

# TRANSITIONAL SHELTER DESIGNS

The following are transitional shelter designs as submitted by agencies. The designs comply with standards set in the parameters as agreed by cluster members.

**CHF International**  
**Church World Service (CWS)**  
**Handicap International**  
**Islamic Relief**  
**Muslim Aid**  
**Palang Merah Indonesia (PMI)**  
**IOM (2007)**

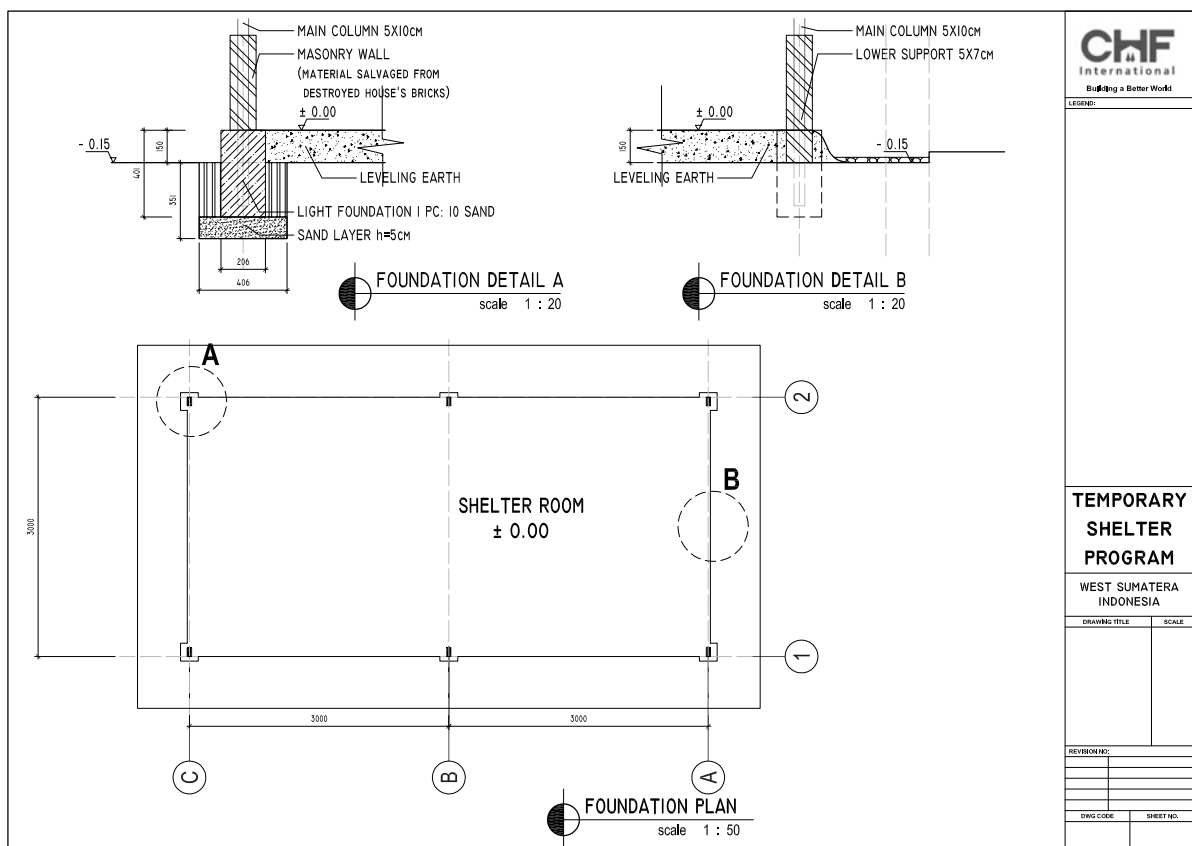
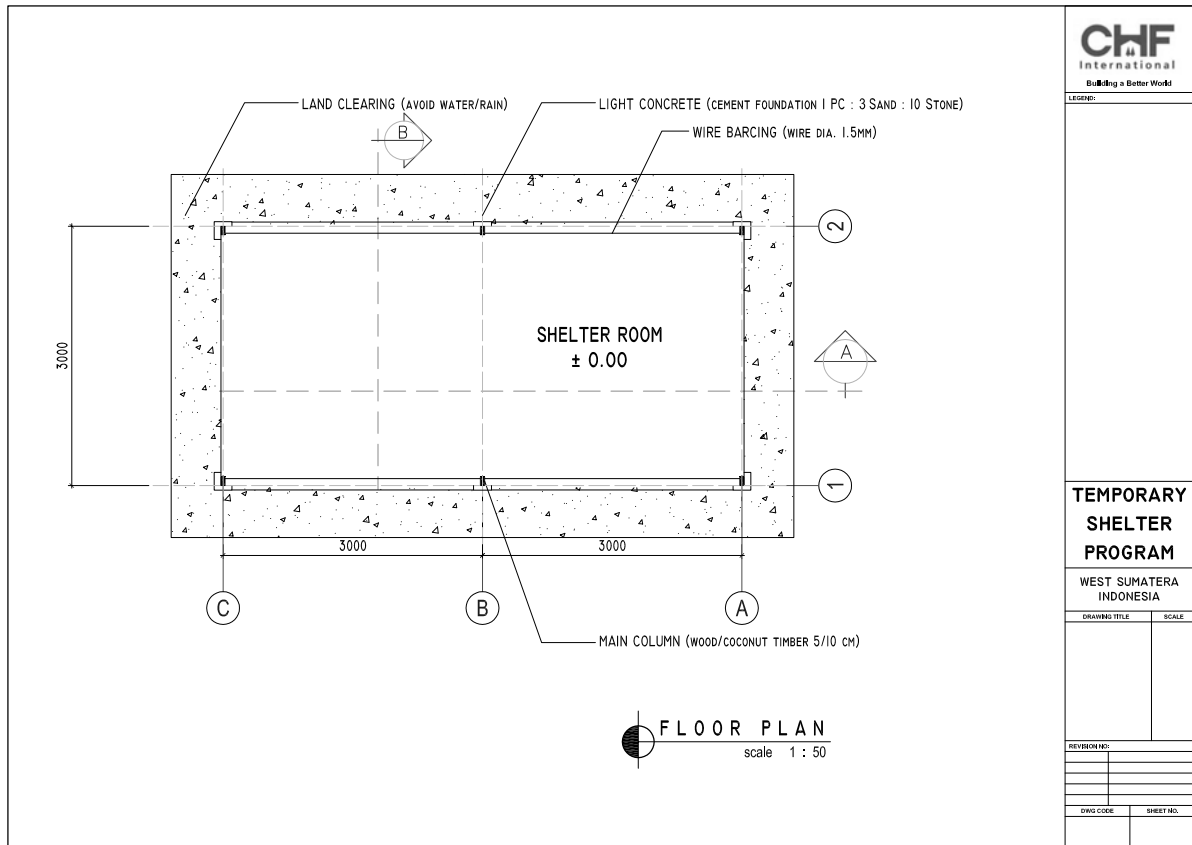
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# CHF International

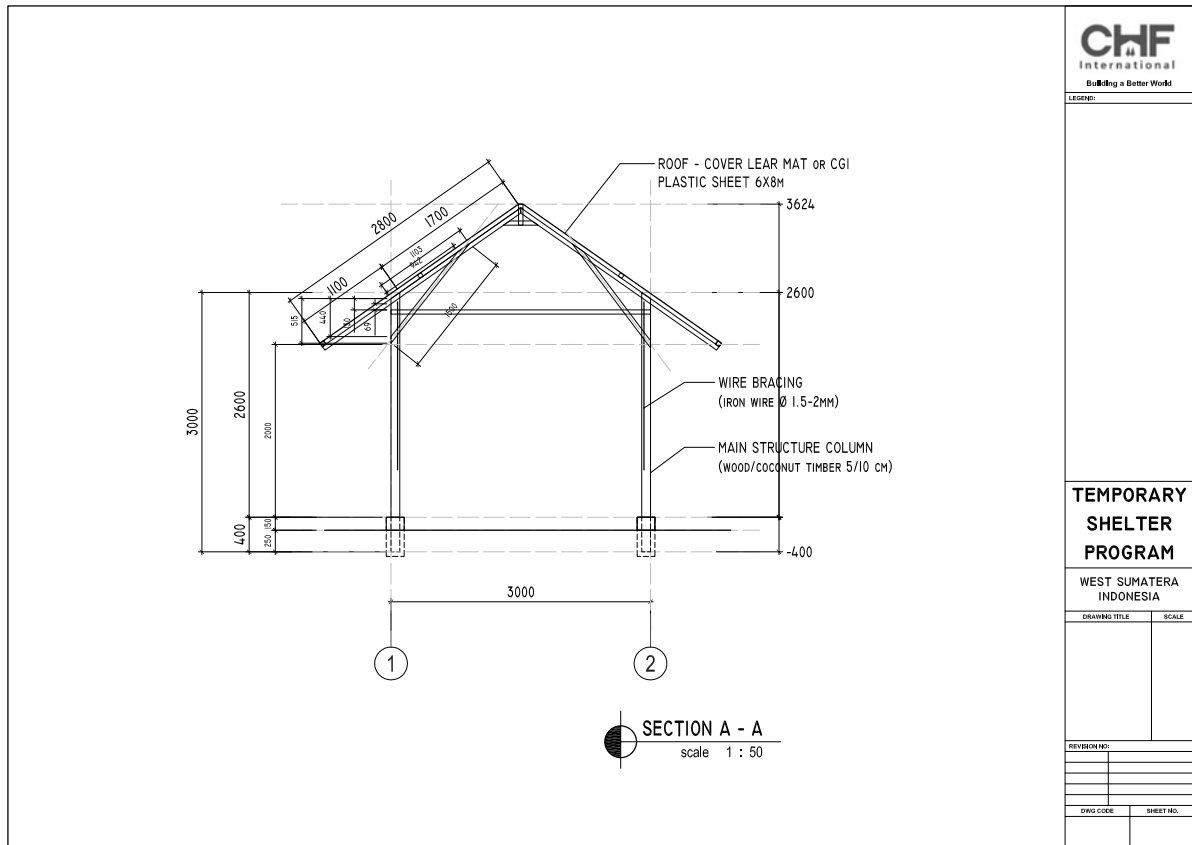
Provision of material package: concrete footing, wooden frame and plastic sheet, hiring and training of local carpenters for prefabrication of frame. Technical support for use of salvaged material to complete shelter. Safe-building awareness campaign.



For more information regarding CHF Int'l design and implementation, please contact:  
Eddie Argenal t: 081384134086 e: [EArgenal@chfinternational.org](mailto:EArgenal@chfinternational.org)



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**CHF**  
International  
Building a Better World

LEGEND:

**TEMPORARY SHELTER PROGRAM**

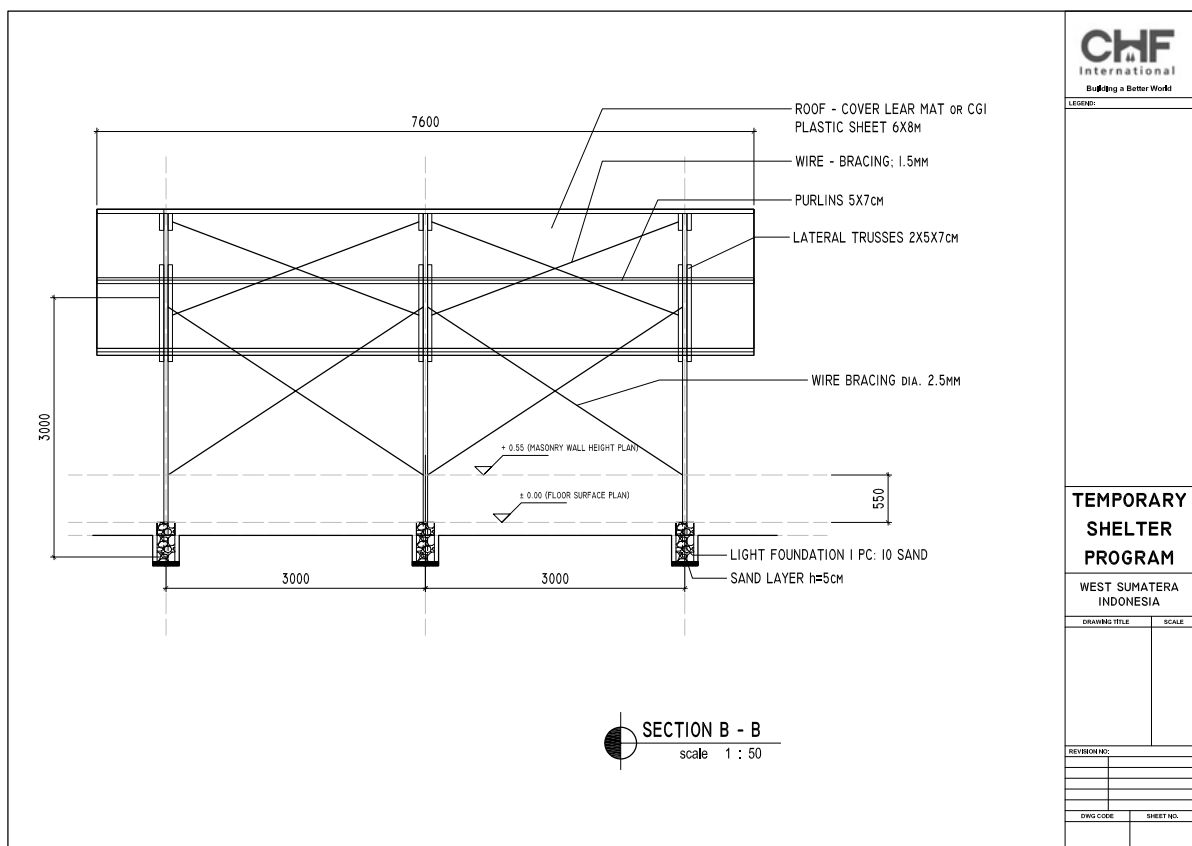
WEST SUMATERA INDONESIA

DRAWING TITLE	SCALE

REVISIONS:

NO.	DESCRIPTION

DWG CODE	SHEET NO.



