

Tech Support to Afghanistan SC Partners

Phase-2

Post Khost June 2022 EQ Recovery Response

- Practical Training of Trainers (ToT) 40 session for the self-builders and Mason on vernacular structures.
- Field Technical Support via Mobile Technical Experts teams
- Target : 25% of SC partners in the SE region

Training & Field Support Timeline:

25th Aug -30th September

Comms Messages /Products

Phase-1

1. Key Technical Messages (for Building Back Safer)
2. Accountability to Affected Population- Assistance Packages
3. Why Local Building Culture? (6 aspects of LBC in Southeast Afghanistan)



Product #1: Key Technical Messages



KEY TECHNICAL MESSAGES

Earthquake Response Khost & Paktika

Shelter Cluster Afghanistan
ShelterCluster.org
Coordinating Humanitarian Shelter

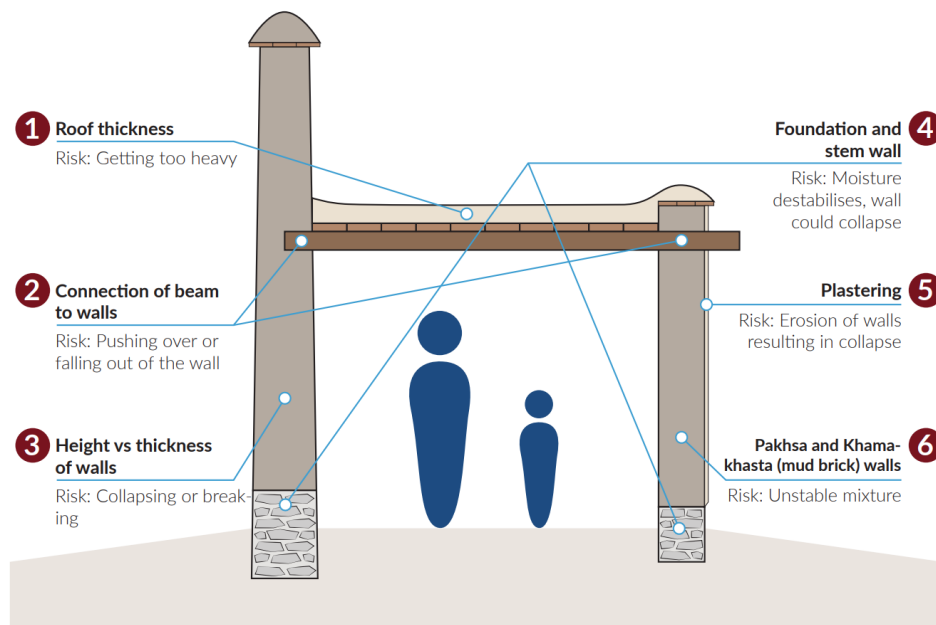
[20221008 ESNFI Cluster Key Technical Messages Earthquake response Afghanistan 2022.pdf](#)

Regional traditional vernacular construction has been improved over the years developing local building solutions.

However, a limited number of poor practices have led to life-critical failures:


1. Overloading of soil cover on roofs
2. Disconnection of roof beams to walls
3. Inappropriate wall dimensions
4. Detachment of foundation stones
5. Irregular erosion of walls
6. Inappropriate soil work for walls and cover on roofs

To mitigate these failures, 6 key technical messages were developed based on local know-how, materials and existing culture.




Product #2: Assistance Modalities

[AAP Com Product.pdf](#)



ASSISTANCE MODALITIES

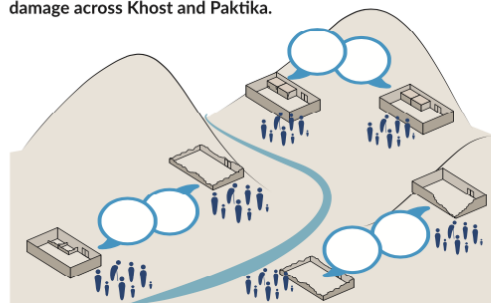
Earthquake Response Khost & Paktika



ShelterCluster.org
Coordinating Humanitarian Shelter

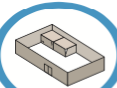
Space for logos implementing organisation

During and after the earthquake many houses sustained damage across Khost and Paktika.




For some families the damage affected their Rooms, for others their Compound walls, for some a combination of both.

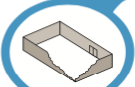
Partial damage to rooms




Total damage to rooms



Partial damage to Compound wall



Total damage to Compound wall




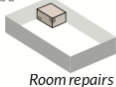
Contact information

Add information about implementing organisation and contact info

Add information about AWAAZ


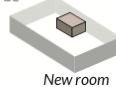
To support the families in the repair or (re)building of their homes, Assistance packages have been calculated, which are the same for all beneficiaries

In the case of Partial Damage to rooms
the Assistance package was calculated to be

 +
 

Technical advice + Room repairs
2,620 USD

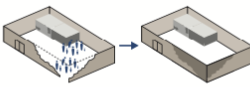
In the case of Total Damage to rooms
the Assistance package was calculated to be

 +
 

Technical advice + New room
1,310 USD

The cost for repair/(re)-construction of compound walls and common areas




should be shared between households that live within the same compound, using their allocated assistance package



Compound wall repairs





There are many different organisations providing technical assistance to these families, through different methods

Example 1

 +
  +
 




Technical advice + money* + labour

Example 2

 +
  +
  +
 



Technical advice + money* + material + labour

Example 3

 +
  +
 

Technical advice + material + labour

Example 4

 +
 

Technical advice + money*

*Money can be given in AFs or USD, depending on implementing organisation

Product #3: Why Local Building Culture?

[LBC Comm product.pdf](#)



WHY LOCAL BUILDING CULTURE?

Earthquake Response Khost & Paktika

Shelter Cluster Afghanistan
ShelterCluster.org
Coordinating Humanitarian Shelter



Phase-II

Proposed Comm Products Outline



Product #4: Well, Built Earthen Structures Can Withstand

Message

The local traditional vernacular construction systems in stone, mud and timber are adequate for the seismic risk, however during the 2022 July-August ground investigations, international earth and seismic engineering experts found that "the main causes of failure were due to poor selection of materials and poor quality of construction

Hints: Examples of earthen structures from around the world

- See assessment findings, key messages and the examples from around the world on next slide onward



Product #4: Well, Built Earthen Structures Can Withstand

MI Technical Assessment Results Summary

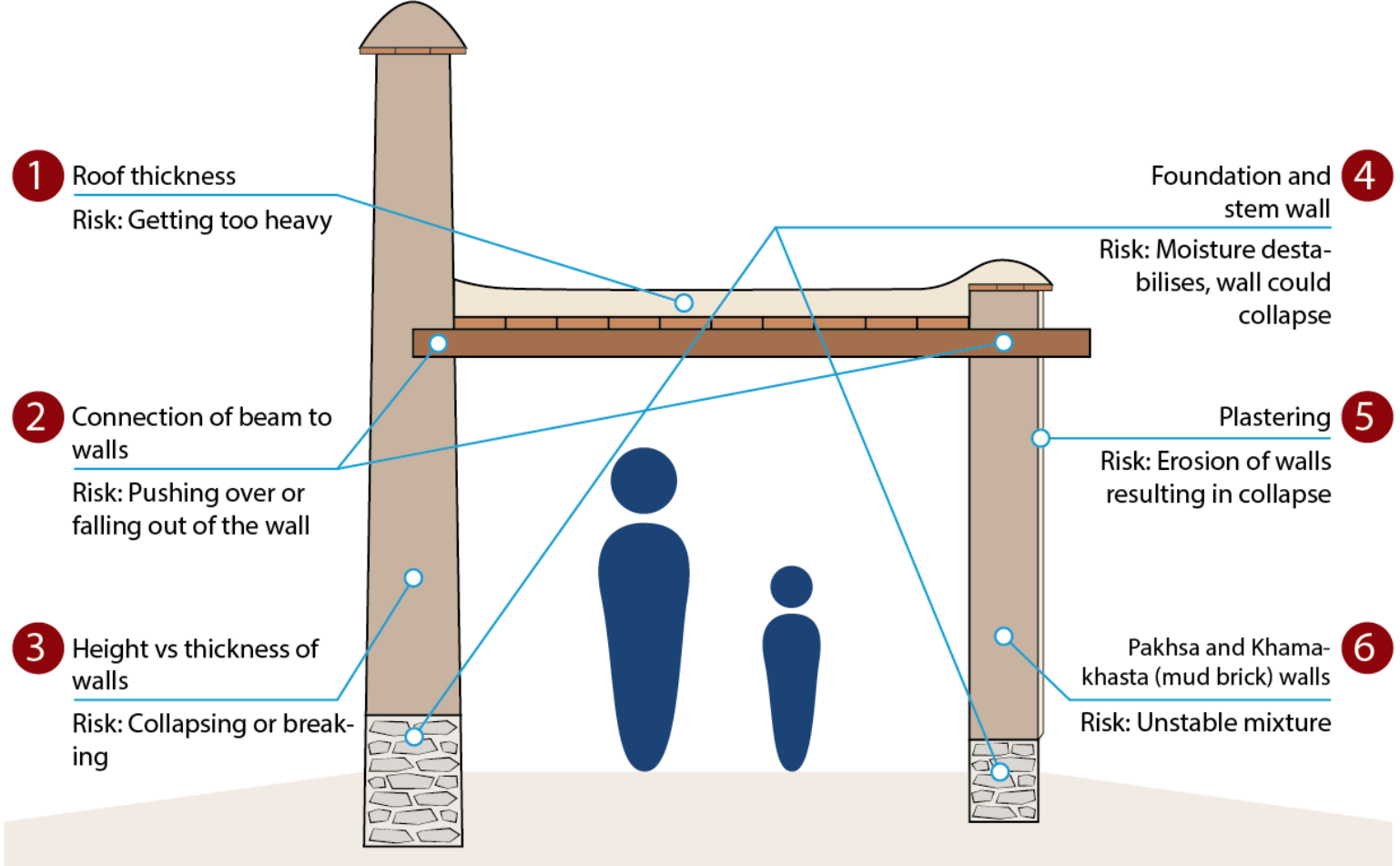
Over 550 randomly selected compounds/homes had been assessed across the three most affected districts of Barmal, Giyan in the province of Paktika and Spera in Khost during July-Aug 2022. This includes 2,310 family units comprising over 12,786 people and with a total area of about 89,458m² of undercover living space. Meetings were also conducted with a wide range of shelter assistance agencies, along with technical experts in clay and stone construction. Seismic modelling and field assessments are still ongoing.

