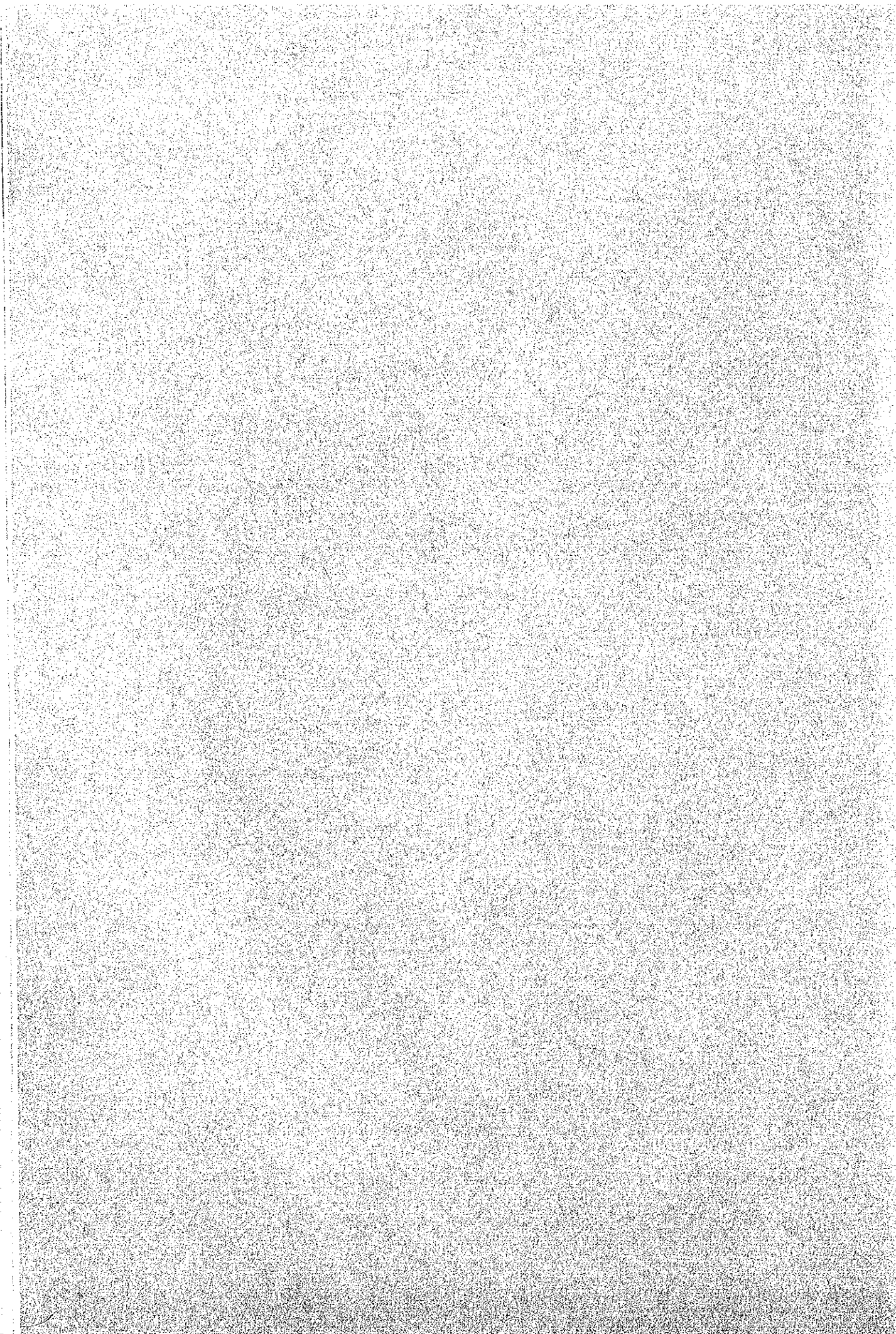


CHAPTER 1: INTRODUCTION



CHAPTER 1: INTRODUCTION

Following the offer of the Government of Japan to disburse the amount of US\$100 M approximately ¥20 B order to establish in ASEAN a human resource development project, the Philippines, together with other ASEAN member countries, established a national human resource development center, later named the Philippine Human Resource Development Center (PHRDC).

Japan's cooperation in the improvement of human resources in ASEAN countries through various kinds of vocational and other training will perceptibly raise productivity and living standards, thus contributing to social and economic development efforts in ASEAN. This cooperation will promote ASEAN-Japan relations.

In particular, the Japanese government considers the contribution to the systematic improvement of human resources on a grass-roots level most important. Accordingly, the Japanese government, via the Japan International Cooperation Agency (JICA), sent Technical Cooperation Survey Teams to the Philippines, and on September 9, 1982, the RECORD OF DISCUSSIONS (R/D) defining the scope of Japanese cooperation to the Philippines was signed by the Philippine authorities and the Japanese Technical Survey Team.

Simultaneously, the government, through the JICA, dispatched Basic Design Survey Team Phase I to the Philippines to determine the extent of facilities and equipment necessary for the planned technical cooperation.

The MINUTES OF DISCUSSIONS (M/D) for Phase I was signed by the Philippine authorities and the Basic Design Survey Team Phase I on September 9, 1982.

After a detailed study of the R/D and the M/D, the Japanese government dispatched, through JICA, Basic Design Survey Team Phase II headed by Michio Sato, officer of the Second Economic Cooperation Division of the

Ministry of Foreign Affairs, to the Philippines. Between October 10 and October 30, 1982, the Survey Team conducted various investigations necessary for the preparation of the basic design, conferring with various Philippine agencies.

Items investigated and discussed included:

