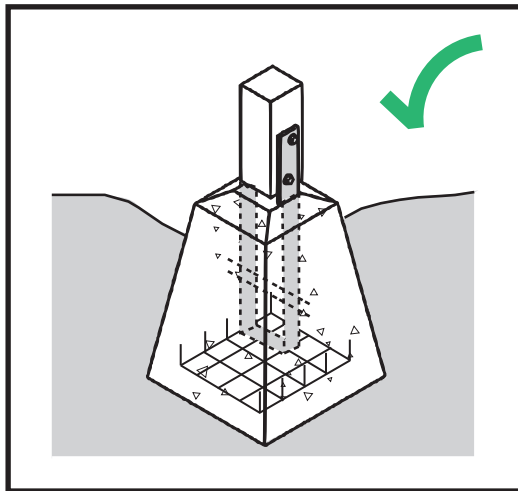
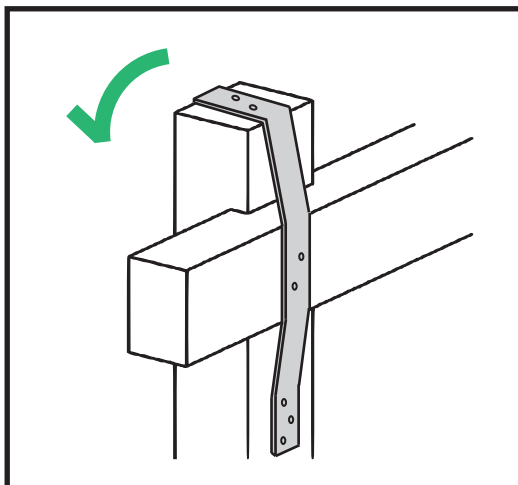


The way we build houses needs to be stronger. These are 8 key messages on how to repair your house and build back safer.

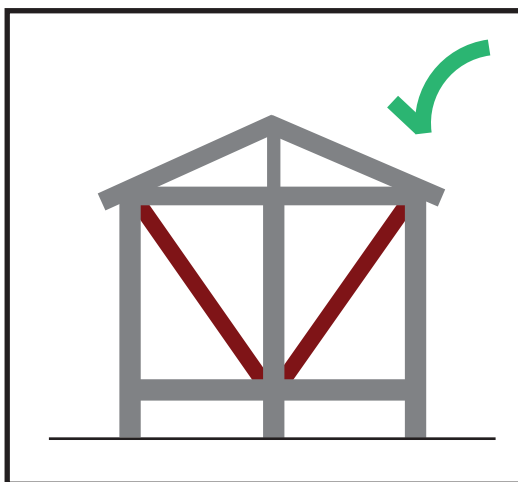
1 BUILD ON STRONG FOUNDATIONS



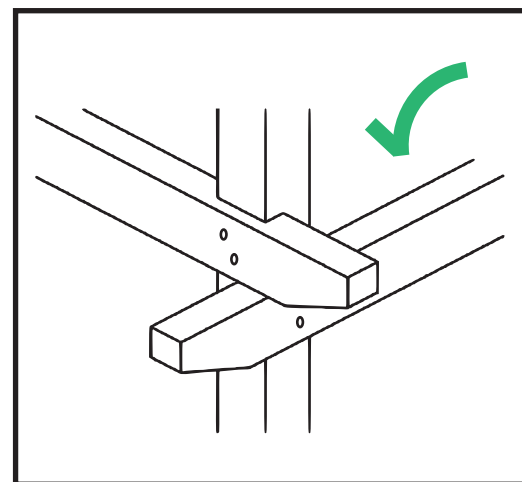
2 TIE-DOWN FROM BOTTOM UP



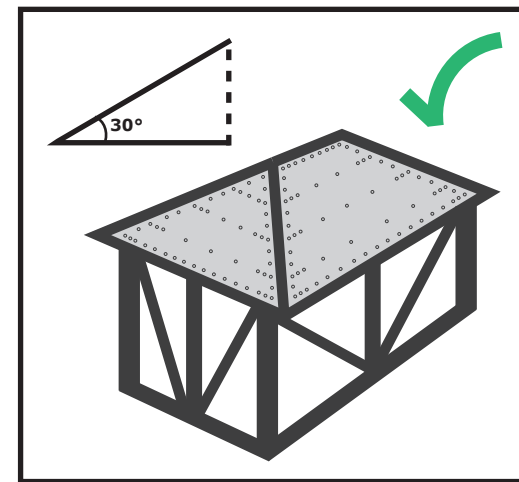
3 BRACE AGAINST THE STORM



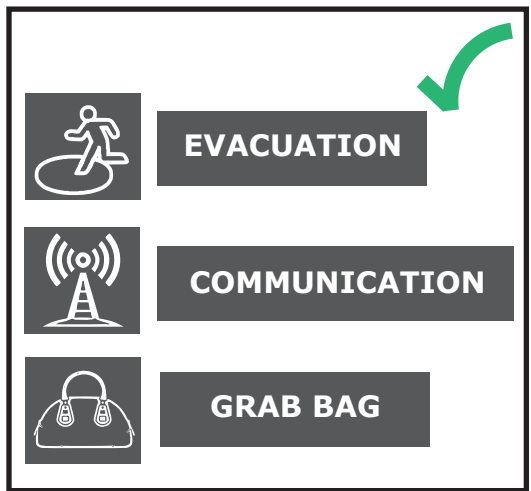
4 USE STRONG JOINTS



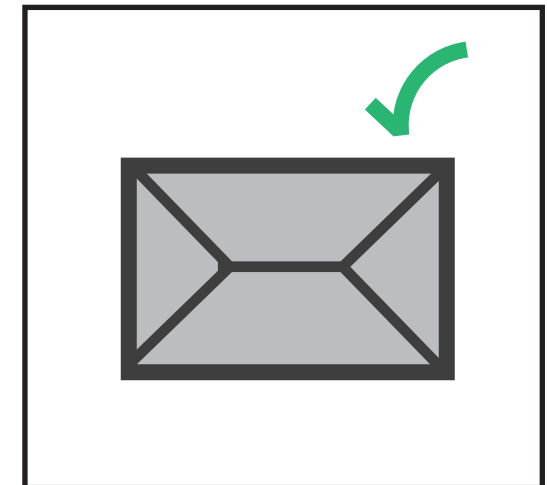
5 A GOOD HOUSE NEEDS A GOOD ROOF



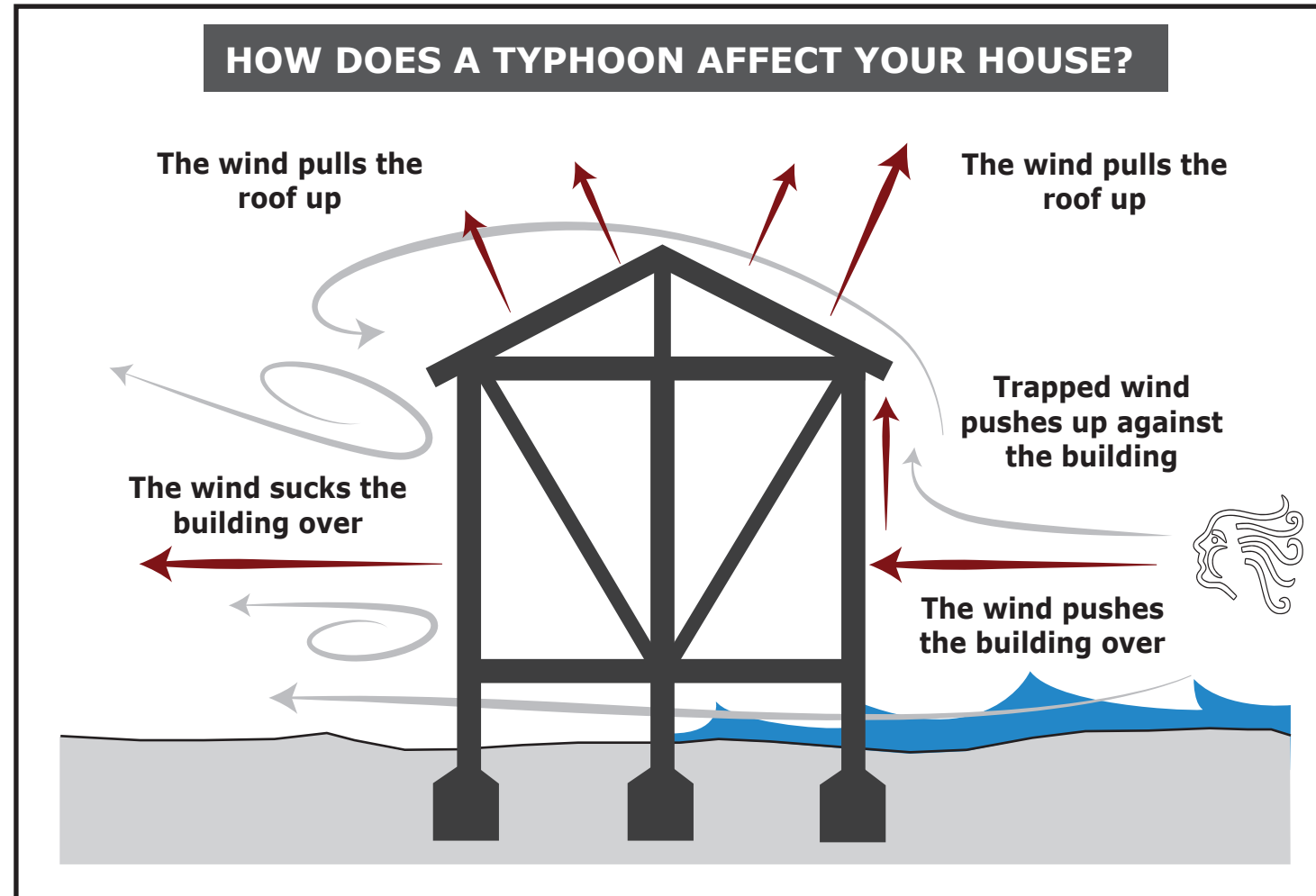
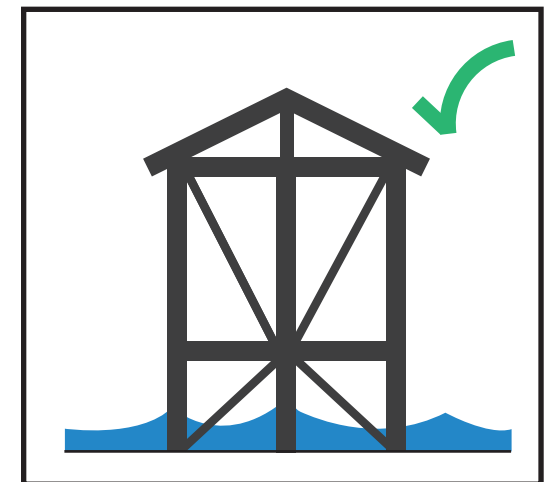
8 BE PREPARED

