



# **Yemen CCCM Cluster Guidelines for Shelter Intervention in Northern Yemen**

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## **1.0 Background:**

Shelter design and construction in Yemen differ depending on the geographical location of residences and availability or provision of construction materials; as a result there are many types of construction. Common construction materials include stonework, mud, thatch, or composite construction from concrete and stones. In the mountainous areas construction materials mainly consist of stones because these materials are cheaper than others, while in the leveled areas, the construction materials consist of mud or cement blocks with wooden roofs or concrete roofs. Additionally, the climate has an effect on these types, for example, in the wet and warm areas like Haradh and Malaheet, most people prefer living in houses made of thatch rather than other types because this type provides more temperate climate.

## **2.0 Introduction:**

The conflicts in Sa'adah in the north of Yemen between the Houthis and the government has led to the displacement of many families from their areas of origin, either to other areas inside the governorate or areas outside the governorate like Amran, Hajjah, Al-Jawf and Sana'a governorate, providing suitable places for IDPs families in their displacement places should be prepared in accordance with their needs and should be environmentally appropriate.

## **3.0 Definition of Shelter:**

**Shelter** can be defined as the suitable structure for IDPs/Refugee family of 4-7 persons to provide:

- 1- Suitable place for temporary living
- 2- Safety from the conflicts
- 3- Enhanced resistance to ill health and diseases.
- 4- Protection from the hot/cold climate.
- 5- Protection from the dangerous animals.
- 6- Protection from humanity aggressions
- 7- Ensure family privacy

#### 4.0 Guiding Principles:

- Needs assessment including disaggregated data of sex and age.
- Land ownership, it should be clear to whom the land belongs (e.g. government, private, etc)
- Vulnerabilities should be prioritized for shelter (*refer to Annex 1*)
- Community-based approach
- Environmental issues must be considered for any shelter interventions
- Local materials must be encouraged
- Encourage local employment
- Culture sensitive
- Package to include latrine if not provided by the WASH (*refer to the annex2 regarding the various latrine designs and cost*)
- Technical support

#### 5.0 Shelter Interventions in Yemen

Classification for shelter types according to the stage of displacement and durable solutions are:

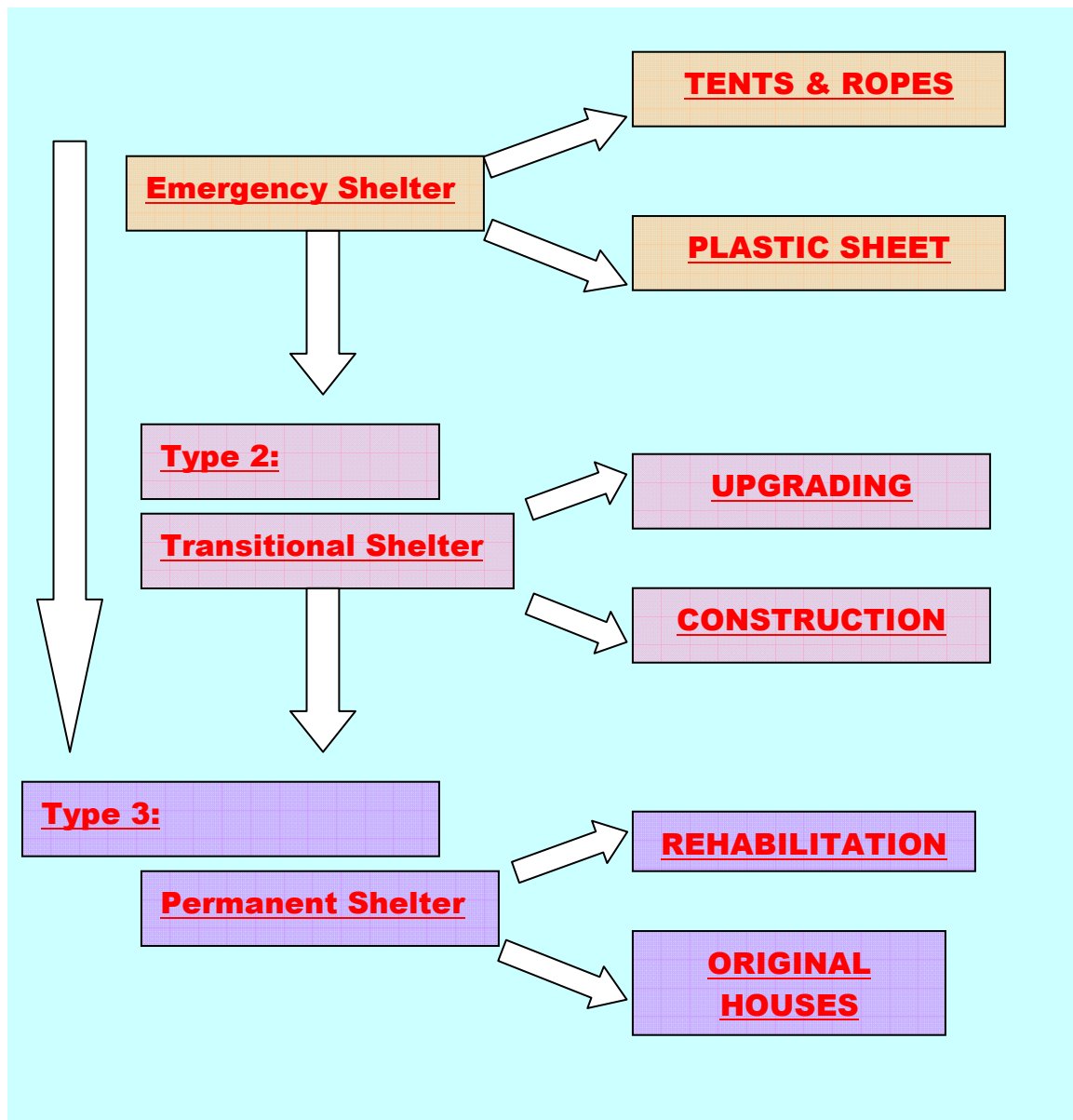
1-Emergency shelter (tents, plastic sheets,) .. in first stage (Displacement).

2-Transitional shelters (upgrading and construction)..in second stage

(Displacement/Durable Solutions)

3-Permanent shelters (Rehabilitation of original houses).. in third stage (Early Recovery)

Yemen CCCM/Emergency Shelter/NFIs Strategy: Salient features at a glance	
Areas affected	Sa'ada, Northern parts of Al-Jawf and Amran
Population affected IDPs	1. IDPs in camps 2. IDPs in scattered settlements 3. IDPs in host communities 4. IDP returnees
Key shelter issues (strategic)	Emergency shelter, Host family, distribution, registration, rehabilitation, quick impact projects
International community coordination. mechanism	Cluster approach Partners: CSSW, ADRA, IOM, IRY, RI, UNHCR, YRCS, UAE Red Crescent, Executive Unit, Al-Amal, OFAM, UNICEF, TRIANGLE, INFPA, WFP, and the Sa'ada Reconstruction Fund, DRC Non-Cluster members: MSF and ICRC
Government response/coordination Mechanism	If any/major issues No existent, instable etc.