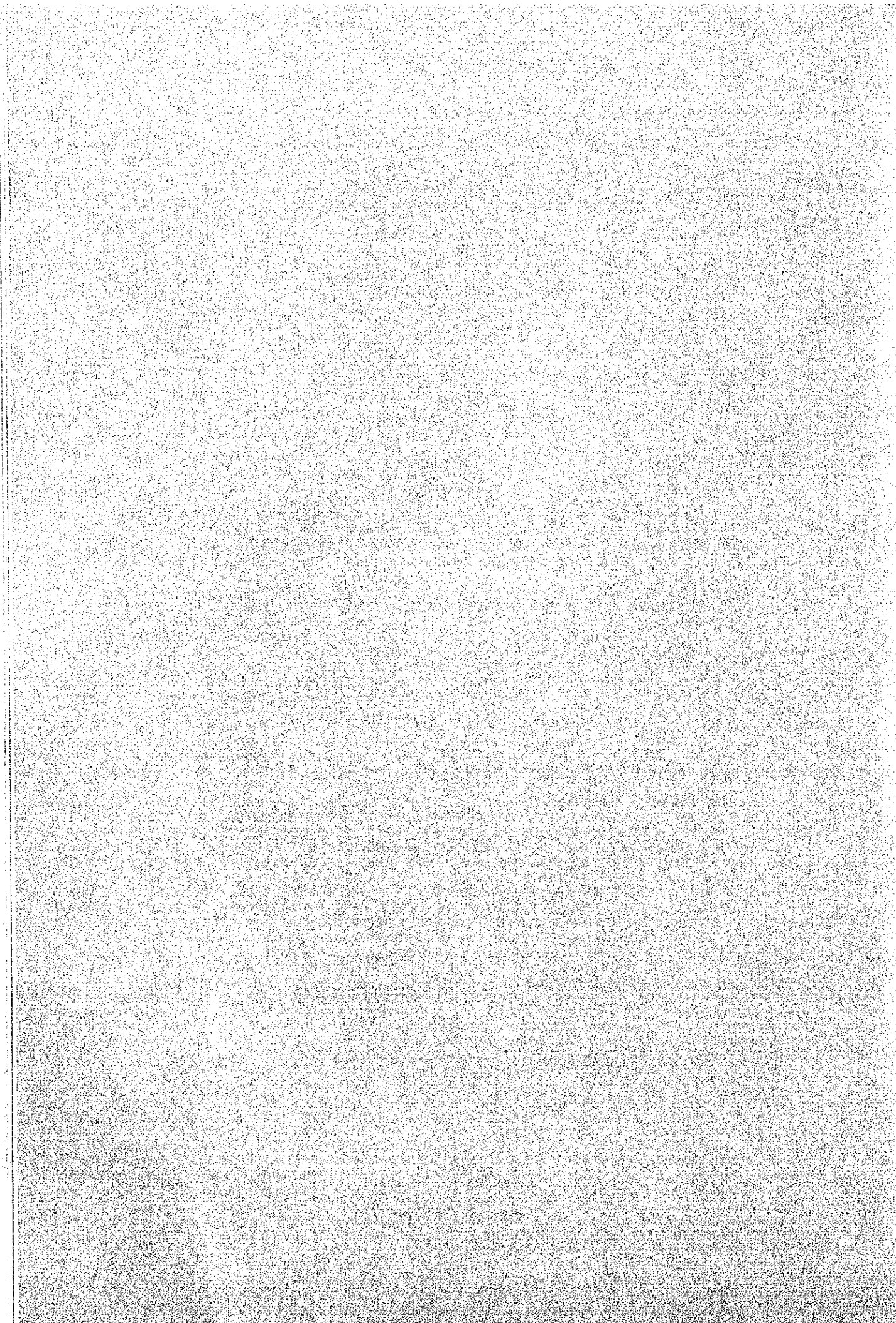
- 1) Clarification of the scope of cooperation with the Philippine government
- 2) Site confirmation and field investigations to ascertain the site conditions of each program of PHRDC
- 3) Establishment of PHRDC and its programs
- 4) Function, intended purpose, and planning of facilities and equipment to be provided for each program
- 5) The scope of the involvement of each government, including budgetary provisions to be made by the Philippine side, and the maintenance and operational requirements for facilities and equipment
- 6) Similar facilities existing in the Philippines

The discussions held and findings made by the survey team and the Philippine authorities were summarized in the form of MINUTES OF DISCUSSIONS on October 29, 1982, and are attached herewith on separate pages.

These surveys resulted into the PHRDC Basic Design Report (draft) by JICA who sent a mission to the Philippines to hold a discussion with relevant authorities on this draft report from December 12 to 21, 1982.

At the occasion of discussion, the Philippine side notified that the location and approach road of the site for Program III has changed and the mission agreed to correspond to this alternation. Basic consent on both side were obtained after the minor modification on equipment and the "MINUTES OF DISCUSSION" was concluded on December 17, 1982.

CHAPTER 2: BACKGROUND OF THE PROJECT



CHAPTER 2: BACKGROUND OF THE PROJECT

2-1 GENERAL

The hike in cost of imported oil and subsequent recession in industrial countries kept the growth ratio of the Philippine economy to 4.9% in 1981 though the inflation ratio decreased to 12.4% in 1981, down from 17.6% in 1980.

Foreign imports still exceed exports in spite of efforts taken in the official and private sectors of the Philippines economy; mainly because of the rise in the price of oil. These factors are depressing the Philippine living standard, even though nominal GNP per capita increased from US\$411 in 1976 to US\$753 in 1980.

These circumstances prompted the Philippine government to issue Executive Order No. 715 on August 6, 1981, establishing the Kilusang Kabuhayan at Kaunlaran, a national livelihood movement that aims to spur economic and social development by transforming the country's 42,000 barangays into self-reliant and productive communities.

Prior to the Kilusang movement, the Ministry of Human Settlement (MHS) was assigned to be secretariat of national shelter and livelihood program named BLISS. By March 1981, 138 livelihood centers had been completed and 111 livelihood projects were operative.

In rural BLISS, skills and local resources were utilized for profitable activities such as backyard gardening, loom-weaving, cutery production and hollow block production. Urban BLISS involved more labor-intensive manufacturing -- toys, native crafts, jeans and children's wear.

Currently the government of the Philippines has initiated as a national movement a livelihood development program designed to create self-reliant and self-sufficient communities. The movement promises to bring about employment and increased national productivity.

Integral to its development approach a human resource development strategy has been adapted focussing on those sectors of the population not traditionally serviced by the existing educational system.

Seven program prototypes have been selected for development:

- 1) Agro-forestry : development of energy farms (ipil-ipil tree plantations) and various orchards
- 2) Agro-livestock : crop and livestock production, integrated feed mills, food processing and small dairy plants
- 3) Marine : coastal and inland fish farming, communal hatcheries, shellfish culture, ice plant operations, fish processing and canning
- 4) Waste utilization : secondary production of wastage into organic fertilizers, bio-gas charcoal briquettes, etc.
- 5) Cottage and light industries : manufacturing projects such as bamboo and rattan craft, garment and toy manufacture, etc.
- 6) Shelter and shelter components : secondary processing of housing construction materials such as hollow blocks, clay brick tiles and wood work
- 7) Services : construction of standardized and upgraded public markets

The government in implementing KKK for the first time not only released one billion pesos to finance the livelihood enterprises but also extended technical, marketing, training, and management support. Now in its second year of implementation, the government has earmarked two billion pesos for this program.

The Kilusang movement promises to bring about employment and surplus food and other products as a result of the increase in productivity.

With the national effort of stimulating employment and productivity a well coordinated human resources approach must be adapted. The Philippine government thru Executive Order 785 created the Philippine Center for Human Resources to perform the following functions:

- a. ensure that human resources development efforts are productively applied to new and existing enterprises;
- b. strengthen established infrastructure for training related to human resources development and to effect the networking of such existing training facilities;
- c. encourage training curricula and programs responsive to industry's demands;
- d. source and negotiate for training opportunities with Japan and with other ASEAN countries as a means of enhancing technical cooperation and technology transfer; and
- e. provide and facilitate information flow not only among local training agencies but also with Japan and other ASEAN countries.

The Center, has offered to the government of Japan several proposals requiring assistance in human resources but the various missions have agreed with the Philippine authorities that the technical cooperation will only be on the following areas:

- a. Human Resources Management Program (Program I)
 - Establishment of human resources data bank and information system
 - Production of teaching materials
- b. Seafarming (Program II)
 - Research and development of oyster culture and depuration
- c. Shelter and Construction Manpower Training Program (Program III)
 - Training of construction teachers and craft teachers
- d. Cottage and Light Industry Program (Program IV)
 - Training of teachers and technicians in woodcraft, bamboo and rattan craft

This is the background for the Philippine government's request to the Japanese government for cooperation in establishing the PHRDC, the ASEAN Human Resources Development Center of the Philippines.

2-2 Human Resources Management Program(HRMP)

HRMP has two objectives, the one is to establish human resources data bank and the other is production of teaching materials.

At the national human resources development in which many ministries, agencies and institutions shall contribute, not always but often their policies differ at fine details and their efforts duplicate from a lack of information each other, not mentioning international references. In driving productivity, especially in non-traditional industry, domestic and international market research works are most important for policy assessment and technology dissemination.

The human resources data bank is the data information system which shall be of service in establishing manpower policy and planning, market development research works and to compile information on ASEAN countries' efforts in technology transfer.

Though the Philippines has an old history of high education in Asia and has raised the level of education among its people through a well-developed formal education system, it has not organized its non-formal educational efforts to service those who are out of school, no longer of school age, and those who are in need of more continuous education or training through life.

