

Department of Health Manpower,
Ministry of Health,
The Union of Myanmar

**BASIC DESIGN STUDY REPORT
ON
EXPANSION
OF THE INSTITUTE OF NURSING
IN
THE UNION OF MYANMAR**

October 1995



**JAPAN INTERNATIONAL COOPERATION AGENCY
PACIFIC CONSULTANTS INTERNATIONAL**

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BASIC DESIGN STUDY REPORT
ON EXPANSION OF THE INSTITUTE OF NURSING IN THE UNION OF MYANMAR

October 19

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PREFACE

In response to a request from the Government of the Union of Myanmar, the Government of Japan decided to conduct a basic design study on the Project for Expansion of the Institute of Nursing and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Myanmar a study team from 19 March to 9 April 1995.

The team held discussions with the officials concerned of the Government of Myanmar, and conducted a field study at the study area. After the team returned to Japan, further studies were made. Then, a mission was sent to Myanmar in order to discuss a draft basic design, and as this result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Union of Myanmar for their close cooperation extended to the teams.

October 1995



Kimio Fujita

President

Japan International Cooperation Agency

October 1995

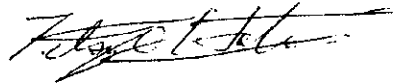
LETTER OF TRANSMITTAL

We are pleased to submit to you the basic design study report on the Project for Expansion of the Institute of Nursing in the Union of Myanmar.

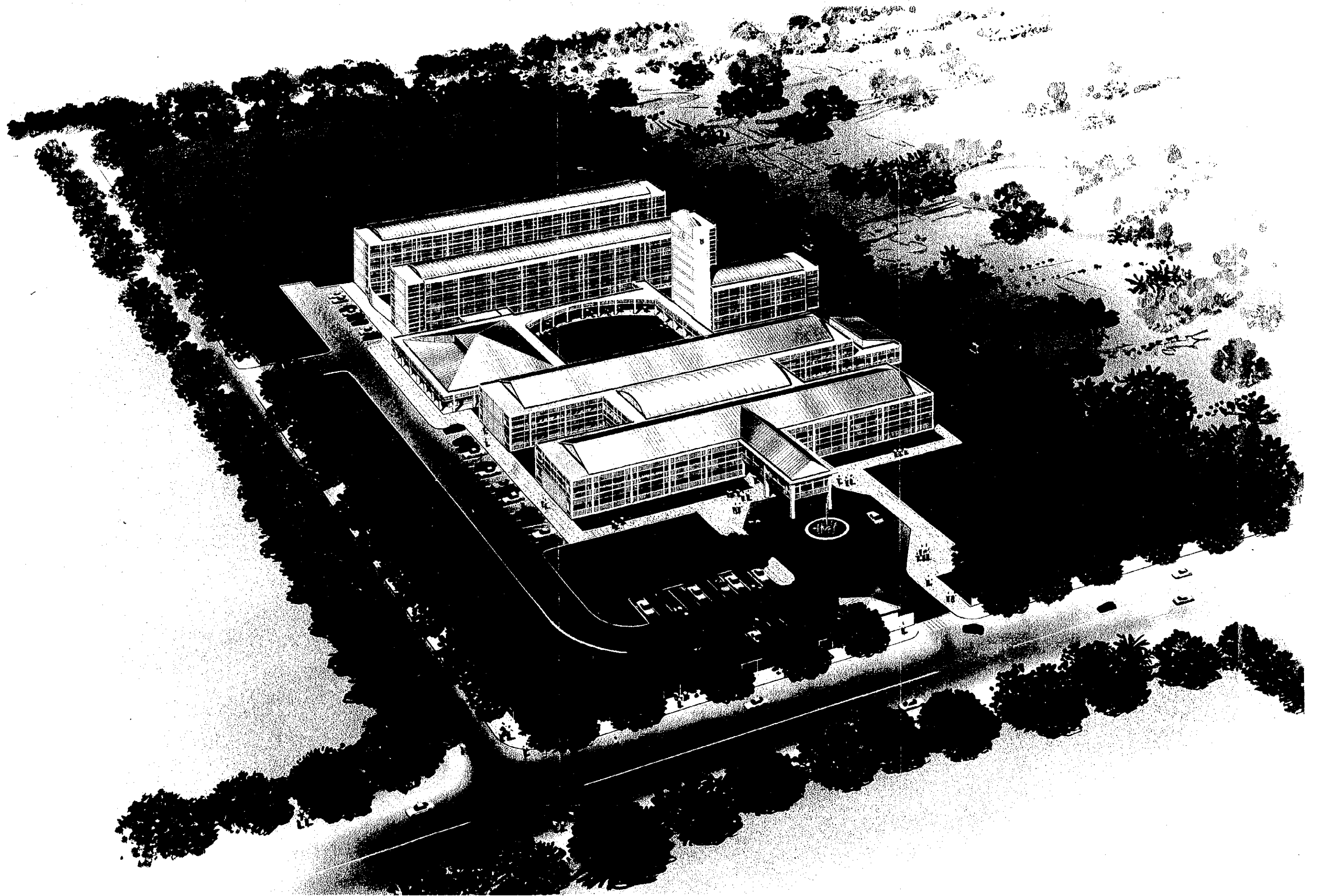
This study was conducted by Pacific Consultants International, under a contract with JICA, during the period from 15 March to 24 October 1995. In conducting the study, we have examined the feasibility and rationale of the Project with due consideration to the present situation of Myanmar and formulated the most appropriate basic design for the Project under Japan's Grant Aid scheme.

Finally, we hope that this report will contribute to further promotion of the Project.

Very truly yours,



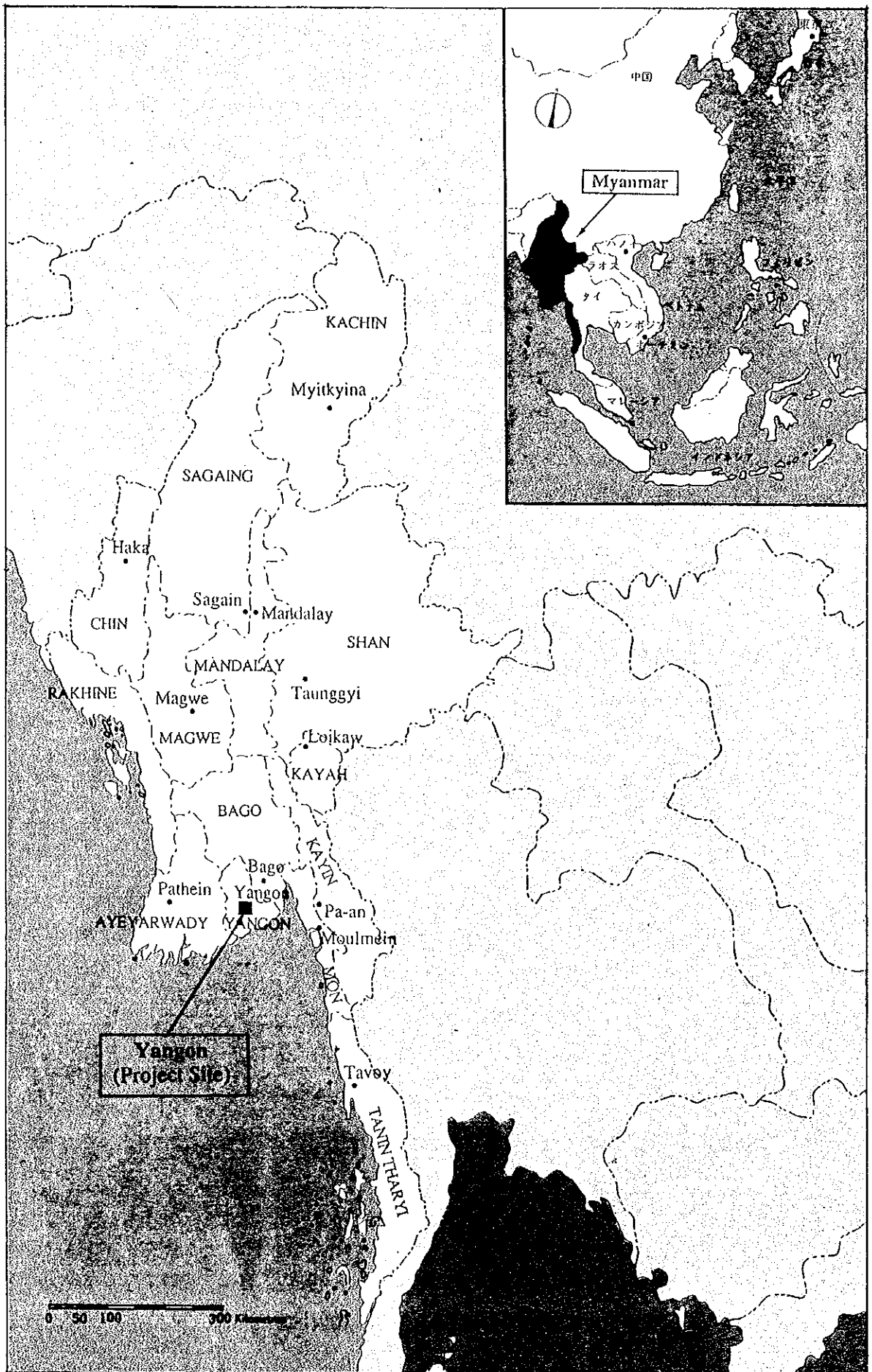
Tetsuji Hatano
Project Manager,
Basic design study team on
The Project for Expansion
of the Institute of Nursing
Pacific Consultants International



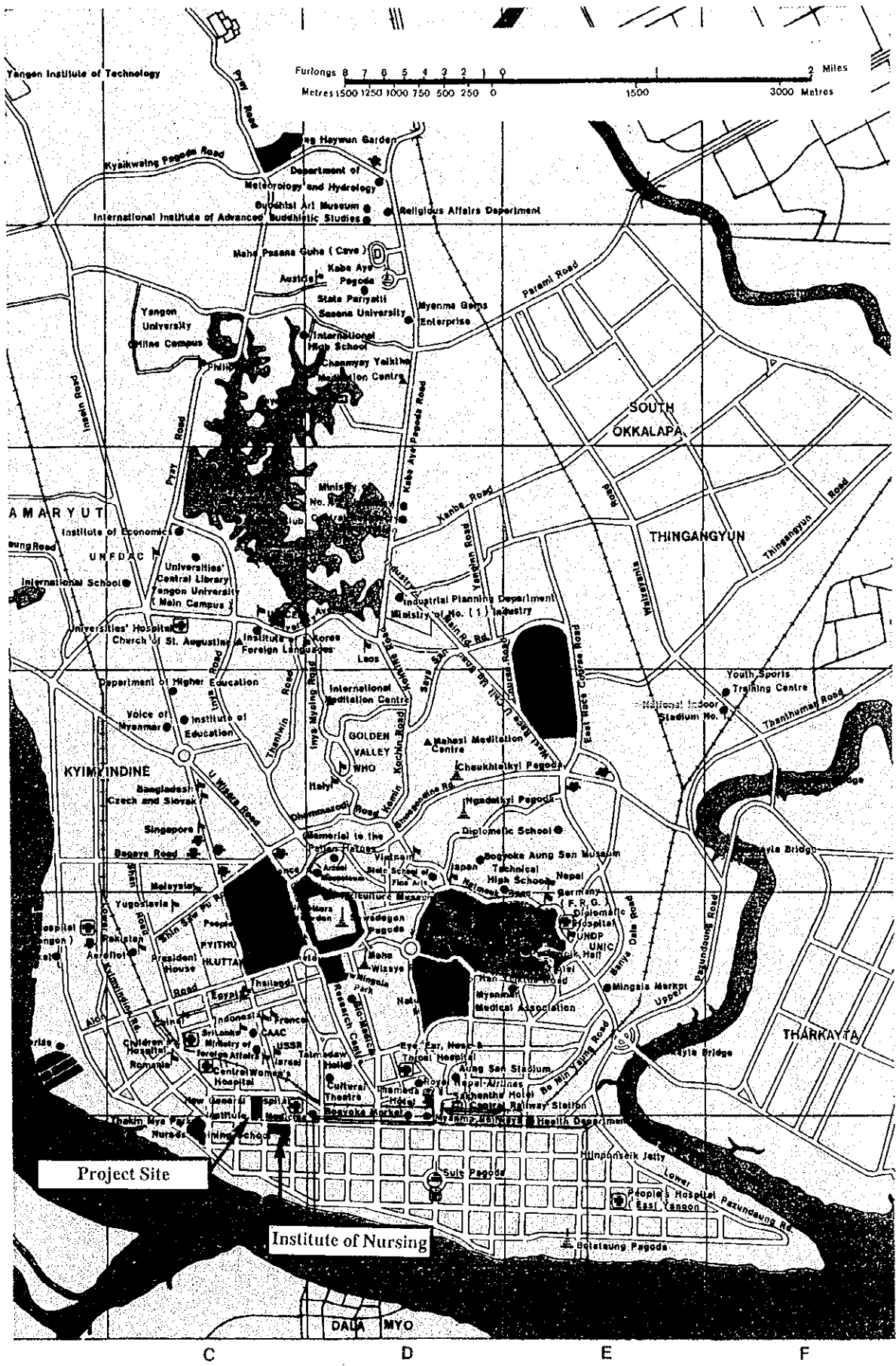
The Expansion of the Institute of Nursing in the Union of Myanmar

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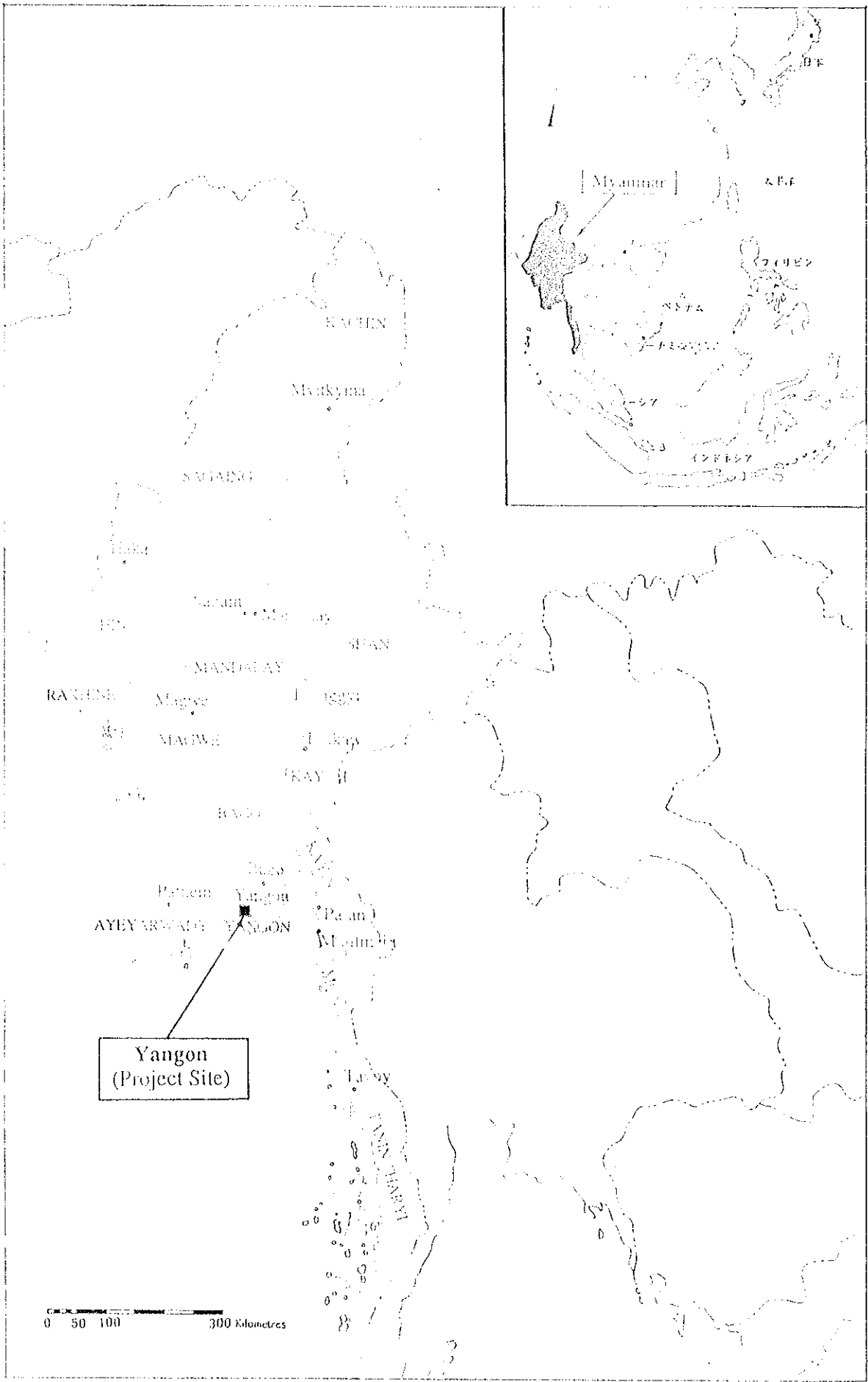
Exterior Perspective
(For Reference Only)



