



Interaction Between Vernacular and Rigid Structures

Earthquake Response: Khost and Paktika



Shelter Cluster Afghanistan
ShelterCluster.org
Coordinating Humanitarian Shelter

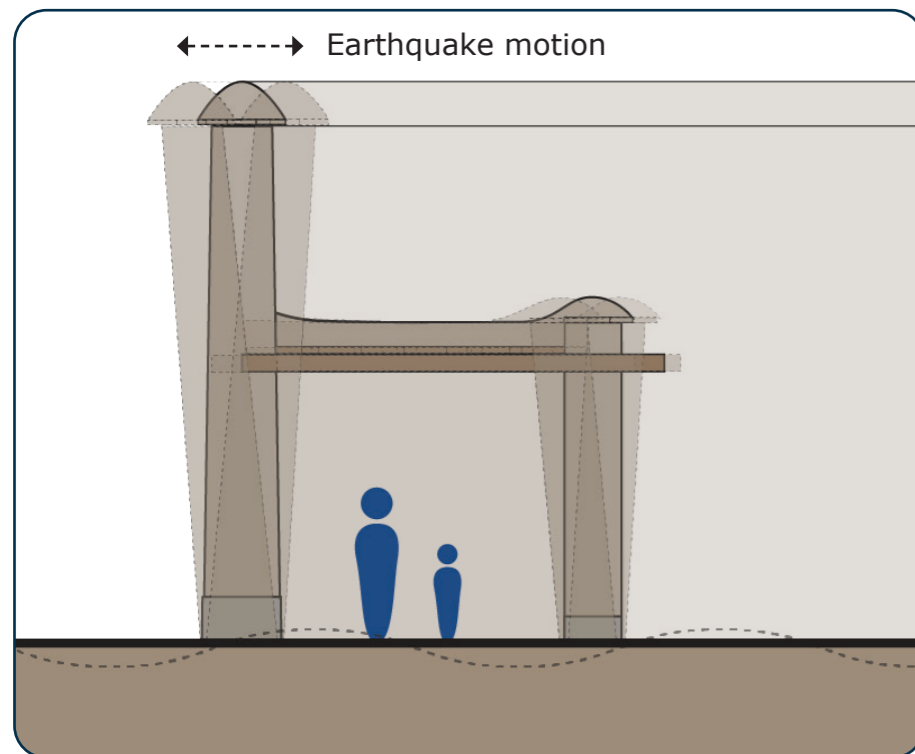
Vernacular structures made mainly from soil (walls and roof), stones (foundation and stem wall) and timber (roof structure) react differently to earthquakes than **rigid structures** do, such as those made from concrete.



