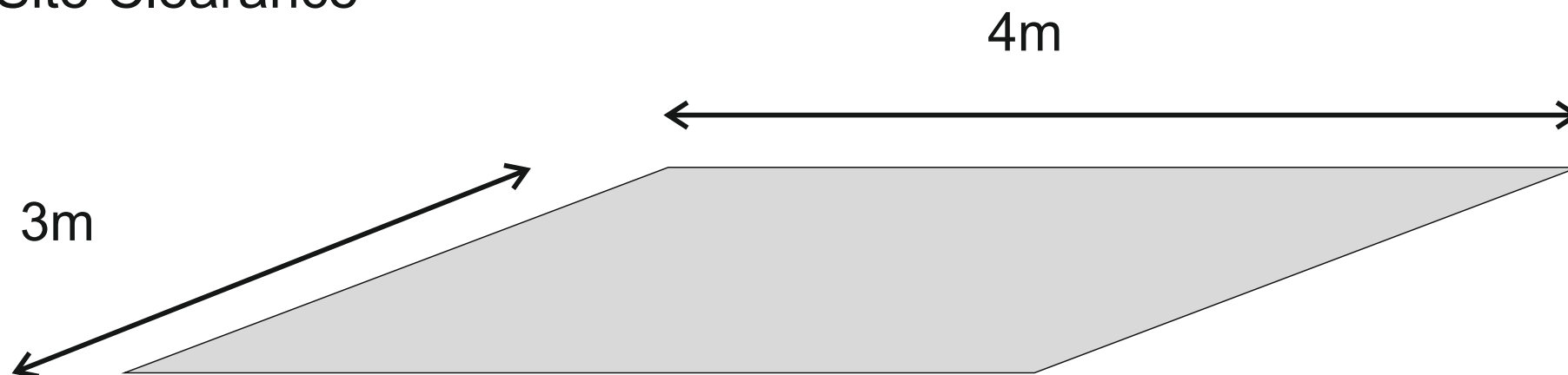
MALAWI FLOOD TEMPORARY SHELTER DESIGN PROCEDURE



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