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A STUDY OF THE PHILIPPINE FACTORY-BUILT  
HOUSING MARKET

Undertaken For

THE CANADIAN DEPARTMENT OF EXTERNAL AFFAIRS  
Ottawa

By:  
J. KIRKPATRICK JACKSON  
GOODWOOD MANAGEMENT CORPORATION LTD.  
Manila and Hongkong

This Study Is Based On Research Conducted  
In Manila, Philippines, May, June, July 1987.

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July 22, 1987  
REF: OGC-0120-JKJ-GWMC

CANADIAN EMBASSY  
9th Floor, Allied Bank Building  
Ayala Avenue  
Makati, M.M.

Dept. of External Affairs  
Min. des Affaires extérieures

ATTENTION: Mr. David Brown  
Commercial Counsellor

JAN 7 1992

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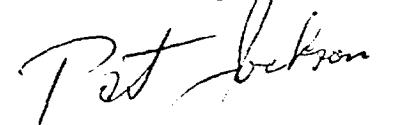
Dear David,

Enclosed you will find our report on the "STUDY OF THE PHILIPPINE FACTORY-BUILT HOUSING MARKET," together with the related albums of photographs.

I believe it meets or exceeds the terms of reference for this study with one minor exception. As noted in the report, the private sector has not been particularly responsive to our approaches for information on their pre-fab housing activities. Consequently, I have not been able yet to compile a very extensive list of companies that engage in this business. If, after reading the report you feel this is a deficiency, let me know and we will attempt to expand the list. (In fact, I am advised there are not many such firms.)

I trust this report has fulfilled its intended purpose. If any Canadian builders wish to obtain more detailed information on Philippine prospects they are most welcome to contact us and we shall be glad to provide whatever assistance they require.

Very truly yours,

  
J.K. JACKSON

CC: Mr. R.N. Cerra

Enclosures.

JKJ:agj

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## LIST OF ABBREVIATIONS USED IN THIS REPORT

BLISS	Bagong Lipunan, (New Society), Sites & Services
C\$	Canadian dollars
DBP	Development Bank of the Philippines
GSIS	Government Service Insurance System
HDMF	Home Development Mutual Fund (also known as Pag-Ibig)
HFC	Home Finance Corporation
HIGC	Home Insurance and Guaranty Corporation
HLURB	Housing and Land Use Regulatory Board
HUDCC	Housing and Urban Development Coordinating Council
I.D.	Inside diameter
M <sup>3</sup>	Cubic metre
NEDA	National Economic Development Authority
NHA	National Housing Administration
NHC	National Housing Corporation
NHMFC	National Home Mortgage Finance Corporation
OSB	Oriented Strandboard
PNB	Philippine National Bank
PVC	Polyvinyl Chloride
SSS	Social Security System
SQ. Mtrs.	Square Metres

## A. INTRODUCTION.

Early in this study of the potential for Canadian private sector participation in the Philippine mass public housing programme it became apparent that any such market entry would have to involve close participation with the various relevant Philippine Government agencies. Private sector housing largely serves the middle and upper income brackets wherein units are either constructed individually or in relatively small blocks whereas Canada's entry into this market is predicated on the premise that there may be a place for Canadian technology in "assembly line" housing. That restricts the opportunities almost entirely to the public housing sector.

Therefore, this report will focus on the various Government agencies concerned with housing, their programmes and their sources of funding.

For the most part, good cooperation was received from the administrators of the various agencies approached. These are largely a younger, pragmatic group of technocrats, some drawn from the private sector, who have been put into office by the Aquino administration. In marked contrast to their predecessors, they appear to be making a fairly dedicated effort to alleviate the enormous lack of livable housing for the lower income groups. In the process, they are also attempting to streamline the management of the housing sector by eliminating some of the overlapping and duplication of functions within the Government housing administration.

However, at this point there still exists some overlapping and inter-agency rivalry. Not all the agency managers interviewed expressed the same philosophy regarding the most workable solution to the national housing shortage and in some instances, statistics provided by one agency did not coincide with those from another. This report has attempted, to the extent possible, to remove these inconsistencies but some remain and, where noted by the reader, the cause should be understood.

With one notable exception, the private sector was less responsive to approaches in connection with this study. Reduced to its simplest terms, the general attitude seemed to be that all that Canada could contribute was funding and that Canadian housing technology had little relevance in this market.

All monetary figures quoted have been converted to Canadian dollars at the official exchange rate of C\$1:PESOS 15.512 prevailing on July 21, 1987.

**B. EXECUTIVE SUMMARY:**

There appear to be four possible means of entry into the Philippine mass housing market for interested parties in the Canadian private sector.

1. By obtaining Canadian Government funding. The one theme common to all opinions expressed was that the surest way for Canadian companies to gain a foothold in this market was if Canada offered concessionary funding for Philippine housing and tied it to participation by the Canadian private sector.
2. By taking over the NHC building component complex at Novaliches. The head of HUDCC has stated that, "Whoever will take on the NHC complex can write their own ticket in public housing." For details of this prospect, see ANNEXES 4 and 5 and photographs 1 to 28.
3. By developing a house that meets the essential needs of low-income Filipinos and can be mass-produced at a price they can afford. This should be done in a joint-venture with a Philippine partner who has the capability to market it successfully.
4. By participating as a straight investor in a minority position with an established Philippine home builder. (See comments under Heading F, "Private Sector".)

C. HOUSING OVERVIEW:

Whereas public housing under the Marcos administration was almost solely within the means of the middle class, the Aquino Government housing policy appears to be directed toward providing affordable shelter for the low-income groups. The enormity of this task is illustrated by the following statistics which accompanied the October 30, 1986, announcement of the Government's six-year housing programme, 1987-1992.

Urban housing units	1,600,000
Rural housing units	<u>1,800,000</u>
Total units in 6 years	3,400,000
Construction target for 1987	91,800
Funding required for 1987	C\$264,311,500
Beyond 1987, estimated funding	
required each year to meet targets	C\$1,031,459,500
Funding presently being generated	
annually within existing system	C\$225,631,760

Obviously, without a massive reallocation of the very limited national budget, it will be impossible to achieve these idealistic targets. Even the modest goal of 91,800 units in 1987 will probably not be achieved. However, to even come close will be a major advance over the 40,000 units which was the maximum constructed in any previous year.

The new six-year programme focuses on providing affordable shelter to the lower income groups and the "poorest of the poor". In order to do so, a two-part concept has been evolved.

- To reduce shelter to its cheapest and most basic elements, ranging from slum upgrading, on up through provision of a serviced site, to financing of a home and lot costing maximum C\$10,750.



- To provide access to mortgage funding for any wage earner who has enough income to commit 20% to 25% of his earnings to mortgage payments.

In establishing mortgage eligibility criteria, the target population has been stratified by income as follows: (Percentages in upper and lower groups are cumulative to 100%.)

- Lowest 30%; "The poorest of the poor." These people comprise 50% of the national housing need but cannot afford more than a token monthly payment of C\$3.25 and will have to receive subsidized housing.
- Upper 70%; in this group, housing loans are considered to be recoverable except for the bottom 20% which will have to be subsidized.

<u>INCOME GROUP</u>	<u>HOUSING COST</u>	<u>MORTGAGE CEILING</u>	<u>INTEREST RATE</u>
Lowest 20%	subsidized	C\$2900	9%
Middle 30%	at cost	C\$5800	12%
Highest 20%	at market	C\$9670	15%

To put matters in perspective for Canadian builders, within the context of the Philippine housing program, they are talking in terms of building costs far below anything imaginable in Canada. The selling prices of the four model homes open for display and sales at the NHA head office compound range from C\$6.00 per sq.ft. to C\$15.00 per sq.ft., (not including the lot).

Any Canadian builders seriously considering entry into this market should first adjust their thinking to housing in keeping with local needs and tastes and then determine if they can design a house that meets these cost criteria and mass-produce it at a profit in this environment.

**D. GOVERNMENT AGENCIES INVOLVED  
IN HOUSING:**

All agencies relative to housing formerly came under the authority of the Ministry of Human Settlements headed by Mrs. Marcos. This administration was marked by extravagance and inefficiency and was one of the first institutions to be abolished by the new Government. When the Ministry was disbanded, all agencies engaged in housing were grouped under the Housing and Urban Development Coordinating Council which has cabinet rank but is not a full scale Department.

Some of the redundant housing agencies were eliminated and the Council now consists of the 14 members listed below. What follows is a brief outline of these 14 members and their role within HUDCC. A detailed dissertation on the workings of each of these agencies is beyond the scope of this report but it should be noted that this information was compiled and is available to interested parties on request.

The agency "BLISS" is included in this listing because, although it is being phased out and is not a full member of HUDCC, it has played a major part in housing construction in the past and still has a number of projects in various stages of completion. NHC has the same status as BLISS but is included because of the significance of the NHC home component complex.

The HUDCC council members are the following:

HUDCC. Housing and Urban Development Coordinating Council.

1. The central, governing body of all public housing activity.
2. Is attempting to rationalize the interrelationship of all Government agencies involved in housing and eliminate redundant functions, etc.

3. In consultation with the agencies listed below, it formulates policy and sets funding priorities.

NHA. National Housing Authority

1. The management of NHA states that, although it is a member of HUDCC, it exists as an autonomous body reporting to the Office of the President.
2. NHA coordinates with HUDCC on policy.
3. Under the new housing organization, NHA will be the sole body concerned with actual construction activities. They will not engage in building on their own but will contract it out to the private sector. This makes them a key agency for any Canadian builder wishing to enter this market.
4. Of particular interest to Canadian builders is the NHA Joint Venture Private Sector Programme which has no prescribed format and is open to any one, local or foreign. Under this programme, NHA could make their serviced sites available to developers willing to build. This approach avoids the problem of land ownership which is not open to foreign entities.
5. NHA will ultimately take over the functions of BLISS.
6. They are moving away from their former "house and lot" programme because of it being affordable only by the middle class and have evolved three new approaches intended to make shelter available to the population in the bottom 30% income bracket.