#### 6.0 Type 1: Emergency shelters:

An emergency shelter is an easily assembled and mobile temporary small residence that provides protection from hot or cold climates, space requirements comply with the agreed Cluster standards and guidelines and suitable for a small family not exceeding 6 members. The Cluster will provide emergency shelter in emergency cases to ensure rapid assistance for the IDPs. The emergency shelter is built using existing trees or vertical poles. The emergency shelter distribution of assistance materials includes:

1-Tent 4x4 m

2-Plastic sheets 4x5 m

3-Ropes (Optional)

The Core relief items for household/individual distribution include the following household items (NFIs):

1-Blankets 1.50 x 2 m

2-Sleeping Mats 1.80 x 0.9 m

3-Buckets by capacity 15 liters

4-Mattresses 1.7x0.90m

5-Jerry cans 20 liters (for supplying water)

6-Kitchen sets

7-Kerosene Stoves almost needed

8-Jerry cans 20 liters (for supplying fuel)

9-Hygiene kits (powder and bar soaps, Sanitary napkins ..... etc)

10-Plastic Rolls 4 x 50m

11-Others

For more details about the NFIs (*see Annex 3*)

## **7.0 Type 2: Transitional shelters:**

**Transitional shelters** are required to bridge the gaps between the emergency and durable housing (Permanent shelters), and can consist of upgrading or construction. Assessments will be undertaken to determine the appropriate assistance needed.

### **7.1 Transitional Shelter assistance method 1: UPGRADING**

**Upgrading** works are required for sub-standard shelters that are not fit-for-purpose such as:

- Shelters that cannot withstand the monsoon (rain & wind), high winds including cyclones,
- Shelters that do not have adequate foundations or floor slab to meet agreed standards,
- Shelters that have structural deficiencies (unsafe),
- Shelters that are prone to flooding, or
- Shelters that do not have access to adequate water and sanitation.

The following construction materials may be included in the assistance distribution:

1. Construction kits including the following items:
  - a. One Shovel (29.5 x 22.5 cm), with wooden handle length 1.0m and diameter 36-40 mm
  - b. Claw Hammer by weight approximately 0.75 kg.
  - c. Axe with its Handel
  - d. Handsaw – Crosscut 40 cm.
  - e. Ropes 30 m and 12mm diameter.
  - f. Trowel Cement
  - g. Bucket oil
2. Roofs (wooden roof local or external, Zinc with metal beams and girders)
3. Doors (wooden or metal doors)
4. Windows (wooden or metal)
5. Others items identified through the analysis of assessments.

## **7.2 Transitional Shelter assistance method 2: CONSTRUCTION**

The design and construction of the transitional shelters should be in accordance with the agreed safety regulations and accepted local building practices; and should maximize local livelihood opportunities. The prevalent construction method is typically one of the three listed below:

- 1-Mud Houses
- 2-Thatch Houses
- 3-Stone Houses

### **7.2.1 Transitional Shelter: MUD HOUSE**

The construction of mud shelters is feasible if there is a sufficient local supply of appropriate raw materials (sand, water, etc) in the locality of the construction site.



In Sa'ada and Harad

- All mud shelter walls are built of mud with the exception of the base, it is built of stones. This sort of shelters is appropriately used in dry and cold areas such as in Sa'ada governorate.
- The estimated cost to build one room 3x4m and small hall with various uses 1.8x3m equals approximately 384,580 YER (1,750 USD) (*refer to Annex 2*)

- Land owner generally object to IDPs building this type of shelter on their land.

### 7.2.2 Transitional Shelter: THATCH HOUSE

Thatch house is small room 3.5x3.5 m or 4x4m arranged in various sizes and shapes (circular or square), and it's mainly erected of local timbers.



In Harad

- This type is suitable in wet and hot areas like Haradh, Hajjah governorate.
- Thatch house walls are erected with timbers.
- The estimated cost to build one room 3x4m and small hall with various uses 1.8x3m equals approximately 155,000 YER (700 USD) (*refer to Annex 5*)
- Land owner generally do not object to IDPs building this type of shelter on their land.

#### **Required Materials with estimation costs to establish a cottage:**

Herein below, names of the required materials to establish circular cottage with 4m diameter.

#### **1-Materials of first type (walls from the local timber)**

#### **Annex 4**

### 7.2.3 Transitional Shelter: STONE HOUSE

This type of houses preferable if the materials are readily available in the area.

- All walls of this type established from the stones with mud mortar on foundations from stones also, this type is suitable in dry and cold areas like Sa'ada governorate.
- The estimated cost to build one room 3x4m only equals approximately 180,000 YER (820 USD) .....
- Land owner generally object to IDPs building this type of shelter on their land.



In Sa'ada and Amran

#### **Construction details for STONE HOUSE**

##### **1- Foundations and footing:**

The foundations under the natural ground level and the footings over the natural ground level also are similar to the foundations and footings in quantities of the mud house above..... see Annex 2.



## **2- The walls:**

Masonry of the wall from the partial regular stones - where the minimum thickness of the wall is between 50 cm to 70 cm with mud mortar.

### **Lintels:**

Lintels of the windows and doors are used special stones with a minimum dimensions with of:

80 – 100 cm of length.

20- 30 cm of width (2 stones together needs for each window or door)

15- 20 cm of thickness of each stone lintel

Note: Mud mortar: mixture from clay with water only, where the water takes about 30% from the size of volume of clay.

## **3- The floors:**

The floors also are similar the floors in quantities of the mud house above..... see Annex4.

## **4- The Roofs:**

- Roof of this type is implemented by using beams from timber and plates from the rigid stones (partial regular stones), with a minimum dimensions, thickness of 6 cm, length of 40-50 cm and width of 20-30 cm also, where these stones plates are putting perpendicular over the timbered beams.
- After that the stones plates will cover from the top by:
  - a- 10 cm layer of mud mortar to close the voids between the stones plates.
  - b- 4x6 m of plastic sheet should cover the roof above layer of the mud mortar, to stop leakage from rains water to inside the room.
  - c- 10 cm layer of dry clay to keep on the plastic sheet from the sunray as well as to slope the roof.
  - d- 3 inch of pipe diameter to discharge the rains water to outside the roof.

