

# Cost-benefit analysis for RC/RC shelter solutions

Haiti earthquake operation

Date : 22 June 2012



Croix-Rouge suisse  
Schweizerisches Rotes Kreuz  
Croce Rossa Svizzera  
CROIX-ROUGE  
1919-1918-1914

## 1 Initial construction

### 1.1 Quality Analysis

#### General information

Type :	Transitional Shelter	
Number of units built :	599	units
Duration of the project :	15	months
Expected life :	15	years
Living surface :	21	m²

#### Hazard-resistance

Earthquake :	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>						
Hurricane (Saffir-Simpson Hurricane Scale) :	Cat 1	<input type="checkbox"/>	Cat 2	<input type="checkbox"/>	Cat 3	<input type="checkbox"/>	Cat 4	<input checked="" type="checkbox"/>	Cat 5	<input type="checkbox"/>
Flood :	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Cmts	living space surelevated of 60cm from ground level				
Fire :	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Cmts	Steel structure fireproof, but siding made in wood				

#### Construction process per unit

Materials purchased locally :	20	%				
Construction time :	4	days				
Elements prefabricated :	All the structure, roofing and openings					
Skills required / Nbr of persons hired :	Carpenters	<input type="checkbox"/>	Masons	1	Welders	<input type="checkbox"/>
	Skilled	2	Unskilled	3	Beneficiary (paid)	<input type="checkbox"/>
Type of tools required :	Power tools	<input checked="" type="checkbox"/>	Hand tools	<input checked="" type="checkbox"/>		

#### Construction details

Type of foundation :	Six 80cm deep reinforced concrete foundation point
Type of structure :	Galvanised steel frame including bracing
Type of siding / walls :	one layer of 3/4" pressure treated plywood sheets
Type of roofing :	CGI sheets + aluminium gutters
Type of flooring :	one layer of 3/4" pressure treated plywood sheets
Type of openings :	One alu and glass door and two alu and glass windows
Painted / Stained :	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Other :	

#### Water Harvesting System

Gutters included :	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water tank and piping included :	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Capacity water tank :	<input type="text"/> US gal

#### Maintenance

Maintenance kit included :	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
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#### Beneficiary participation

Tasks :	Collecting all materials from the stock area, and bringing them to their own plot
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### 1.2 Cost per unit

International Transportation Cost :	<input type="text"/>	411	USD
Local Transportation Cost :	<input type="text"/>	19	USD
Land site preparation Cost :	<input type="text"/>	0	USD
Material Cost * :	<input type="text"/>	3594	USD
Tool Kit & Fuel Cost :	<input type="text"/>	45	USD
Labor cost :	<input type="text"/>	300	USD
Other Cost :	<input type="text"/>	<input type="text"/>	0 USD
Total Cost :	<input type="text"/>	4369	USD
Total Cost / m² :	<input type="text"/>	208	USD

\* Including materials for foundation, structure, walls, roofing, flooring, openings, fastenings, water harvesting system, etc.



## 2 Rendering (upgrades, renovations)

### 2.1 Quality Analysis

#### General information

Type :	Improved Shelter	
Number of units built :	599	units
Duration of the project :	9	months
Expected life :	25	years
Living surface :	29	m²

#### Hazard-resistance

Earthquake :	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>						
Hurricane (Saffir-Simpson Hurricane Scale) :	Cat 1	<input type="checkbox"/>	Cat 2	<input type="checkbox"/>	Cat 3	<input type="checkbox"/>	Cat 4	<input checked="" type="checkbox"/>	Cat 5	<input type="checkbox"/>
Flood :	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	Cmts	living space surelevated of 60cm from ground level				
Fire :	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	Cmts	Steel structure fireproof, but siding partly made in wood				

#### Construction process per unit

Materials purchased locally :	100	%				
Construction time :	3	days				
Elements prefabricated :	Protection for windows, extra door					
Skills required / Nbr of persons hired :	Carpenters	<input type="checkbox"/>	Masons	<input type="checkbox"/>	Welders	1
	Skilled	2	Unskilled	3	Beneficiary (paid)	<input type="checkbox"/>
Type of tools required :	Power tools	<input checked="" type="checkbox"/>	Hand tools	<input checked="" type="checkbox"/>		

#### Construction details

Type of foundation :	
Type of structure :	
Type of siding / walls :	Addition of a ventilated fiber cement layer all over the walls
Type of roofing :	
Type of flooring :	Addition of a second layer of 3/4" pressure treated plywood sheets
Type of openings :	Protection of the windows by a grill using expanded metal, addition of an extra door
Painted / Stained :	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Other :	Creation of an 8m² wooden front veranda, installation of a complete water harvesting system

#### Water Harvesting System

Gutters included :	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Water tank and piping included :	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Capacity water tank :	400 <input type="text"/> US gal

#### Maintenance

Maintenance kit included :	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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#### Beneficiary participation

Tasks :	Collecting all materials from the stock area and bringing them to their own plot, painting
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### 2.2 Cost per unit

International Transportation Cost :	<input type="text"/>	0	USD
Local Transportation Cost :	<input type="text"/>	14	USD
Land site preparation Cost :	<input type="text"/>	0	USD
Material Cost * :	<input type="text"/>	2168	USD
Tool Kit & Fuel Cost :	<input type="text"/>	42	USD
Labor cost :	<input type="text"/>	310	USD
Other Cost :	Maintenance kit	<input type="text"/>	21 USD
Total Cost :	<input type="text"/>	2555	USD
Total Cost / m² :	<input type="text"/>	88	USD

\* Including materials for foundation, structure, walls, roofing, flooring, openings, fastenings, water harvesting system, etc.