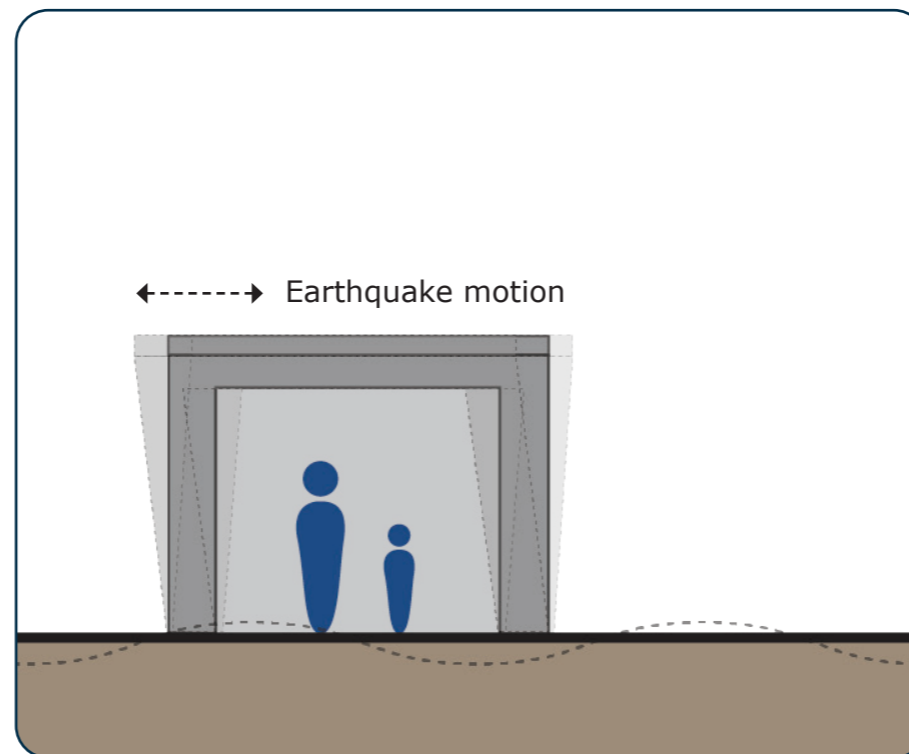
Vernacular construction



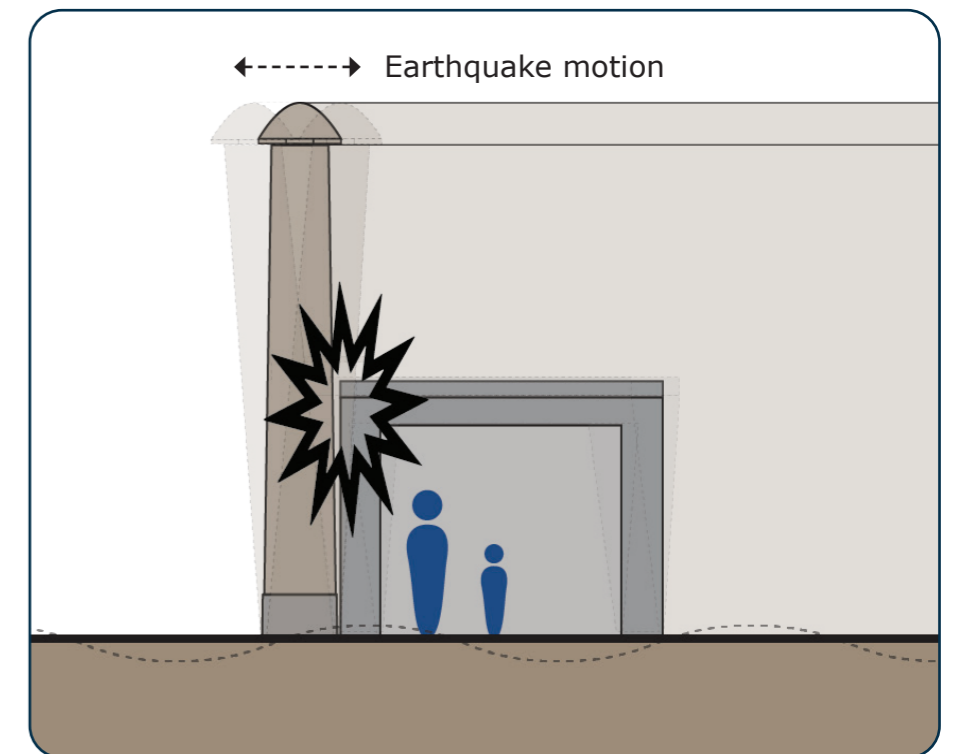
Rigid construction



Vernacular structures made with stones, soil and timber behave flexibly during earthquakes.



Rigid structures, such as reinforced concrete buildings, are less flexible than vernacular constructions and behave differently.



It is NOT recommended to connect these two types of structures because they behave differently during an earthquake and can have fatal consequences.