## **5- The plastering of walls from inside:**

The plastering of the walls from inside of the room also are similar the walls in quantities of the mud house above ..... see Annex 4.

## **8.0 Permanent Shelter**

The permanent shelter involves fixing and maintaining existing emergency shelters. For example, the rehabilitating and reconstructing of destroyed houses in Sa'ada where most are built of mud and some of stones.

**Methods of implementation**

The Government has established a fund to reconstruct the destroyed houses in the country. Engineers make visits to the conflict affected areas in order to prepare estimates for repairs. Financial assistance to cover the cost of house repairs will be provided in installments.

**Structures design:**

The engineers have the responsibility of designing the structures for partially or totally affected houses.

**Construction types:**

Most of the destroyed houses are of mud and timber roofs: most of the materials needed are traditional and locally available. Houses of stones will have concrete to reinforce the roofs.

**Cost of the construction:**

- Cost for rehabilitation of one house is estimated between 2,300 to 3,000 USD
- Cost for reconstructing partially destroyed house can be estimated between 5,000 to 5,500 USD per one house.
- Cost for reconstructing totally destroyed house is more than 10,000 USD per one house

**- Construction kits (Returnee Kits)**

UNHCR is distributing the construction kits that help people reconstruct their destroyed houses, these tools are:

- Hand-held saw
- Hammer
- Plastering Trowel
- Shovel (Mounted on the Handle)
- Pick / Digger (Mounted on the Handle)
- Mason's Bucket
- Rope (Sisal)
- Rope (Nylon)

- Table including some pictures for other shelters:



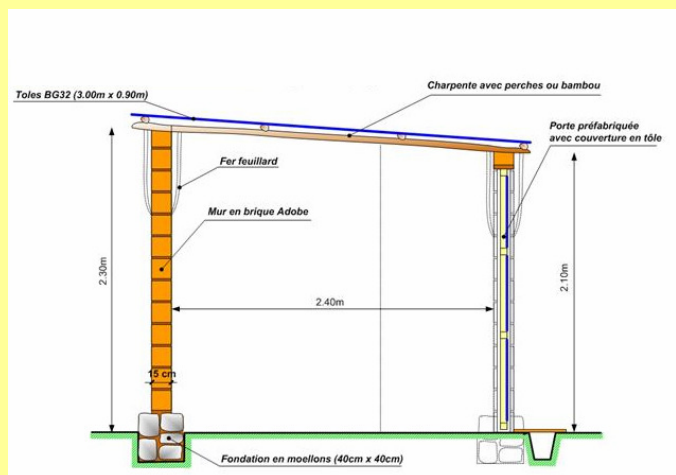
**Other type of shelter (two rooms) walls from mud/blocks & Metal roof**



**Other type of shelter (two rooms) walls from mud/blocks & Metal roof**



**Other type of shelter (one room) walls from mud/blocks & Metal roof**



**Cross section for the above shelter (two room) walls from mud/blocks & Metal roof**



**Sample for these type in the field (two rooms)  
walls from mud & metal roof**



**Sample for these type in the field (two rooms)  
walls from mud & metal roof**



**Sample for these type in the field (two rooms)  
walls from blocks(Yajor) & metal roof**



**Sample for these type in the field (two rooms)  
walls from cement blocks & metal roof**





**First type:** Walls from the local timber (In Harad)



In Harad



**Second type:** Walls from mud (In Sa'ada and Harad)



**Third type:** Walls from cement blocks (In Harad)

## Annexes:

### Annex 1: Vulnerability Criteria

#### ASSESSING VULNERABILITY

##### Principles

##### **1- Applying a Right Based Approach**

Persons of concerns should play a key role in their own protection and have resources, capabilities and resiliencies to find suitable solutions. Adopting right based approach empowers persons of concern who are not seen as passive recipients of aid, but as 'rights – holders' with legal entitlement.

##### **2- A Participatory and Community Based Approach**

Work in partnership with communities of persons of concern in order to build on existing capacities to deliver protection, assistance and solutions to their problems. The CBA reinforce the dignity and self-esteem of people and seeks to empower all actors to work together to support the different members of the community in exercising and enjoying their human rights.

##### Criteria of persons with special needs

The following categories of internally displaced persons are considered as groups with special needs and can go through a needs assessment interview to assess their needs. If they are eligible according to the criteria, they can be assisted within UNHCR assistance program.

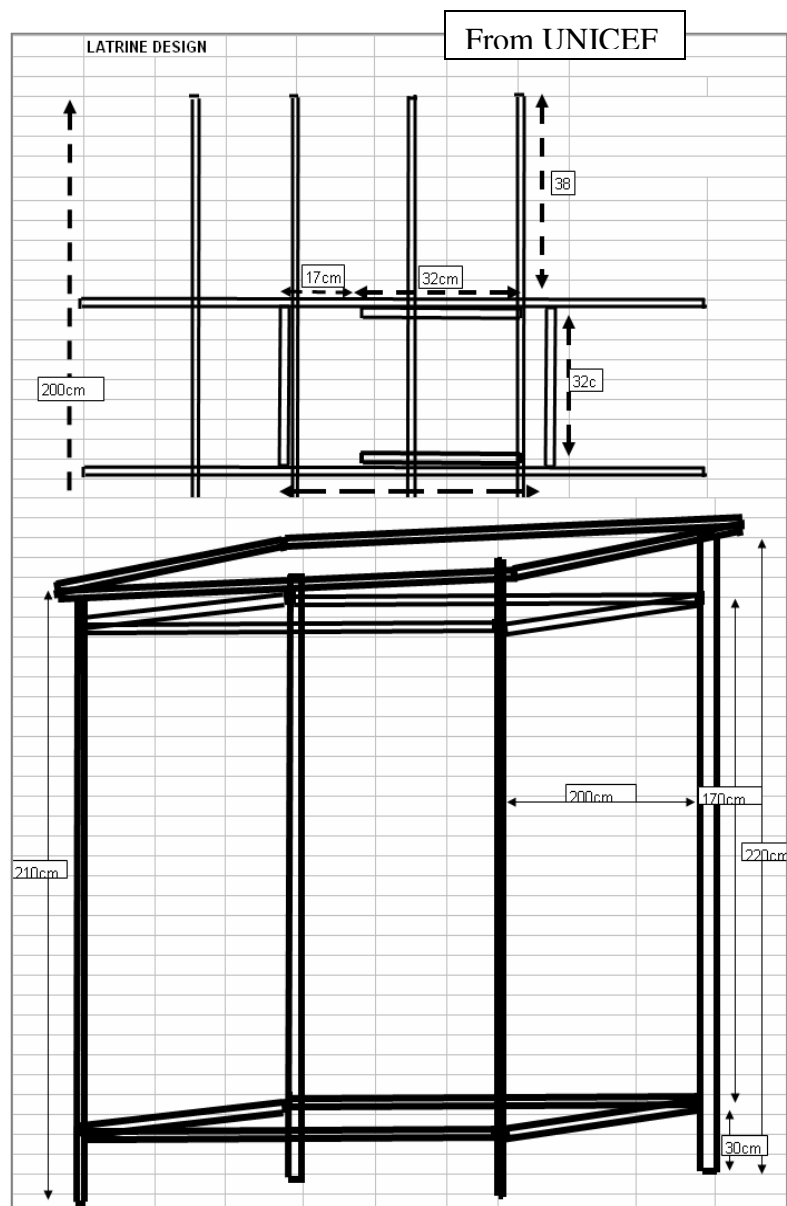
1. Unaccompanied and separated children under 18 years of age.
2. Unaccompanied elderly persons of concern over 60 years of age, who lack support from their community.
3. Single parent taking care of a child with disability.
4. Single women combining an additional vulnerability element, such as: Medical condition.
5. Persons with disabilities, who due to their disability can not support themselves, those, include persons with physical and mental disabilities.
6. Couples with one spouse bed ridden or suffering a medical problem which can prevent the other partner from work.
7. Single pregnant women can be assisted starting their 7 months pregnancy for 6 months.
8. Persons with serious health problems who, because of their health situation, can not support themselves or their families.
9. Women with special needs who can not support themselves or their families. This includes women without any male support or any traditional family protector; women with serious legal problems, women who face or have faced sexual and gender based violence, women facing threat to their physical safety, women stigmatized, and rejected by their community because of cultural, domestic, social, problems, women victims of torture.
10. Household headed by minors. Exceptional assistance.
11. Survivors of Sexual Gender Based Violence.
12. Persons with psychological or mental problems

