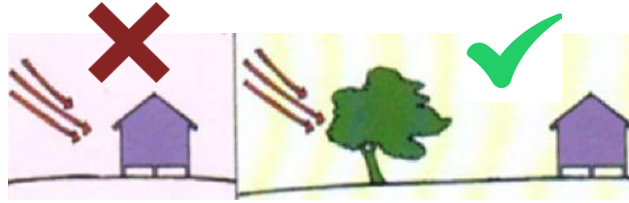


Site your House Safely

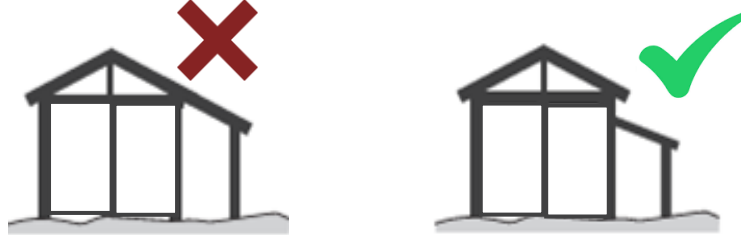
Avoid potential hazards, such as :

- Unstable slopes or ground
- Loose soils
- Landslides

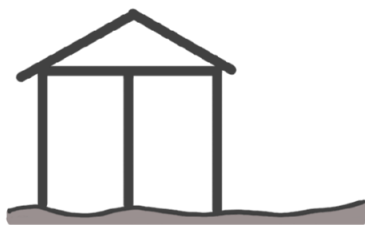
BUILD SMART, open space is danger in strong wind, let nature guard your shelter.



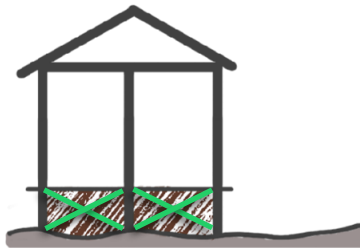
PORCHES AND VERANDAS SHOULD BE BUILT SEPARATELY FROM THE MAIN STRUCTURE = allow independent movement and reduce stress on the main frame.



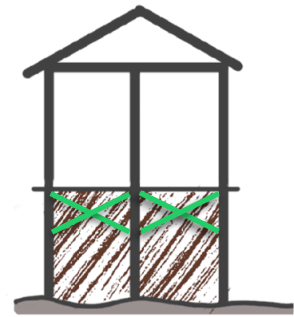
ENSURE PROPER ELEVATION AND FOUNDATION DESIGN to address earthquake risks safely.



On ground level

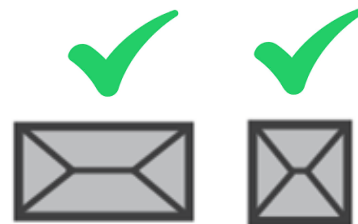
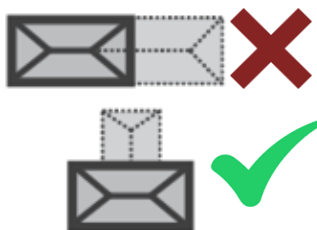


2 ft raised over highest flood level



6 ft raised over highest flood level

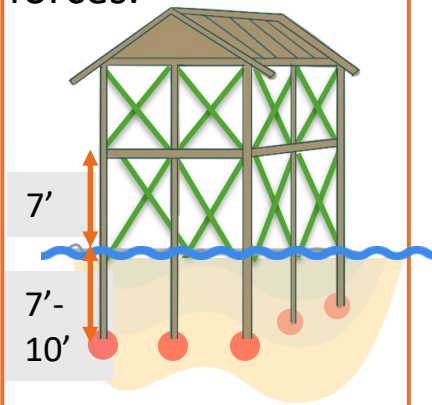
Length of the house < 3 x Width



ABC Principle

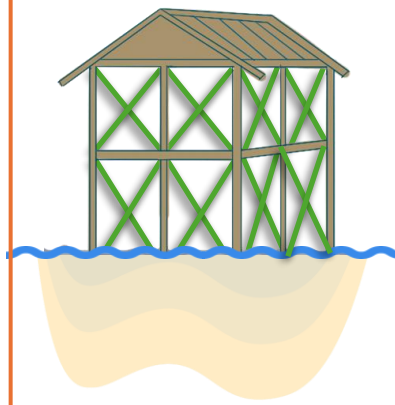
A nchoring

Every part must be tied back to a secure point which can resist applied forces.