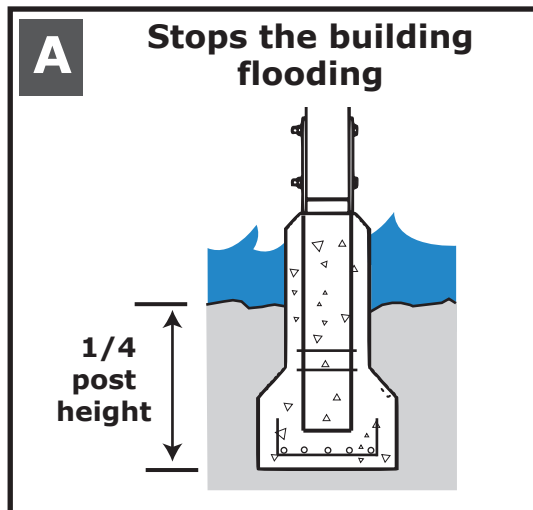


7 A SIMPLE SHAPE WILL KEEP YOU SAFE



6 SITE YOUR HOUSE SAFELY

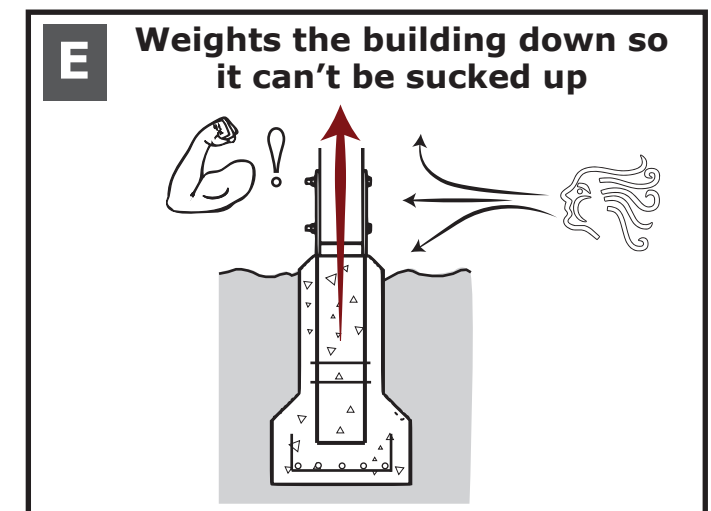
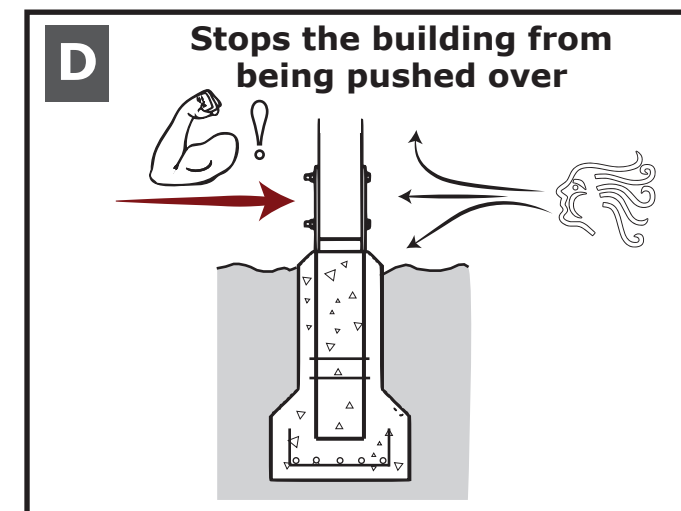
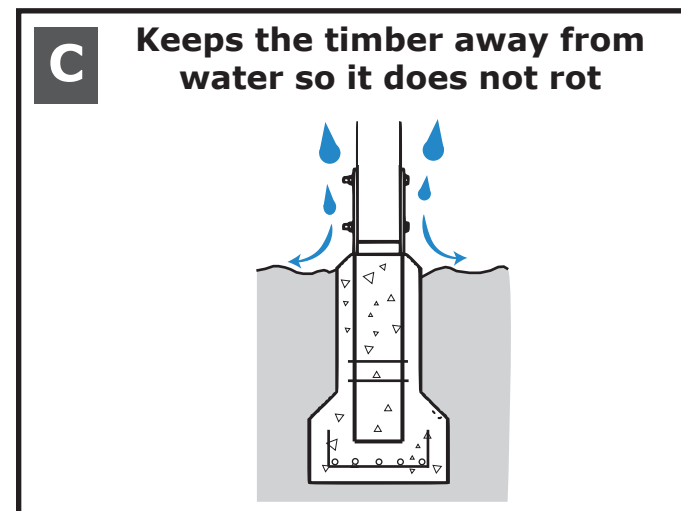
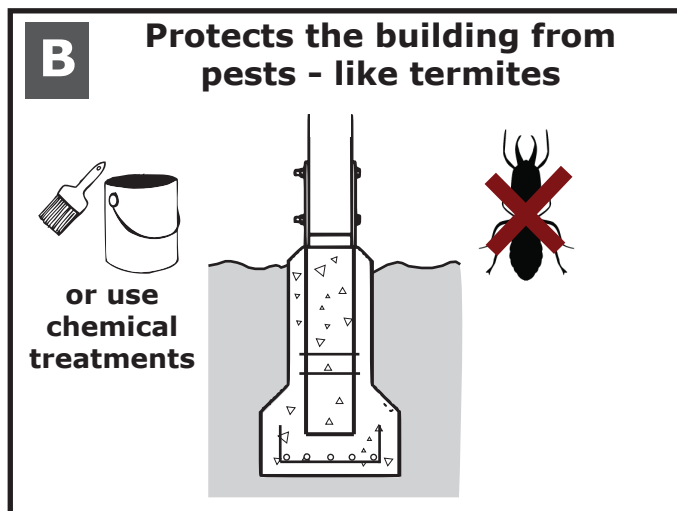
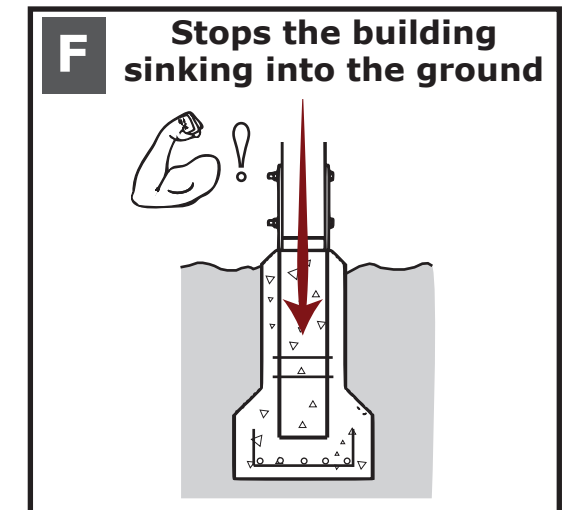