Site Clearance

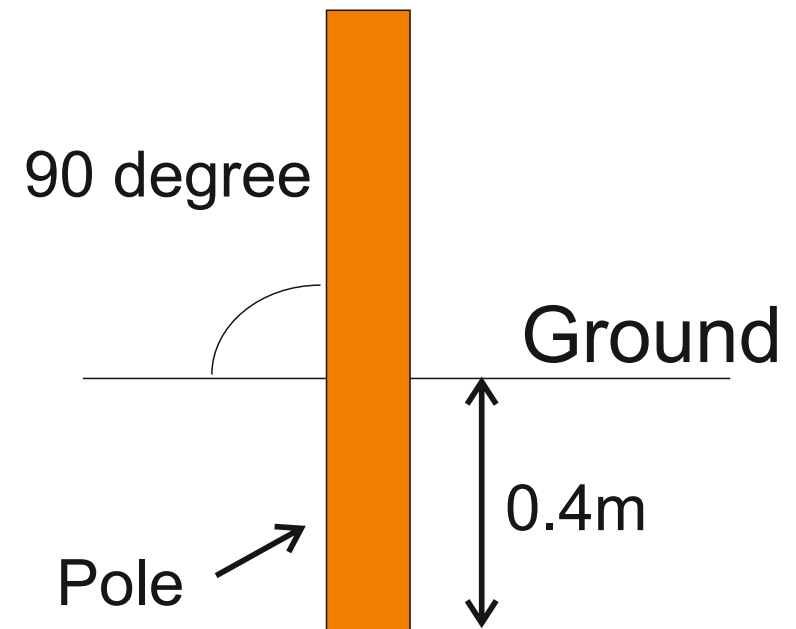
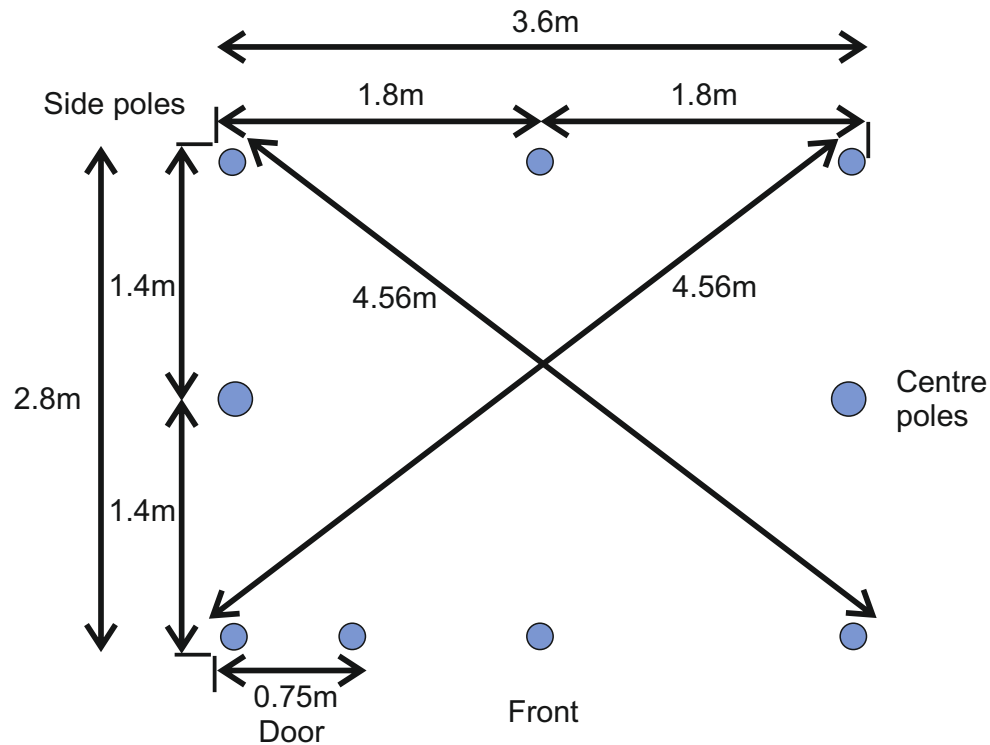