##### **A special vulnerability**

- May be forced towards unhealthy or inhospitable environments
- Social organisation destroyed or damaged
- May experience profound psychological distress
- Removed from sources of income and livelihood
- Schooling for children and adolescents disrupted
- May lack identity documents
- Lack of access for international organisations
- Protection and assistance needs have not been fully met
- Family groups may be separated or disrupted
- Women may face particular vulnerabilities
- Children, elderly, or pregnant women, may experience profound psychosocial distress.
- Local inhabitants may be of different groups or inhospitable
- The condition of internal displacement may raise the suspicions of or lead to abuse by armed combatants or other parties to conflict.
- Internally displaced persons may lack identity documents essential to receiving assistance

Any vulnerable case which does not fit in the a/m category and appears to be with special needs through social counselor's/community mobilizers judgment and with mobilizers/counselors own common sense can be reassessed and reviewed for possible assistance.

## Annex 2: Latrine Design



## From OXFAM

### Family latrine old design 2m x2m - BOO

Materials	Quantity	unit
Red timber 3cmx 3cm x2m()	4	pcs
Red timber 3cmx 3cm x2.5m()	2	pcs
Red timber 3cmx 3cm x2.2m()	2	pcs
White timber 2cm x10cm x2m()	10	pcs
White timber 2cm x10cm x1m()	4	pcs
pvc 4inch pipe	1	pcs
latrine seat	1	pcs
plastic sheet	3	pcs
nails 1.5 inch with ring	0.5	box
nails 2 inch	0.5	box
door&seat	1	each
metalic hunch	1	pcs
hand drop	1	pcs
wooden paint	1	unit
transportation	1	unit
construction cost	1	unit

### Total

### The new design 1.5 x1.5m

Materials	Quantity	unit
Red timber 3cmx 3cm x2m()	4	pcs
Red timber 3cmx 3cm x2.5m()	2	pcs
Red timber 3cmx 3cm x2.2m()	2	pcs
White timber 2cm x10cm x2m()	2	pcs
white timber 2cm x10cm x1.5 m	8	pcs
White timber 2cm x10cm x1m()	4	pcs
pvc 4inch pipe	1	pcs
latrine seat	1	pcs
plastic sheet	2	pcs
nails 1.5 inch with ring	0.5	box
nails 1.5 inch	0.5	box
door&seat	1	each
metalic hunch	1	pcs
hand drop	1	pcs
transporatation	1	unit
wooden paint	1	unit
construction cost	1	unit



### Annex 3: Thatch house quantities + cost

S / N	Items	Specification	Cost in USD	Provenance	Remarks
1	<b>Tent (canvas)</b>	<ul style="list-style-type: none"> <li>• <b>Item Definition:</b> is temporary small residence and mobile in any suitable place, suitable to live small family not more than 6 individuals to protection the family members from the hot or cold climes.</li> <li>• <b>Dimensions:</b> 4x3 m,</li> <li>• <b>Centre height:</b> 2 m</li> <li>• <b>Side wall height:</b> 0.90m</li> <li>• <b>Floor Area:</b> 12 m<sup>2</sup></li> <li>• <b>Poles:</b> 4 pip steel (Dia. 2inch)</li> <li>• <b>Suitability for Family size:</b> 6 individuals (in hot and temperate climate's areas)</li> <li>• <b>Installation:</b> easy</li> <li>• <b>Packing:</b> the tents with its rolls, poles and all its accessories are packed in bundle wrapped with strong cloth.</li> </ul>	<b>168.85</b>  (excluding transport cost)	imported	UNHCR providing
2	<b>Fleece Blanket</b>	<ul style="list-style-type: none"> <li>• <b>Dimensions:</b> 1.5x2.0 m</li> <li>• <b>Effective area:</b> 3.0 m<sup>2</sup></li> <li>• <b>Compositions:</b> polyester 100%</li> <li>• <b>Distribution:</b> - <ul style="list-style-type: none"> <li>- 1 blanket/person (in hot and temperate climate's areas)</li> <li>- 2-3 blankets/person in cold climate</li> </ul> </li> <li>• <b>Packing:</b> the blankets are packed in bales of 30 pieces</li> </ul>	<b>3.93</b>  (excluding transport cost)	Imported	UNHCR providing
3	<b>Mattresses</b>	<ul style="list-style-type: none"> <li>• <b>Dimensions:</b> 1.7x0.9 m</li> <li>• <b>Effective area:</b> 1.53 m<sup>2</sup></li> <li>• <b>Using:</b> for sleep</li> <li>• <b>Composition:</b> sponge %</li> <li>• <b>Capacity:</b> 1 piece/person</li> <li>• <b>Using Area:</b> using in all climates.</li> <li>• <b>Packing:</b> the mattresses are packed in bales of five pieces</li> </ul>	<b>9.00</b>  (excluding transport cost)	Imported	UNHCR providing