Build on strong foundations

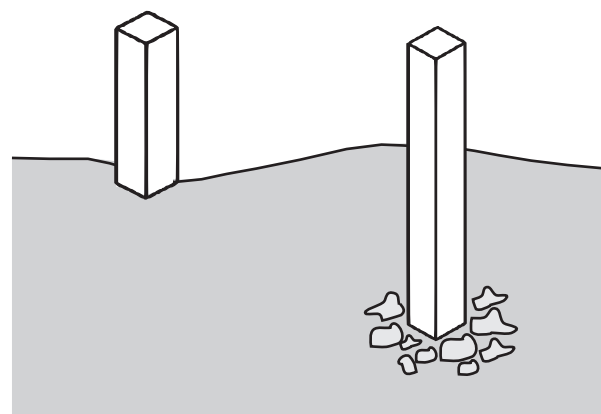


Foundations are very important as they anchor your house to the ground. Ensuring foundations are suitable to your building's location and ground conditions protect your house from strong winds, earthquakes and flooding.



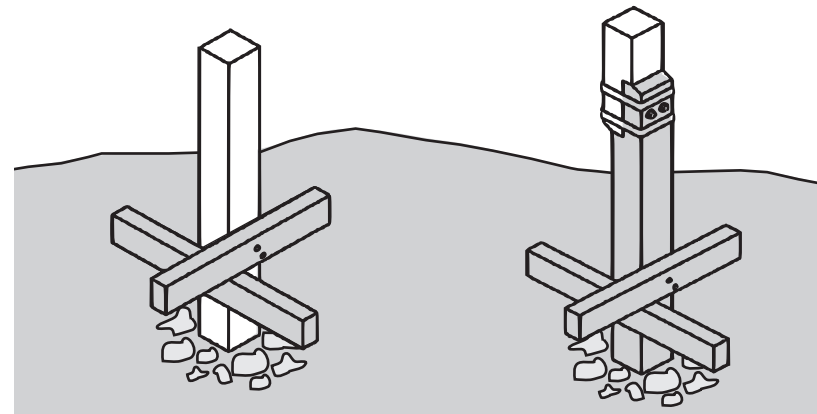
WHAT CAN I USE AS A FOUNDATION FOR MY HOUSE?

Above ground timber post Below ground timber post



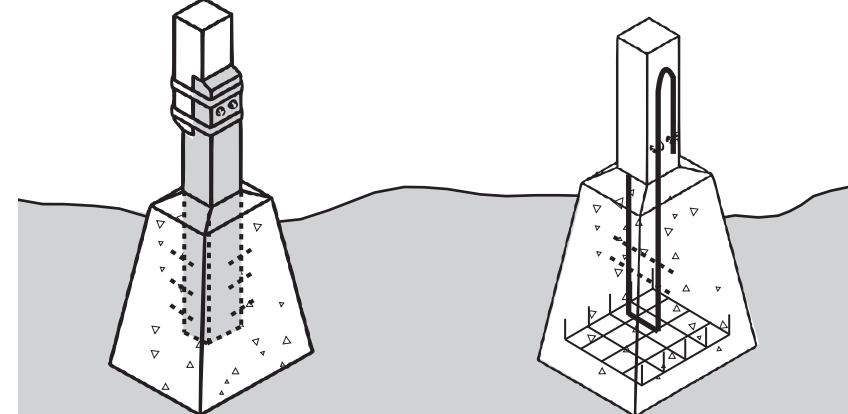
Too Weak ❌

Anchors increase foundation strength Treated hardwood post below ground protects from rotting