Findings

The assessment result has shown that about 39% of undercover living spaces were still habitable (no damage), and 53% were repairable, with the remaining 8% destroyed.

Key technical messages

"KEY MESSAGES ARE TO SAVE LIVES BY REDUCING RISKS & IMPROVING STRUCTURAL PERFORMANCE"

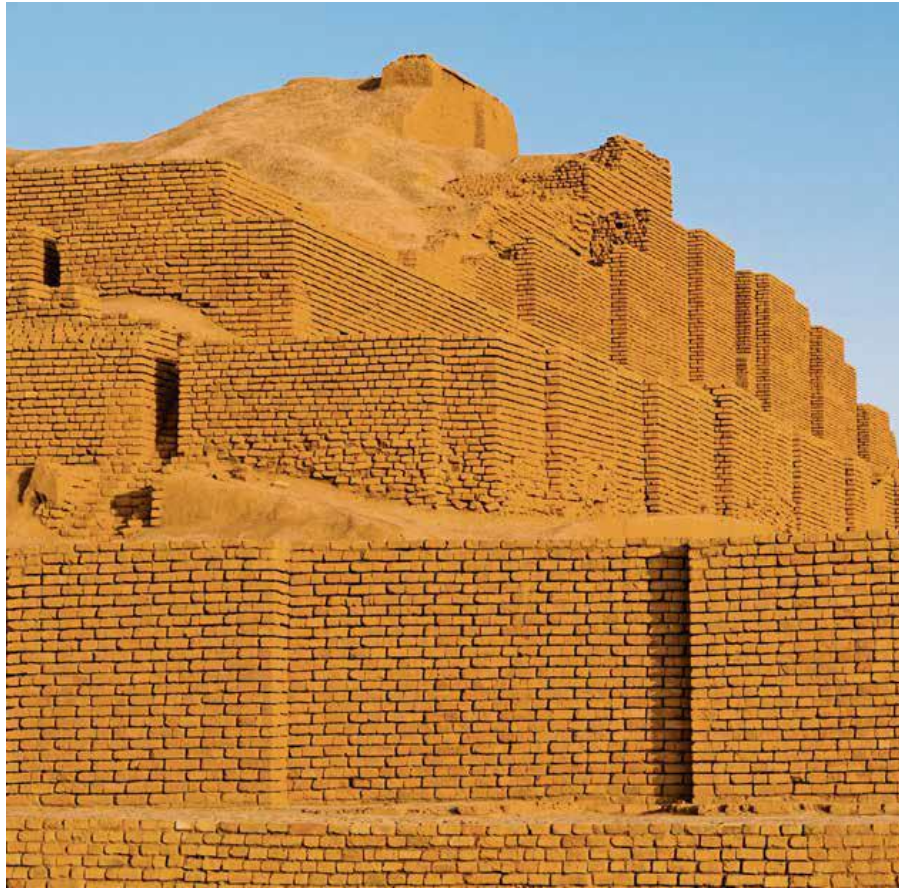


Earthen architecture throughout history



Fortresses built with mud bricks at Bouhen, Egypt in the 19th century BC.
Located in Nubia, on the banks of the Nile.

Earthen architecture throughout history



Ziggurat of Tchoga Zanbil (Iran), built between 1400 and 1000 BC

Earthen architecture throughout history

The Great Wall

Built, destroyed, and rebuilt over two millennia, until the 17th century.

When the stone was not available locally, the wall was often built in earth.
Final section built in the far west, in the province of Gansu.



Earthen architecture throughout history



Shibam in Yemen. "The Manhattan of the desert"
There is evidence of its existence since the 2nd century BC

Earthen architecture throughout history

Shibam in Yemen

Today inhabited by about 7,000 people.

With buildings that reach 16 floors and a height of up to 40 meters.

The minaret, with 50 meters, is the tallest building in the city.



Modern earthen architecture



Wang Shu and Lu Wenyu architects at Wencun village
2015

Modern earthen architecture



The Xiangshan campus, located on the outskirts of Hangzhou City in China, housing 8,000 students.

Modern earthen architecture



Terra Nostra, prototype of economic housing.
Prefabricated in 4 months by students of ENSAG in 2016

Modern earthen architecture



France, National Institute for Agricultural Research (INRA) on the university campus in
Orléans, France
Nama Architects

Product #5 : Interaction Between Vernacular and Rigid Elements of a Structure

Message

Why the interaction between vernacular and rigid elements are important to understand for the HHs See slide#6 to#10 for guidance

See next slide onward

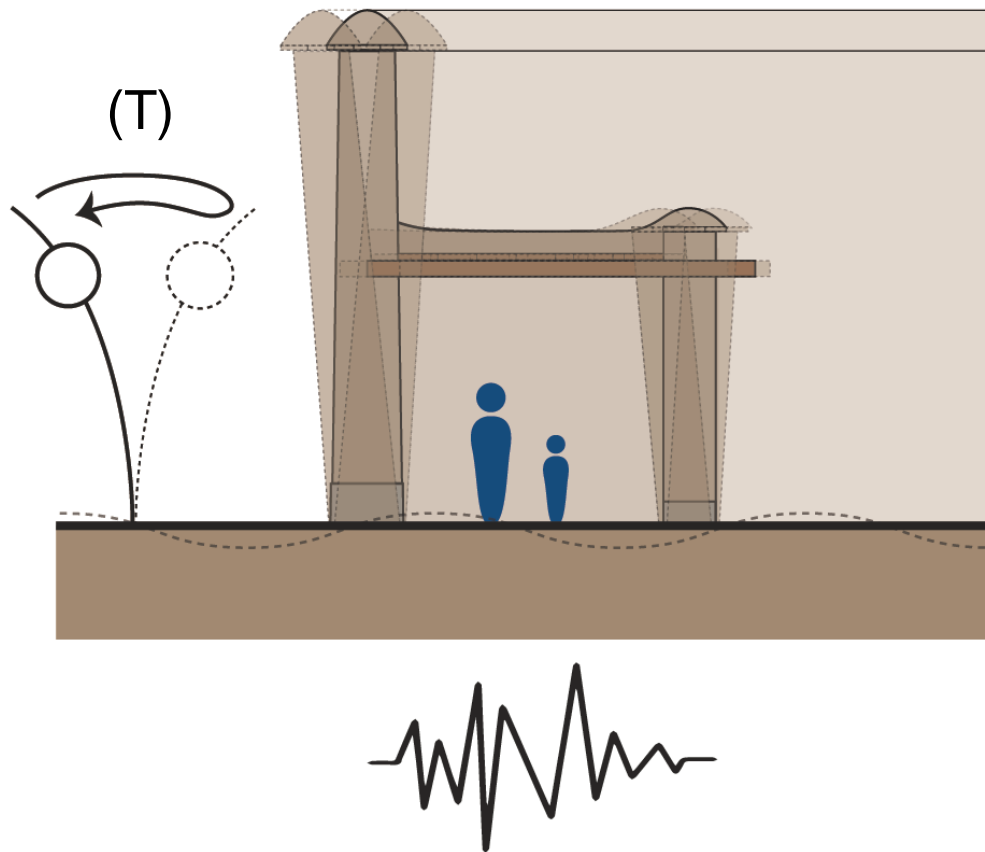


*The interaction between vernacular and rigid elements



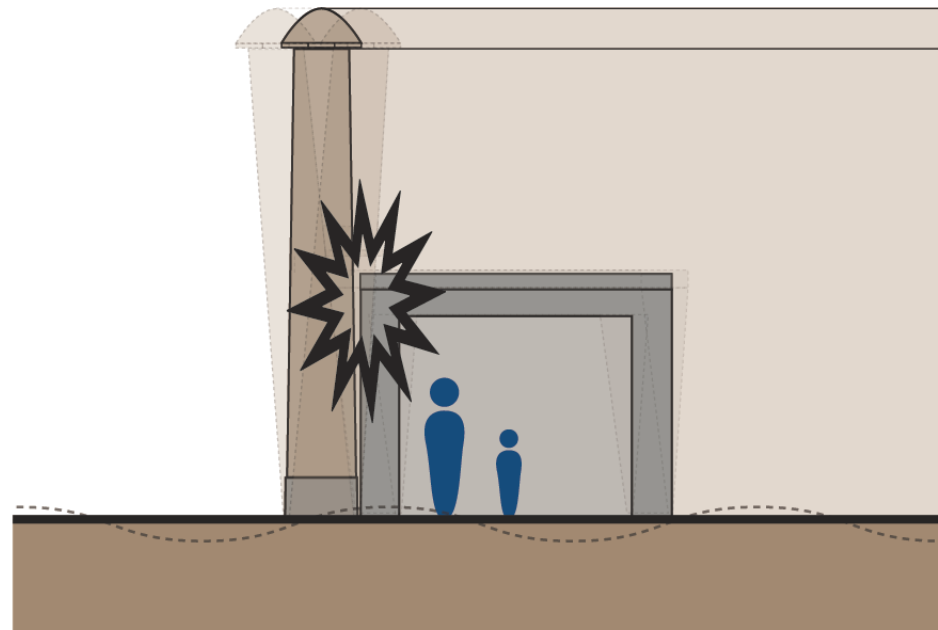
*Different behaviors of structures during EQ

The vernacular earth constructions of southeast Afghanistan are flexible and have a long natural period (T) compared to rigid structures



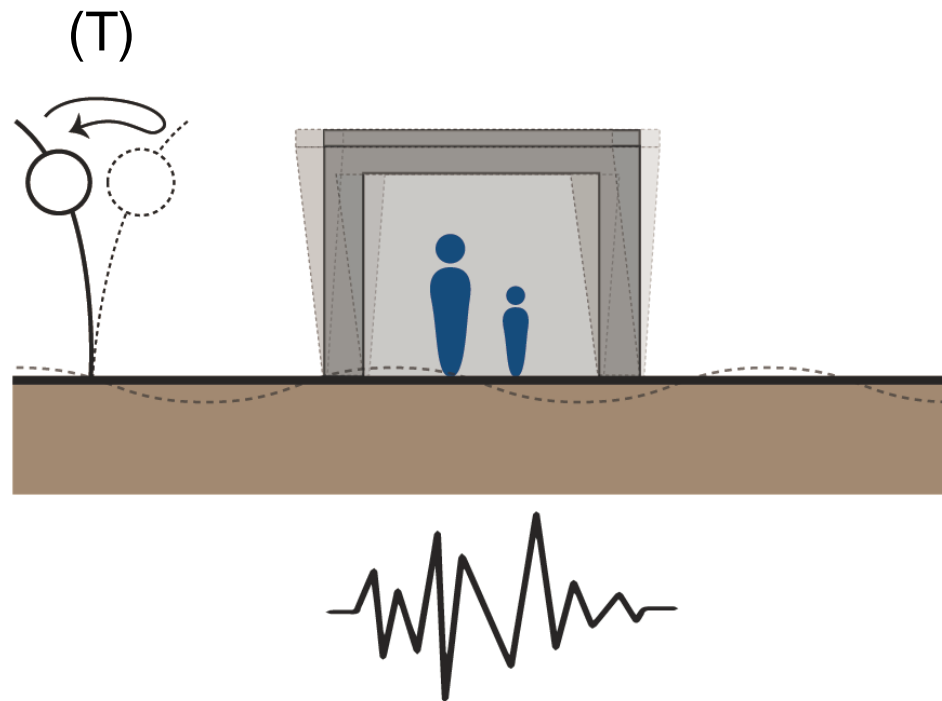
*Different behaviors of structures during EQ

Combining two structural systems that behave differently during an earthquake can be fatal and is not recommended.



