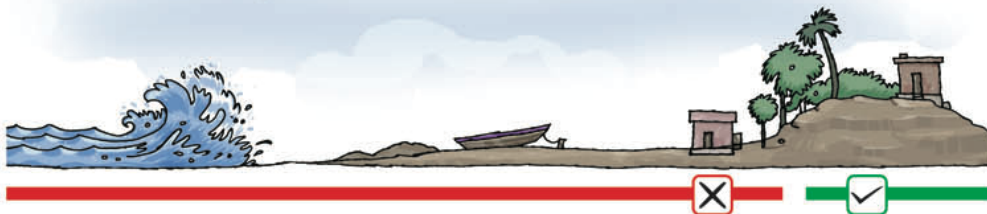


Tsunami, cyclones, flood or earthquakes turn catastrophic because of human follies. Badly constructed weak buildings at vulnerable locations threaten the human lives.

Our safety is in our hands.

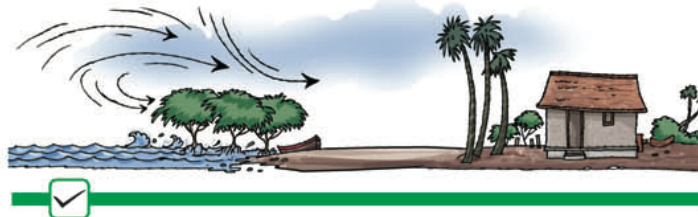
We wish that the disaster of 26th December 2004 is not repeated. Therefore, let's ensure we make all our buildings safe.

How to choose safe location?



It is desirable to build house at a safe distance and safe height based on information of past flood levels at the specific location. Higher locations are safer.

One should take care that the land on which we are building house should not be in the way of natural drainage.



For protection from cyclones and tsunami the locations which are shielded by barrier of mangroves, trees or sand dunes are safer.

What makes the building disaster safe?



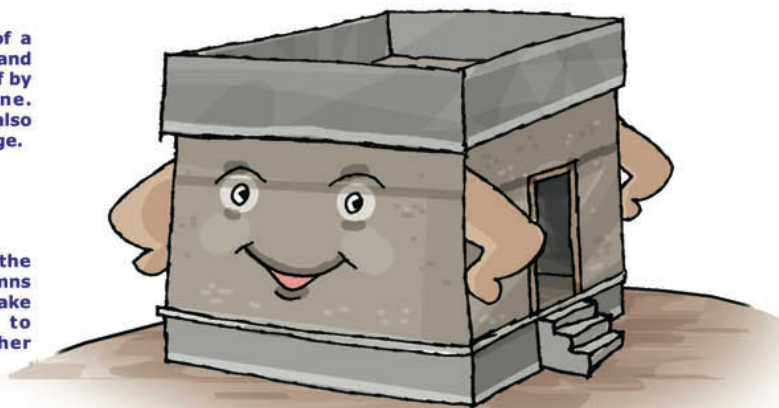
Light weight components of a house like the tiled roof and door-windows tend to fly off by wind during the cyclone. Houses in low lying area also get flooded due to storm surge.



During, earthquake all the elements like walls, columns and roof of a house shake horizontally and tend to separate from each other causing collapse.



Horizontal impact of tsunami waves damages and demolishes the structure of a house. Foundations get exposed and damaged due to scouring of soil causing collapse of the walls.



To make the building safe from disasters all the elements of a building like foundation, walls, openings and roof should be tied up with each other like a box by following the safety guidelines.

For further information, contact:

KRRC
Kanyakumari Rehabilitation Resource Centre
113 A, Trowell Street, Nagercoil - 629 001, Tamil nadu.
Ph : 04652 571517

**SAFE HOUSE
SAFE LIFE**

Government of Tamil Nadu has brought out guidelines for safe construction. you can obtain a copy from the district collector's office.



UNNATI

Organisation for Development Education
G-1, 200, Azad Society, Ahmedabad, Gujarat - 380 015.