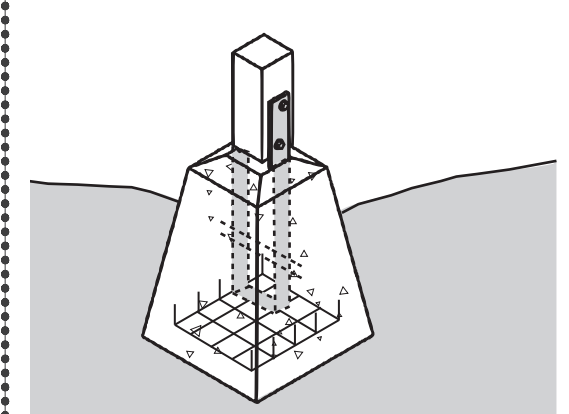
Strong ✔️

Hardwood post set into concrete foundation Rebar set into concrete foundation



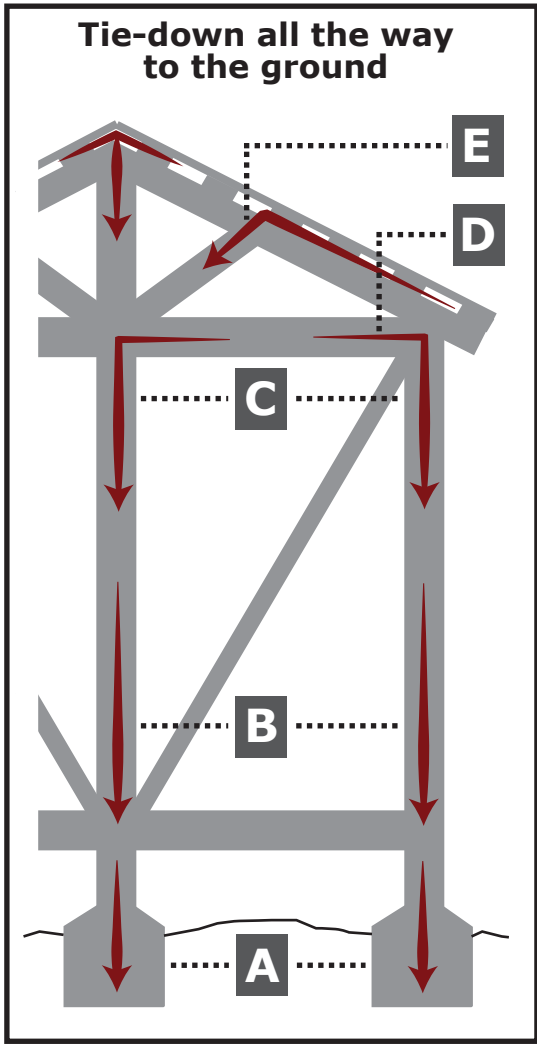
Stronger ✔️

Steel strap bolted to post with gap to avoid rotting



Strongest ✔️✔️

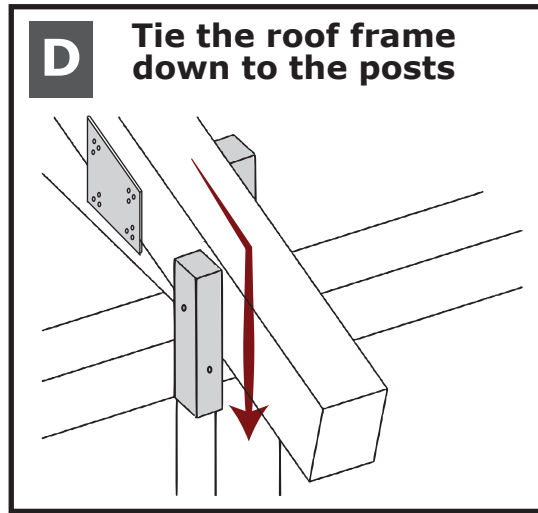
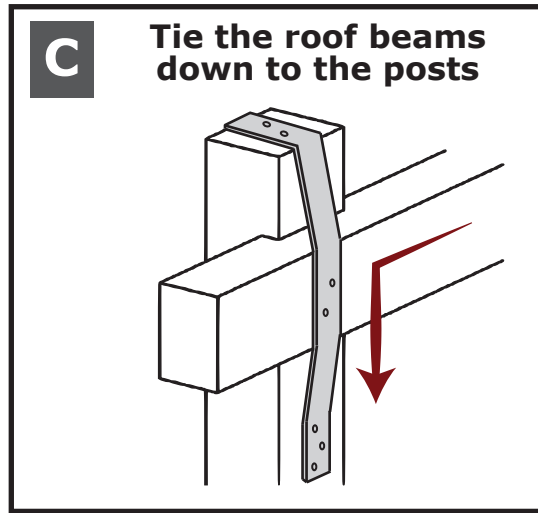
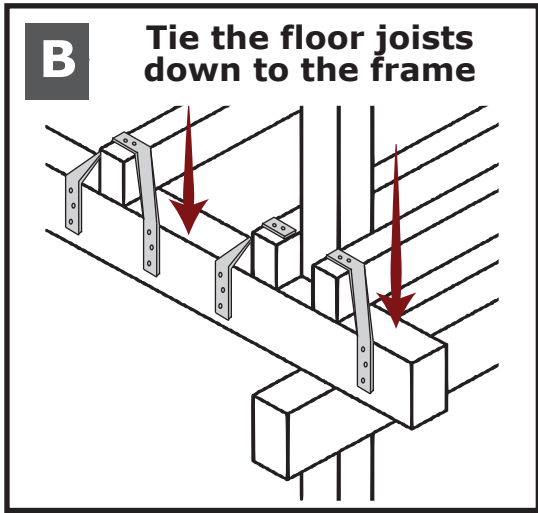
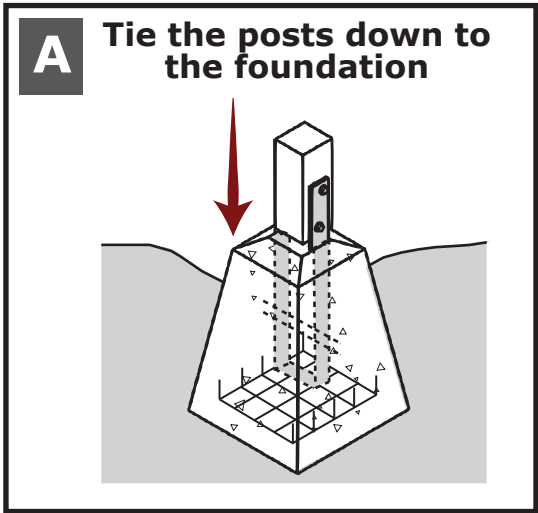
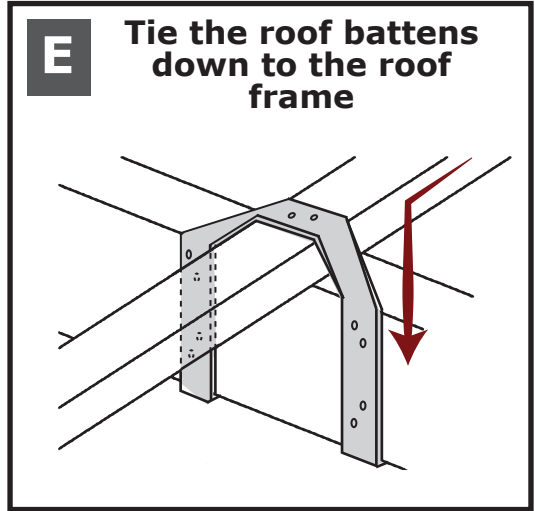




Tie-down from bottom up

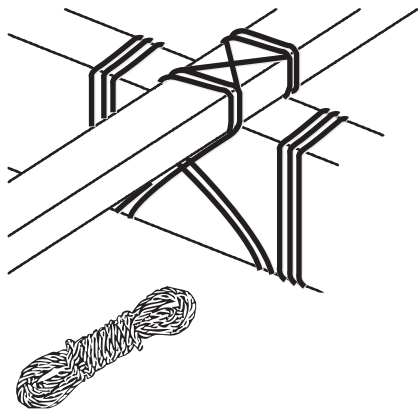


In a typhoon your house can be sucked apart or blown away by the wind. Tie every part of your building right through to the ground. Start thinking about this from the bottom up.

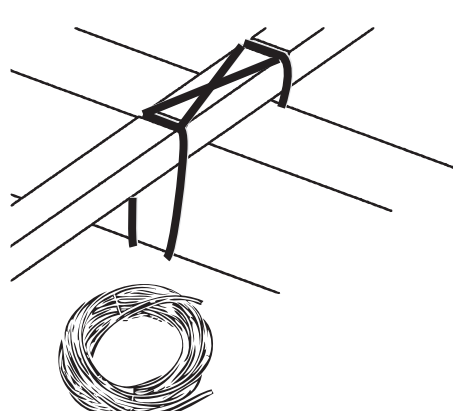


WHAT CAN I USE TO TIE-DOWN MY HOUSE?

Rope or nylon fishing wire



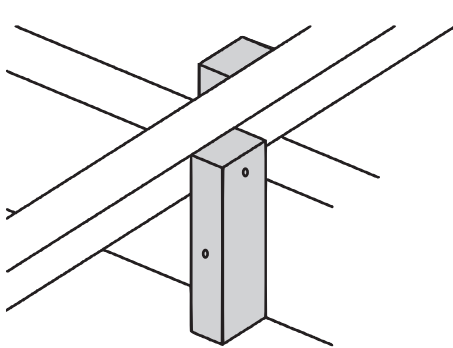
Thick galvanized wire (multiple layers)



