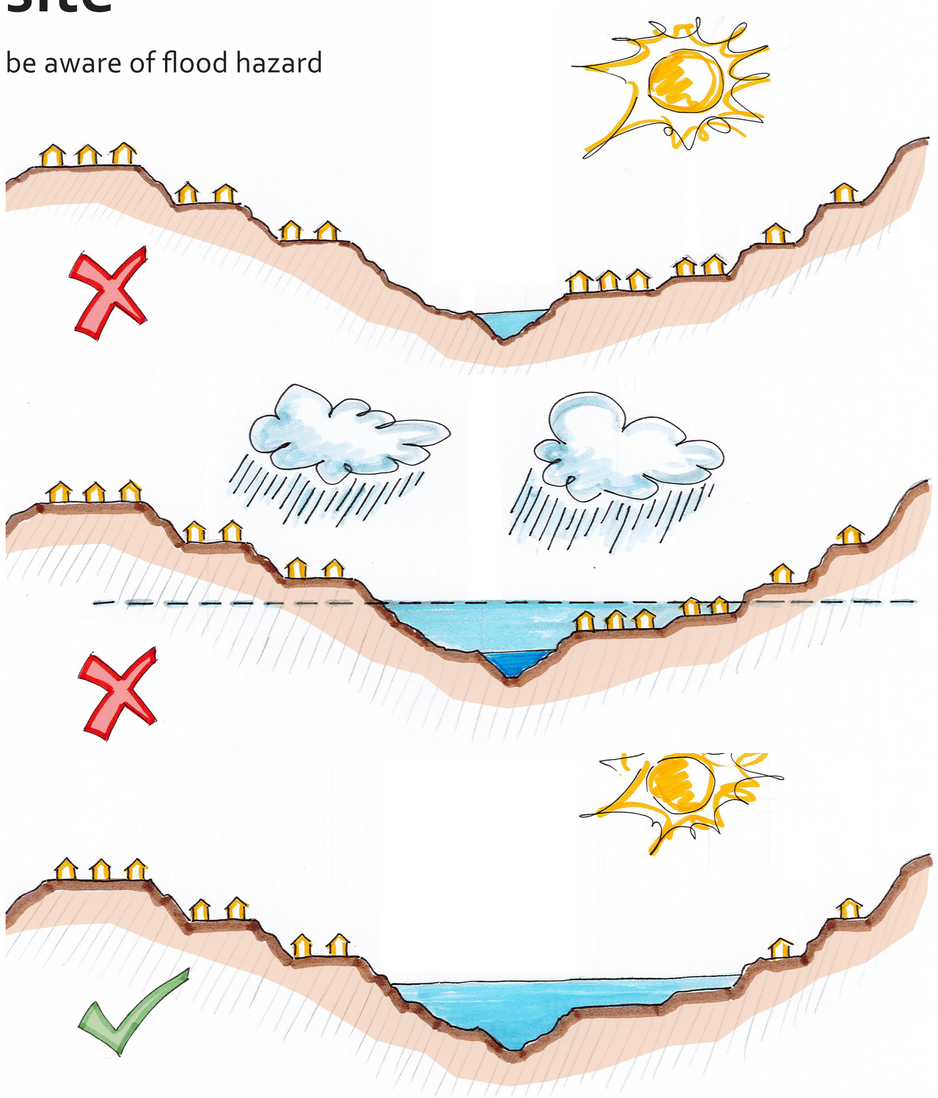
Basic Guidance on Shelter Improvement & Maintenance

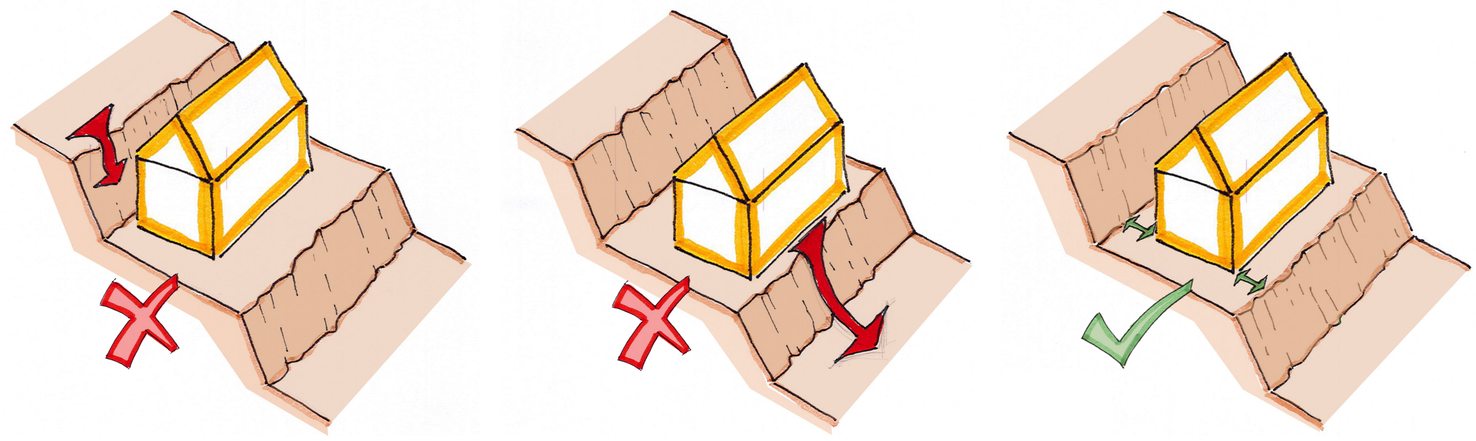
site

01

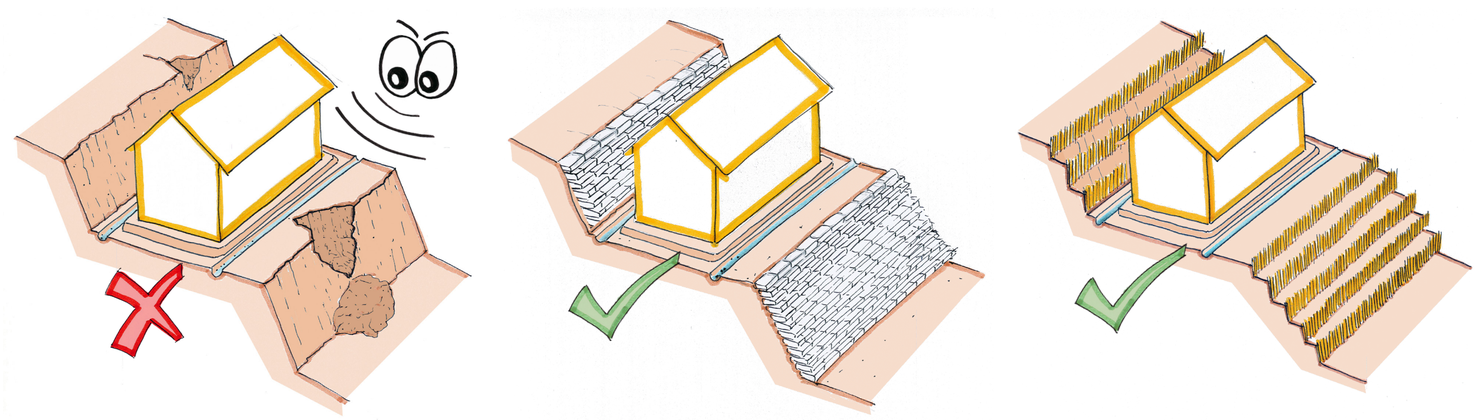
be aware of flood hazard



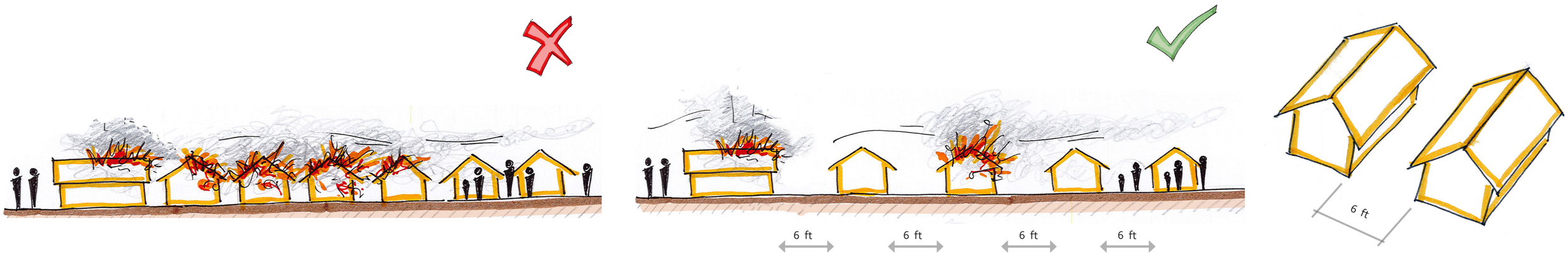
locate your shelter in the middle of the plot