The development of human resources has to reach the great mass of people to be meaningful who has to be motivated, encouraged and taught to be productive and self-reliant. The multi media method is the most appropriate method in the transfer of skills, teaching proper attitude for works and others, and will reach more number of people needed for development.

HRMP shall contribute in this human resources development by producing multi media education materials production.

This human Resources Management Program shall be implemented by the University of Life.

2-3 PHILIPPINE FISHERIES

The fish industry contributed 4.4% to the GNP of the Philippine in 1980 and about 800,000 people are directly employed in fisheries (1980 GNP 264.3 billion pesos). Table 2-3-1 below compares the fish production in the Philippines of 1970 and 1980 by quantity and value.

TABLE 2-3-1 lists the fish export figures for 1976 to 1980

1970		1980		Growth Rate	
Quantity (M.T.)	Value (000P)	Quantity (M.T.)	Value (000P)	Quantity	Value
988,884	1,725,222	1,672,254	11,644,350	5.4	21.0

TABLE 2-3-2

Year	Quantity (M.T.)	%	Value (000P)	%
1976	23,974	-7.70	330,273	0.7
1977	37,574	56.60	395,370	19.8
1978	48,438	29.05	532,210	34.6
1979	64,890	34.00	781,740	46.9
1980	76,179	17.40	939,290	20.2

The government made the Integrated Fishery Development Plan and the Expanded Fish Production Program operational for the development of the fish industries. The program aims for efficient production, fish utilization, conservation and management, concentration of resources, institutional linkage and high fish exports while emphasizing modernization, the foreign market, high income and good quality.

To mobilize these programs, three major loans have been provided;

- 1) The Third Livestock and Fisheries Credit Project (P45 million)
- 2) The Fourth Central Bank-IBRD Rural Credit Line (P132 million)
- 3) The Biyayung Dagot Program

2-4 CONSTRUCTION INDUSTRY OF THE PHILIPPINES

The Philippine Construction sector employs about 600,000 workers, About 40% of them are unskilled and semi-skilled workers requiring some form of training. Likewise, construction skilled workers are demanded by other sector of industry such as transportation, mining and manufacturing. Then there is the overseas market of construction workers.

The heavy demand for construction workers overseas particularly in the Middle East has depleted the supply of skilled workers to the extent that the quality of workmanship in domestic projects is going down. The shortage of skilled manpower threatens to endanger the implementation of programs of both the government and private sectors. In 1981 alone, about 63,000 construction workers left the country.

The considerable foreign currency earning made by the construction industry between 1978-82 has moved the government to initiate a systematic development of overseas contract as well as the development of construction manpower for the needs both in domestic and overseas.

In order to meet the growing demands for the skilled manpower, the Construction Industry Authority of the Philippines (CIAP), an agency of the Ministry of Trade and Industry was created through Presidential Decree 1746. One of the boards under CIAP is the Construction Manpower Development Foundation (CMDF) which primarily undertakes the development of the construction manpower to respond to the need of construction industry.

Based on the specific provisions of Presidential Decree 1746, the objectives of CMDF are

- a. development and implementation of manpower training programs for the construction industry;
- b. formulation and adoption of construction skills and standards, skills testing and certification procedures;
- c. nationalization of training and export of construction manpower;

- d. arrangement of finance for its training programs through borrowings from financial institutions and adoption of funding mechanism for its programs in cooperation with construction industry.

As a whole, CMDF's main goal is to train a sufficient number of construction workers in critical skills to narrow the gap between supply and demand in construction manpower. CMDF being the lead agency of Program III, the Project is expected to assist in narrowing this gap.

2-5 SMALL AND MEDIUM-SCALE INDUSTRY

Understanding that "trade is the lifeblood of the economy," the Ministry of Trade and Industry undertook to intensify exports with a policy of "country specific and product line specific" in order to accelerate foreign exchange earnings.

The exporting amount is shown in Table 2-5-1 below.

TABLE 2-5-1 (FOB, US\$ million)

Year	Total Export	Coconut	Sugar	Item by %		
				Forestry	Copper	Non-Traditional
1976	2,574	21.1	17.7	10.5	10.3	21.1
1977	3,151	24.2	17.0	8.3	8.5	20.9
1978	3,425	26.2	6.3	9.6	7.3	30.0
1979	4,601	21.0	5.2	10.5	9.6	33.0
1980	5,635	13.6	11.6	7.2	9.7	36.2

The government is supporting the export of non-traditional products with a focus on garments and textiles, electronics, shoes and leatherware, furniture and woodwork, handicrafts, overseas contracting and food-processing.

Of these products, the private sector will be encouraged in furniture, woodwork and handicrafts.

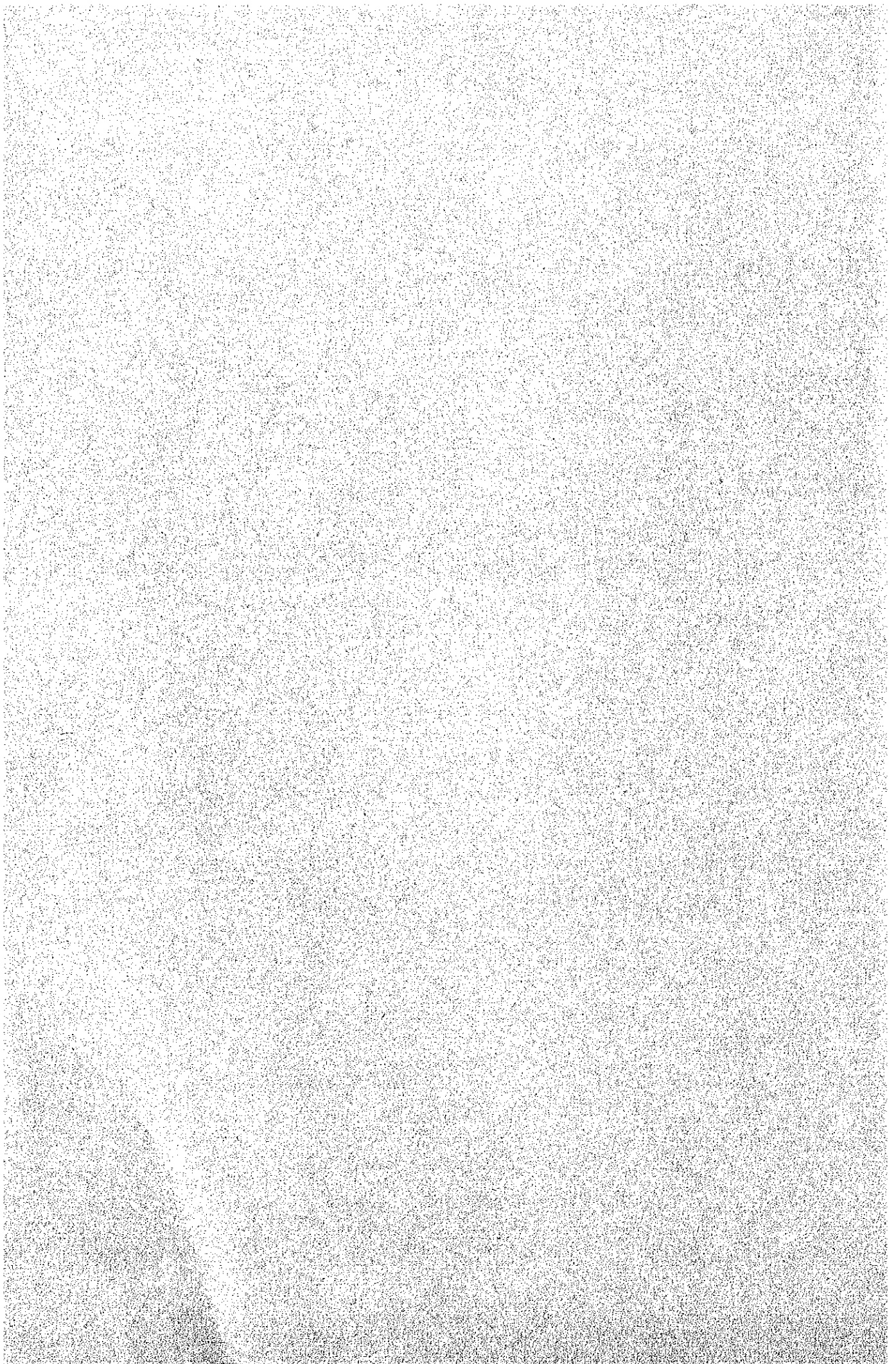
The export volume of furniture and woodwork in 1980 was US\$77 million. The Ministry is assisting small handicraft producers in identifying and making contracts with foreign markets. It is also developing a buying mechanism which will purchase small cottage and handicraft products for the inventories of storage houses in the U.S. and EEC countries.