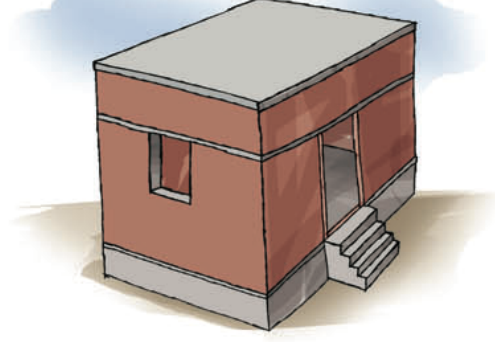
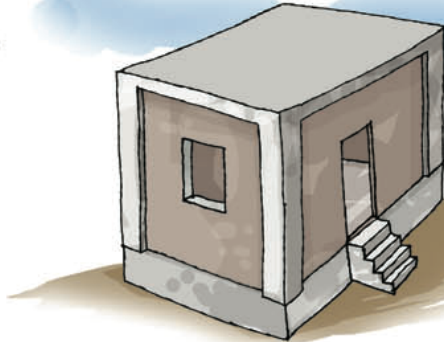
How to choose the material for house construction?

It is possible to build disaster safe houses with various materials. One can use stone, wood, bricks, concrete blocks, cement stabilized soil blocks, fly ash bricks, concrete etc.



It is not the choice of material that makes the Building strong or weak, but the way the materials are used.

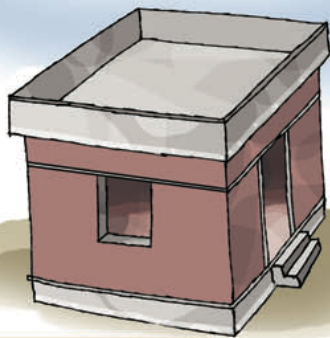
Which is safe way of construction column-beam structure or load bearing structure?



It is possible to build by both methods. Load bearing structures can be equally safe if technical guidelines are followed. In fact it is much easier to build load bearing structures with lesser professional expertise and supervision.

Which is safer- burnt clay tiled sloping roof or concrete flat roof?

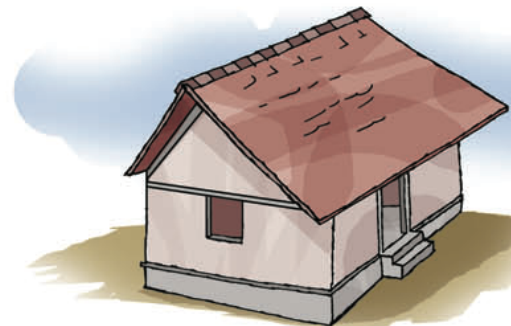
In coastal areas both types of houses are built. Both types of roofs can be made disaster safe by using appropriate guidelines.



Concrete flat roof



- Easy to construct first floor when require.
- Terrace for use.
- External technical expertise required.
- In case of collapse due to disasters it can be life threatening.
- If not constructed or maintained properly it can leak.
- Expensive



Sloping roof



- While constructing first floor it needs to be removed.
- Does not provide usable terrace.
- Local artisans and carpenters can construct.
- Because it is light weight its collapse is not life threatening.
- Because of slope less chances of leakage and easy to maintain.
- Cheaper