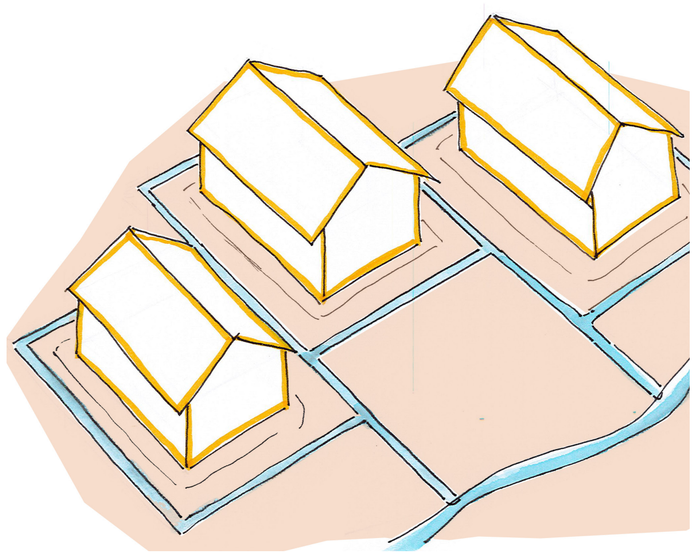
inspect the slopes next to your shelter and stabilize them regularly using sand bags / plastic sheeting / bamboo fence / vetiver grass



be aware of fire hazard | keep a distance in between shelters

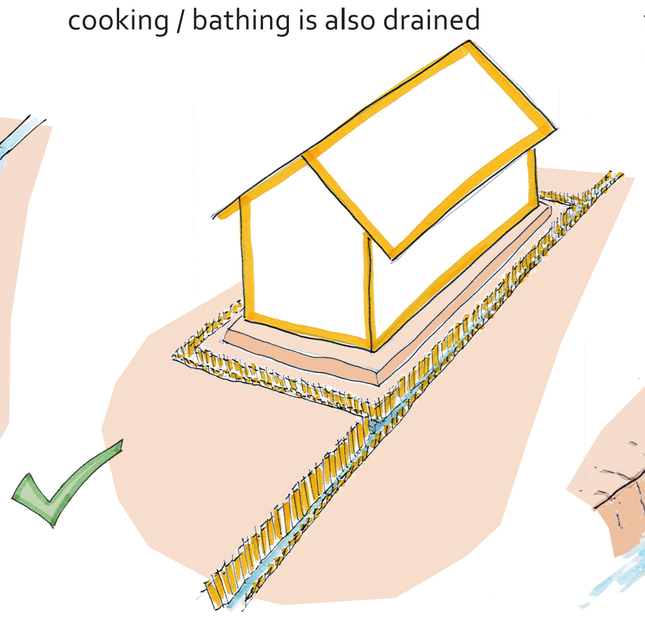


create drainage around your shelter and connect your drainage to the main drainage system

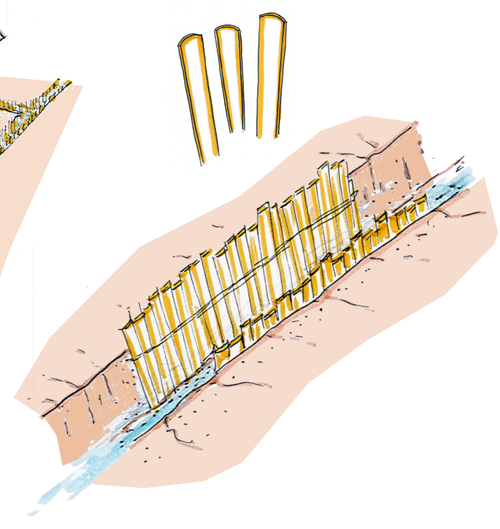


regularly clean your drainage

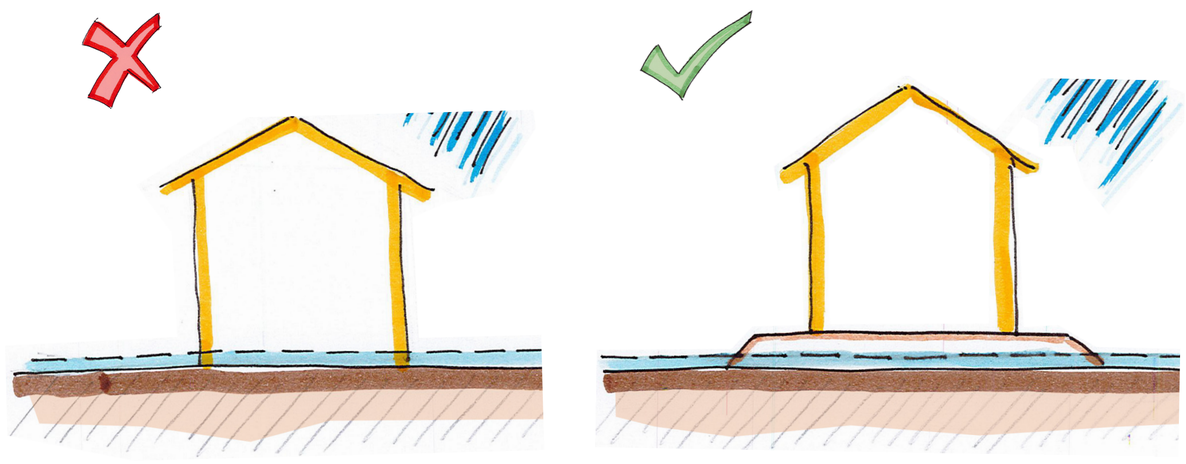
ensure that waste water from cooking / bathing is also drained



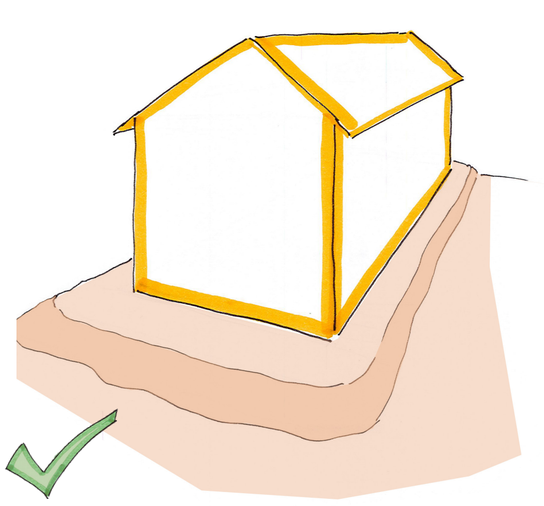
you may use split bamboo to stabilise the sides of the drainage canal



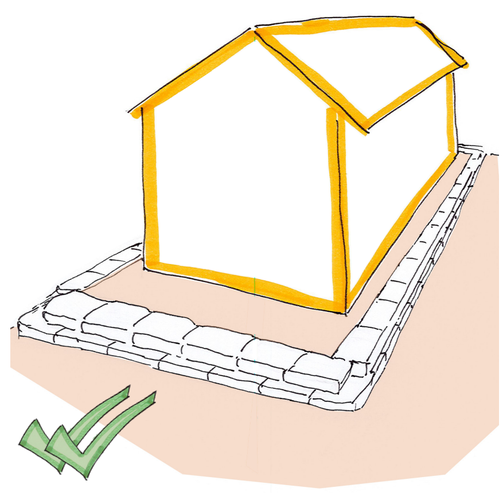
raise your shelter's plinth from ground level to avoid rain water getting inside



raise your shelter's plinth using compacted soil



you may also use sand bags /jute bags filled with 1:6 ratio cement:sand mix around the plinth



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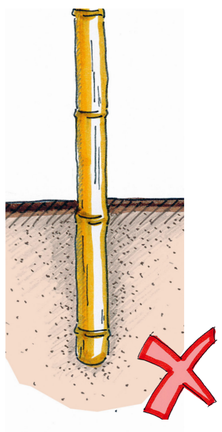
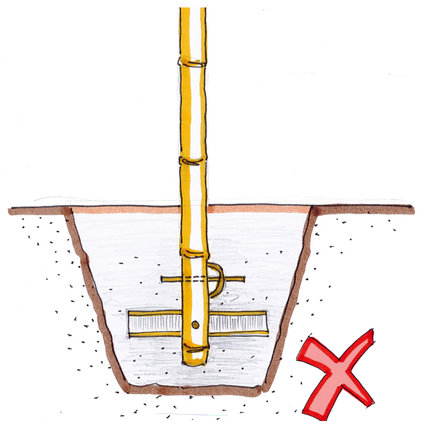
Basic Guidance on Shelter Improvement & Maintenance

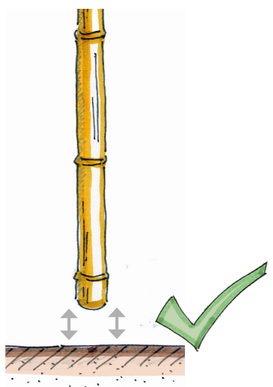
foundation

02

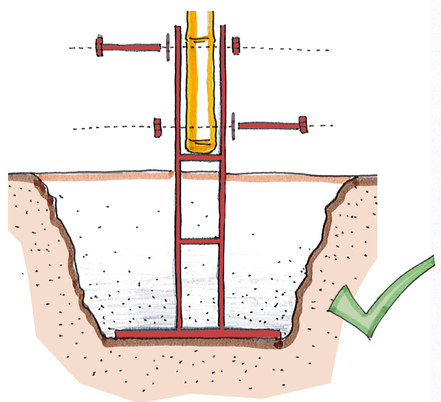
have a strong foundation and raise the bamboo poles from the ground to prevent decay

