



The Aga Khan Award for Architecture

32, chemin des Crêts, 1218 Grand-Saconnex, Geneva, Switzerland, Telephone (22) 98 90 70

1983 ARCHITECTS' RECORD

CONFIDENTIAL

I. IDENTIFICATION

- A. Project Title The Building Together Project
- B. Postal Address 52, Soi 101, Lardprao Road, Bangkok, Thailand

II. PERSONS RESPONSIBLE

(Please give name and address for each. If more than one, please state precise roles and relationships.)

- A. Client/Owner The Building Together Association
52, Soi L01, Lardprao Road, Bangkok, Thailand
- B. Architect/Planner Shlomo Angel, Paul Chamniern Vorratnchaiphan and
A. Bruce Etherington
The Human Settlements Division
Asian Institute of Technology
P.O. Box 2754, Bangkok, Thailand
- C. Consultants (e.g. Economist, Sociologist, Demographer, Engineer)
Narin Sakul-chalanuwatn (structural and environmental engineer)
Policy and Planning Office
National Housing Authority of Thailand
Klongchan, Bangkok, Bangkok, Thailand
- D. Contractor The Building Together Company Limited
- E. Master Craftsman A. Bruce Etherington, Master Builder

(Please continue overleaf if necessary)

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III. USE

- A. Type(s) of Use Housing
- B. User/Occupant Low-income families (Buddhist, Muslim, Christian)
1. Occupation Workers, low-grade officials, drivers, market sellers, housewives.
2. Income Level More than 80 per cent earn less than US \$240 per household per month, which is the median income in Bangkok.
- C. Specify any change(s) between planned and actual use.
None.

IV. PROJECT HISTORY

- A. Programme Development
1. Date of Commencement October 1978
2. Date of Completion March 1979
- B. Design
1. Date of Commencement March 1979
2. Date of Completion June 1979
- C. Construction
1. Date of Commencement October 1979
2. Date of Completion April 1982 (Phase II, consisting of 121 units, completed)
- D. Date of Project Occupancy August 1980 - April 1982 (Households occupying gradually as their houses were completed.)

V. PROJECT ECONOMICS

(For Costs, please give amounts and currencies. Specify their date(s) of validity)

- A. Total Initial Budget -
- B. Total Actual Costs US \$ 797,187 (Total expenditure by the end of Phase II)
- C. Analysis of Costs
1. Land US \$ 172,517
- Infrastructure 107,879
2. Materials & Production/Operating Expenses 301,804
- Construction of Self-help Factory 26,033
3. Labour 82,761
- Interest, Taxes and other Rates 88,309
4. Professional Fees 17,884
- D. Source(s) of Funds (indicate percentage)
1. Private _____
2. Public
- a. Local _____
- b. National Total loans from Government Housing Bank US \$ 431,280
- c. International Loans from Bread for the World (Germany, 379,803
SELAVIP (Chile), Netherlands Government

(Please continue overleaf if necessary)

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Project economics:

1. The project was designed on a cost recovery basis, with the idea of recovering all the funds invested in the project through the sale of houses.
2. Houses were sold to project participants at subsidized rates. While the average cost of a house was US \$ 5,573, the average price charged to the low-income families was US \$ 3,740.
3. 121 houses were constructed for low-income families by the people themselves, using mutual-aid and self-help labor. An additional 81 houses comprising Phase III of the project are being constructed by a private contractor for sale to middle-income families.
4. Phase III houses are to be sold at market prices. The surplus income from the sale of these houses is expected to cover the subsidy given to the low-income families.

VI. CONSTRUCTION DETAILS

A. Site Area and Characteristics The 1.6-hectare site is located in a developing area in Bangkok, accessible to transportation facilities and work opportunities essential to its low-income residents. The site is low-lying, but a perimeter dyke and a drainage and pumping system keep it flood-free during the rainy season. The site has been divided into ten clusters and has spaces for community structures and activities.

B. Total Floor Area of Individual Building(s)
Average plot size for each unit is 54 square meters. The two-storey house, covering about 70 per cent of the plot, has a gross floor area of 76.8 square meters.

C. Structural System (describe)

The load-bearing wall system is used. The technology adopted for Building Together was selected for its suitability to the limitations of unskilled labor

D. Materials (describe and indicate whether locally produced or imported)

1. Infill Concrete
2. Rendering of Facades Facades are left to the house owners to do and this has resulted in a rich variety of facades, using both wood and concrete materials.
3. Floors Concrete
4. Ceilings Again left to the house owners. Those who have done their ceilings, have done so using wood materials.
5. Others (interior and exterior)

E. Site Utilities and Building Services (describe)

Water and electrical connections are given to each house, with the water supply to be managed by the community once project staff move out. Other services (e.g. garbage collection) are rendered by the relevant municipal agencies.

F. Construction Technology

1. Describe the Basic Method of Construction The interlocking blocks used require no mortar for assembly and are produced on site with a simple block machine. The floor joists, which fit into the interlocking blocks, are cast into simple steel moulds also on site. The foundation piles of short 2-meter segments are hammered into the ground with a simple piling rig. Each pile is 6 meters long, with each hollow segment connected together by small pieces of wood.
2. Indicate which major building parts were fabricated on-site and which were fabricated elsewhere. The pile segments, concrete stairs, grade beams, like all other major building parts, are also cast using steel moulds on site. All the components thus fit together into one integrated building system.

G. Type of Labour Force (indicate percentage)

- | | |
|--------------|------|
| 1. Skilled | 15 % |
| 2. Unskilled | 85 % |

H. Origin of Labour Force (indicate percentage)

- | | |
|-------------|-------|
| 1. Domestic | 100 % |
| 2. Imported | 0 |

(Please continue overleaf if necessary)

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VII. EVOLUTION OF DESIGN CONCEPTS

Please describe the genesis of the project, through programme, design and construction to final and present occupancy.