**CHF**  
International  
Building a Better World

LEGEND:

**TEMPORARY SHELTER PROGRAM**

WEST SUMATERA INDONESIA

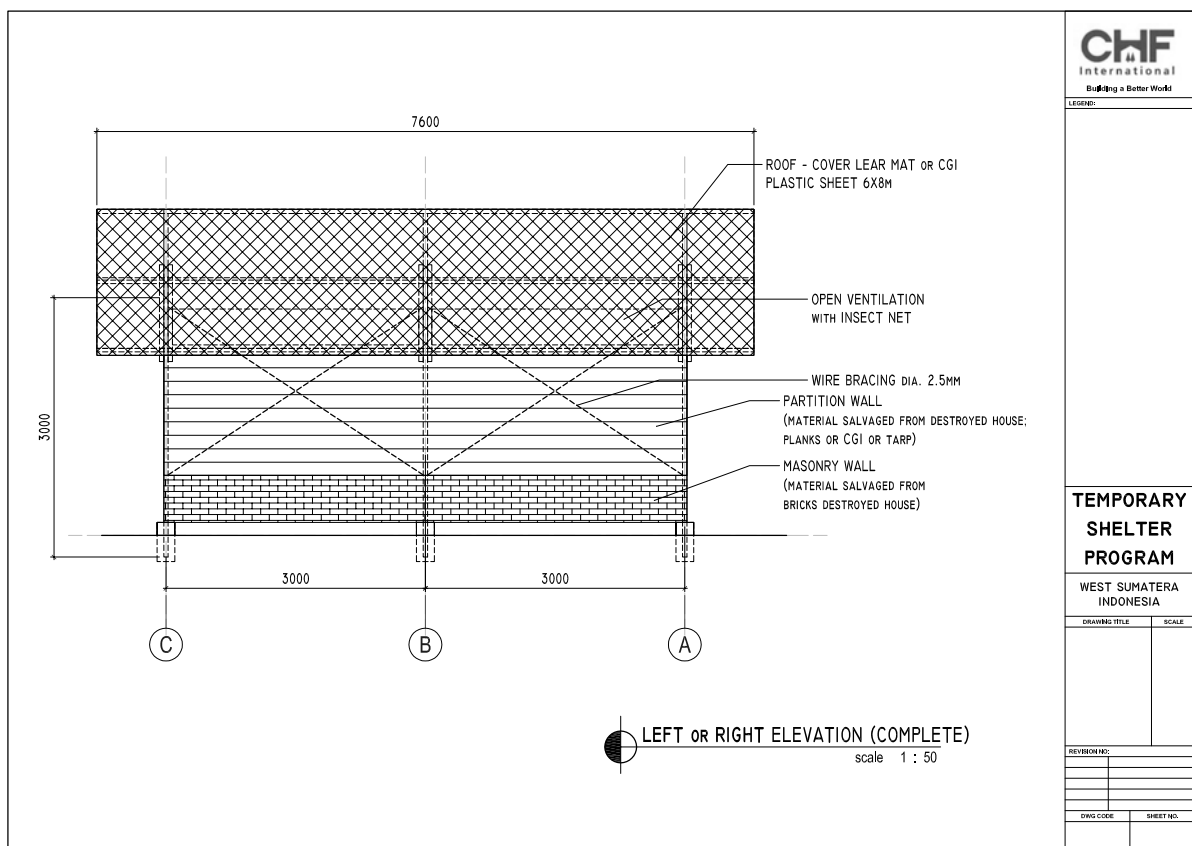
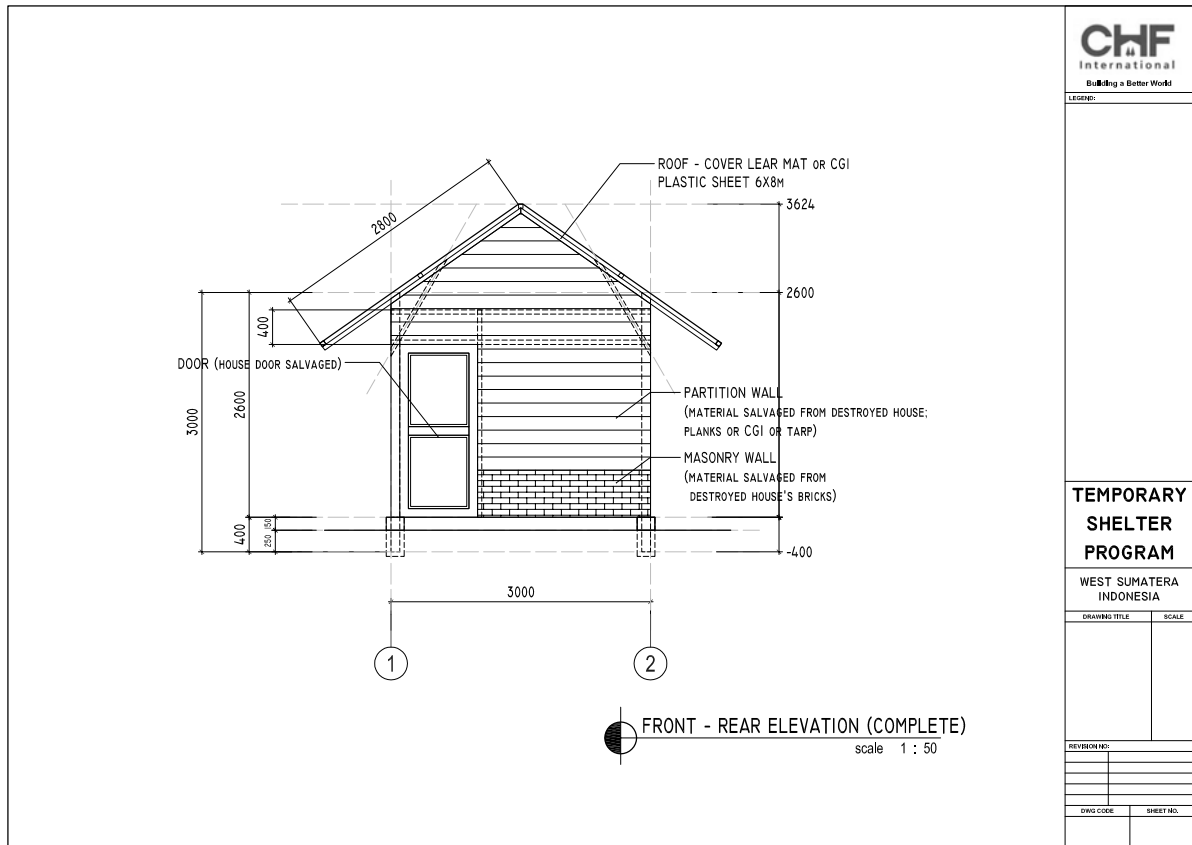
DRAWING TITLE	SCALE

REVISIONS:

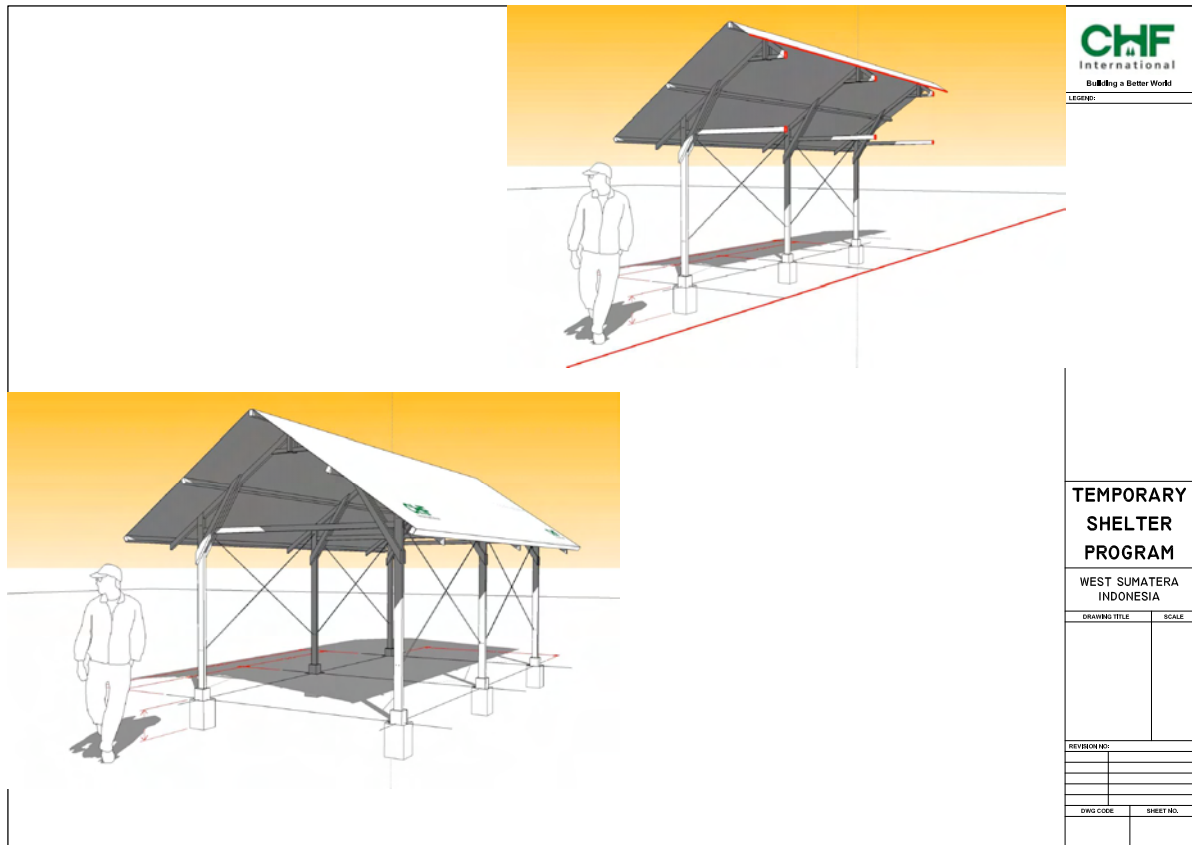
NO.	DESCRIPTION

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<b>CHF</b> International Building a Better World	
LEGEND:	
<b>TEMPORARY SHELTER PROGRAM</b>	
WEST SUMATERA INDONESIA	
DRAWING TITLE	SCALE
REVISION NO:	
DWG CODE	SHEET NO.



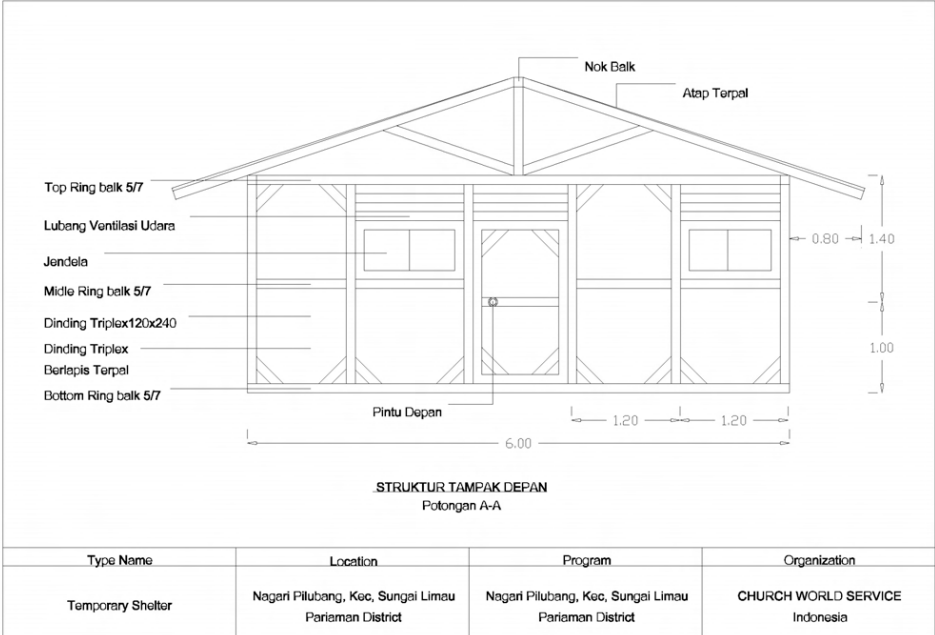
**BILL of QUANTITY**  
**COCONUT MATERIAL NEEDS for 1 (ONE) UNIT SHELTER**