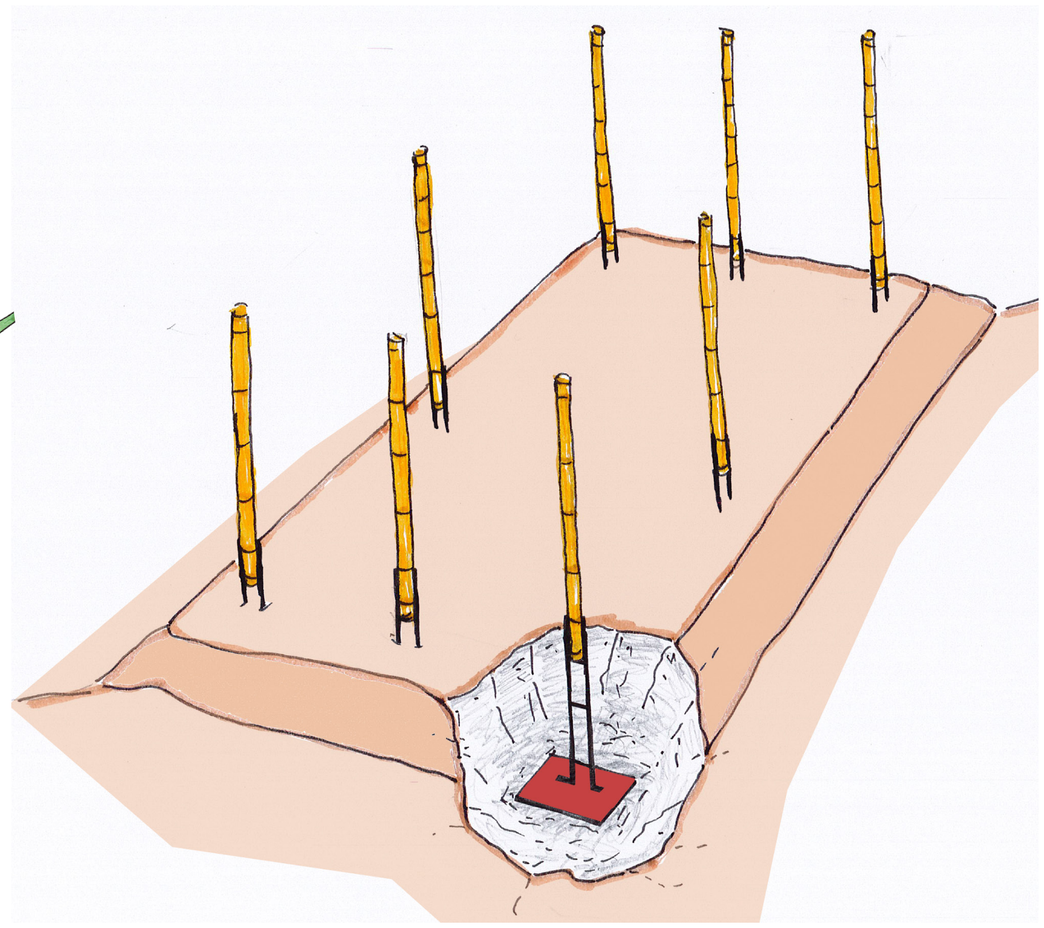




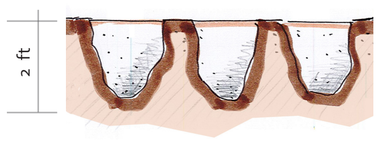


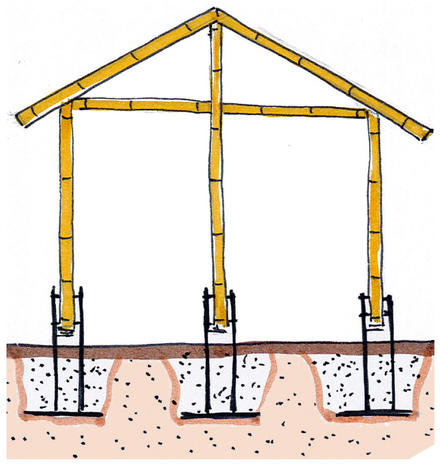
keep the bamboo off the ground

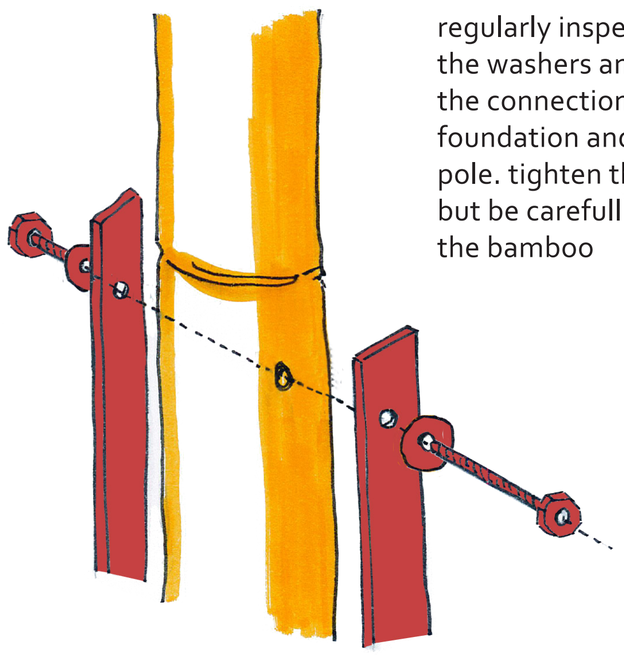




dig 2 feet deep footing pits. place the footings. fill the footing pits with soil and compact the soil firmly

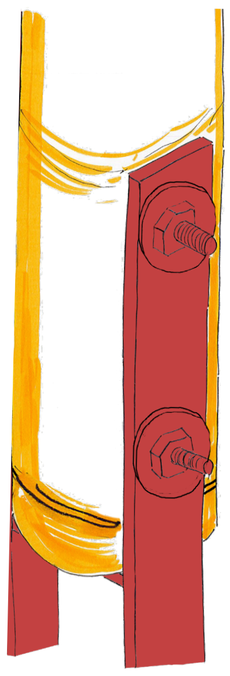


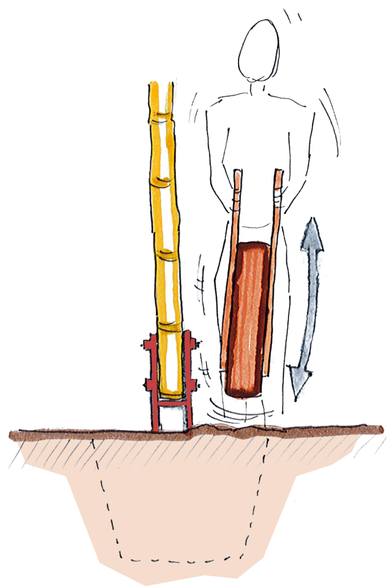




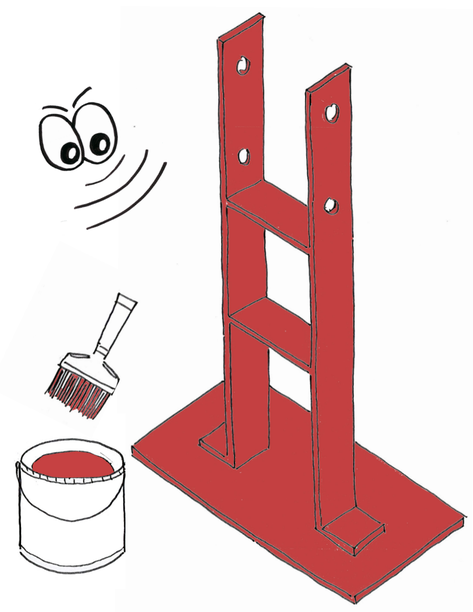
regularly inspect the bolts, the washers and the nuts in the connection between the foundation and the bamboo pole. tighten them regularly, but be carefull not to crush the bamboo

cut the bamboo so there would be a node below the connection bolt to prevent splitting





compact the soil around the footings



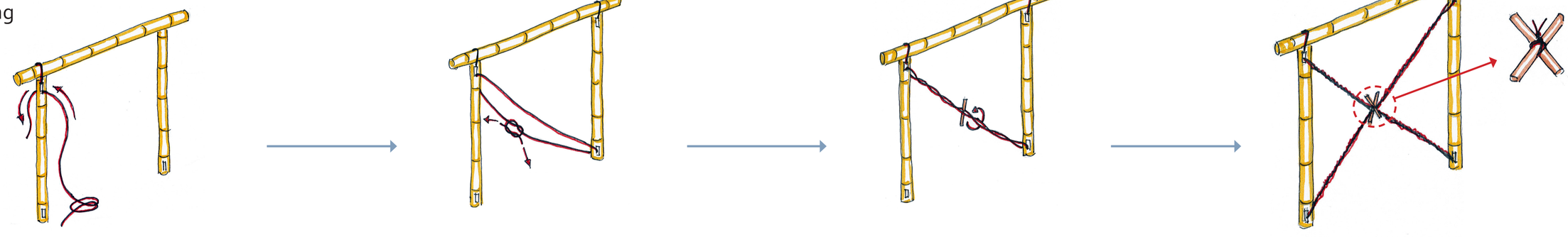
check for rust and if needed paint with anti-corrosive paint