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4	<b>Sleeping Mats</b>	<ul style="list-style-type: none"> <li>• <b>Dimensions:</b> 1.8x0.9 m</li> <li>• <b>Effective area:</b> 1.62m<sup>2</sup></li> <li>• <b>Using:</b> for sleep</li> <li>• <b>Composition:</b> 100% synthetic yarns in a tightly wove</li> <li>• <b>Distribution:</b> 1 piece/person</li> <li>• <b>Using Area:</b> using in all climates.</li> <li>• <b>Packing:</b> the mats are packed in bales of 25 pieces</li> <li>•</li> </ul>	<b>1.35</b>  (excluding transport cost)	Imported	UNHCR providing
	<b>Kitchen sets</b>	<b>Using:</b> for cooking <b>Composition:</b> each kitchen set includes the following items: 1- 1x7 litres aluminium cooking pot with lid. 2- 3- 1x5 litres aluminium pot with lid. 4- 5x deep stainless steel plates 5- 5x stainless steel cups 6- 5x stainless steel table spoons 7- 1x kitchen knife with stainless steel blade 8- 1x stainless steel serving spoon <b>Distribution:</b> 1 set/family (5members) <b>Using Area:</b> using in all climates. <b>Packing:</b> the kitchen sets are packed into a plastic bag with 4 sets in each bag	<b>17.54</b>  (excluding transport cost)	Imported	UNHCR providing
6	<b>Buckets</b>	<ul style="list-style-type: none"> <li>• <b>Capacity:</b> 15 litres</li> <li>• <b>Weight:</b> 800 grams</li> <li>• <b>Manufacturing:</b> made of plastic, with plastic lid to close and open, as well as strong plastic handle to carry the bucket.</li> <li>• <b>Distribution:</b> 2 Buckets/family</li> <li>• <b>Using Area:</b> using in all climates.</li> <li>• <b>Packing:</b> the Buckets are packed into cartoon bag with 30 buckets in each cartoon bag, and the size of cartoon bag 35x35x110 cm</li> </ul>	<b>2.50</b>  (excluding transport cost)	Imported	UNHCR providing

7	<b>Jerry Can</b>	<ul style="list-style-type: none"> <li>• <b>Item Definition:</b> is water container to carry the water from nearest point to the residence place by hand.</li> <li>• <b>Capacity:</b> 10 litres</li> <li>• <b>Weight:</b> approx. 200 grams</li> <li>• <b>Manufacturing:</b> made of plastic, with plastic lid to close and open, as well as strong plastic handle to carry the Jerry can</li> <li>• <b>Distribution:</b> 2 Jerry cans/family</li> <li>• <b>Using Area:</b> using in all climates.</li> <li>• <b>Packing:</b> the Jerry cans are packed into cartoon bag with 50 pieces in each cartoon bag</li> </ul>	<p><b>2.05</b></p> <p>(excluding transport cost)</p>	Imported	UNHCR providing
8	<b>Plastic Sheet</b>	<ul style="list-style-type: none"> <li>• <b>Item Definition:</b> is a reinforced plastic tarpaulin, designed rectangular sheet for long outdoor use, and designed for various purposes such:               <ol style="list-style-type: none"> <li>1- Using as cover in weak roof.</li> <li>2- Using as cover for damaged structure</li> <li>3- Using for protection from raining and sun temperature.</li> <li>4- Using as mat on ground.</li> <li>5- Using as cover for the family inside the residence.</li> <li>6- Using as divisions inside the residence place</li> <li>7- Another using</li> </ol> </li> <li>• <b>Dimensions:</b> 4x5 m</li> <li>• <b>Effective area:</b> 20 m<sup>2</sup></li> <li>• <b>Weight:</b> approx. 4.5 kg</li> <li>• <b>Manufacturing:</b> made of woven high density black polyethylene fibres, with reinforced rims by heat sealing on</li> </ul>	<p><b>16.22</b></p> <p>(excluding transport cost)</p>	Imported	UNHCR providing

		<p>all sides.</p> <ul style="list-style-type: none"> <li>• <b>Distribution:</b> 1-2 pieces/family</li> <li>• <b>Using Area:</b> using in all climates.</li> <li>• <b>Packing:</b> the plastic sheets are packed into bales with 5 pieces in each bale.</li> </ul>			
9	<b>Plastic Rolls</b>	<ul style="list-style-type: none"> <li>• <b>Item Definition:</b> is a reinforced plastic tarpaulin, designed rectangular sheet for long outdoor use, and designed for various purposes such: <ul style="list-style-type: none"> <li>1- Using as walls of transition community shelter.</li> <li>2- Using as fence for health centre.</li> <li>3- Using to built latrines or kitchen</li> <li>4- Using as fence for the food distribution centre.</li> <li>5- Using as covering for the family inside the residence.</li> <li>6- Using as divisions inside the residence place</li> <li>7- Another using</li> </ul> </li> <li>• <b>Dimensions:</b> 4x50 m</li> <li>• <b>Effective area:</b> 200 m<sup>2</sup></li> <li>• <b>Weight:</b> approx. 40 kg</li> <li>• <b>Manufacturing:</b> made of woven high density black polyethylene fibres, with reinforced rims by heat sealing on all sides.</li> <li>• <b>Distribution:</b> in need</li> <li>• <b>Using Area:</b> using in all climates.</li> <li>• <b>Packing:</b> the plastic Rolls are packed individually to facilitate carry it.</li> </ul>	<p><b>163.44</b></p> <p>(excluding transport cost)</p>	Imported	UNHCR providing