No.	ELEMENTS	LENGTH	NEEDS	VOLUME			MAT. PRICE/UNIT (A)		TOTAL		NOTES
		(m')	(pcs)	m'	kg	pcs	IDR	\$	IDR	\$	
<b>1</b>	<b>MAIN STRUCTURE</b>										
A	COLUMN (5/10)	3.00	6	18			10,000.00	<b>1.05</b>	180,000.00	<b>18.95</b>	
B	TRUSSES - MAIN (5/7)	3.00	6	18			5,000.00	<b>0.53</b>	90,000.00	<b>9.47</b>	
		1.50	12	18			5,000.00	<b>0.53</b>	90,000.00	<b>9.47</b>	
		3.00	4	12			5,000.00	<b>0.53</b>	60,000.00	<b>6.32</b>	
C	PURLINS (5/7)	8.00	5	40			5,000.00	<b>0.53</b>	200,000.00	<b>21.05</b>	
<b>3</b>	Plastic Sheet (6x8)					1	240,000.00	<b>25.26</b>	240,000.00	<b>25.26</b>	
	Roofing Nails (2,4mmx45mm - 13BWGx1 3/4")				0.50		25,000.00	<b>2.63</b>	12,500.00	<b>1.32</b>	
	Nail 2.5"				1.50		15,000.00	<b>1.58</b>	22,500.00	<b>2.37</b>	
	Nail 3"				1.50		15,000.00	<b>1.58</b>	22,500.00	<b>2.37</b>	
	Cement 50 kg (PCC)				50.00		980.00	<b>0.10</b>	49,000.00	<b>5.16</b>	
	Wire Fastener diameter 1.5 mm				3.00		20,000.00	<b>2.11</b>	60,000.00	<b>6.32</b>	
<b>TOTAL 1+2+3+4+5</b>									<b>1,026,500.00</b>	<b>108.05</b>	<b>IDR \$</b>

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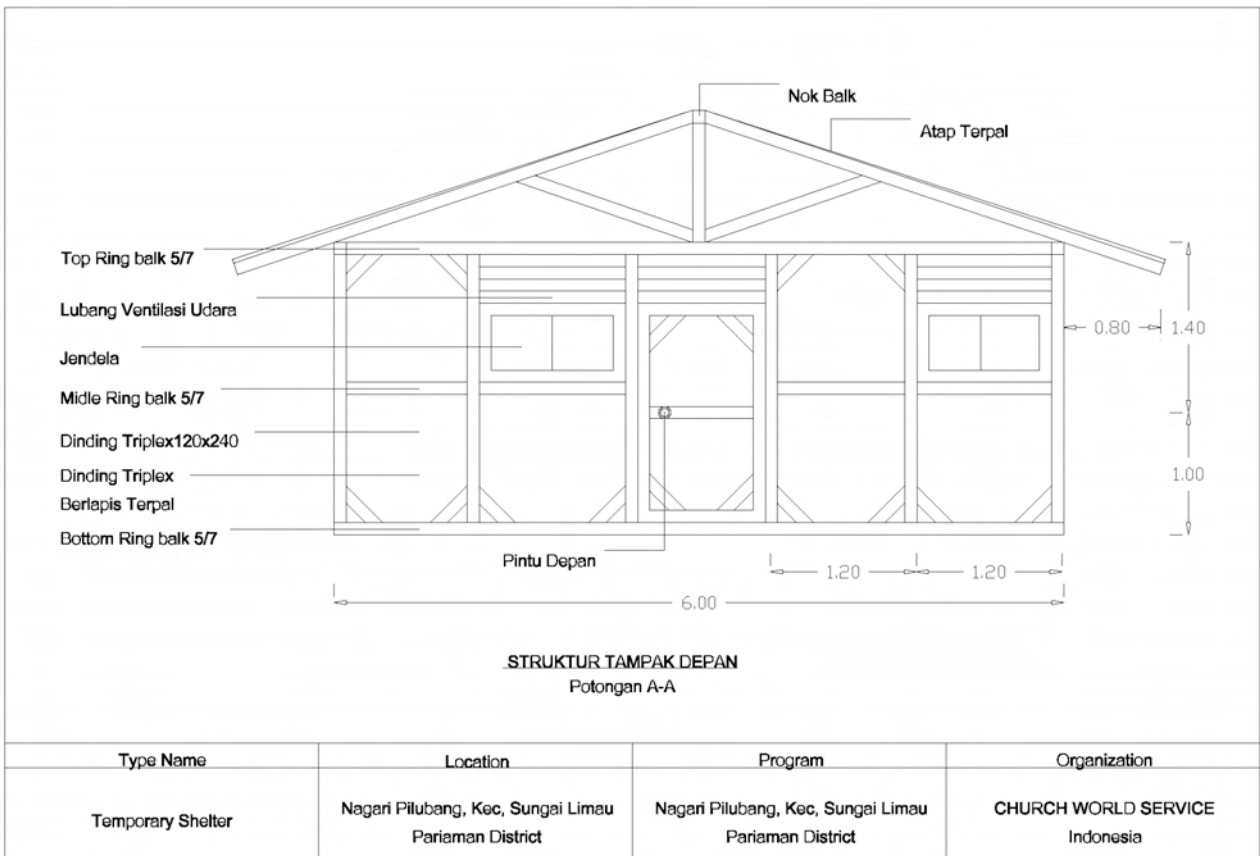
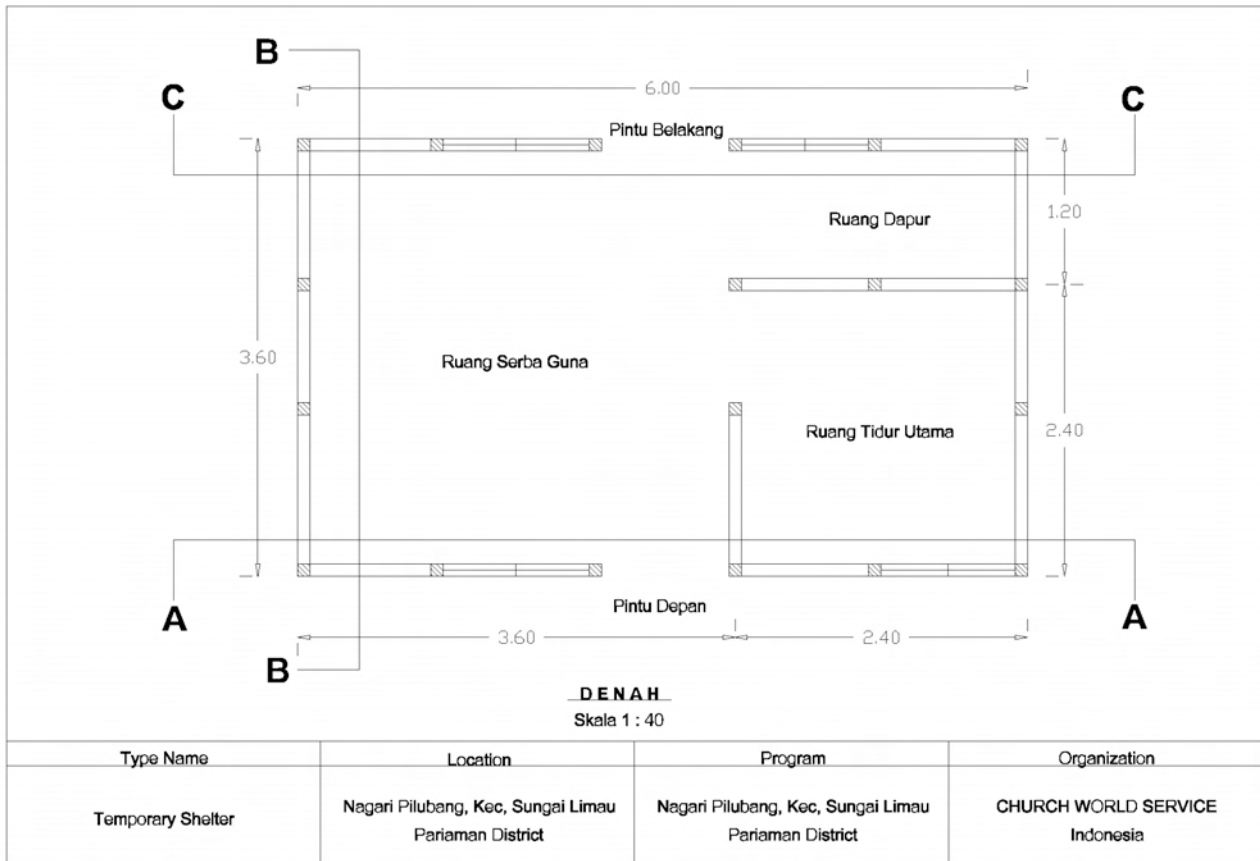
# Church World Service (CWS)

Cash Grants for building material through household assessment. Technical Training

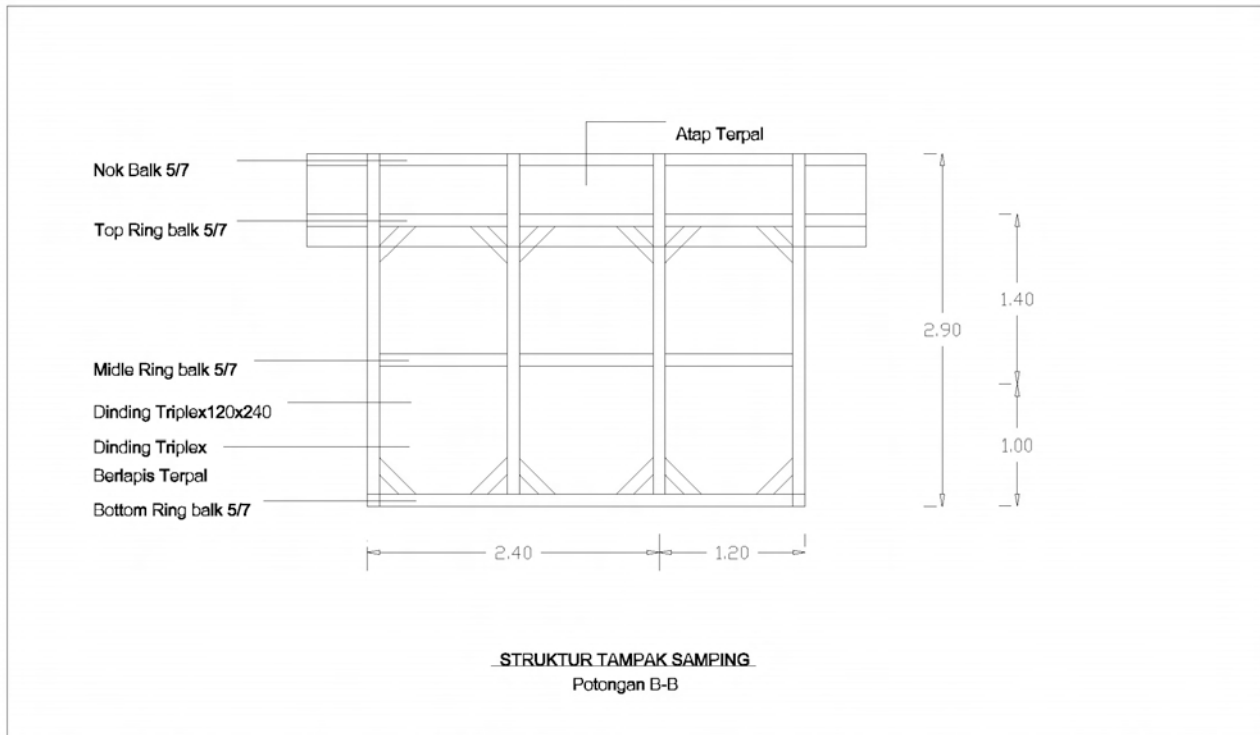


For more information regarding CWS design and implementation, please contact:  
Lukman H. Moeslich t: 0751 93997/ 021 7883 8437 e: [lhmoeslich@cwsindonesia.or.id](mailto:lhmoeslich@cwsindonesia.or.id)