*Different behaviors of structures during EQ

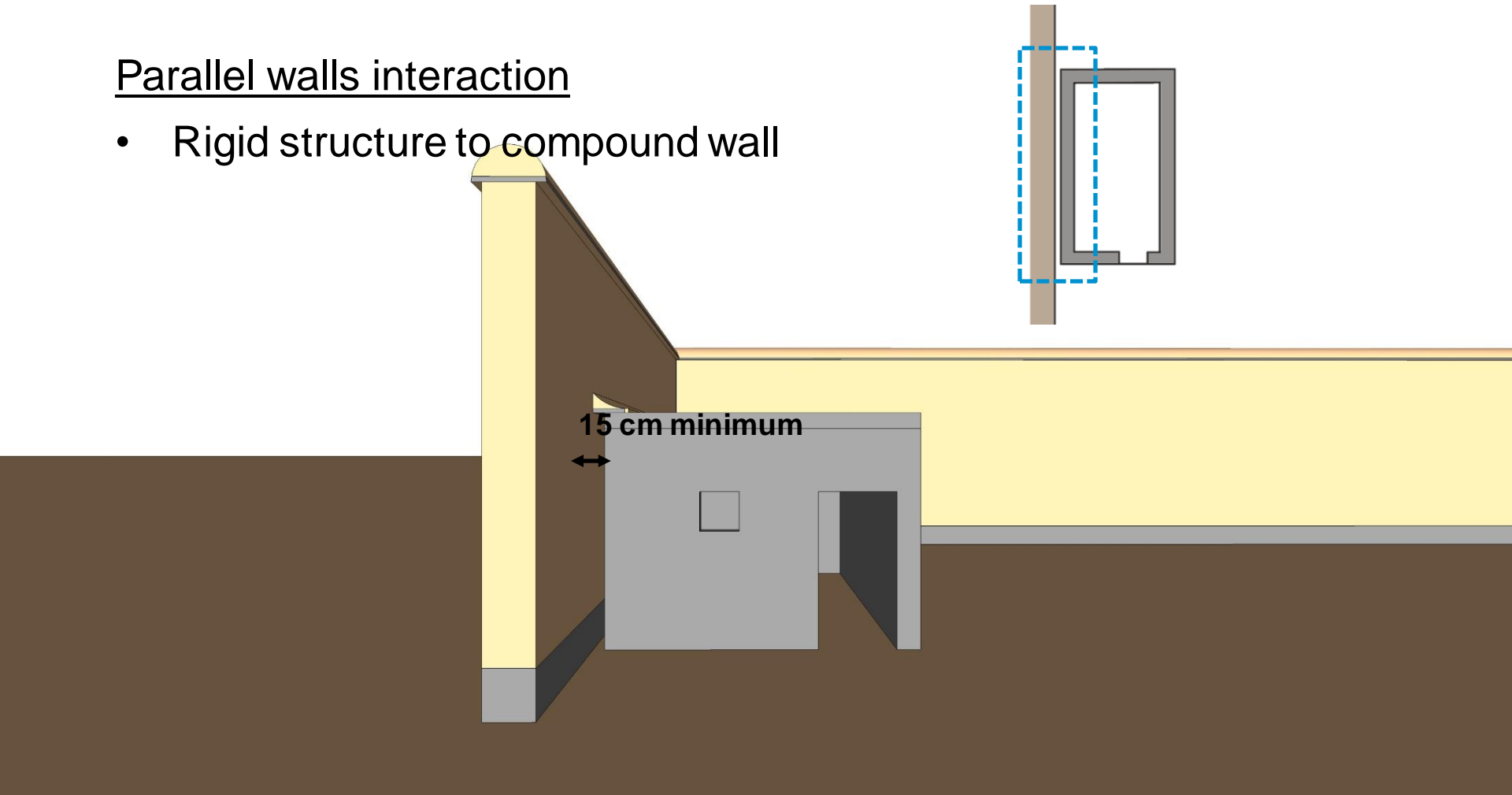
Stiff structures such as reinforced concrete buildings have reduced natural periods (T)



*Possible scenarios of interaction

Parallel walls interaction

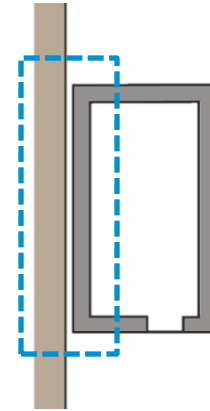
- Rigid structure to compound wall



*Possible scenarios of interaction

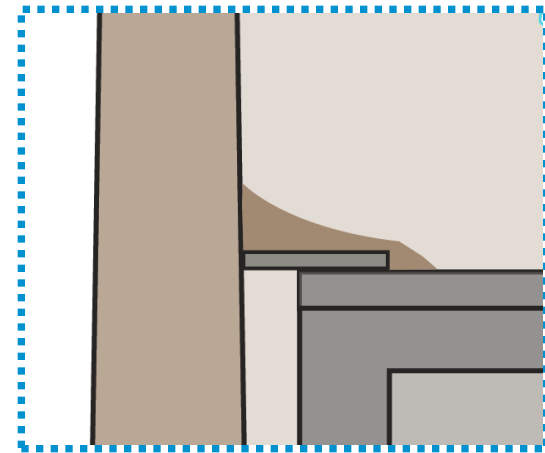
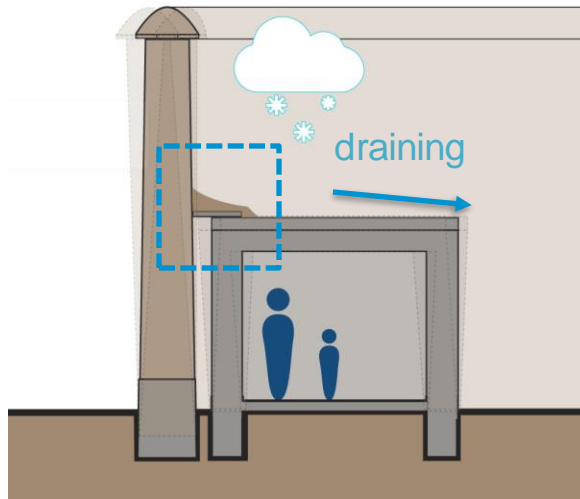
Parallel walls interaction

- Rigid structure to compound wall



Capping

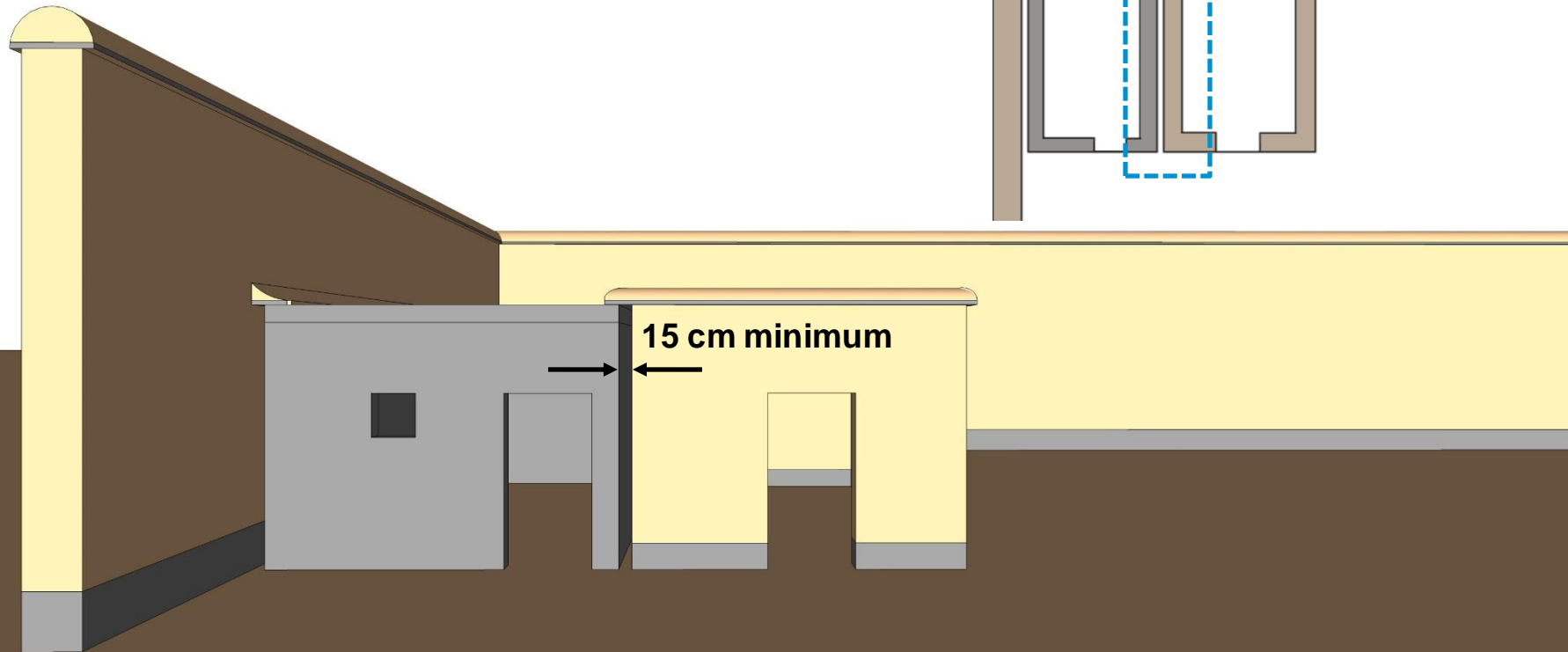
- To avoid snow accumulation it is important to put a soil capping in the form of a chamfer, following BBS recommendations