1. Removing unnecessary vegetation and making surface level by excavating or filling earth
2. Plot size 4x3 m

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Digging Holes - Foundation

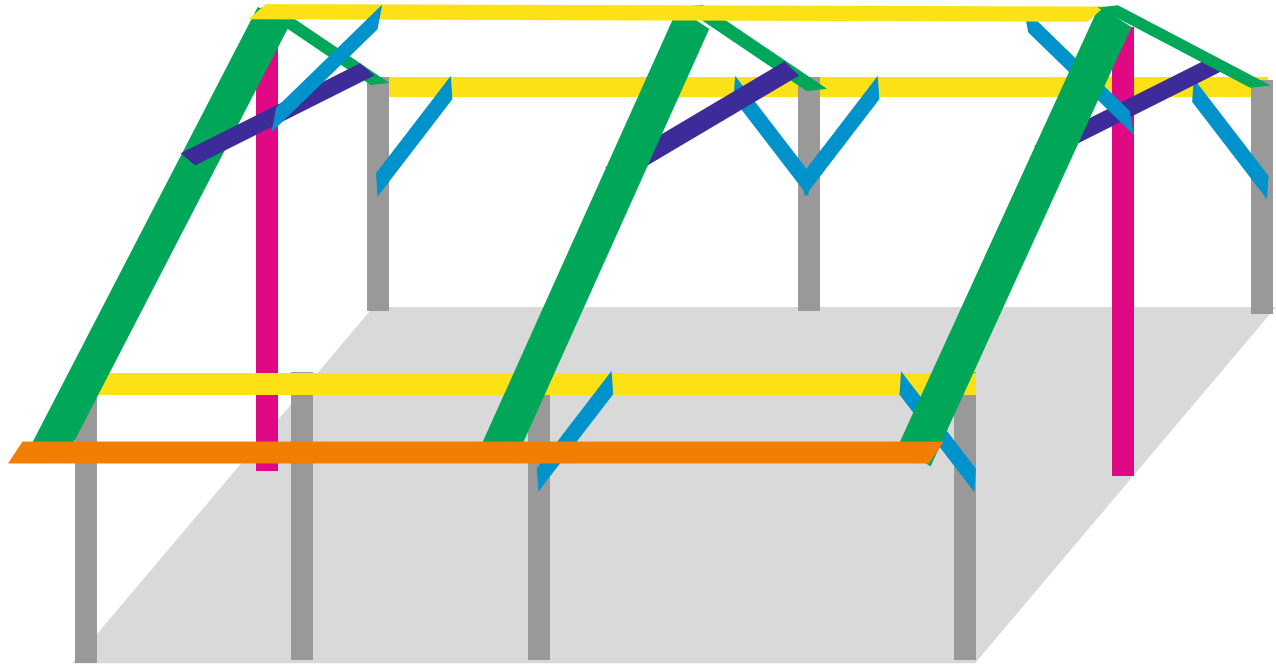


1. Layout the 3.6 x 2.8 m plot and make sure all poles inside the measurement. Cross check the diagonal length 4.56 m in both way.
2. The depth of foundation should be at least 0.4 m in stable soil.
3. All 9 poles should be compacted as well set in 90 degree.

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Erecting Frames

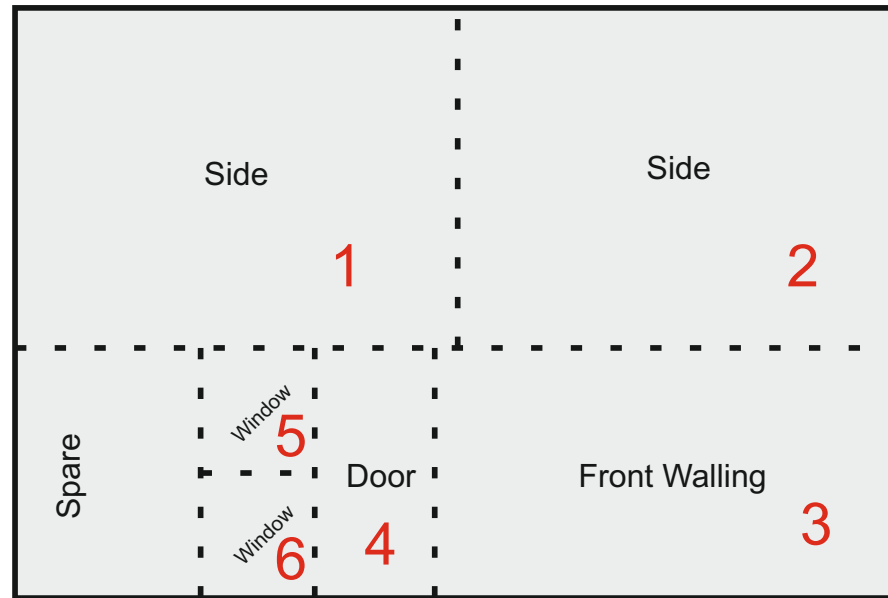


1. Side poles, 7 numbers 1.9 m long ●
2. Central poles, 2 numbers 2.4 m long ●
3. Connect the side poles and central pole by 3.6 m long horizontal poles ●
4. Put 1.7 m long 3 rafters in front and 1.4 m long rafters in back side in roof. ●
5. Fix 3.6 m long purlin at the face of front rafters to fix/tie up tarpaulin ●
6. Provide 0.7 m long 8 bracings to connect side and central poles to horizontal poles ●
7. Connect rafters with 1.9 m long bracing in sides and 1.3 m long bracing in middle. ●
8. Tie up joints of frames by wooden nails (at least 2 in 1 joint)