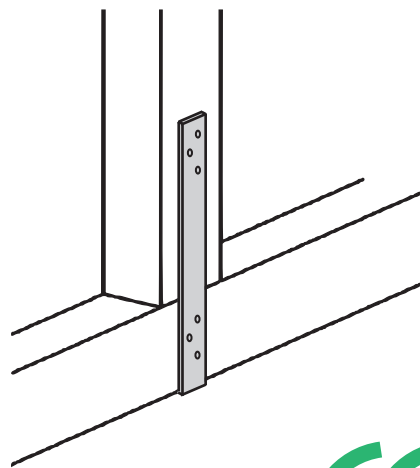
Strong



Timber cleats



Galvanized metal strap

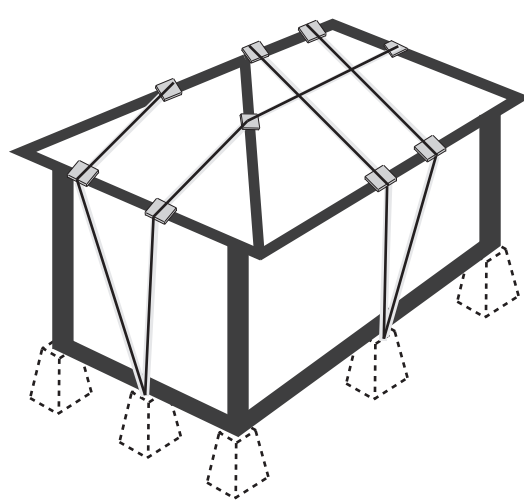


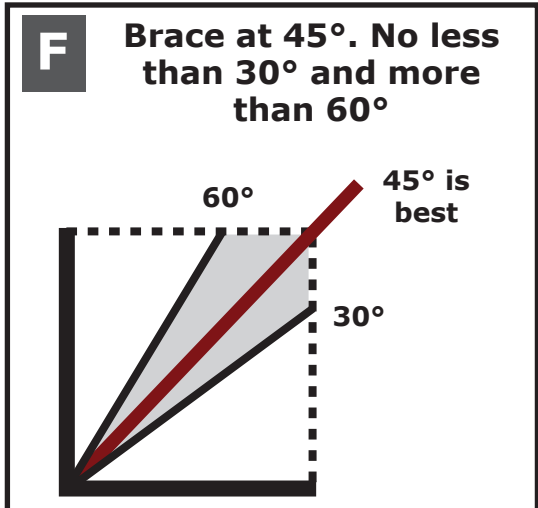
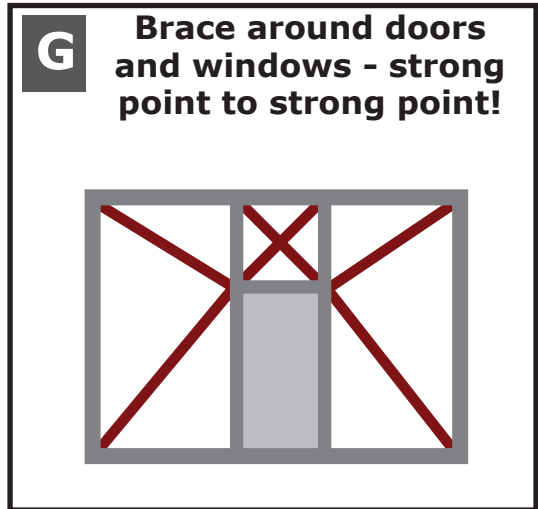
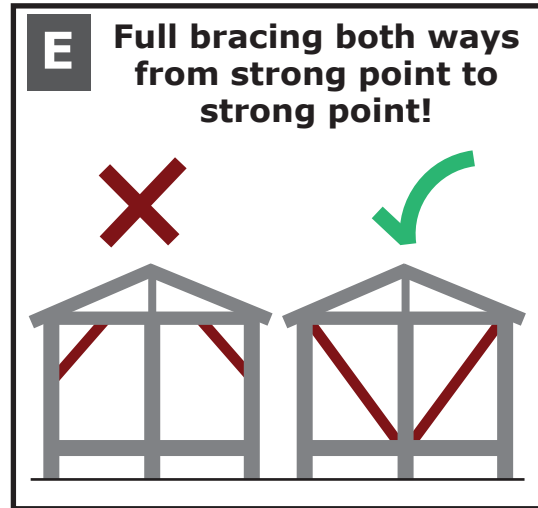
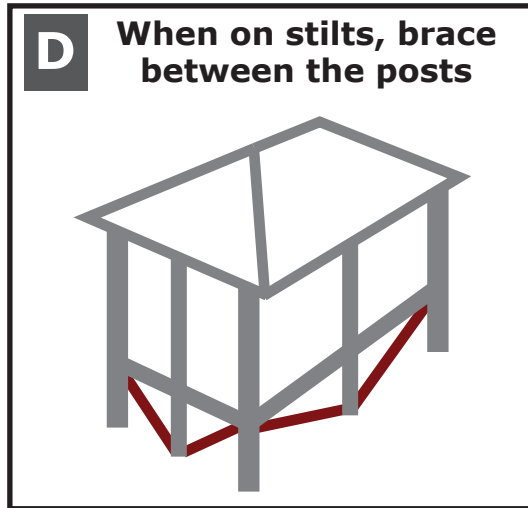
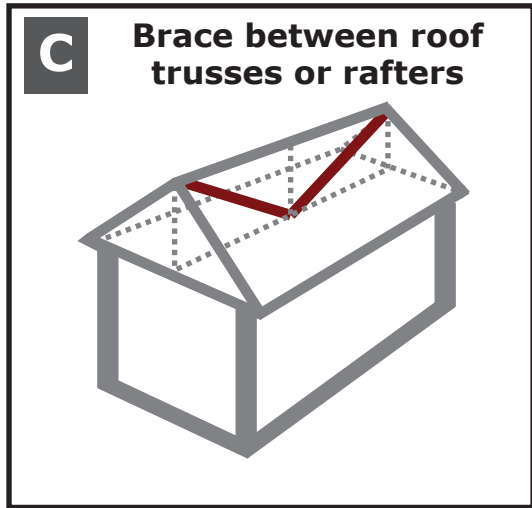
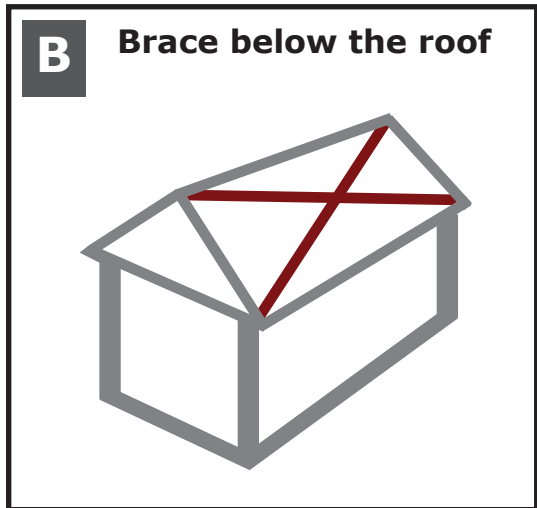
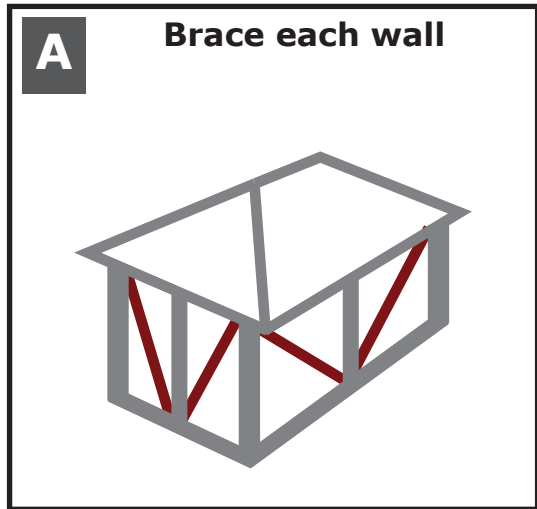
Strongest



STRONG WINDS COMING?

Tie-down when strong winds come

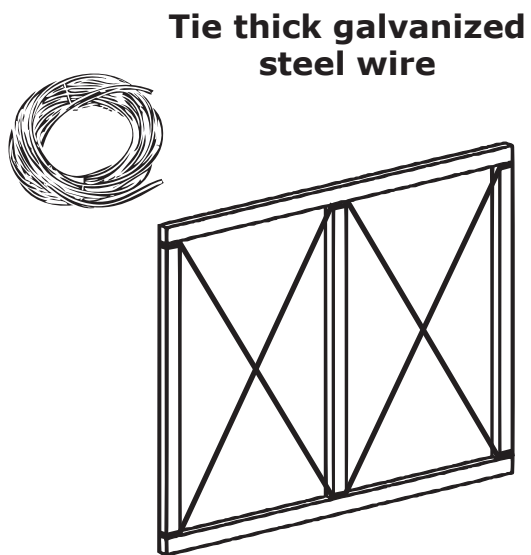




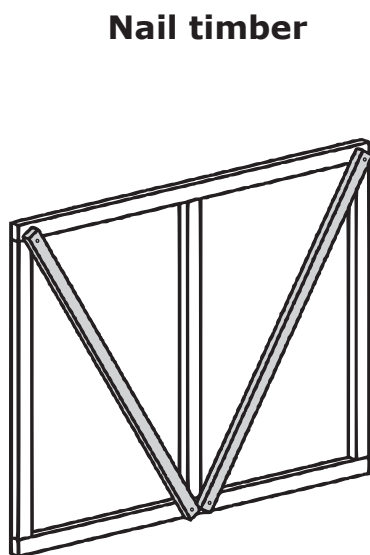
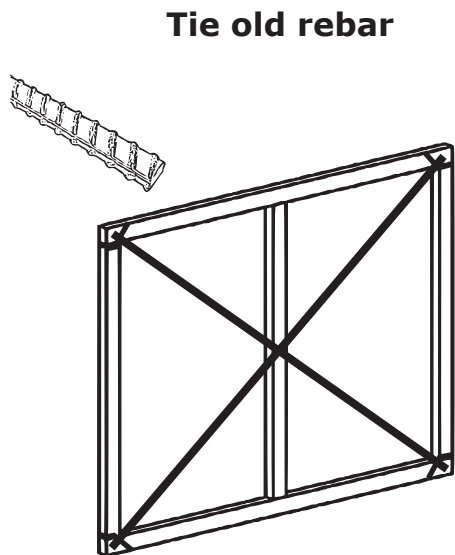
Brace against the storm ✓

Strong bracing stops your house being pushed over or pulled apart by the wind. Bracing needs to be strong against being crushed along its length or pulled apart. Brace between the strong points of your house.

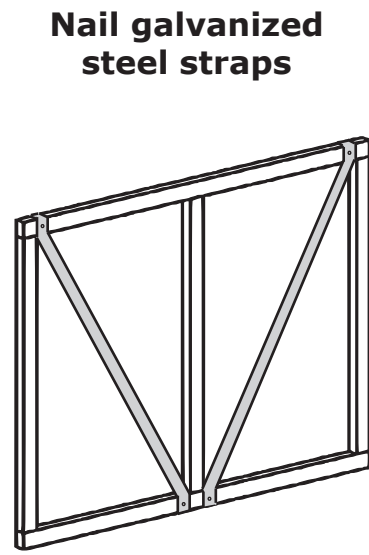
WHAT CAN I USE TO BRACE MY HOUSE?



Strong ✓



Stronger ✓



Strongest ✓✓

A Extend timber past joints to stop nails splitting the timber

Use strong joints ✓

Your house is only as strong as the weakest joint. Build every joint so it can't be pushed or pulled apart. Horizontal nails are better as they can't be pulled apart by the wind sucking your house up or pulling it down.

F Use gusset plates to strengthen joints

B Don't cut away too much of the main posts or beams

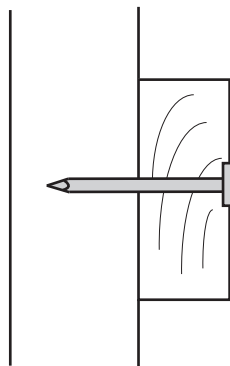
C Offset nails to prevent timber splitting

D Nailing at an angle will make the joint harder to pull apart

E Fishplate/strap vertical and horizontal joints to increase strength

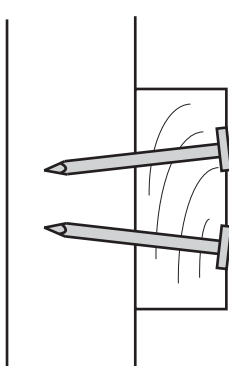
WHAT CAN I USE TO STRENGTHEN JOINTS?