(a) Upgrading Slum Areas.

- Secure land tenure.
- Contract out development work such as upgrading utilities. No home construction.
- Award lot titles to families on monthly amortization.
- This programme is designed for full cost recovery.

(b) Providing Sites and Services. (See Photos Nos. 55 to 59.)

- No home construction.
- Lots reduced to 48 sq.mtrs. to make them affordable. Mortgages available through GSIS, SSS, and NHMFC.

(c) Resettlement Projects.

- Similar to 6 (b) above but heavily subsidized.
  - Intended for the "poorest of the poor". Occupants will pay maximum C\$3.25 per month.
7. The subsidized projects of NHA are funded by an annual budget of C\$32,200 which is the only funding from the national treasury supplementing the mortgage money drawn from SSS, GSIS and HDMF.

NHMFC. National Home Mortgage Finance Corporation.

1. Is now the sole agency processing public sector mortgages.
2. All funds are drawn from GSIS, SSS, and HDMF and channelled to the public through private sector development banks who do the actual loan processing and charge NHMFC a service fee.
3. There is no counterpart funding from the Government other than the annual grant of C\$32,200 to NHA.

HIGC. Home Insurance and Guaranty Corporation. (It replaced the former HFC, Home Finance Corporation.)

1. It is capitalized from the national treasury.
2. HIGC's prime purpose is to encourage private developers to enter into low-cost housing projects by acting as guarantor for their bank loans.
3. If a developer defaults on a bank loan, the bank will call the HIGC guarantee for the entire outstanding principal plus interest at 8-1/2%. From the private bankers' standpoint, there are several advantages to an HIGC guarantee.
  - (a) In the event of a guarantee call, the 8-1/2% interest is tax free.
  - (b) The bank is exempted from the single borrower limit of 70% of the appraised value of the collateral property.
  - (c) The entire principal of the loan is considered non-risk and therefore does not affect the banks' reserve requirements.

HLURB. Housing and Land Use Regulatory Body.

1. Establishes and regulates housing standards.
2. Regulates private realtors.
3. Carries out land use planning in urban areas.
4. Issues land use permits.

GOVERNMENTAL SUPPORT AGENCIES.

There are five senior Government Departments which are members of HUDCC.

1. Department of Finance.
2. Department of the Budget.
3. Department of Public Works and Highways.
4. Department of Lands.
5. NEDA (National Economic Development Authority).

PRIVATE SECTOR REPRESENTATIVES.

The private sector has four seats on the board of HUDCC representing:

1. Builders
2. Lending institutions
3. Architects and town planners
4. The urban poor.

In addition to the foregoing 14 members of HUDCC, the following two agencies are of sufficient significance to warrant mention.

BLISS. Bagong Lipunan, (New Society), Sites and Services

1. Originally established to provide low-cost public housing in conjunction with livelihood projects but soon became extravagant, producing homes only affordable by the middle class. (See Photos 47-54.)
2. Its function was to buy land, design the buildings and contract out construction to the private sector. During its active existence it was the construction arm of SSS, GSIS and HDMF.
3. Most units constructed were of the multi-dwelling high-rise type.
4. Presidential Executive Order No. 90 has decreed that BLISS be privatized.

5. At present, they have a number of projects in various stages of completion and/or marketing. No further construction is being undertaken and the function of BLISS is to liquidate its properties and phase itself out of existence.
6. Concurrent with the processes described under No. 5 above, BLISS is being merged into NHA which will take over all its operations.

NHC. National Housing Corporation.

1. This agency is more or less in a state of receivership by the Government. It is run by a board consisting of the four major creditors, DBP, PNB, NHA, and GSIS.
2. NHC owes NHA C\$270,750.
3. Its sole remaining asset is the house component complex at Novaliches which is covered in detail under ANNEXES 4 and 5 and Photos Nos. 1 to 29.

**E. FUNDING: NEEDS, SOURCES AND APPLICATION.**

1. Funding needs are summarized under Heading C, "Housing Overview"
2. Government agency mortgage funds are derived entirely from the three national payroll savings systems detailed below. Since these are made up of employee/ employer contributions, it can be said that the Government housing programme is financed by the private sector. The only direct injections of Government funds are the annual grant to NHA and the funding of HGIC. Efforts are also being made to secure financial assistance from external sources and there is hope for a soft loan of U.S.\$175 million from World Bank. This loan would be channelled through NHMFC to the lowest 30% of the economic spectrum.

The three national savings plans are:

(a) GSIS: Government Service Insurance System.

- Membership and payroll deductions are compulsory for all Government employees.
- The Government makes counterpart contributions.
- Intended as a retirement pension plan.
- Members can finance mortgages through GSIS once their savings have reached the required level.

(b) SSS: Social Security System.

- Functions the same as GSIS for all non-Government employees.

(c) HDMF: Home Development Mutual Fund.

- It is patterned after the Central Provident Fund of Singapore and Malaysia wherein members' contributions go directly into their individual savings account paying 7-1/2% interest.
- Employers make matching contributions.
- Membership used to be mandatory for all Philippine wage earners but has recently become voluntary.

At present only 53% of the country's total work-force is enrolled in one or more of these contributory savings plans. The mortgage funding generated annually from these sources amounts to approximately C\$212 million.

GSIS	C\$135 million
SSS	45 million
HDMF	<u>32 million</u>
	C\$212 million

3. These funds are intended to be channelled entirely through NHMFC into mortgages for the eligible lower income groups.

The criteria for eligibility, loan ceilings and interest rates are detailed under Heading C, "Housing Overview". To qualify for a mortgage of 20 to 25 years, the borrower must demonstrate that he can make a 10% down payment plus commit up to 25% of his income to mortgage amortization. The balance of 90% can be covered by mortgage financing.

Financing for builders of low-cost housing that meets HUDCC criteria can be obtained from a combination of commercial banks and NHMFC funding. Backed by an HIGC guarantee, the builder can obtain a working capital loan from the banks. Sales are made on the basis of a 10% cash payment and a 90% mortgage, issued by the builder, who then sells the mortgage back to NHMFC for cash and pays off his loan. This funds flow cycle will continue to repeat itself to the extent that NHMFC funding is available.

#### F. PRIVATE SECTOR:

Traditionally, the private sector has not been active in the low-cost mass housing sector. It has largely been devoted to the building of high-priced, architect-designed homes, (in the Philippines, architects usually act also as the builder), or middle class, suburban housing tracts. Homes in these tracts sell in the range of C\$15,500 to C\$29,000 for houses with floor space of 80 sq.mtrs. to 100 sq.mtrs., not including lot. Although developers have been hampered by both cost and availability of mortgage money, the profits have been attractive.

Under the 1986 National Housing Programme, the private sector has been nominated to provide 55% of the urban low cost housing targets. It remains to be seen how it responds to this Governmental requisite. Certainly the four NHA display houses detailed in ANNEX 3, all erected and offered for sale by private contractors, indicate a certain degree of positive response.



Under the Government's low-cost housing programme, private builders will look to NHMFC to provide a cash, "take-out", by purchasing their mortgages at face value, thereby realizing their profits plus providing them with the working capital to construct further units.

One major private builder stated that Canadians would be welcomed as investment partners by responsible Philippine builders and could expect an after-tax return on investment of 12% to 24%. However, he conceded that because repatriation of these profits would come via an NHMFC take-out which basically amounted to an outward remittance of Filipino savings, this could raise certain nationalist objections. There have already been editorial protests in the press over the Korean group allegedly displacing Filipino contractors and being financed by Filipino's savings through NHMFC in the process. In essence, this complaint is correct.

The entry of this Korean group into the low-cost housing market is an interesting case study. They are reputed to be a large building concern who have developed the SRC panel technology in Korea and have been able to win the support of NHA on the basis of technology transfer to their local joint venture partner. Initially they propose to do a turnkey development of 2500 units. Korean supplier credits will finance the establishment of the panel plant in Manila. They will build on serviced sites provided by NHA and raise working capital in the Philippines via an HIGC bank guarantee. Upon sale of the units, mortgages will be sold to NHMFC so, essentially, the venture is largely funded by the Philippine Government.

#### G. BUILDING METHODS:

Philippine construction methods vary widely, with efficiency being in inverse proportion to home cost. Due to extremely low labour rates, in the area of C\$6.50 per day for the building trades, they are universally labor intensive. In the case of the higher priced homes, they are entirely fabricated on site and virtually every piece of lumber is hand-planed and fitted in place. Even in the

middle class suburban housing developments constructed by private contractors, the houses are essentially put together, "piece by piece".

Moving down the price scale, in a typical, "tract house", development of say 200 houses, the general contractor would sub-contract the construction to small labour contractors who might take on the building of 10 or 20 units. This work, in turn, would be jobbed out to the various labour trades on a piecework basis. Consequently, the possibilities of assembly-line economies of scale are often lost.

By far the most popular style of large-scale home construction is the single storey house built of hollow cement blocks on a concrete slab and roofed with galvanized, corrugated sheets. This system is universal throughout the Philippines. For local builders it has several advantages.

- Materials are readily available and require very little preparation.
- It is simple and therefore requires minimal supervision.
- It lends itself to sub-contracting and labour peicework rates.
- It is relatively cheap, C\$12.00 to C\$15.00 per sq.ft.
- It is popular and readily saleable to any buyer who can afford it.