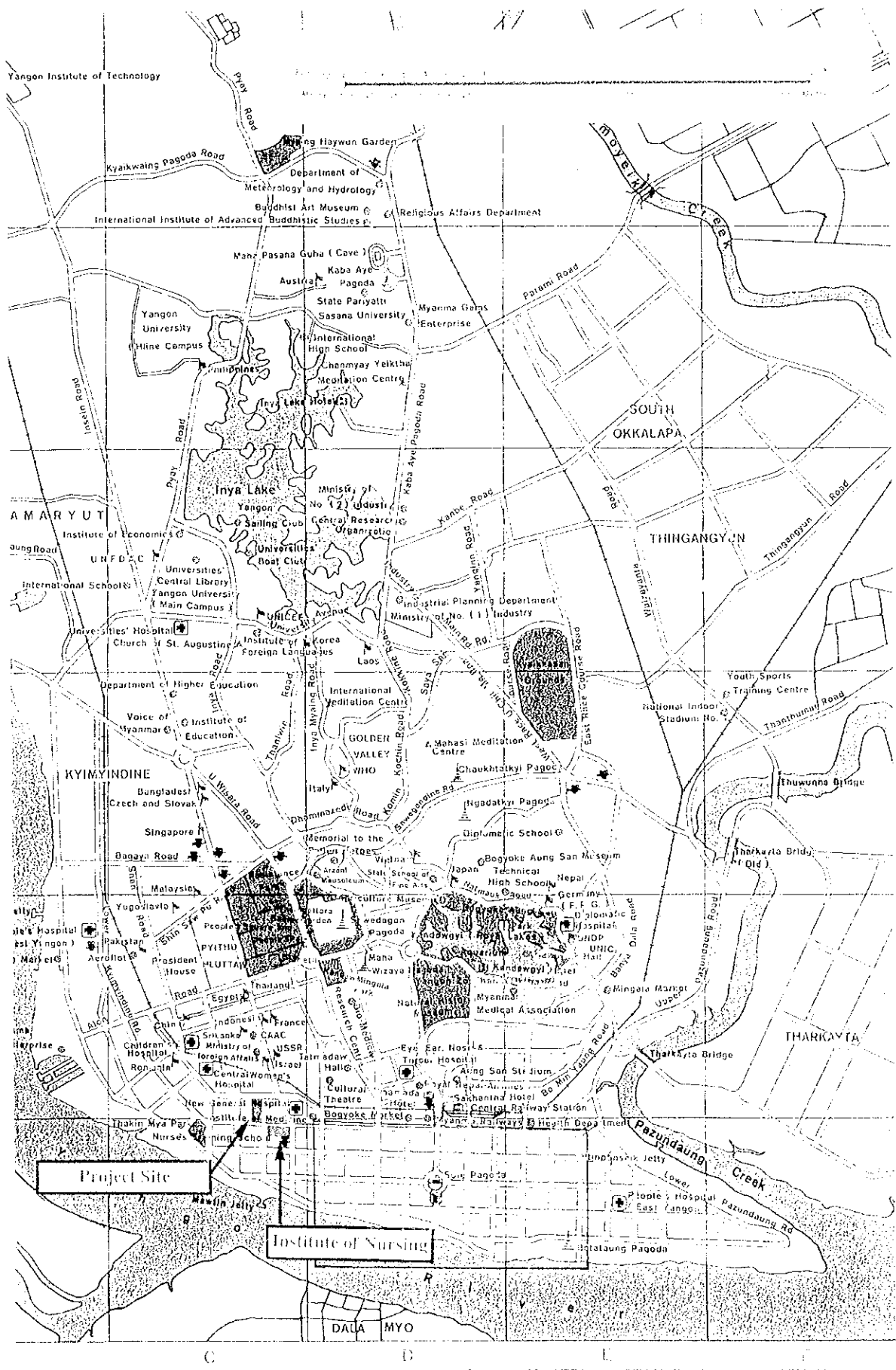
Map of Myanmar



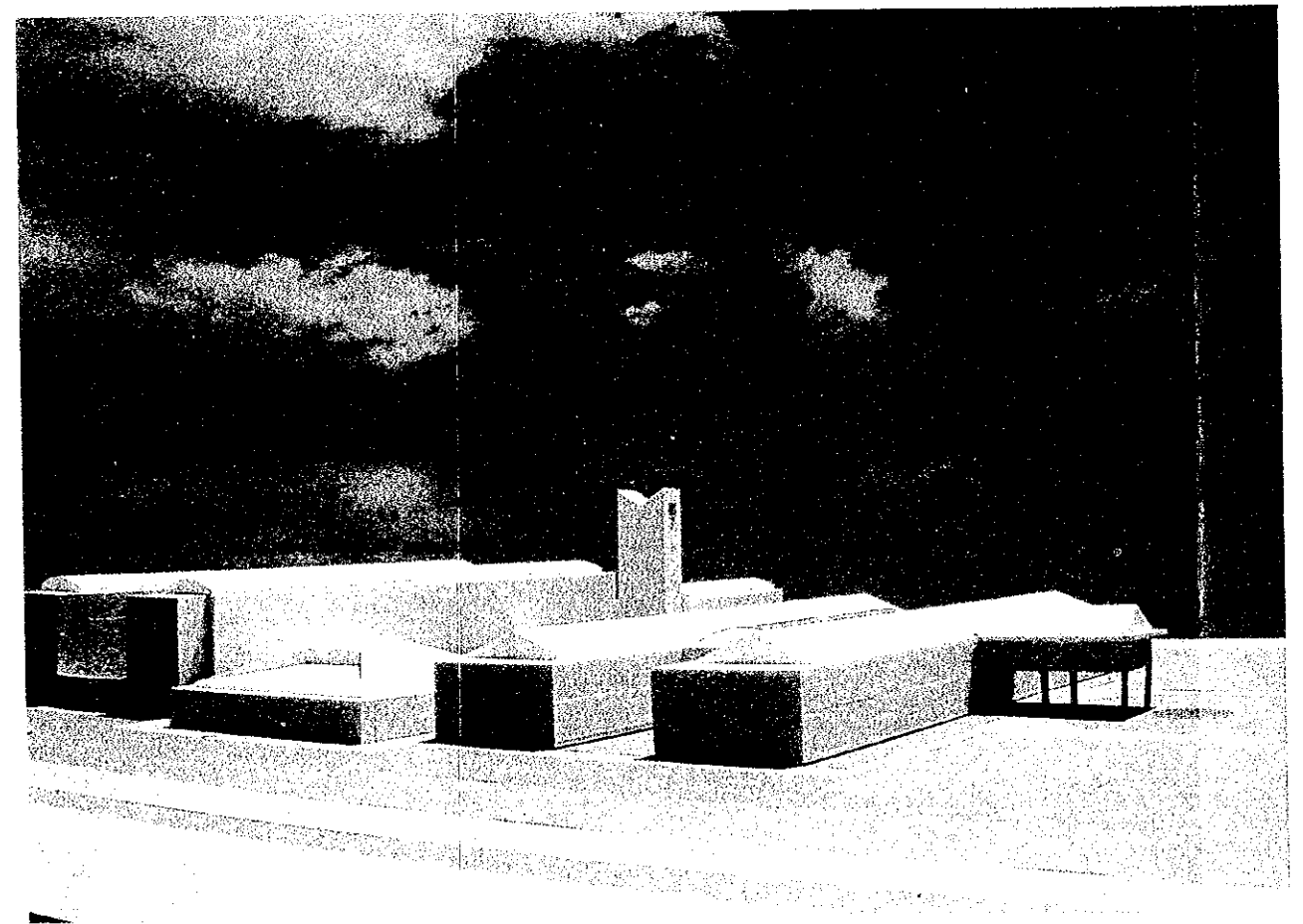
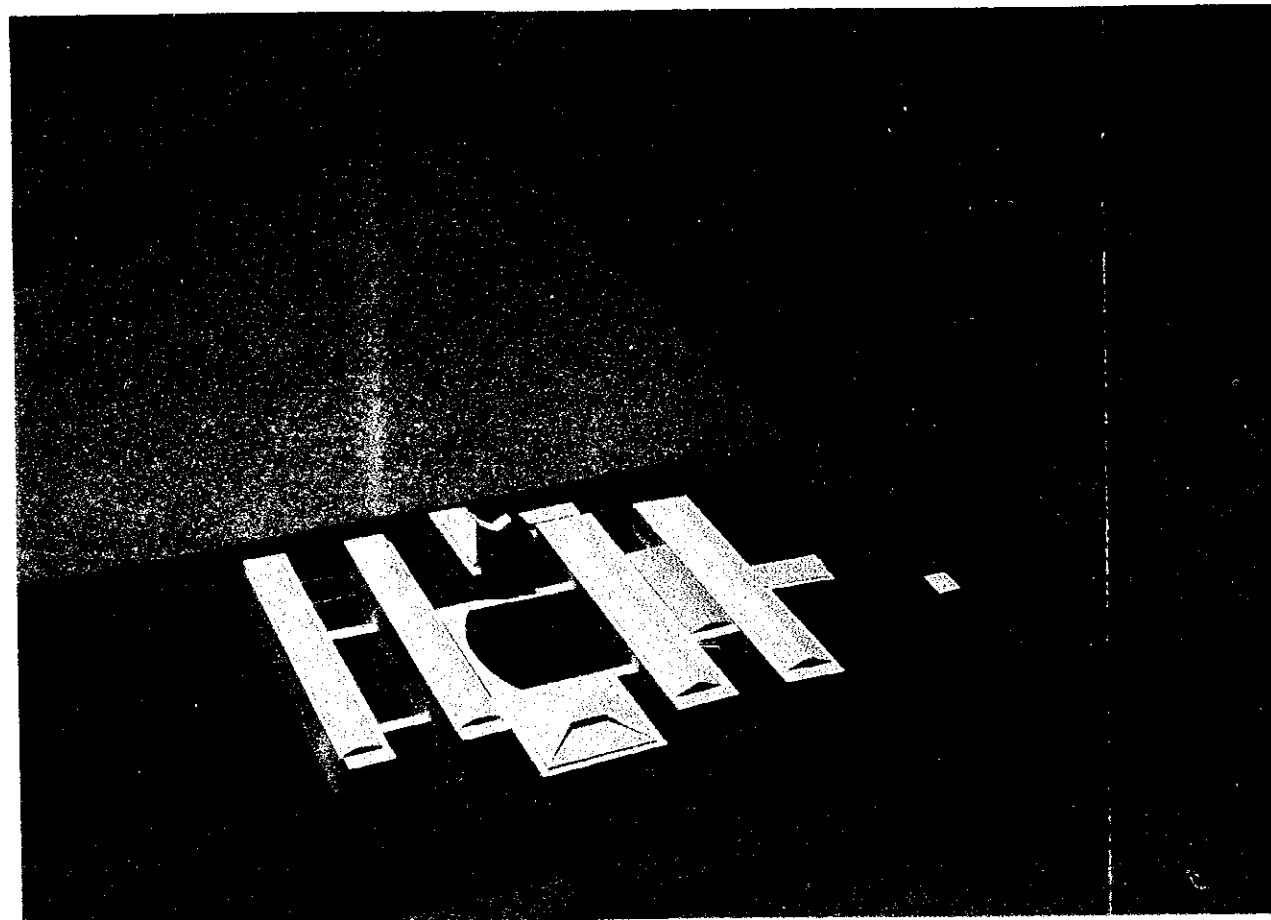
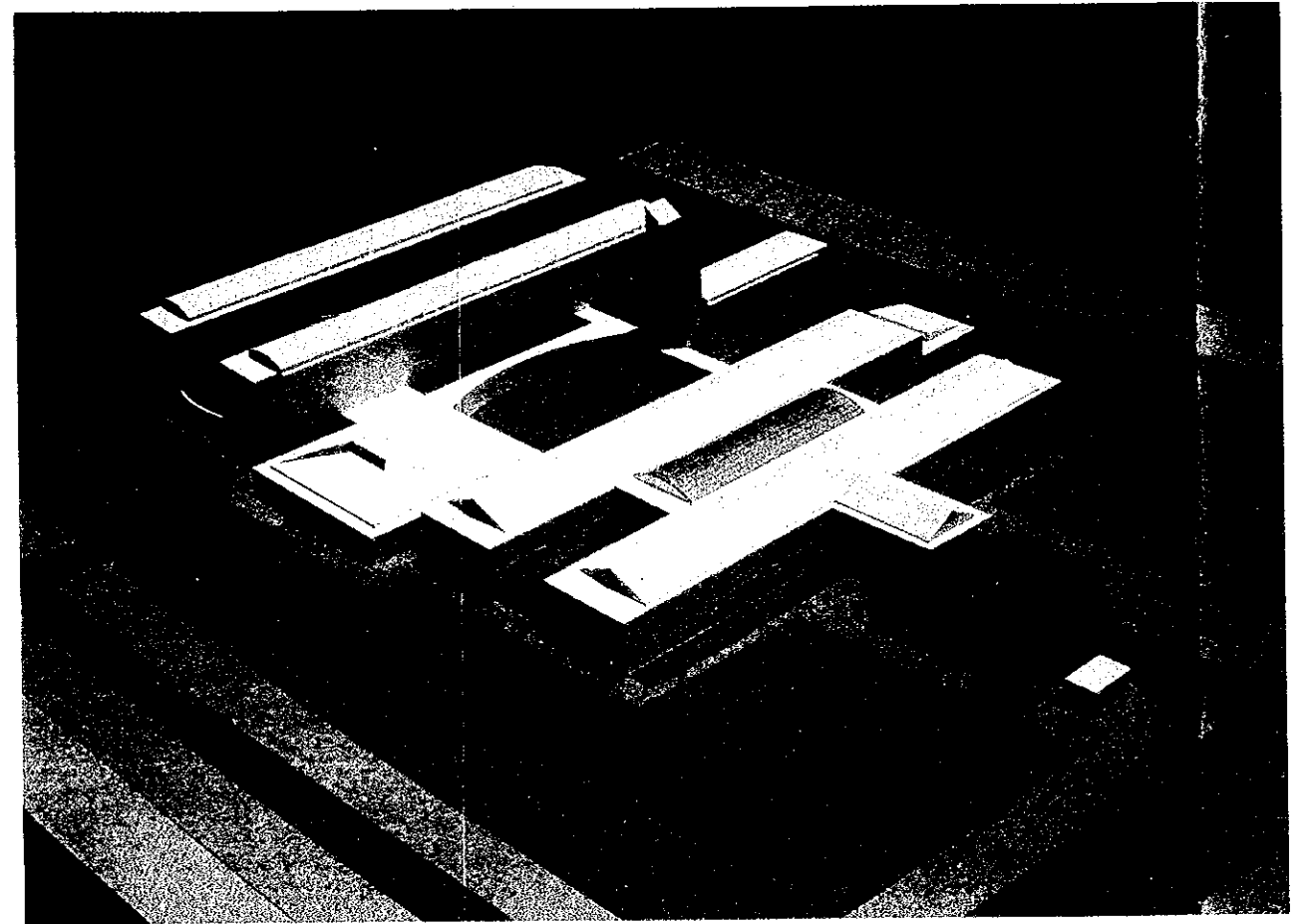
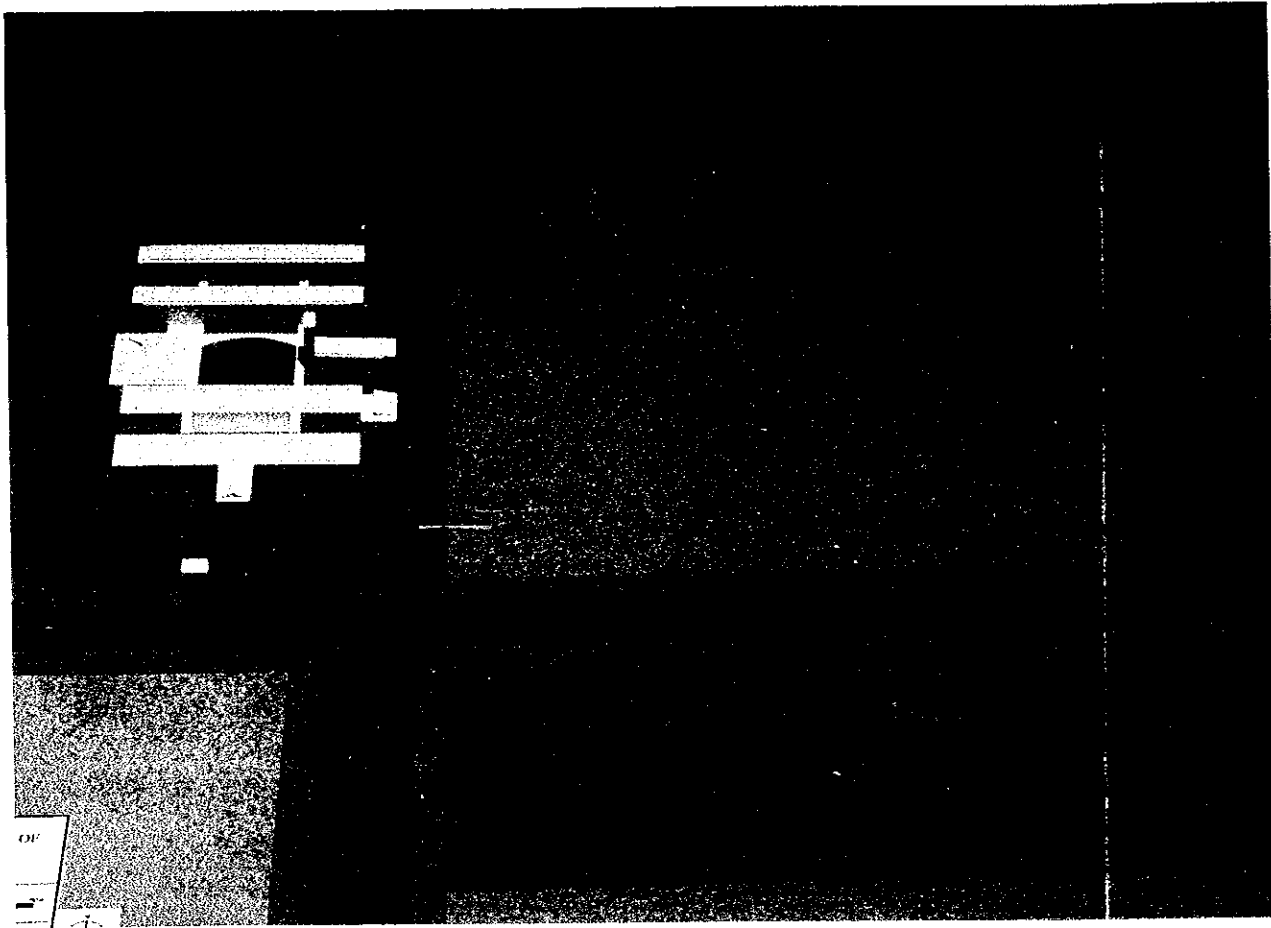
Location Map of Project Site