Interaction Between Vernacular and Rigid Structures

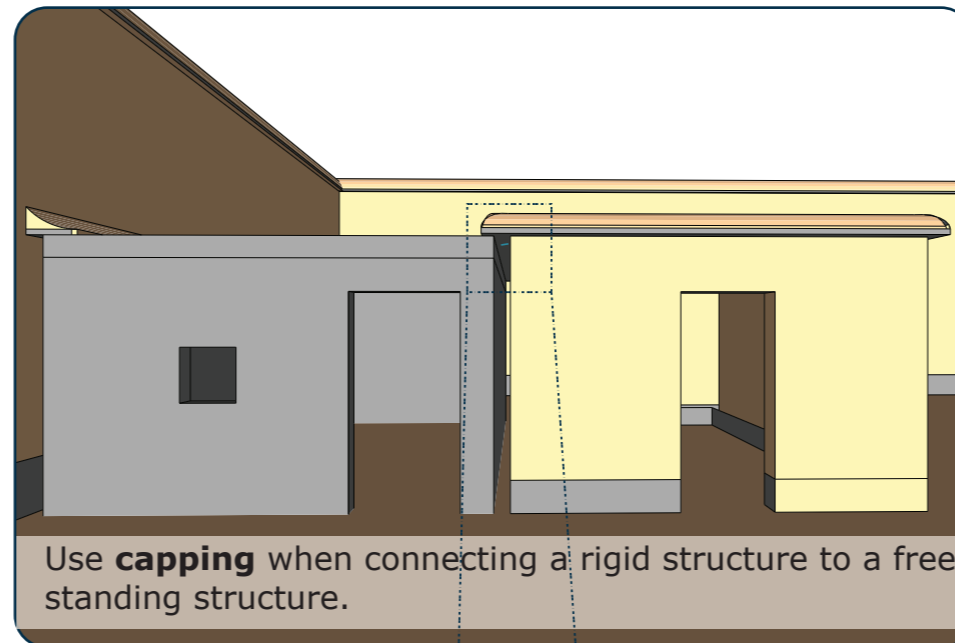
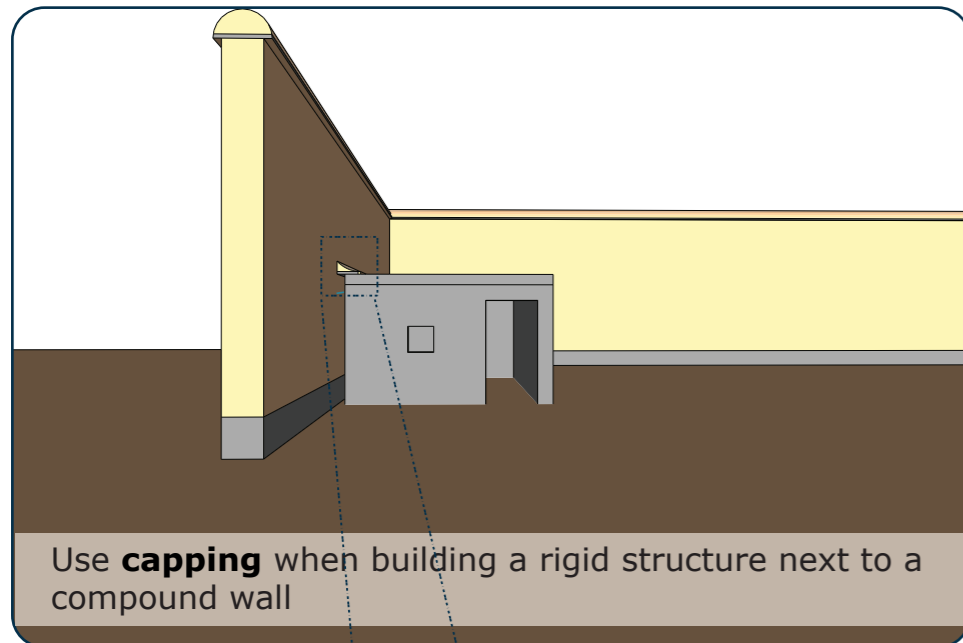
Earthquake Response: Khost and Paktika