This construction system is graphically illustrated by Photos 61 to 69 in ANNEX 6.

It is only with the recent emphasis on very basic low-cost housing that real progress has been made in construction methods. (See Photos and writeups on four NHA display houses, ANNEX 3). In general, both the contractors and building trades have an entrenched resistance to labour saving building techniques and this attitude has retarded the acceptance of more efficient methods.

Amongst the more knowledgeable architects, engineers and builders interviewed, there was an awareness of North American assembly-line house construction techniques and recognition of the fact that, by comparison, the highly labour intensive Philippine methods were far less efficient. At the same time, there was considerable skepticism as to the applicability of these advanced techniques in this environment. They claimed that the radical differences between the economics of the Philippine and Canadian industries largely negated any cost savings achieved through a foreign technology and offered to cite instances where this had been tried and abandoned as a failure.

A prime example of this is illustrated in ANNEX 6. Photos 72 and 73 are of a house constructed of factory-built, pre-cast concrete panels and erected on site. This system was abandoned in favour of the universally popular hollow-block system demonstrated in Photos 61 to 69. Two reasons stated for this rejection of the pre-cast system were the cost of the crane for erection and the fact that home owners always improve on the basic "core house", (see Photo No. 71), and it is much easier to breach the walls of a hollow-block house when remodeling.

Any builder seeking to secure a place in the Philippine housing market on the strength of the superior technology they have to offer will first have to convince at least one major contractor that it offers sufficient cost savings to make it worth trying. Following that, the architects and engineers will need to be instructed in the new approach. Finally, the workforce will have to be educated to accept the new methods.

This may sound daunting but it is achievable as evidenced by the fact of the apparent initial success of the Korean SRC panel system being marketed as the "Cory House". (See ANNEX 3 plus photographs.)

Canadian Embassy



Ambassade du Canada

9th Floor, Allied Bank Center  
6754 Ayala Avenue  
Makati, Metro Manila

08 May 1987

Mr. Pat Jackson  
President  
GOODWOOD MANAGEMENT CORPORATION  
Suite 403, Araza Building  
Paseo de Roxas, Makati  
Metro Manila

Dear Pat:

As discussed during our meeting on Friday, 08 May, please consider this letter as our agreement to engage your services to conduct a study of the Philippine Pre-Fab or Factory-Built Housing Market.

The cost of the study must not exceed Cdn\$5,000.00 or its equivalent in Philippine pesos or U.S. dollars and should cover all of the components outlined in the attached project description.

Please let me know if we can help with any of the appointments you will need with government agencies.

Regards,

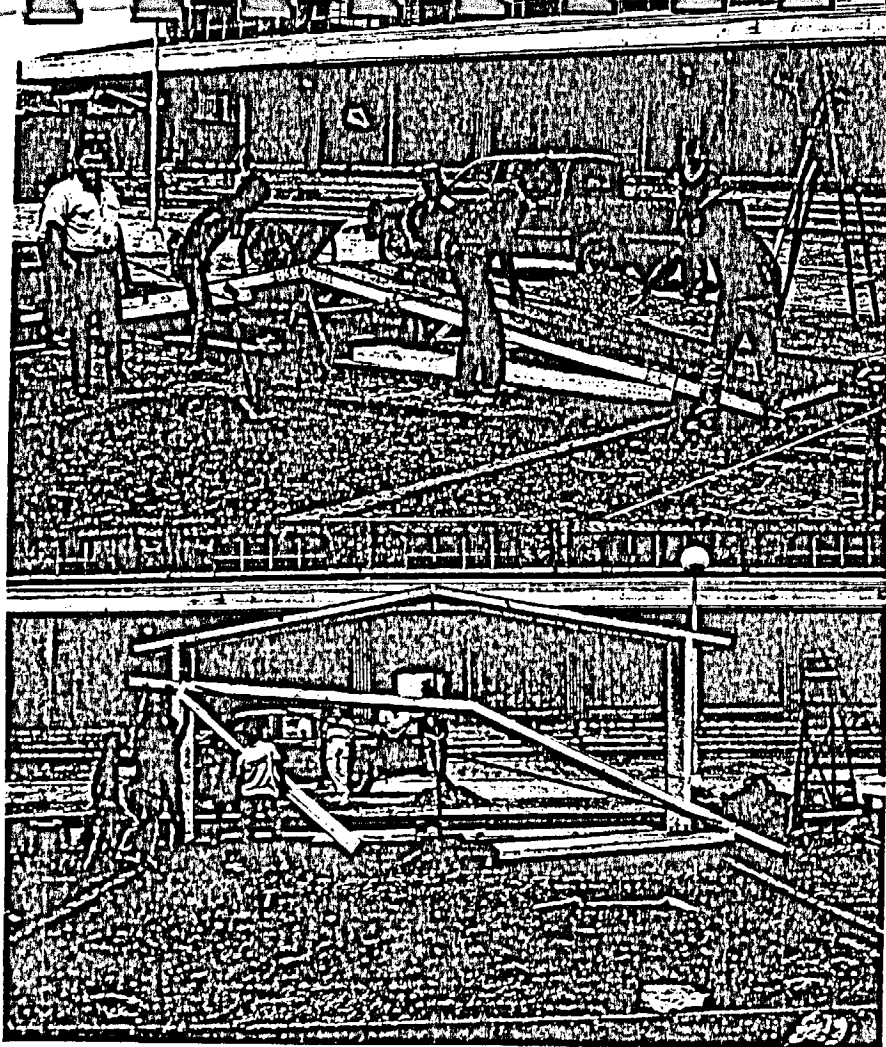
*David W. Brown*  
DAVID W. BROWN  
Counsellor (Commercial)

## MARKET STUDY

TITLE : FACTORY-BUILT HOUSING MARKET POTENTIAL IN PHILIPPINES

### COMPONENTS:

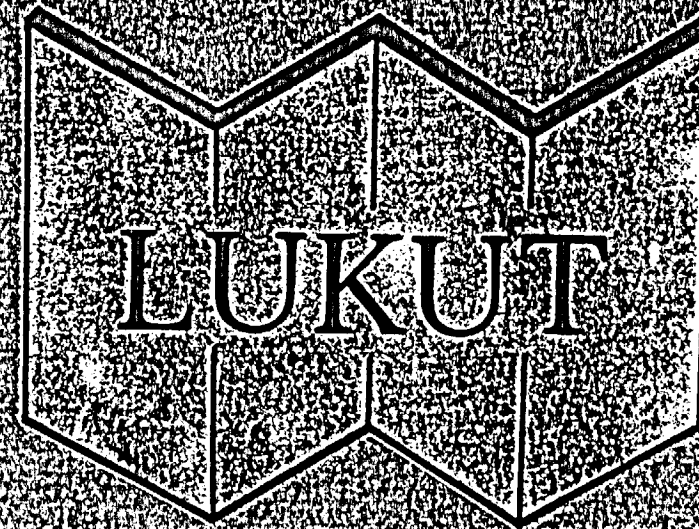
- (i) Listing of various government and private entities involved in the provision of funding for housing and a brief description of their lending program.
- (ii) A listing of existing pre-fab or factory-built housing capacity including names and addresses of companies, ownership, operating status, and description of their existing physical plant and product(s).
- (iii) Description of the market, both existing and potential, including size of market, description of type of housing being constructed, identification of existing and potential customers i.e. developers, private companies who provide housing to employees, government housing, etc.
- (iv) An assessment of the potential for the application of Canadian factory-built housing technology in the Philippine market in form of direct investment in new Philippine plant capacity, or joint-venture with existing factory housing producer, or licensing of technology, etc. The assessment should include the economics or viability of employing pre-fab or factory-built technology in the Philippine housing construction context. Is it practical?



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**HOW TO CHOOSE THE CORRECT LUKUT UNIT:  
(or you can design your own from standard panels)**

Depending on the frontage of your lot you can choose the appropriate unit.

**Frontage:**

10 m	3 BR w/ carport	(LUKUT 67 or 77)
8 m	2 BR	(LUKUT 45 or 52)
7 m	2 BR	(LUKUT 30 or 36)
6 m	2 BR	(LUKUT 33D)
4-5 m	1 or 2 BR	(ROW TYPE or STUDIO)