Single nail



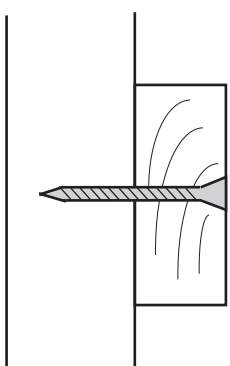
Too Weak ✗

Nails

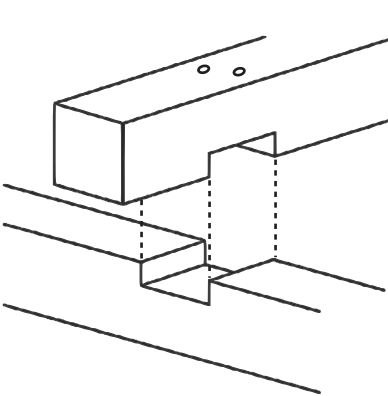


Strong ✓

Screw

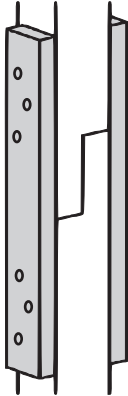


Interlock joint and nail

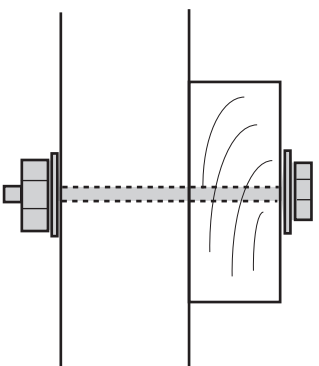


Stronger ✓

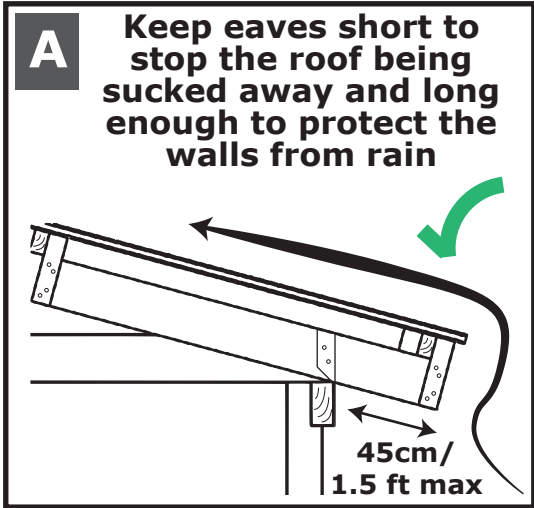
Fishplate or cleats



Bolt

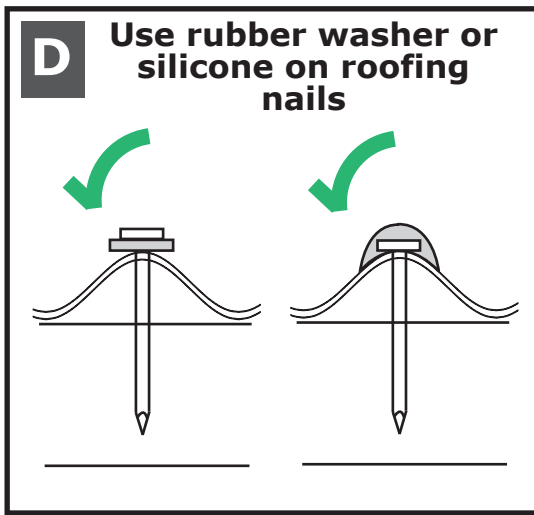
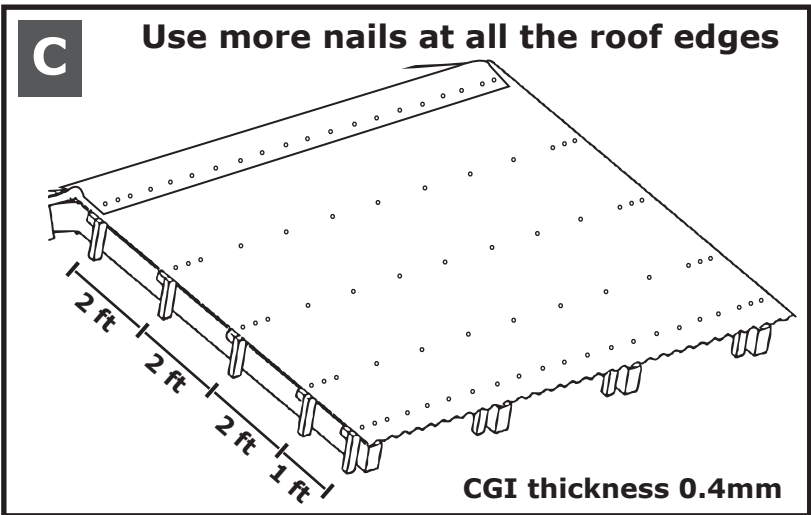
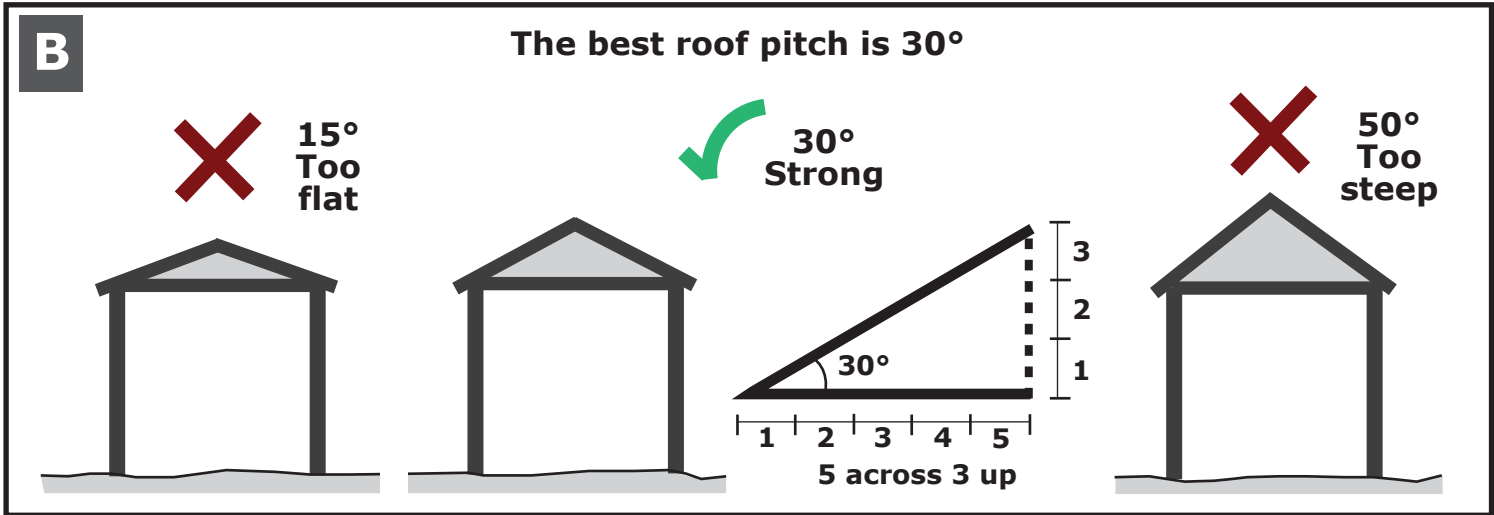
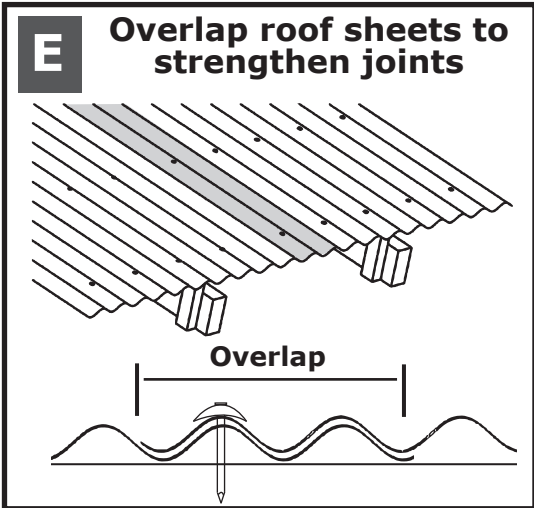


