

Project

Project name

Country	Viet Nam
Region/town	Xuan Quang 2 commune, Dong Xuan District, Phu Yen province
GIS data (WGS 84)	
Project type	Post-disaster Reconstruction
Typology	Individual housing
Approach	Self-help / contracted construction teams from the local area
Beneficiaries	Local population affected by typhoon Ketsana in 2009
Climate	Tropical / coastal
Special constraint	Storm / flood
start / end of project	15.06.2010 – 30.09.2010
Country GNP	USD / cap 650 in 2005



Partners

Organization (donor)	Swiss Red Cross (Swiss Solidarity)
IO/NGO partners	Vietnam Red Cross (VNRC)
GO partners	Xuan Quang 2 Commune Authority, Dong Xuan District

Context to project

Initial Situation	<p>In September and October, 2009, Phu Yen Province was hit by both typhoons Ketsana and Mirinae and earlier tropical depressions, but damages by Ketsana were strongest. The typhoon combined with very heavy rain caused record floods with water levels up to 4m inundating around 46'500 houses. 79 people were killed and 76 persons injured. More than 200'000 households were affected. Shelters of 1'376 families collapsed and houses of 35'994 families were damaged. Many families repaired their houses themselves, but the concern was that repairs of these shelters wouldn't be sufficient to protect the same families during the next typhoon or tropical storm.</p> <p>Many households lost their harvest others got their reserves wet, lost their livestock, fishing gear or had their fish cages and nets damaged. In addition many hectares of rice and sugarcane fields, as well as fruit and rubber tree plantations were destroyed /damaged and infiltrated with sand, rendering them unusable also for the next season. A great amount of local roads, bridges, irrigation systems and the national railway line has been damaged.</p>
Goals, Beneficiaries	<p>Goal: to reconstruct the 60 totally destroyed houses of typhoon affected villages of Xuan Quang 2 commune of Dong Xuan district.</p> <p>Besides housing reconstruction the project included a component for recovery of lost economic assets livelihood recovery component for 400 households.</p>
Implementations / Results	<p>55 houses were constructed in the hamlets of Xom Truong and Phu Son. The reconstruction of 5 more houses had to be cancelled based on mutual agreement between owners, local government and VNRC/SRC because of incomplete and conflicting ownership information.</p> <p>574 households in neighboring villages received financial support to replace lost economic assets.</p>

Reference data (comparative)

Land plot (per house unit)	300 m2	Garden	Approx. 200 m2
Ground floor (incl. walls)	45.0 m2	Floor (incl. walls)	45.0 m2
Occupants max.	6 persons	Occupants min.	2 persons
Total house area	45.0 m2	Surface / occupant	7,5 m2/cap
House volume (outside dimension)	181 m3	Volume / occupant	30,2 m3/cap
Number of rooms	3 rooms	Occupant / room	0.5 cap/room
Heated area	m2	Heated area/occupant	m2/cap
cost /unit	3,500 USD	cost/occupant	583.3USD/cap
cost/m2	77.78 USD/m2	cost/m3	19.3 USD/m3
Total housing cost	3,500 USD	Self help (beneficiaries)	38.4 USD/cap
community development projects cost	154,225.6 USD	Comm. Dev. cost/occupant	60 USD/cap

Approach to results

Initial Situation

Private houses were completely destroyed or damaged in a way that they couldn't provide safe accommodation anymore. Rural population with limited means for self-help (the most vulnerable: elder people, single mothers, families with many children, poor community members, families with completely destroyed houses) suffered the most from the impact of the typhoons. These people couldn't provide by themselves new shelters.

Approach

The house construction was carried out with a participatory approach to ensure a strong acceptance among the beneficiaries. The project team organized workshops in order to allow the beneficiaries to contribute to the design of their houses. Two different house designs each in two different sizes were developed. Within the basic designs individual adaptations and preferences were possible according to beneficiaries' ideas and needs. Families up to 3 members were entitled to get a 35 m2 house and families with 4 and more members 45 m2.

In terms of construction material the houses show no variation to the traditional houses in the project area: walls are built of red clay bricks, with a stone masonry plinth, a wooden roof truss, red clay roof tiles and metal windows/doors. Due to the strong involvement of beneficiaries and the community the house design meets the cultural, social and physical requirements of the residents.