**SWITCH TO A HOUSE OF THE FUTURE NOW:**

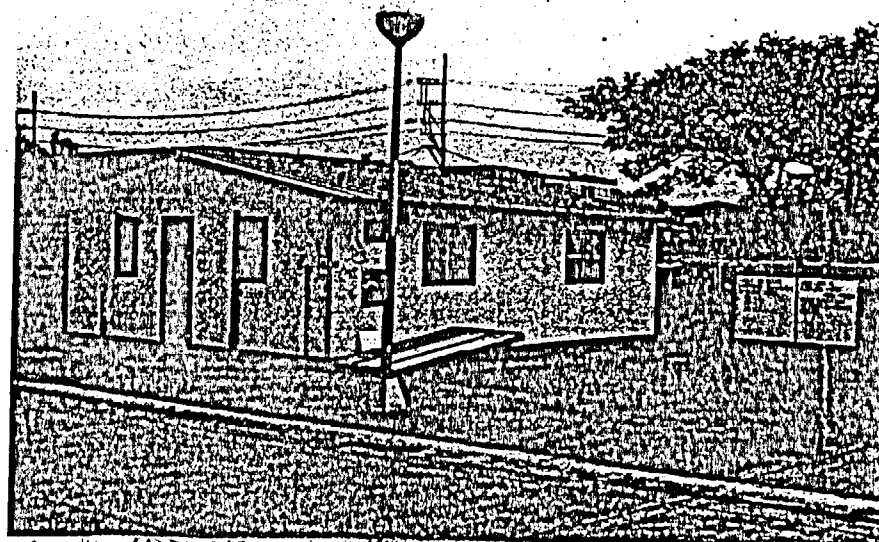
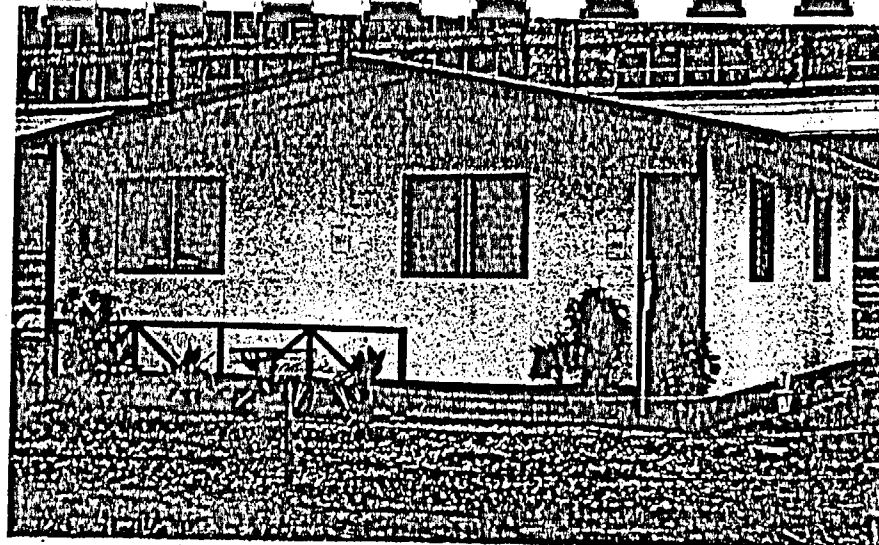
Due to their advantages paneled houses are widely used in developed countries.

In US Bases, Subic Bay and Clark Field, houses for personnel are invariably pre fabricated in the US shipped and erected here.

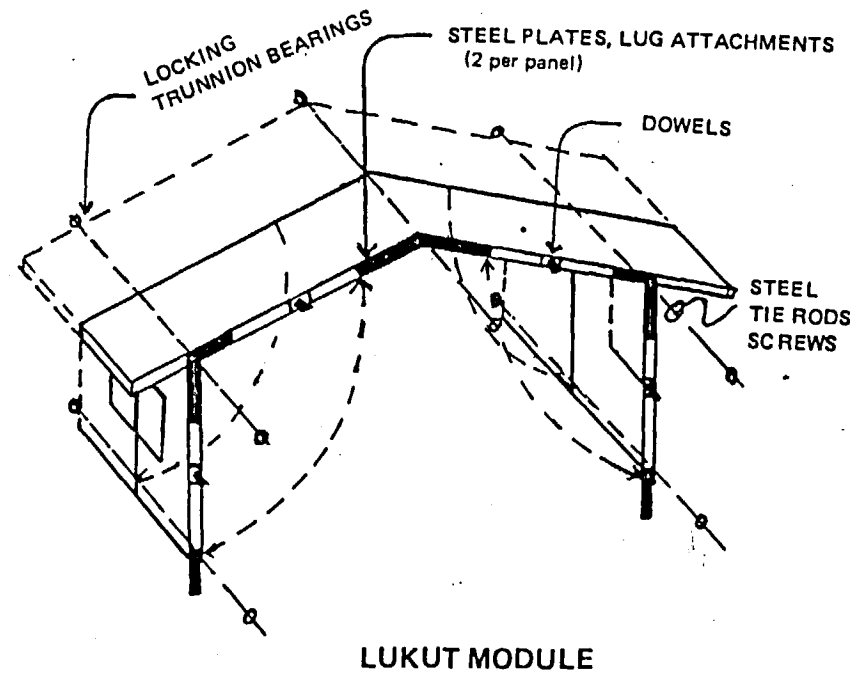
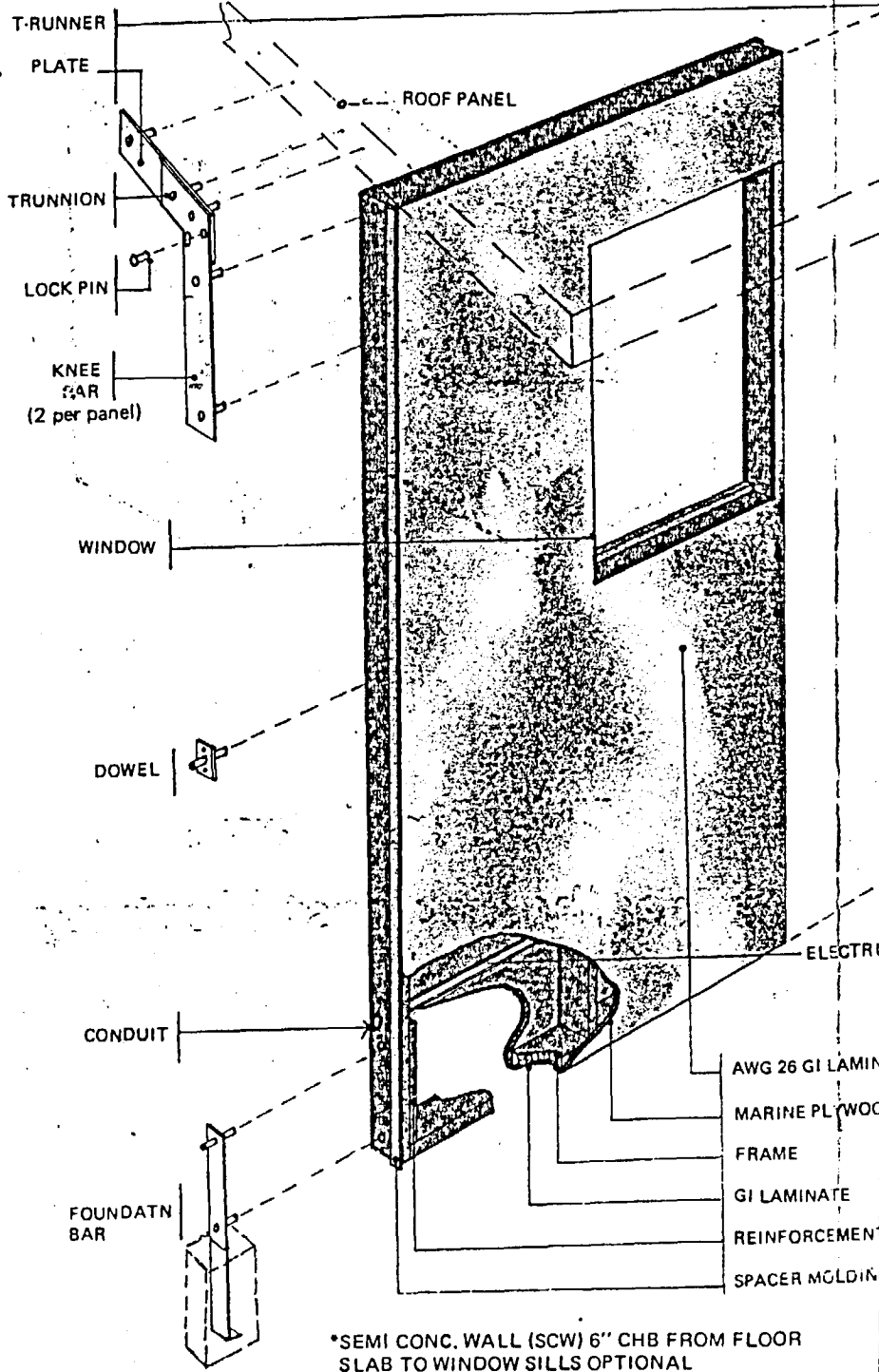
The LUKUT series of structures is designed to utilize readily available standard materials, labor and technology to produce shelter units in the most economical way contemplated at the present.

This is accomplished by:

- a. Deviating from conventional methods and practices that tend to unnecessarily employ more expensive and non-functional materials and labor.
- b. Centralized production to maximize the use of labor saving procedures and equipment, ease of supervision and control, materials accessibility and quality.
- c. Modular construction for flexibility, transportability and ease of erection.



WALL PANEL



**WHY REALLY LOW COST:**

With conventional construction methods costs can only be reduced by miniaturization or by sacrificing comfort, thus affordable shelters become "DOLL" houses or incomplete "SAUNA" houses.