*Possible scenarios of interaction

Parallel walls interaction

- Rigid structure to free standing vernacular



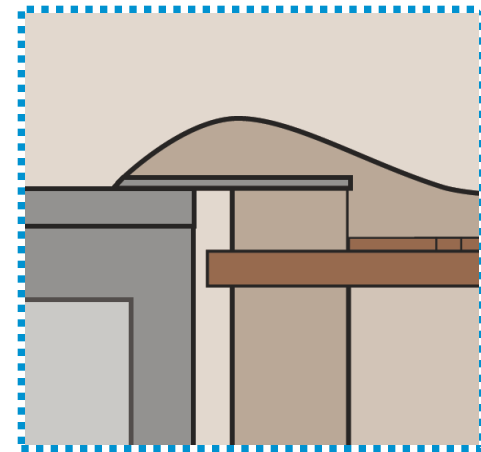
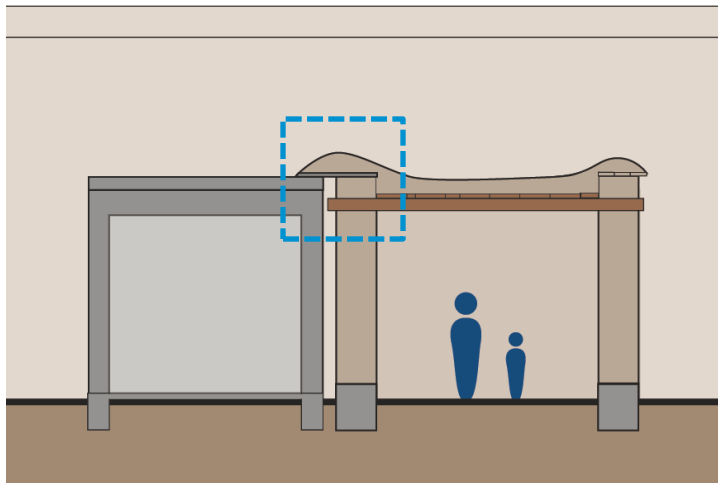
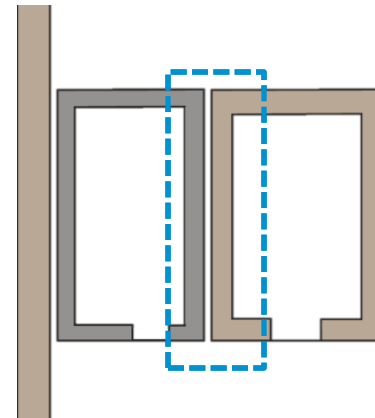
*Possible scenarios of interaction

Parallel walls interaction

- Rigid structure to free standing vernacular

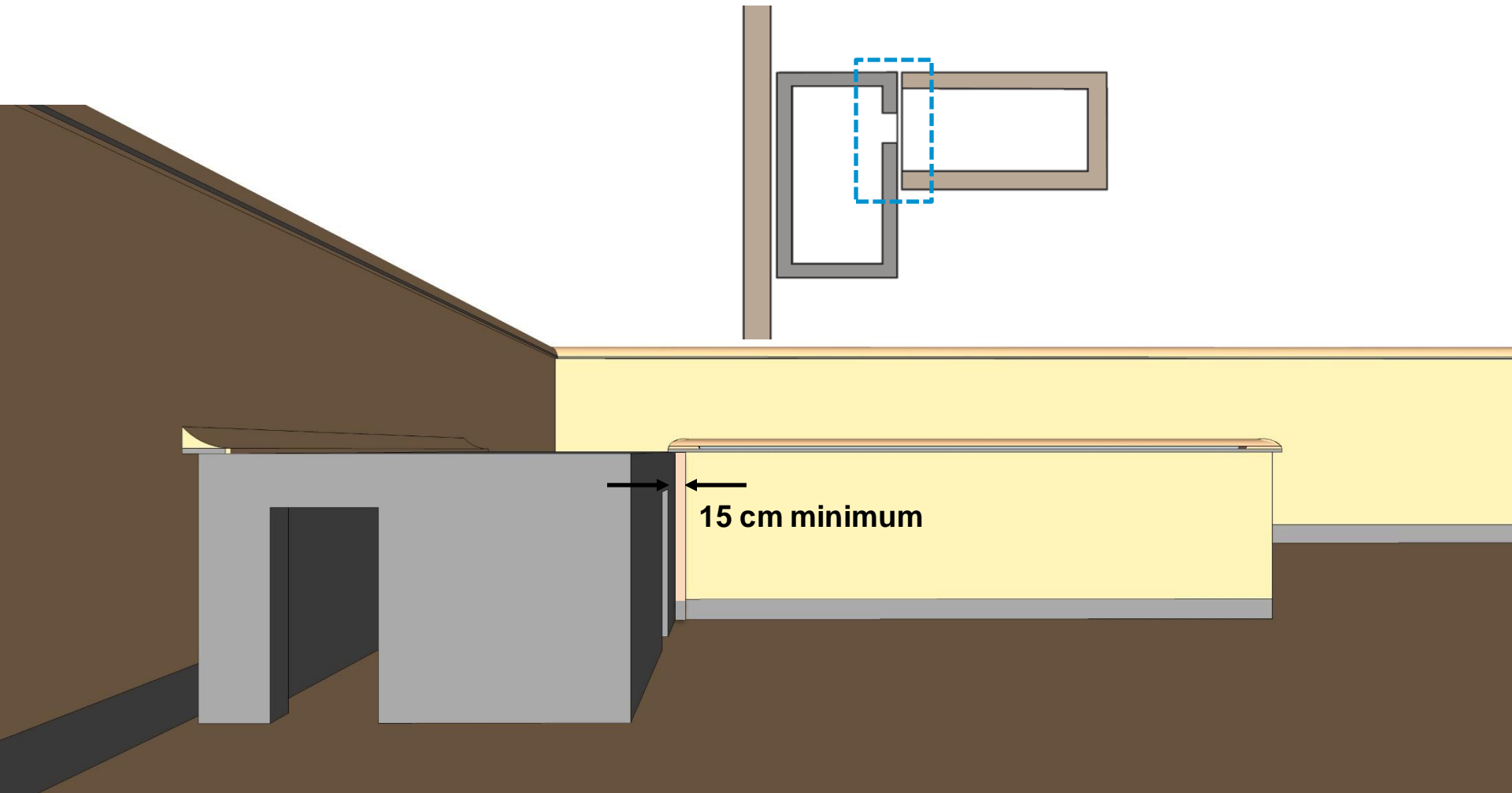
Capping

- To avoid water stagnation it is important to put a soil capping in between constructions, following BBS recommendations



(two rooms connected)

Possible scenarios of interaction



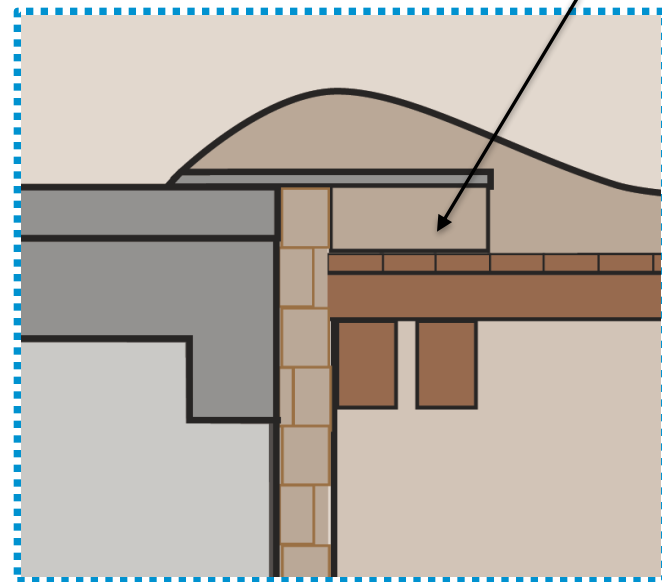
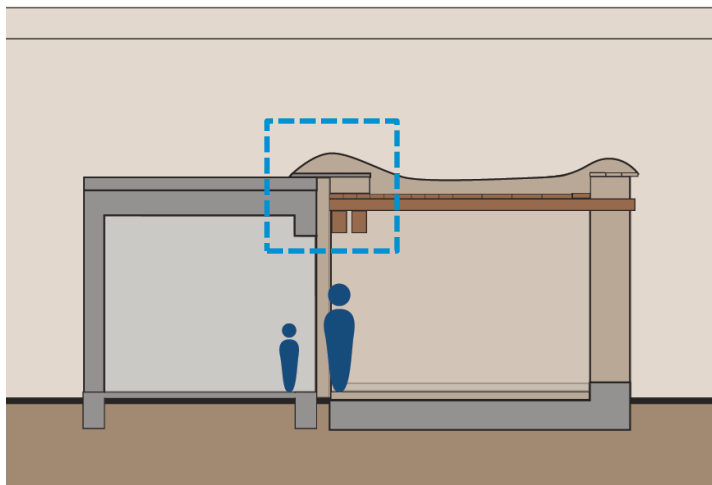
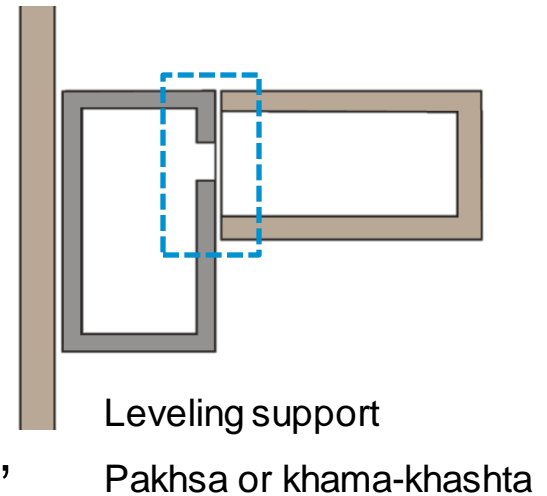
*Possible scenarios of interaction