The houses were constructed with the focus on storm safety. Especially the foundations were improved by increased depth as well as an additional ring beam and the wall size was doubled comparing with traditional building habits, also to improve protection against heat. The connections between roof and walls were strengthened by connecting the different construction parts with steel bands.

The house designs and especially the aspect of storm safety were recently developed in Vietnam for the improvement of houses under storm conditions based on the following house design handbooks: "House design handbook European Mission/ Development workshop France" and most important by the "Handbook on Good Building design and Construction of the UNDP International Strategy for Disaster Risk Reduction", both of which were already available in Vietnamese language.

The construction itself was carried out by local construction teams – paid by the project - with the help of the beneficiaries wherever possible. In cases where the beneficiaries weren't able to assist in the construction due to old age or other circumstances, additional helpers were paid by the project. The whole implementation was steered by the SRC team in partnership with VNRC and the community. The direct implementation control was done by engineers of the SRC.

The local construction teams received two trainings in order to improve more durable and disaster-proof construction immediately before the start of the specific construction phase. The first training was given from the foundation to the ring beam and another one for the roof construction. All construction teams also benefitted from ongoing "on the job" training

during the construction period. The local crafts people thus acquired additional knowledge regarding storm safety and enhanced lifespan of buildings. These types of houses can now be replicated by the population and local authorities in the further reconstruction efforts.

Problems/Constraints

The participatory nature of the project approach was new to Vietnamese partners and the beneficiaries and they had to get accustomed with it. After initial hesitation and misunderstandings however all stakeholders fully embraced the approach and good results were obtained.

Lessons learned

Active participation of beneficiaries from the beginning of the design stage of the project to the end of the project is very important to make better results of higher ownership feeling and satisfaction. The SRC team managed to build more cost-effective than anticipated. The direct construction with beneficiaries supported by local craftsmen has allowed important savings.

Evaluation

The houses were completed on schedule and slightly below calculated costs. Beneficiary families and local authorities were satisfied with the project results and beneficiaries had taken full ownership of the houses.

Legal framework

Politically attached to

Dong Xuan District, Phu Yen Province

Type of ownership

Completion (handover) certificate to each beneficiary; all plots and houses are property of the beneficiaries.



Construction information

Construction

Structure	Foundations	Rock foundation with foundation bracing beam
	Walls or columns	Double brick wall
	Facade	Plastered and painted
	Roof	Wooden tiled roof
	typhoon protection	The roof connected to the wall bracing beam. Four small beams hold the tiles firmly.
materials	Floor surface	Paved with ceramic tile
	Walls	Outside wall constructed with double brick, inside wall with single brick
	Doors	Glass metal door
	Windows	Glass metal window
	Ceiling	No ceiling available, done later by beneficiaries
	Thermo insulation	No
	Roofing	Clay Tiles on wooden structure
WatSan	Water	Funded by Vietnamese Government
	Toilets	Funded by Vietnamese Government
	Waste water	Soak pits provided in individual plots
	Rain water	No
equipment	Heating system	No
	Electricity connection	Connected by beneficiaries
	Telephone connection	No connection
	Cooking facilities	Funded by Vietnamese Government

Total

100%

Urban planning

Distance to	Health center	In average 3 km
	Education facilities	In average 1 km
	Income activities	Mainly farming
	Public transport	Bus