More than 90% of all manufacturing establishments in the Philippines are small- and medium-scale industries. Thus, the Ministry is assuming an important role in the livelihood program as it extends marketing, technical and financial assistance to cottage and light industries.

The National Cottage Industries Development Authority (NACIDA), one of 17 agencies within the Ministry of Trade and Industry for administrative or program and policy coordination, promotes cottage industries of metal work, textiles, wood craft, bamboo craft and rattan craft.

The NACIDA is the lead agency for Program IV.

CHAPTER 3: OUTLINE OF PROJECT SITES



CHAPTER 3: OUTLINE OF PROJECT SITES

Since Japan's cooperation covers four PHRDC programs, there are four project sites.

3-1 LOCATION AND GENERAL CONDITION OF SITES

3-1-1 PROGRAM I

(1) SITE

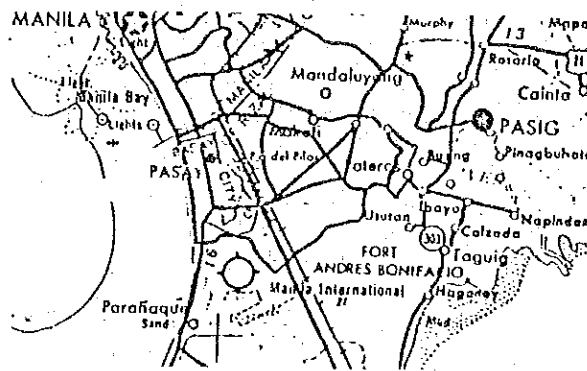
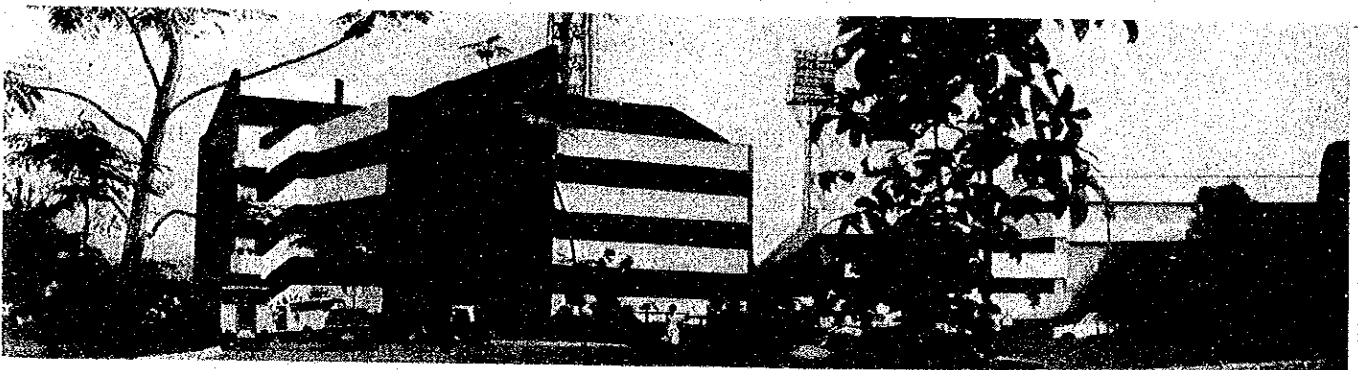


FIG. 3-1-1 SITE LOCATION

The project site for Program I is the campus of the University of Life at Meralco Avenue, Pasig, Metro Manila.

The University of Life is surrounded by a developing business area and a middle class residential area. To the south are located noiseless and pollution-free urban industrial factories.

A little removed from the main traffic, the campus is quiet but convenient to Quezon City, Makati and Manila.



The University of Life occupies a hill which drops to the north and east. It is surrounded by public roads, but Meralco Avenue is the only road which gives vehicle access to the university.

Jeepneys are the only public transportation servicing Meralco Avenue, but on Shaw Boulevard - one block to the south - there is much public transportation.

Formerly a private school, the campus was beautifully rearranged after its purchase by the Ministry of Human Settlement, the founder of the University of Life. All buildings incorporate the same color scheme and a harmonious use of finishing materials.

Skirting the buildings are gardens with much green and many trees and seasonal flowers. They are very well kept, providing a pleasant and quiet, yet sometimes gay atmosphere.

The building to be renovated for the program's use is located about 3 meters below and behind the main administrative building of the University. Presently it is being used as an annex of the dormitory. Although this annex sinks below the level of the approach road, as some areas around the dormitory open onto lower levels of ground, flooding by heavy rain is not expected.

Electric cables and water mains lie near this building on the administration building side as shown in the drawing in the appendix. This must be considered in deciding the direction of expansion.

The capacity of existing public utilities - electricity, water and drainage - is sufficient for the renovated and expanded buildings, and telephone lines can be added to the existing PBX of the University.

(2) **EXISTING BUILDING**

The building offered to the program is a four-storied reinforced concrete frame building with a total floor area of approx. 2,220 sq.m., presently being used as an annex facility of the dormitory.

This building was originally meant as a dormitory. One block is composed of four wings, each consisting of two rooms and an area for sanitation facilities. These facilities are enclosed by H-shaped reinforced concrete structural walls which provide earthquake resistance of the building and hence cannot be demolished.

Interior finishings of the building are as follows.

	room	sanitation facilities	corridor
ceiling	gypsum board, painted	gypsum board, painted	mortar spray
walls	mortar, painted	glazed tile	mortar, painted
floor	vinyl tile	tile	gravel wash

Exterior finishings

roof : flat roof, asphalt built-up waterproofing covered with concrete, partially covered by tiled roof

walls: brick, mortar spray

Sashes and doors

interior: wood doors and frames

exterior: colored aluminum doors and frames, colored aluminum jalousie sashes with clear and patterned glass

3-1-2 PROGRAM II

The site for Program II is Binloc, Dagupan City, Pangasinan.

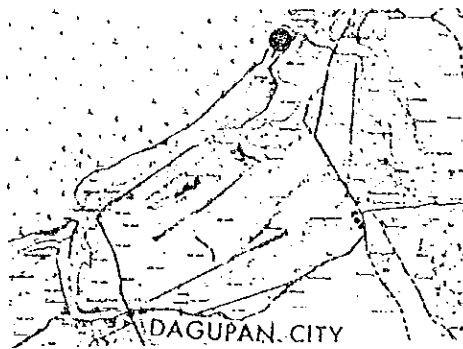


FIG. 3-1-2 SITE LOCATION

Dagupan City is about 250 km north of Manila, facing Lingayen Gulf and situated on a sand bank formed by the Mangueragday and Cayanga Rivers. Dagupan City, with a population of about 60,000, is the commercial and fishing industry center of the district.