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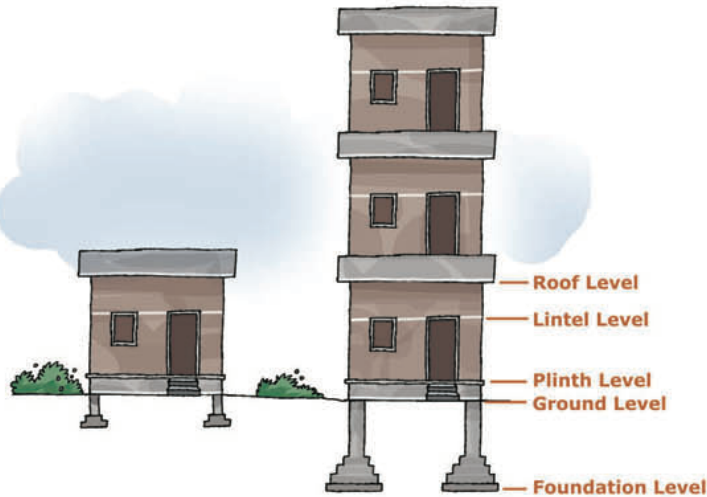
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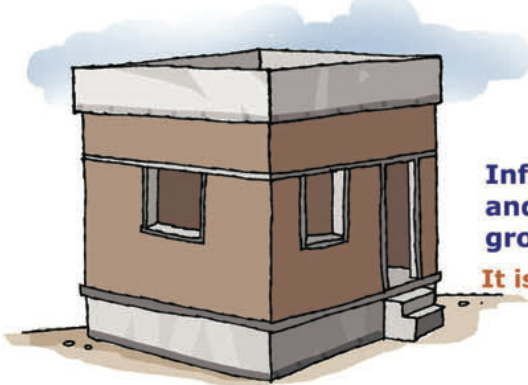
How to construct safe foundation and walls?

Foundation

The whole house stands on foundation that is why foundation needs to be strong.



If number of stories are more or bearing capacity of soil is less more depth and width of foundation

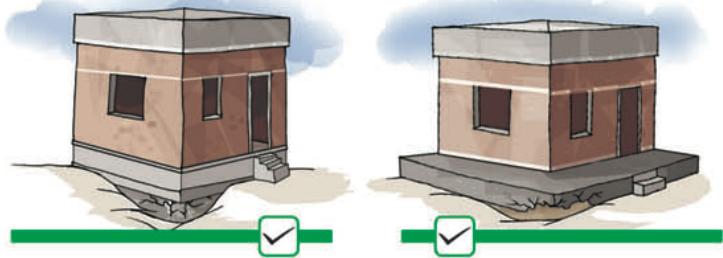


Information should be collected about maximum flood level in past and plinth height should be more than that. From the surrounding ground level it should be minimum 2 feet high.

It is desirable to have a band at plinth level.



In locations susceptible to flooding or storm surges foundations can be affected due to scouring of soil.



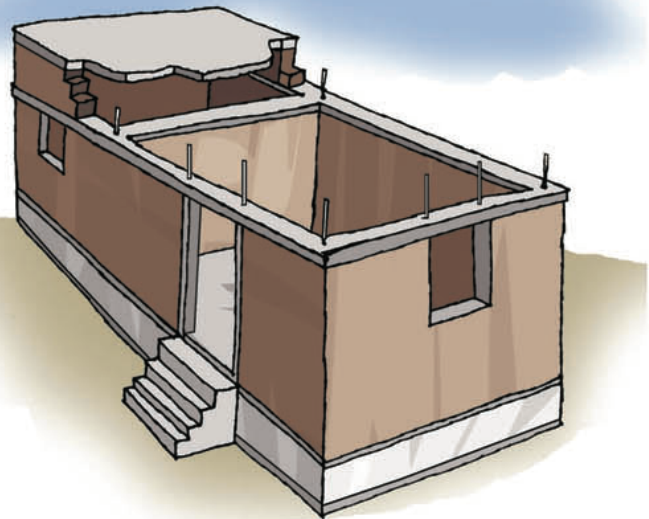
This can be prevented by adding an RCC Grade beam at ground level or by adding extended plinth all around the building.

Walls

Earthquake, tsunami and storm surge puts horizontal thrust on walls. Wall should be capable to withstand it.

To achieve this we need vertical bars at corners and at jambs of the openings and horizontal RCC bands at lintel and roof level.

All external walls or any load bearing wall should not be less than 9 inch.



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Openings

As walls take load of roof and upper stores, too many and large openings (doors and windows) can weaken the wall.

If you have 10 feet long wall, total opening length on that wall should not be more than 5 feet.