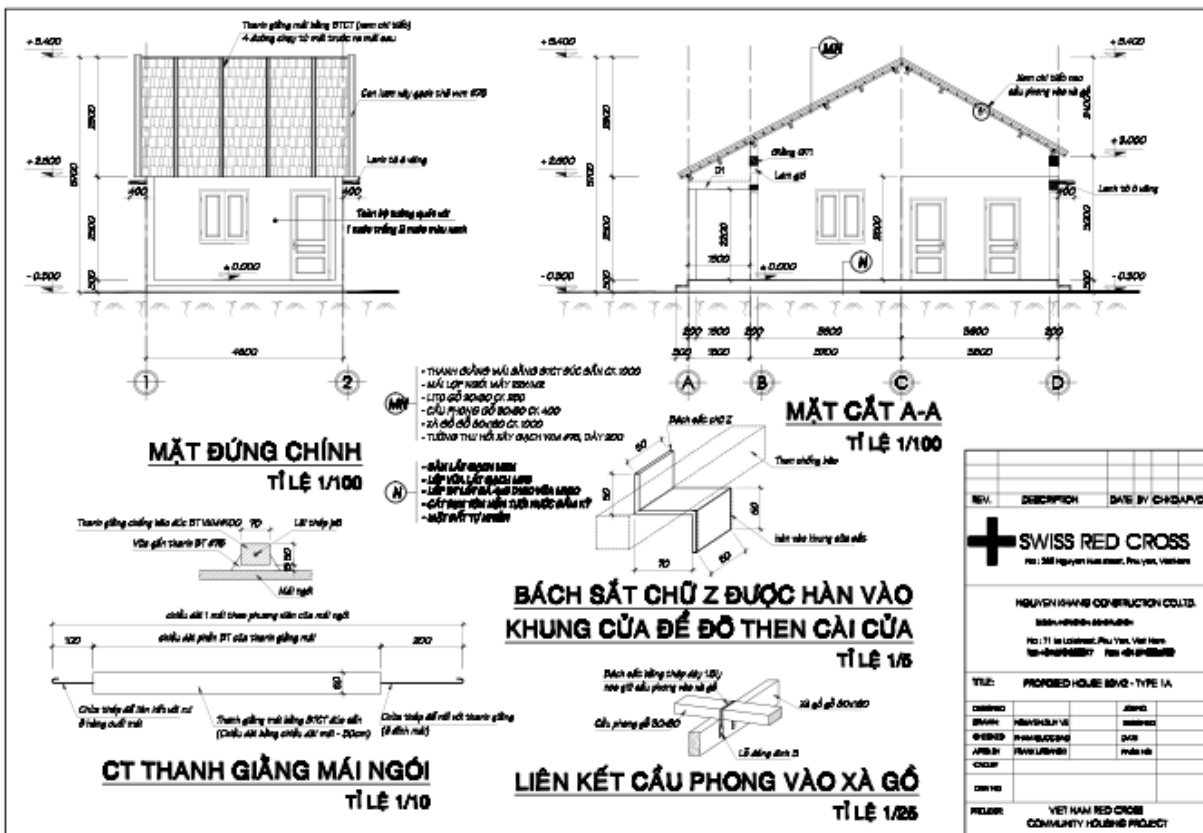
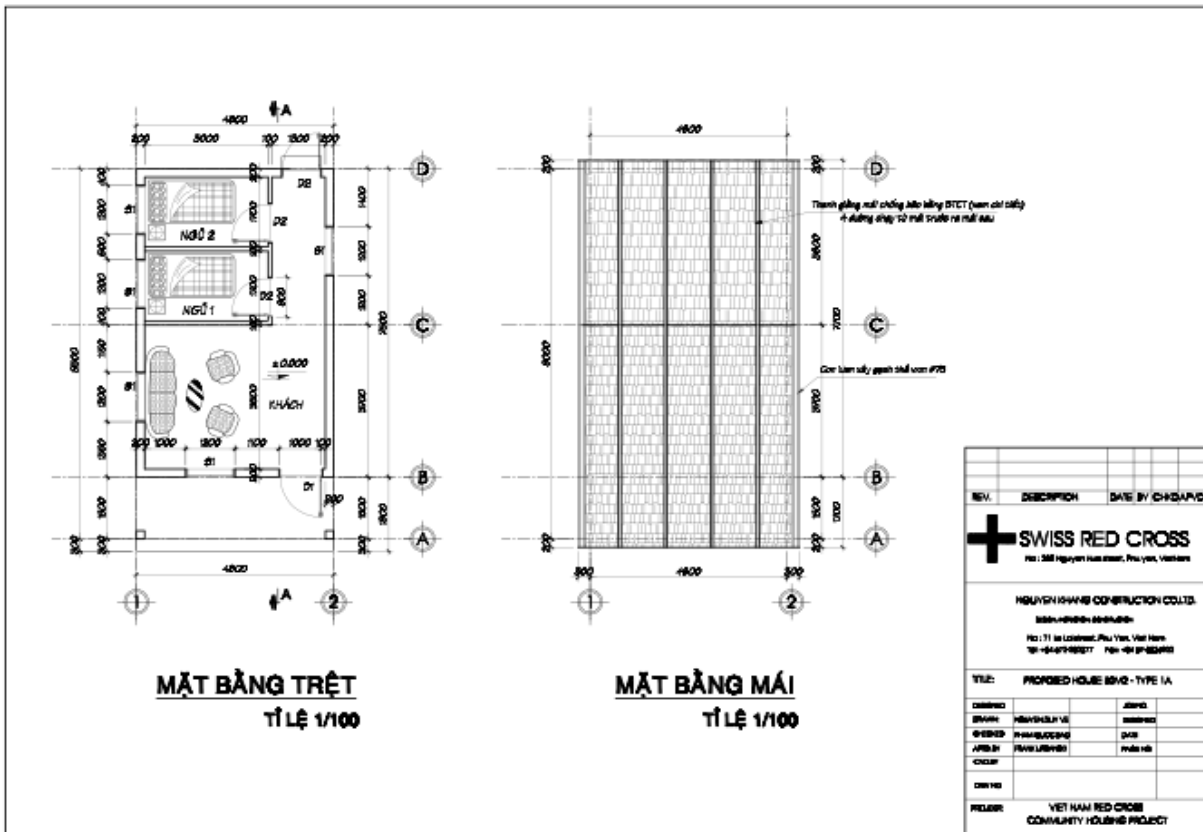
For further information