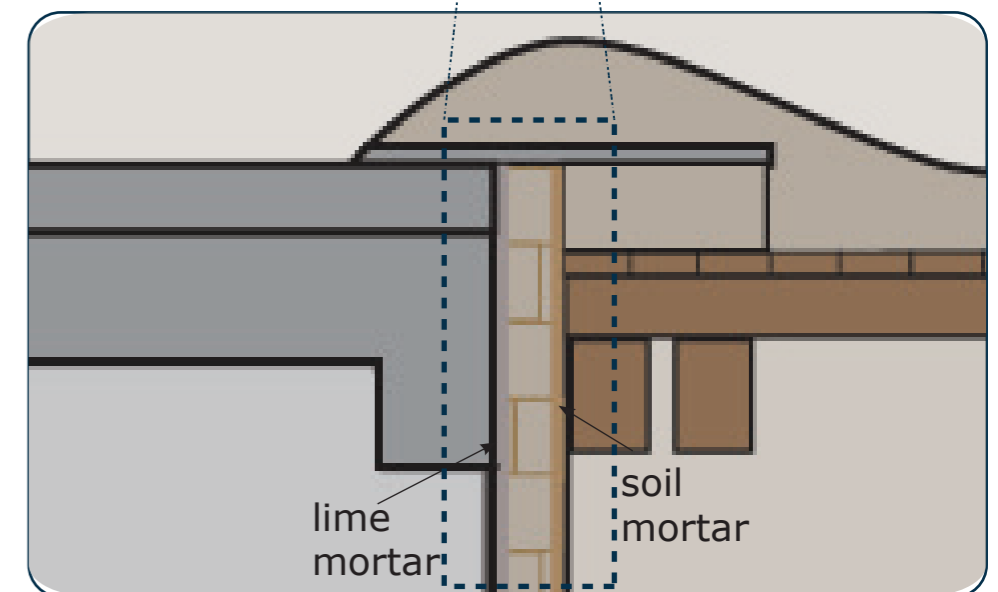
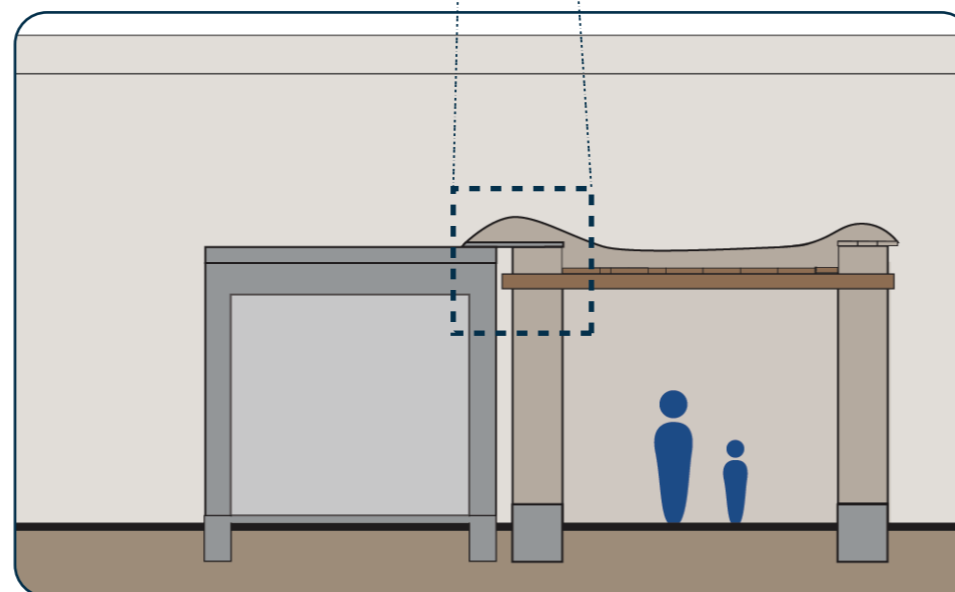
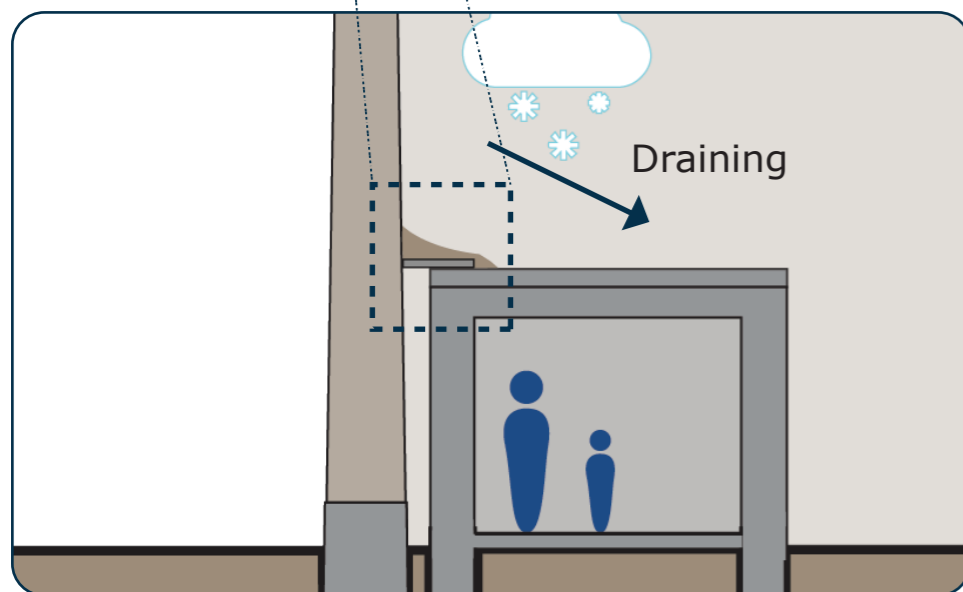