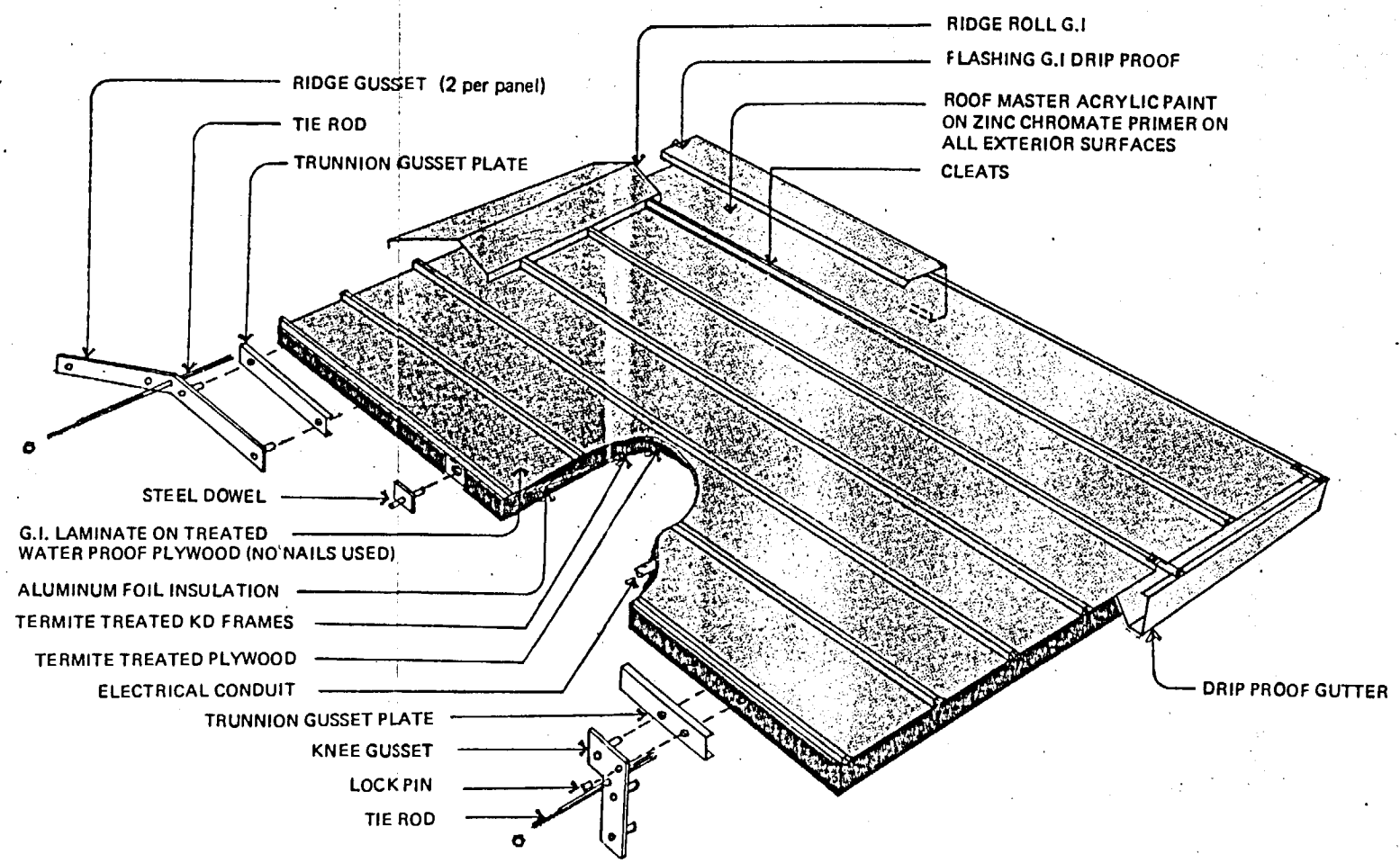
**The LUKUT method:**

1. All members, roof, ceiling, double walls are functional structural panels eliminating redundant framing without sacrificing strength.
2. Complete factory fabrication insuring standardization and quality at least cost.
3. Mechanization to enable folding of units for transportability and unfolding (erecting) at site ready for occupancy all in one day.
4. Use of high technology fasteners, bonders, insulators, chemicals and paints to insure durability.

USING THE SAME MATERIALS LUKUT STRUCTURES MAXIMIZING THESE METHODS COST ONLY HALF THE COST OF EQUIVALENT CONVENTIONAL STRUCTURES.



# LUKUT ROOF PANEL



## ANNEX 3

### DETAILS OF FOUR FACTORY-BUILT HOMES

There are a variety of semi pre-fab homes offered in the market but there are four basic houses currently being promoted through NHA which exemplify the true low-cost housing concept the Government has adopted. At the invitation of NHA, each of the four building contractors has erected in the NHA central office compound the display homes shown in Photographs Nos. 29 to 49.

The details of these are as follows:

#### "Lukut House".

(See enclosed sales brochure and Photos 30-36)

- Floor area 32 sq. mtrs.
- Concrete floor slab
- All constructed of exterior grade local plywood.
- Roof is sheet metal with acrylic enamel over zinc chromate primer.
- Interior finishing includes: ceiling; two fully partitioned rooms; enclosed toilet and shower; kitchen sink; plumbed and wired. There is no septic tank.
- Delivered pre-fab and builder claims it can be erected on a prepared site in 8 hours.
- Price C\$9.73 per sq.ft.
- Builder: Eastern Construction Company, Inc., 497 E. Rodriguez St. Avenue, Quezon City, Metro Manila, Tel Nos. 711-27-01 to 08. Mr. Magin San Juan is the President of this group.

#### "Cory House". (See Photos 36-39)

- Floor area 36 sq. mtrs.
- Concrete floor slab.
- Entirely constructed of SRC panels which consist of a polystyrene core with wire mesh on both sides to which concrete plaster is applied.

- Roof is also SRC panels.
- Interior finishing includes: vaulted, beamed ceiling; two fully partitioned rooms; enclosed, fully-tiled bathroom with sink, shower and toilet; kitchen sink; plumbed and wired.
- Price C\$8.~~55~~ per sq.ft.
- Builder: SRC International Development Corp., Phils., Ground Floor A&E Building, Greenhills, San Juan, M.M. with telephone No. 721-02-55. The General Manager is Mr. Loy Lim. This company is a joint venture between a Philippine builder and a large Korean construction group.

"Zytec House". (See Photos 40-42)

- Floor area 36 sq.mtrs.
- Concrete floor slab.
- Framed in wood with exterior/interior wall panels of coconut fibreboard. This construction is the flimsiest of the four houses on display.
- Roof is plain sheet metal painted over.
- The design of the house is unique. Approximately the rear one third of the floor area is not enclosed but consists of a roofed-over back patio where the kitchen and eating area are located. Interior finishing includes: one partitioned room; a shower stall with concrete walls; water-sealed toilet and septic tank; kitchen sink; plumbed and wired. There is no ceiling.
- Price C\$5.~~82~~ per sq.ft.
- Builder: Zytec Builders Inc. Amorsolo Mansion, 130 Amorsolo Street, Makati, M.M. Tel. No. 818-6811. The General Manager is Mr. Earl Calp, of German/American ancestry.

"MKL-33 House". (See Photos 43-46)

- Floor area
- Concrete floor slab.
- Entirely constructed of pre-cast panels composed of polyester, cement and pea gravel aggregate.
- Roof is corrugated, galvanized sheet metal.
- The builder has not completed this house and NHA was unable to supply details regarding what would be included in its finished state. As it now stands, there are no doors, windows, interior partitions or ceiling.

- Price C\$9.58 per sq.ft.
- Builder: Multi-Development Corp., Cityland 1V, Salcedo Village, Makati, M.M. with Tel. Nos. 817-8150 and 85-44-96. The contact person is Mr. Pablito Calma. This is a local company using American technology.

With the exception of the MKL-33 House, the builders have established sales offices in the display homes and the public is invited to visit them and sign applications to purchase which are then processed through the mortgage approval mechanisms of HUDCC. Based on applications submitted as of June 1987, the public's preferences are as follows:

<u>HOUSE MODEL</u>	<u>COST PER SQ. FT.</u> <u>IN CAN. \$</u>	<u>NO. OF APPLICATIONS</u>
Lukut	9.73	2,000 in 3 months
Cory	8.68	12,000 in 1-1/2 months
Zytek	5.82	18,000
MKL-33	9.58	NONE

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June 26, 1987

REF: OGC-0092-JKJ-GWMC

Housing and Urban Development  
Coordinating Council  
8th Floor, Allied Bank Building  
Ayala Avenue, Makati

ATTENTION: Mr. Teodoro K. Katigbak  
Chairman

Dear Mr. Katigbak,

Since our conversation on June 3, I have conducted an assessment of the NHC complex at Novaliches and, as promised, I am passing on to you herewith my observations in the hope that they may be of some benefit to you.

Let me state at the outset that without seeing the plants in operation it is not possible to make an accurate appraisal of their mechanical condition. Also, not having access to their financial records, I can only draw reasonably logical economic assumptions based on past experience.

Certain facts are fairly obvious. The entire complex is over-specified, over-built and probably grossly over-priced. The scale on which it was designed and its installed capacity far exceed the market it was intended to serve and, in fact, at its date of construction only a very limited market existed for some of the components it was designed to produce. That same market restraint probably still applies today.

So much for past history. My purpose in assessing the complex now was to attempt to determine:

- A workable operating strategy
- What is its recoverable value under various strategies?
- What contribution could it still make to the mass housing programme?

In my opinion, because of its original extravagance in design and cost, only a portion of its dollar cost could be recovered through one or a combination of the following three operating strategies.

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## A. As An Integrated Complex Serving a National, Mass-Produced Housing Programme.

That was the original purpose for which this complex was designed. However, the intended market never developed to the extent envisioned and, at most, only absorbed about 40 percent of the plants' capacity. This was probably due to a combination of factors.

- The fragmented nature of the housing industry and its absence of standardization.
- The entrenched resistance of both developers and the building trades to the introduction of new methods and materials.
- The usual inefficiencies of Government-run industries versus private ownership.

As it stands today, this complex in its entirety could only operate at a profitable level of capacity if it was integrated with a massive national programme of standardized, "assembly-line" housing, all using the same components. One possibility would be for a consortium of private-sector builders to assume ownership of the plant and all standardize their building plans so as to utilize its components and thereby enjoy the economies of scale.

The likelihood of this approach may be somewhat reduced because of the NHA's current policy of providing only serviced sites and encouraging builders or even individual lot owners to exercise their own initiative in getting some sort of shelter erected on the site.

There have been some parties, most notably the group promoting the "Korean House", who have stated an interest in leasing the entire complex but since their production would only utilize a portion of the complex they could not be expected to pay a lease fee that would recover more than a fraction of its present book value. Without a mass market that would accept close to 100% of its potential output, the inherent salvage value of this complex to any single, private operation is extremely limited if its output is restricted to home building components only.