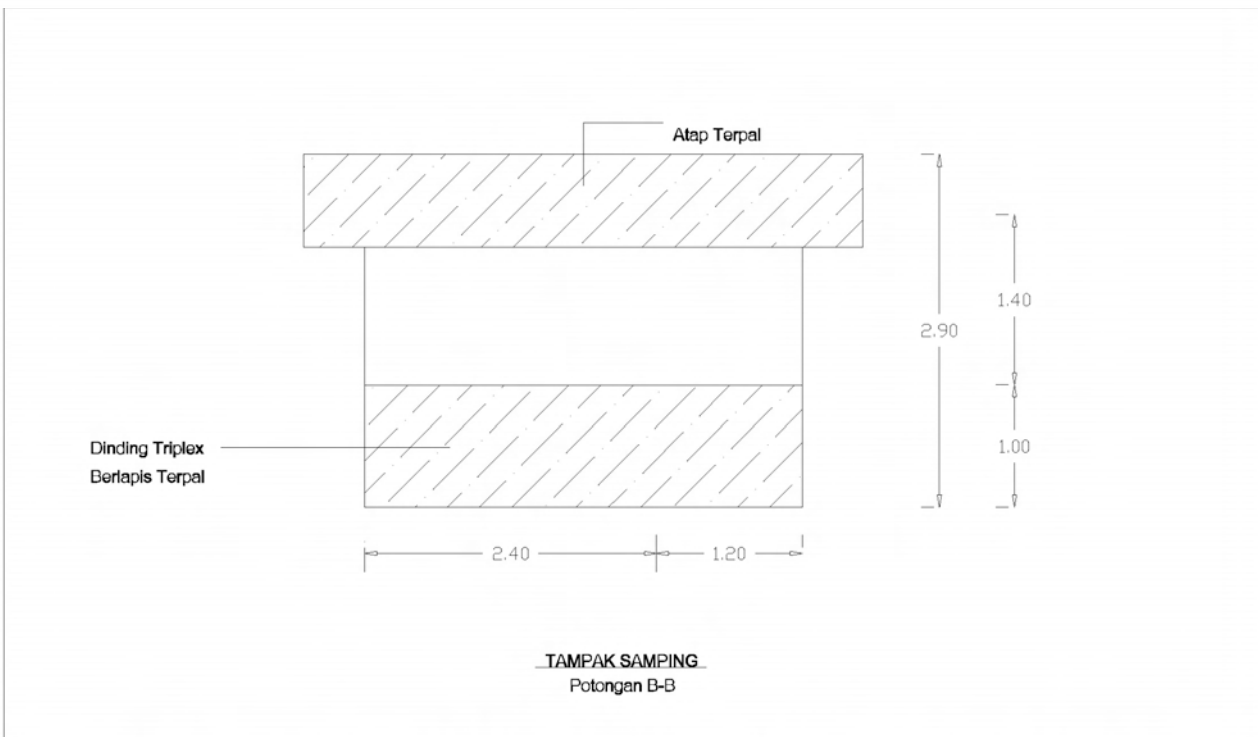
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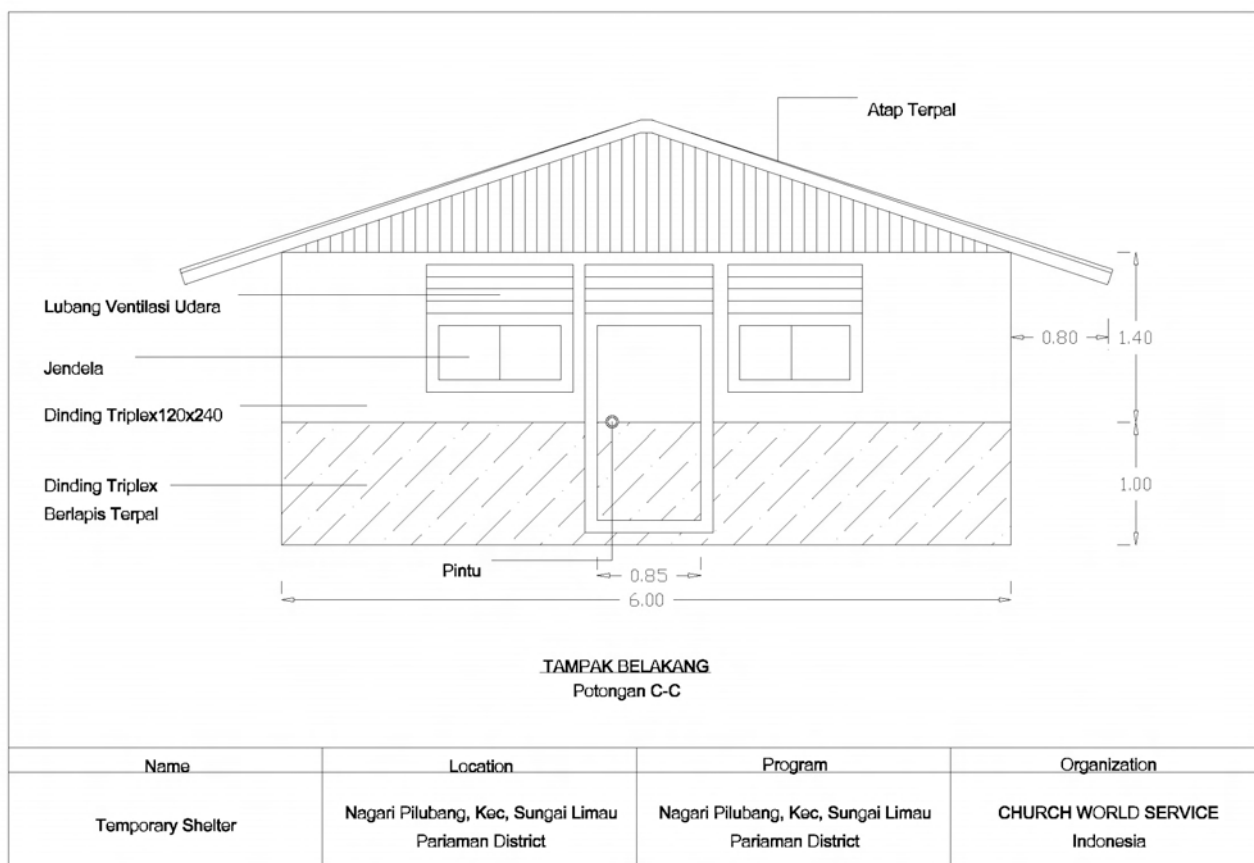


Type Name	Location	Program	Organization
Temporary Shelter	Nagari Pilubang, Kec, Sungai Limau Pariaman District	Nagari Pilubang, Kec, Sungai Limau Pariaman District	CHURCH WORLD SERVICE Indonesia



Name	Location	Program	Organization
Temporary Shelter	Nagari Pilubang, Kec, Sungai Limau Pariaman District	Nagari Pilubang, Kec, Sungai Limau Pariaman District	CHURCH WORLD SERVICE Indonesia

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**EMERGENCY RESPONSE WEST SUMATRA 2009  
RENCANA ANGGARAN BIAYA  
TEMPORARY SHELTER TYPE 4X6**

NO	ITEM	SATUAN	HARGA SAT.	VOLUME	HARGA	UNIT	TOTAL VOL.	HARGA TOTAL
<b>I Bahan Bangunan</b>								
1	Kayu 5/7 p=4m	btg	Rp 27,000	44	Rp 1,188,000	2,000	88,000	Rp 2,376,000,000
2	Triplex 3mm 122cmX244cm	lbr	Rp 39,000	20	Rp 780,000	2,000	40,000	Rp 1,560,000,000
3	Terpal dinding	m	Rp 5,000	24	Rp 120,000	2,000	48,000	Rp 240,000,000
4	Terpal Atap 6mX8m	lbr	Rp 100,000	1	Rp 100,000	2,000	2,000	Rp 200,000,000
5	Paku 10cm	kg	Rp 15,000	2	Rp 30,000	2,000	4,000	Rp 60,000,000
6	Paku Triplex	kotak	Rp 15,000	2	Rp 30,000	2,000	4,000	Rp 60,000,000
7	Engsel pintu	bh	Rp 5,000	6	Rp 30,000	2,000	12,000	Rp 60,000,000
8	Engsel jendela	bh	Rp 5,000	8	Rp 40,000	2,000	16,000	Rp 80,000,000
9	Grendel pintu bagian dalam	bh	Rp 5,000	3	Rp 15,000	2,000	6,000	Rp 30,000,000
10	Grendel pintu gembok	bh	Rp 5,000	3	Rp 15,000	2,000	6,000	Rp 30,000,000
11	Grendel Jendela	bh	Rp 5,000	4	Rp 20,000	2,000	8,000	Rp 40,000,000
<b>II Alat</b>								
1	Palu	bh	Rp 15,000	1	Rp 15,000	2,000	2,000	Rp 30,000,000
2	Gergaji	bh	Rp 30,000	1	Rp 30,000	2,000	2,000	Rp 60,000,000
3	Meteran/tape measure	bh	Rp 7,000	1	Rp 7,000	2,000	2,000	Rp 14,000,000
<b>III Upah</b>								
1	Pekerja	hari	Rp 150,000	4	Rp 600,000	2,000	8,000	Rp 1,200,000,000
<b>TOTAL</b>					<b>Rp 3,020,000</b>			<b>Rp 6,040,000,000</b>

Approved by,

Dino Satria  
Program Manager

Reviewed by,

Feiby M.  
Finance

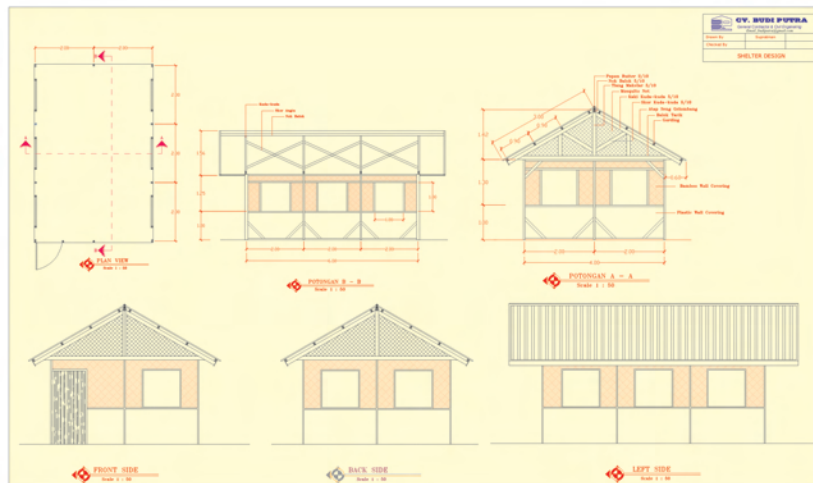
Prepared by,

Rachmat Choirul Syah  
Program Officer

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# Handicap International

Targeting people injured during earthquake, suffering from chronic disease, with disability and/or elderly. Specification: cement floor, CGI roof, ridge vent, plastic sheeting, bamboo/coconut wood, bamboo mat, 4 windows front and back, 90cm wide door; prefabricated.



For more information regarding Handicap Int'l's design and implementation, please contact:  
Philippe Pascal t: 08 137 492 542 e: hial.pm.hr.padang@gmail.com

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25.10.2009 HANDICAP International - Disability-friendly T-Shelter

### Disability-friendly Transitional Shelter Parameters

Parameter	Details	Remarks
Lifespan	Materials and shelter construction allow for 6-24 months use	According to the announcement of the Government for the following reconstruction phase
Internal area	6 meters length by 4 meters wide <sup>1</sup>	Average size for 5 persons in the family
Head height	2,45 m	Allows to avoid the construction of a false ceiling
Roof Design & pitch	Roof to be designed with adequate strength for proposed roofing material (zinc sheet), the pitch is to be at minimum 25%	Zinc sheets are commonly used and well accepted by communities
Ventilation and insulation	5 windows of 1 m <sup>2</sup> each Open gables on each side	The shelter will be oriented in order to follow the dominant winds of the area.
Walls	Plastic sheeting will be used for the base of wall (1 m from the floor) his materials  Bamboo braided will cover the highest part of the wall.	It will protect the interior against humidity, water and the intrusion of non domestic animal such as rats or snakes.  This will ensure a good isolation and sufficient privacy.
Weatherproofing	Design to protect from rain	

<sup>1</sup> SPHERE standards, The Sphere Project: Humanitarian Charter and Minimum Standards in Disaster Response, 2004

1

25.10.2009 HANDICAP International - Disability-friendly T-Shelter

Parameter	Details	Remarks
Privacy	At least one internal division for privacy	According to the family size and specific health conditions of the beneficiaries.
Vector control	Plastic sheeting on 1 meter high for each wall. Mosquito net on the open gables.	
Culturally and climatically appropriate	Materials and construction techniques to be used are familiar to the community.  A porch (with a porch roof) of dimensions 4 m x 1,5 m will be added.	Discussions and public awareness will ensure the best acceptance of used techniques.  To allow traditional gathering of the persons on the porch.
Accessibility and Disability-friendliness	Entrance door of 90 cm wide <sup>2</sup> Door opening to the outside, to ease the evacuation of the person Non slippery concrete floor Ramp is necessary Opening of the windows not higher than 100 cm	

<sup>2</sup> Compliant with the ADA and ABA Standards according to USAID Policy on Standards for Accessibility for the Disabled in USAID-Financed Construction

Note: The purpose of this document is to highlight the most basic of features and indicative costs of the example transitional shelter<sub>2</sub> designs provided. Interested parties are requested to contact the agency directly regarding detailed drawings and details.