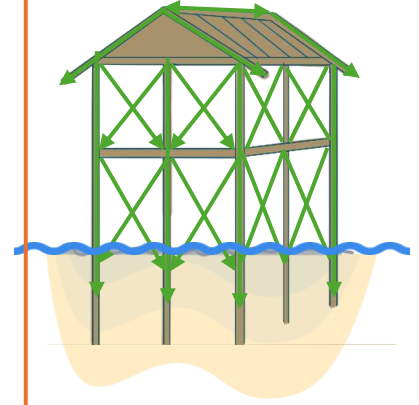
B racing

Every part must be held rigid, so the shelter can't shift, tilt or rotate.



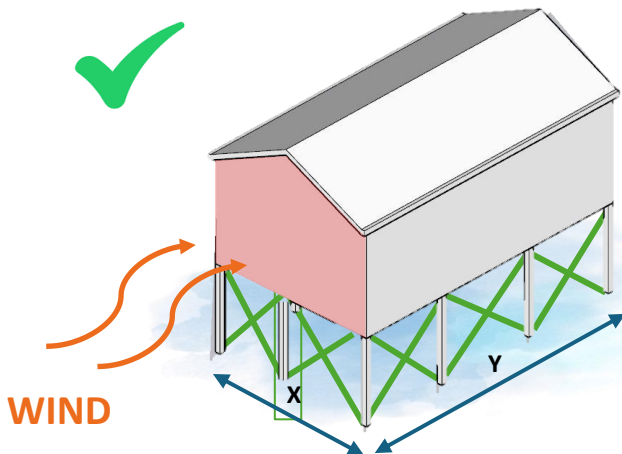
C ontinuity

Every part must be well connected to the other through strong joints.

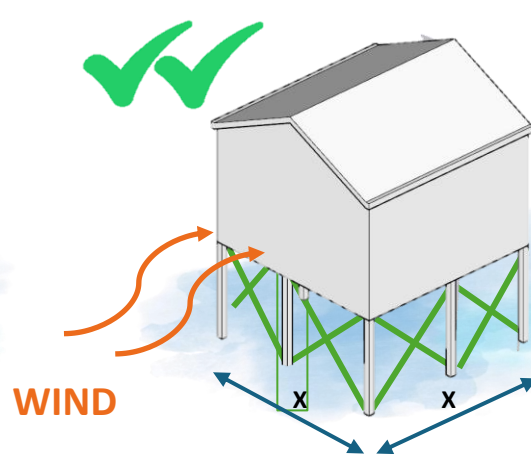


Square shaped shelters are more appropriate.

For rectangular shaped shelters, the **short side** should face the direction of the oncoming wind.



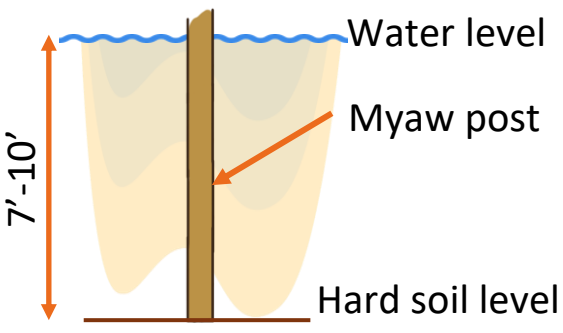
Rectangular shaped shelter



Square shaped shelter

Ensure a deep foundation

Below water



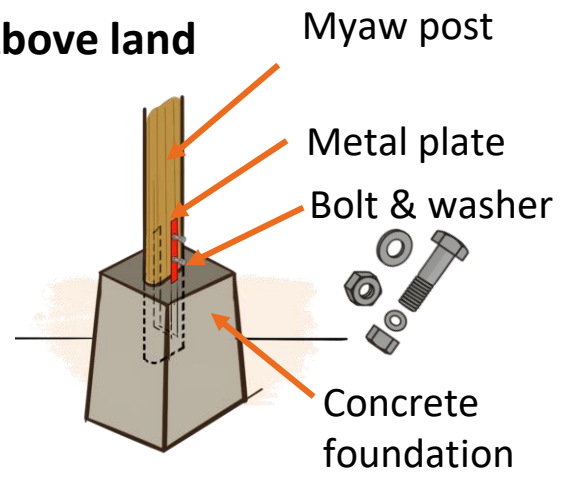
Water level

Myaw post

7'-10'