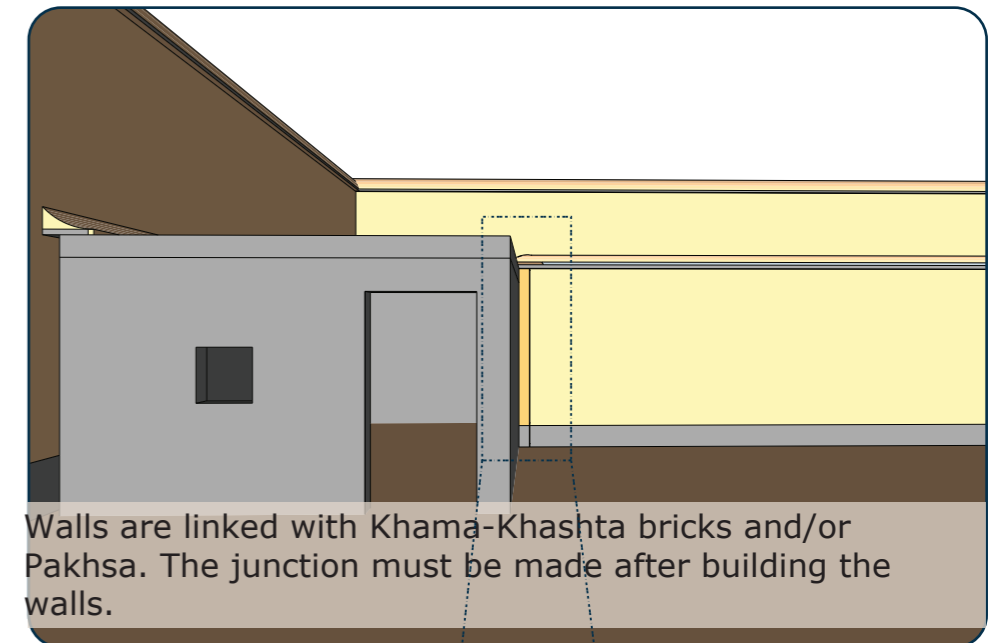
Shelter Cluster Afghanistan
ShelterCluster.org
Coordinating Humanitarian Shelter