# Shelter Cluster Padang

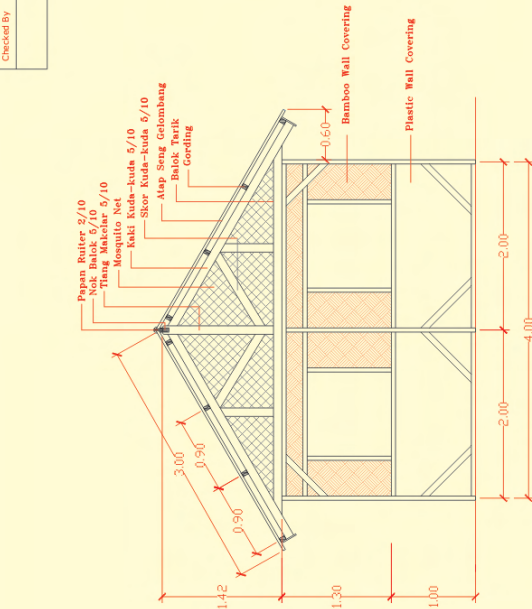


**CV. BUDI PUTRA**  
 Civil Engineering and Architecture  
 Jl. Hutan Kelapa No. 10  
 Padang, Sumatera Barat 25131  
 Telp. 0751-7333333  
 Email: budi\_putra@budi\_putra.com

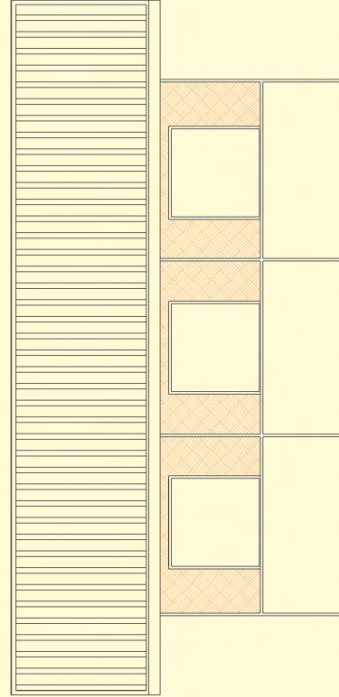
Drawn By  
 Supratman

Checked By

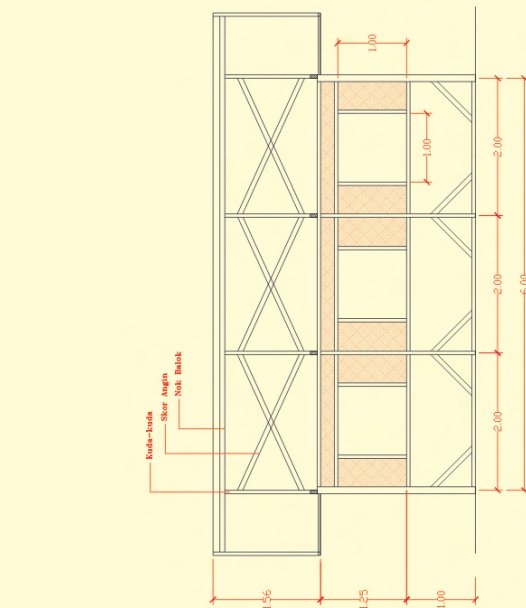
**SHELTER DESIGN**



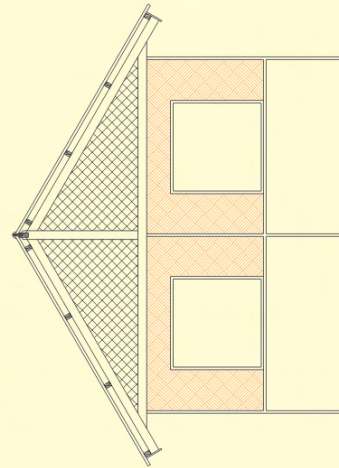
**POTONGAN A - A**  
 Scale 1 : 50



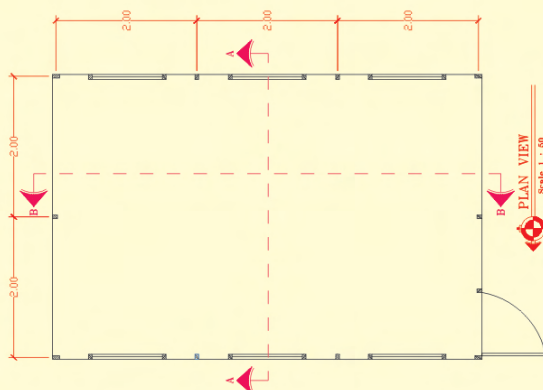
**LEFT SIDE**  
 Scale 1 : 50



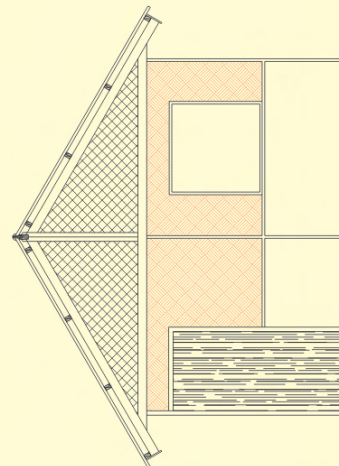
**POTONGAN B - B**  
 Scale 1 : 50



**BACK SIDE**  
 Scale 1 : 50



**PLAN VIEW**  
 Scale 1 : 50



**FRONT SIDE**  
 Scale 1 : 50

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Transitional accessible shelter  
Cost estimate

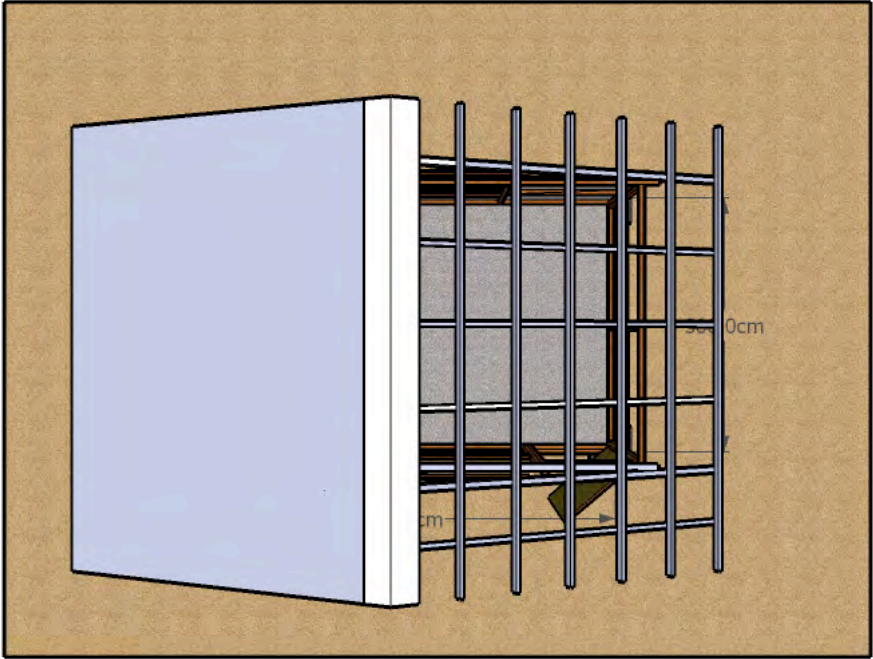
Designation	Quantity	Unit	Unit price IDR	Total price IDR	Procurement
Coconut Wood	1	m3	1500000	1200000	Local purchase
Plastic sheeting	20	ml	12500	250000	Padang/Medan
Triplex 4mm for door and windows	5	piece	55000	275000	Padang
Bamboo wall	30	m2	12500	375000	Medan - local procurement may not be sufficient due to the lack of professionals
Zinc sheet	40	m2	31000	1240000	Padang
Sand	2	m3	100000	200000	Local purchase
Cement	5	bag	38400	192000	Padang or Pariaman
Hinge for doors	3	piece	20000	60000	Padang or Pariaman
Hinge for the windows	16	piece	20000	320000	Padang or Pariaman
Mosquito net	4	m2	15000	60000	Padang or Pariaman
Labor for prefab module construction	2	day.man	75000	150000	Kota Pariaman
				<b>4 322 000</b>	
				<b>\$465</b>	

# Islamic Relief

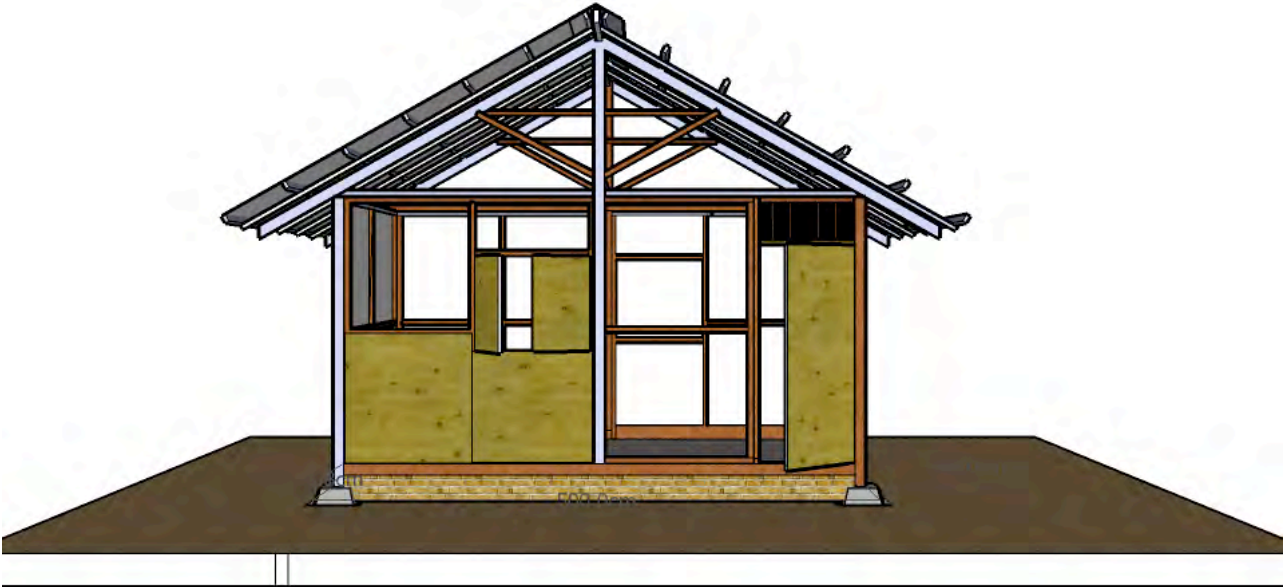
Community participation, provision of material packages, prefabricated components, coupled with skilled-labour training.



For more information regarding Islamic Relief's design and implementation, please contact:  
Bimo Khairul e: [bimo@islamic-relief.or.id](mailto:bimo@islamic-relief.or.id)