Hard soil level

Above land



Myaw post

Metal plate

Bolt & washer


Concrete foundation

Myaw post is securely anchored in hard soil

✓ **Stability**
✓ **Resistance to natural forces**

Apply bracing to strengthen the frame.


Without bracing

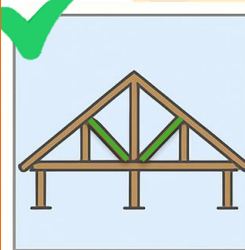


WIND

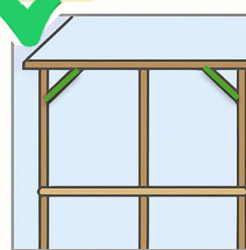
WIND

With bracing

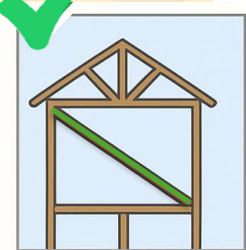




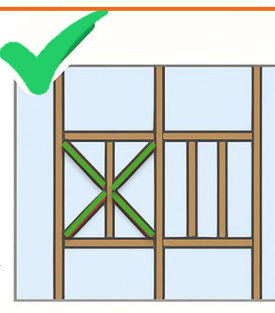
Roof Frame



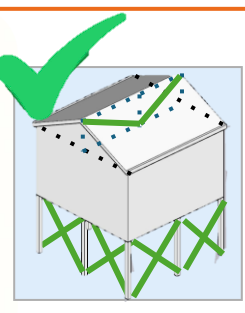
Short Diagonal Braces



Main Frame

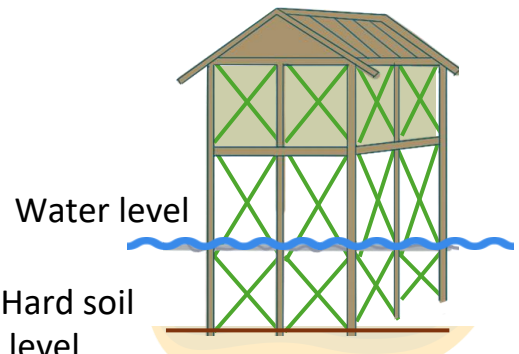


Braces at Joints



Diagonal bracing

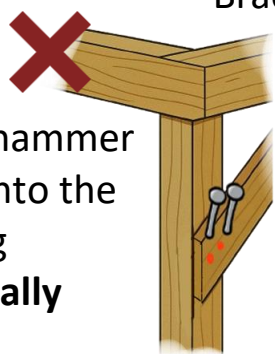
At Inlay area shelter construction:
braces must be added also under water level of shelter.