shelter structure

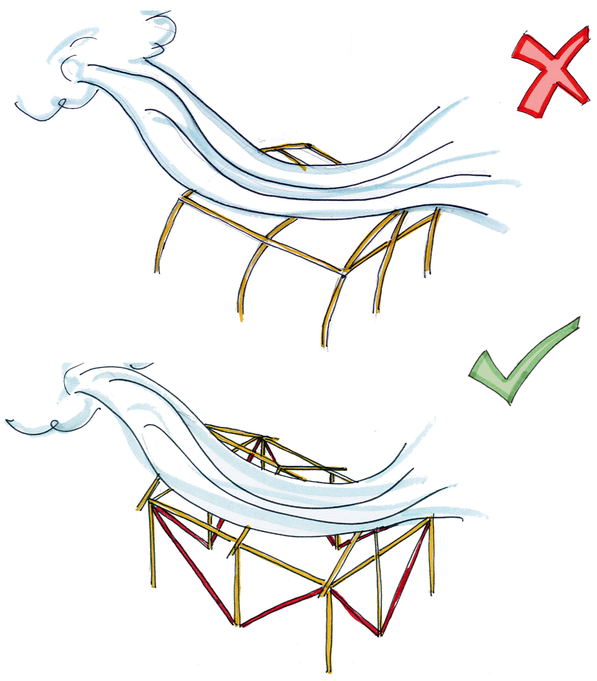
03

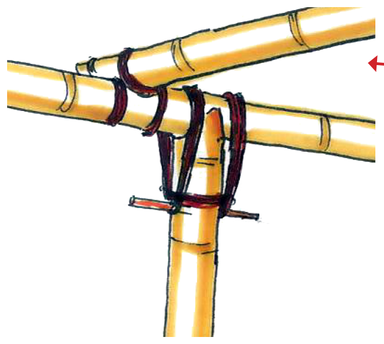
reinforce your shelter structure with rope or bamboo diagonal bracing

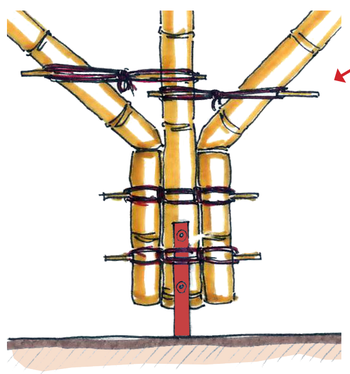
rope bracing

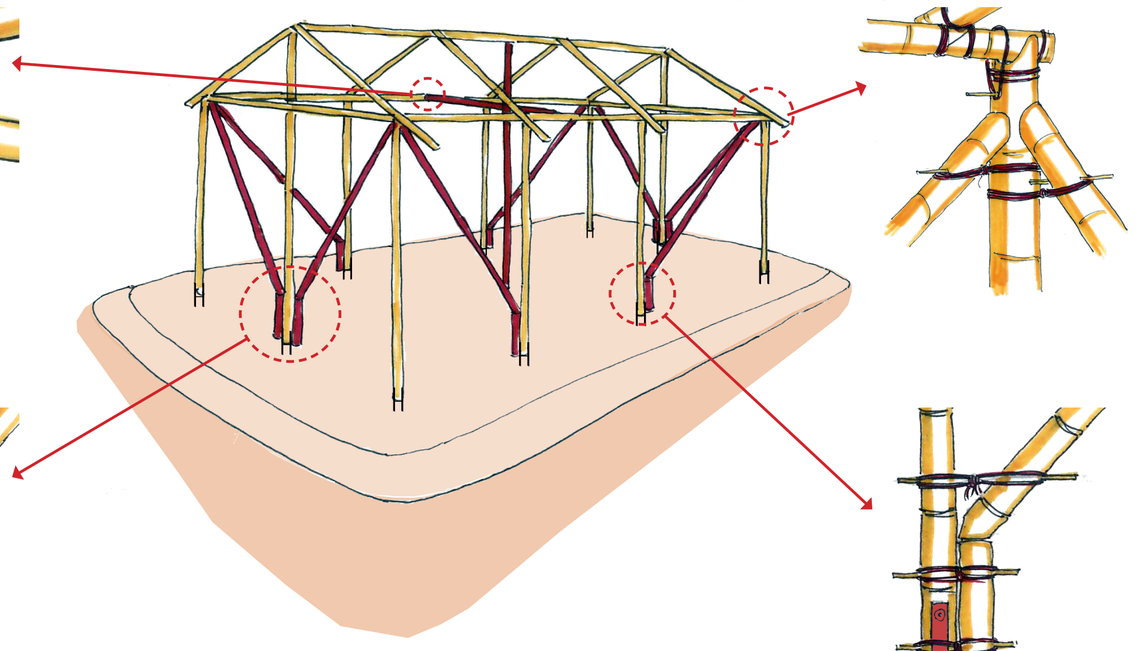


bamboo bracing









use thick bamboo/ metal dowels to connect diagonal bamboo bracing pieces

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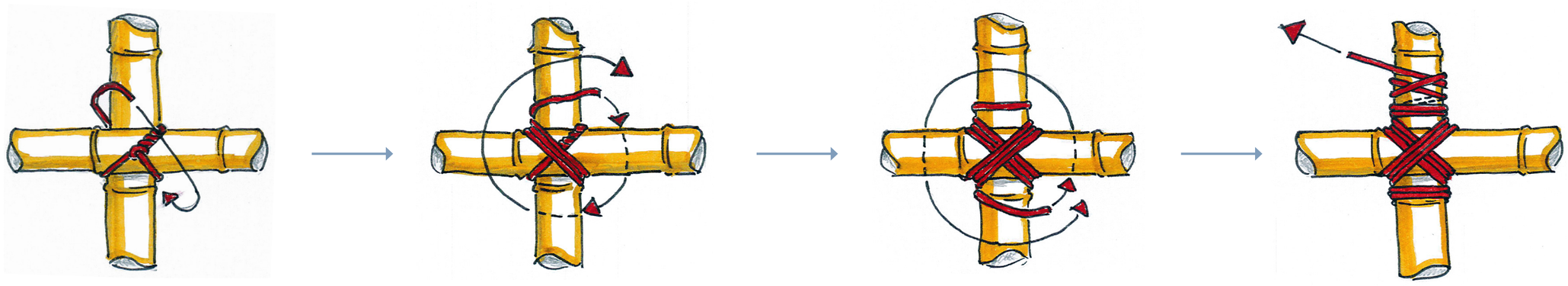
ties | connections