Perpendicular walls interaction

- Rigid structure to free standing vernacular
(two rooms connected)

Capping

- To avoid water stagnation it is important to put a soil capping in between constructions, following BBS recommendations



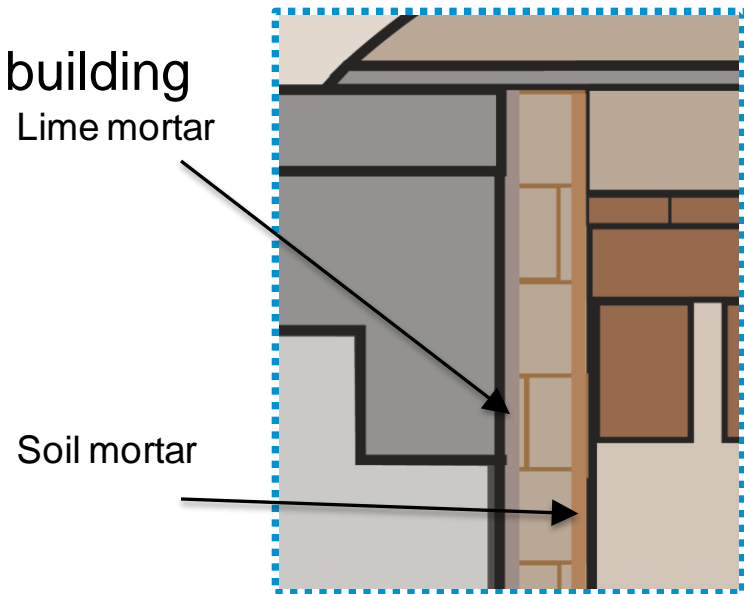
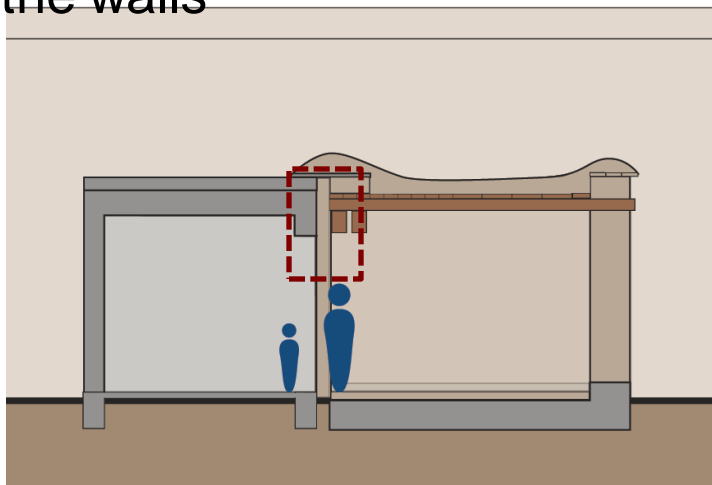
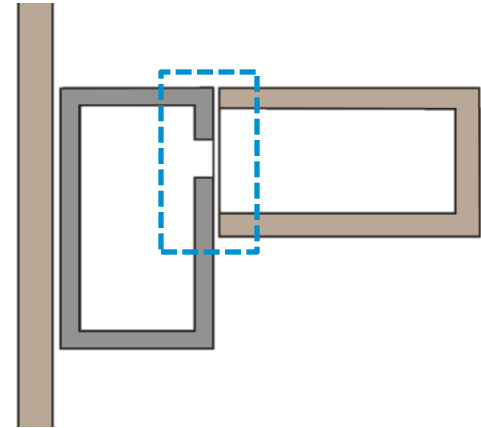
*Possible scenarios of interaction

Perpendicular walls interaction

- Rigid structure to free standing vernacular
(two rooms connected)

Flexible wall-to-wall connection

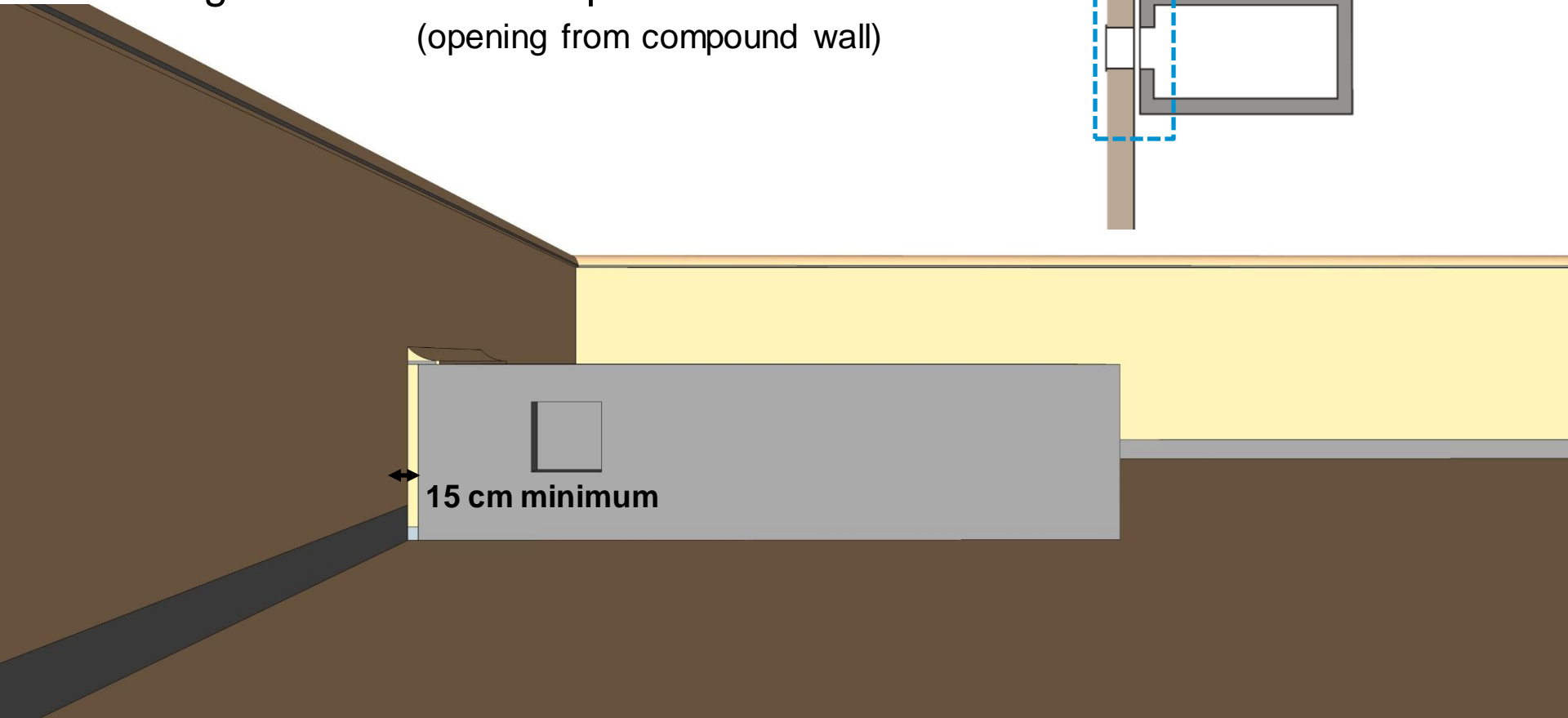
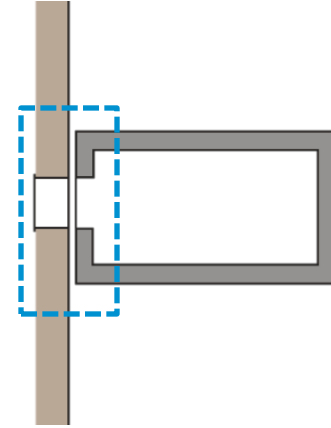
- For comfort, the walls are linked with khama-khashta bricks.
- *The junction must be made after building the walls



*Possible scenarios of interaction

Perpendicular walls interaction

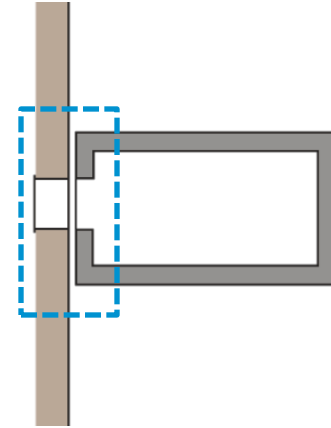
- Rigid structure to compound wall
(opening from compound wall)



*Possible scenarios of interaction

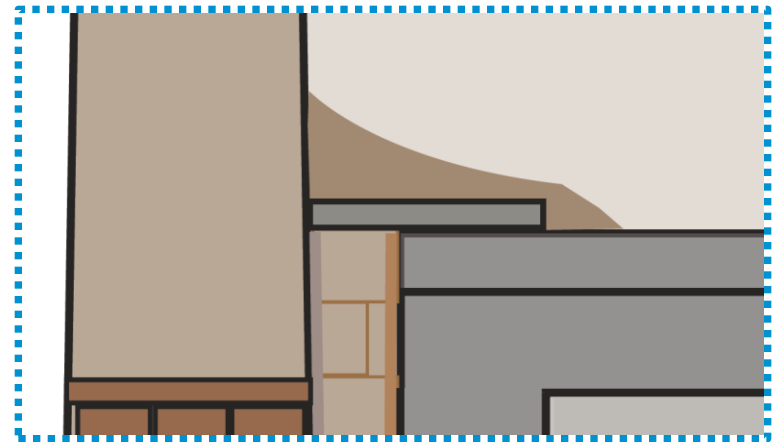
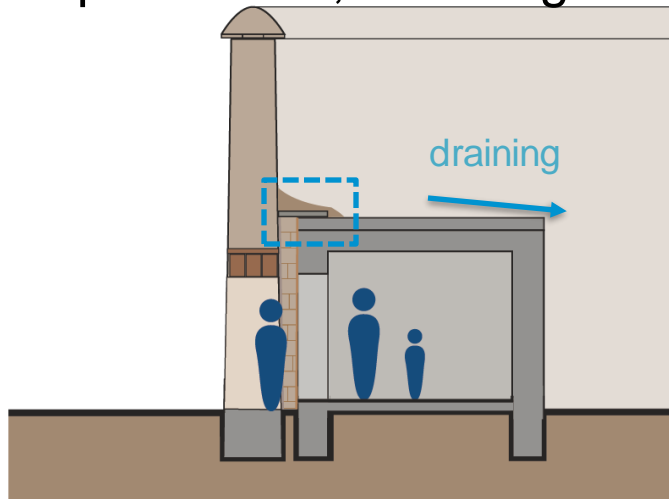
Perpendicular walls interaction