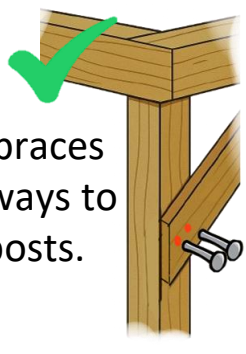
Water level

Hard soil level

✗ **Don't hammer nails onto the bracing diagonally**



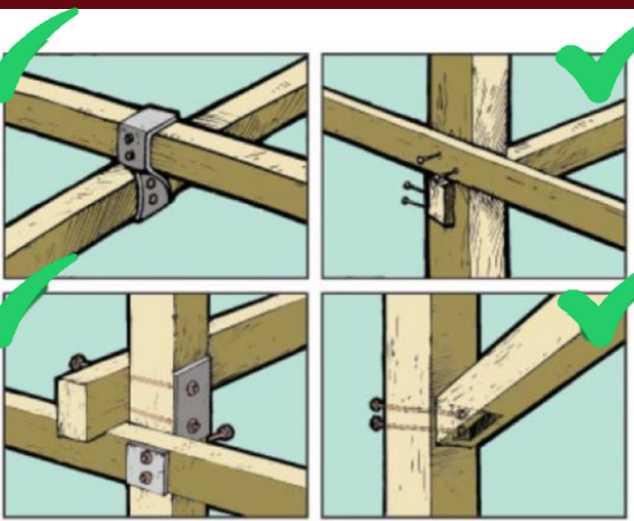
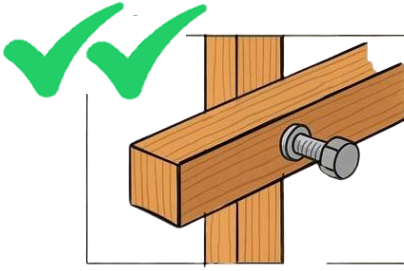
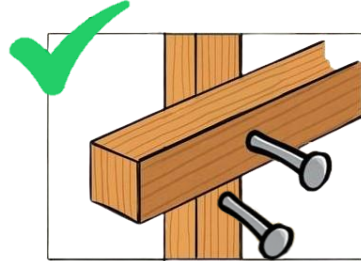
✓ **Nail braces sideways to the posts.**



Ensure strong joints

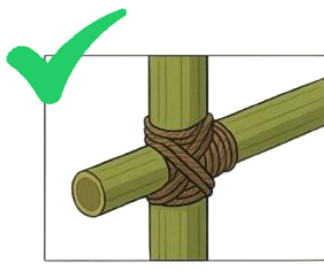
for posts, the tie beam and the main rafter.

Use undelay joints with cleats.

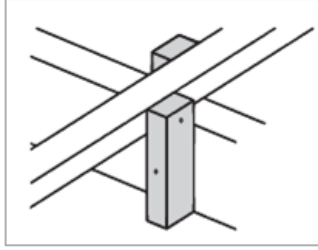


Don't nail the bamboo, it cracks!

Use durable materials:
Nylon ropes,
strong coconut
fiber ropes, or
binding wire

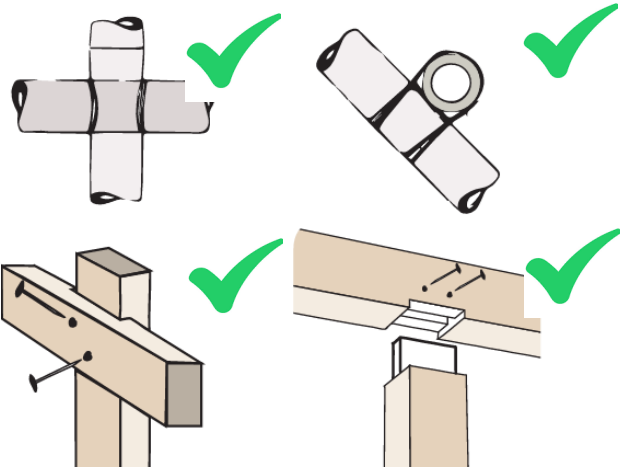


Use bolts, nuts, and washers, not just nails



DON'T SPLIT THE BAMBOO !

Connect all wood framing members strongly to each other to improve wind resistance.

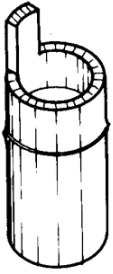


USE
Good timber
Strong toddy palm
Seasoned bamboo
Durable materials

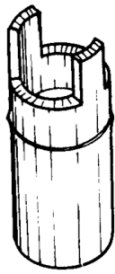
DON'T USE
Weak materials
Already used

Cut the bamboo poles carefully

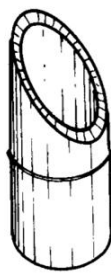
End profiles of bamboo poles for use in construction.