The fish markets and daily goods markets are very colorful, and the many shops - from food stores to machine shops - are visited by the regional people. Bangus (milk-fish) from Dagupan is famous even in Manila and oysters are exported as far away as Singapore. Region I Office Bureau of Fisheries and Aquatic Resources (BFAR) is located in this city.

Since Dagupan City is the commercial center of the district, there are many bus routes between Manila, San Fernando, Baguio and other cities and towns along the Lingayen Gulf. The Philippine National Railroad (PNR) runs between Dagupan and Manila, but for transportation, road vehicles are by far faster. In the city area and suburbs, public Jeepneys and tricycles (passenger service motorcycle with side-car) abound.



The peninsula which forms the western part of the Lingayen Gulf is expected to be a very good site for oyster cultivation. The BFAR Region I Office has a scheme for the development of 6,000 ha for oyster cultivation around Alaminos, and much of the research work from Program II will be applied to this area.

Dagupan City became the sister city of Iwata City, Shizuoka Prefecture, in 1980 and there is active exchange of delegates.

The actual program site is about 10 km north-east of the city center, east of Marcos Park, near the mouth of the Cayanga River on a sand beach facing the Lingayen Gulf.

This area is owned by the National Government and the official procedure of donating the site to the PHRDC (2 ha of which will be used by Program II) was already under way on October 28, 1982.

The site is an undulating sand shore, with fishermen's cottages scattered along the road which leads from Dagupan City to the site and further on towards the Cayanga River. West of the 50m-long service road which connects the road to Dagupan City to the site, there is a two-story, four-unit concrete block resort apartment house, and north of this on the sea side, a 20m-wide road is being planned to run straight from Marcos Park to the south side of the site.

Although the apartment house is supplied with electricity, new lines will be needed to satisfy the demands of the facilities and equipment of Program II. Water must be obtained from a deep well and there is no public drainage.

The Survey Team conducted boring tests to determine what problems the sand site might pose in laying the foundations for the proposed building. Results of the boring test can be found in Appendix 6.

3-1-3 PROGRAM III

The site for Program III is located in Carmona, Cavite, south of Manila. It is about 30 minutes' drive from EDSA on South Super Highway, taking the Carmona Exit then heading west.

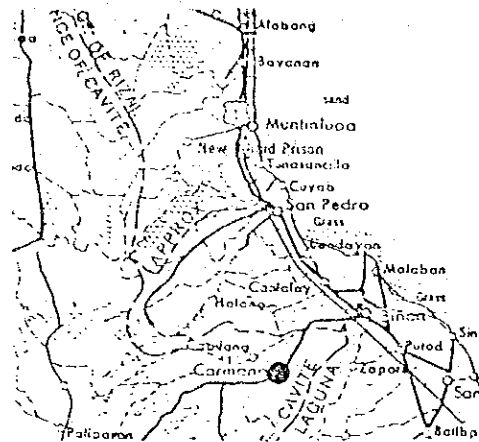


FIG. 3-1-3 SITE LOCATION

A small and quiet agricultural town, Carmona supplies much produce to Manila. Its products are mainly sugar cane, corn, wheat, vegetables and various fruits.

Recently, the Municipality of Cavite initiated a plan to develop an industrial zone in the area because of its geographical advantages. Already three industrial estates have been developed, and the site for Program III is located at the one of these three estates which are owned and being developed by Carmona City. Cavite's mayor has basically agreed to allow CMDF to use this site for Program III and the conditions for official approval are now being studied by the two authorities concerned.



About 130m east from the site there is a 12m-wide auxiliary road and 15m wide access road from this auxiliary road to the site will be constructed by the Philippine side. The site is in the north part of Carmona City. North of the site runs the National Route connecting Carmona and Cavite City, and across this road, an industrial estate has been developed. The southern part of this road also borders a primary school for which safety and noise protection must be considered. To the south is a residential area and west of the site is more industrial area.

Originally a rice field, the site is flat land of approximately 8.9 ha in area, which retains a layer of cultivation soil 30 cm thick. The Survey Team requested the CMDF to remove this soft cultivation soil and backfill about 60 cm in the places where buildings are to be built and the CMDF promised not only to perform measurement of the land and nine different boring test of the site but also to backfill according to the basic design.

High tension electric lines run along the National Route, so there will be no problem in supplying electricity to this project. However, there is no public water supply system or public drainage. A deep well for water supply and waste water treatment facilities are required.

There are no direct public transportation facilities between the site and any part of Manila. At least two transfers - at the South Super Highway bus terminal and at the Carmona Exit - are necessary to reach the site from Manila. Because of this, the Survey Team recommends the construction of a dormitory at the site to house trainees from the provinces; the Government of Japan to provide the budget. Without a dormitory it would be almost impossible to recruit trainees.

3-1-4 PROGRAM IV

The site for Program IV is the Cottage Industry Training Center (CITC)-NACIDA Compound located at Marikina, Metro Manila.

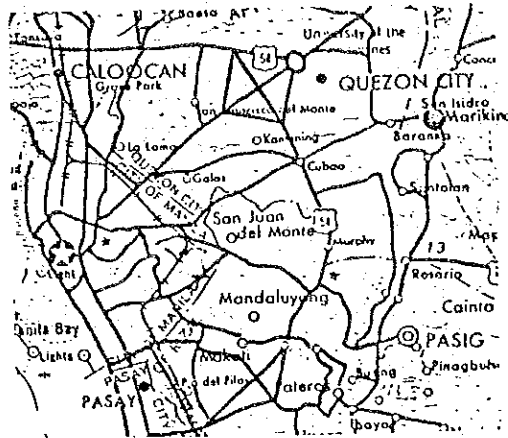
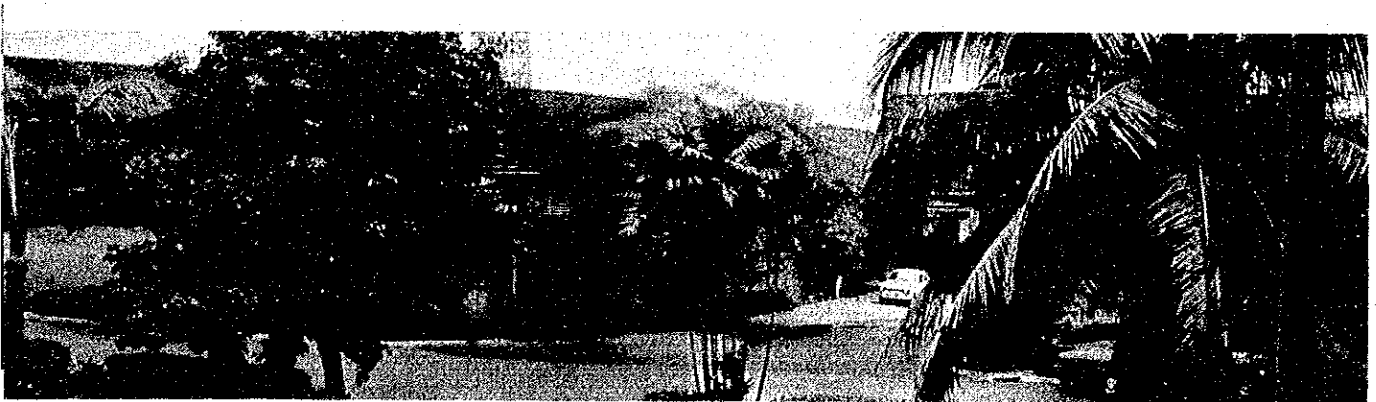


FIG. 3-1-4 SITE LOCATION

It is about 7 km north of Makati along Route 54 and about 5 km east from Cubao, located in a quiet residential area.