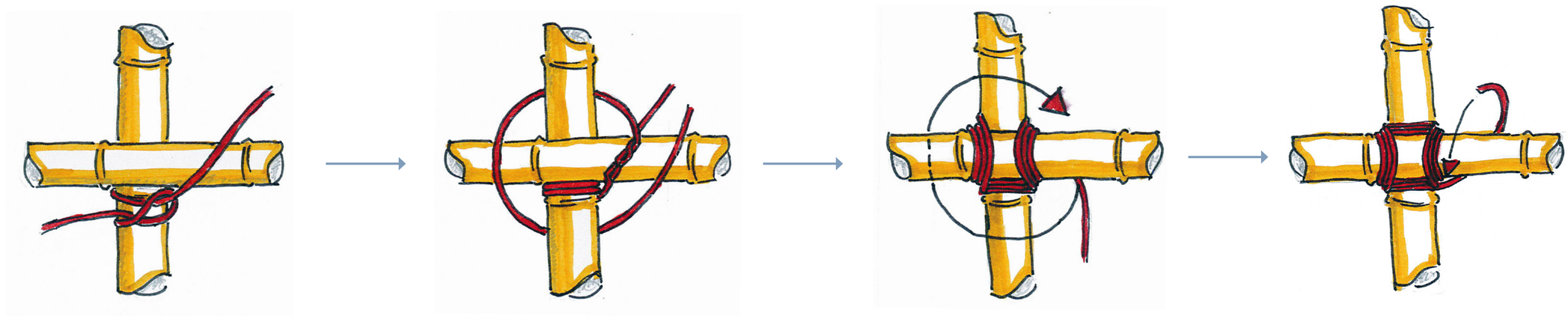
04

have strong ties and connections in your shelter

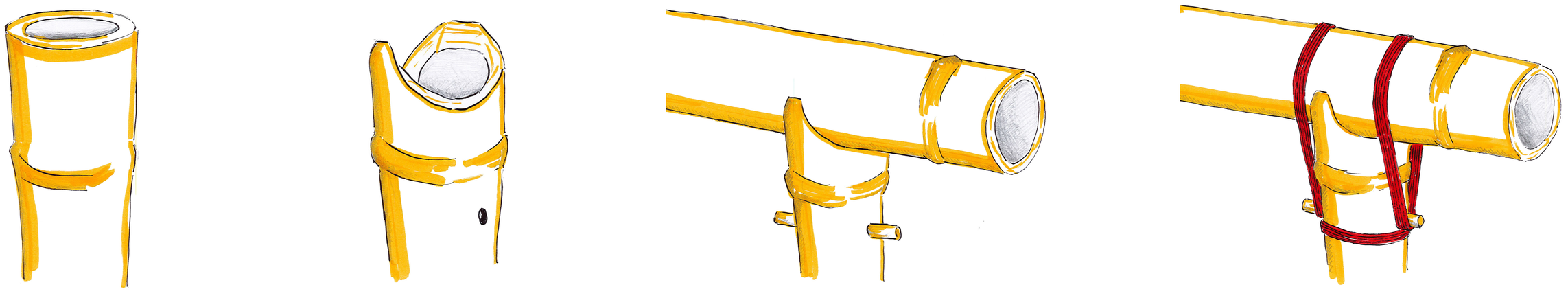
diagonal lashing



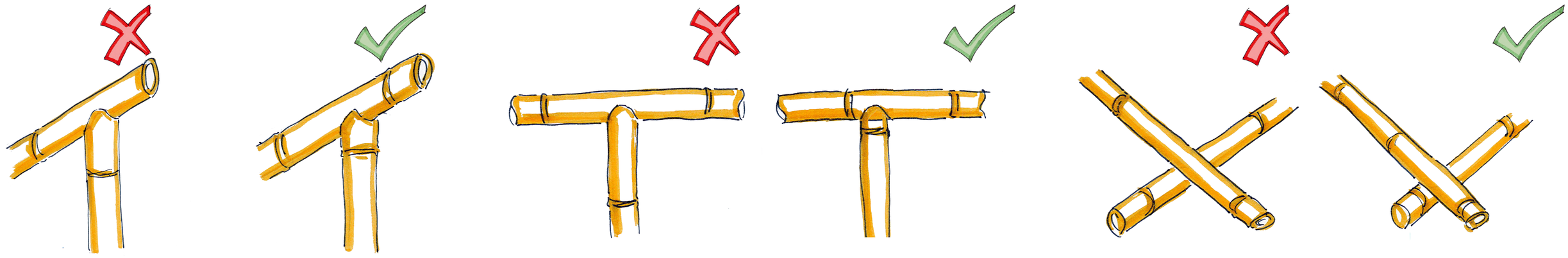
square lashing



column / beam | fish mouth connection

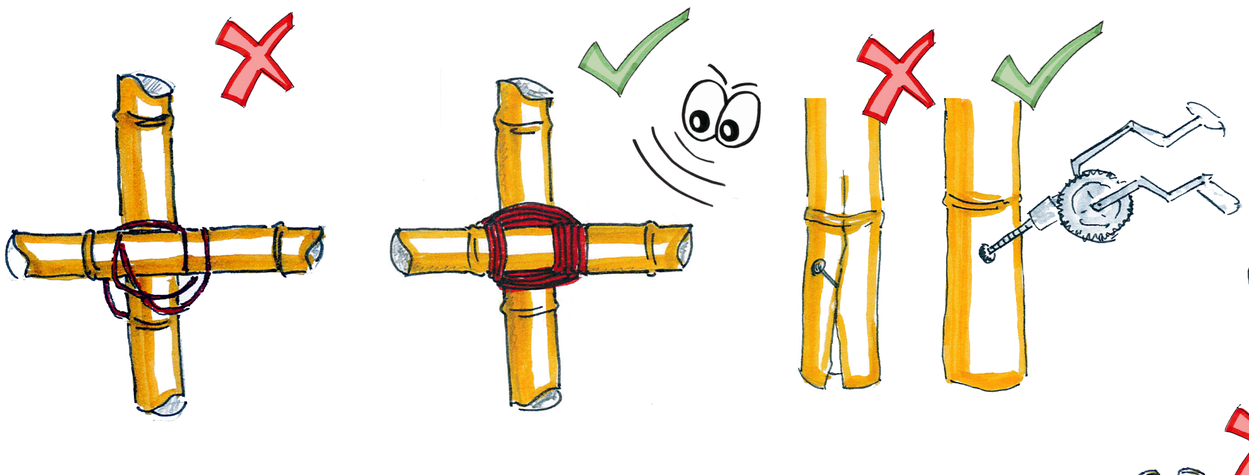


be aware of the nodal placement importance while making bamboo connections

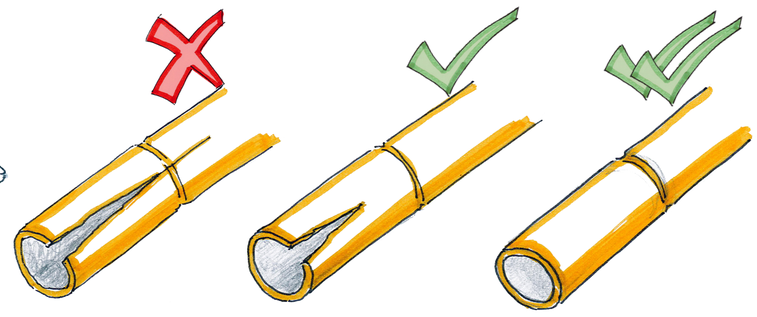


always leave a node after the joint

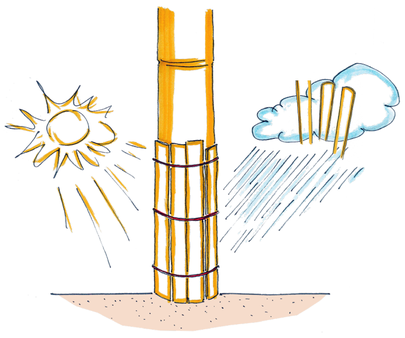
regularly check your lashing



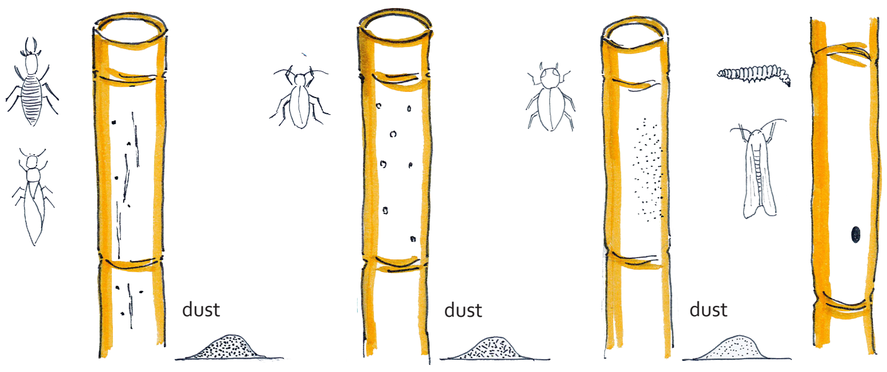
regularly check your bamboo poles to see if bamboo is cracking

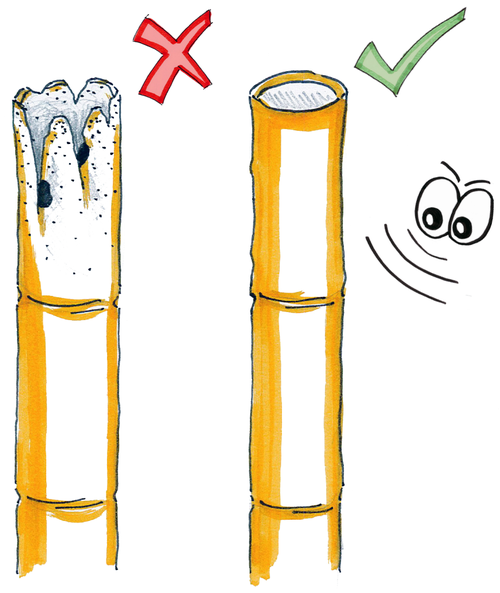


protect the bottom section of bamboo poles from sun and rain using small pieces of split bamboo



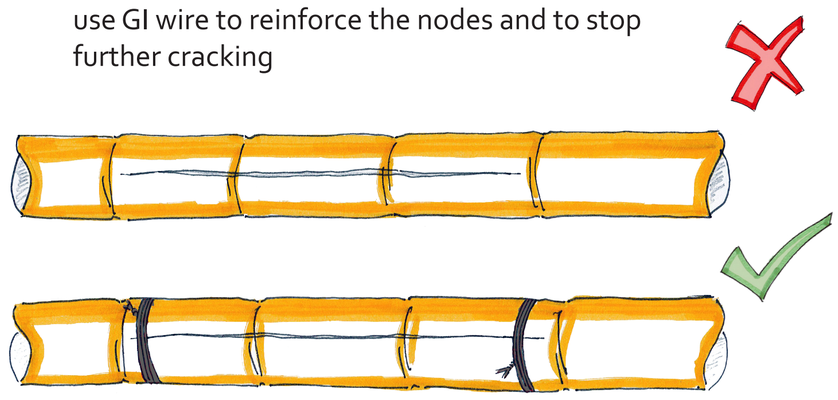
regularly check if the bamboo poles have any pest infestation - dust is a sign of pest infestation





replace rotten or pest infested bamboo

use GI wire to reinforce the nodes and to stop further cracking



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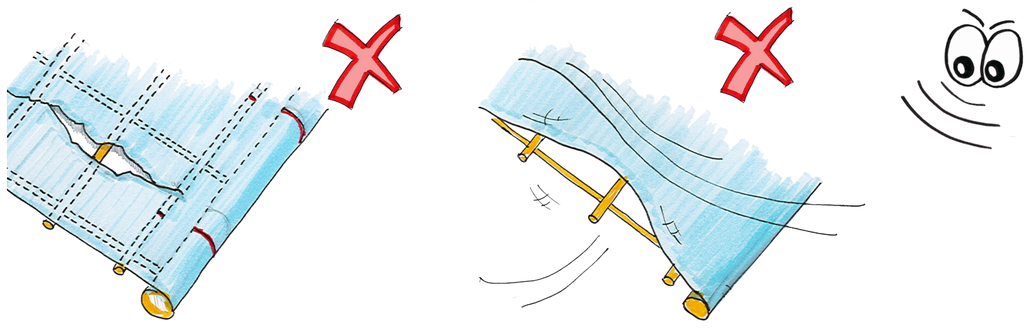
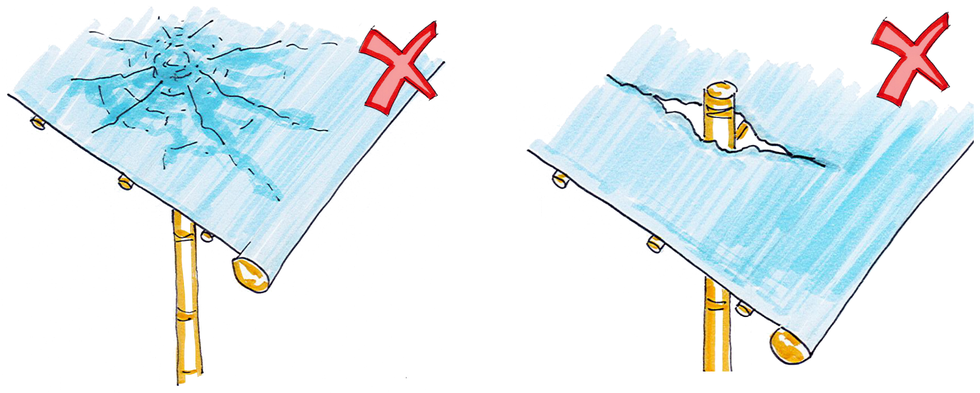
tarpaulin | roof