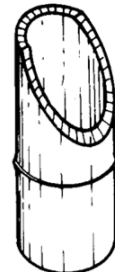
1. With ear



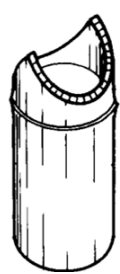
2. With two ears



3. Bevelled



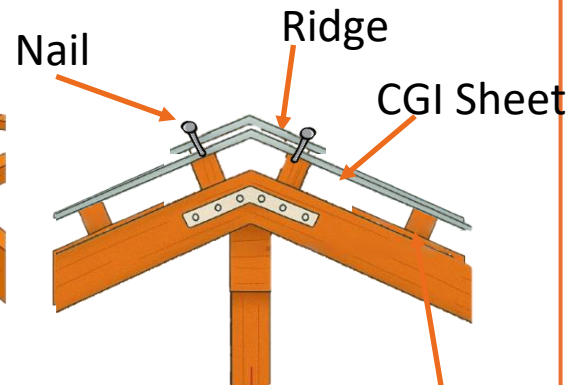
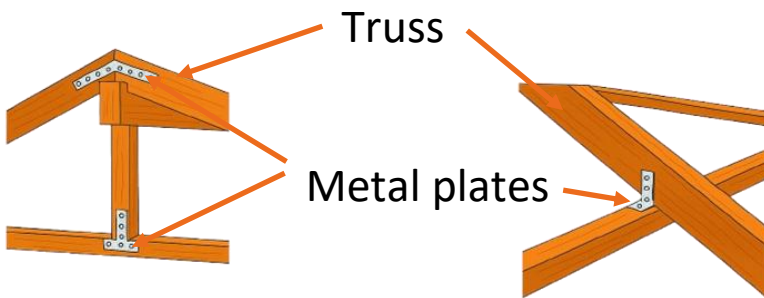
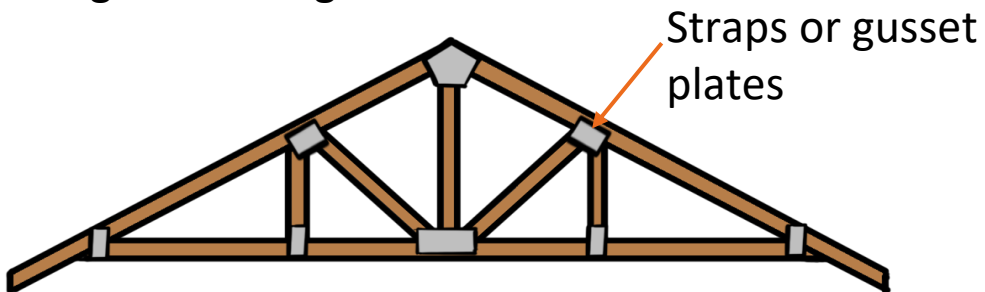
4. Flute-shaped



5. Fish-shaped

Build a strong roof

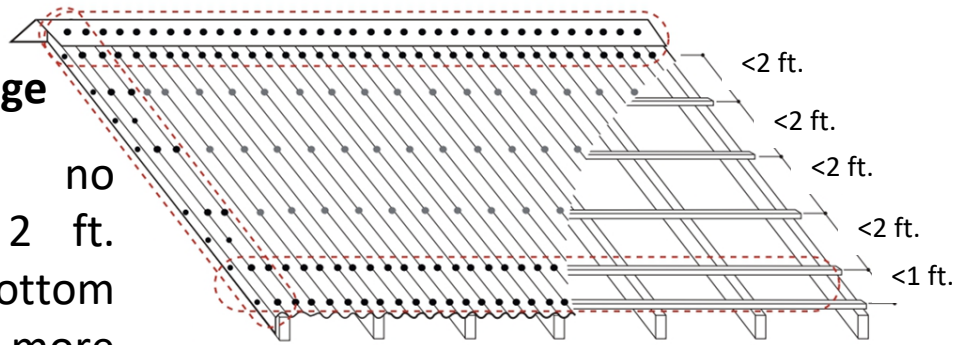
Truss members should be connected with straps or gusset plates to have strength in strong winds



A Good House Needs a Good Roof – CGI Roof

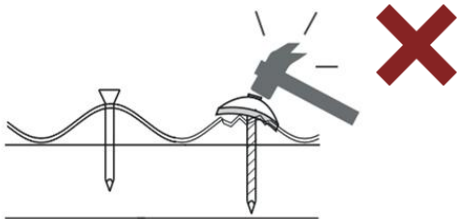
- Use 0.4 mm thickness gauge

- Purlins are no more than 2 ft. apart, for bottom batten no more than 1 ft. apart.