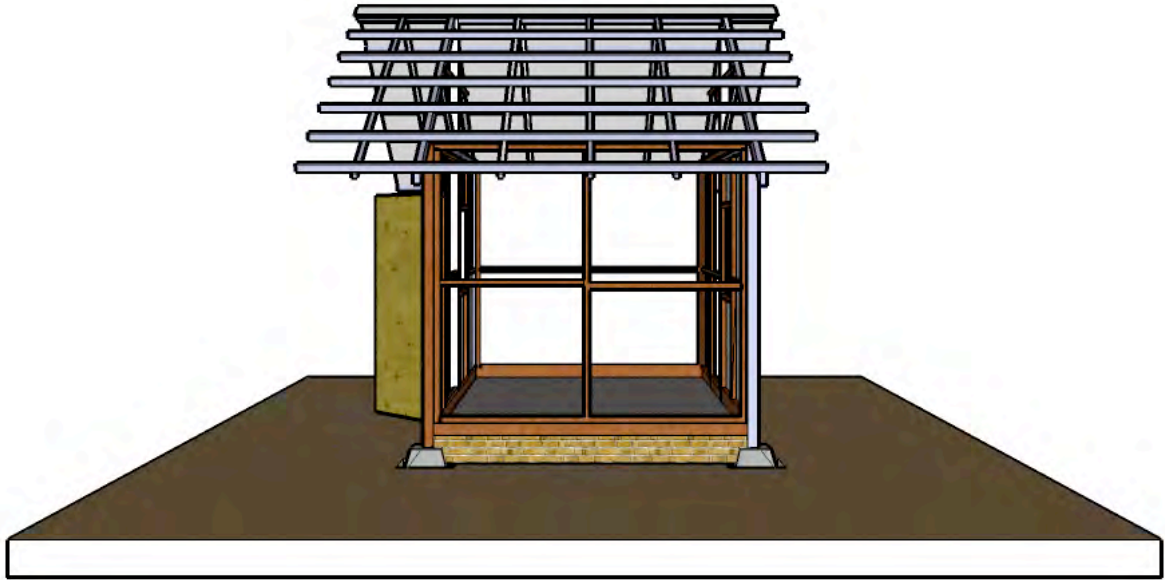


Overview plan

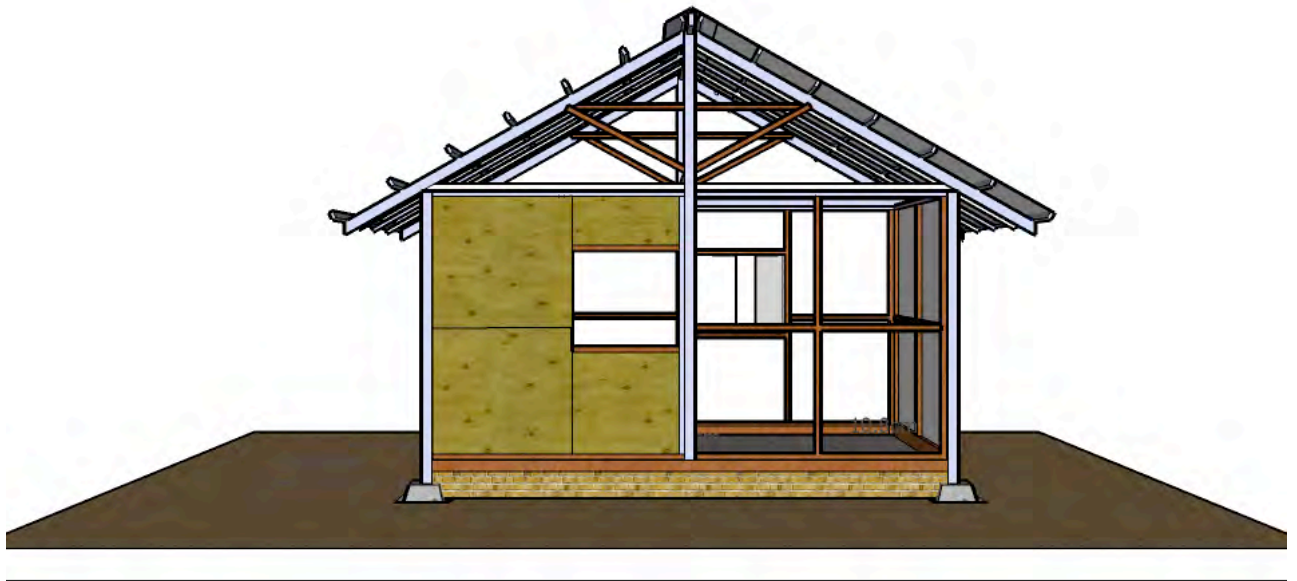


Front elevation

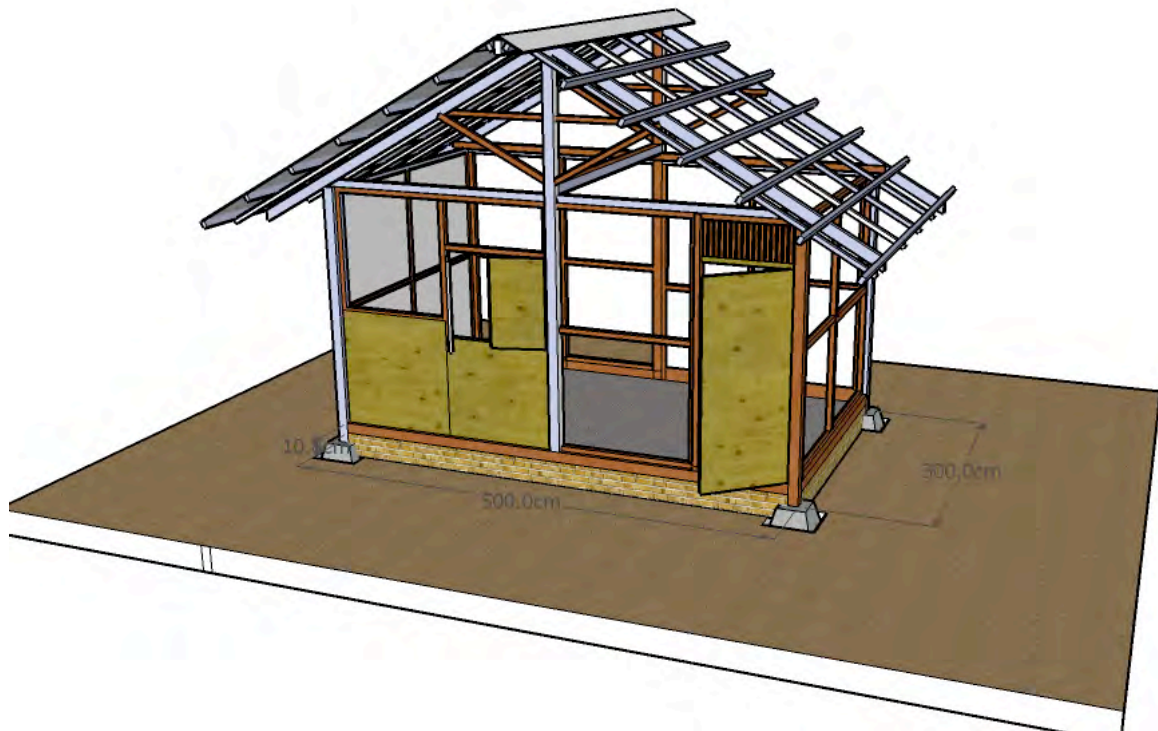
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Side elevation



Back elevation

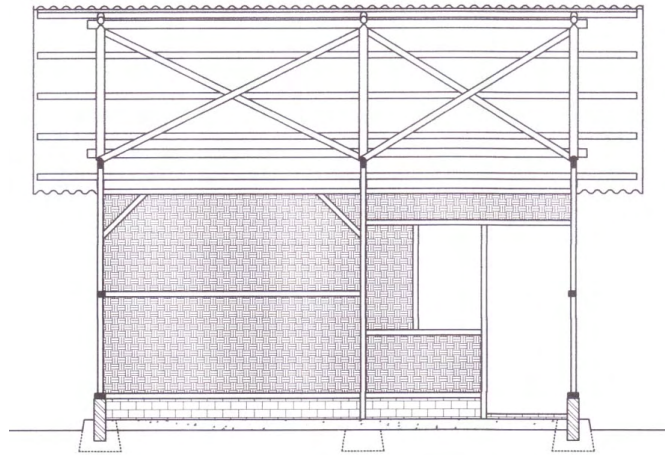


**Estimate Cost  
TAMPORARY Shelter Material (type 3.5m X 5m)**

no	Material Items	volume	unit	price unit (Rp)	total price (Rp)
1	Cement @ 50 kg	4	zak	52,000.00	208,000.00
2	Sand	1.4	m3	150,000.00	210,000.00
3	Brick	210	pcs	600.00	126,000.00
4	Multiplek 3mm	19	sheet	43,500.00	826,500.00
5	Nail Wood	4	kg	14,000.00	56,000.00
6	Nail Roof	0.5	kg	20,000.00	10,000.00
7	Coconut Timber				
	3cm x 5 cm	149 m	0.2235 m3	1,100,000.00	245,850.00
	4cm x 6 cm	41 m	0.1512 m3	1,100,000.00	166,320.00
	5cm x 10 cm	70,4 m	0.355 m3	1,100,000.00	390,500.00
8	Zinc	28	sheet	30,000.00	840,000.00
9	Door Hinge	2	pcs	1,500.00	3,000.00
10	Windows Hinge	4	pcs	1,000.00	4,000.00
11	Padlock	1	pcs	5,000.00	5,000.00
12	Door Latch	1	pcs	3,000.00	3,000.00
				Sub. Amount	3,094,170.00
	Loosing Material			5%	154,708.50
				Total Cost	3,248,878.50

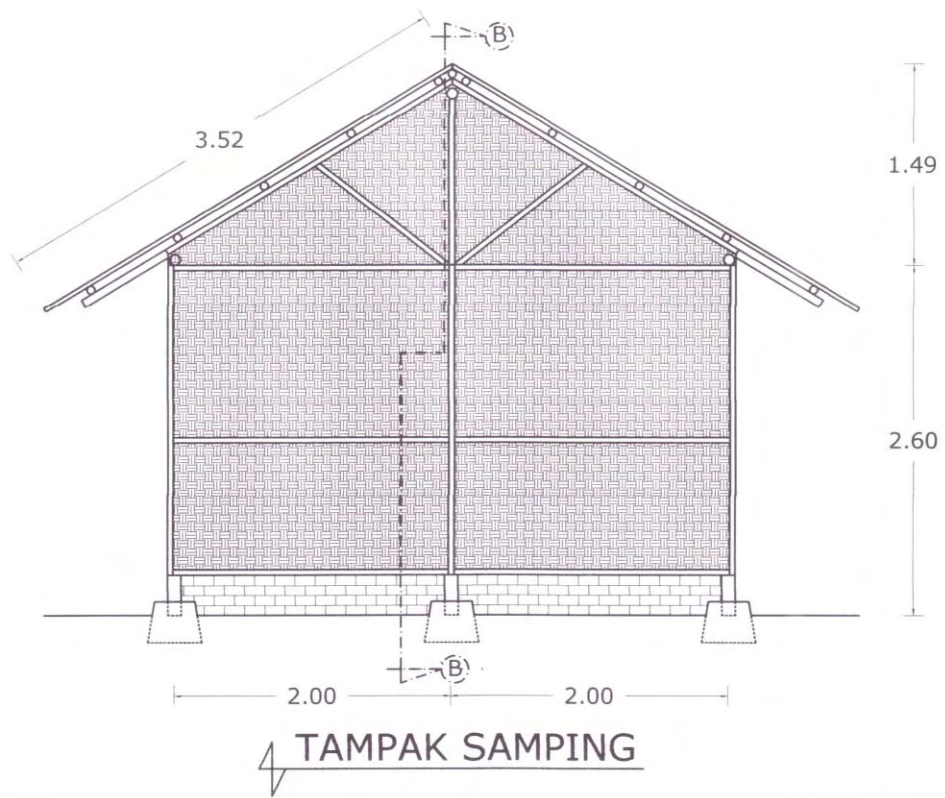
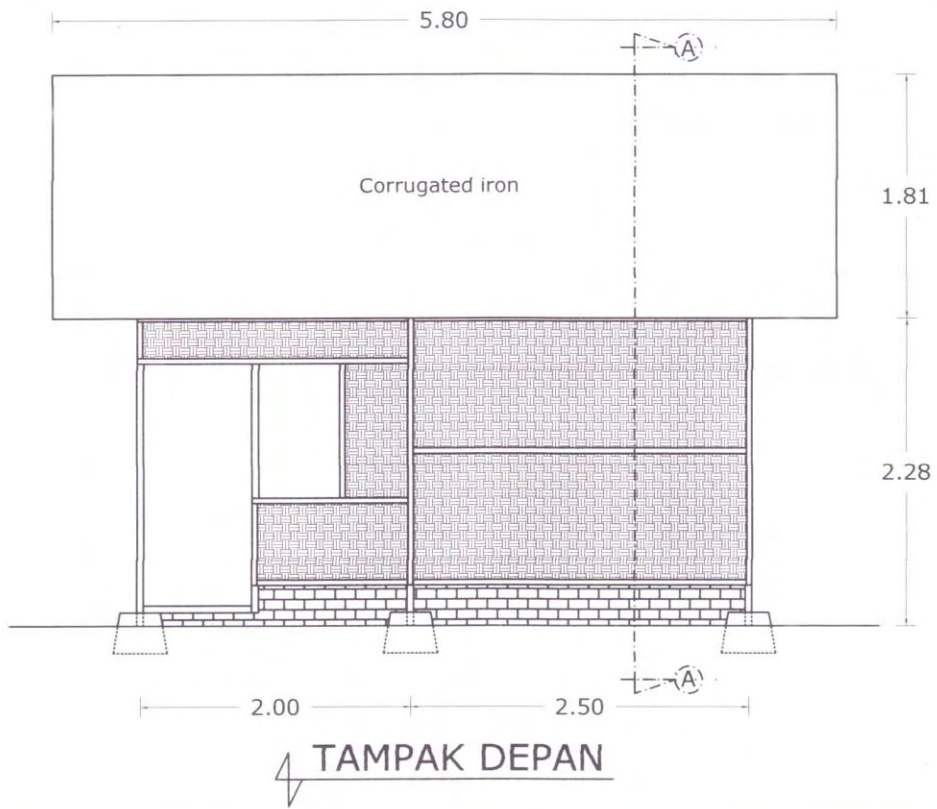
# Muslim Aid

Involving communities in construction, training and prefabrication: Coconut timber, bamboo, CGI Sheet and bamboo mats.



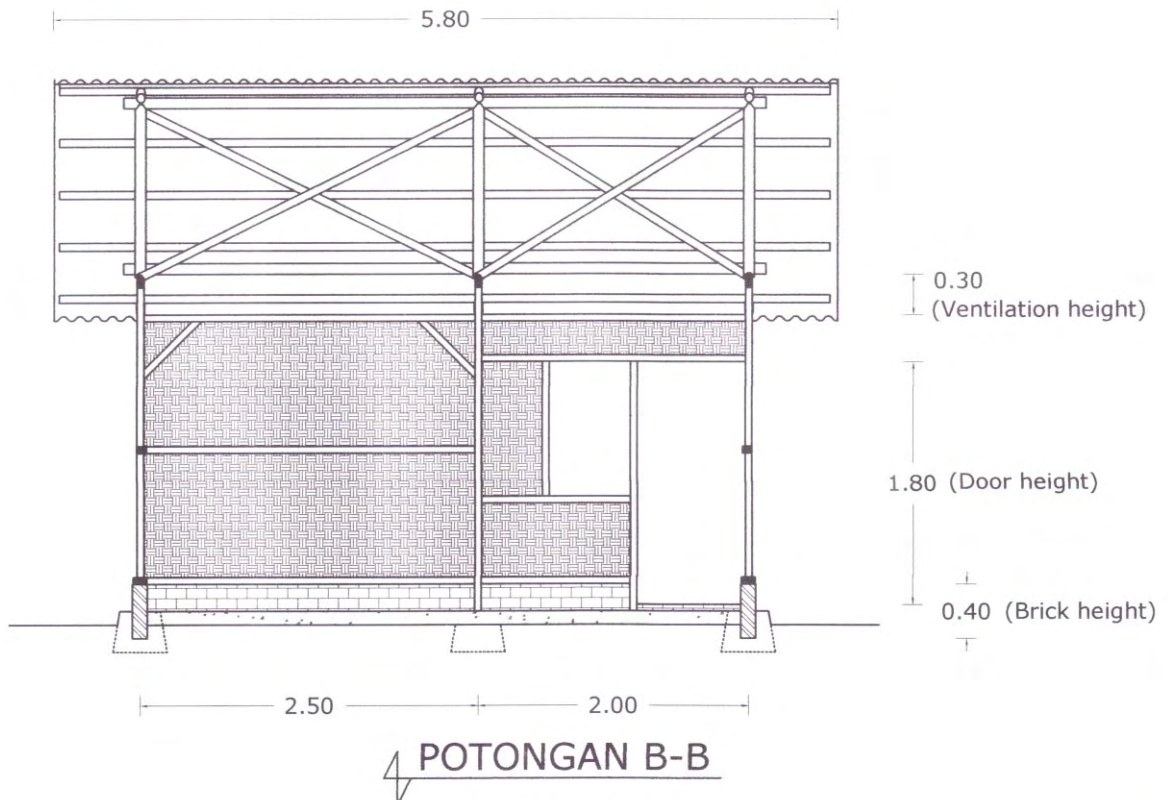
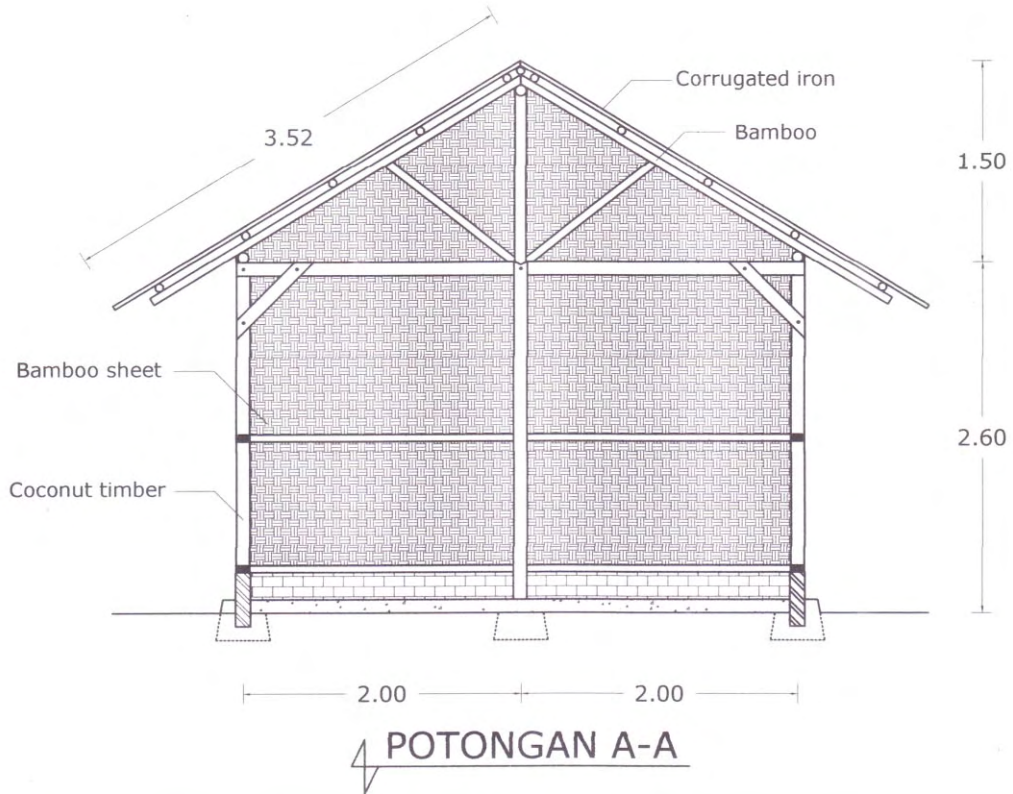
For more information regarding Muslim Aid's design and implementation, please contact:  
Muhammad Ihsaan t: 081 226 92 247 e: [muhammad.ihsaan@gmail.com](mailto:muhammad.ihsaan@gmail.com)