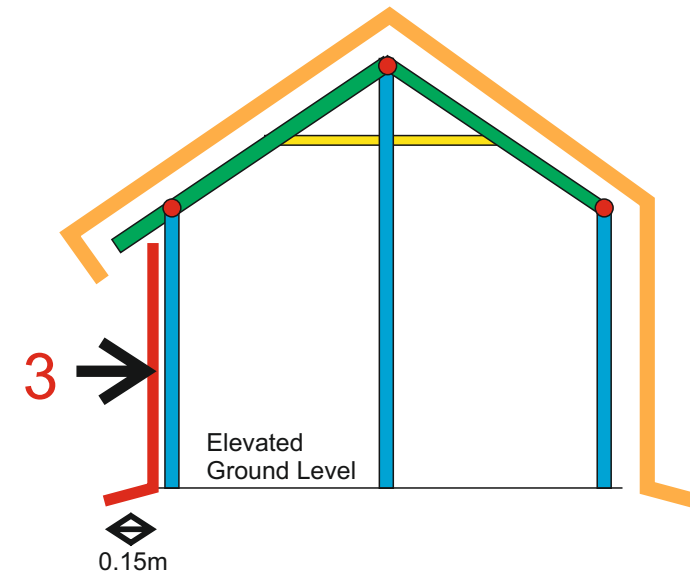
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TARP 1



TARP 2



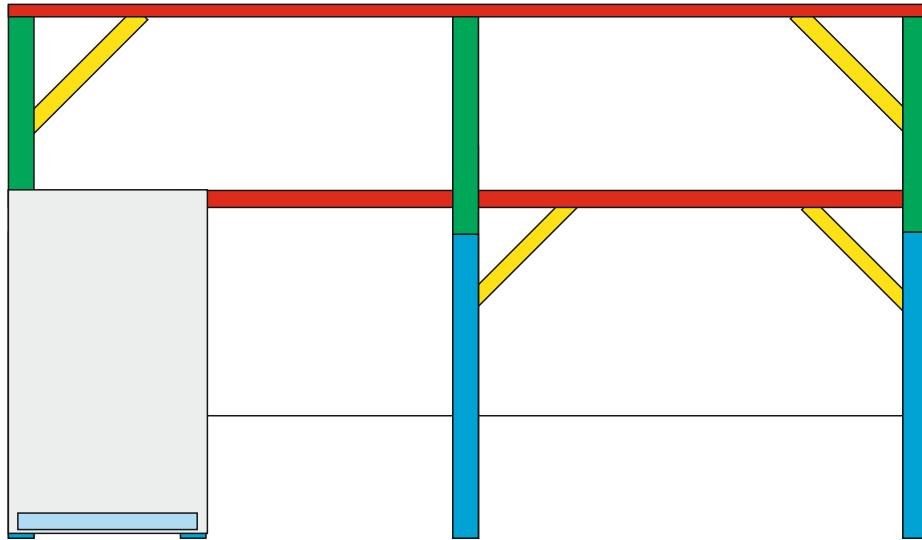
1. Divide first tarpaulin as shown in pictures
2. Use pieces 1 and 2 having length of 3x2.3 m in sides (triangular sides)
3. Put piece 3 having size 3.15x1.70 m in front face wall
4. Use piece 4 in door
5. Cut piece 5 and 6 having size 0.85 x0.80 m in diagonal for window
6. Use second tarpaulin to cover from front roof to back wall and first fix nails in front purlin through making one round fold.
7. Fix tarpaulin to side rafters and poles from the front face to wall and cut unused 0.7 m tarpaulin in ground at the back.
8. The spare pieces (1.3x1.70 m, 0.6x0.8 m and 0.70x4 m) can be used as mattress in floor.

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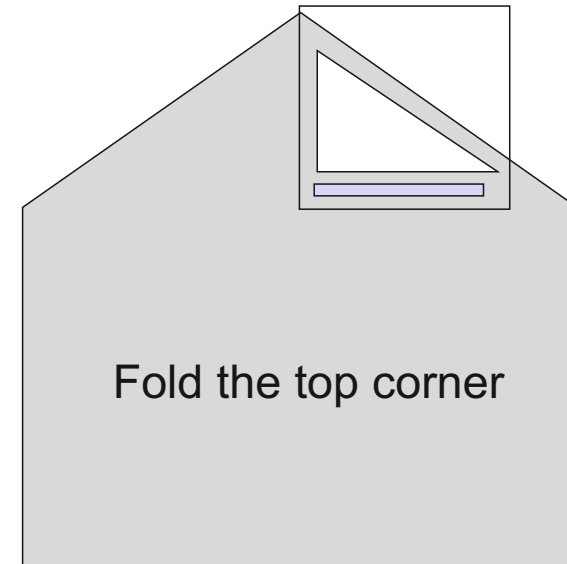