Map of Myanmar



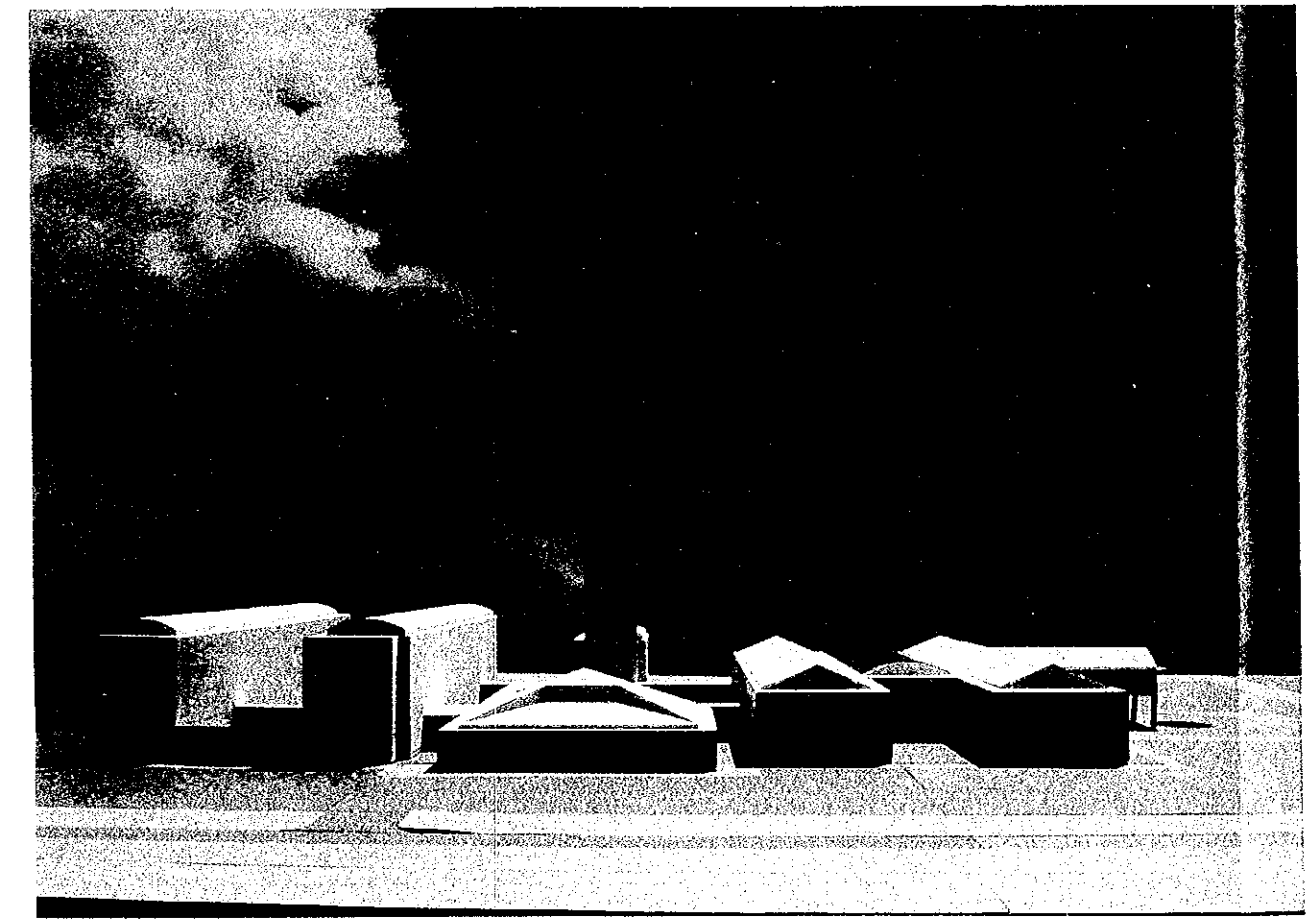
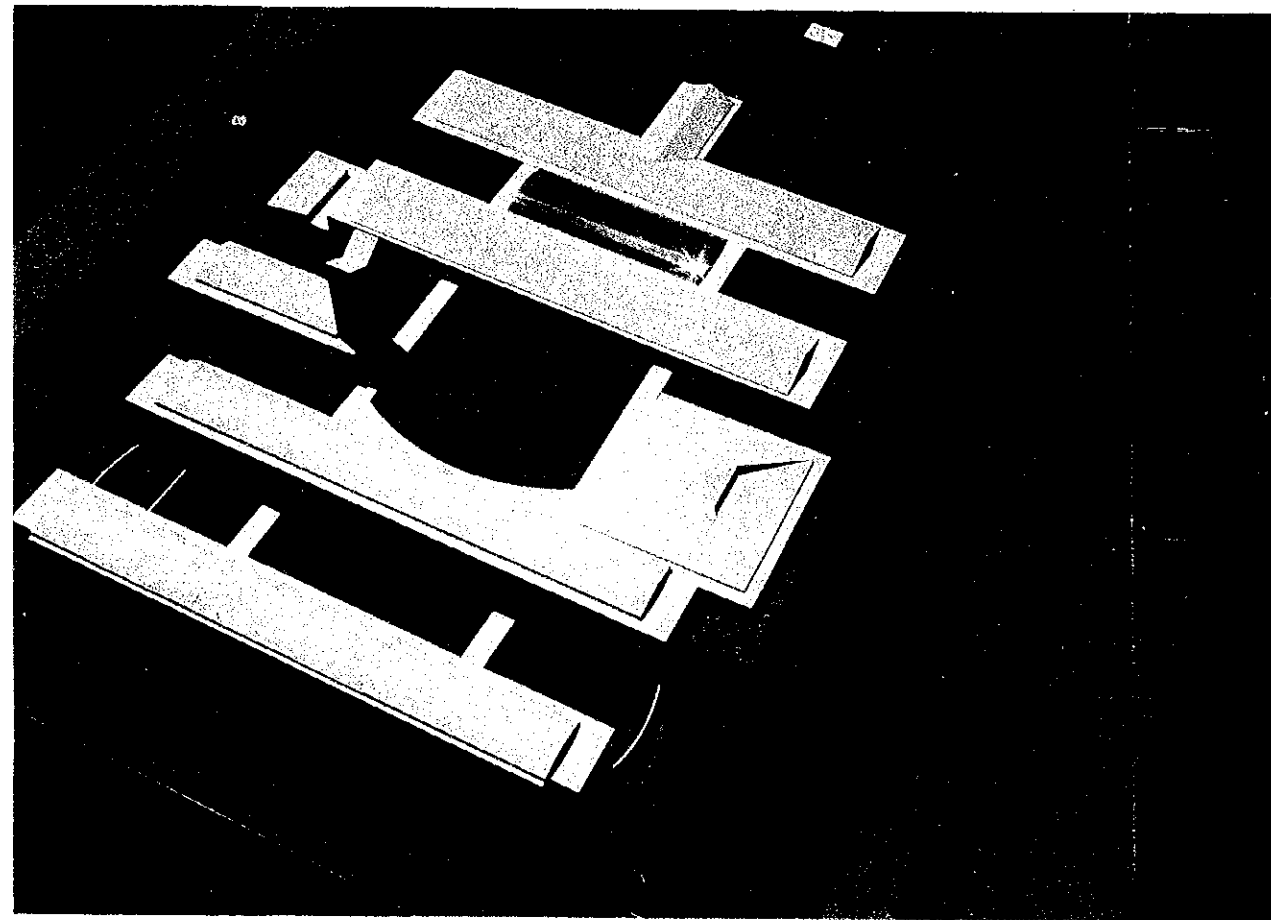
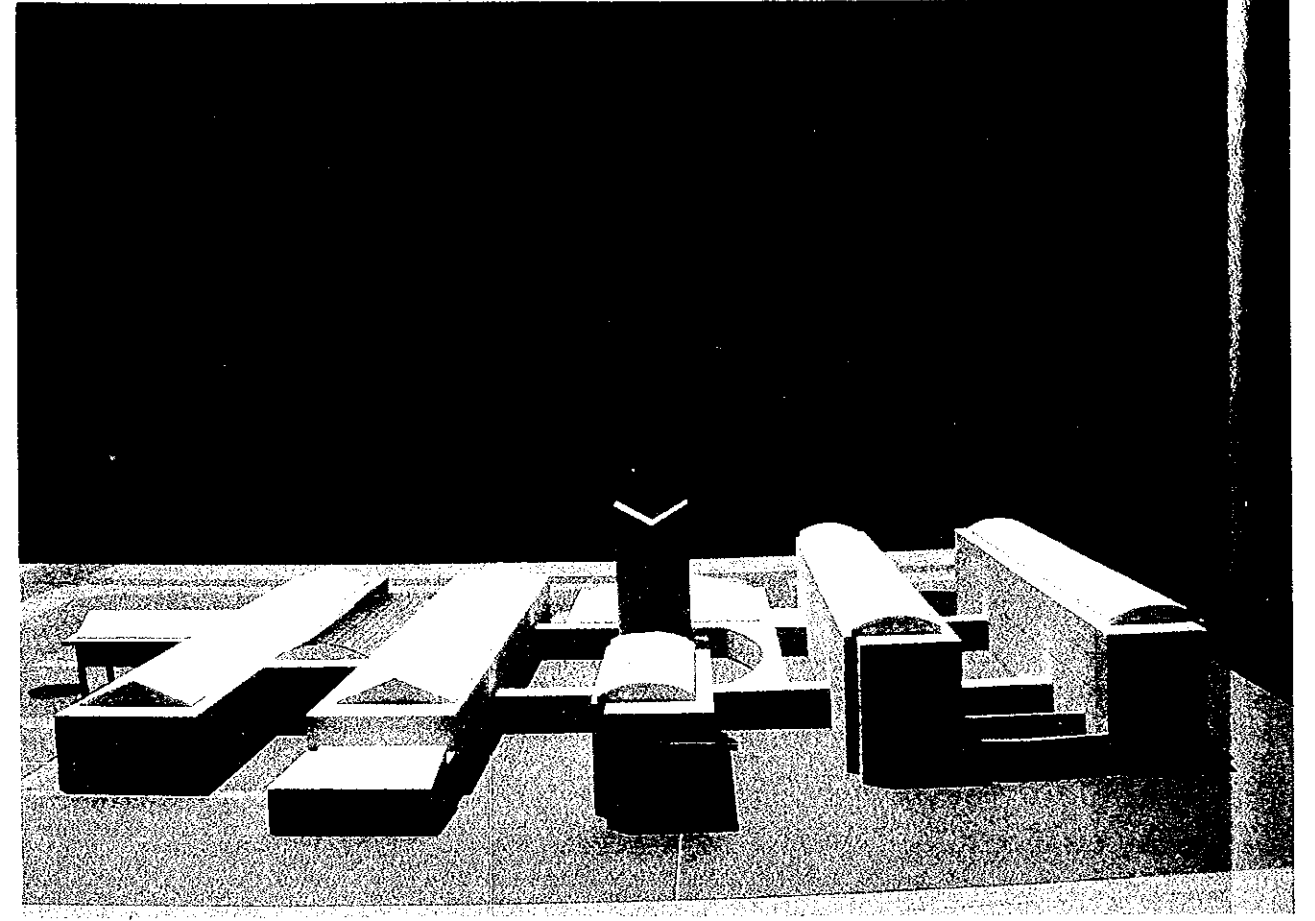
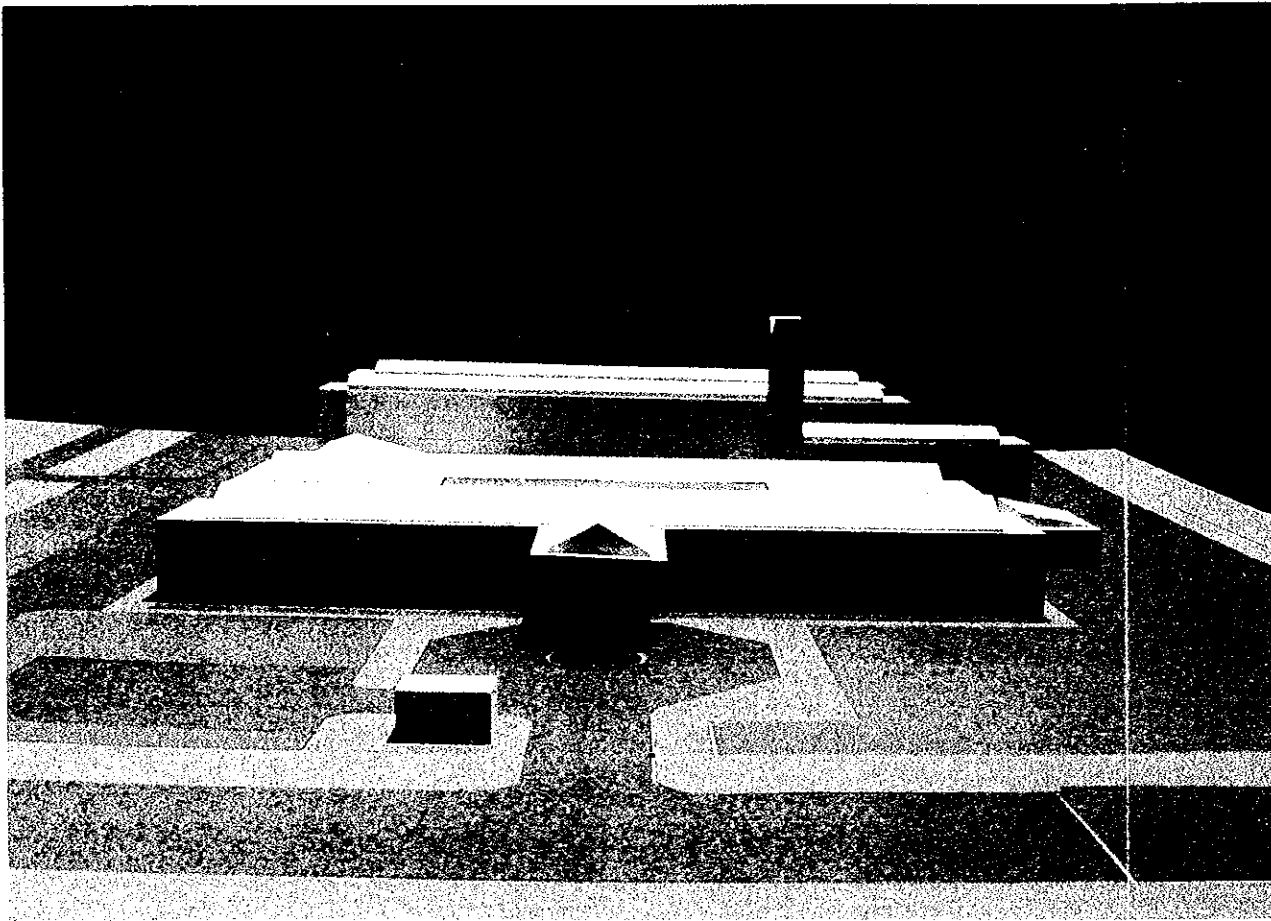
Location Map of Project Site



The Project for Expansion of The Institute of Nursing in Myanmar

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Study Model Photographs - 1



Basic Design Study Report on Expansion of the Institute of Nursing
in the Union of Myanmar

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CHAPTER 1 BACKGROUND OF THE PROJECT

CHAPTER 1 Background of the Project

The Union of Myanmar is located in Southeast Asia and lies between latitude 09°32'N and 28°31'N, longitude 92°10'E and 101°11'E. It shares common borders with Bangladesh and India in the west, Laos and Thailand in the east and the People's Republic of China in the north and northeast. The Bay of Bengal lies to the west and the Andaman Sea to the South of the country.

The population of Myanmar was about 43 million in 1993, and it has been increasing with 20 % growth rate annually. The predominant religion is Theravada Buddhism, with about 90% of the population being Buddhist. The remaining 10% are Christians, Muslims and Hindus.

1-1 Health Sector Overview

1-1-1 Present Situation of Health Care in Myanmar

(1) Present Situation of Health

The situation of health and medical conditions has not been fully improved as shown some indicators below, in spite of all the government's efforts such as the People's Health Plan. Most diseases in Myanmar are categorized as infectious diseases, such as Malaria, Tuberculosis, Typhoid and Dysentery. However, these diseases together with Malnutrition, which is also a common problem in Myanmar, can be prevented by adequate health and medical conditions. Some of the reasons why the Myanmar is in this situation, is because of the complicated topography and undeveloped infrastructure, such as the traffic and communication system, so that knowledge of health and sanitation has not spread throughout the country.

< Statistics of Health in Myanmar >

Life Expectancy at Birth:	Average	60.2
	Men	57.9
	Women	63.1
Children's Mortality Rate (CMR: under 5 years old)		65.7/1,000 (1993)
Calorie Intake		2,450 cal/day/man (1990)
Crude Birth Rate		32/1,000
Crude Death Rate (CDR)		13/1,000
Infant Mortality Rate (IMR)		95/1,000

< Source: The Indication of Health in Myanmar >

In recent years, HIV has been prevalent especially in the border areas. It is one of the important issues to prevent and control HIV infection, with support from nurses in these rural areas.

(2) The Situation of Facilities and Staff for Health Care

The numbers of health facilities and health care staff in 1991/1992 are shown in the Table 1-1. With increasing population, the number of hospitals, doctors and nurses have also increased. However the ratio of their numbers to the population has not improved.

Table 1-1 Situation of Health Care (1983/84 - 1991/92)

	1983/1984		1991/1992	
	Numbers	per 10,000 persons	Numbers	per 10,000 persons
Public Hospital	620	0.17	694	0.17
Doctor (Government)	4,902		4,720	
(Cooperative, Private)	4,029		8,633	
(Total)	8,931	2.50	13,353	3.12
Dentist	531	0.15	970	0.22
Nurse	7,264	2.03	9,023	2.17
Midwife	7,831	2.20	8,407	2.02

(Source: Statistical Yearbook, 1993)

The health service in Myanmar is mainly provided through public institutions, such as General Hospitals, Special Hospitals and Township Hospitals, Rural Health Centers and Rural Sub-health Centers, etc. Though there are only a few private hospitals in Myanmar, there are about 1,000 to 2,000 private clinics in Yangon. If a doctor opens a private clinic in Myanmar, he or she has to make an application for its establishment.

As indicated in Table 1-1, there was a total increase in doctors of 4,500 from 1983 to 1991. The number of doctors in cooperative and private clinics increased, but the number in public hospitals decreased.

The number of nurses also increased by about 1,800 from 1983 to 1991. However, the ratio of nurses to the population increased only a little. That ratio in Myanmar is low in comparison with other countries, as shown in Figure 1-1. About 70% of nurses belonged to public hospitals in 1987. The nurses in Myanmar are registered with the Myanmar Nursing Council like doctors, and they are normally held in a high respect especially in rural areas, and have high social status.

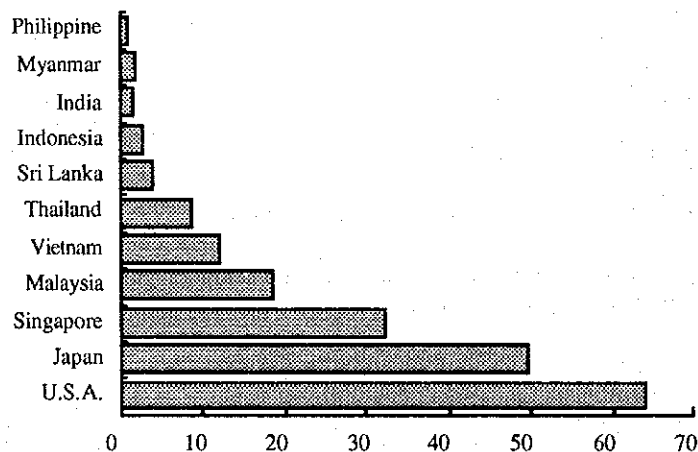


Figure 1-1 Comparison of the Number of Nurses per 10,000 Persons

(Source: Interprog Corp./March 1992)

The nurse doctor ratio in public hospitals in 1984/85 was 0.9 : 1.0, and it changed to 0.7 : 1.0 in 1993/94, way under of the ideal ratio 4 : 1. The comparison of the nurse doctor ratio in Myanmar with other countries is shown in Figure 1-2. The ratio in Myanmar is obviously less than others. It is clear that the shortage of nurses is a serious problem in Myanmar.

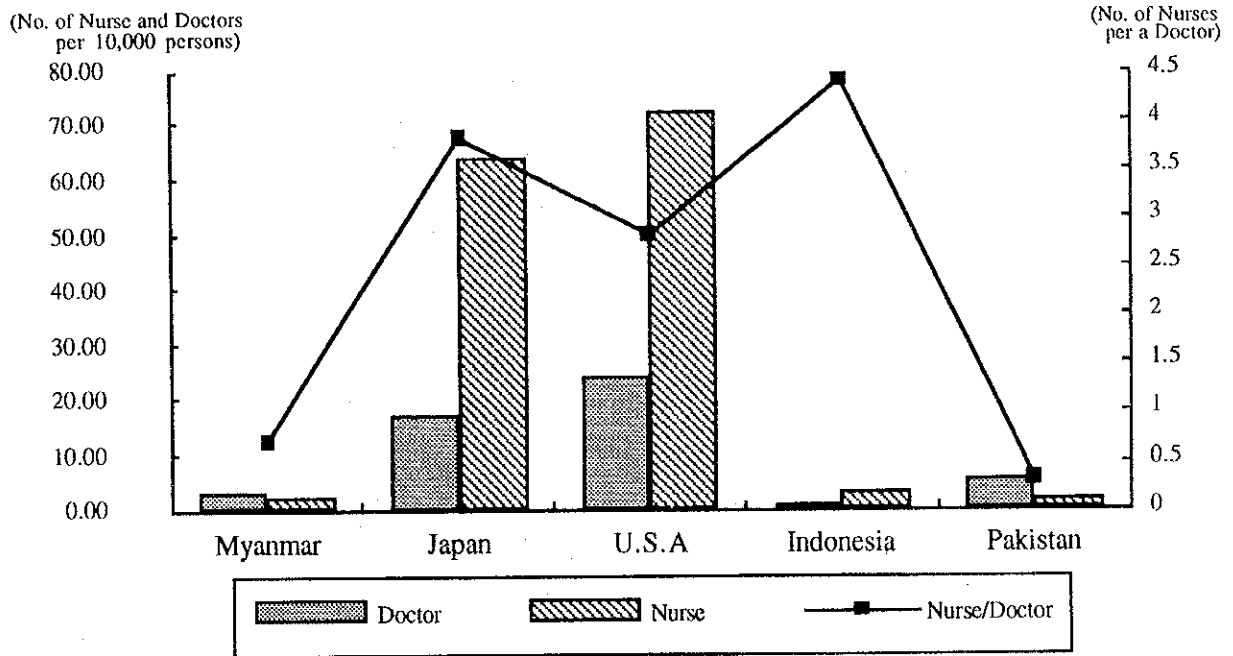
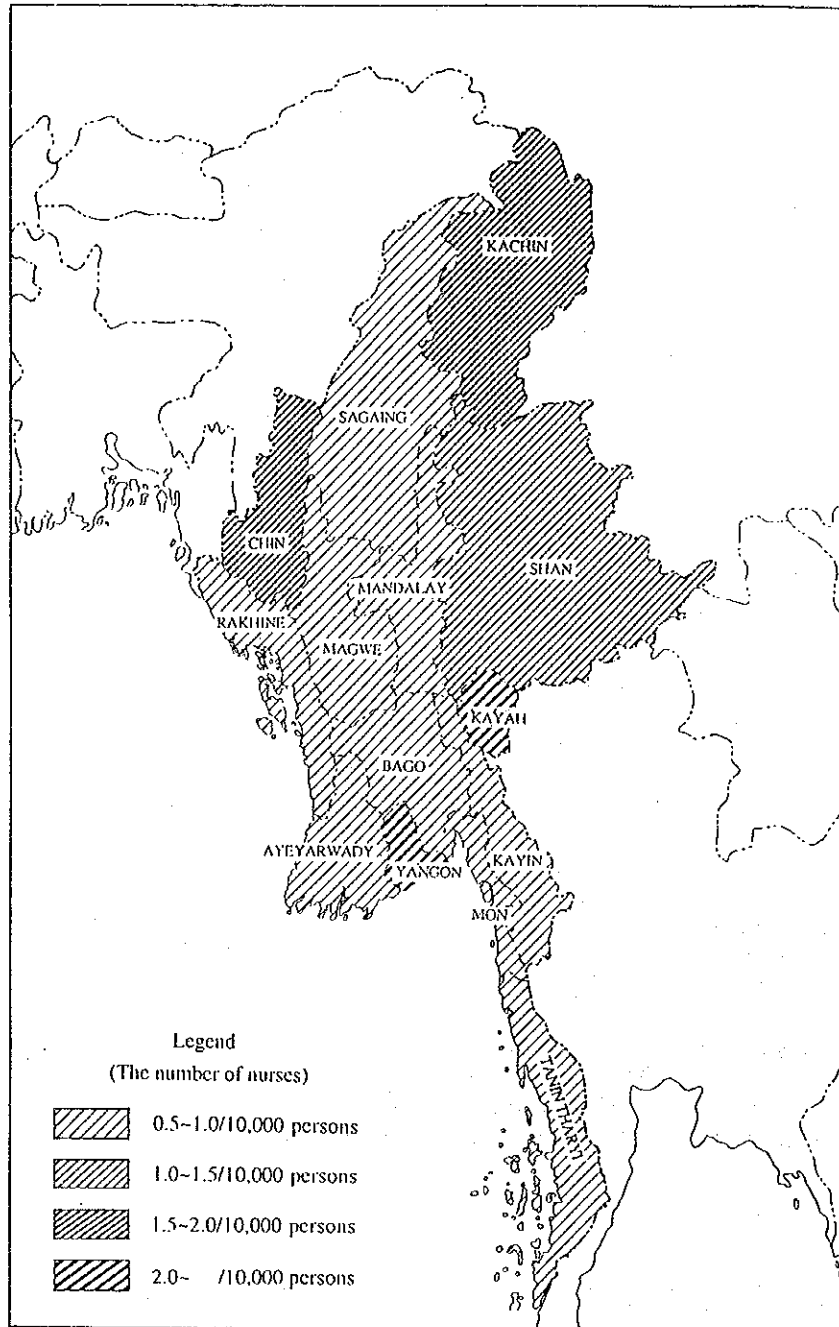


Figure 1-2 Comparison of the Nurse Doctor Ratio

The number of nurses per 10,000 persons was 2.17 in 1991/92, which was slightly increased from 2.03 in 1983/84. The ratio of the number of nurses with population varies with the division, as shown in Figure 1-3.