# TRANSITIONAL SHELTER MUSLID AID 2009 (18 m<sup>2</sup>)



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# TRANSITIONAL SHELTER MUSLID AID 2009 (18 m<sup>2</sup>)



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Estimate Cost  
TEMPORARY Shelter Material (type 3.5m X 5m)

no	Material Items	volume	unit	price unit (Rp)	total price (Rp)	Volume for 460 unit
1	Cement @ 50 kg	3	zak	52,000.00	156,000.00	1,380
2	Sand/Pasir	1.4	m3	150,000.00	210,000.00	644
3	Brick/Bata	180	pcs	600.00	108,000.00	82,800
4	Multiplek 3mm	17	sheet	43,500.00	739,500.00	7,820
5	Nail Wood/Paku Kayu				0.00	-
6	Nail Triplek (Special With Big Head)/Paku Triplek Dengan Kepala Besar	1.5	kg	14,000.00	21,000.00	690
	2.5 inch	1.5	kg	14,000.00	21,000.00	690
	3 inch	1	kg	14,000.00	14,000.00	460
	4inch	1	kg	14,000.00	14,000.00	460
	Screw	48	pcs	200.00	9,600.00	22,080
7	Nail Roof/Paku Atap	0.5	kg	20,000.00	10,000.00	230
8	Coconut Timber/Kayu Kelapa					-
	4cm x 6 cm x 500 cm	20	batang			
	4cm x 6 cm x 400cm	6	batang			
	5cm x 10 cm x400 cm	11	batang			
	5cm x 10 cm x 500 cm	4	batang			
				1,100,000.00	682,000.00	285
						Converted To M3
9	Zinc/Seng	28	sheet	30,000.00	840,000.00	12,880
10	Door Hinge/Engsel Pintu	2	pcs	1,500.00	3,000.00	920
11	Windows Hinge/Engsel Jendela	4	pcs	1,000.00	4,000.00	1,840
12	Padlock/Gembok	1	pcs	5,000.00	5,000.00	460
13	Door Latch/Gerendel	1	pcs	3,000.00	3,000.00	460
14	Door Handle	1	pcs	2,000.00	2,000.00	460
15	Estimation of Labour Cost	1		400,000.00	400,000.00	
				Sub. Amount	3,242,100.00	
	Loosing Material			5%	162,105.00	
				Total Cost	3,404,205.00	

November 5,2009

Calculated By

Approved By

Rinaldi  
Construction Assistant

Bimo Khairul  
Project Manager

Note:The purpose of this document is to highlight the most basic of features and indicative costs of the example transitional shelter designs provided. Interested parties are requested to contact the agency directly regarding detailed drawings and details.

# Palang Merah Indonesia (PMI)

Community driven and voluntary based programme; community mobilisation, technical assistance and progressive provision of cash grants (tool kits and materials)



For more information regarding PMI's design and implementation, please contact:  
Ony Purwitasari t: 08 123 121 129 [ony\\_purwitasari@yahoo.com](mailto:ony_purwitasari@yahoo.com) or  
[srcpadang.tshelter@gmail.com](mailto:srcpadang.tshelter@gmail.com)

## Sekilas Info Hunian Sementara PMI



### Tujuan:

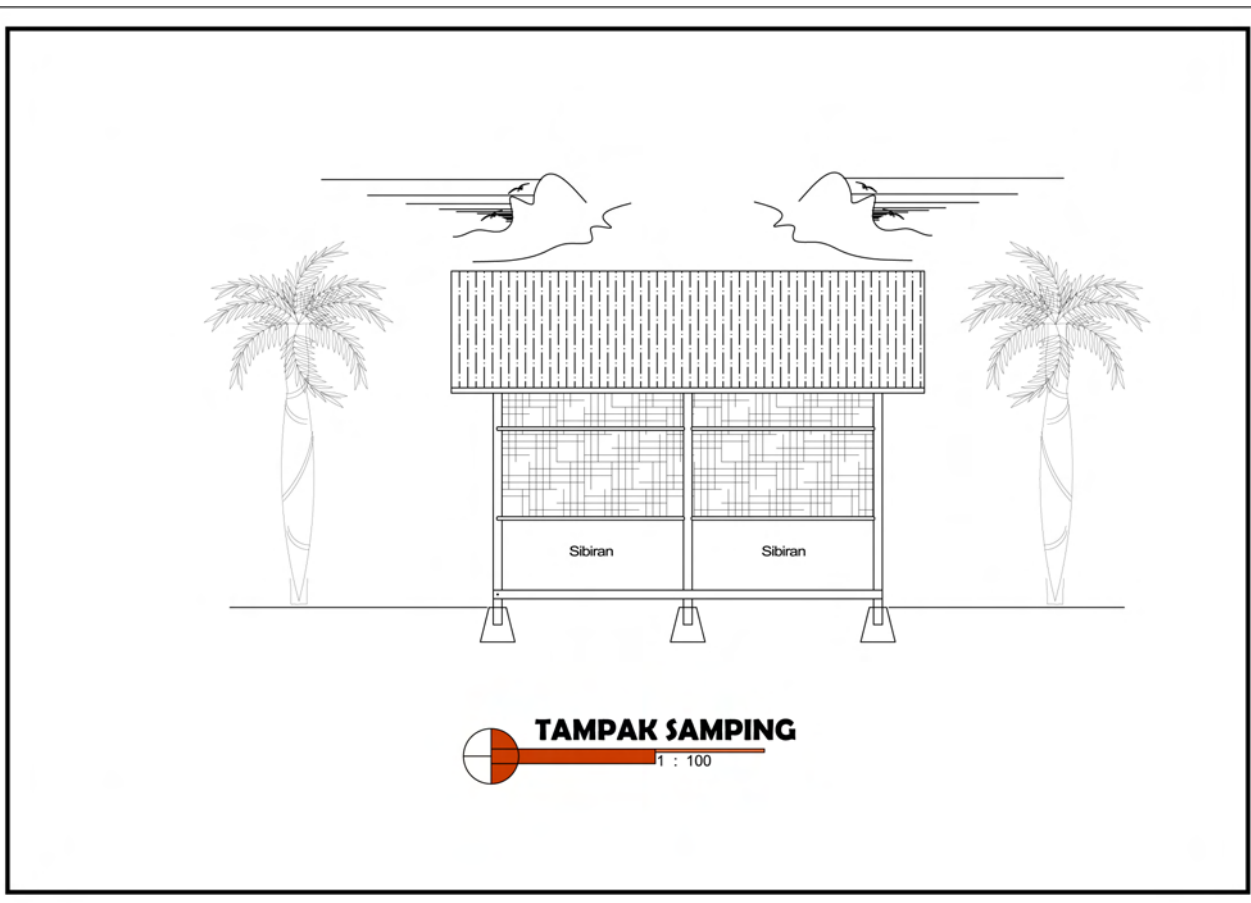
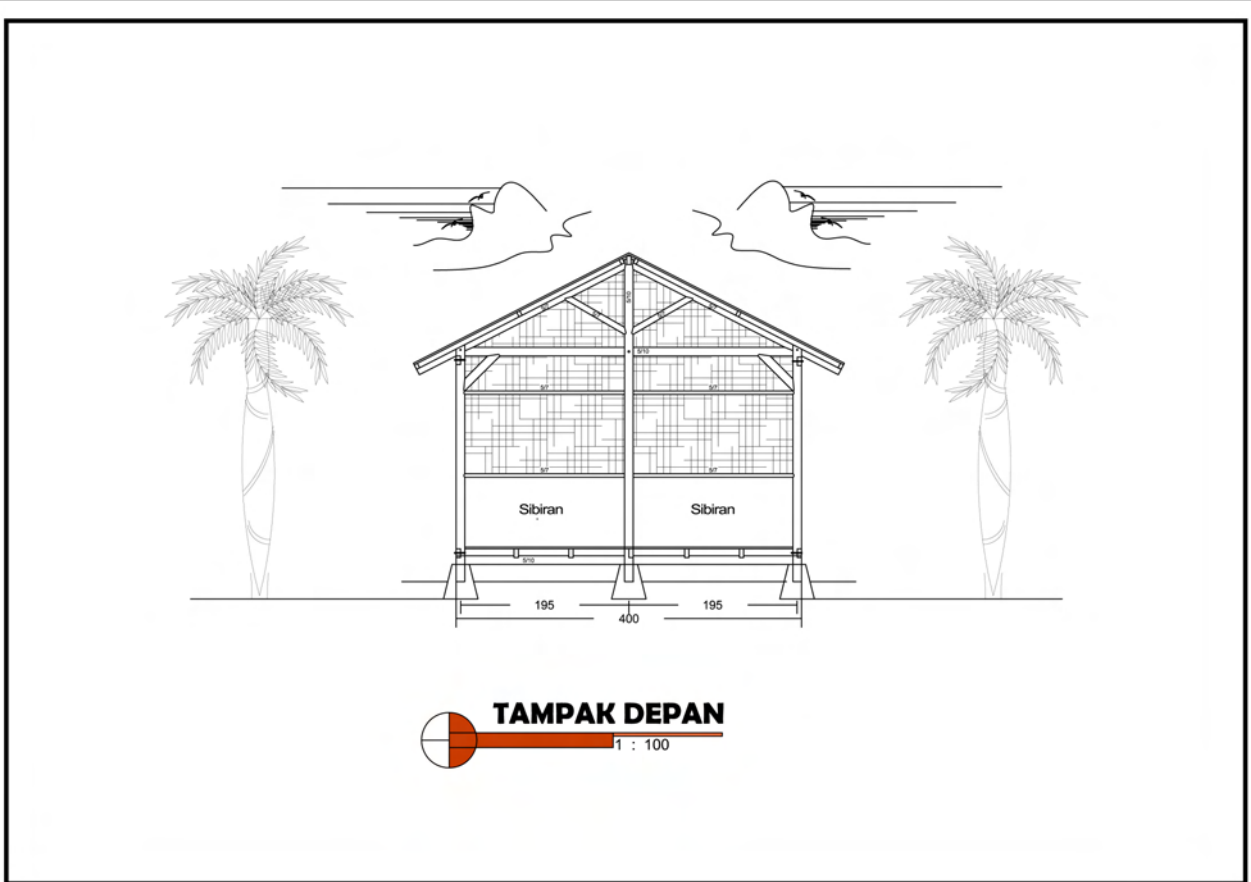
“Menyediakan tempat yang aman bagi keluarga yang rentan & hidup di bawah tenda atau terpal dimana mereka bisa memulai lagi aktivitas **aktivitas ekonomi mereka**”

### Konteks:

- (i) Sesuai dengan kondisi lokal
- (ii) Kontribusi PMI Rp 3,000,000 untuk bahan dan 200,000 untuk alat
- (iii) Material dapat dipakai kembali
- (iv) Bisa dibangun dengan *Gotong Royong*
- (v) Tahan Gempa