The only public transportation service going past the site is a bus, but about 1 km away, on the main road, there are other transportation services.

Parallelogram shaped, the CITC Marikina Compound is about 200 m long along the road and about 200 m deep. There exist on the compound an administration building, a dormitory and six workshops for ceramics, bamboo, rattan and woodcraft and metal and fiber working.



The machines to be supplied through this project will be installed in these workshops. They are one-story buildings with partial mezzanines, steel framed with painted brick walls and corrugated asbestos roofing except for one which has a GIS roof. Floors are of concrete with a troweled finish.

The workshops' roofs, roof ventilators and eave gutters have deteriorated and leaks. Renovation of roofs and gutters is imperative to protect the new machines from rain.

Space in the existing workshops is sufficient for the machines to be supplied, offices for the experts and classrooms; work space in the wood craft however, is inadequate.

NACIDA plans to transfer the machines presently in the workshops to regional training centers before the new machines are installed; it will also build a new shed for wood-craft finishing work and storage, and repair the existing dormitory to house trainees for Program IV.

3-2 NATURAL CONDITIONS

3-2-1 GEOLOGICAL CONDITIONS

(1) PROGRAM I

The project site, on the campus of the University of Life in Pasig, is accidented land. The ground is composed of soft rock called adobe, a kind of tuff, covered by a layer of surface soil generally about 1.0 m thick, although the adobe is exposed in several places.

(2) PROGRAM II

The site for this program is along the seashore in Dagupan City. Four boring tests were carried out at the points shown in Fig. 3-2-1-1. The boring log for BH-1, only a part of the results of the test, is shown in Fig. 3-2-1-2.

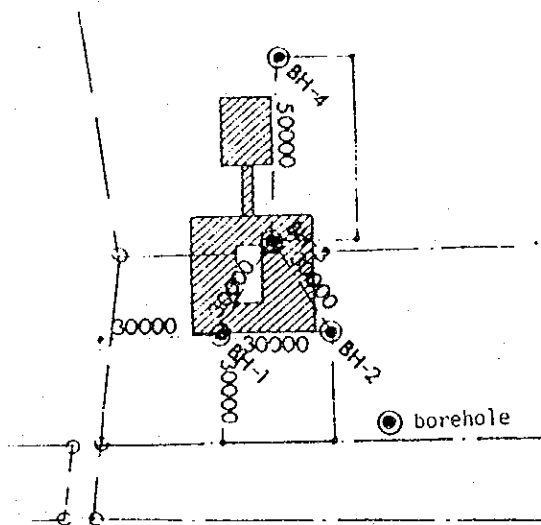


FIG. 3-2-1-(1) BOREHOLE PLAN

SUBSURFACE EXPLORATION LOG

Feature Japan (Int'l.) Corp. Agency Ground Elevation -0.764 meter Hole No. BH-1
 Project Dagupan City Tondaligan Aquamarin Laboratory Watertable Elev. 3.06 M below ground elevation Location Dagupan City
 Hole Logged By A. Bisnar Date gaged Oct. 29, 1982 Depth of Hole 30.0 meter
 Date Begun Oct. 24, 1982 Weight of Hammer 63.64 kg. Coordinates See borehole location plan
 Date Finished October 28, 1982 Height of Drop 0.762 meter

Notes Type & Size of hole Type of Sampler Loss of Drilling Water	Recovery, %	No. of Blows	Sample taken	Description and Classification of Material	Depth, m.	Log	Penetration Resistance blows per foot				
							10	20	30	40	50
Size of hole : 0.0762 m. SPT Sampler : 5.08 cm. O.D. 3.50 cm. I.D. 60 cm. long Shelby Tube Sampler : 60 mm. I.D. 60 cm. long	50	2	SPT-1	Fine Sand, gray to dark gray, very loose to medium dense, moist							
	58	7	SPT-2								
	65	15	SPT-3								
	88	17	SPT-4	Silty Fine Sand, gray, medium dense, non-plastic wet in place	5						
	92	18	SPT-5								
	92	19	SPT-6								
	85	10	SPT-7								
	75	16	SPT-8								
	85	12	SPT-9								
	92	15	SPT-10								
	65	10	SPT-11								
	00	12	SPT-12								
	92	11	SPT-13								
	58	10	SPT-14								
	50	10	SPT-15								
	58	11	SPT-16								
	65	11	SPT-17	Sandy Silt, dark gray medium stiff very low plasticity wet in place	20						
	65	8	SPT-18								
	62	7	SPT-19								
	65	8	SPT-20								
	80	-	ST-1								
	65	7	SPT-21								
	60	6	SPT-22	Clayey Silt, dark gray medium stiff to stiff low to medium plasticity, wet in place	25						
	92	-	ST-2								
	65	8	SPT-24								
00	-	ST-3									
00	6	SPT-26									
00	-	ST-4									
00	17	SPT-27									
00	-	ST-5									

End of Boring

Checked by E. RAMIREZ/Matl's. Testing Engr.

Noted by D. R. FERMIN, JR./President

FIG. 3-2-1-(2) Boring Data

According to the results of the boring test, the ground of the project site is composed of a sub-surface layer 3.0 m to 9.0 m thick of fine sand and a silty fine sand layer and sandy silt layer down to about 20.0 m below the ground surface. Underlying these strata is a clayey silt layer. The thickness of the clayey silt layer and the geological conditions below this layer were not determined in the boring tests. Because of the site's proximity to the ocean, the ground water level is probably quite high.

(3) PROGRAM III

This program will take place within the rice fields of Carmona near Lagoon Bay. The surface level of the rice fields is approximately 60 cm lower than the level of the front road. Beneath the 30cm-thick soft surface soil is an adobe layer like that of Program I. The existence of this adobe layer was ascertained in nine trial digs of the proposed project site.

3-2-2 SEA WATER AROUND PROJECT-II SITE

Results of survey held on Sept. 1 and 2, 1982, of the sea water around Program II's site are given in Fig. 3-2-2-(1).

From the survey it was found that because of the lessened effect of the river, a place about 2 km from the mouth of the Cayanga River is best suited to the project.

For oyster depuration, sea water with about 30‰ salinity, a relatively low temperature and less suspension is desired.

The temperature given in Fig. 3-2-2-(2) is that of surface water. Although the sea water actually used will be taken from a deeper place, along the bottom, and is expected to have a lower temperature, that temperature will be much higher than Japanese sea water temperature of around 10°C.