Nurses especially those working in rural areas, have a significant role to play in the health service in Myanmar. They have to often give medical treatment in place of a doctor in rural areas because no doctors are available. It can be said that the quality of health care services is dependent upon nursing personnel.

Figure 1-3 Distribution Chart of the Number of Nurses per 10,000 persons



The shortage of health and medical equipment is obviously a problem, and therefore WHO and other donors have provided some equipment. Because of a shortage of skilled workers and the fluctuating electrical power supply, high grade equipment is not suitable for hospitals in Myanmar.

1-1-2 Outline of Related National Development Policy

"National Health Policy" was formulated in 1974 with the principle of "The whole people has the right to receive a health care service equally". In the policy, there are some strategies; up-grading of standards of health workers smoothing out health care differentials, and improvement of the health service in both prevention and cure, etc.

In 1978, "The Health for All by the year 2000 (HFA 2000)" was formulated with objectives and targets, in accordance with the same titled strategy produced by WHO in 1978.

Based on the above mentioned plan, the following health plans were formulated and implemented with the HFA 2000 objectives.

- From 1978 to 1982 The First People's Health Plan (PHP I)
- From 1982 to 1986 The Second People's Health Plan (PHP II)
- From 1986 to 1990 The Third People's Health Plan (PHP III)
- From 1990 to 1992 National Health Plan (NHP 1990-92)

The implementation of the NHP 1990 - 92 has been limited to ongoing health programmes and has recorded only a few achievements.

The National Health Policy in 1993 was reformed and developed by the National Health Committee (NHC), which has been set up by the State Law and Order Restoration Council (SLORC) to lead and give guidance in implementing health programmes systematically and efficiently with the HFA 2000 targets. Guided by the National Health Policy, the National Health Plan (1993-1996) has been systematically formulated, and now it is being implemented.

"National Health Plan (1993-1996)"

The objectives of the NHP 1993-96 are to achieve the HFA 2000 targets, to be in line with the National Health Policy, as well as to take into consideration socio-economic and health changes of Myanmar.

This plan is composed of the following six broad programmes:

- 1) Community Health Care Programme
- 2) Disease Control Programme
- 3) Hospital Care Programme
- 4) Environmental Health Programme
- 5) Health Systems Development Programme
- 5) Organization and Management Programme

Especially 1) the Community Health Care Programme, is one of the essential components, has given the following objections:

- 1) Conduct training courses for 30 Assistant Directors (Nursing), Nursing Officers and Township Nurses Grade I annually.
- 2) Develop manuals on "Self Care at Home in Nursing".

- 3) Train Nurses, Lady Health Visitors, Midwives, members of NGOs and communities on "Self Care at Home in Nursing" in 1 pilot township and 2 selected townships.

"Future Nursing Manpower Development Plan"

In order to increase the training capacity of nurses, the Ministry of Health made a future nursing manpower development plan as shown in Table 1-2.

In this plan, about 2,000 nurses and 500 doctors will be produced in the year of 2000, the target year.

Though 380 students are planned to be graduated from the ION each year in this plan, the number of nurses produced will be only 300, based on the future plan of the ION. (The number of students in B.N.Sc. Bridge course is not counted because they are in-service nurses.) According to discussions with the Myanmar side during the field survey, the future nursing manpower development plan made by the MOH is currently being reviewed.

Table 1-2 Future Nursing Manpower Development Plan

INSTITUTE/SCHOOL	95-96	96-97	97-98	98-99	1999-2000	2000-2001
Institute of Nursing	350	350	350	380	380	380
Nursing School (Y.G.H)	250	250	250	300	300	300
Nursing School (East YGH)	40	40	40	40	40	40
Nursing School (North Okkalapa)	60	60	60	60	60	60
Nursing School (Mandalay)	250	250	250	300	300	300
Nursing School (Pa-Thein)	100	100	100	150	150	150
Nursing School (Taungyi)	80	80	80	100	100	100
Nursing School (Lashio)	70	70	70	70	70	70
Nursing School (Mawlamyine)	150	150	150	150	150	150
Nursing School (Phalun)	50	50	50	50	50	50
Nursing School (Loikaw)	50	50	50	50	50	50
Nursing School (Pa-an)	50	50	50	50	50	50
Nursing School (Myitkyena)	50	50	50	50	50	50
Nursing School (Dawei)	50	50	50	50	50	50
Nursing School (Sittwe)	50	50	50	50	50	50
Nursing School (Pyay)	50	50	50	50	50	50
Nursing School (Monywa)	50	50	50	50	50	50
Nursing School (Magwa)	50	50	50	50	50	50
Nursing School (Kyaing-Ton)	50	50	50	50	50	50
TOTAL	1,850	1,850	1,850	2,050	2,050	2,050

1-1-3 Nursing Administration

The Ministry of Health is the organization in charge of the central health administration in Myanmar. There is a National Health Committee above the Ministry of Health, which has been formed by the State Law and Order Restoration Council (SLORC) to lead and give guidance in implementing the people's health programmes systematically and efficiently. Myanmar comprises of seven states and seven divisions, and there are 52 districts and 324 town ships in the country, with each municipality having a health department.

The organization structure of health administration is shown in Figure 1-4.

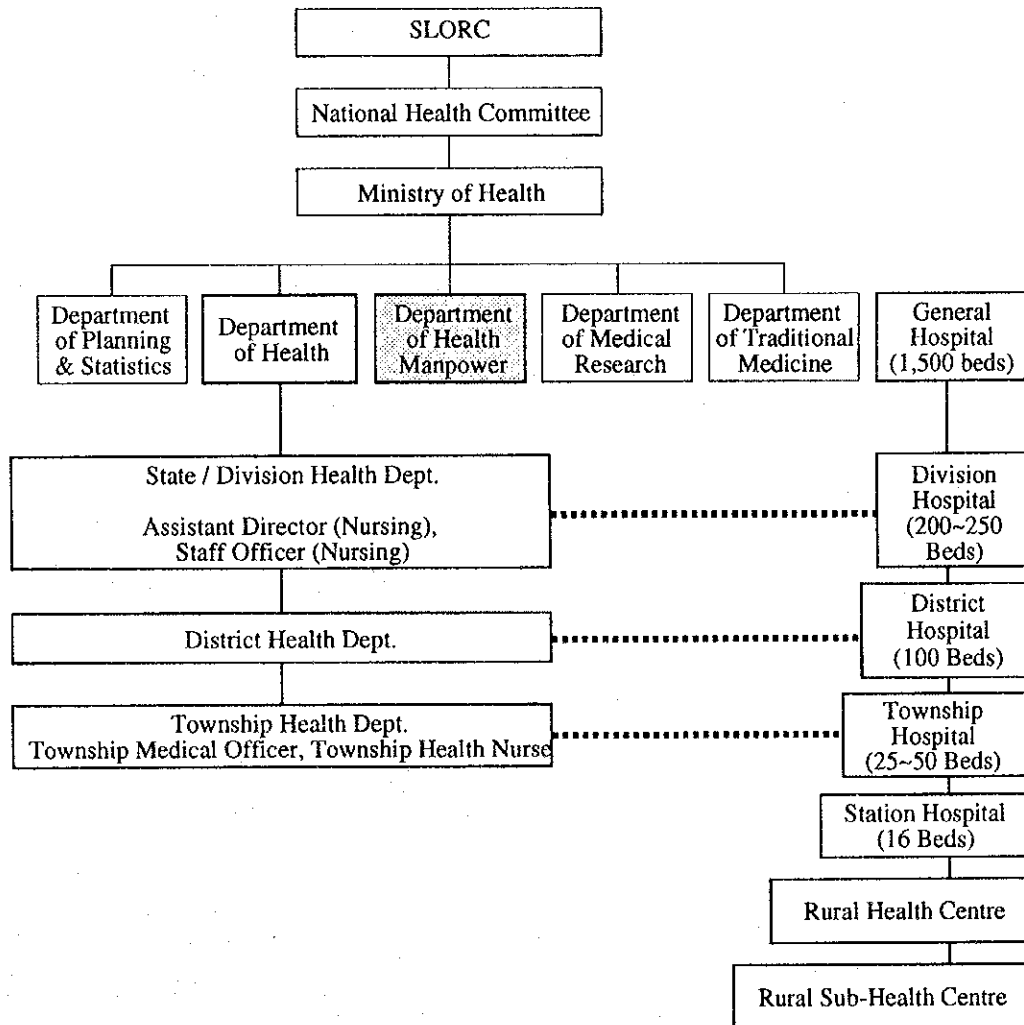


Figure 1-4 Organization of Nursing Administration

For nursing administration, the Department of Health, Nursing Section's Organization was established in 1991. At the same time the posts of Assistant Director (Nursing) and Staff Officer (Nursing) in the State and Division Health Department, and Township Nurse Grade I were also set up.

In the new organization, Community Health Nurses, who are able to carry out community health care effectively with much training in the area of community health nursing, are requested for the above mentioned posts.

In the organization of health administration, doctors do not often stay at lower level facilities such as a Rural Health Centres and Rural Sub-Health Centres. Therefore, Nurses in the above centres are requested to give some medical treatment, and their roles are therefore very important.

The existing problems in the Nursing Organization are as follows;

- There is no nursing personnel to give technical supervision to the existing LHV and Midwives.
- There is no nursing personnel for Township Nurse, who must supervise both hospital and community-based nurses.
- For achieving the HFA targets, the self care at home in nursing of the community will be effective. However, the self care at home does not exist at the moment, because of the lack of nursing personnel.
- Though Community Health Nursing is requested especially in rural areas, routine nursing is hospital-based, and nurses would need more training in the area of community health nursing.

1-1-4 Overview of Nursing Education

The Department of Health Manpower takes responsibility for the health personnel education sectors. The organization of DOHM is shown in Figure 1-5.

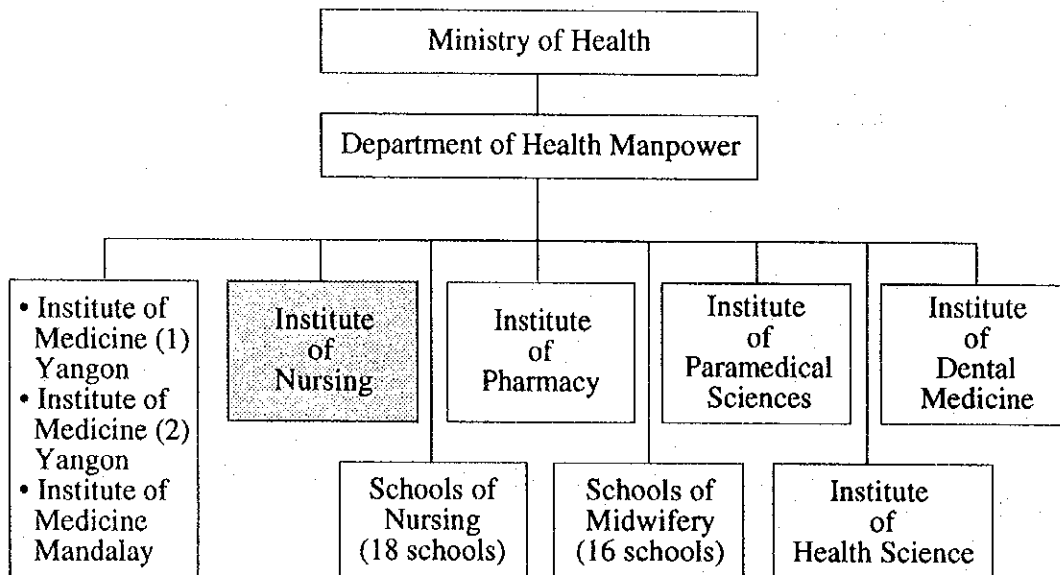


Figure 1-5 Organization of DOHM

Nursing Education in Myanmar was started by the British Government in 1887 during the colonial period. At first, hospital nurses were self-trained. For the purpose of training more nurses, a Nursing Training Centre (NTC) was established with the support of the Japanese Government in 1986, which offered a three and a half year basic nursing and midwifery programme.

Research and analysis for the project of the Strengthening of Nursing Services by UNDP and WHO was started in 1988, and a situation analysis of nursing services and nursing education was conducted in 1989. As a result of these efforts, most health services were performed by nurses (professional nurses, midwives, auxiliaries) in both hospitals and community settings. Therefore, the quality of health care by these health workers had a great impact on the people's health status.

However, some problems existed still in the nursing system; the nursing education was hospital-based, and there was no leaders such as administrators, managers and educators, who could carry out the very important functions of ensuring the quality of health service.

To solve the above problems, nursing education in Myanmar was re-oriented with the development of a new three-year community-oriented curriculum in 1991, from a former three and a half years hospital-based basic nursing and midwifery programme. The midwifery curriculums were included in the three-year Diploma course, and the graduates receive both the nursing and midwifery certificates after this course. Previously, the requirement for entry into this course was that the candidate was required to have 2 years of university study. However, whoever passes the Basic Education High School Examination can now sit the entrance examination.

In 1991, NTC was also upgraded to the first Institute of Nursing with a two-year Bachelor of Nursing Science Bridge course for in-service nurses, in response to the urgent need for better qualified teachers and nurse managers.

Next, a four-year B.N.Sc. Generic course was started in 1994 for applicants who had passed the Basic Education High School Part (A) examination.

The existing and proposed system of nursing education are shown in Figure 1-6. The ION and another 18 Nursing Schools offer nursing education at present. A description of each course is shown in "Chapter 1-2-3 Curriculum".

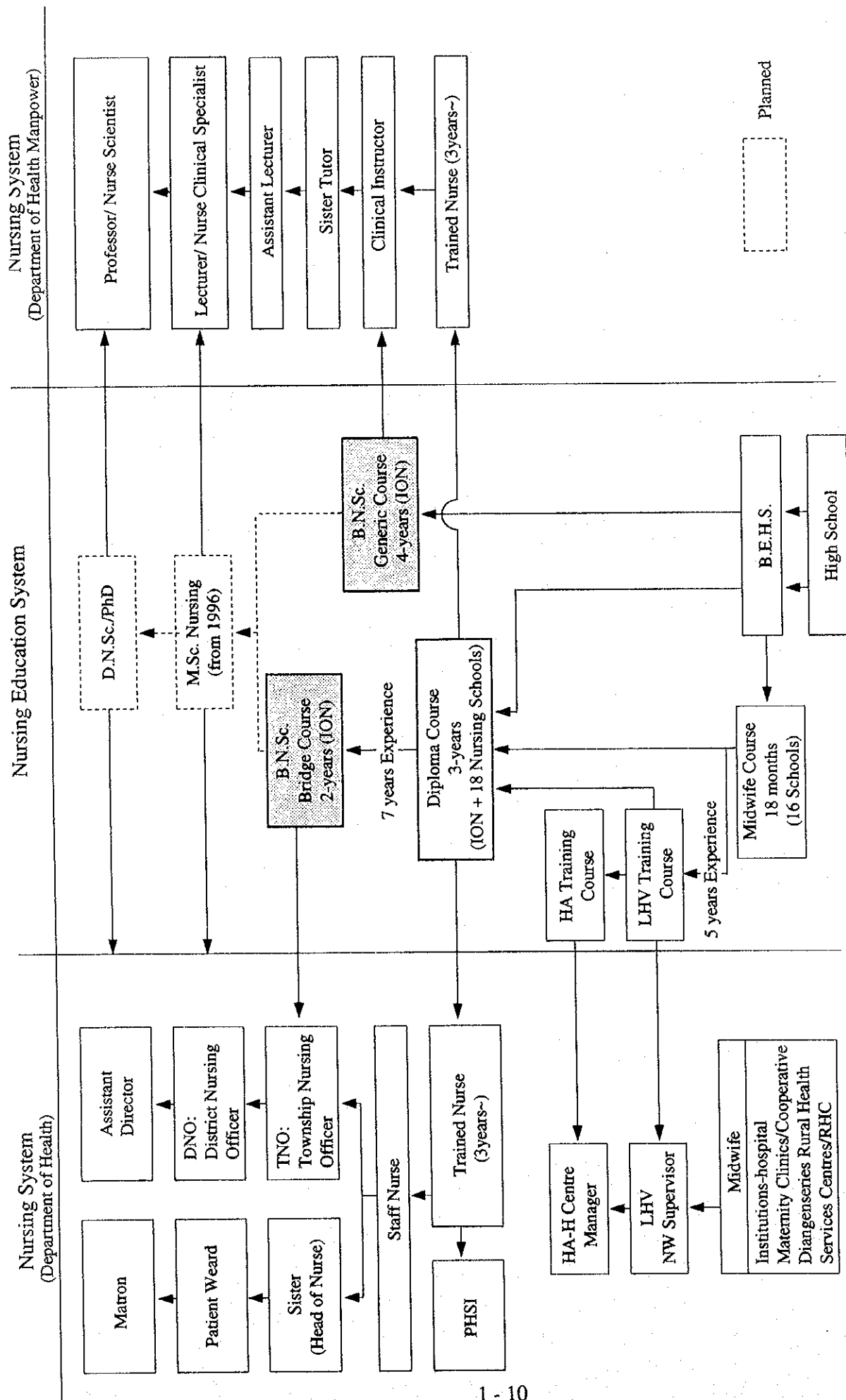


Fig. 1-6 Existing and Proposed System of Nursing Education

1-1-5 Budget for the Health Sector

(1) National Finance

The National Finance of Myanmar consists of three parts; the State Administrative Organization, the State Economic Enterprises and the Town and City Development Committees. The State Administrative Organizations includes SLORC, Multi Party Democracy General Election Commission, Chief Justice, Ministries and Departments, and so on, in which the budget for the Department of Health Manpower, Ministry of Health is included.

The changes in national budget in recent years are shown in Table 1-3. The National Finance has been in deficit since 1987.