If you do build concrete structures next to local construction, use these methods to keep your family safe.

1 CAPPING: To prevent excess water between structures, build a soil capping over the existing gap.



2 FLEXIBLE WALL-TO-WALL CONNECTION:





Interaction Between Vernacular and Rigid Structures

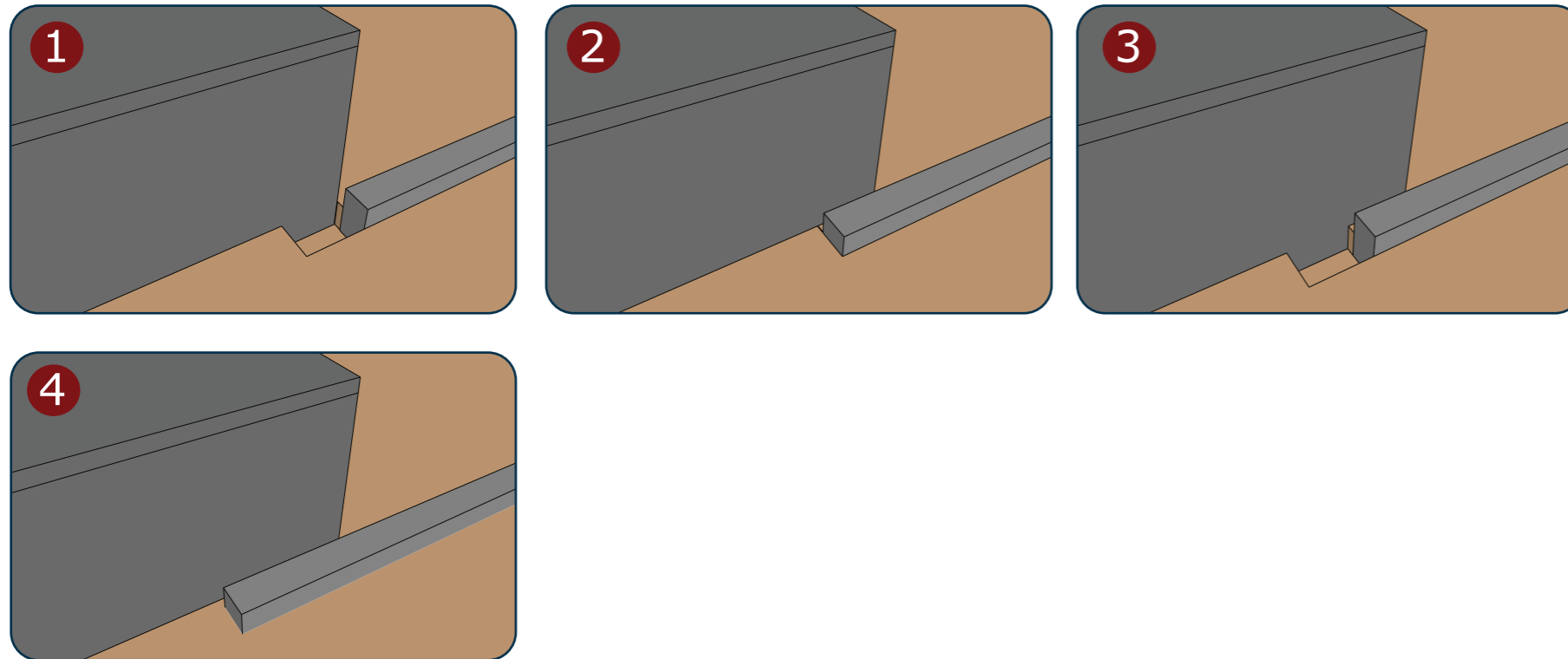
Earthquake Response: Khost and Paktika



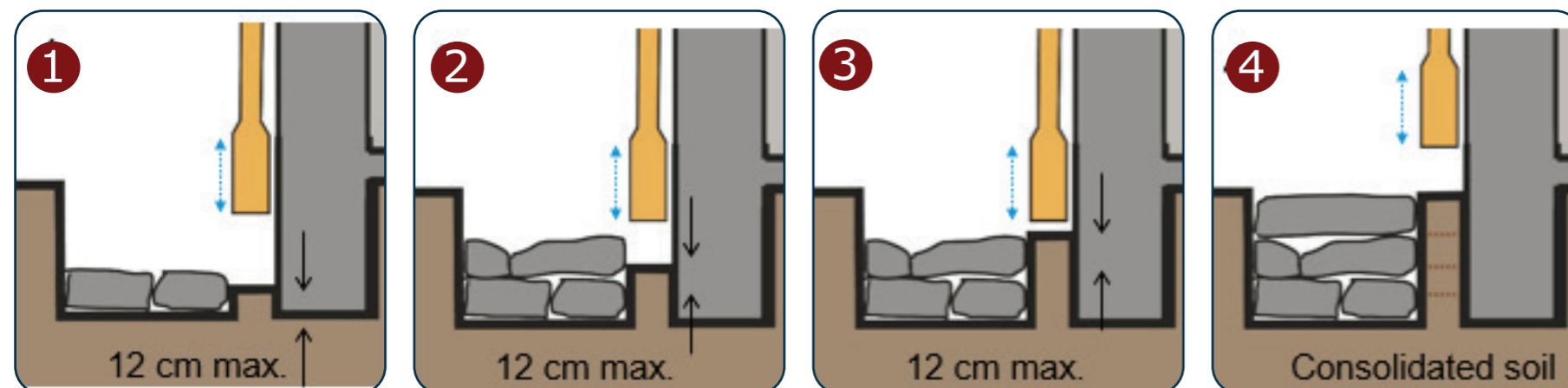
Shelter Cluster Afghanistan
ShelterCluster.org
Coordinating Humanitarian Shelter

For building a foundation next to an existing one:

The excavation and construction should be done in sections by completing a one-meter section and then continuing to the next.

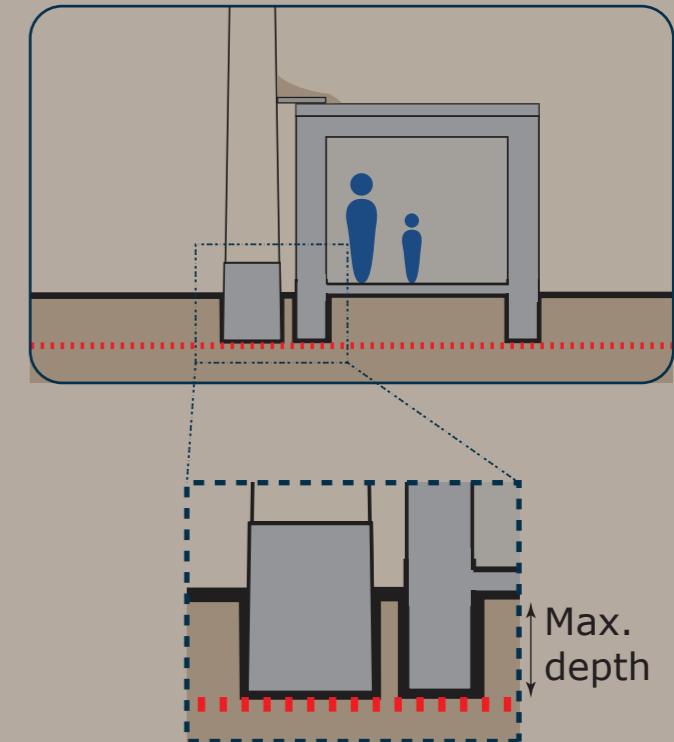


Consolidate the soil between the two foundations by compacting it in layers. The compacted layers should have a maximum thickness of 12 cm.



The new stone-foundation should never be deeper than the existing one.

The dimensions of the new construction shall be in accordance with the foundation.