- Rigid structure to compound wall
(opening from compound wall)



Capping

- To avoid water and snow stagnation it is important to put a soil capping in the form of a chamfer in between the rigid construction and compound wall, following BBS recommendations



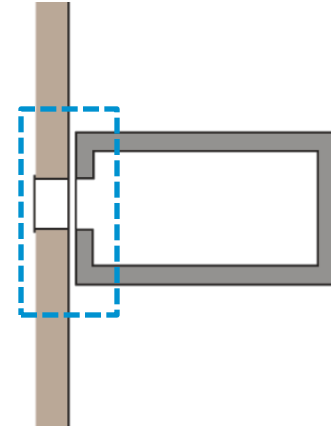
*Possible scenarios of interaction

Perpendicular walls interaction

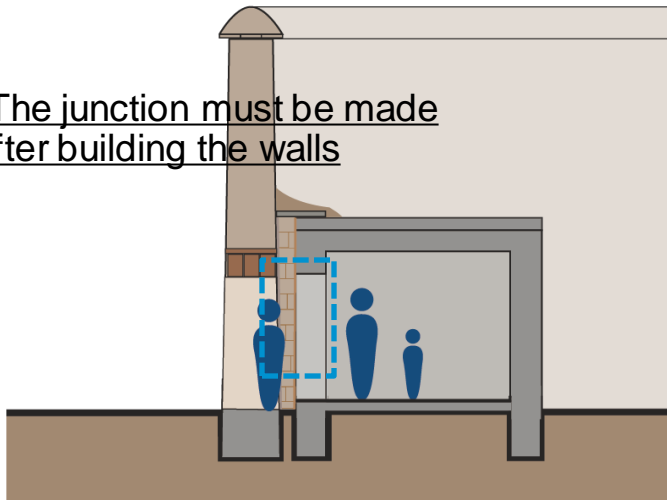
- Rigid structure to compound wall
(opening from compound wall)

Flexible wall-to-wall connection

- For comfort and without structural properties, the walls are linked with khama-khashta bricks.

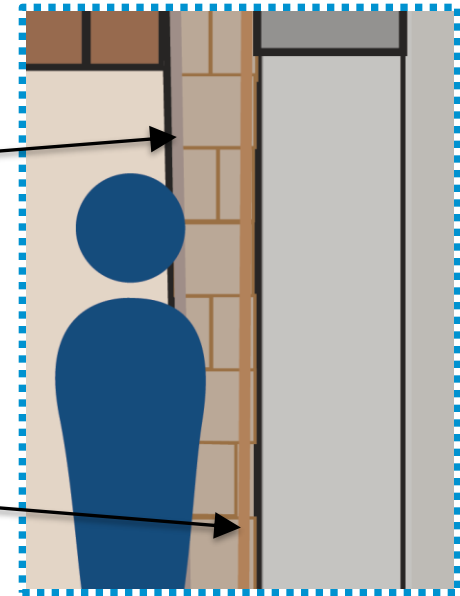


*The junction must be made after building the walls



Lime mortar

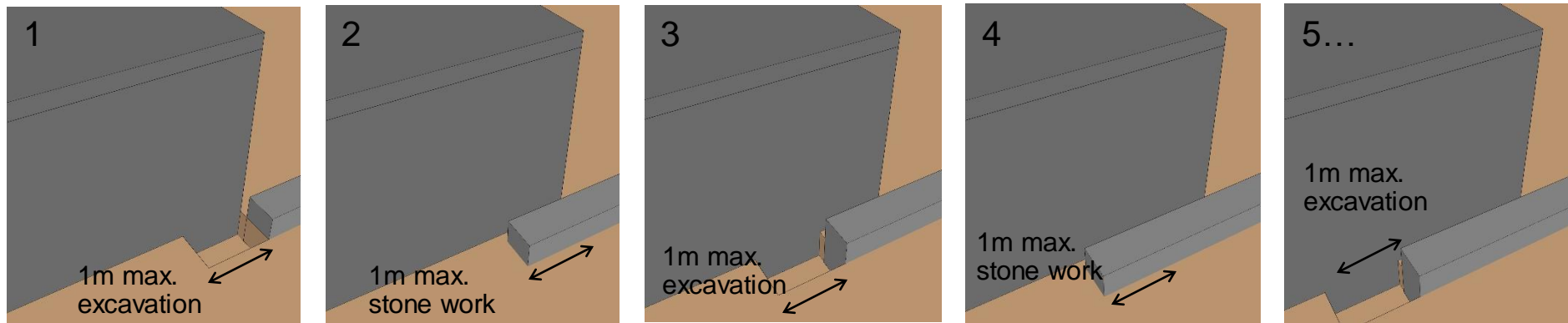
Soil mortar



*Possible scenarios of interaction

Foundation for all scenarios

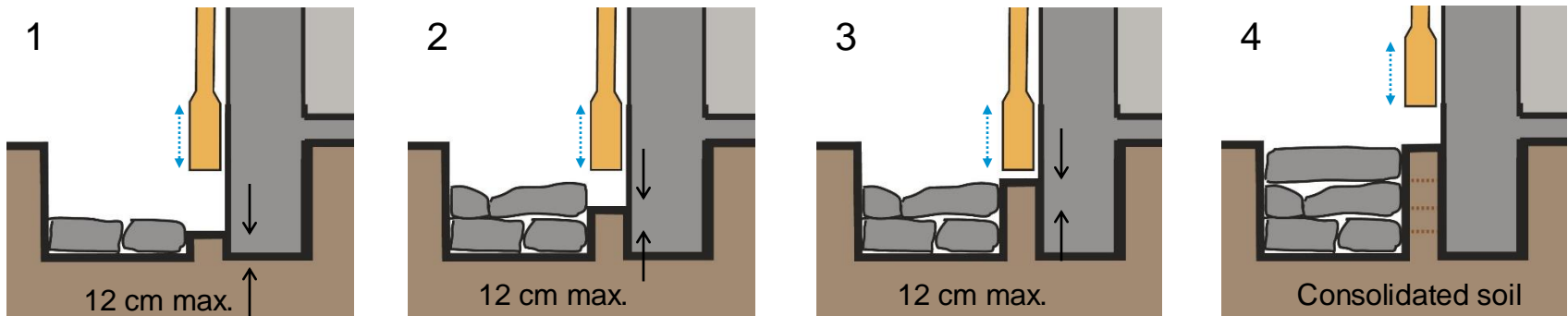
- Building a foundation next to an existing one
- The excavation and construction of the foundation should be done in one-meter sections.



*Possible scenarios of interaction

Foundation for all scenarios

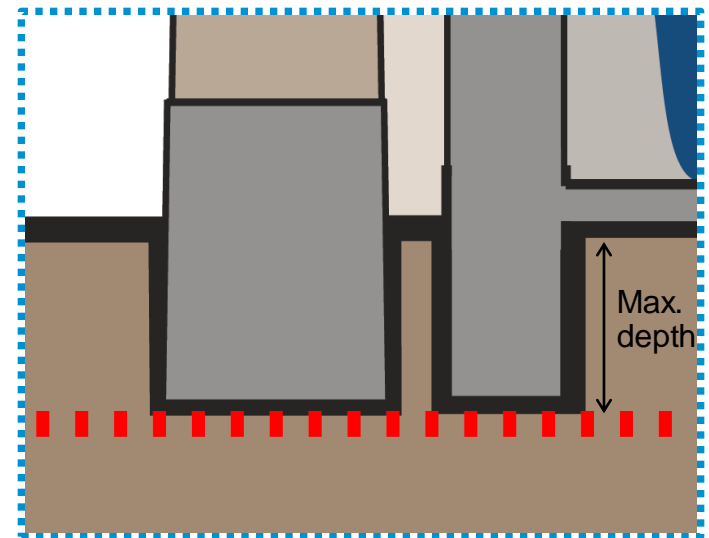
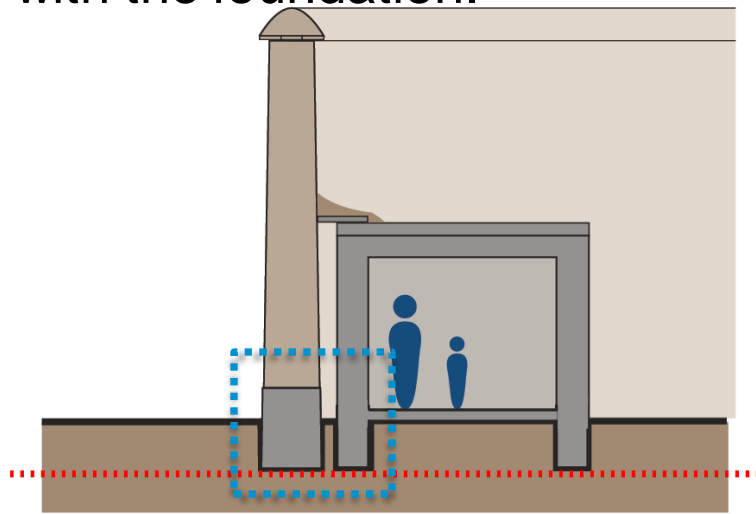
- Building a foundation next to an existing one
- It is important to consolidate the soil between the two foundations by compacting it in layers. The compacted layers should have a maximum thickness of 12 cm.