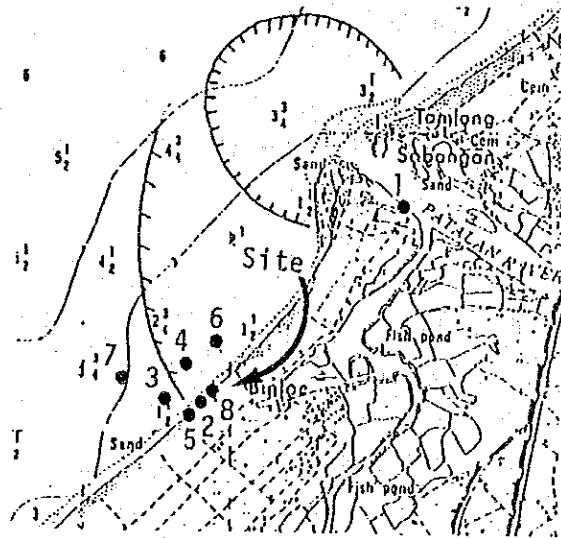


FIG. 3-2-2-(1)

Date	Time	st:n0	Water Temp. (°C)	Sa-linity (%)	PH	Trans- parency	Remarks
Sep. 1	14:15	1	30.3	5	8.14		Westcoast of Patalan River Turbid by Silt, Brown
	15:00	2	30.6	32	8.03		Shore at Proposed Site, Blue &
Sep. 2	9:30	3	29.2	28	8.11	3.0	Westside of Currents Junction
	9:35	4	28.2	15	8.08	0.7	Eastside of Currents Junction
	9:40	5	28.8	27	8.07		Shore
	9:50	6	27.9	12	8.04		Surface of Eastside Mediam Turbidity
	10:00	7	29.1	29	8.09	4.8	Westside of Currents Junction
	10:10	8	29.8	26	8.08		Shore

FIG. 3-2-2-(2) SEA WATER QUALITY AROUND THE SITE

3-3 PUBLIC UTILITIES

3-3-1 PROGRAM I

(1) Water Supply

A 6-inch water supply main runs under the road in front of the dormitory from the main pump station to the dining hall building. The $2\frac{1}{2}$ -inch branch line provided for the dormitory will also be used to supply water to the planned extension building.

This water supply main, however, must be removed from its present place at the expense of the Philippine side because it interferes with the planned extension.

(2) Drainage

There are several septic tanks in the University of Life campus. Waste water from the existing dormitory drains into the nearest one of them. Since the population in this dormitory will not increase after the completion of expansion and renovation of the buildings, the waste water treatment system could be utilized as it is now.

There are storm drains around dormitory A.

(3) Gas

As city gas is not supplied to the campus, LPG is being used in the main dining room's kitchen.

(4) Electricity

Electricity supplied to each building in the campus from the campus substation has been transformed from 3-phase 13.8 kV super-high-tension power to 3phase 220V and singlephase 220V power at 60Hz. A main supply trunk line runs beneath the ground in front of the dormitory, but at present, only singlephase 220V power is supplied to the dormitory for lighting.

The Philippine side will shoulder the cost for a new 3-phase 220V and single-phase 220V line to the switchboard in the expanded section and for additional lighting, air-conditioners and computers.

The estimated additional electricity requirement is 170kVA.

(5) Telephone

The Philippine side will provide about 10 city lines and 30 extensions to a terminal board in this building through the existing main terminal board.

(6) TV and Radio

There are TV and radio broadcasting in Manila.

- E — POWER SUPPLY (EXISTING)
- — — DITTO (BY THE PHILIPPINES)
- W — WATER MAINLINE (EXISTING)
- — — DIT TO (TO BE MOVED BY THE PHILIPPINES)

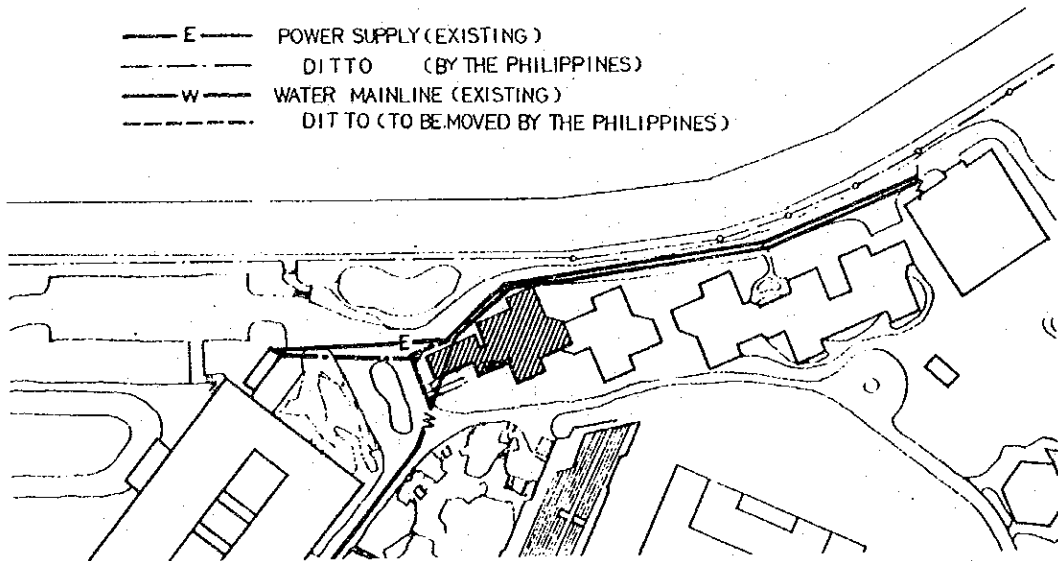


FIG. 3-3-1

3-3-2 PROGRAM II

(1) Water Supply

There is no public water supply to the site. The Philippine side is to drill a deep well with casing for the use of this program.

(2) Drainage

There is no public drainage to the site. Waste water will be discharged into the sea after proper waste water treatment.

(3) Gas

City gas is not supplied to this site. LPG cylinders are available.

(4) Electricity

Single-phase 220V power is supplied to houses and the apartment house near the site. It is necessary that the Philippine side arrange for 3-phase 220V and single-phase 220V power to be supplied to the projected building.

The estimated requirement is 180 kVA.

(5) Telephone

There are no telephone lines around the site, and no immediate plans to extend lines from Dagupan City to this area.

(6) TV and Radio

There is radio broadcasting but no TV broadcasting.

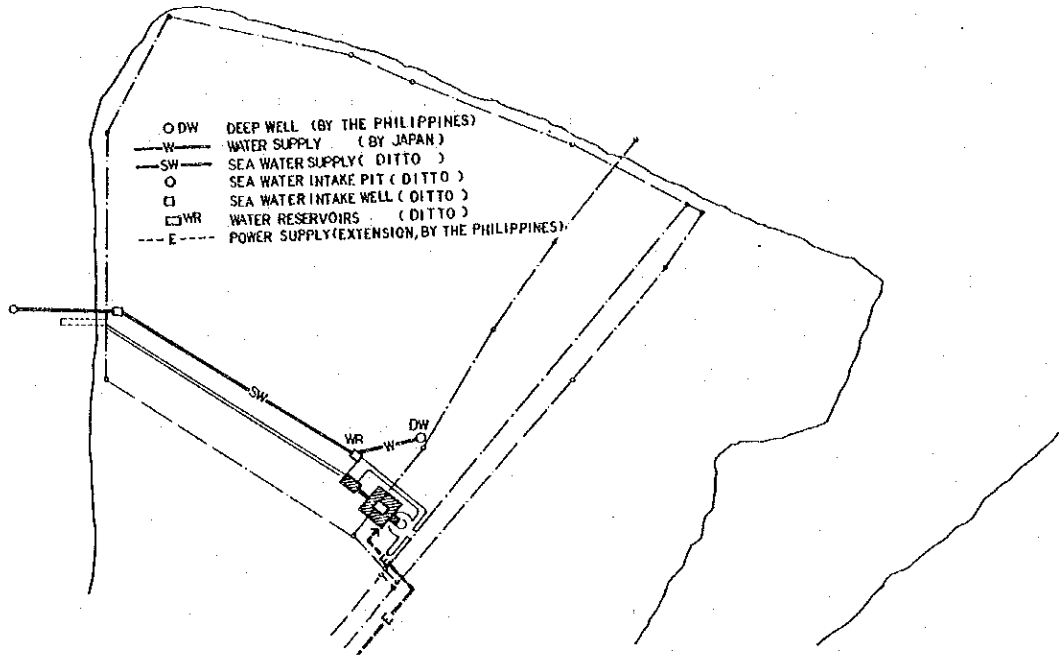


FIG. 3-3-2

3-3-3 PROGRAM III

(1) Water Supply

This area has no city water supply and at present there are no plans to construct a public water main for the industrial estate.