Strongest ✓✓



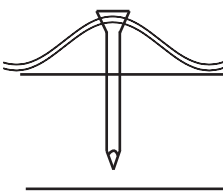
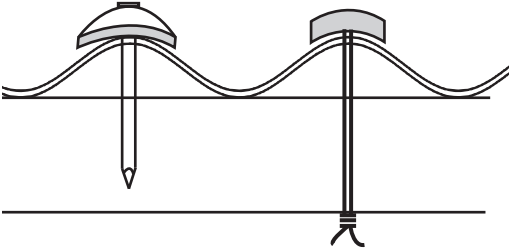
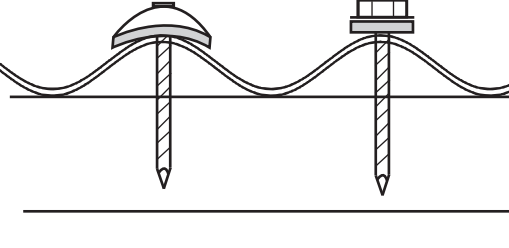
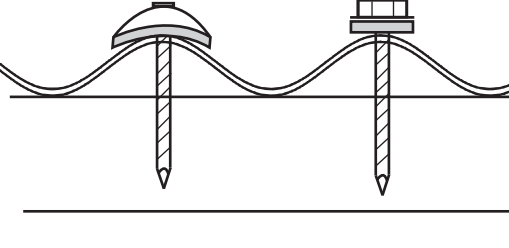
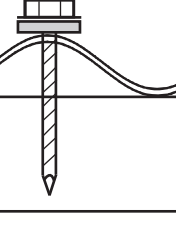
A good house needs a good roof ✓

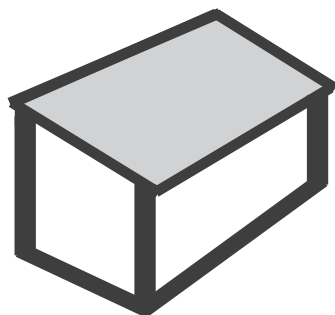
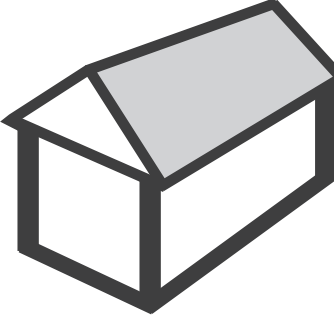
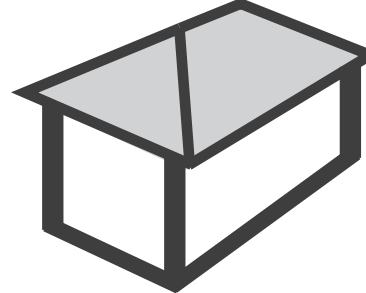
The way you design and build your roof is critical to protect you against strong winds and rain. Build your roof the right shape and pitch, and well nail down to protect against a storm.



WHAT CAN I USE TO SECURE MY ROOF?

WHAT ROOF SHAPE SHOULD I USE?

Regular nail	Umbrella head nail and washer	German wire (good for bamboo)	Twisted umbrella head nail and washer	Roofing screw and washer
				
Too Weak ✗	Strong ✓	Strongest ✓✓	Strongest ✓✓	Strongest ✓✓

Single slope roof	Two sided gable roof	Multiple roof slopes reduce the risks of your roof being pulled apart
		
Too Weak ✗	Strong ✓	Strongest ✓✓

A

Raise your house above the floods





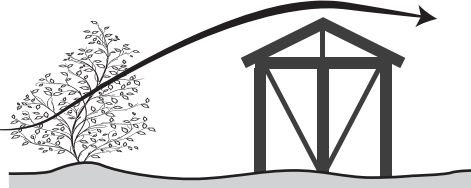
Site you house safely

Identify the hazards in your location and build as well as you can to resist them.