*Possible scenarios of interaction

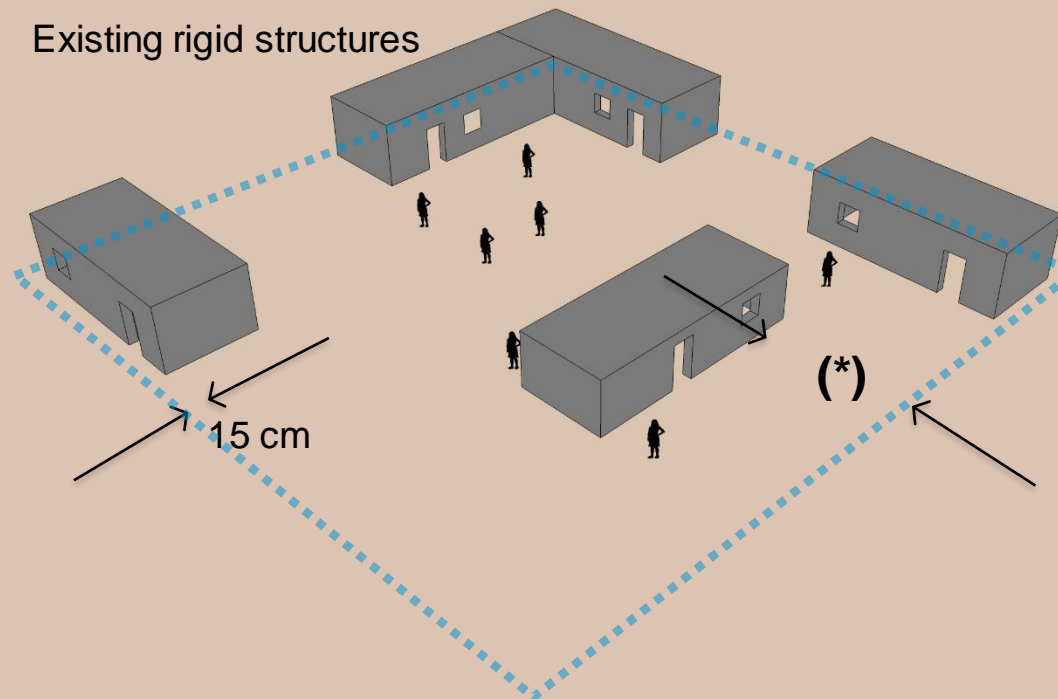
Foundation for all scenarios

- Building a foundation next to an existing one
- 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.



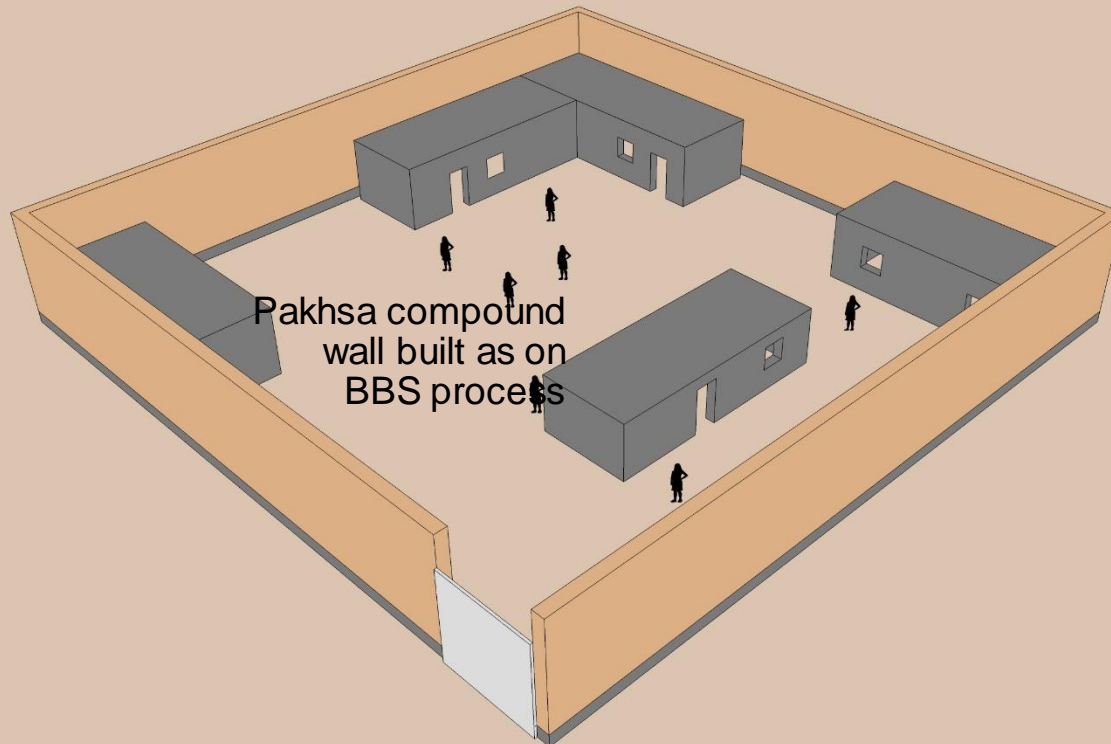
*Layout recommendations

(*) Wide and visible spaces are recommended for security of the inhabitants and to make the best use of the living space



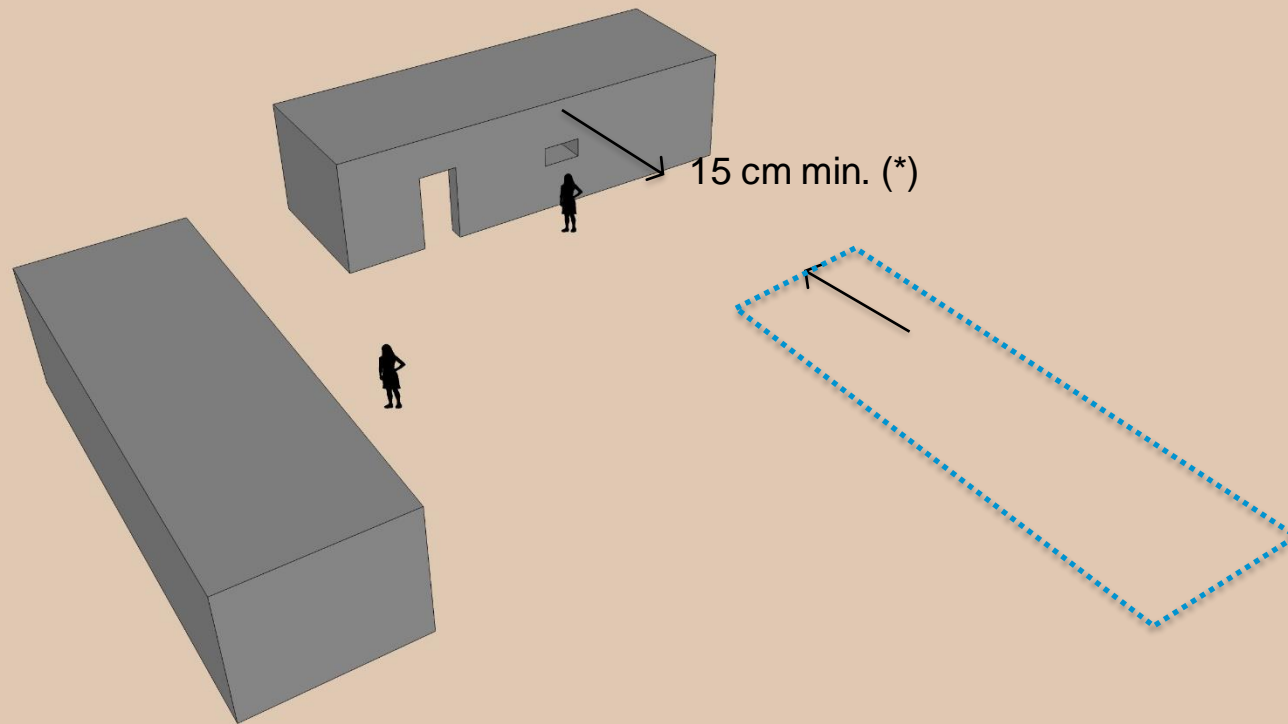
*Layout recommendations

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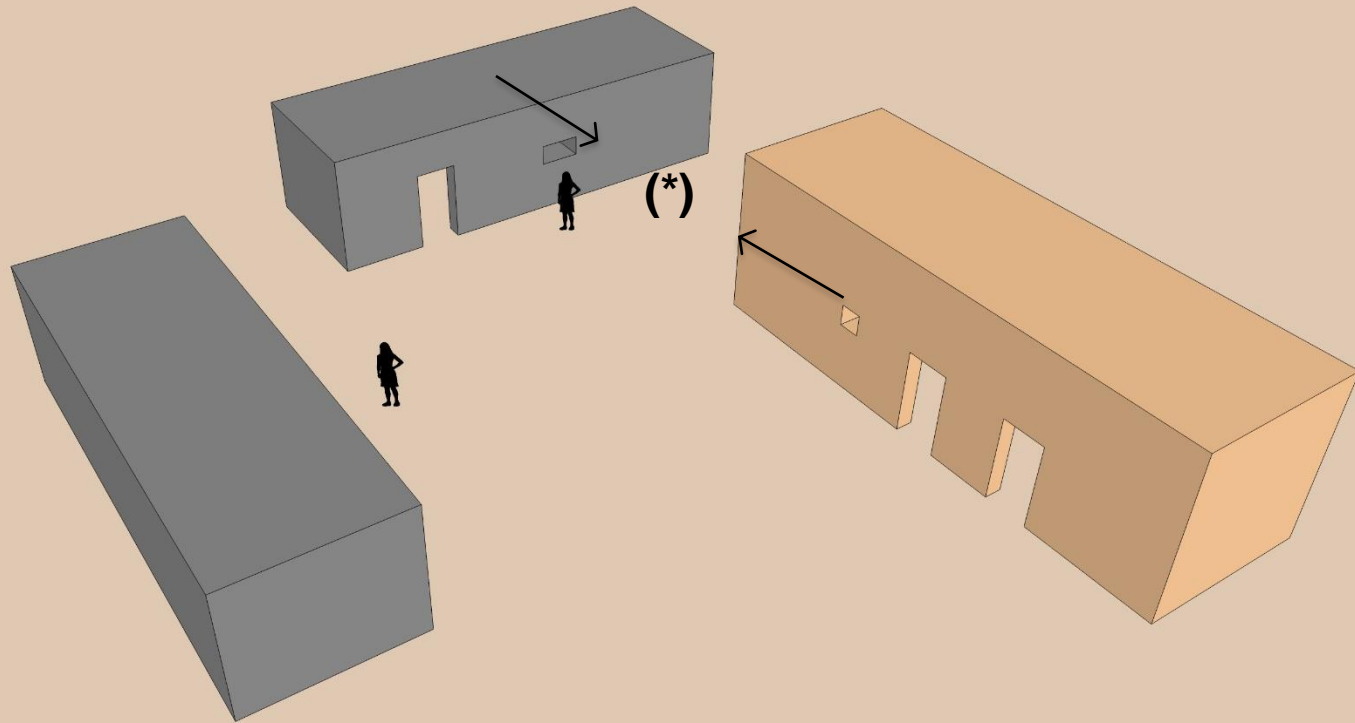
*Layout recommendations