05

secure the tarpaulin to roof structure and regularly inspect the tarpaulin

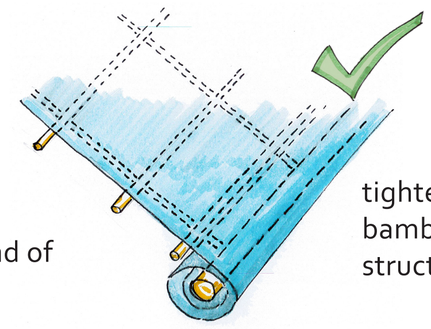


avoid having sharp edges pushing against the tarpaulin

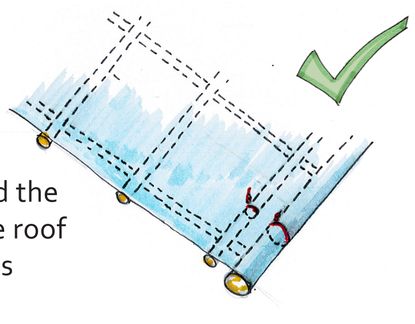


regularly check if the tarpaulin has any holes or any other kind of damage. make sure the tarpaulin is tightly stretched

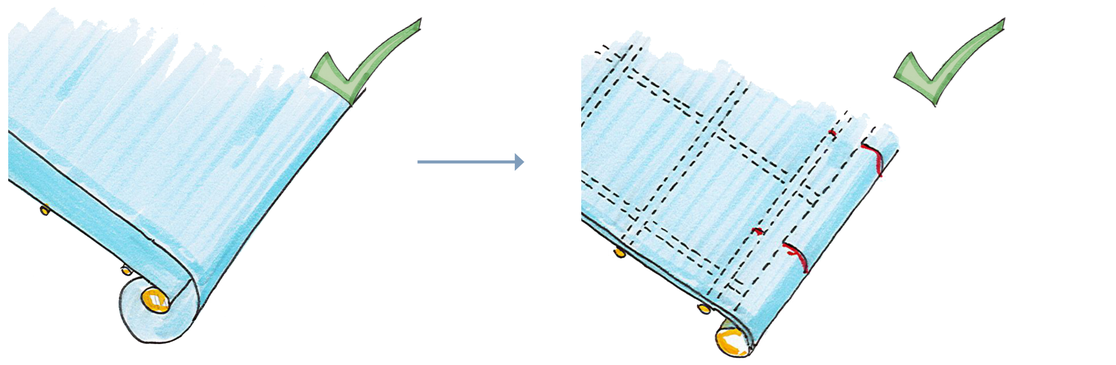
roll the tarpaulin around the bamboo at the end of the roof



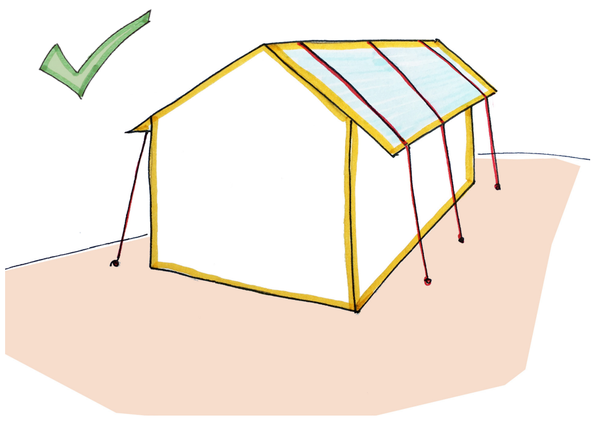
tighten the tarpaulin around the bamboo and secure it to the roof structure in several locations



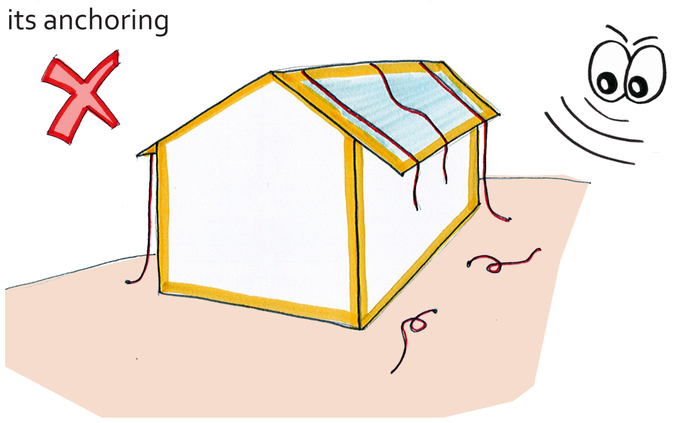
you may use a second tarpaulin to cover the damaged tarpaulin. this will also provide better insulation.



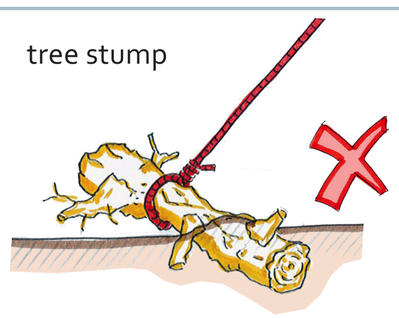
secure the roof structure using rope and anchoring it to the ground