## B. As An Integrated Complex Producing Housing Components and Exportable Wood Products.

The sawmill, woodworking and OSB plants all have export and domestic wood products sales potential if

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properly managed. The manufacturing processes are totally compatible with those for housing components and the two production programs are complementary rather than mutually exclusive. Under a single, profit-oriented management, the complex could serve both markets and achieve a level of plant utilization which would be profitable and enable the operator to pay a reasonable lease or lease/purchase fee. The sale/profit potential of the individual plants within the complex is dealt with later in this report.

Raw material supply, (i.e. logs and lumber), is the key to profitable operation and without an adequate supply base, the plant is of little value to anyone. If Governmental influence could be enlisted to ensure a wood supply it would add greatly to the attractiveness of the plant in the eyes of interested investors.

If a raw material base can be secured, Strategy "B" would definitely be my preferred recommendation.

## C. Lease Purchase of Individual Components of the Complex.

Unless a deal can be struck under the foregoing Strategy "B" for integrated operation of the entire complex its recoverable value to the Government is probably greater if disposed of as separate components. In considering this option, however, there should be full awareness of the hazards involved. The experience of agencies such as DBP and PNB with lease or lease/purchase disposal of assets has been problematic.

The lessee usually has little or no equity in the plant and all too often adopts a short-term, exploitive attitude. Maintenance is minimal and sometimes outright looting takes place. Eventually the plant is run into the ground and the lessee abandons it, often with several months lease payments in arrears, and it reverts to the owners in an unuseable, unsaleable state.

Further to the above, there are also a number of practical problems involved in the joint usage of a formerly integrated complex by independent operators of its separate components. In the process, the shared, common facilities are usually abused and/or neglected and it is very difficult to attach responsibility for this.

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Strategy "C" would be the least attractive option in my opinion.

## D. Profit/Sales Potential of Individual Plants.

### 1. General Physical Condition.

Because it was largely overbuilt to start with and was never worked at full capacity, the plants appear to be largely intact and in reasonable mechanical condition. However, without seeing them in actual operation, it is not possible to conduct a detailed assessment.

### 2. Woodworking Plant.

This facility probably has the greatest single potential for export sales and profits. Its principal value lies in the kilns and industrial woodworking section. The highly sophisticated furniture-making section, because of its high-tech complexity is probably of secondary interest. Unless the wood preservative plant is needed to treat house components, it has little value. Similar plants are sitting virtually idle elsewhere in the Philippines.

### 3. Sawmill.

This appears to be in good condition but it is a fairly rudimentary mill with limited capacity. It can make a contribution to the lumber requirements of the woodworking plant but cannot come close to supplying its total needs.

### 4. OSB Plant.

This was constructed as a particleboard plant and converted to an Oriented Strandboard facility. There is an export market for OSB as veneer substrate but the samples I saw were not of export quality. The only other OSB plant in the Philippines sells almost its entire output domestically.

The plant can be operated on sawmill waste and plantation woods such as Ipil-Ipil and Falcata. If these supply sources can be marshalled in sufficient



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volume, the plant has commercial possibilities both as a commodity product and for home components such as ceilings and interior walling.

## 5. PVC Plant.

This was reported to be in full commercial production up to the time operations were suspended and the former plant manager states that it could be returned to full operation within one week. If it can be competitive with other PVC pipe producers in the private sector, it could be a profit centre within the complex.

## 6. Lightweight Concrete Plant. (Swedish "Ytong" process.)

According to the former plant manager, NHC was able to sell 100% of the plant output during the heyday of luxury hotel construction but the product subsequently gained very limited acceptance in the housing market. Its cost on a square meter basis is higher than traditional hollow block construction and builders failed to take into account the offsetting cost savings achievable because of its strength, lightness and ease of installation.

Another problem was the distance from the source of the basic raw material, silica sand. The delivered cost of this may make the product uncompetitive. If a less distant source of supply can be developed and a successful education/marketing program mounted with the home building industry, there is a possibility the plant could be reactivated. However, I rank it the lowest in terms of potential profitability.

The foregoing is intended only as a general overview of alternate strategies for the NHC plant. As such, I trust you find it of some assistance in formulation of a workable policy on disposal of this asset. If I can be of further assistance please feel free to call on me.

Sincerely,

J.K. JACKSON

CC: Mr. Alex Santos, HUDC

## ANNEX 5

### NHC FACTORY BUILT HOUSING COMPLEX - NOVALICHES

#### A. RELEVANCE.

The relevance of the NHC Complex to this study stems only from the fact that the head of HUDCC has stated the takeover of this asset would assure the buyer of an entre into the Philippine public housing industry.

ANNEX 4 outlines three possible approaches to the aquisition and operation of this plant with the recommendation that "Strategy B" is probably the most workable one. At this point, it is doubtful if the Government itself has any firm idea of what would be an acceptable offer for this asset. It appears there are not many interested buyers at present although the group promoting the "Korean" house have stated an interest in leasing the entire complex and an American company, "Zytec" is reported to be showing keen interest in the OSB plant. At the right price, and with the other stated conditions satisfied, the operation of all but the light weight concrete plant could probably become a viable operation. However, it would be primarily as a wood processing complex with production of housing components a secondary feature of the product mix.

#### B. BACKGROUND.

This plant, located about 45 minutes drive from the Manila business district, was constructed by the Government during the early 1970's to supply the full range of all components required to support a very large-scale national low-cost housing programme. For a variety of reasons, it never fulfilled that intended purpose.

- (a) Dry Kilns: Hildebrand, 3 chambers stated to have a capacity of 100 MBF 2 inch lumber each.
- (b) Industrial woodworking consisting of multi-rips, moulders, trimsaws, end-tenoners, etc. There are also assembly presses for door and window frames.
- (c) Complete furniture production line.
- (d) Wood preservative plant with 2 large pressure-treatment vessels.

4. Lightweight Concrete Plant. (See Photos 22-24)

- this is largely covered under ANNEX 5, Heading D-6.
- output on 24 hour operation stated to be 14,000 slabs per day in 30x60 cm. size in thicknesses ranging through 10/20/30 cms.
- process steam for the curing autoclaves is supplied by two bunker-fired boilers but can also be drawn from the wastewood boiler of the wood-working plant.

5. Boiler House. (See Photo 25)

Access could not be gained to this building but it appears to contain a fairly large German package boiler fitted for co-firing with either bunker fuel or pneumatically injected hogfuel from the wood working plant.

6. Polyvinyl Chloride (PVC) Pipe Plant. (See Photo 26)

This is a small but fully self-contained plant which was in full commercial production at the time of closure. No figures were available on output of sizes ranging from 3/4 in. to 3 in. I.D.



No. 1. Entrance to NHC Complex. Guardhouse and employee time clock station in right foreground. Woodworking plant in background.



No. 2. View of Office block.



No. 3. Truck scale for inward/outward measurement of raw materials and finished products.



No. 4. Lumber shed on right. Woodworking Plant in background. Note reinforced concrete shed construction and blacktop paving throughout.



No. 5. Building products warehouse on right.  
Sawmill in centre distance.



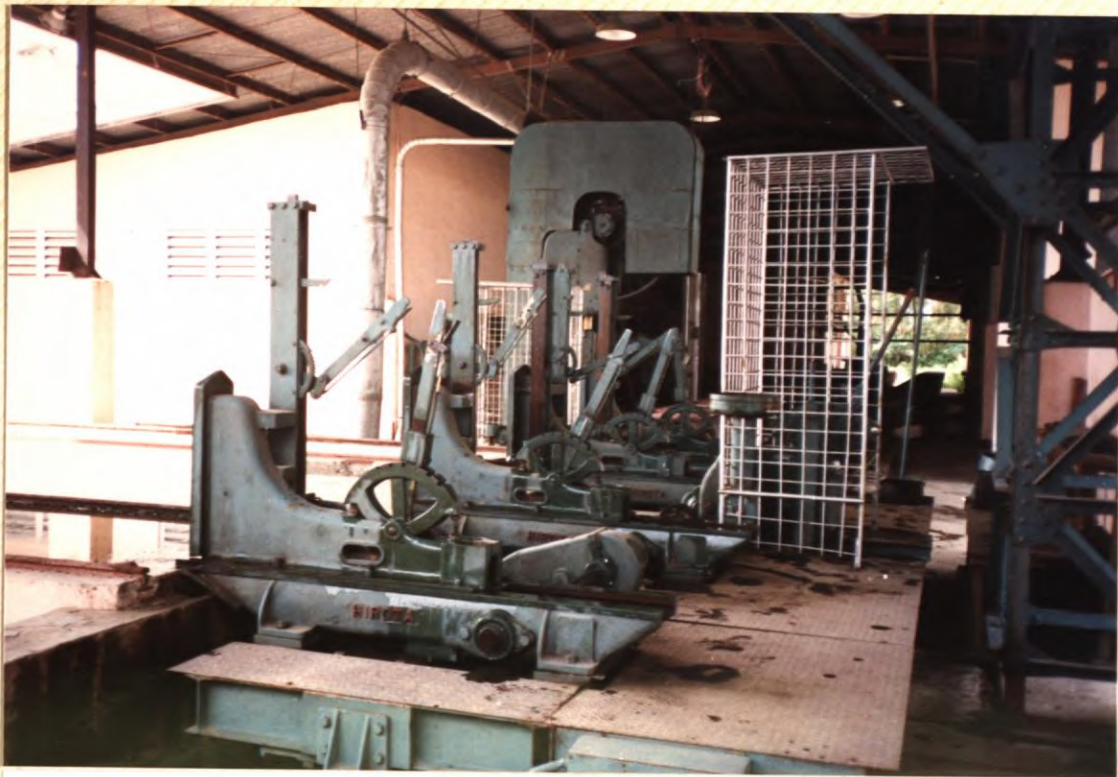
No. 6. Sawmill building to the left with  
warehouse in background.