Interaction Between Vernacular and Rigid Structures

Earthquake Response: Khost and Paktika

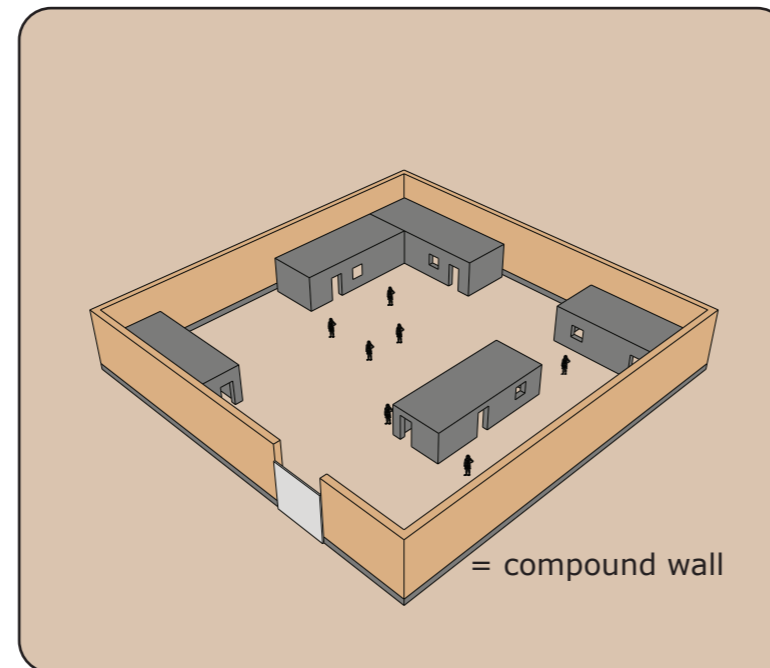
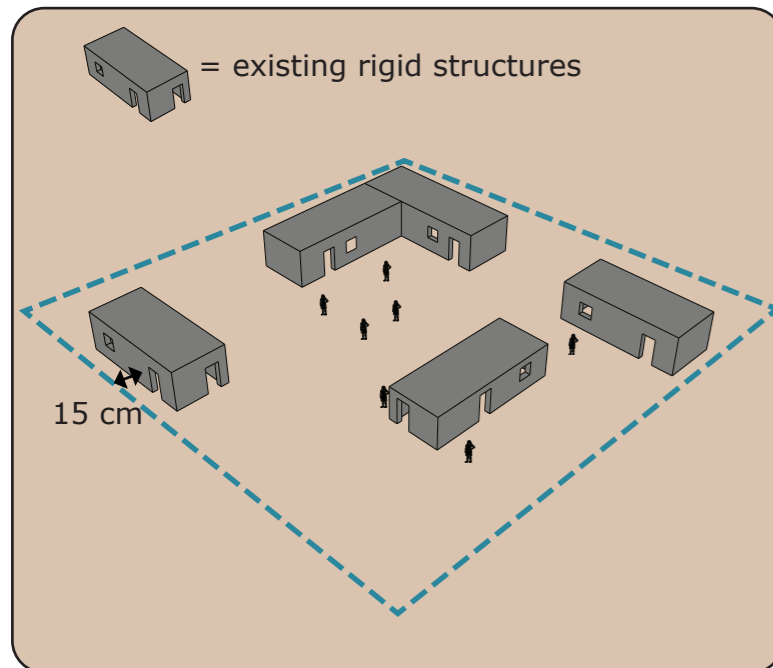