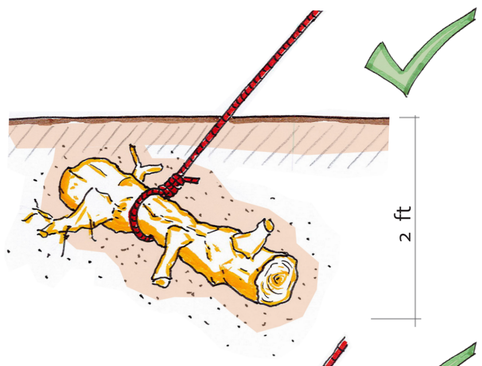


regularly inspect the rope securing the roof and its anchoring

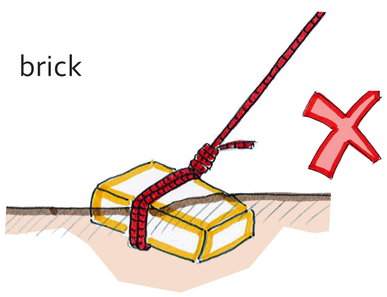


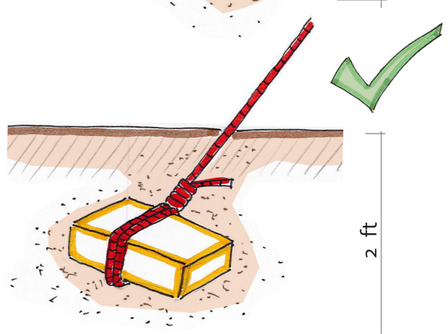
tree stump



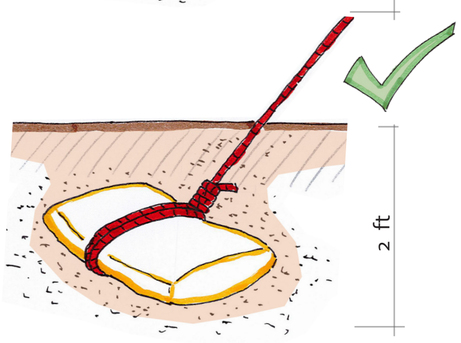


brick

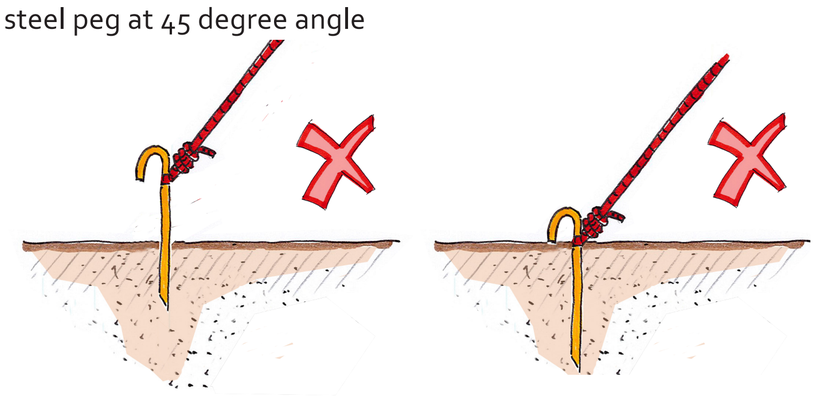


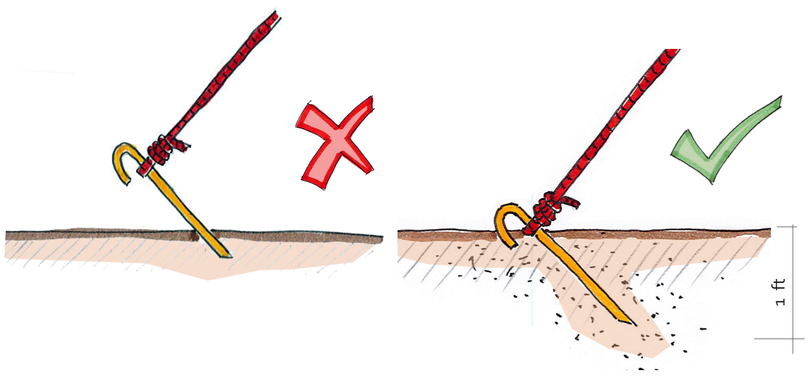


sand bag



steel peg at 45 degree angle

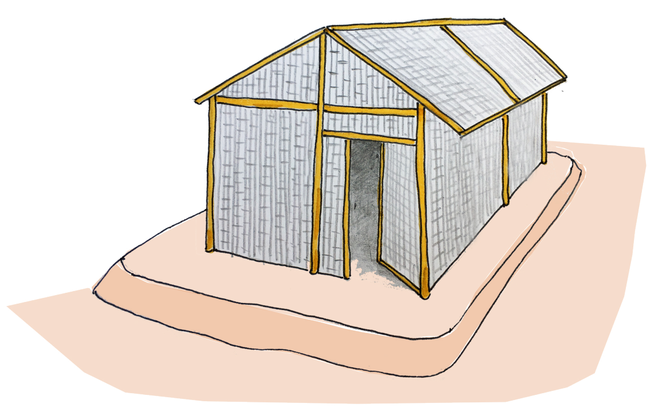




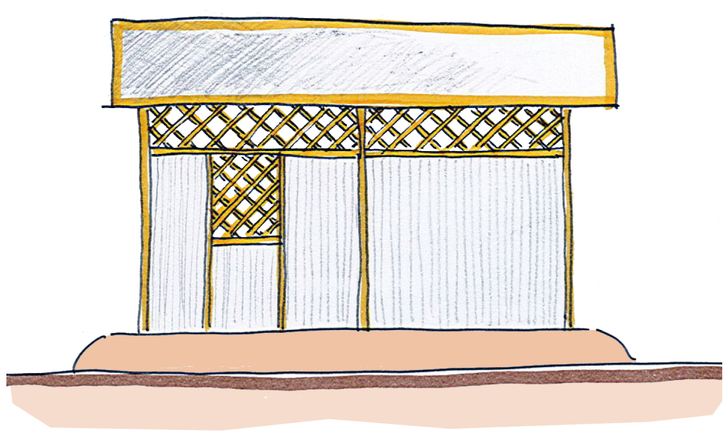
walls | openings | ventilation

06

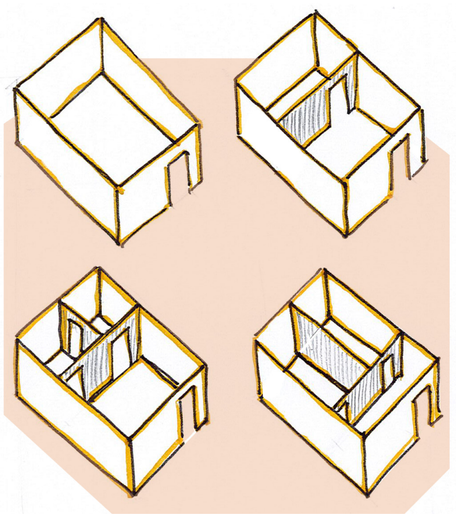
use bamboo weaving on the walls and roof to improve insulation



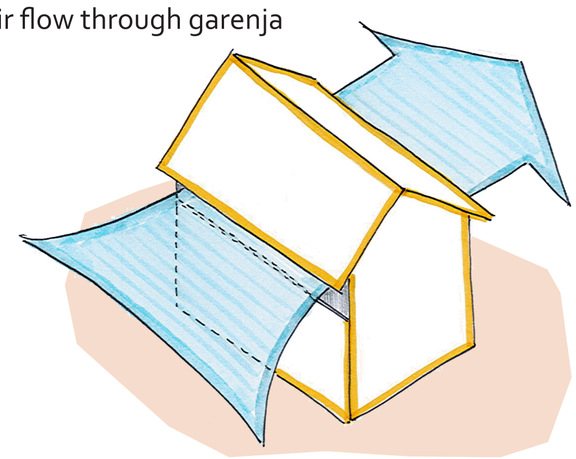
make windows and garenja for air flow, to cool the interior of the shelter and allow daylight



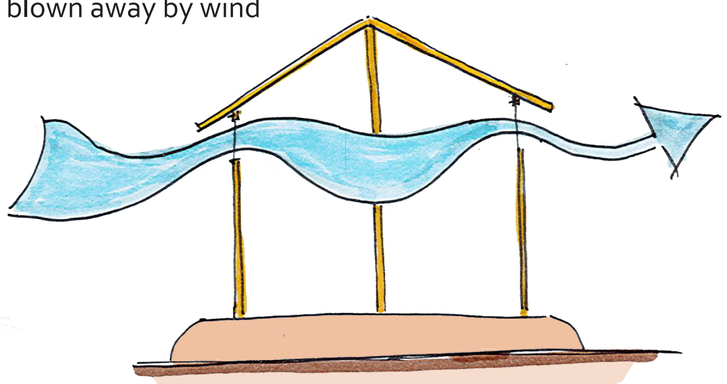
make partitions for privacy



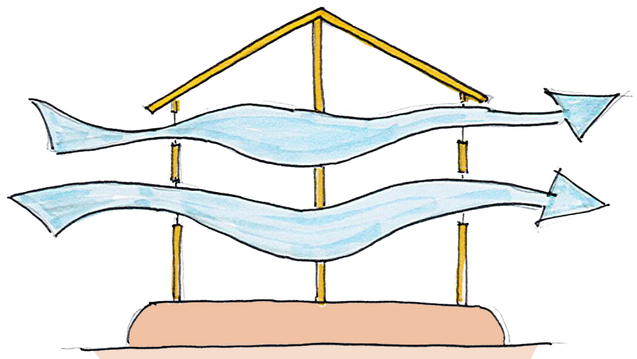
air flow through garenja



air flow through garenja prevents shelter from being blown away by wind



air flow through garenja and windows



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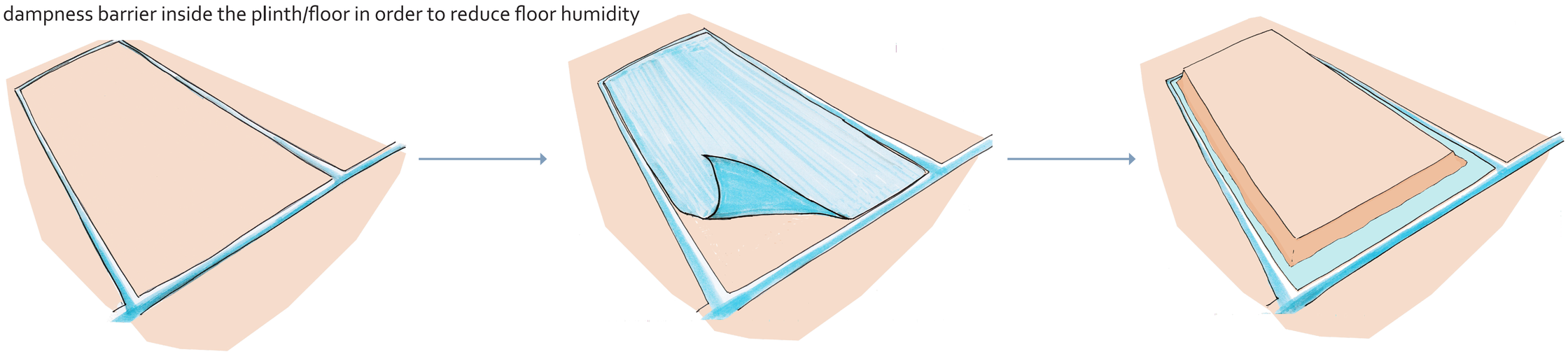
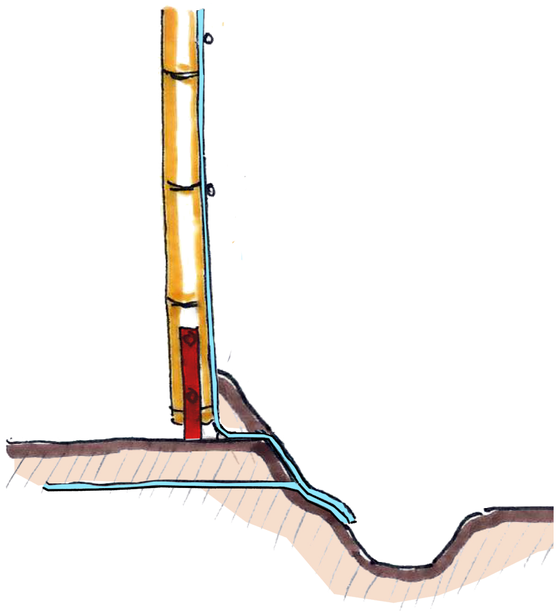
flooring | dampness barrier