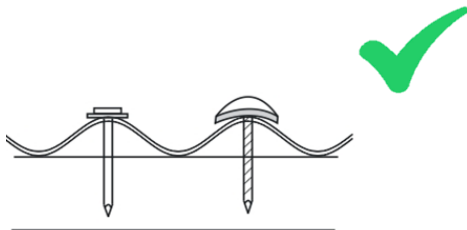


- Use more nails at the ridge and eaves

Do not flatter when nailing !

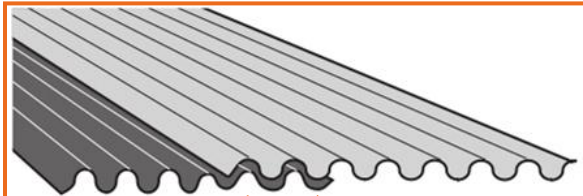


Regular nail



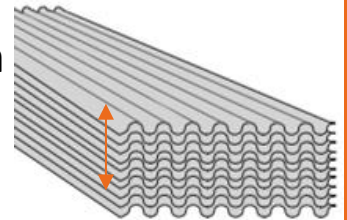
Flat head nail & metal washer

Umbrella nail & rubber washer

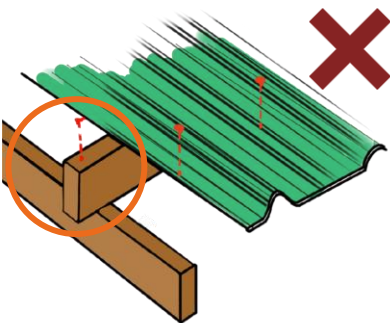


Have a minimum **overlap of 2 corrugations** between sheets

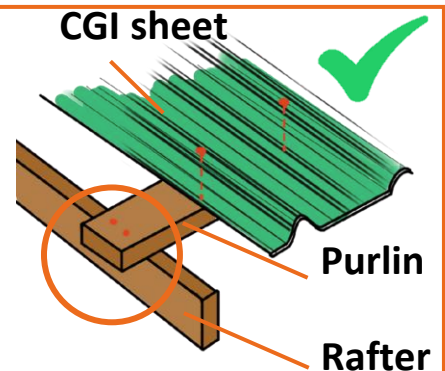
Don't stack in piles higher than 4 ft



Always wear gloves and helmet for safety!



Secure roofing materials firmly !
Using appropriate fasteners to prevent them from becoming hazards.



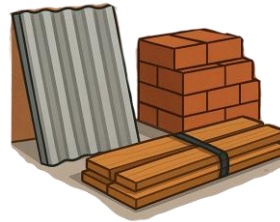
Purlin

Rafter

Health and Safety Measures



Undertake daily clean-up of activity area and good housekeeping to prevent trips, slips and falls.



Clean and tidy working area. Organize and properly store materials.



Secure loose materials that have the potential to fall.



Ensure careful handling of Asbestos!
[Consult UNDP guidance on asbestos.](#)



DANGER
Electric shock risk

Be careful of electric shocks from broken electric cables lying on the floor



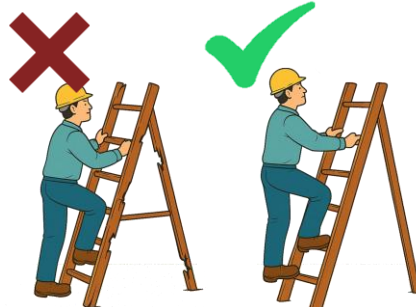
Use the right PPE & Wear gloves when handling materials with sharp edges such as CGIs.



Do not smoke near flammable items, such as paint, bamboo and nipa/palm leaves.



Do not carry out roofing works or handle CGI sheets on windy or rainy days.



Use undamaged ladders if you need to climb up to the roof.



Perform on site sorting, identify the disposal pathway for each of them.