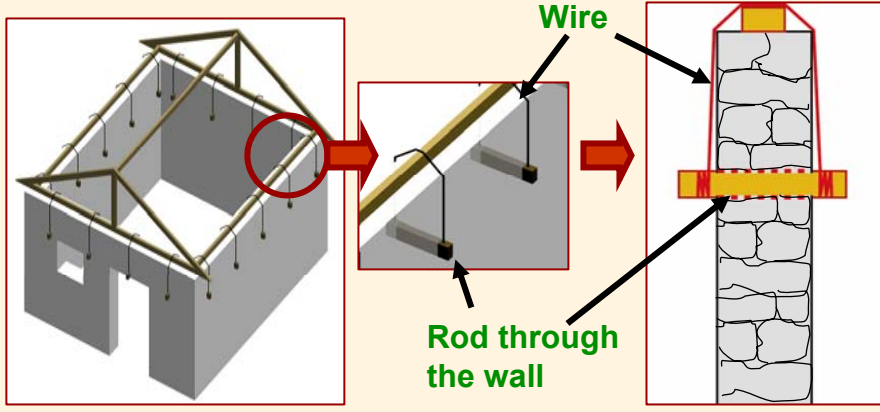


**Problem:** Wall Collapse

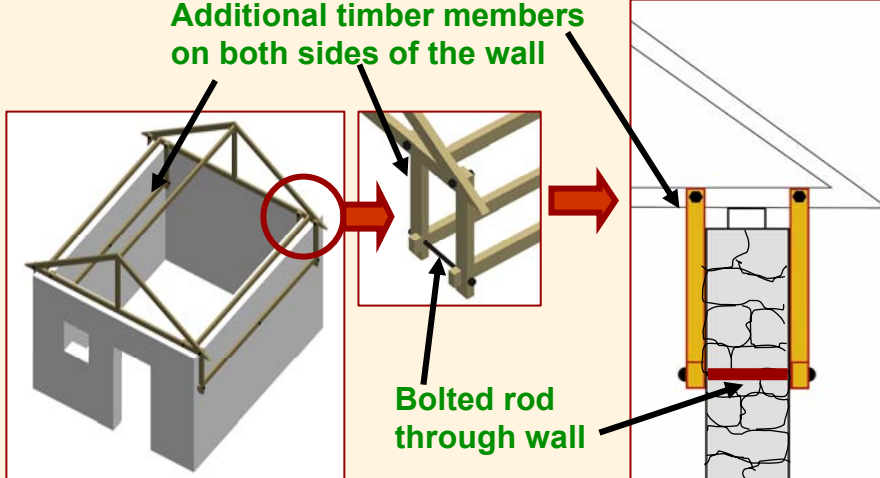
**Solution:** Roof-Wall Connection

**Simple Solution:** Insert a series of rods in the wall and connect them with wire to the roof frame



**Stronger Solution:** Use timber members connected to the roof and to each other

Additional timber members on both sides of the wall



## BASIC CONSTRUCTION RULES TO BUILD STRONGER STONE HOUSES

*If we want our families to live in safer homes  
we do not need to spend more money...  
but we have to **work harder***

**Don't let it  
happen again!**

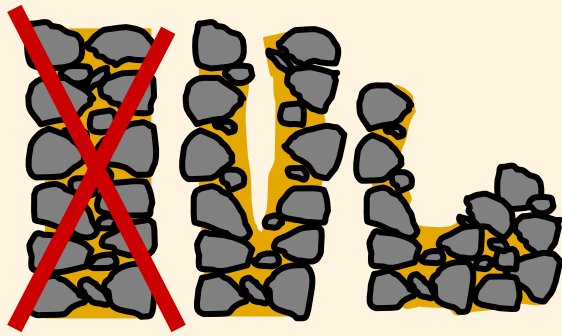
**Build better  
houses!**



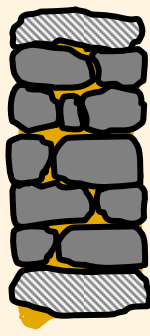
For additional information:  
[www.engineering4theworld.org/Pakistan.html](http://www.engineering4theworld.org/Pakistan.html)