Shelter Cluster Afghanistan
ShelterCluster.org
Coordinating Humanitarian Shelter

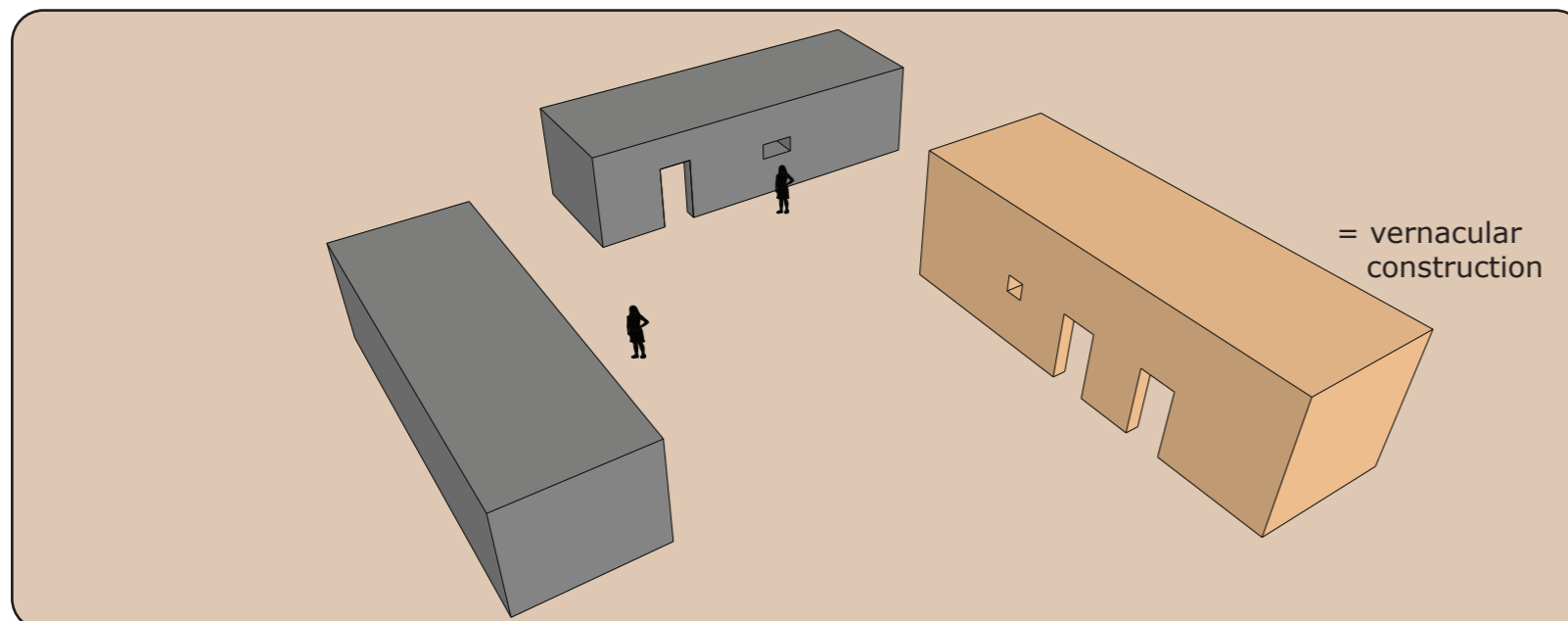
Layout recommendations



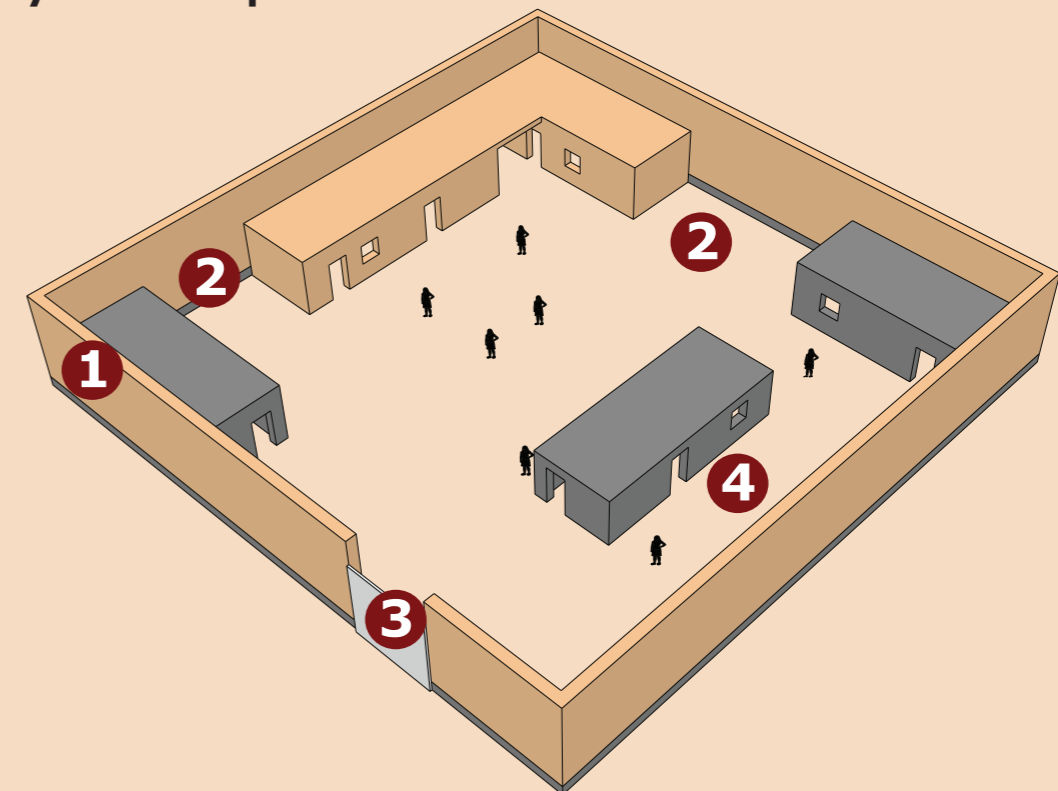
Wide and visible spaces are recommended for security.



Build free-standing vernacular construction buildings or compound walls that do not share walls with concrete buildings. Leave at least 15cm between these local construction and concrete structure.



Build Back Safer Layout Example



- 1** At least 15 cm gap between rigid walls and compound walls.
- 2** At least 15 cm gap between rigid buildings and vernacular construction.
- 3** Entrance visible from every room for security.
- 4** Additional open areas for back yard with additional land.