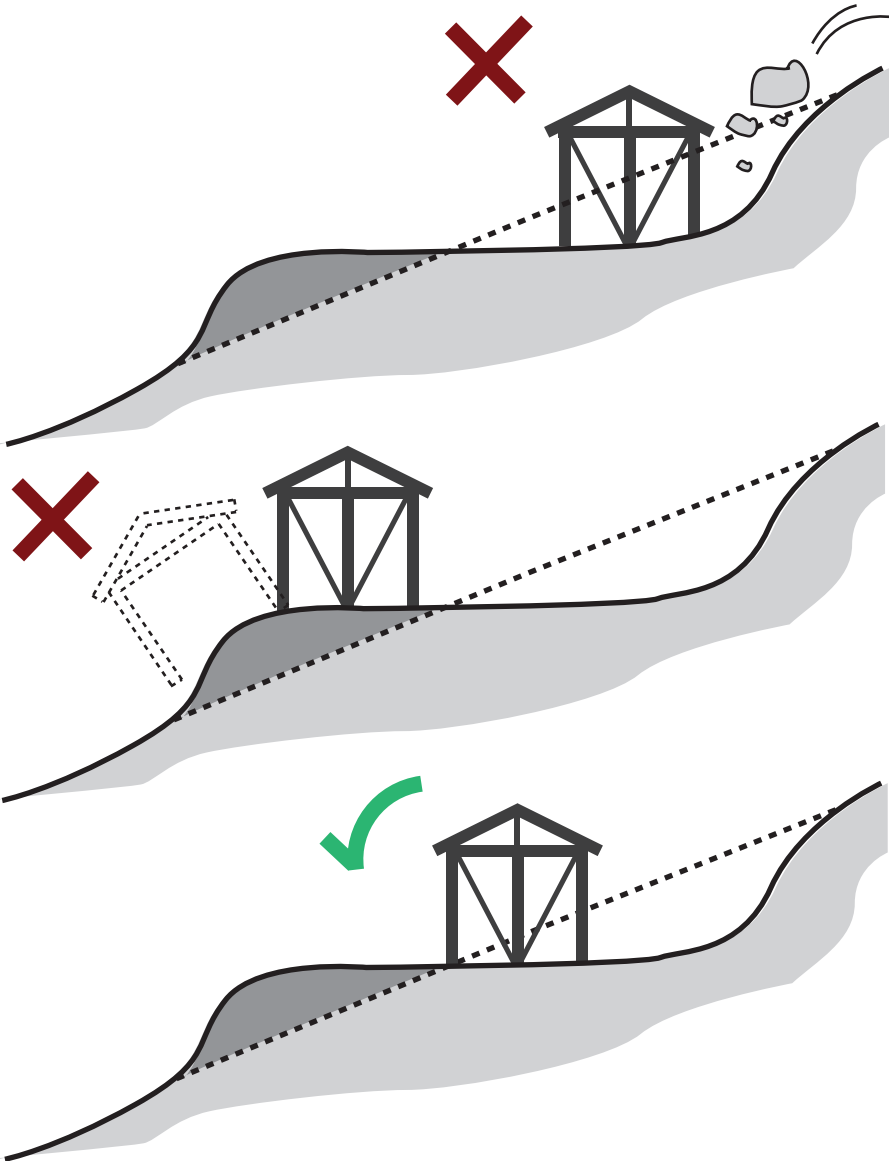
E

Use wind breaks to protect your house from strong winds



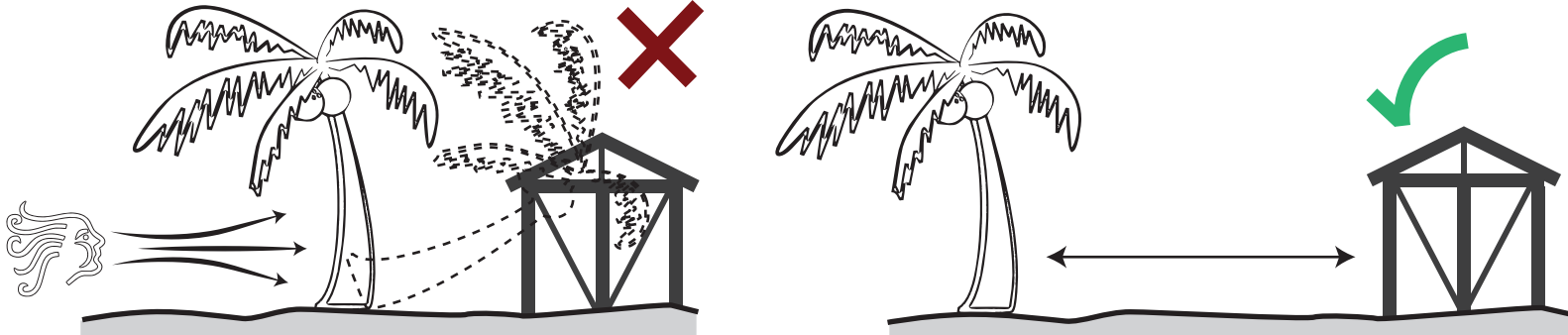
B

Don't build too close to edges or where rocks might fall



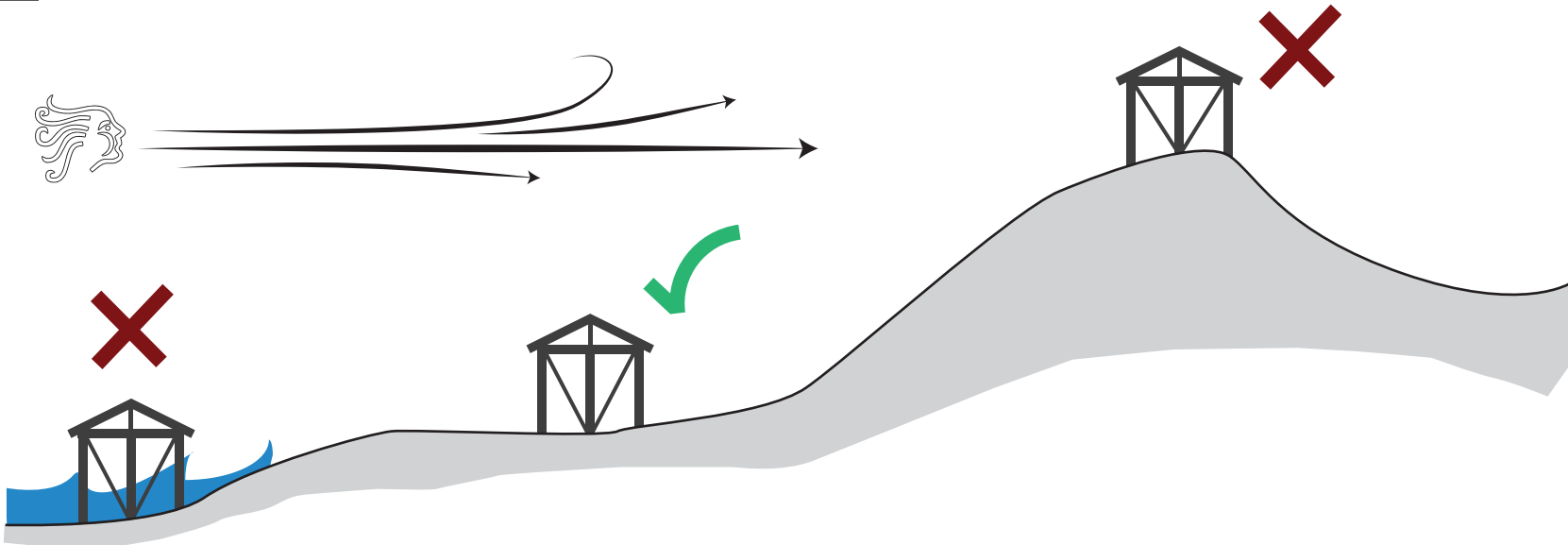
D

Build away from large trees or remove trees near the house to reduce risk of damage



C

Reduce risks and build away from hazards where possible



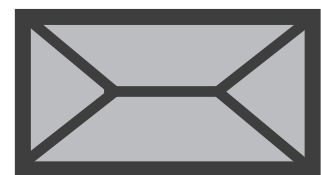
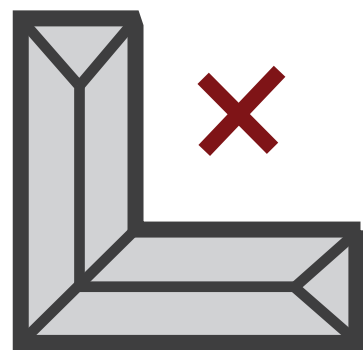
A Overhangs weaken the strength of your house



A simple shape will keep you safe

The shape of your house is important to reduce damage in strong winds. Always keep the design simple and strong.

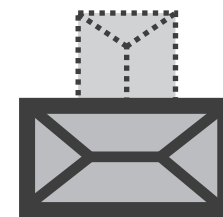
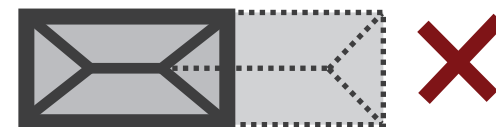
B Simple, compact shapes are the safest



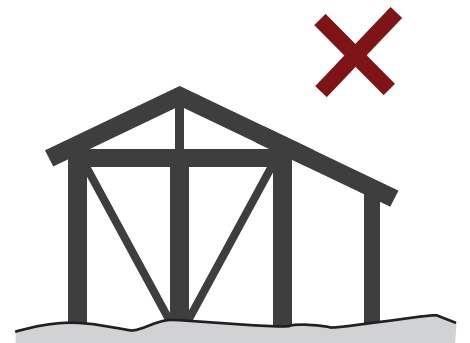
Length no more than three times the width



C Don't extend too long

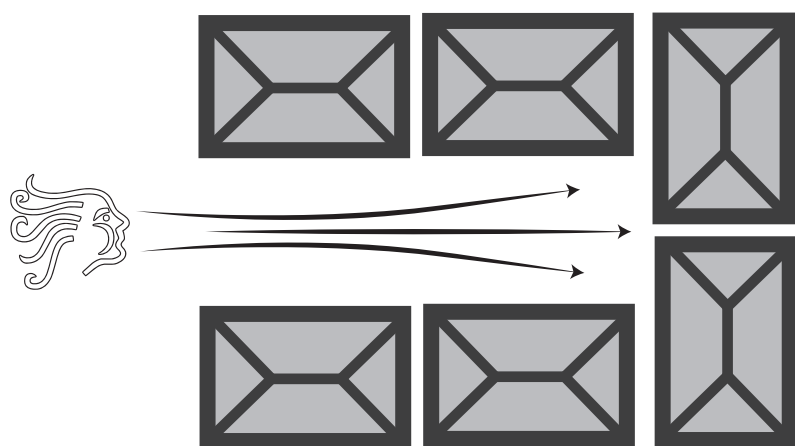


D Lean to roofs separate to main roof

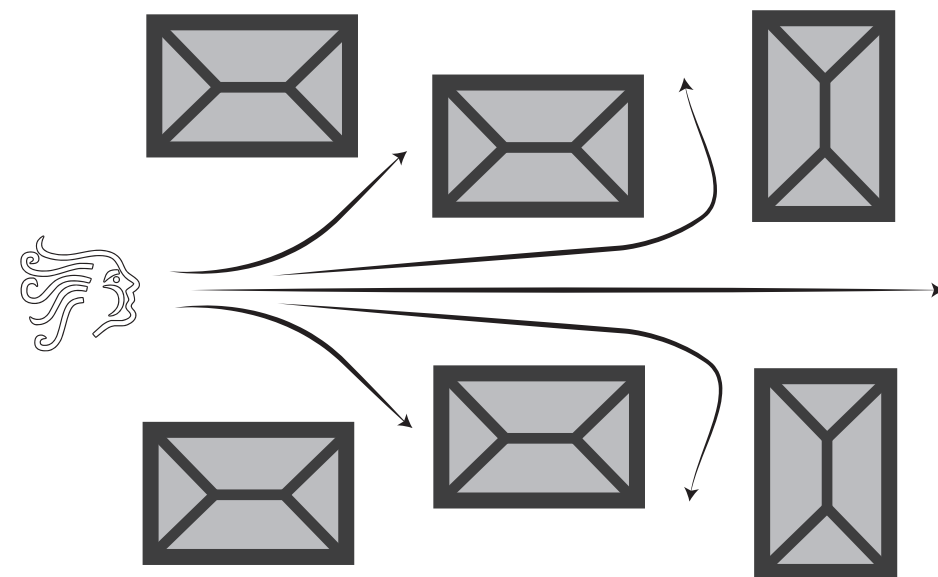


HOW SHOULD WE PLAN A GROUP OF BUILDINGS?

Houses too close together trap the wind



Spacing houses to let the wind pass





HOW CAN I PREPARE MYSELF AND COMMUNITY FOR A DISASTER?



- Make a plan and practice it
- Decide early if you will evacuate or stay in place
- Prepare safe evacuation route
- Know where the evacuation sites are
- Know what transport you can use



- Know the disaster warnings signals
- Know how you can receive information about a disaster
- Inform your relatives and friends where you will evacuate to
- Know how you will communicate with relatives and friends after disaster
- Know how and who to inform of your situation after a disaster
- Know where to find information on missing persons



- Prepare a waterproof 'grab bag' prior to a disaster
- Make the 'grab bag' easy to carry and include:
 - medical kit
 - extra clothing and safe shoes
 - batteries
 - torch and matches
 - basic food
 - cooking equipment
 - basic tools
- important personal records/ID
- Don't forget some water