<b>1 0</b>	<b>Returnee Kits (Construction kits)</b>				
10-1	<b>Hand -held saw</b>	<ul style="list-style-type: none"> <li>• <b>SIZE:</b> 600-700mm blade (HARDPOINT TEETH)</li> <li>• <b>HANDLE:</b> PLASTIC OR WOOD</li> </ul>			
10-2	<b>Hammer</b>	<ul style="list-style-type: none"> <li>• <b>SIZE:</b> 4 INCH (10cm) handle with finger grooves</li> <li>• <b>head:</b> steel head, MAGNETIC</li> <li>• <b>type:</b> claw WITH RUBBER HANDLE</li> </ul>			
10-3	<b>Plastering Trowel</b>	<ul style="list-style-type: none"> <li>• <b>SIZE:</b> 10 INCH (20 cm)</li> <li>• <b>handle:</b> WOODEN</li> <li>• <b>type:</b> Brick Trowel</li> <li>• <b>SHAPE:</b> SPADE</li> </ul>			
10-4	<b>Shovel (Mounted on the Handle)</b>	<ul style="list-style-type: none"> <li>• <b>SIZE:</b> 1 METER (INCL. SHOVEL HEAD)</li> <li>• <b>handle:</b> WOODEN</li> <li>• <b>type:</b> NARROW EDGE</li> <li>•</li> </ul>			
10-5	<b>Pick / Digger (Mounted on the Handle)</b>	<ul style="list-style-type: none"> <li>• <b>SIZE:</b> 0.6 METERS (INCL. DIGGER HEAD)</li> <li>• <b>handle:</b> WOODEN</li> <li>• <b>type:</b> FLAT / PICK EDGE</li> <li>•</li> </ul>			
10-6	<b>Mason's Bucket</b>	<ul style="list-style-type: none"> <li>• <b>SIZE:</b> 10-12 LITERS</li> <li>• <b>TYPE:</b> RUBBER WITH METAL HANDLE</li> <li>• <b>COLOR:</b> BLACK</li> </ul>			
10-7	<b>Rope (Sisal)</b>	<ul style="list-style-type: none"> <li>• <b>TYPE:</b> SISAL – NATURAL FIBER</li> <li>• <b>LENGTH:</b> 100-120 METERS PER ROLL</li> <li>• <b>THICKNESS:</b> 1 CM</li> <li>•</li> </ul>			
10-8	<b>Rope (Nylon)</b>	<ul style="list-style-type: none"> <li>• <b>TYPE:</b> NYLON</li> <li>9.0 <b>LENGTH:</b> 45 - 50 METERS PER ROLL</li> <li>10.0 <b>THICKNESS:</b> 1 CM</li> </ul>			
10-1	<b>Hand -held saw</b>	11.0 <b>SIZE:</b> 600-700mm blade (HARDPOINT TEETH) 12.0 <b>HANDLE:</b> PLASTIC OR WOOD			

#### Annex 4: Mud Shelter Quantities + Cost

S/N	Description	Unit	Qty	Unit price	Total Value	Remarks
	<b>Important Note:</b> All works including supplying and transporting all materials to the location.					
1	Digging foundation of wall as per the dimensions indicated in the plans (Annex 5,6), with a minimum dimensions width of 40cm and depth of 30cm. Works to include removal the rocks and trees to clear the site area and excavation area.	M3	2.65	1000	2,650	M3: mean cubic meter M2: it means square meter
2	<b>The foundation:</b> Stones foundations with dimensions width 40 cm and depth 30 cm, with mix ratio of 70% stones and 30% plain cement concrete. (See Annex 5,6)	M3	2.65	3,200	8,480	Stones foundations: under the natural ground level, as per the indicated in the planning in (Annex 5)
3	<b>The footing :</b> Masonry stones with cement for base by dimension 40x30 cm width x height with cement mortar (1 : 3) cement : sand (See Annex 5, 6)	M2	2.65	5,000	13,250	The footing: over the natural ground level, as per the indicated in the planning in (Annex 5)
4	<b>The floor:</b> consist of 1- 15 cm layer of compacted soil (type of soil should be sandy clay) 2- 15cm layer of stones. 3- 10 cm concrete slab, to ratio 1:2:4 cement: sand: gravel 4- The work according to the indicated drawing in Annex 7.	M2	17.4	2000	34,800	
5	<b>The walls:</b> Masonry from mud units by dimensions 40x20x10 cm length x width x height with mud mortar, as per the specifications in	M2	60	1,800	108,000	
6	<b>The Roofs:</b> Supply and installation of timber roof, with the following specification: (See Annex 8) 1: Locally sourced wooden beams, diameter thickness minimum 15 cm. Or using of the imported timbered beams with a minimum dimensions 4x6" (inch), as per the drawing 2: Rows from wooden sticks diameter thickness minimum 3 cm, without spacing between the sticks (adhesive),	M2	20	6,500	130,000	

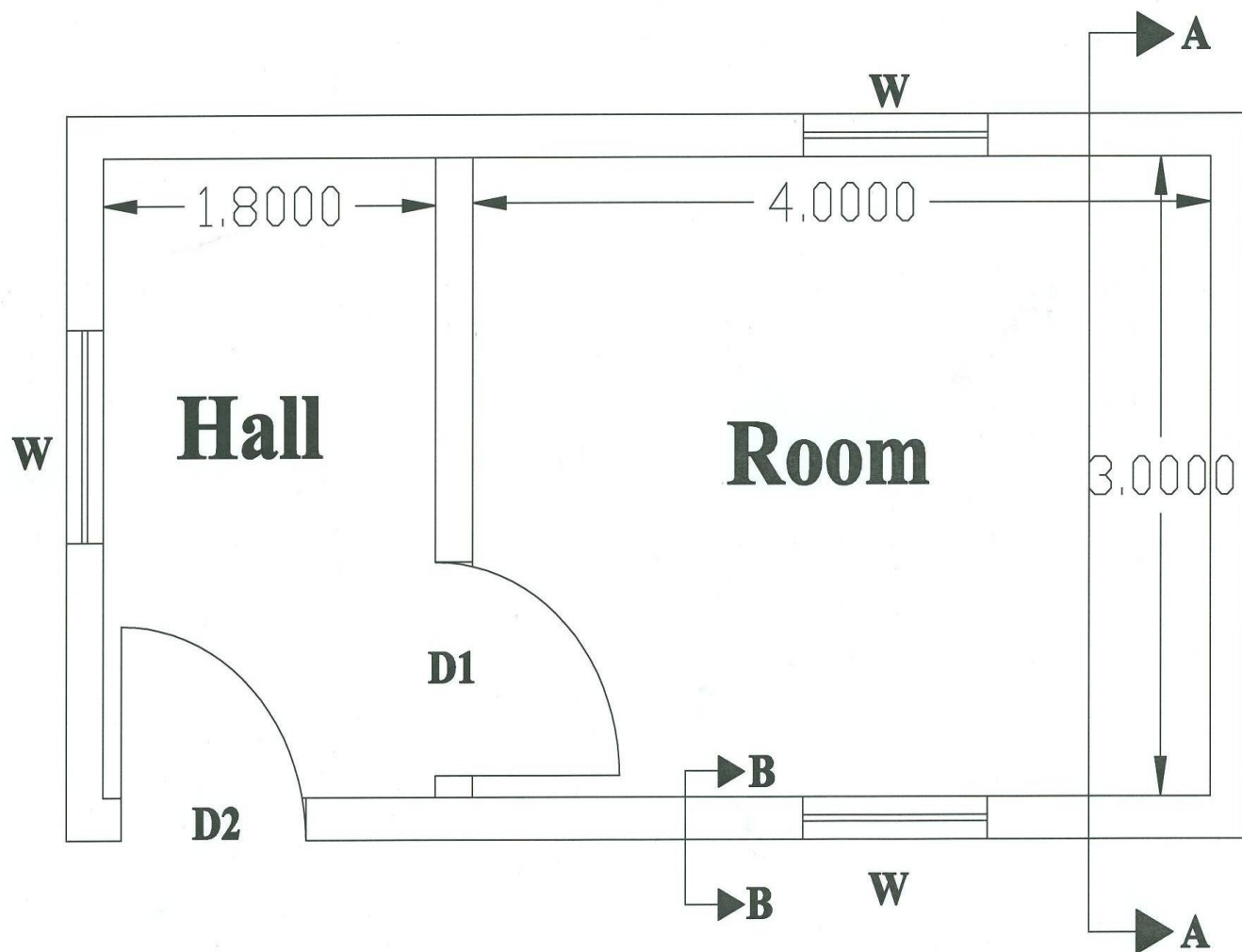
	perpendicularly on the beams. 3: 10 cm thick layer of mud on the sticks 4: One Plastic sheet 8x10 to resist rains leakage, plastic sheet will cover the roof over the previous mud layer 5: 5 cm thick layer from mortar of mud on the plastic sheet to fix it. 6: (10-5) cm thick layer from the clay to slope the roof surface 6: Drainage pipe for rain water ,4"					
7	Plastering by mortar of mud and hay for internal and external walls, Hay mixture with clay by ratio 1:2, (Hay : mud)	M2	94	600	56,400	
8	Supply and installation of iron doors 1.0m x 2.0 m with locks incl. 2 coats of painting with primer paint for the rust.	No.	2	8,000	16,000	
9	Supply and installation of iron windows (1 x1) m with handles incl. 2coats of painting with primer paint for the rust.	No.	3	5,000	15,000	
<b>Grand total</b>					<b>384,580</b>	<b>USD =1,750</b>