Fixing the Door and Windows

DOOR

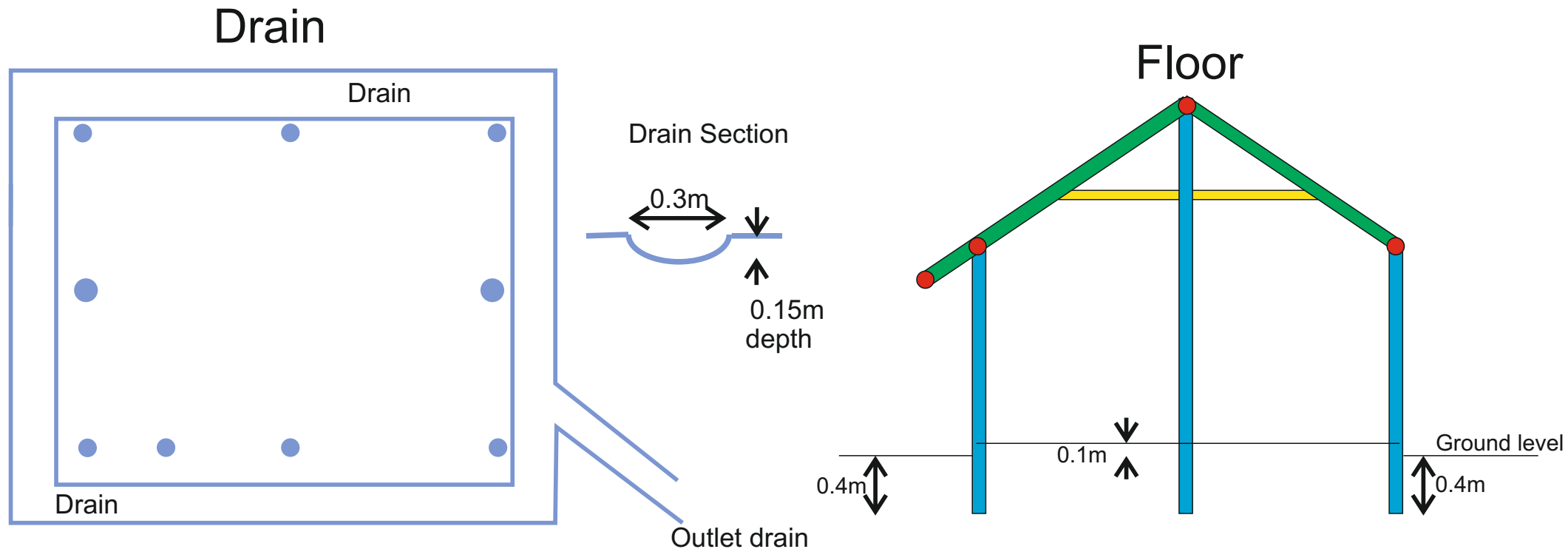


WINDOW



1. Use 0.8 x1.7 m piece of tarpaulin for door
2. Put 0.9 m pole in one side by making a fold and insert nails. Fix the other side in horizontal poles in door opening.
3. Cut the 0.85 x0.8 m long tarpaulin in a diagonal way for windows
4. Put the piece of pole along 0.8 m length by making fold and insert nails.
5. Cut tarpaulin for window openings and fold the cutting piece to poles and secure them by nails.

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Floor

Raise the inside floor by filling soil up to 0.15 m and make level and compaction as needed.

Drain

Dig a drain of width 0.3 m and depth 0.15 m surrounding the shelter. Put the soil in a slope to the bottom of wall to stop rain water from entering into the shelter.

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Summary of construction materials for each shelter

10 Wooden poles, (3.5-4)m

2 tarpaulins, 4x6 m

1 kg wire nails, 3 inch

1 Kg roofing nails with washer

Tools

1 Handsaw

1 Claw hammer

1 Machete (Phanga Knife)

1 Sniper

1 Nylon rope, 30 m roll

1 Measuring tape, 7.5 m

1 Ballpen, blue