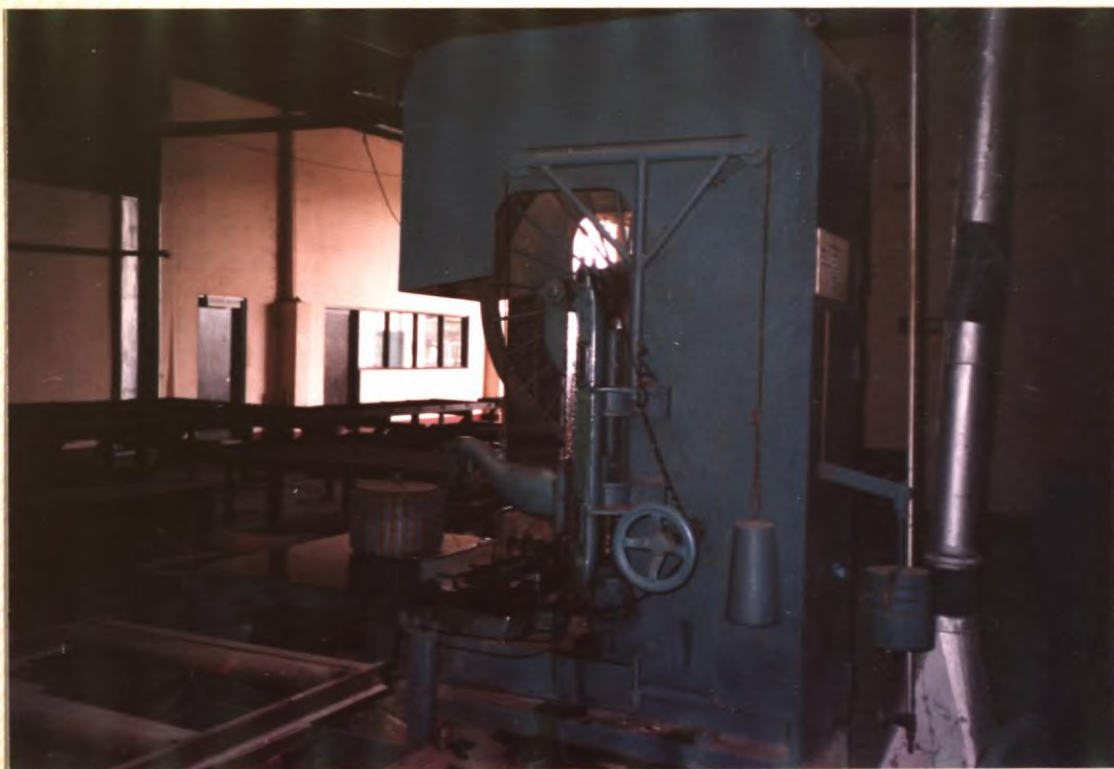
No. 7. Rear view of woodworking plant. 3 hectares of floor space under one roof.



No. 8. Sawmill log deck and headrig. Note full concrete yard paving and steel building construction.

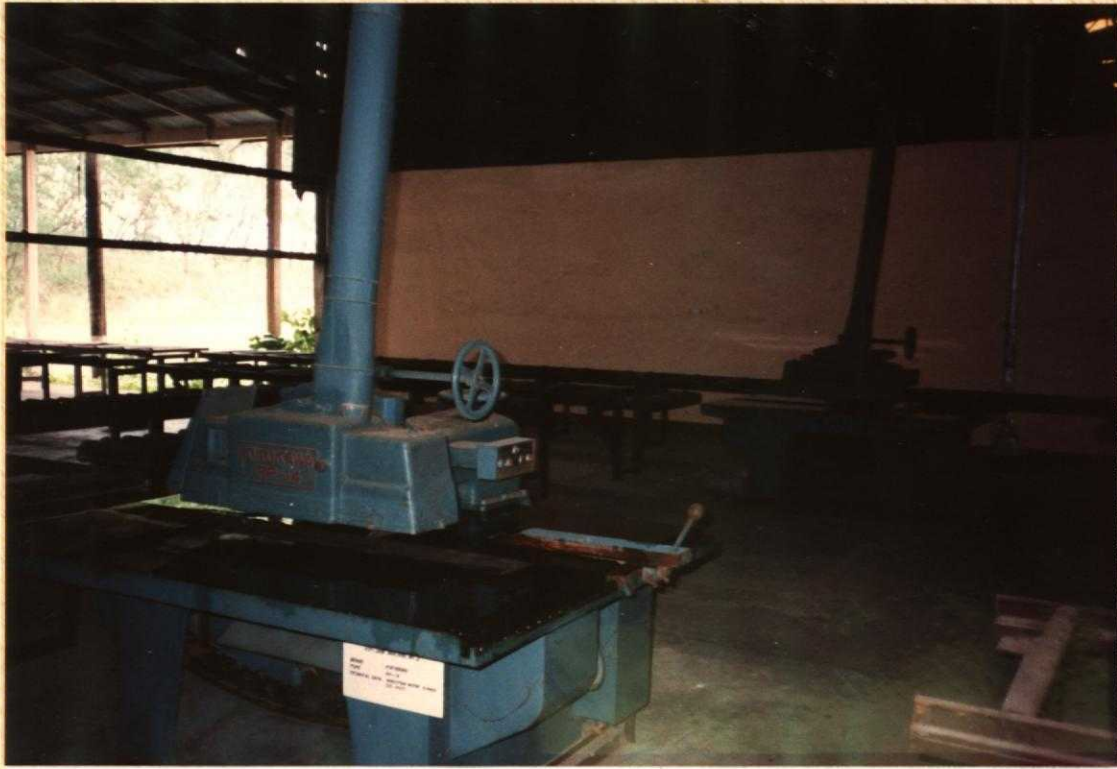


No. 9. Hirota headrig and manual carriage.



No. 10. Sawmill resaw. Note absence of live conveyor rolls.

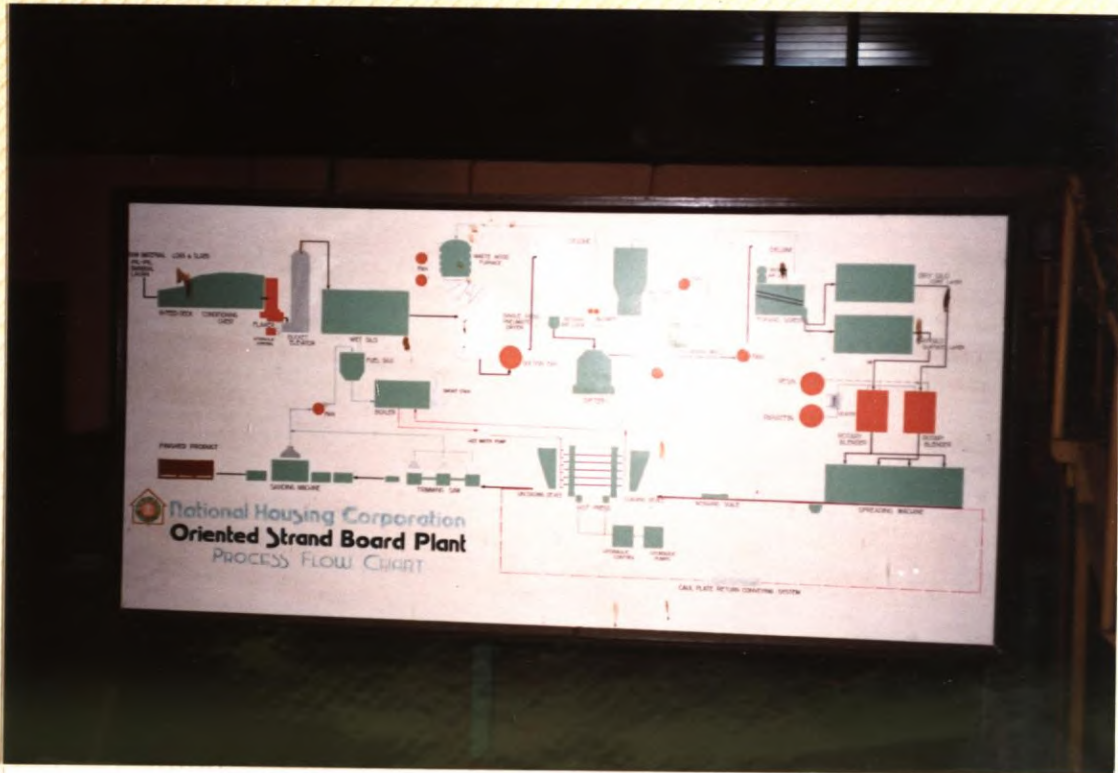




No. 11. A pair of straight-line ripsaws.



No. 12. Sawmill trimsaw.



No. 13. Flow chart of OSB Plant.



No. 14. OSB log infeed conveyor.



No. 15. OSB Plant chipper.



No. 16. OSB Feedstock blenders.



No. 17. OSB Panel assembly line with spreading machine in foreground.



No. 18. OSB Press line with 5-opening, 4x16 ft. press in background.