### Annex 5 A: Thatch Shelter Quantities + Cost

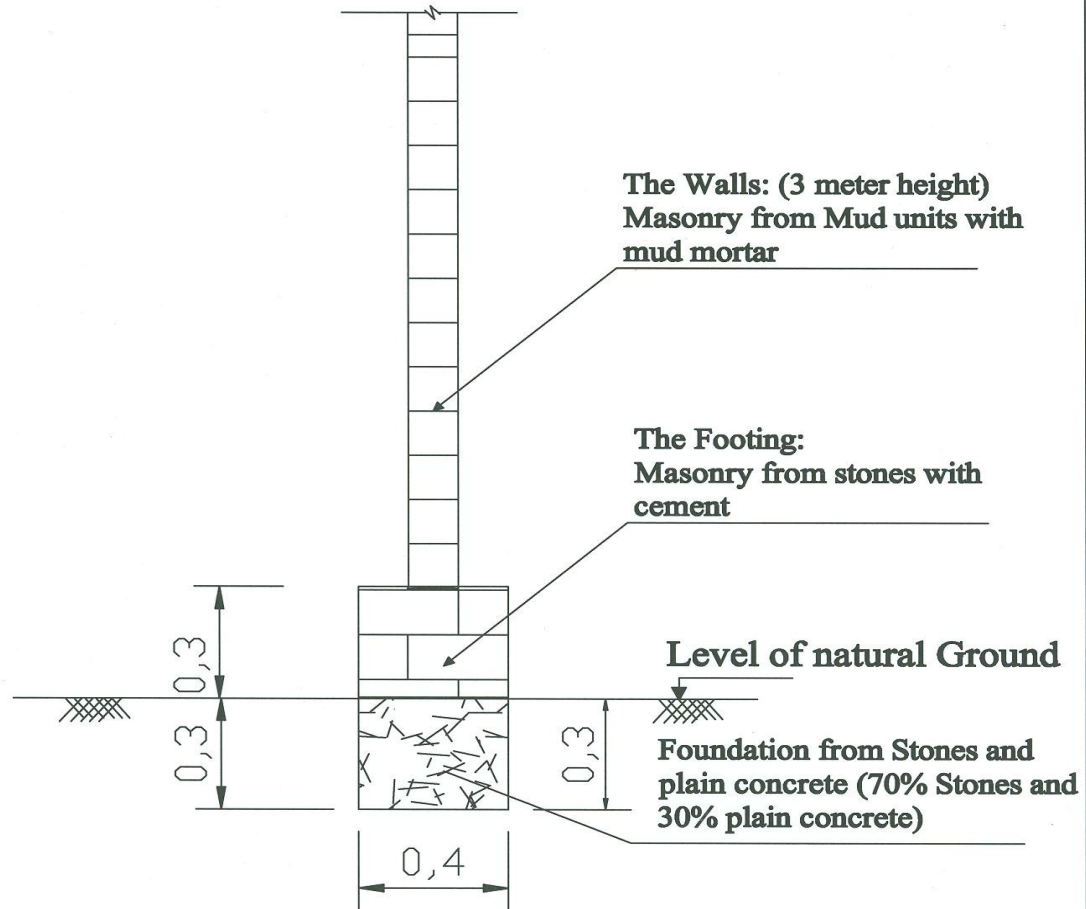
S/N	Material Name	Local name	Unit	Qty	Price YR	Total YR	Sources	Remarks
	<b>Note:</b> Regarding the Foundation will be implemented by IDPs themselves, for the circular walls 30cm width x 30cm deep							
	<b>1 For Walls</b>							
1-1	Thick wooden sticks by height not less than 2 m.	Redif or Asas	Car carriage	2	20,000	40,000	Local Markets	
1-2	Thin wooden sticks to support the sticks of walls installed from two sides, on two	Almud or Alharjah	Pack	30	300	9,000	Local markets	

	positions on horizontal lines.							
2	For Roof:							
2-1	Diagonal thick wooden sticks, by length not less than 2.8 m	Aawared	Pack (Koom)	10	3,000	30,000	Local markets	
2-2	Straw (thin sticks to cover the roof above the diagonal sticks)	Thomam or Ghasho	Pack	400	40	16,000	Local markets	
2-3	Tarpaulin (plastic sheet) not less than 4x6 m	Tarpaulin	piece	1	1,500	1,500	Local markets	Distributed by UNHCR
2-4	Ropes ( handy made) to tie the tarpaulin and straw	Metat	Roll	4	1,500	6,000	Local markets	
3	Other Accessories							
3-1	Ropes: nylon ropes to tie the horizontal sticks	Ropes	Roll	10	300	3,000	Local markets	
3-2	Fees of skilled workers	skilled workers	LS	1	40,000	40,000	Local skilled labour	
3-3	Transportation costs for all required materials	rent		1	10,000	10,000		
	Total					155,000	700 USD	