Building vernacular on a free-standing room context



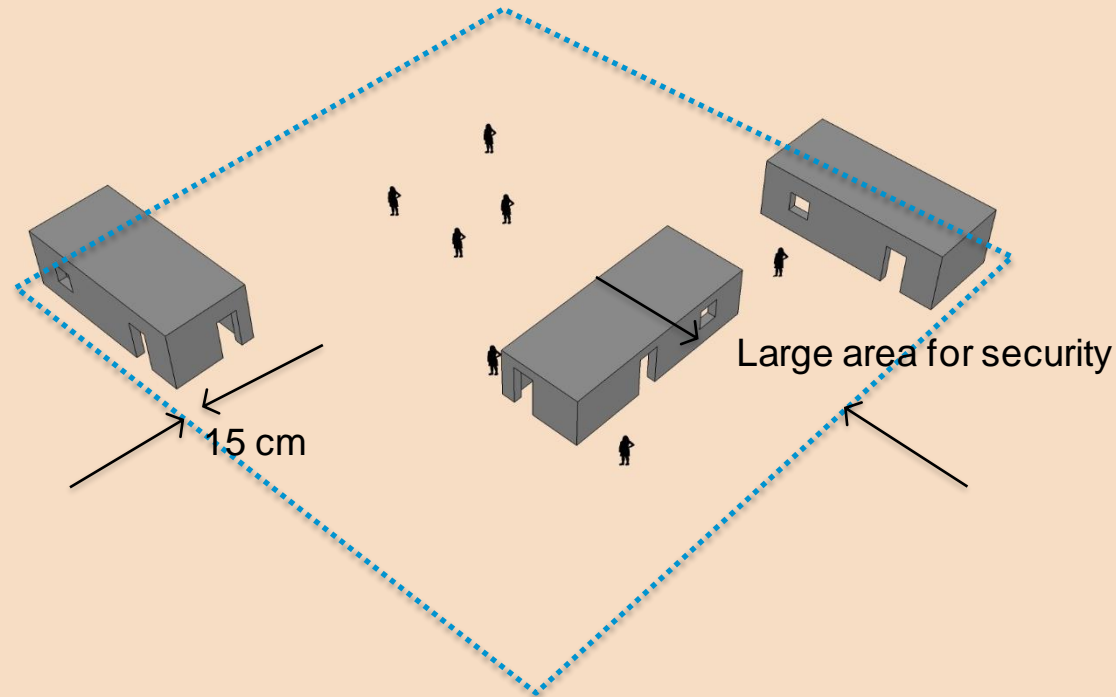
*Layout recommendations

Building vernacular on a free-standing room context



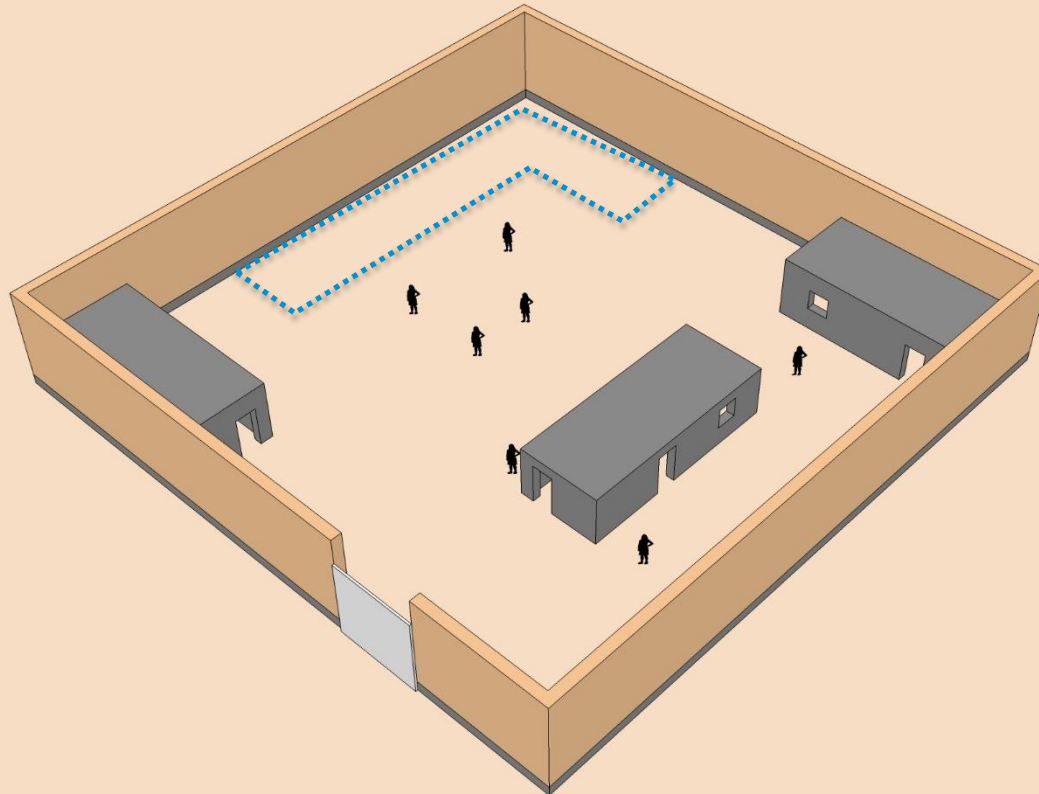
*Layout recommendations

Building vernacular on a free-standing room context



*Layout recommendations

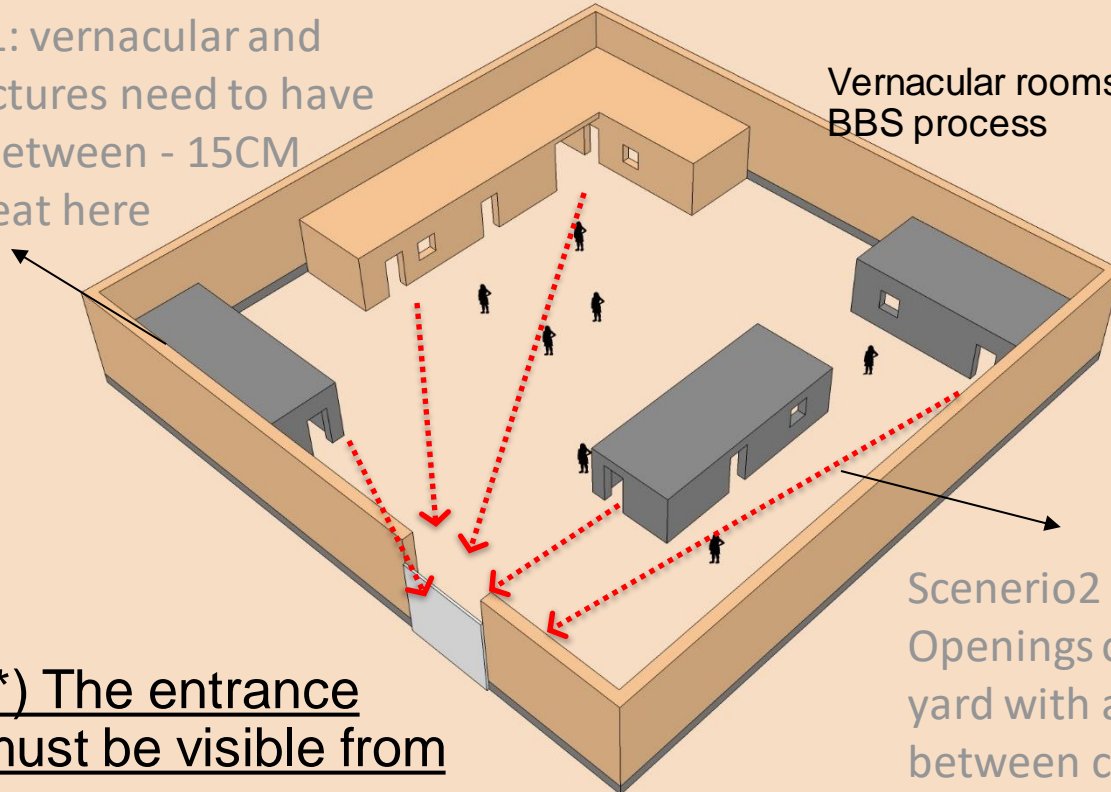
Building vernacular on a free-standing room context



*Layout recommendations

Scenerio1: vernacular and rigid structures need to have a gap in between - 15CM so no threat here

Vernacular rooms as on BBS process



(*) The entrance must be visible from every room

Scenerio2 :
Openings on the narrow back yard with additional land in between compound wall and the constructed rooms

Product #6 : How the compound layout ensures privacy and dignity for the residents

Message

How the Layout of the compound ensures the safety and security of the residents especially women, girls and adolescents as well as provides space for the livelihood/livestock, WASH, children playing area and space for other domestic use

See slide # 36 onward and 44 onward



Product #6 : How the compound layout ensures privacy and dignity for the residents

Problem :

The pre disaster compound housing typology was an open courtyard with all rooms facing on to it. This meant young women and children were safely visible by everyone else in the compound when they came out of their room. While building a space between paksha compound walls and rigid concrete structures makes sense in terms of engineering it potentially creates a massive social problem.

By far the majority of sexual abuse and violence to women and children globally is from close male relatives. While I make no judgement about Afghan society, this proportion is likely to be much higher given young women rarely meet anyone else than close relatives. In a society where women have an increasingly diminished voice it will always be hard for us to know how much of an issue this is in Afghanistan society

I would suggest that we need to come up with some recommendations on how to seal off or make those spaces safer without compromising the structures. To do this I would suggest a combination of primary analysis through community discussions in particular by women, with women and children and also through secondary data analysis by talking with the UN Women and the Gender working group. Also with some Afghanistan Women's rights NGOs that I am sure they could suggest.

Addressing this issue is an important part of making sure Miyamoto is taken seriously by donors and other actors, as a stand alone Shelter actor and not just an engineering subcontractor for other actors. Particularly given this is a corner stone issue for the UN non acceptance of the Taliban as a legitimate government.

Finally I think it would be useful for me to get back across at some stage and wrap my end around where funding and Shelter is heading in Afghanistan. Happy for advice on timing or appropriateness