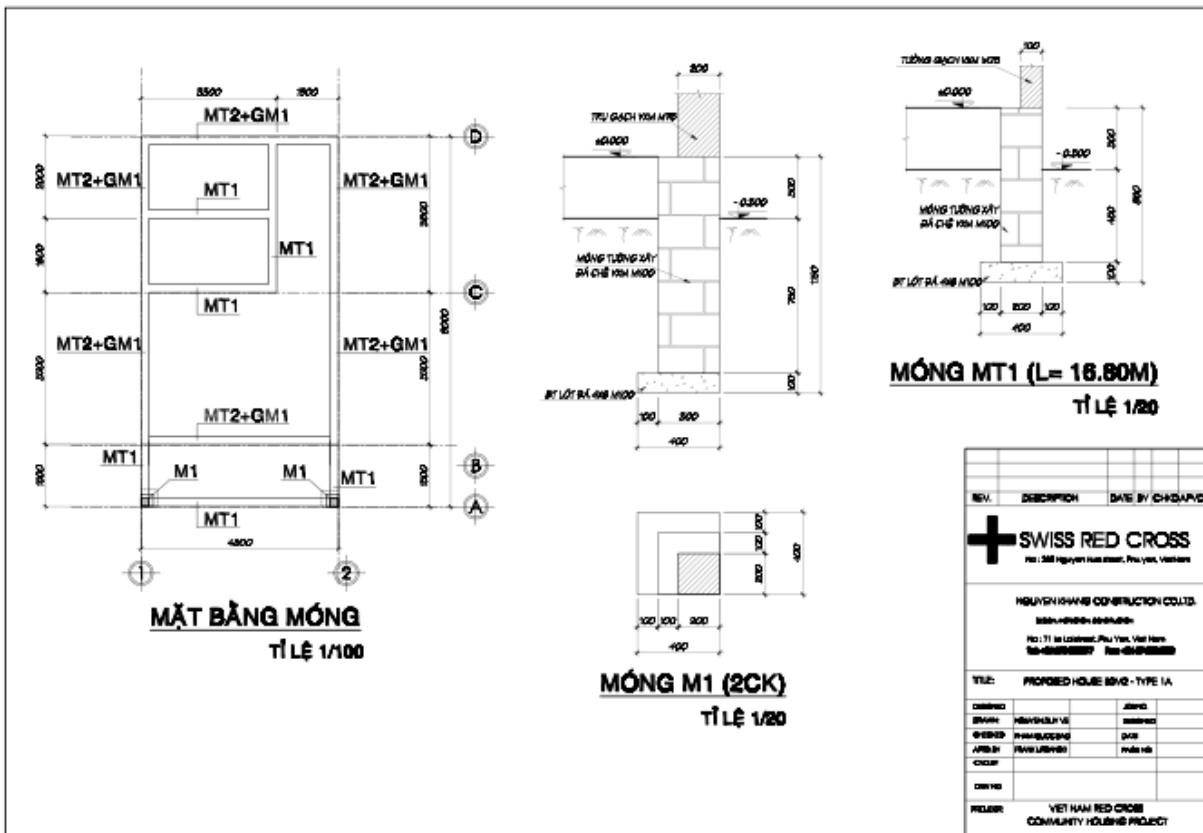
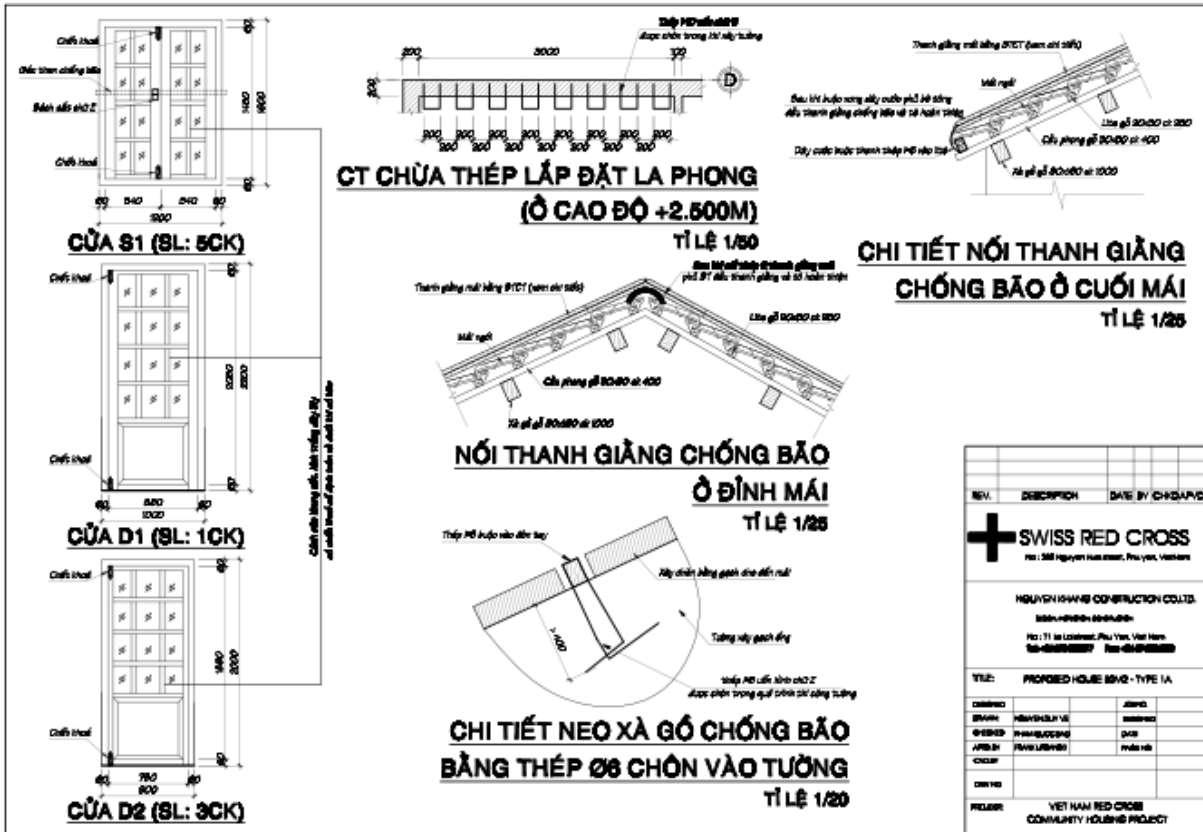
Involved SHA construction group consultants	
Other involved SHA consultants	
Author / Contact:	Juerg.frei@redcross.ch
Recommended Institutions:	
Recommended partners:	
Recommended books/reports:	
Relevant other projects (links):	
Annex	