The water source for this project, a deep well with casing, must be prepared by the Philippine side.

(2) Drainage

In this area, there is no sewer system, nor a plan for one. The Philippine side is expected to secure a drain for waste water from the waste water treatment system.

(3) Gas

Although there is no city gas supply, LPG cylinders are available.

(4) Electricity

There are 34.5 kV and 13.8 kV super-high-tension lines along the road in front of the site. At its own expense the Philippine side must erect a substation on the site to transform the power from these lines to 3-phase 220 V and single-phase 220 V power for the project.

The electric authority is First Cavite Electric Cooperative.

The estimated requirement is 675 kVA.

(5) Telephone

There are no telephone lines in this area nor plans to provide them.

(6) TV and Radio

There is both TV and radio broadcasting.

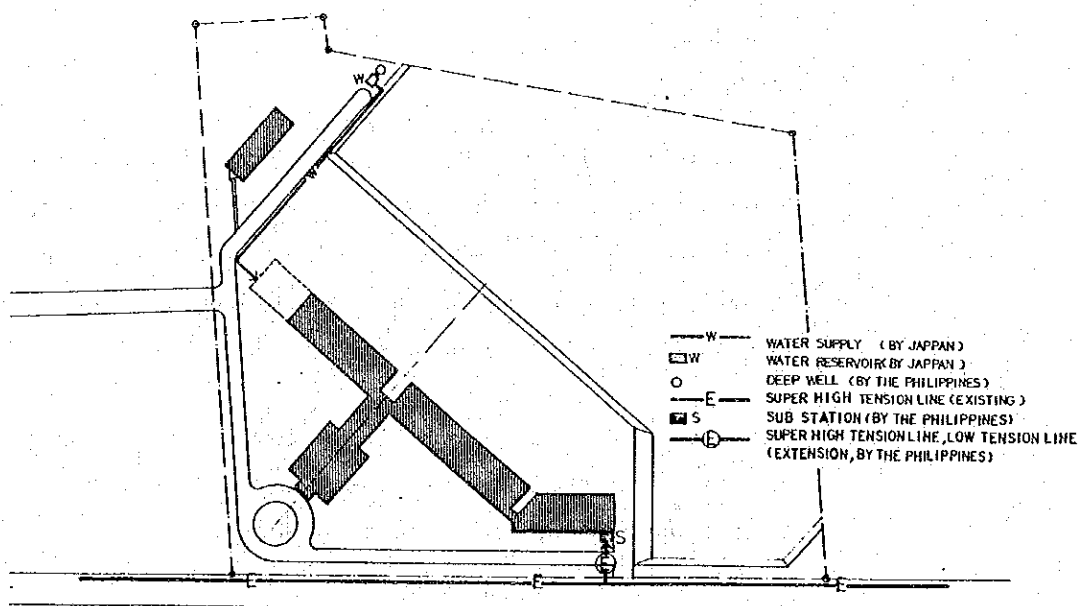


FIG. 3-3-3

3-3-4 PROGRAM IV

(1) Water Supply

At NACIDA CITC, water is pumped up from a 180m-deep well by a 20HP submersible pump to an 11 cubic meter elevated steel tank, creating water pressure sufficient for each building.

The water is potable and the supply appears to be adequate.

(2) Drainage

At this site, each building or group of buildings has its own septic tank. After treatment in these septic tanks, waste water is discharged into the public main.

Storm drain water is also collected and discharged to the public main.

(3) Gas

City gas is not supplied to this area; LPG cylinders are available.

(4) Electricity

A super-high-tension line (3-phase 34.5 kV) runs to the substation on the site and is transformed to 3-phase 220 V power for supply to each building. The total capacity is 1,000 kVA and is sufficient for demand, including that of the machines to be supplied in this project.

The capacity of each building's power line is sufficient. However, the Philippines side must run a new supply line to the shed to be built next to Wood-2.

The present electric power load and estimated power load for the project are given below.

	Present Load (kVA)	Future Load (kVA)
Bamboo	73	80
Rattan	34	74
Wood-1	124	210
Wood-2	229	248
Wood-3	0	48

(5) Telephone

There are city lines to the existing administration building and also extension lines in the site.

(6) TV and Radio

There is both TV and radio broadcasting.

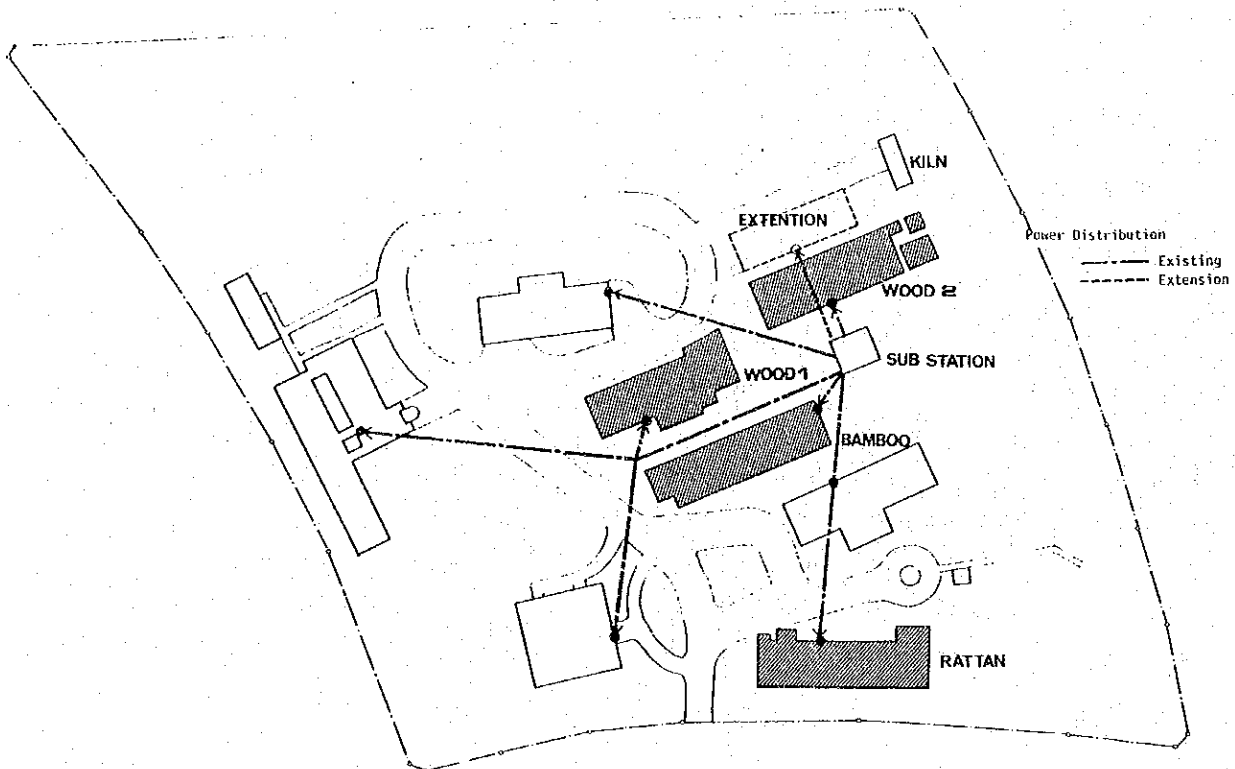


FIG. 3-3-4