Table 1-3 Revenue and Expenditure

(Unit: 100 million Kyat)

		1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94
The State Administrative Organizations	1) Revenue	8,342	6,860	11,250	14,837	15,977	17,167	16,284
	2) Expenditure	8,541	8,227	15,788	21,708	25,139	27,343	34,174
1) - 2)		-199	-1,367	-4,538	-6,871	-9,162	-9,576	-17,890
Government Finance	3) Revenue	28,754	26,368	39,072	48,760	54,651	66,979	67,227
	4) Expenditure	32,776	32,682	47,092	59,964	66,963	80,432	102,429
	3) - 4)	-4,022	-6,315	-8,020	-11,204	-12,312	-13,453	-35,202
3) - 4) / GDP		-5.9%	-8.2%	-6.4%	-7.4%	-6.6%	-5.4%	-10.4%

(2) Finance of Health Section

The budget for the Ministry of Health for 1995/96 is about 1,947.1 million kyats, and it forms approximately 4.5% of the budget of the State Administrative Organizations of 43,253.4 million kyats.

The budget for the Department of Health Manpower, Ministry of Health and its ratio with the budget for the State Administrative Organizations is shown in Table 1-4.

Table 1-4 Budget for DOHM

(unit: 100 million kyat)

	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
(1) The State Administrative Organizations	82,227	15,788	2,178	25,439	27,343	34,174		43,253
(2) The Department of Health Manpower	30	50	192	258	445	314	300	573
(1) / (2)	0.36%	0.34%	0.88%	1.03%	1.63%	0.92%		1.32%

The Budget for Health Manpower sector has gradually increased. The expenditure of the DOHM in 1995/96 is estimated at 573 million kyats, in which the expenditure for this project must be included.

In order to make the expansion of facilities and equipment of the ION more effective, and to increase the supply of nurses and up-grade their skill, the budget necessary for the maintenance and management of facilities is expected to be increased.

1-2 Present Situation of the Institute of Nursing

1-2-1 Overview

The Institute of Nursing was established as the first Institute of Nursing in Myanmar, with a two-year Bachelor of Nursing Science (B.N.Sc.) Bridge course, on November 5, 1991.

The building was formerly the Nurses Training Centre (NTC) which was constructed with the support of the Japanese Government through JICA and opened in 1986. The NTC offered a three and a half year basic nursing and midwifery programme which was primarily hospital-based. The NTC complex has a capacity for five hundred and sixty students. Since the NTC had the best facilities for teaching nursing education, it seemed that the NTC would be the best preparation of nurses, and the student population has increased to more than its capacity.

A situation analysis of nursing services and nursing education, which was conducted in 1989, led to re-orientation of nursing education in Myanmar with the development of a new 3-year community-oriented curriculum in 1991.

In response to the urgent need for better qualified teachers and nurse managers, the MOH decided to upgrade the NTC to the first Institute of Nursing (ION) in Myanmar. The Ministry of Health made a decision to open an Institute of Nursing within the higher education system, which would be empowered to award a baccalaureate degree in nursing.

In 1991, the ION started with a two-year B.N.Sc. programme for in-service nurses, and in June 1994, the four-year Generic B.N.Sc programme started for qualified applicants who passed the Basic Education High School (B.E.H.S.) Part (A) examination.

The existing courses at the ION are as follows:

- 1) Three-year Diploma Course in nursing/midwifery.
- 2) Two-year B.N.Sc. Bridge Course for in-service nurses.
- 3) Four year B.N.Sc. Generic Course.

The three-year Diploma course is more popular than those of other Nursing Schools, thus the competitive rate for admission has been higher and it is more difficult to pass the entrance examination. It is same for the B.N.Sc. Generic Course where the applicants for admission to the ION have to make a good score in the B.E.H.S.

1-2-2 Number of Students

The number of students is 767 at present, much more than 560 which is the schools capacity, causing a shortage of beds in the dormitory.

Table 1-5 The Number of Students at ION

	1990/91	1991/92	1992/93	1993/94	1994/95
Diploma Programme	271	347	641	689	603
B.N.Sc Bridge Programme	0	67	67	67	66
B.N.Sc Generic Programme	0	0	0	0	98
Total	271	414	708	756	767

(Source: Institute of Nursing)

The ION has been accepting students from every part of the country. Students of the Diploma course have obligation to work in a hospital located in their hometown for three years after graduation, and so will carry out very important roles for community health care in rural areas. However, approximately 75% of students of the B.N.Sc. Bridge course are from Yangon. More students working in hospitals located in rural areas should come to ION for studying administrative, management nurses and midwifery, in order to upgrade community nursing health care.

The transition of budget and the number of students of ION is shown in Figure 1-7. It seems to be necessary to increase the budget certainly keeping with the student increase.

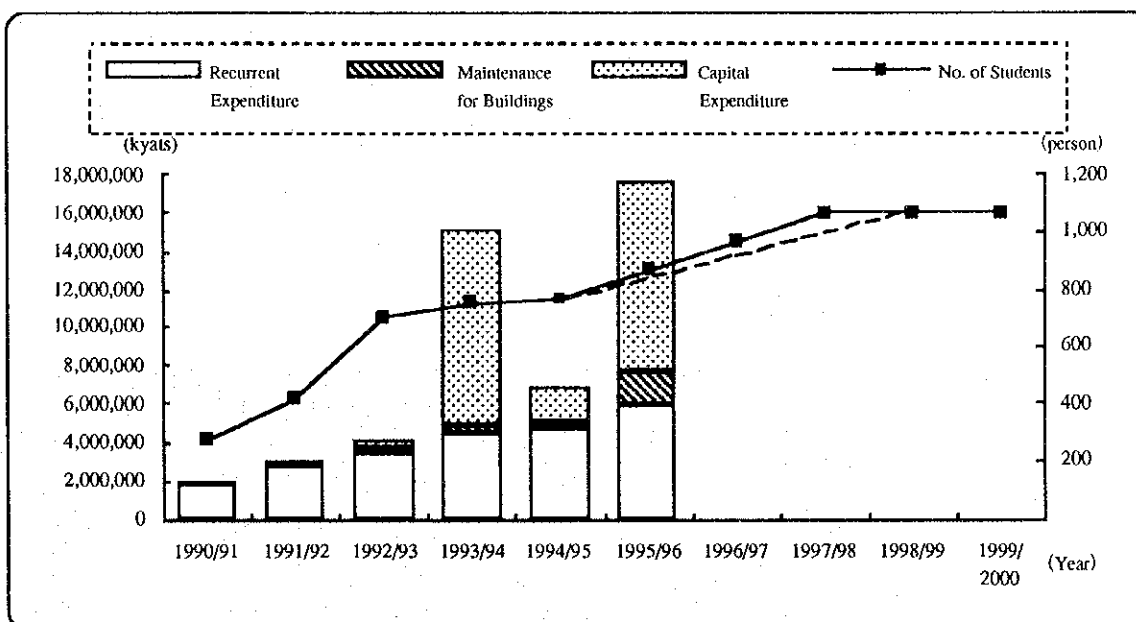


Figure 1-7 Number of Students and Budget of ION

Nursing has a high social status and the number of applicants for admission to the ION is still more than that of invitations. To be admitted to the ION, the applications have to achieve a good score in the BEHS examination. Expanding the facilities and equipment of the ION is expected to lead to an increase in the number of nurses so as to solve problems linked to the shortage of nurses.

1-2-3 Curriculum

The Institute of Nursing has three courses, a Diploma course, a B.N.Sc. Bridge course and a B.N.Sc. Generic course. The main component of curriculum in each course is as follows:

(1) Diploma Course

This programme is for the study of basic general nursing. At the end of the 3 year programme, the graduate will receive both nursing and midwifery certificates, and be able to function as a beginning nurse in the care of people of any age group within any health care setting. The subjects offered in this course are Nursing Foundations, Community Health Nursing, Family Health Nursing, Nutrition, etc. as shown in Table 1-6.

More than 50% of these subjects are experiment or practical training based. The higher the grade, the more hours for practical lessons.

Table 1-6 Diploma Programme (Hours)

	Theory	Laboratory	Practice	Total
First Year 1st Term	580	30	170	780
2nd Term	340	90	330	760
Sub-total	920	120	500	1,540
Second Year 1st Term	350	20	370	740
2nd Term	300	0	500	800
Sub-total	650	20	870	1,540
Third Year 1st Term	270	0	490	760
2nd Term	225	0	555	780
Sub-total	495	0	1,045	1,540
Total	2,065	140	2,415	4,620

(2) B.N.Sc. Bridge Course

This is a two-year post diploma baccalaureate course for in-service nurses, who have more than 7 years experience. After successful completion of this programme, the graduate will be competent in the practice of nursing, teaching of basic nursing for midwifery students, or in the management of nursing services.

The students of the course are in-service nurses, so they listen intently to lectures, and have a substantial number of lessons.

Table 1-7 B.N.Sc. Bridge Programme (Two-years)

	Theory	Practice	Total
First Year	730	870	1,600
Second Year	405	1,220	1,625
Total	1,135	2,090	3,225

(3) B.N.Sc. Generic Programme

This is a four-year generic baccalaureate course in nursing. After successful completion, the graduate will be able to function as a first-level nurse in the country, hospitals and clinics "wherever people are" for individuals, families, groups, and communities. Nursing Administration and Management, and Educational Science will be offered in the fourth grade.

Table 1-8 B.N.Sc. Generic Programme (Four-years)

	Theory	Laboratory	Field Practice	Total
First Year	880	152	224	1,264
Second Year	846	96	442	1,384
Third Year	628	80	656	1,364
Fourth Year	582	48	720	1,350
Total	2,944	376	2,042	5,362

This Basic Design will be prepared based on the above calculations.

1-2-4 Site Conditions

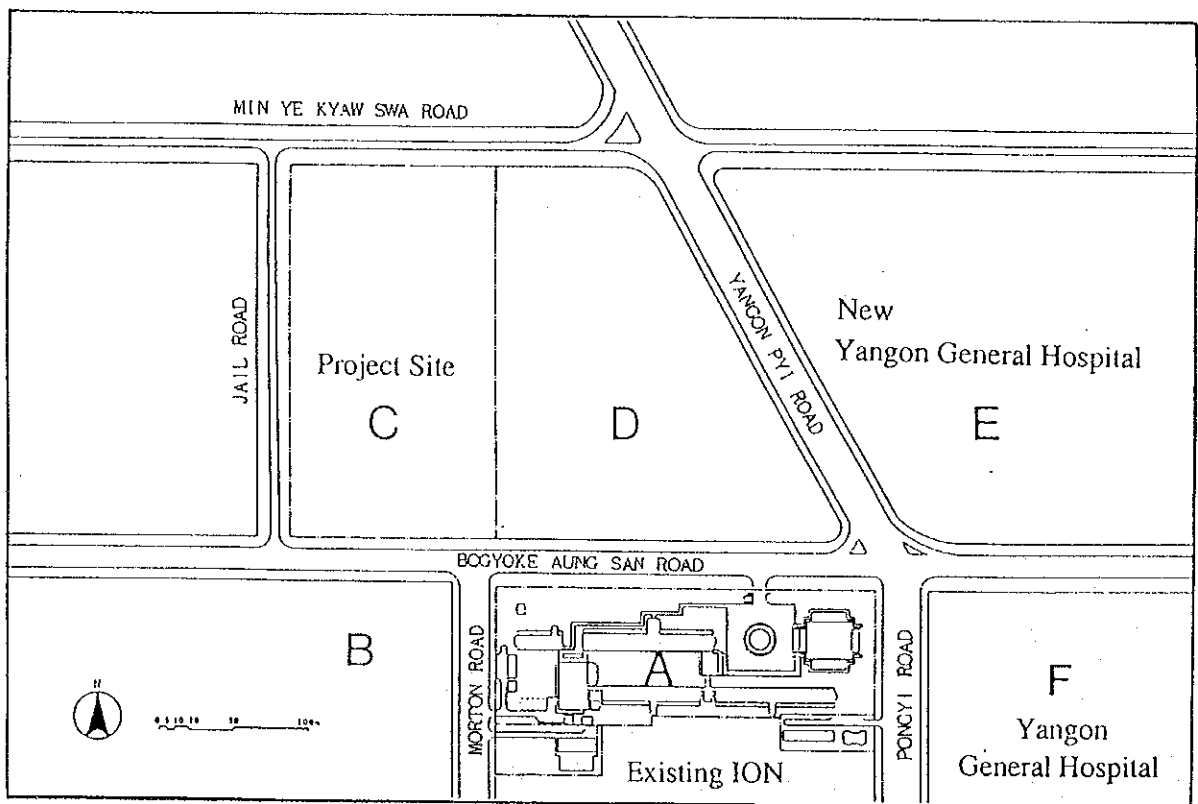
The proposed site for the new facilities is situated on the north side of the Bogyoke Aung San Road, on the opposite side from the existing facilities. The site has a total area of 35,000 m² (3.5 ha), is under the name of the Ministry of Health (MOH), and the western side of the site is currently occupied by a temporary open market, previously called the "China town market". The MOH has expressed that the removal of the temporary market will be done without any problem.

The site was originally reserved for the future hospital project supported by the ADB. However the field survey team has confirmed that the ADB project has already been cancelled and now on the opposite side of the site there is expected to be built a complex of the MOH's facilities.

The east border line of the site is extended to an extension of the west boundary of the ION in term of improvement of access between old and new facilities. This is clearly indicated in the attached proposed site map in the Minutes of Discussions dated March 14, 1995.

As in Fig. 1-8 adjoining areas are divided into 5 zones. The existing state of each zone is described as follows:

Figure 1-8 Area Map



A: Currently the existing facilities of the Institute of Nursing

The two parallel main blocks of the Institute of Nursing maintain the street line of the Bogyoke Aung San Road.

B: Currently a residential neighbourhood

The residential neighbourhood along the B.A.S.-Road is a part of the most recent expansion on the western side. The majority of the dwellings consist of 4-story family dwellings. To some extent, the problem of the visual contact can be avoided by the preservation of existing roadside trees..

C: Currently used as a temporary open-market (namely part of the project site)

The open-market is crowded with shoppers and many kinds of merchandise. The shops are arranged in a controlled manner along the Jail Road and Min Ye Kyaw Road under the YCDC supervision.

D: Planned as the site of the complex of the MOH

The area has been reserved for a future complex of the MOH's building.

E: New Yangon General Hospital is located at the opposite angle of the existing Institute of Nursing and Yangon General Hospital is located only 10 minutes walk from the Institute. These hospitals are also used for the student training.

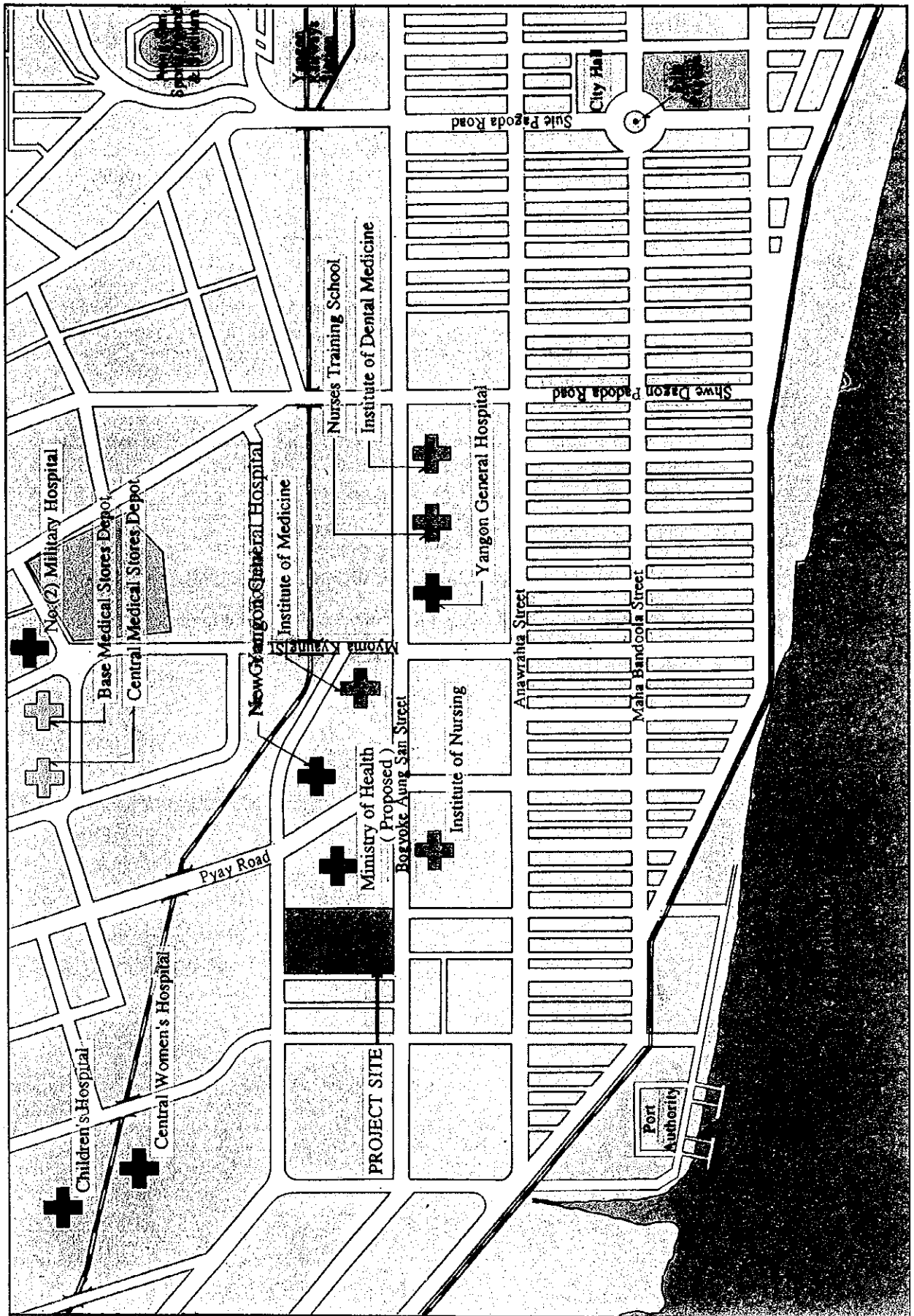






Figure 1-9 Medical facilities and the relationship with the downtown of the Yangon City

-  Educational Facilities
-  Hospitals
-  Ministry of Health
-  Medical Stores Depot

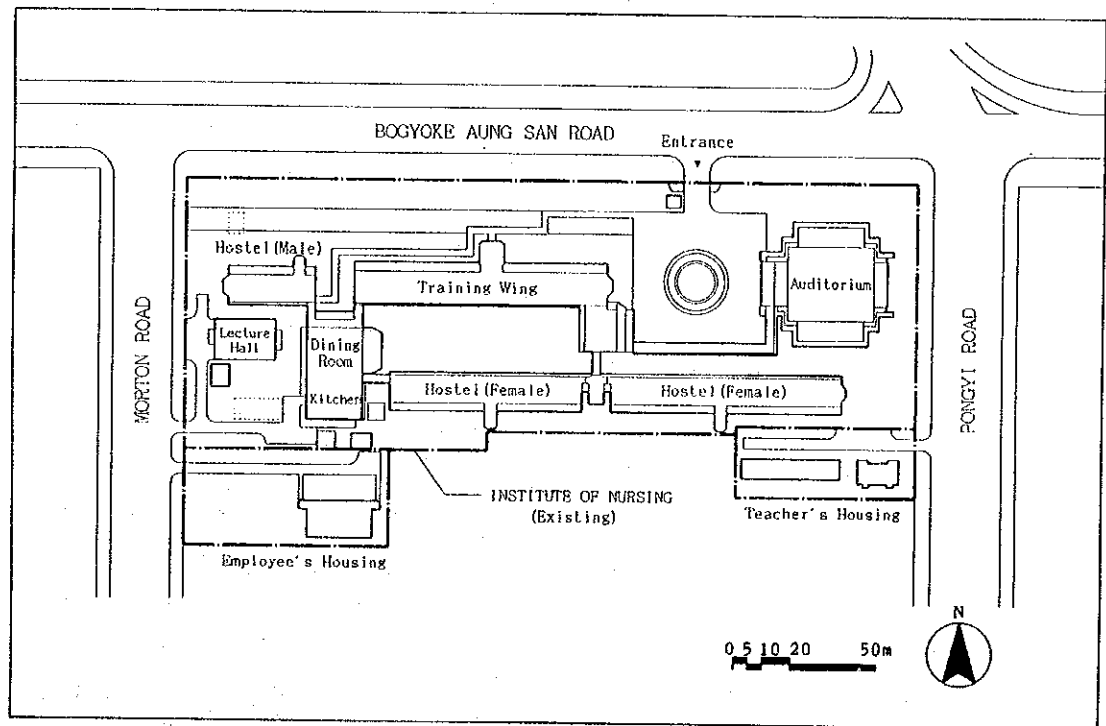
1-2-5 Existing Facilities

The inner court yard of the Institute of Nursing makes a three zonal plan possible: Training wing, dormitories and other facilities (dining, auditorium and lecture theater, etc.).