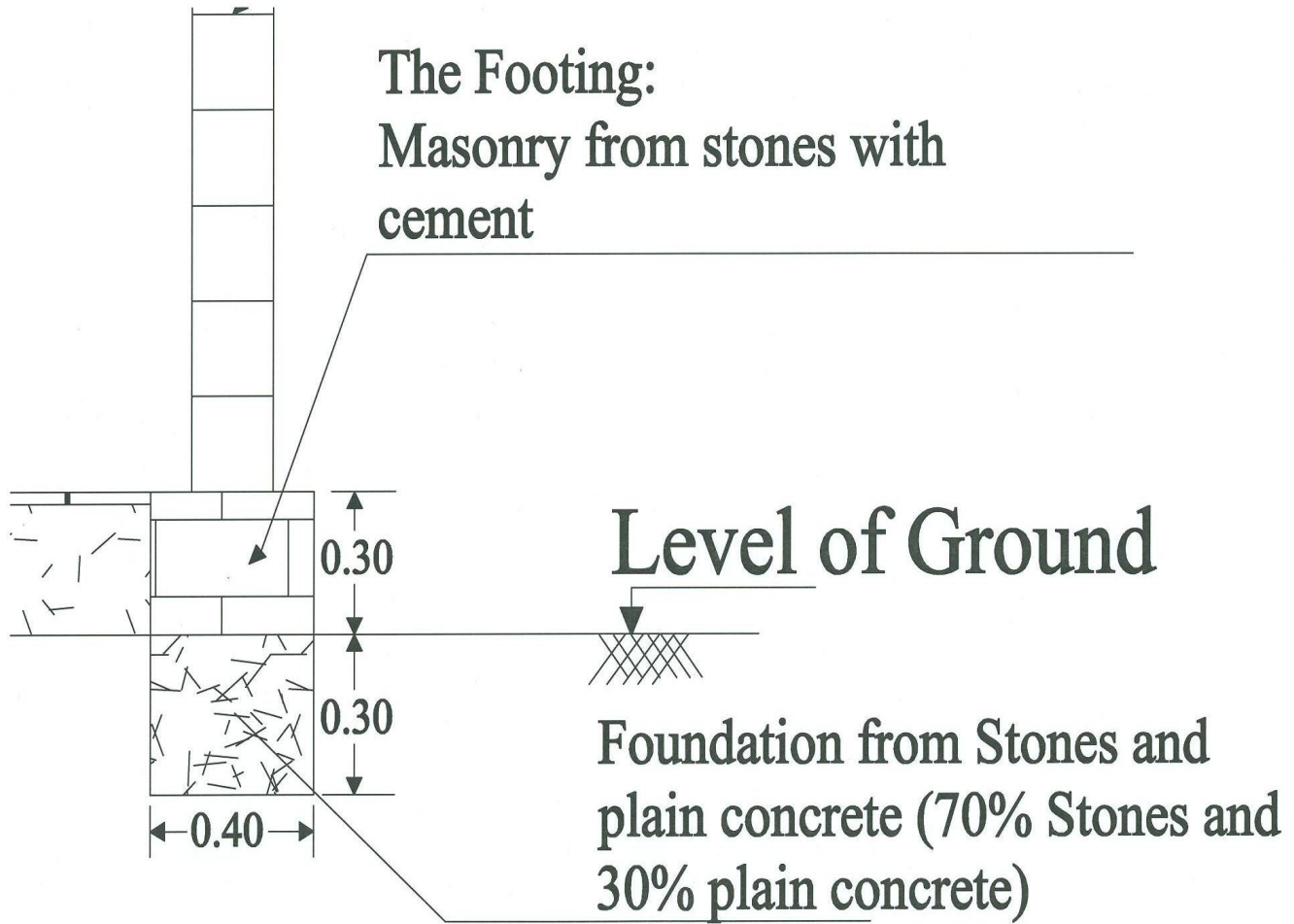
Top View

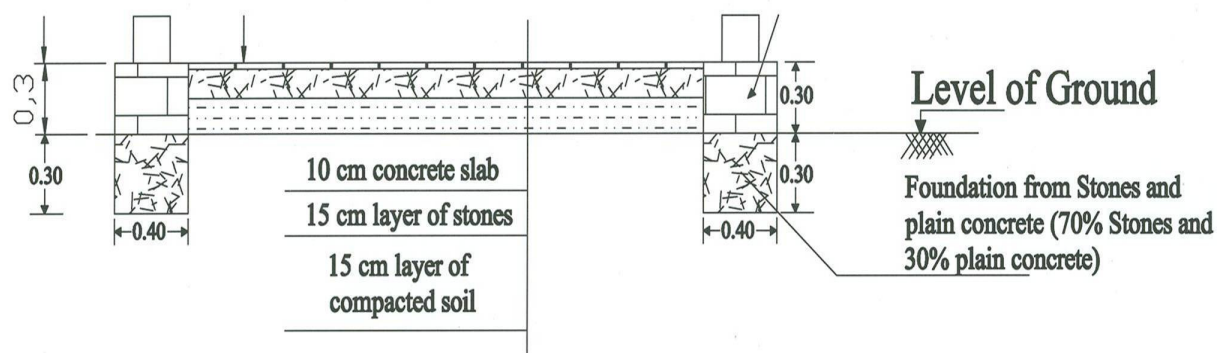


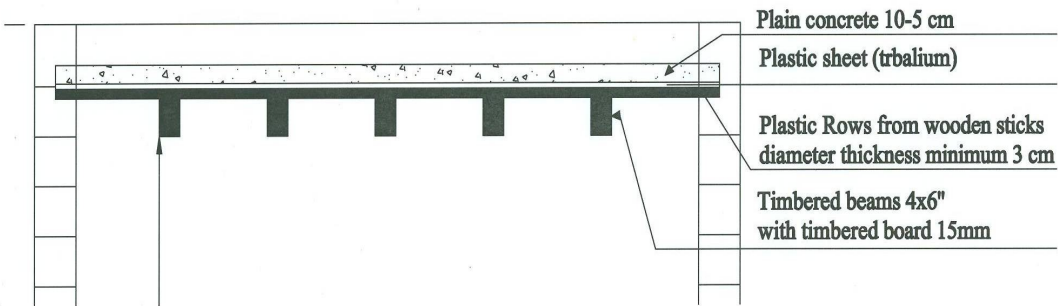




Section B-B







## **Annex 9: TWG**

### **Technical Working Group:**

- United Nations High Commissioner for Refugees (UNHCR)
- Danish Refugee Council (DRC)
- *Charitable Social Society Welfare (CSSW)*
- *Relief International (RI)*
- Sa'ada Reconstruction Funds (SRF)
- Executive Unit (ExU)
- Humanitarian Forum Yemen (HFY)
- WASH Cluster