The initiators of the project, Angel, Vorratnchaiphan, and Sakul-chalanuwatn, were involved in the organization of a fire brigade and a fire protection system in one of the slums in Bangkok called Jerusalem Village. They were approached by an organization called Bread for the World in Germany for a proposal to do another project. This resulted in a request for a revolving fund to construct self-help and mutual-aid housing projects with low-income groups, and in the creation of the Building Together organization. An initial fund of US \$223,933 was thus obtained, which was used to purchase a 1.6-hectare site in a developing area in Bangkok. A grant of US \$111,304 from the Netherlands Government was added to the revolving fund, and used for the construction of infrastructure. Instead of filling the land, as is customary in Bangkok, a perimeter dyke and an internal drainage and pumping system was constructed, at approximately half the price of land fill.

The project was advertised in the nearby slums, and almost 2,000 families applied. Families were interviewed and screened. The first cluster of families started training in August 1979, completing their training in 8 consecutive weekends. Construction started in October 1979, before the self-help factory was completed on the site. The factory was subsequently completed in the following months. The first cluster finished construction in August 1980, averaging 1,780 hours of labor per family. Women contributed almost as many hours as men, and hired labor was kept to a minimum. The second and third clusters were started before the first one was finished. New clusters were started and completed between October 1979 and April 1982, by which time Cluster VII was completed, bringing the total number of families housed in the project to 121.

The project suffered from several delays, caused both by untrained management, inexperience with the new technology, weak organization on the part of the people, and cash flow problems resulting from major increases in the prices of building materials and interest on loans. As most funds for construction came from the Government Housing Bank, with which the land was mortgaged, the project also suffered from delays in the release of funds by the Bank.

By May 1982, all mutual-aid houses were completed and settled. Families have initiated a large number of self-help improvements in the houses, ranging from plastering, facades, ceilings, bathroom tiling, landscaping and partitioning of rooms. A number of productive activities were also initiated, adding much needed income to the families. A Community Committee has been elected, both by cluster members and at large, to maintain and develop the community. The Committee is currently in the process of planning the construction of a community hall on the site.

At the same time, a private contractor is building housing units for sale on the site. The proceeds from the sale of these houses will be used as cross-subsidies to recover the revolving fund. These houses, which form an independent phase in the project, are expected to be completed by August 1983.

VIII. SIGNIFICANCE OF PROJECT

In what way is this project important?

Please describe the aspect(s) of the project which you feel represent a particular achievement, for example, the technical, economic, or social achievement, or its response to culture or climate, etc.

Mutual aid: Families in the project were organized into cluster groups of 16-20 families. Each cluster group built all the houses together and allocated the houses by lottery when they were finished.

Self help: People produced all the building materials themselves and carried out all the building operations. On average, families contributed more than 1,600 hours of self-help work, women contributing almost as much as men.

Shell structures: The mutual-aid stage was limited to the construction of two-storey shells with services. Families later finished the houses themselves, using their own designs. Average individual investment in house completion has been US \$500. Independent house completion resulted in a great variety of designs.

Appropriate technology: The project utilized a technology specifically designed for self help. The technology consists primarily of an interlocking block system, and floor joists that fit into the blocks. Blocks, joists, piles, stairs, manhole covers, and door and window frames were all produced by the people themselves in a self-help factory built on the site.

Intermediary organization: The project was initiated and implemented by a non-government organization on a non-profit basis. This facilitated access to the people, to the government, and to international funds.

Community participation: Community members were involved in a variety of decisions, particularly in the organization of work and in the management of the community during and after construction.

Escape from poverty: The people, by participating in the project, have been transformed in more than one way. They have left the slums and are committed not to return there. They are economically more aggressive and more ambitious, and appear to work harder and save more.

Satisfaction with the project: The project has succeeded in introducing mutual aid and self help into Thailand. It has not succeeded in bringing construction costs down sufficiently because of a number of inefficiencies and adverse market conditions, although costs remain low by comparison to the construction cost in the city. The organization of the community has not been smooth. There have been many difficulties in organizing construction work and in creating strong community leadership. Strong leadership is only now emerging, often in constructive confrontation with project staff. The Building Together organization has been (Please continue overleaf if necessary) strengthened by the experience, and has a number of alter-

(Please see overleaf.)

IX. DOCUMENTATION

Please indicate the materials you enclose for project documentation:

- ☒ 10 Photographs; Color, and Black & White; 8" x 10" (18 x 24 cm).
- ☒ 20 Slides; Color, and Black & White; 35 mm.
- ☒ Drawings: Community plan, Site plan, Floor plans, Sections, Elevations.
- ☒ Project Brief/Programme
- ☒ Biographical Data
- ☒ Other (Please specify: Two films, "Learning to Building Together" and "Building Together").

Please note: The submission of this Record is a prerequisite to candidacy for the Award. All information contained and submitted with the Form will be kept strictly confidential until the announcement of the 1983 Award recipients. Subsequently, such information may be made available by the Aga Khan Award Foundation for scholarly purposes only. Nevertheless, persons wishing to publish, reproduce or reprint such information shall be required to secure prior permission in each instance.

Authorized Signature SHLOMO ANGEL Date 6 October 1982
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natives which are currently being pursued, among them the reconstruction of a slum using similar methods. Still, organizing the poor is very difficult, and reducing costs to the level that the poor can afford without subsidies or cross-subsidies has remained impossible to achieve. Cross subsidies seem to offer limited hope, but further cost reductions appear necessary in future projects.