07

create a dampness barrier inside the plinth/floor in order to reduce floor humidity

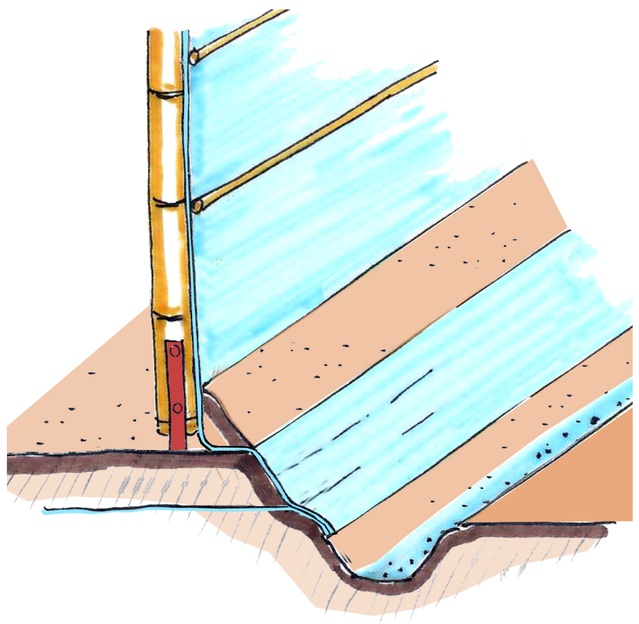


create the drainage at your plot. level and clear the ground



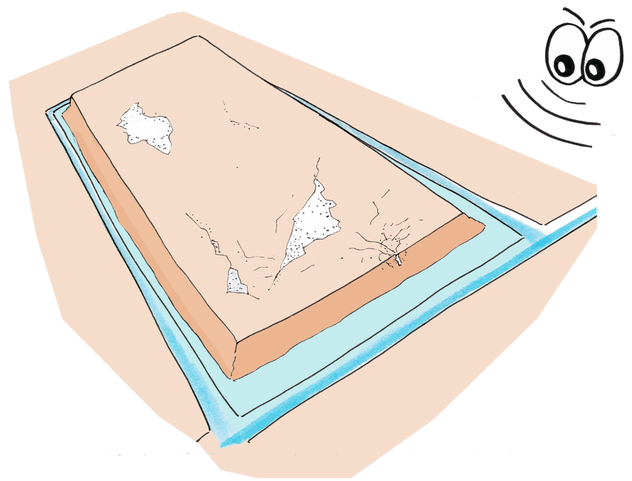
extend the tarpoulin or plastic sheeting underneath the plinth all the way to the drain

cover the ground with a tarpaulin or plastic sheeting all the way to the drain



extend tarpaulin from walls underneath plinth to drainage to avoid rain or flood water from entering the shelter

cover the tarpaulin with minimum 6 inch plinth, if possible add a layer of cement stabilized mud as finish

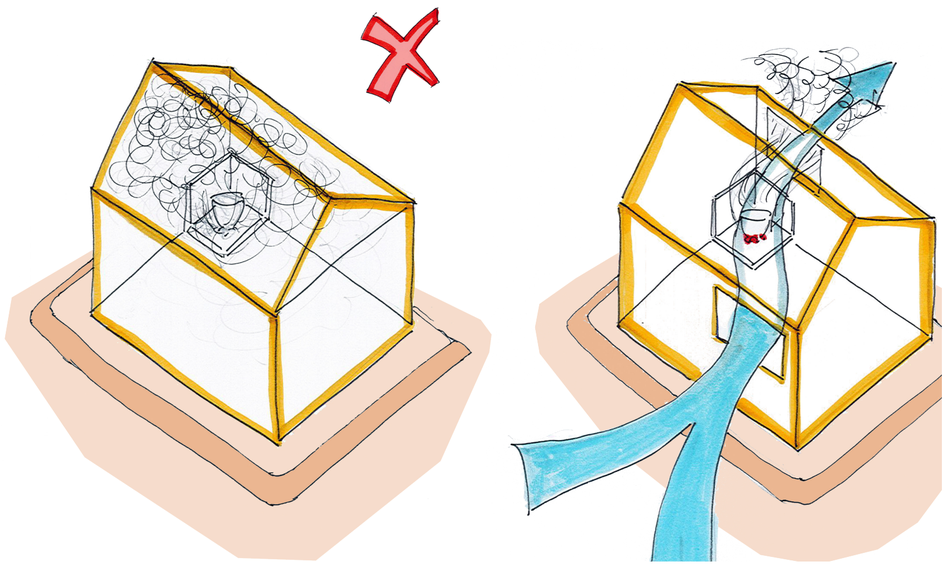


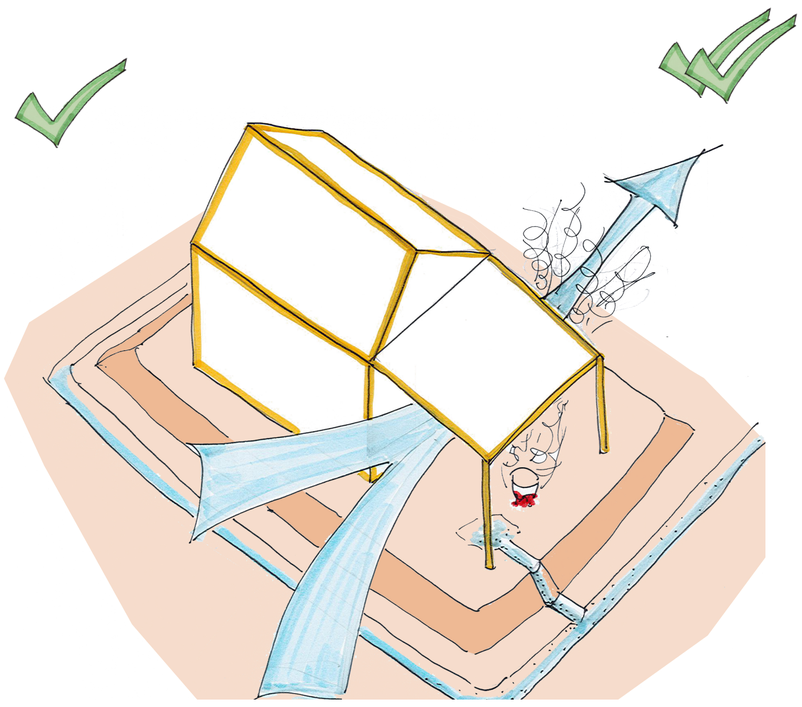
regularly inspect the floor and look for cracks or holes in the top layer. Fix them using a coat of cement stabilized mud plaster

cooking

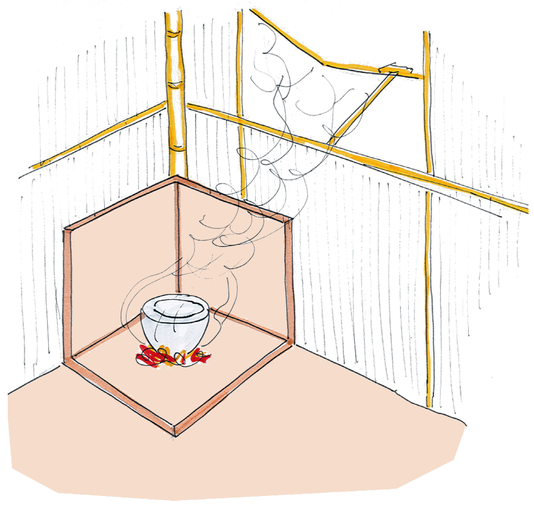
08

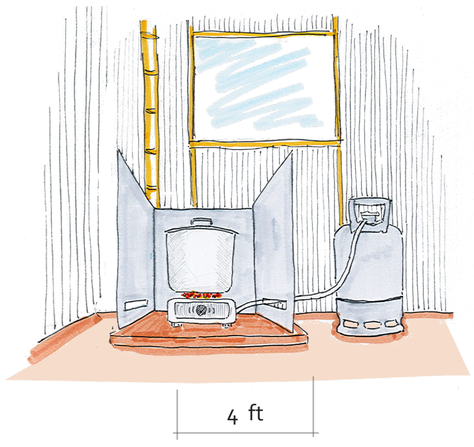
do not cook inside a completely closed shelter



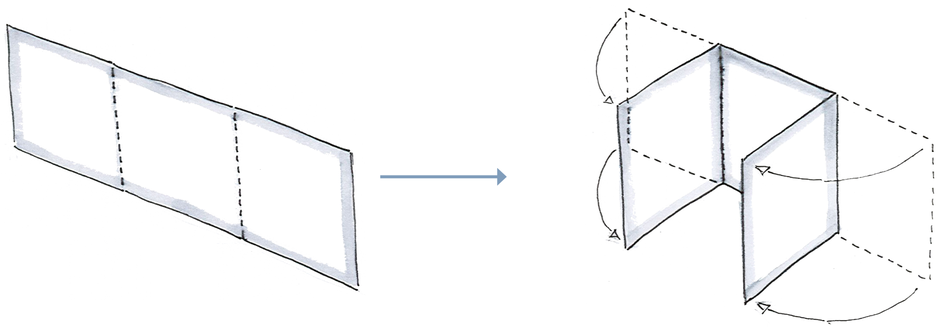


if you have to cook inside the shelter install your cooking area next to a window. build mud walls around the fire to protect the bamboo





if you cook with gas, do it next to a window and place the gas cylinder at least 4 feet away from the stove and the flame



you may use metal sheeting to protect your cooking area

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