Relevant illustration









BẢNG THỐNG KÊ THÉP

Mã vật	Số nhà	Kích thước kích thước	Số tầng	Số loại thanh (mm)	Số lượng		Tặng (m)	Trọng lượng (kg)
					Thanh dọc	Thanh ngang		
GT	1	1850	12	1650	4	8	15,2	11,72
	7	150 150 150 150 150	46	750	10	20	14	3,11
IT0V	2	1450	10	1450	4	20	29	17,88
	3	50 1450 50	46	1550	4	20	21	6,9
IT0V	4	50 550 50	46	650	11	55	35,75	14,11
	7	150 150 150 150	46	750	11	55	38,5	8,55
IT1	5	1450	10	1450	4	8	11,4	7,15
	7	150 150 150 150	46	750	11	22	15,4	3,42
IT2	6	1150	10	1150	2	4	4,6	2,84
	8	50 150 50	46	250	7	14	3,5	0,78
GM1	9	24920	12	24920	4	4	99,68	88,52
	7	150 150 150 150	46	750	122	122	85,4	18,98
GT1	9	24920	12	24920	4	4	99,68	88,52
	7	150 150 150 150	46	750	122	122	85,4	18,98

MÓNG MT2 (L= 24.20M)
TỶ LỆ 1/20

GIĂNG MÓNG GM1 (DÀI: 24.2M, SL: 1CK)
TỶ LỆ 1/25

GIĂNG TƯỜNG GT1 (DÀI: 24.2M, SL: 1CK)
TỶ LỆ 1/25

DẦM D1 (DÀI: 1.7M, SL: 2CK)
TỶ LỆ 1/25

CT LANH TÔ Ô VĂNG (DÀI: 1.5M, SL: 5CK)
TỶ LỆ 1/25

LT1 (DÀI: 1.5M, SL: 2CK)
TỶ LỆ 1/25

LT2 (DÀI: 1.2M, SL: 2CK)
TỶ LỆ 1/25

REV.	DESCRIPTION	DATE BY	CHK/APP

SWISS RED CROSS
No. 288 Nguyen Huu Son St., Phu Yen, Vietnam

NGUYEN HUU SON CONSTRUCTION CO., LTD.
Số 11 Lê Lợi Street, Phu Yen, Viet Nam
Tel: 0914 000 000 Fax: 0914 000 000

TITLE: **PROPOSED HOUSE BIVD - TYPE 1A**

DESIGNER	ARCHIT.
DRAWN	STRUCTURE
CHECKED	DATE
APP. BY	PROJECT NO.
CLIENT	
DATE	
PROJECT	VIET NAM RED CROSS COMMUNITY HOUSING PROJECT

BẢNG THỐNG KÊ VẬT TƯ ĐIỆN

STT	TÊN VẬT LIỆU	SỐ QU	SỐ QU
1	đèn âm trần loại âm trần	M	10
2	ổ cắm điện loại ổ cắm điện	M	20
3	ổ cắm điện loại ổ cắm điện	M	20
4	ổ cắm điện loại ổ cắm điện	M	20
5	ổ cắm điện	Ổ	20
6	ổ cắm điện	Ổ	20
7	ổ cắm điện	Ổ	20
8	ổ cắm điện	Ổ	20
9	ổ cắm điện	Ổ	20

MẶT BẰNG BỐ TRÍ ĐIỆN TRỆT
TỶ LỆ 1/100

KÝ HIỆU

- Ổ cầu main
- Ổ cầu tắc main
- BÊN HƯỚNG QUANG LẠM
- ĐỒNG HỒ ĐIỆN
- AUTOMAT 1 PHA

GHI CHÚ

- NGUỒN ĐIỆN LẤY TỪ HỆ THỐNG CẤP ĐIỆN CỦA KHU VỰC
- TOÀN BỘ HỆ THỐNG ĐIỆN ĐẶT NƠI
- DÂY ĐIỆN PHẢI LUÔN TRONG ống NHỰA ĐẠC KẾ
- KHOẢNG CÁCH TỪ BÀN NHÀ ĐẾN MẶT TRÊN BẢNG ĐIỆN LÀ 1.8m
- DÂY DẪN TỪ CÔNG TẮC BÊN BÊN BÊN BỞ DÙNG DÂY 2X0.5mm²

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