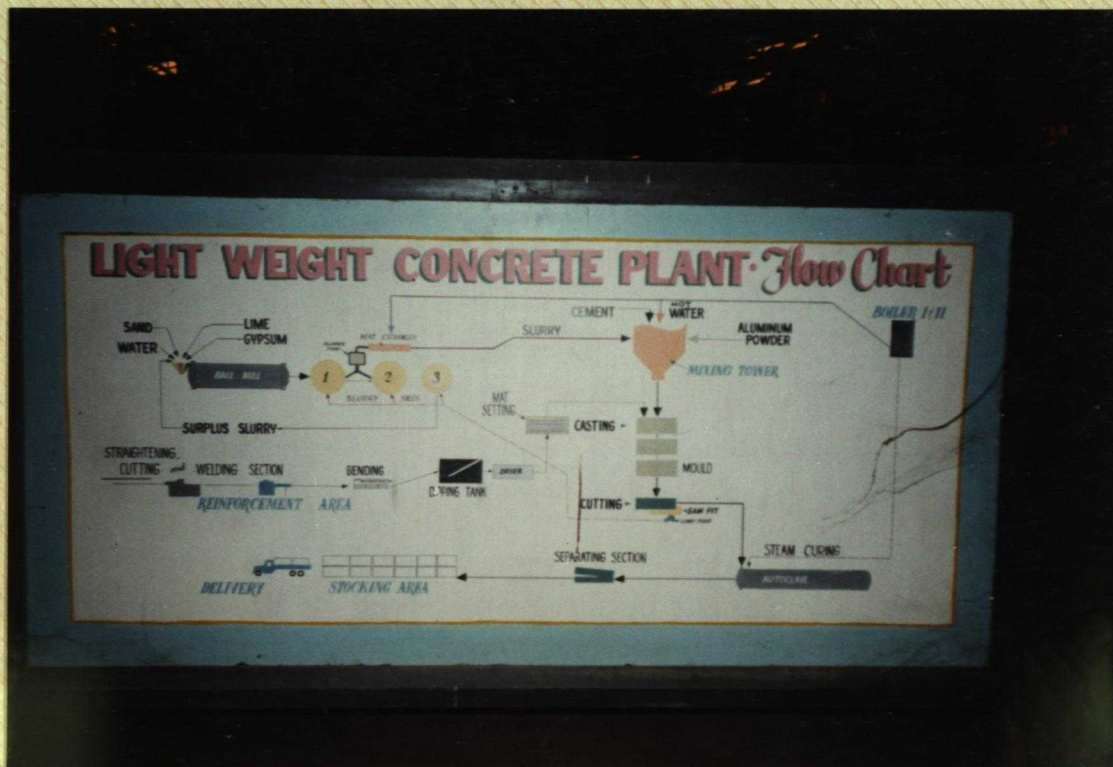
No. 19. View of a small portion of the woodworking plant. Note concrete floor and steel building construction.



No. 20. Solution tanks in wood preservation section.



No. 21. Pressure treatment vessel with door open.



No. 22. Flow Chart of lightweight concrete slab plant employing the Swedish "Ytong" system.



No. 23. Distant view of lightweight concrete plant.

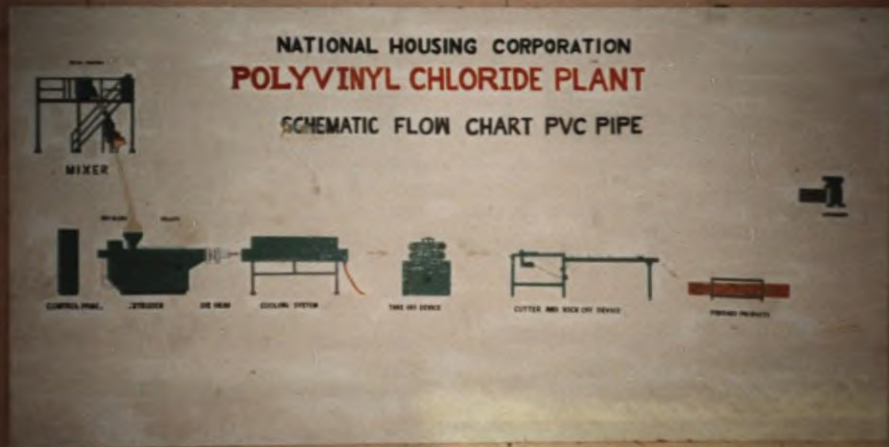


No. 24. Outside view of lightweight concrete plant building.



No. 25. Boiler house providing steam to lumber dry kilns, wood preservation and lightweight concrete curing.





No. 26. Flow Chart of PVC pipe plant.



No. 27. Pressure treated, pre-fabricated gangnail roof trusses left in the yard.



No. 28. An example of wastage through neglectful handling of lumber not piled on stickers.



NO. 29. FOUR DISPLAY HOMES IN NHA COMPOUND.

From left to right.

- A. The "Lukut House" of exterior grade plywood.
- B. The "Cory House" of SRC panels.
- C. The "Zytec House" of coco-fibre panels.
- D. The "MKL-33 House" of pre-cast concrete.



No. 30. Lukut House front entrance.



No. 31. Interior of Lukut House facing rear entrance with two bedrooms on the left.



No. 32. Interior of Lukut House. 2 bedrooms on right. Note hardwood stripping on panel joints.



No. 33. Bathroom of Lukut House showing toilet and tiled floor.

LUKUT IS NOT A GIMMICK.  
IT IS SIMPLY THE BEST UTILIZATION OF  
COMMON MATERIALS, LABOR, TIME AND  
TECHNOLOGY TO PRODUCE ADEQUATE  
AFFORDABLE SHELTER FOR OUR PEOPLE.

SOIL UNDER "LUKUT" ARE POISONED WITH  
1% CHLORDANE, FUMES ONLY OF WHICH  
CAN KILL PEOPLE AS IN HYBERABAD -  
INDIA, WHAT MORE TERMITES ?

A POLYTHELENE VAPOR BARRIER  
IS LAID UNDER THE FLOOR.

DEVELOPED COUNTRIES LIKE USA  
AND IN EUROPE USE PLYWOOD FOR  
EXTERIORS OF HOUSES SO WHY  
DON'T WE ?

THE REASON IS OUR PLYWOOD  
FAIL US FEDERAL WATER  
RESISTANCE SPECIFICATIONS  
ALTHOUGH OUR MARINE PLYWOOD  
PASS.  
LUKUT THEREFORE USES LOCAL  
MARINE PLYWOOD EXTERIOR WALLS

No. 34. Promotional poster on Lukut House.



No. 35. Poster on Lukut House showing stages of complete on-site assembly in one day.



No. 36. "Cory House" front entrance.



No. 37. Exterior view of Cory House.





No. 38. Interior of Cory House showing SRC panel core before plaster is applied. People in picture are signing applications to purchase.



No. 39. Cory House interior showing moulded doors and beamed ceiling of SRC panels.



No. 40. "Zytec House" front entrance showing sheet metal roof, 2x2 panel framing and wooden shutters on windows.



No. 41. Right side of covered back porch on Zytec House showing kitchen sink. Shower stall and toilet are behind yellow door.



No. 42. Left side of covered back porch. The room seen through the window is the single partitioned bedroom in the interior.



No. 43. The "MKL-33 House" front entrance. Note corrugated sheet metal roof and semi-finished state of construction.



No. 44. Interior showing joint between 2 pre-cast MKL-33 wall sections.



No. 45. Unfinished bathroom enclosure of MKL-33 House.



No. 46. Unfinished ceiling framing of MKL-33 House.



No. 47. A typical BLISS Condominium Housing development. These units have 68 sq.mtrs. floor space and sell for C\$18,630 to C\$20,700.



No. 48. The BLISS "Guadalupe" development. At time of photo, 288 units awaited finishing before being offered for sale.



No. 49. A BLISS Guadalupe block partially occupied.



No. 50. "Capitol BLISS" subdivision. Note three separate types of housing distinguished by white, red and blue roofs.





No. 51. Street in Capitol BLISS with single-family units on right and duplexes on left. Note automobiles parked in carports.



No. 52. Capitol BLISS duplex. Each family unit within the duplex has 77 sq.mtrs. floor space and sells for C\$11,000.



No. 53. Capitol BLISS townhouses.



No. 54. Capitol BLISS townhouses. Each two-storey unit contains 79 sq.mtrs. floor space and sells for C\$18,300.



No. 55. Sign at entrance to NHA site and service development intended to make housing sites available to the lowest 30% of wage earners.



No. 56. Street in site and service subdivision showing lack of maintenance.



No. 57. Partially completed homes. Owners have purchased a lot and are building as they have funds available.



No. 58. Overview of site and service area showing random pattern of housing starts by individual lot owners.



No. 59. Houses on site and service lots showing lack of compliance with any building code. Individual lot owners build in accordance with their own taste and budget.



No. 60. "Pacita Complex". A 7,000 home subdivision financed by GSIS and constructed by a private builder. All houses are of hollow cement block.



No. 61. This series of photographs, Nos. 61 to 69 will show the steps in the construction of a typical hollow-block house.



No. 62. Installing toilet plumbing. Note window header supports while concrete is curing.



No. 63. Interior partitions entirely of hollow block. Bathroom enclosure on right.



No. 64. Detail of roof trusses framed with pressure treated wood.



No. 65. Septic tank installed at ground level.





No. 66. Door and window framing underway.



No. 67. Door and window frames installed and corrugated sheet metal roof and gutters complete.



No. 68. House exterior complete, including glass jalousie windows.



No. 69. Completed house, including exterior and interior finishing.



No. 70. Neighbourhood of relatively new homes prior to improvements being made by owners.



No. 71. Older street in subdivision showing result of owners' improvements to homes originally identical to those in photo No. 70.



No. 72. An unfinished house constructed with a system of pre-cast concrete panels erected on site.



No. 73. A finished house built via the pre-cast panel method before this system of construction was abandoned in favour of the hollow block style.

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