**Problem:** Wall Crumbling  
**Solution:** Through-Stones

**WRONG !!!**



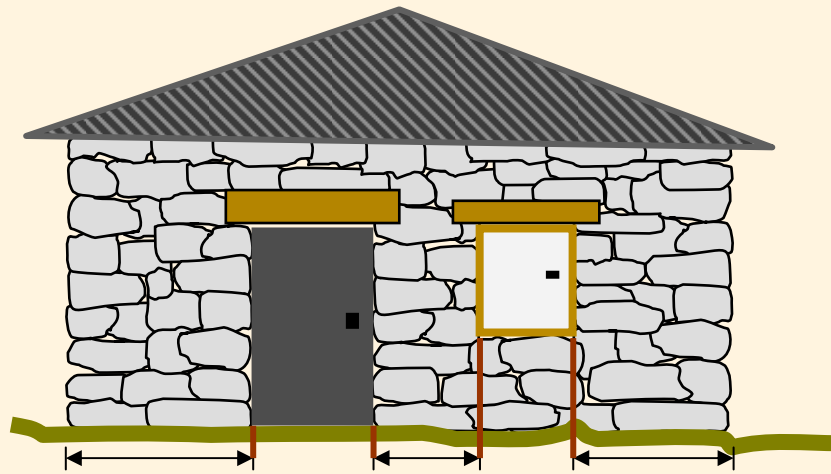
**RIGHT !!!**



**Don't Use: Irregular stones**  
 Small stones  
 Big joints

**Use: Through-Stones**  
 Big stones  
 Small Joints

**Problem:** Wall Openings  
**Solution:** Proper Dimensions

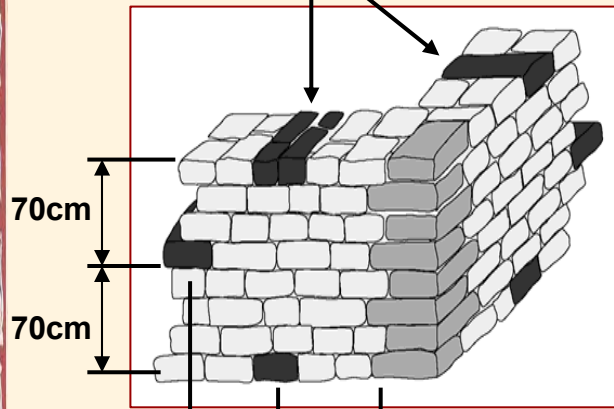


**Minimum:** 70cm

70cm

70cm

**Through stones**

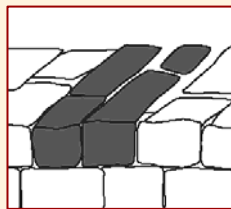


70cm

70cm

50cm 50cm

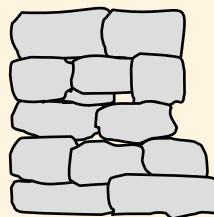
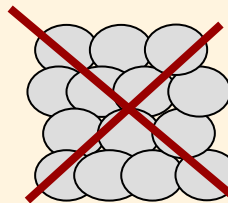
**Minimum spacing  
 between through stones**



**Through stones  
 made of four  
 smaller units**

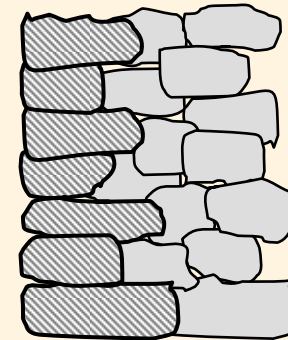
**Additional Problems and Solutions:**

**Don't use  
 rounded,  
 smooth  
 stones**



**Use large,  
 square  
 stones**

**C  
 o  
 r  
 n  
 e  
 r**



**Use big regular-shaped  
 stones**