The basic organization of the training wing consist of a three story building (with administration office, seminar room, laboratory, demonstration room on the ground floor, 2 classrooms, 3 seminar rooms and 6 teachers' rooms on the first floor and 7 classrooms and a library on the second floor) running in an east-west orientation.

Fig 1-10 shows the present condition of the existing facilities.

Figure 1-10 Existing Facilities of the Institute of Nursing



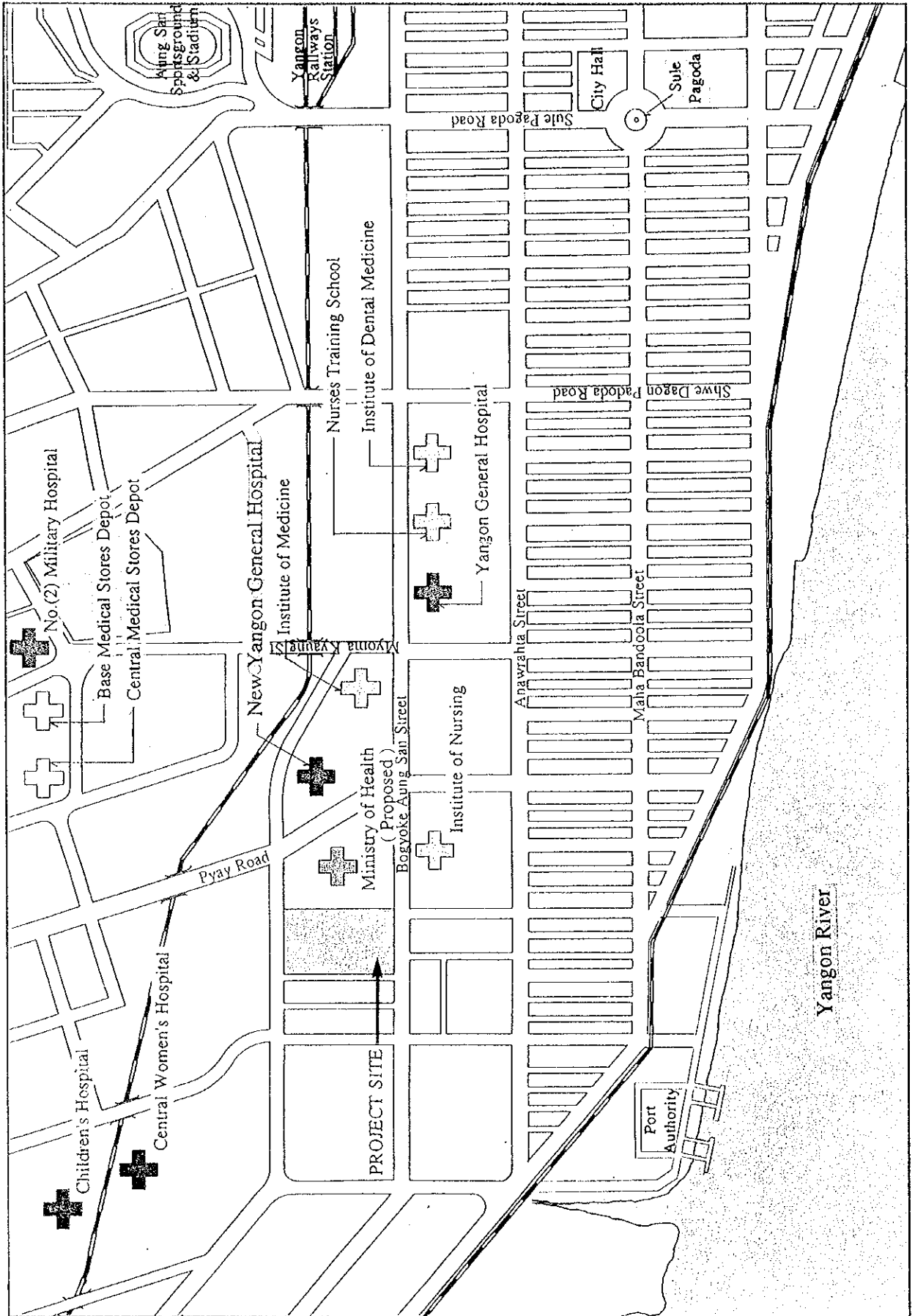


Figure 1-9 Medical facilities and the relationship with the downtown of the Yangon City

- Educational Facilities
- Hospitals
- Ministry of Health
- Medical Stores Depot

(1) The favorable points of the existing facility

The advantages which we would like to reflect subsequently in this project are as follows:

- The facilities plan of an east-west orientation lengthwise is selected so as to give protection from sunlight and prevent high temperatures in the rooms.
- The roof is a double layer in structure. The air space between the roof and building can further reduce the rate of radiant energy entering the building.
- The main device for security is trellis work that covers much of the exterior of the first and second floor.
- High quality materials for the exterior finish paint and floor waterproofing paint are used to reduce operation and maintenance costs.

(2) The unfavorable points to be improved

In this project we will make suggestions as to possible improvement of these unfavorable points at the basic design stage. The intentions of our design is to make the management more easy and effective.

- Because there is one room to each 4 persons in the dormitory, there is a shortage of storage spaces for clothing and other personal property. The rooms are too small. The students having night shift sleep in their room during the daytime. However, the opening of the room is small, so that they have to leave the door open during this time.
- In the delta region around Yangon the temperature often rises to over 35°C during March to May. In the entrance hall, the opening area of the space is limited, and we felt stifling heat as we entered. An opening of the main entrance hall is bounded on one side by a large paved parking area which increases the radiant heat by the sun. The other side opens through a glass window to an inner courtyard at one end, and for that reason the entrance becomes a room exposed to the westering sun. When air movement is blocked by the high building around the inner courtyard, the temperature of still air rises very quickly.
- The opening of the dining room is not efficiently utilized as expected, so that it makes the room very warm. In addition to this fact, the students of the ION have to take a lunch under ill-ventilated circumstances, because ceiling fans in the dining room blow down warm air. The same problem occurs in the Auditorium during the hot season.
- The width of stairways and corridors in the building is not a serious problem for two persons passing, but there are some specific problems for many students passing or passing with a tray. Because of beams, the clear headroom of less than 1.8 meters invites danger for stair traffic. The corridors are not protected by deep overhangs or screens which act as protective measures for the internal corridor spaces. Open corridors are used for most areas, which means that when the monsoon sweeps in from the south-west from the Indian Ocean, rain-fall blows into the corridors.
- A shortage of technical books and stock space is a serious problem, and so the function of the library is not effective at present. The collection of technical books is expected to increase due to some donations. However, there is no

alternative other than to pile up the books on the floor under the present conditions.

From the facts described above, we may conclude that a response to the climate of Myanmar (impact of strong sun-light under hot and humid climatic conditions, wind and rain from the monsoon) and a maintenance-free structure are important factors in the design of this project.

1-2-6 Present Conditions of Infrastructure and Utilities

(1) The Renovation of the Water System in the Existing Facilities

As a result of the Preliminary Study, the following renovations of the water system in the existing facilities were requested:

- Piping in the shower rooms in the female dormitory
- Piping in the toilets in the male dormitory
- Piping in the toilets and laboratories in the classroom building
- Sand separation for the water supply system

However, based on the field survey and discussions with the Myanmar side, the renovation works in the existing facilities have been examined and it was judged that these works can be maintained and repaired by the Myanmar side.

The Myanmar side will make the repairs themselves.

1) Plumbing System

In this basic study, the plumbing system against clogging shall be studied. The existing drainage system in shower room is by floor drainage trap. However, the new drainage system will be with gratings, so that the maintenance can be done easily.

The ION requested that the level between the shower room and booth should be made higher than the existing one, for separation of the polluted water.

2) Water Piping

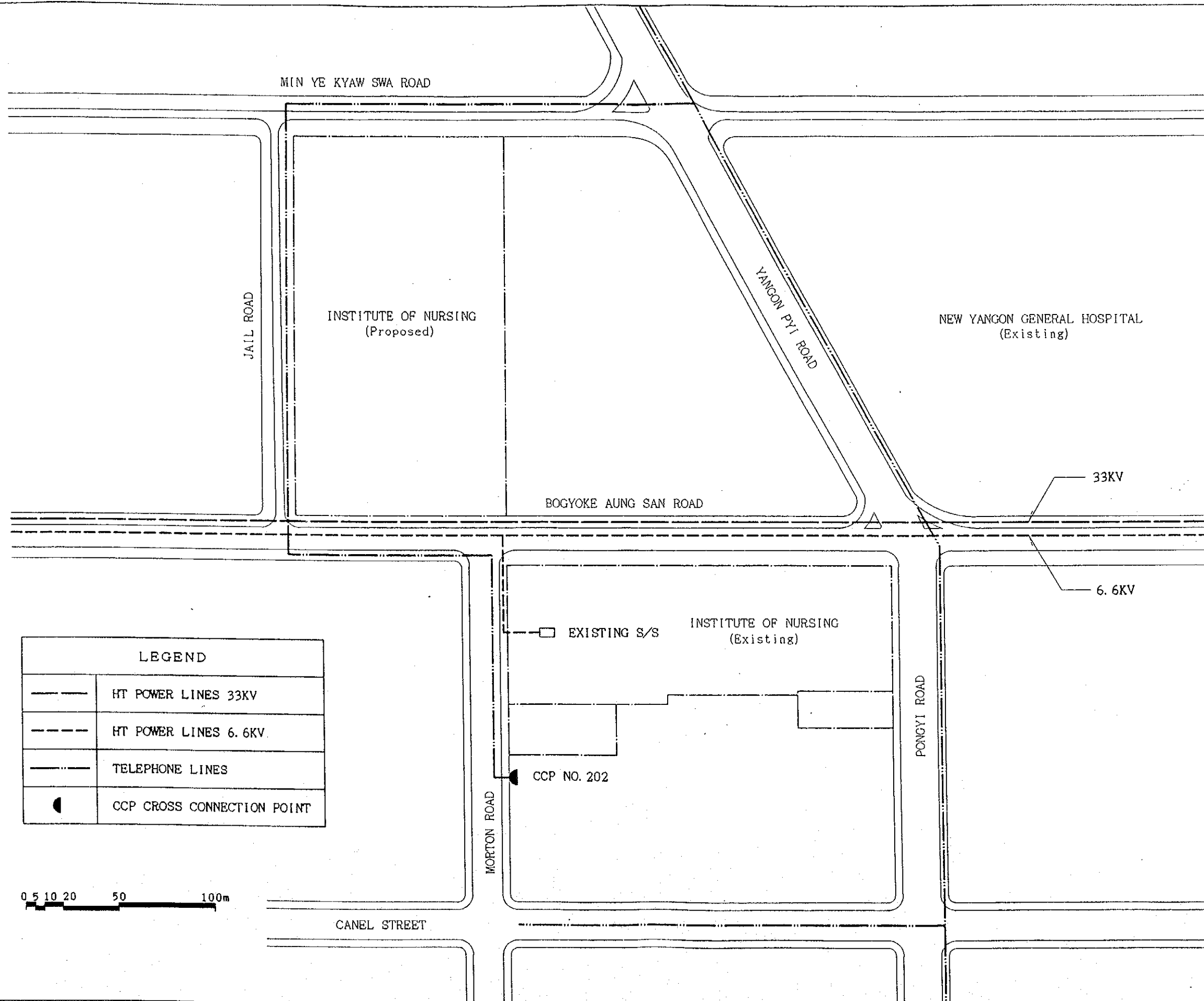
The piping problems are caused mainly by corrosion of connections between pipes and valves or rusting of bolts, primarily due to the climatic condition in Myanmar.

Therefore the materials for water pipes, such as poly-vinyl chloride, shall be used for economic reasons and ease of installation.

3) Equipment and Materials

Equipment and materials shall be used considering the ease of maintenance and high durability. Especially piping materials shall meet the water quality of the site.

Locally available materials, equipment and spare parts shall be selected in principle.



LEGEND	
	HT POWER LINES 33KV
	HT POWER LINES 6.6KV
	TELEPHONE LINES
	CCP CROSS CONNECTION POINT



0 5 10 20 50 100m

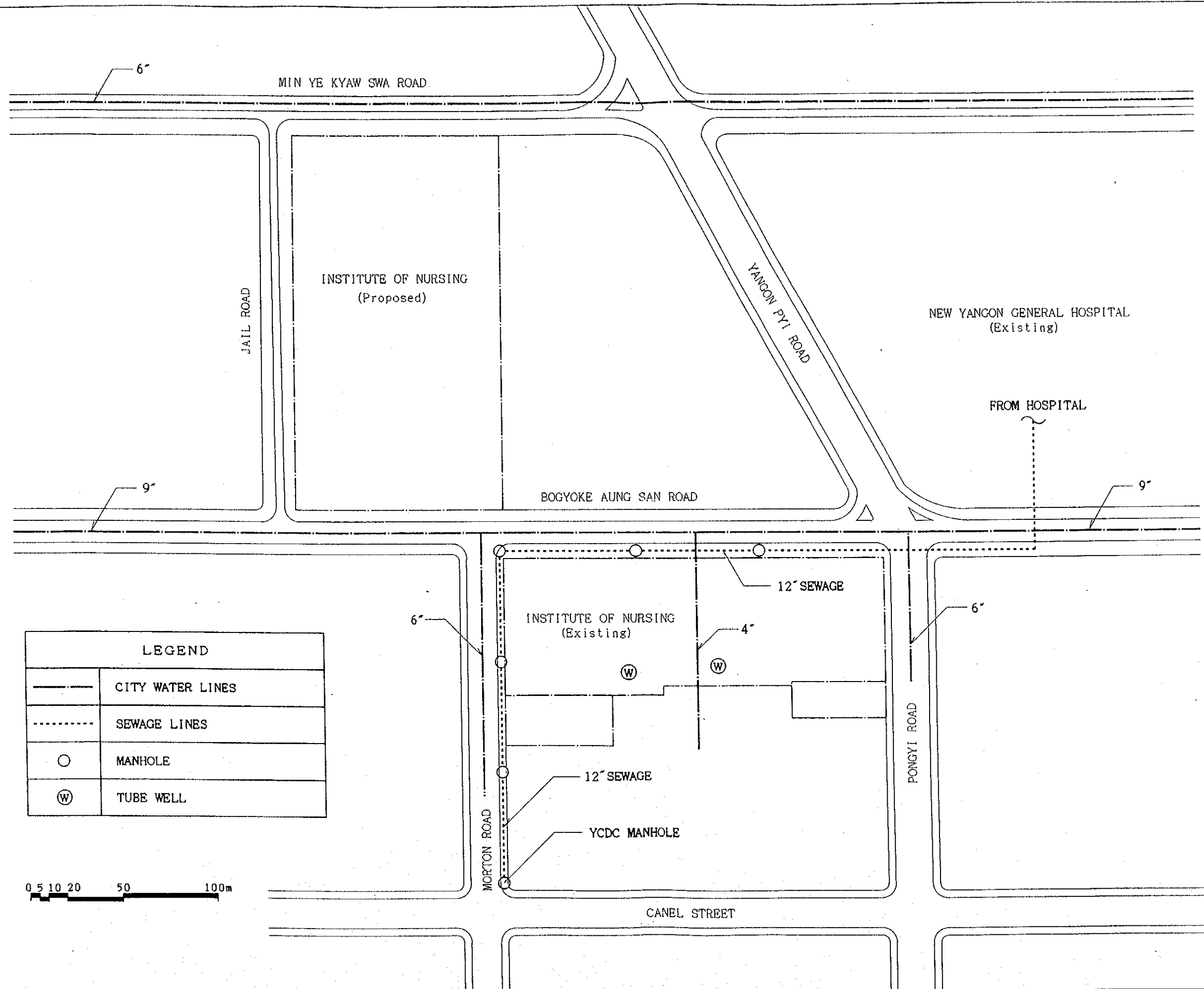
THE PROJECT FOR EXPANSION OF
THE INSTITUTE OF NURSING IN MYANMAR

PACIFIC CONSULTANTS INTERNATIONAL

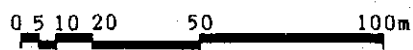
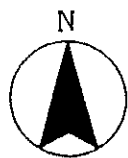
Scale:
NTS

Date:
APRIL, 1995

Title:
HT CABLE & TELEPHONE (EXISTING)



LEGEND	
—	CITY WATER LINES
- - - -	SEWAGE LINES
○	MANHOLE
⊙	TUBE WELL



THE PROJECT FOR EXPANSION OF
THE INSTITUTE OF NURSING IN MYANMAR

PACIFIC CONSULTANTS INTERNATIONAL

Scale:
NTS

Date:
APRIL, 1995

Title:
SEWAGE & WATER LINES (EXISTING)

1-2-7 Present Status of Equipment

Most of the existing equipment in this institute, supplied by an ODA project from Japan, is kept in good condition and is utilized without any problems. Especially, OHP, other audio-visual materials and the human body models in the laboratory are frequently utilized. Some of the equipment such as the TV monitor and air-conditioner, however, have been waiting for spare parts to arrive. The details of each item of equipment are described below:

(1) Equipment for Lectures

1) Medical books/Off-set printing system

The existing medical books are short in quantity and variety because of high prices and limited supply. The most of medical books and video tapes for nursing education were donated by WHO, UNICEF and NGOs. Due to the chronic shortage of books, the faculties usually compile hand-outs for classes and make large quantities of duplicates from a rotary press or by ordering outside for distribution. The Institutes as a leader of nursing education is also expected to distribute a large quantity of duplicates to other nursing schools all over the country. Under such a situation, the Myanmar side has requested an off-set printing system or a rotary press rather than medical books.

(2) Human Body Models

Human body models supplied in the previous project are utilized and kept in good condition. However, the quantity and the variety of these needs to be increased. Models short in quantity or those needed for educational activities are to be given top priority. The quantity is basically decided by one item for each lecture, but a problem occurs in the case of a large conference room with 250 students. It takes a long time for all the students to observe small models by passing them from hand by hand.

(3) Audio-Visual Materials

Audio-visual materials such as OHPs, slide projectors and video players are frequently used in the classes. Consumable goods such as slide sheets, slides, video tapes and soft-ware for the video players are supplied by WHO, UNICEF and other organization, and these existing materials are effectively utilized. These materials will need to be increased accordingly with the increase of students planned in this project.

English is widely used in Myanmar, and linguistic education is important in the curriculum. However, there are only two small tape recorders for linguistic materials which were supplied by WHO and UNICEF for the Institute. This means one class is limited to 7 or 8 students at any one time. This shortage of tape recorders creates an inefficiency in teaching.

(4) Laboratory Equipment

Biochemistry, bacteriology and pathology are all in the curriculum. However, since the Institute is short of basic instruments such as blood test sets for Hb, specific blood-gravity test sets, spectrophotometers and water stills and glass instruments such as flasks, graduated cylinders and beakers, possible experiments are limited. Under the existing conditions, lectures of medical colleges bring the necessary equipment, instruments and reagents to make simple experiments. However, these glass instruments sometimes break in transit.

(5) Equipment for Practical Training

1) Human Body Models

The existing models for practical training are well utilized and in good condition, but a lack of quantity and variety causes problems. It is impossible to provide students with enough training by using only 2 or 3 models, or in some cases no model for class of 50 students.

2) Personal Computers

The utilization of personal computers is growing rapidly in Myanmar. The Institute has computer classes in its curriculum, but there is no personal computer. The students are given only lectures without practical training. Since licensed nurses are often assigned to an administrative or teaching positions, personal computers are necessary in order for them to become accustomed to their use.