### Spesifikasi

Luas Dalam	minimal 18m <sup>2</sup>
Material	<p><b>Pondasi “umpak” dari semen</b> atau batang kelapa</p> <p>Kerangka kayu Kelapa/kayu kelas 3 atau kayu daur ulang</p> <p>Dinding dari <b>Gedhek, kayu “sibiran” sisa potongan</b> atau yang lain yang murah</p> <p>Atap terpal dan daun rumbia</p> <p>2 jendela berbingkai <i>Gedhek</i></p> <p>1 pintu berbingkai <i>Gedhek</i></p> <p>Alternatif menggunakan pintu dan jendela bekas</p>
Konstruksi	<p>½ lantai panggung digunakan untuk tidur/beristirahat</p> <p>Umpak untuk keawetan dan penahan gempa</p> <p>100% Komunitas mengerjakan di tempat</p> <p>Kemungkinan untuk adanya hasil konstruksi bersama di daerah</p>
Waktu Konstruksi	1 unit 1/2- 1 hari / 10 unit 4-5 hari
Target Usia Bangunan	<p><b>“Hingga Rekonstruksi dari Pemerintah Selesai”</b></p> <p>½-2 tahun jika diperbarui atap “rumbia”</p>



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Pekerjaan PEMBANGUNAN T - SHELTER KAYU KELAPA UKURAN 4 X 4,5 M  
DINDING TIKAR PANDAN

No.	Uraian Pekerjaan	Sat	Vol	Harga satuan (Rp)	Jumlah Harga Satuan (Rp)	Jumlah Biaya (Rp)	KETERANGAN
1	2	3	4	5	6	7	8
<b>A</b>	<b>Pekerjaan Pondasi</b>						
1	Pek. Beton Pondasi K175	M3	0.20	Rp 450,000.00	Rp 90,000.00		
2	Bekisting ember	Bh	5.00	Rp 10,000.00	Rp 50,000.00		
						Rp 140,000.00	
<b>B</b>	<b>Pekerjaan Struktur Utama</b>						
1	Pek. Tiang 5/10 x 4m	Btg	6.00	Rp 26,000.00	Rp 156,000.00		Sisa 6x1,2
2	Pek. Balok Bawah 5/10 x 4m	Btg	6.00	Rp 26,000.00	Rp 156,000.00		Sisa 2,5m
3	Pas. Balok Lantai 5/10 x 4m	Btg	4.00	Rp 26,000.00	Rp 104,000.00		
4	Balok Atas 5/10 x 4m	Btg	3.00	Rp 26,000.00	Rp 78,000.00		sisa 2,5m
5	Balok Pinggang 5/7 x 4m	Btg	9.00	Rp 18,055.56	Rp 162,500.00		
6	Lantai Papan 2/20 x 4m	Helai	25.00	Rp 24,193.55	Rp 604,838.71		
						Rp1,261,338.71	
<b>C</b>	<b>Pek.Kuda-Kuda dan atap</b>						
1	Balok Tarik 5/10 x 4m	Btg	3.00	Rp 26,000.00	Rp 78,000.00		sisa 1,3X6
2	Kaki Kuda-Kuda 5/7 x 4m	Btg	6.00	Rp 18,055.56	Rp 108,333.33		
3	Skor 5/7	Btg	1.00	Rp 18,055.56	Rp 18,055.56		
4	Tiang Makelar 5/7	m'	3.00				
5	Nok Gording 5/7 x 4 m	Btg	1.00	Rp 18,055.56	Rp 18,055.56		Sisa potongan kuda-2
6	Gording 4/6 x 4m	Btg	9.00	Rp 11,538.46	Rp 103,846.15		
7	Kasau 3/4 x 4m	Btg	36.00	Rp 5,769.23	Rp 207,692.31		
8	Pas. Terpal 4X6 M	Lbr	1.00	Rp 120,000.00	Rp 120,000.00		
9	Atap Rumbia	Helai	130.00	Rp 2,500.00	Rp 325,000.00		
						Rp 978,982.91	
<b>D</b>	<b>Pek. Pendukung</b>						
1	Paku	Kg	3.00	Rp 15,000.00	Rp 45,000.00		
3	Engsel	Bh	8.00	Rp 3,000.00	Rp 24,000.00		
4	Bout 10 - 12 mm	Bh	18.00	Rp 4,500.00	Rp 81,000.00		
						Rp 150,000.00	
<b>E</b>	<b>Pek. Dinding penutup</b>						
1	Pas.dinding Tikar Pandan uk. 1x2 m	Lbr	24.00	Rp 15,000.00	Rp 360,000.00		
2	Kayu Profile 3 cm	Btg	16.00	Rp 6,000.00	Rp 96,000.00		
						Rp 456,000.00	
					jumlah total	Rp2,986,321.62	

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## IOM (2007)



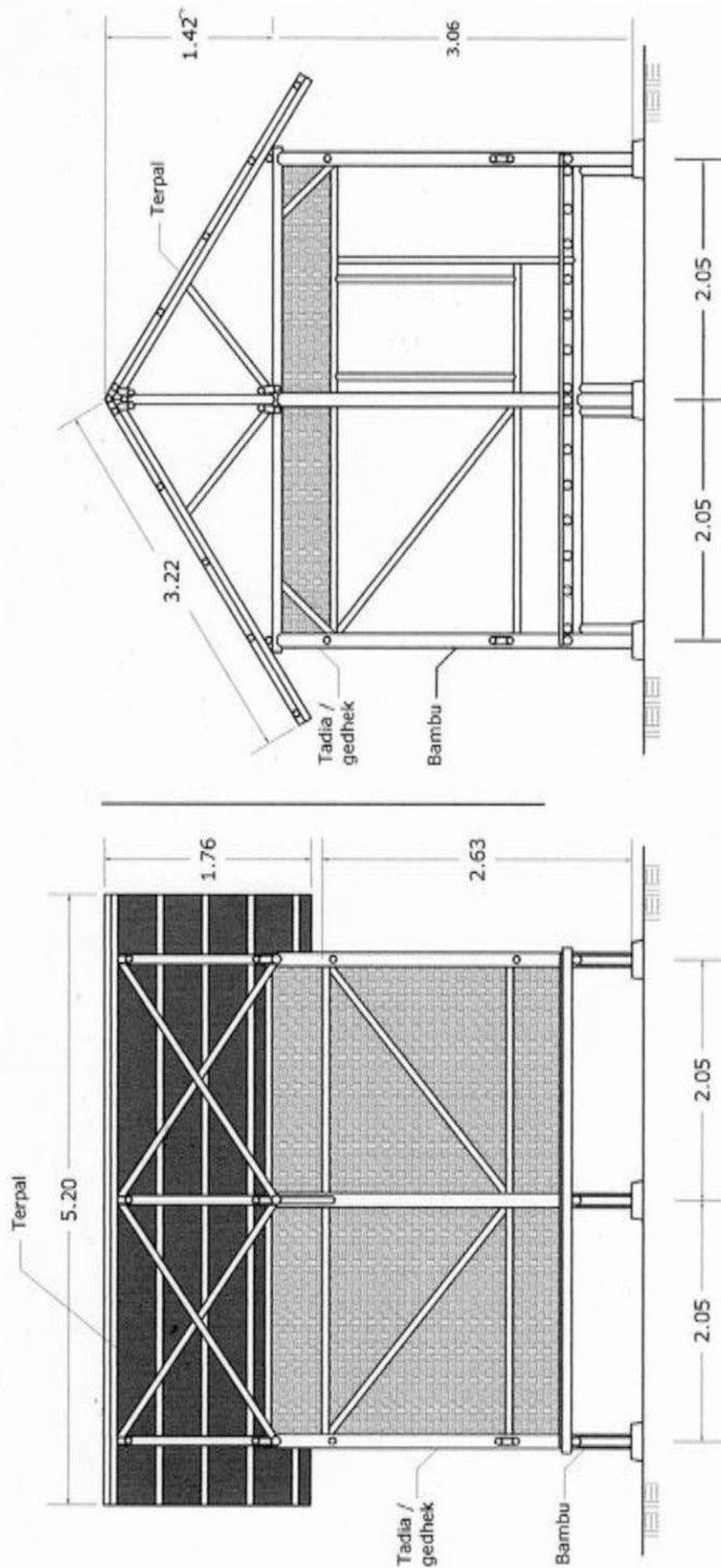
Photos by Muslim Aid

Following the March 2007 West Sumatra earthquake, IOM built over 700 transitional bamboo shelters in the affected areas. IOM prefabricated the shelters in an old stadium in Padang Panjang and partnered with NGOs to identify beneficiaries and erect the frames in the field. Following another earthquake in September 2007, one of these partners, Muslim Aid, used the same design to build 320 transitional shelters in Muko Muko Bengkulu with UN OCHA funding.

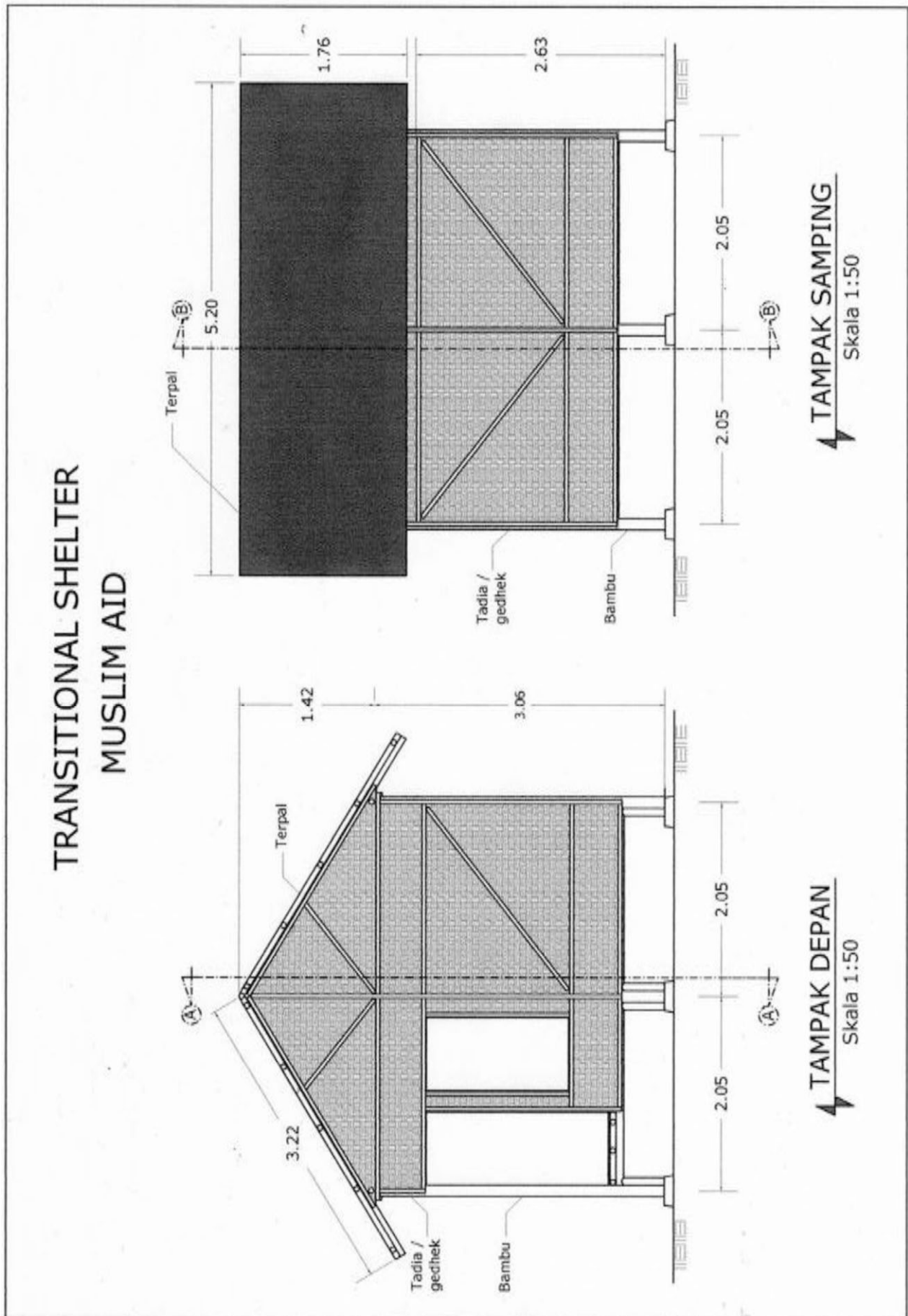
The design is 16m<sup>2</sup>, but this is easily extendable to 18m<sup>2</sup>. An elevated stripped bamboo floor was chosen because of the frequent absence of flat preexisting slabs, and to allow for water underneath the house (fish ponds were prevalent in the area).

The design is unique in that it is completely modular and thereby minimizes the number of unique items. All items were fully prefabricated and detailed, including the concrete foundation blocks, such that beneficiaries only needed straps to tie the bamboo together. The advantages of this prefabrication method were speedy construction in the field and control over the quality of construction. While in Yogya frames were pre-assembled, in West Sumatra prefabricated bamboo sticks were assembled on site to allow delivery by small pick-up truck to remote locations.

For more information regarding IOM's design and implementation, please contact:  
Peter Kern t: 081 187 02 289/ 081 575 884 444 e: [pkern@iom.int](mailto:pkern@iom.int)



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