(6) Equipment for Office Work

There are two copy machines, but one is out of order because of the high humidity of Myanmar. The problem is that these machines are used in rooms without an air conditioner or a dehumidifier. There are many maintenance companies and makers of this equipment who can supply consumable goods and copiers can be repaired in Myanmar.

Type writers are used for administration and the producing of teaching materials for classes. Duplicated materials are simply bounded by hand, but a lack of instruments for binding creates in efficiency of work. It is difficult to acquire paper cutters, heavy duty staplers and heavy duty punches, but electronic calculators, pencil sharpeners and gun cutters are inexpensive and easy to obtain in Myanmar.

(7) Vehicles

The field survey team found that the requested buses and trucks will be used for transporting students who visit the relevant medical institutes for their practical training. Since the public transportation system is not developed in Myanmar, it is impossible to transport the students without vehicles. As a view of cost sharing, a student currently pays 6 or 8 Kyats each time for using rental cars arranged by the Institute.

The main purpose of the truck is to transport students, and 30 students can be transported by a truck at any one. Aside from this, the truck will transport foods for 560 students staying in the dormitories. A 2-ton truck will have to make 4 journeys for transporting such an amount of food.

(8) Furniture

In the previous project, the provision of the furniture was the responsibility of the Myanmar side, and the preliminary study report of this project mentioned that the Myanmar side had the capability to supply the furniture by itself. However, the field survey team has found that the Institute is considerably short of the furniture and is in a poor condition financially.

1-3 Components and Background of the Request

1-3-1 Background of the Request

In Myanmar, the shortage of nurses is a very serious problem in the health sector. In order to increase the number of nurses, there is a Future Nursing Manpower Development Plan to increase the training capacity of nurses by the year 2000, prepared by the MOH. Also in the National Health Plan (1993 - 96), the Community Health Nursing Project is one of the most important components. Under these circumstances, the Government of Myanmar has formed a project for the expansion of the Institute of Nursing in order to accomplish the above plans.

At first, the NTC was constructed with support by the Japanese Government in 1986, with a capacity of 560 persons. The number of students in the NTC has been increased gradually, and was up-graded to the Institute of Nursing (ION) in 1991 with a two-year B.N.Sc. Bridge course for a baccalaureate degree. From 1994, a four-year B.N.Sc. Generic course was also started, and the first and second grade students are studying in the ION at present. The present number of students in the ION is 767, which is over the capacity of the school facilities. The projected number of students in the ION is 1,070 in 2000.

In response to this, the Government of Myanmar has formed a project for the expansion of the ION with the highest priority rating within the National Health Plan 1993 - 96, as an important project necessary to upgrade the health situation in Myanmar. To achieve this, the Government of Myanmar has requested the Japanese Government for grant aid assistance. The first request from the Government of Myanmar, which is shown in the Application Form for Japan's Grant Aid, consisted of three units as follows:

- 1) Expansion of the Administration and Training Building
- 2) Expansion of the Dormitories
- 3) Preparation of Equipment

In response to the above request, the Japanese Government sent a Preliminary Study Team to Myanmar in December 1994. The study team conducted a field survey and had a series of discussions with the GOM.

As a result of the field survey conducted by the Preliminary Study Team, the mission confirmed the main items of the project in an official side-letter to the Government of Myanmar. The following components were finally requested by the Myanmar side:

- 1) Expansion of facilities by constructing two buildings; A Training/Administration Building and a Dormitory Building.
- 2) Renovation of the water system of the existing facilities, particularly for in the bathrooms of the dormitory, toilets and laboratories of the school building, and pumping up of ground water.
- 3) Provision of equipment related to nursing education at the Institute.

The second item, the renovation of the water system of the existing facilities was added as the result of this field survey.

1-3-2 Components of the Request

The contents of the request from the Government of Myanmar to the Japanese Government has been carefully examined for its propriety and necessity based on the result of the Preliminary Study by the Japanese Government. Next, the Basic Design Study has been executed confirming the study result of the Preliminary Study and examining further details of the request.

The contents of the request mutually agreed between the Myanmar Government and the Japanese Government in the Minutes of Discussions on March 24, 1995, are as follows;

CONTENTS OF THE REQUEST

- 1) Expansion of facilities by constructing buildings
- 2) Provision of equipment related to nursing education at the Institute.

The renovation of the water system, which was the item added to the request as the result of the Preliminary Study, was excluded from the contents of this project. The reason is that the renovation works such as piping in the shower rooms, toilets, laboratories and sand separation for the water supply system, have been examined and judged that these works could be maintained and repaired by the Myanmar side.

The contents of each item of the above request are as follows:

(1) Expansion of Facilities

The facilities of the requests from the Myanmar side confirmed during the Basic Design Survey (refer to Appendix- 5, the Annex-2 of the Minutes of Discussions on March 24, 1995). Then, the contents of the request have been revised during the Draft Explanation Survey. The major changes in the contents of the facility are the cancellation of the seminar rooms and the addition of a registrar's room, and the number of the Teaching Staff rooms is decreased from 5 to 3, but the area of the rooms has been expanded in total. The requested facilities for expansion are shown as follows:

REQUESTED FACILITIES FOR EXPANSION

The contents of the request finally submitted by the Myanmar side are as follows, in the order of priority regarding the facilities:

- (1) Dormitories
- Consisting of
- | | |
|--------------------|---------------------|
| 1) Dormitory rooms | 100 |
| 2) Kitchen | 1 |
| 3) Dining Room | 1 (for 200 persons) |
- (2) Administrative & Training Building
- Consisting of
- | | |
|--|---------------------|
| 1) Classrooms for 50 persons | 8 |
| 2) Classrooms for 100 persons | 2 |
| 3) Library (including book storage) | 1 (for 200 persons) |
| 4) Demonstration room | 1 |
| 5) Common Laboratory | 1 |
| 6) Conference room | 1 |
| 7) Teaching Staff Rooms | 3 |
| 8) Registrar's room | 1 |
| 9) Meeting room | 1 |
| 10) Office (including Rector's room
and Reception room) | 1 |
| 11) A/V Equipment room | 1 |

Note:

1. Both sides confirm that each item mentioned above includes the necessary common spaces such as corridors, storage, toilets and machine rooms, the necessary utilities such as electricity, water supply, sewage, as well as equipment.
2. The Myanmar side understand that the construction and /or installation of road, street lighting and fencing, within the Institute, will be borne by the Myanmar side in principle.

Source: Minutes of Discussions (1995.8.30) Annex 1

(2) Provision of Equipment

The first equipment was requested from the Myanmar side is in Annex-3 of the Minutes of Discussions of March 24, 1995.

In view of the fact that the provision of books and teaching materials to students is insufficient, the Preliminary Design team had suggested to the Myanmar side to include them in the equipment list, and a desired list of books and teaching materials was sent to Japanese Government from the Government of Myanmar.

However, it was made clear that books in the ION are now increasing due to donations from NGOs, WHO, UNICEF, etc., and the Government of Myanmar will prepare a budget for books. Therefore, the Basic Design team decided to withdraw the request for books.

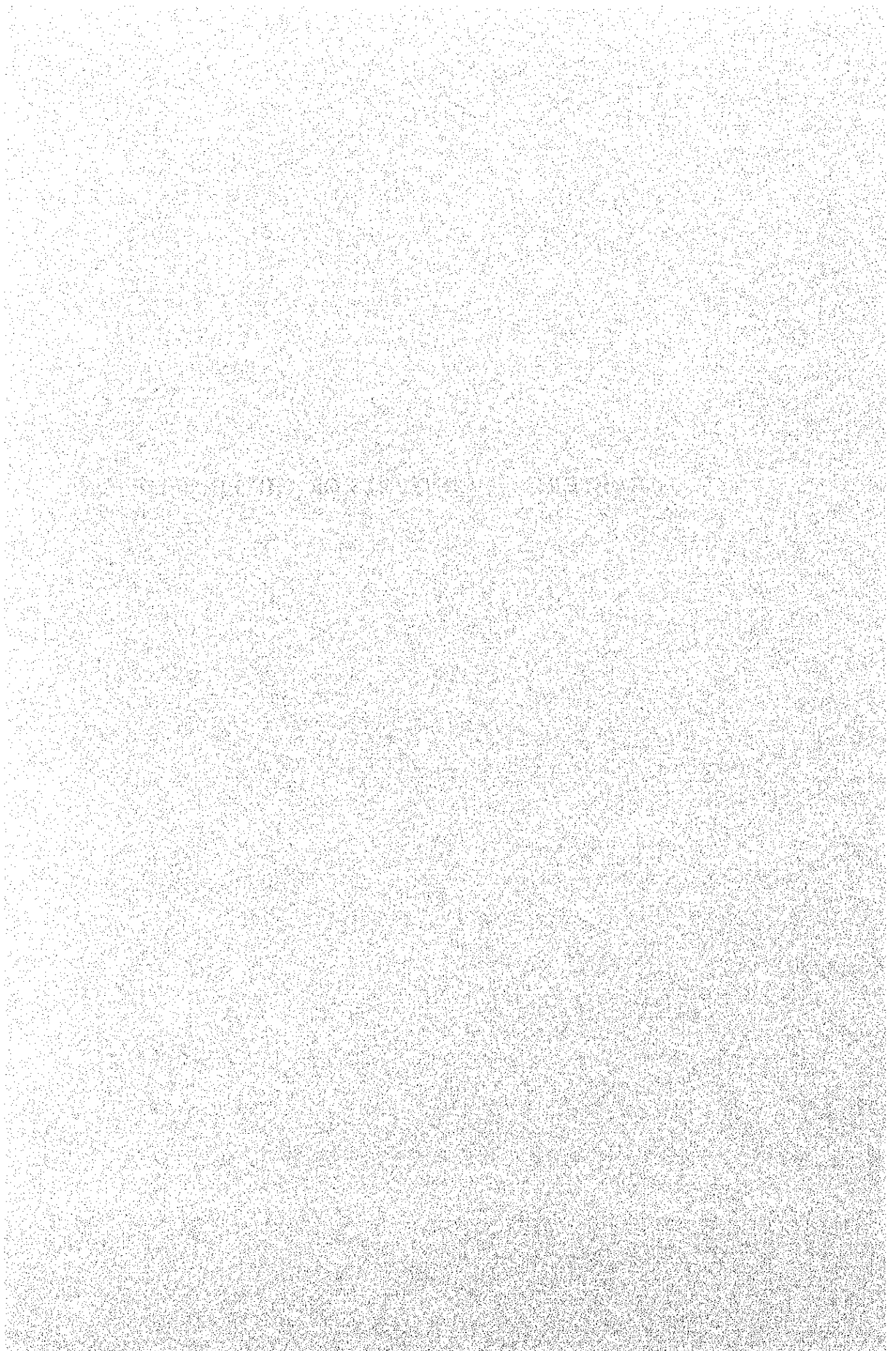
The curriculum is classified into lectures, and experiments or a practical training, and therefore the equipment requested is studied in accordance with this classification. Human body models and audio-visual instruments are used for lectures, basic clinical experiment equipment, glass ware and reagents for experiments, and human body models and personal computers for practical training. An Off-set printing system and a rotary press are needed to make teaching materials. Equipment for a language laboratory is requested for linguistic education, and a typewriter and stationery are essential for office work.

Some of the equipment in the request list are excluded, because they require a high cost and a special ability to maintain, or they can be allotted into the portion of the facility plan and the equipment with unnecessarily advanced specification. The equipment which can be purchased by the Myanmar side is also excluded. If some equipment is considered to be very necessary and has no problems for maintenance, the equipment will be added to the equipment list even though it is not in the requested list.

The implementation of this project has been judged to be suitable for Japan's Grant Aid project, based on the study on the necessity, the propriety and the ability to operate and maintain by the Myanmar side.

The contents of the request from the Government of Myanmar are further examined in Paragraph 2-2-1 "Study Result of the Contents of the Project" in order to formulate the appropriate facility scale as well as to confirm the number and contents of equipment list for the basis of the Basic Design.

CHAPTER 2 CONTENTS OF THE PROJECT



CHAPTER 2 Contents of the Project

2-1 Objectives of the Project

The immediate objective of this project is the expansion of the dormitories, the administration and educational facilities and the nursing education equipment as well as to upgrade the Institute of Nursing, Yangon, the first Institute of Nursing in Myanmar. The extent of the effect contributed by the project will be great; the production of better prepared and qualified teachers and nursing managers, as well as improving the health status of the community. We envisage thus the ultimate goal of the project is to contribute to the achievement of "the Health for all by the year 2000", the primary objective of the National Health Plan (1993 - 1996).

2-2 Basic Concept of the Project

In this chapter, the contents of the request have been examined and the basic direction of the project has been formulated in order to establish the optimum plan. The basic concept of the project is focused particularly on the specific nature of Japan's Grant Aid Programme; assisting and enhancing the recipient country's self-effort.

2-2-1 Study Result of the Contents of the Project

Based on the contents of the request mutually agreed between the Government of Myanmar and the Japanese Government, which is mentioned in Chapter 1-3-2, the Basic Design Study Team discussed and studied with the ION about the scale of facilities, the number of rooms and the area of each room and are formulated tentatively as shown in Table 2-1.

Table 2-1 Floor Area of Proposed Facilities

	* Tentatively Proposed Facilities			Remarks
	Area (m ² /Rm.)	Number of Rooms	Area (m ²)	
(1) Dormitories				
1. Dormitory rooms	26.0	100	2,600.0	
2. Kitchen	192.0	1	192.0	
3. Dining room	384.0	1	384.0	
4. Common space			3,024.0	
Sub-Total			6,200.0	
(2) Administration & Training Building				
1. Classrooms (50)	80.0	8	640.0	
2. Classrooms (100)	160.0	2	320.0	
3. Library (including book storage)	320.0	1	320.0	
4. Demonstration room	160.0	1	160.0	
5. Common laboratory	160.0	1	160.0	
6. Conference room	160.0	1	160.0	
7. Teaching staff room	40.0	5	200.0	
8. Seminar rooms	40.0	3	120.0	
9. Meeting room	40.0	1	40.0	
10. Office (including Rector's room and Reception room)	160.0	1	160.0	
11. A/V Equipment room	80.0	1	80.0	
12. Common space			1,540.0	
Sub-Total			3,900.0	
(3) Other				
1. Mechanical room	150.0	1	150.0	
2. Corridor			300.0	
Sub-Total			450.0	
Total			10,550.0	

* The table has been formulated tentatively for the discussion between the Basic Design Study Team and the ION in the initial stage.

2-2-2 Study and Examination of the Contents of the Request

The facility scale and number of rooms in the above table are carefully studied for their propriety and the result of the study, which will be the basis of the Basic Design is as described below.

(1) Examination on the Proposed Facility Scale

Before proceeding with this project, an assumption of the student population must be examined. Based on the discussions held during the field survey and the future plan of the ION, each course will have following numbers of students;

1) Diploma course:

three years, 200 persons for each year = 600 persons

2) B.N.Sc. Bridge course:

two years, 70 persons for one year / 2 years = 70 persons

3) B.N.Sc. Generic course:

four years, 100 persons for each grade = 400 persons

Table 2-2 Projected Population of Students in ION

	1990/91	1991/92	1992/93	1993/94	1994/95	1998/99	2003/04
Diploma Programme (3 Years)	271	347	641	689	603	600	600
B.N.Sc. Programme (2 Years)	0	67	67	67	66	70	70
B.N.Sc. Programme (4 Years)	0	0	0	0	98	400	400
Total	271	414	708	756	767	1,070	1,070

(Source: Institute of Nursing)

As shown in the above table, the student population of the Institute of Nursing is projected to be approximately 1,070 by 1998/99.

Though the above number of students is different from the Future Nursing Manpower Development Plan prepared by the MOH, the Basic Design will be prepared based on the number in Table 2-2.

In Myanmar, nurses are required to carry out very important functions, and therefore have great impact on the people's health. Therefore, nurses are held in respect by the people, especially in the rural areas, and so nursing is a very popular vocation. The number of applicants to enter to the ION is much more than those of invited. This is especially so in the diploma course, where the number of applicants is more than ten times the number of invited number of students.

Based on the above, the projected number of students as 1,070 (600 Diploma students for the existing facility and 470 B.N.Sc. students for the proposed facility), which was provided by the Myanmar side as the requested figure, is reasonable as an assumption for the Project. Therefore, the upgrading and expansion of the facilities and equipment will be designed and planned based on this assumption.

(2) The Number of Rooms for the Dormitory

The total number of rooms for the dormitory is 100, 95 for the students and 5 for the staff.

- 90% of the Generic course students will stay in the dormitory

$$400 \times 90\% = 360$$

- 25% of the Bridge course students will stay in the dormitory

$$70 \times 25\% = 20$$

- The total number of students who will stay in the dormitory is 380 (360 + 20).

If four students stay in a room, 95 rooms are required for the dormitory ($380/4 = 95$). Five rooms will be used by the tutors and wardens for the security and supervision of the students.

Therefore, a total number of rooms at 100 is confirmed as reasonable.

(3) The Number Classrooms

Two different capacities of classrooms were requested, an ordinary one for 50 persons (8 rooms) and a large one for 100 persons (2 rooms).

- The total duration of the terms is 11 months in the year.
- There are various activities and training outside of the Institute at related hospitals and sub-centres.
- The necessary number of classrooms is 13.38 with 1.71 for the laboratories.
- The large room for 100 persons will be calculated as two ordinary rooms for 50 persons.

The result of the calculation based on the above assumptions, is that for the ordinary classroom for 50 persons, the required number is 12 in total ($8 + 2 \times 2$). Therefore, the requested number of classrooms was confirmed as reasonable. As for the laboratories, one laboratory is reasonable.

2-3 Basic Design

2-3-1 Design Concept

The basic design of the facilities and equipment in the project is based on the following design policies; with due consideration of the results of the field survey, the environmental and social conditions of Myanmar, the construction and procurement conditions, the maintenance and management ability of the facility and equipment and the construction schedule under Japan's Grant Aid assistance.

- (1) The new facilities should be arranged to meet with the existing facilities so as to coexist effectively as a whole and show the significance of this extension plan.
- (2) The good points of the existing facilities should be become a reference for the design, while the existing problems of the building should be improved in the plan.
- (3) The physical conditions of the space (rain, sun & wind) and local customs (security, segregation of sexes) should be taken into consideration.
- (4) Design should be considered with regard to facilitate, mechanical and electrical design, and selection of equipment so as to ease maintenance with a minimum cost.
- (5) Local construction methods, local materials and procurement from third countries should be considered as thoroughly as possible. For the items of high quality and other particular items, procurement in Japan should also be considered.
- (6) On the premise that this project is executed by Japan's Grant Aid assistance, the design and implementation method of the project should be rational and comply with the schedule and guidelines formulated under the Japanese Grant.
- (7) Most importantly, the overall architectural design should reflect vernacular aspects of Myanmar; not only it's cultural heritage or background, but in respect of the common activities in every day life.

2-3-2 Study and Examination of the Design Criteria

(1) Basic Concept for Determination of the Facilities Scale

In order to upgrade and achieve the training of competent nurses, the Institute of Nursing with a 2 year Bridge course was established in addition to the Diploma course in 1991. A 4 year Generic course of the Institute was further established in 1994. After the completion of this expansion plan, the existing facilities will be used for the Diploma course and the new facilities will be used for the Bachelor courses (Bridge & Generic).

Originally, 560 students in the existing facilities was assumed as its capacity, but the number of students reached 767 students under the existing 3 courses mentioned above in 1995. The existing facilities, if this project is carried out will be able to accommodate the diploma course (600 students). The remaining students enrolled in the Institute is projected as 400 students for the Generic course (100 students in each grade) and as 70 students in the Bridge course. The total enrollment of 470 is considered as the criteria to determine the basic design scale of this project.

Table 2-3 The Changes and Projection in the Number of Students

	← Expectation →		
	1994/95	1998/99	2003/04
Diploma Course (3 Years)	603	600	600
Bridge Course (2 Years)	66	70	70
Generic Course (4 Years)	1st Year 42 2nd Year 56	400	400
Total	767	1,070	1,070

(2) Study of the Facilities Scale

1) Study on the Scale of the Dormitory

The number of dormitory rooms will be calculated for 470 students (for the Bridge and Generic courses) in the future. The facility size will be formulated based on the existing conditions.

Based on the result of discussions with the Institute, the dormitory will be used by 90 % of the 400 students in the Generic course and 25 % of the 70 students in the Bridge course.

Generic course	400 persons	x	90 %	=	360 persons
Bridge course	70 persons	x	25 %	=	20 persons
Total					380 persons

One room to each 4 persons is understood to be its preliminary decision. Therefore, 95 rooms for students (380/4), 4 rooms for tutors (one room to each 2 persons), and 1 room for the warden are required. As a result of the investigation on the existing facilities it is necessary to provide a visitors space (parlor). This visitors space will also function as study room. Besides this, the related facilities for the dormitories such as sanitary accommodation and laundries will be planned carefully.

2) Study on the Scale of the Classrooms

Based on the findings of the facilities under the present conditions and discussions with the Institute, general classrooms are provided for 50 persons, with a classroom for 100 persons.

The number of periods of utilization of a classroom, laboratory and demonstration room are found from multiplying the total number of study periods, which is calculated based on the expected number of classes per level and curriculum by the satisfaction rate. As is shown in Table 2-4 and 2-5, the number of projected classrooms is calculated by dividing the calculated number of periods of utilization of the classroom by the 880 periods (students off campus training in the morning, teaching hours 4 periods per day, 5 days a week, 11 months a year) and the upper limitation of utilization rate of classrooms (80 %).

The Generic course is basically divided into two classes, with each class for 50 students. The Bridge course is also divided into two classes, with each class for 35 students.

As a result of the estimation for each course, the required number of classrooms in the Generic course is 9 classrooms and 1 laboratory and the required number of classrooms in the Bridge course is 3 classrooms and 2 demonstration rooms. The estimated total of the required number of classrooms is 12 classrooms, with 1 laboratory and 2 demonstration rooms.

Based on the analysis of the existing facilities and the discussions with the ION side, 8 classrooms for 50 persons, 2 classrooms for 100 persons (these are counted as 4 classrooms per 50 students), 1 laboratory, 1 demonstration room are required.

Table 2-4 Estimation of Required Number of Classrooms Calculated from the Planned Number of Classes based on the Existing Curriculum for the Bridge Course

	Theory	Practice	Remarks
1st Year	730 x 2	870 x 2	
2nd Year	405 x 2	1,220 x 2	
Total Number of Periods	1,460 *1)	2,440 *1)	Period x Class
Classroom Planned Satisfactory Rate (%)	100	50 *2)	
Number of Periods for Classroom Utilization	1,460	1,220	
Number of Necessary Classrooms	2.07	1.73	
Planned Number of Classrooms	3	2	

*1) The Bridge Course is two years, so the Total Number of Periods is using bigger periods between 1st year and 2nd year for theory and practice periods.

*2) The estimations regarding practice are derived as 50%.

Table 2-5 Estimation of Required Number of Classrooms Calculated from the Planned Number of Class based on the Existing Curriculums for the Generic Course

	Theory	Laboratory	Practice	Remarks
1 Year	888 x 2	152 x 2	224	
2 Year	846 x 2	96 x 2	442	
3 Year	628 x 2	80 x 2	656	
4 Year	582 x 2	48 x 2	720	
Total Number of Periods	5,888	752	2,042	Period x Class
Classroom Planned Satisfactory Rate (%)	100	100	0	
Number of Periods for Classroom Utilization	5,888	752	0	
Number of Necessary Classrooms	8.36	1.07	0	(Number of Periods for Classroom Utilization) ÷ (880 x 0.8)
Planned Number of Classrooms	9	1	0	

(3) Computation of the Scale of each Room

In accordance with "the scale of the project" mentioned in paragraph (2) Study on the Facility's Scale, the floor area is estimated based on the expected number of rooms in the new facility.

The facility size will be formulated based on the existing facilities at the Institute of Nursing, other similar facilities in Yangon City and similar projects undertaken by Japan's Grant Aid assistance in Southeast Asia. (cf. Table 2-6)

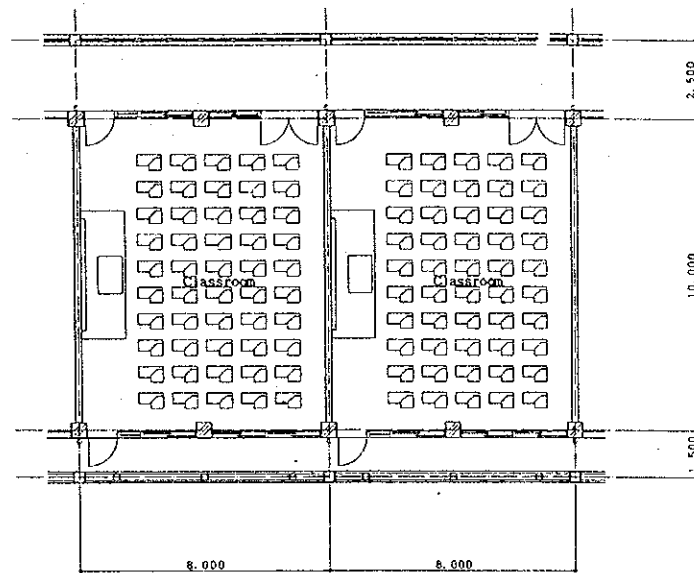
1) Classroom

The basic area of the existing classrooms is calculated as $7.5 \text{ m} \times 8 \text{ m} = 60\text{m}^2$. The area per student is 1.5 square meters. This value is appropriate under the circumstances. Comparing with similar projects in Southeast Asia, the floor area per student is 1.2 square meters in Thailand and 1.5 square meters in the Nursing School of Indonesia.

The floor area of a classroom for 50 persons should be considered as unit area of 80 square meters, but the determination of this floor area should take in to consideration the space requirement of desks, chairs and equipment.

Fig. 3-3 shows a layout plan of a classroom. Therefore, the proposed floor area of a classroom to 100 students is calculated as 160 square meters (two times of the unit area). As for seminars, classrooms will be utilized.

Figure 2-1 Classroom and Seminar Room



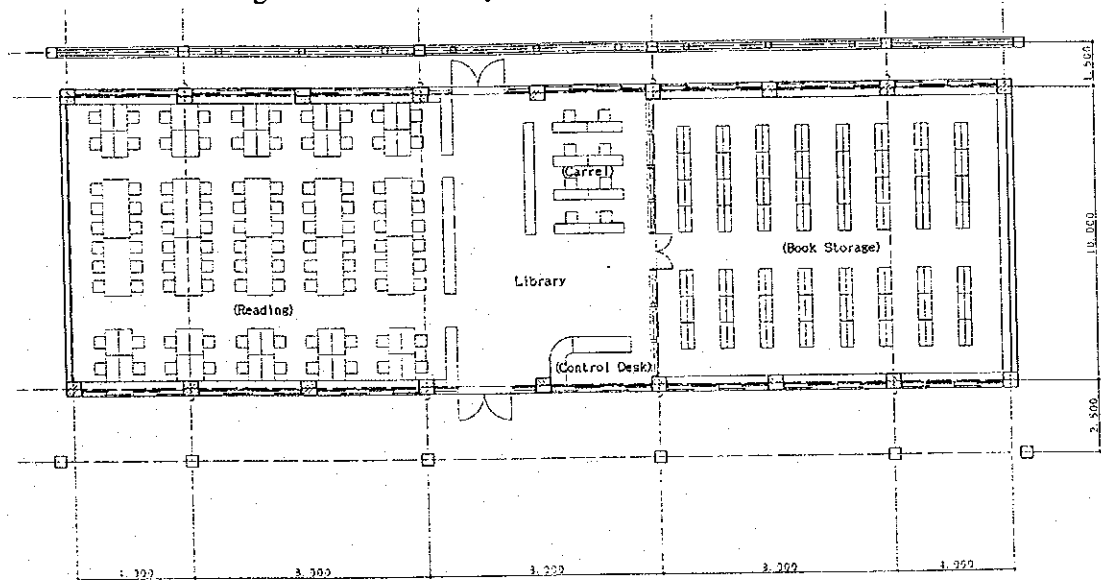
2) Library and Book Storage

Although the utilization rate of the existing library is very high, the library has not fulfilled its function, because the book storage is too small. The library will be unified as a major common facility for the Diploma and Bachelor course. The space for the library will be determined by the number of readers and books to be housed in this area; that is approximately 100 readers and 30,000 books for this project.

In addition to these aspects, provision for study carrels will be necessary for servicing long term readers.

Fig. 2-2 shows a layout plan of the Library.

Figure 2-2 Library and Book Storage



3) Demonstration Room and Common Laboratory

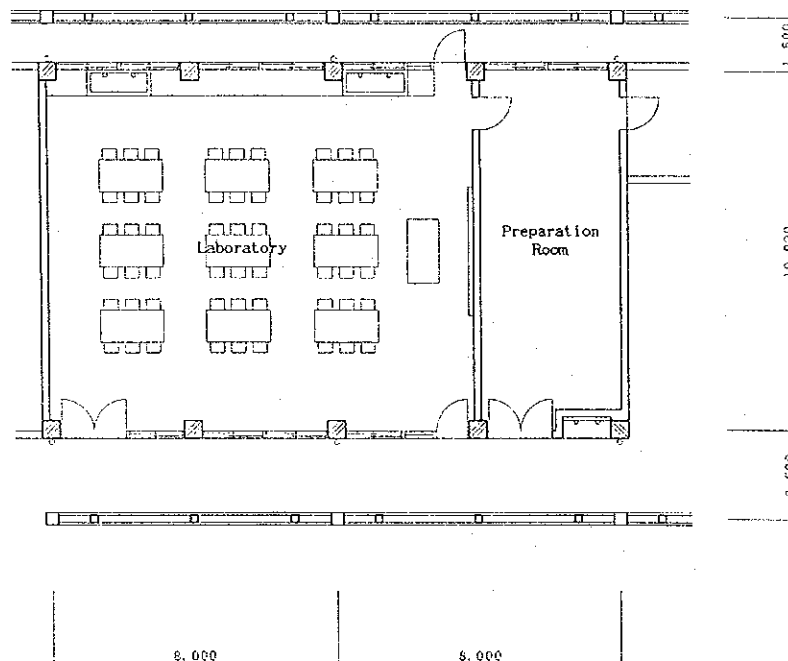
The floor area of the demonstration room and common laboratory will be calculated based on the content of training, the number of students and the layout plan of the equipment.

The floor area of the existing common laboratory is 90 square meters with 2.25 square meters per person. In the case of the College of Nursing in Thailand, the floor area of the common laboratory is calculated as $15\text{ m} \times 8\text{ m} = 120\text{ m}^2$ (75 persons, 1.6 square meters per person).

The window table with 2 wash basins (as a perimeter bench) and 9 movable tables were requested through the discussions with the ION. According to a judgment based on the layout of the equipment and similar examples, the floor area of laboratory is calculated as $10\text{ m} \times 12\text{ m} = 120\text{ m}^2$ (cf. 1.5 times the size of a classroom). The preparation room will be used for the storage of educational equipment.

Fig. 2-3 shows a layout plan of the Common Laboratory.

Figure 2-3 Common Laboratory



4) Conference Room and Meeting Room

The students of the new facility will share the auditorium with the students of the existing facility, but the conference room in this new facility will be used for lectures, training courses, etc. and will contain about 100 seats.

As might be expected, the floor area of the conference room is calculated as 160 square meters.

The floor area of the meeting room, that is, the small conference room, is calculated as $4\text{ m} \times 10\text{ m} = 40$ square meters.

5) Teaching Staff Room

In terms of the plan for increasing the number of teachers in the new facility, there will be 60 teachers per 400 students (Generic course). The academic department will be divided into 14 departments.

Approximately 20 m² per each department is requested. The floor area of teaching staff room is therefore calculated 280 square meters in total (80 m² x 2 and 120 m² x 1).

6) Office including the Rector's Room and Reception Room

A number of clerical employees is estimated as 60 persons by the year of 1998~1999. The floor area of the existing office is measured as 150 square meters. Therefore, the unit area is 1.4 m² per person. After due consideration of similar examples and the layout of furniture, the office is calculated as 8 m x 10 m = 80 m².

Besides this, the related facilities for the office such as the rector's office and the reception room are respectively calculated as 20 square meters and 40 square meters. A printing machine and rotary press are also required for the new facility.

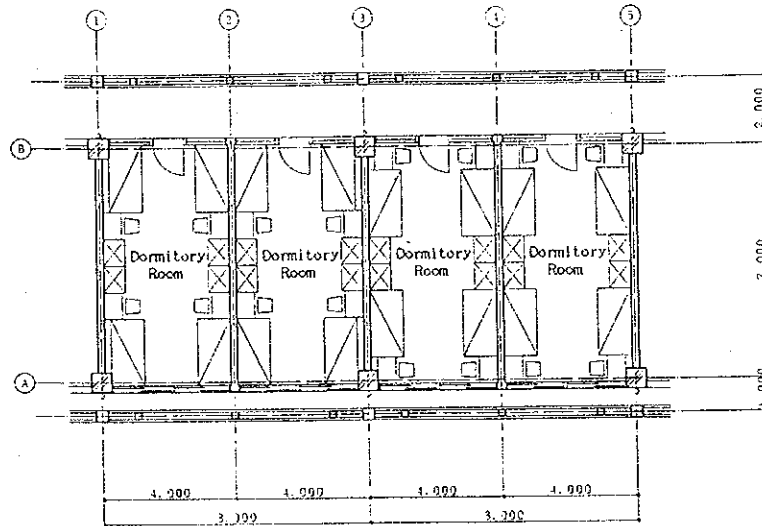
7) A/V Equipment Room

After due consideration, of the number of audiovisual equipment (OHP, video player, slide projector, etc.), its durable years, and the climate conditions of Myanmar, a stock room should be provided. The floor area of the stock room is calculated as 80 square meters.

8) Dormitory Room

The floor area of the existing dormitory room is measured at 7 m x 4 m = 28 m² and the floor area per student is 7 square meters. This floor area per student is larger than the existing dormitory (26.25 m²: 6.56 m²/person), but has a minimum amount of space compared to similar projects in Thailand or in Indonesia which are 7.14 square meters and 7.59 square meters respectively. Fig. 2-4 shows a layout plan of a dormitory room.

Figure 2-4 Dormitory Room

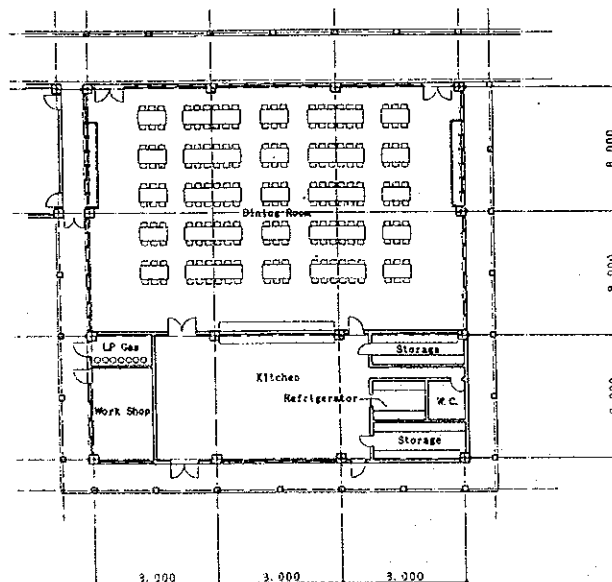


9) Dining Room and Kitchen

The existing dining hall can provide meals for 200 students in two shifts. Half of the students will be absent due to training in hospitals etc., which means 1.72 square meters per person is available for seating space, has 311 square meters.

Assuming that the number of students will increase to 400 in the new facility (1/3 of the 600 students are on training outside the Institute), the proposed floor area of the dining hall will be required to be approximately 380 square meters with a floor area per student at 1.9 square meters. An area for preparation, cooking and service, including of store rooms and toilet for the staff will be provided. It goes without saying that the layout and selection of equipment is of great importance to the efficiency of the kitchen.

Figure 2-5 Dining Room and Kitchen



10) Other Facilities

Other requirements are a workshop for maintenance staff, a machine room and an electric room area. The required areas for these facilities are 30 square meters, 60 square meters, and 80 square meters respectively.

Table 2-6 Estimation of the Floor Area of Projected Facilities Rooms based on Similar Projects by Japan's Grant Aid

Room	The Mahasarakham College of Nursing The Kingdom of Thailand (March 1981)	Nurse Education Facilities The Republic of Indonesia (March 1979)	Existing Institute of Nursing	Facility Size for this Project
Classroom	150 persons 22.5 m x 8 m = 180 m ² 1.2 m ² /person	40 persons 9 m x 6.75 m = 60.75 m ² 1.2 m ² /person	40 persons 7.5 m x 8 m = 60 m ² 1.5 m ² /person 80 persons 1.5 m ² /person	50 persons 8 m x 10 m = 80 m ² 1.6 m ² /person 100 persons 1.6 m ² /person
Laboratory	15 m x 8 m = 120 m ² 1.6 m ² /person	-	11.25 m x 8 m = 90 m ² 2.25 m ² /person	50 persons 10 m x 12 m = 120 m ² 2.4 m ² /person
Demonstration Room	15 m x 8 m = 120 m ²	-	11.25 m x 8 m = 90 m ²	10 m x 16 m = 160 m ²
Library (including book storage)	Library 22.5 m x 8 m = 180 m ² Book Storage 7.5 m x 8 m = 60 m ²	91.12 m ²	205 m ²	Library 16 m x 10 m = 160 m ² Book Storage 16 m x 10 m = 160 m ²
Conference Room	11.25 m x 8 m = 90 m ²	6.75 m x 4.5 m = 30.375 m ²	5.7 m x 8 m = 46 m ²	10 m x 6 m = 160 m ²
Teaching Staff Room	7.5 m x 8 m = 60 m ²	6.75 m x 4.5 m = 30.375 m ²	48 persons 162.6 m ² 3.4 m ² /person	60 persons 28 m x 10 m = 280 m ² 4.6 m ² /person
A/V Equipment	-	-	3.25 m x 8 m = 30 m ²	8 m x 10 m = 80 m ²
Office	11.25 m x 8 m = 90 m ²	13.5 m x 6.75 m = 91.12 m ²	150 m ² 1.4 m ² /person	8 m x 10 m = 80 m ² 1.4 m ² /person
Dormitory	8 persons 9 m x 6.35 m = 57.15 m ² 7.14 m ² /person	4 persons 6.75 m x 4.5 m = 30.375 m ² 7.59 m ² /person	4 persons 7 m x 3.75 m = 26.25 m ² 6.56 m ² /person	50 persons 7.0 m x 4.0 m = 28 m ² 7.0 m ² /person
Dining Room	399 m ² (Capacity of 300 Students) 1.33 m ² /person	189.5 m ²	343.31 m ² (Capacity of 200 Students) 1.72 m ² /person	384 m ² 1.92 m ² /person
Kitchen	180 m ²	60.75 m ²	153 m ²	192 m ²

(4) Required Rooms and their Floor Areas

Table 2-7 shows the required rooms and floor area of projected buildings.

Table 2-7 Rooms Required and their Floor Area

Room	Area (m ² /Rm.)	Number of Rooms	Area (m ²)	Remarks
(1) Dormitories				
1. Dormitory Rooms	28.0	100	2,800.0	Including 5 tutor's room
2. Kitchen	192.0	1	192.0	Including workshop
3. Dining Room	384.0	1	384.0	200 persons
4.* Common Space			3,872.0	Including Mechanical room
Sub-Total			7,248.0	
(2) Administration & Training Building				
1. Classrooms (50)	80.0	8	640.0	
2. Classrooms (100)	160.0	2	320.0	
3. Library (including book storage)	320.0	1	320.0	
4. Demonstration Room	160.0	1	160.0	
5. Common Laboratory	120.0	1	120.0	Including preparation room
6. Conference Room	160.0	1	160.0	
7. Teaching Staff Rooms (small)	80.0	2	160.0	
" (large)	120.0	1	120.0	
8. Registrar's Room	40.0	1	40.0	
9. Meeting Room	40.0	1	40.0	
10. Office (including Rector's Room and Reception Room)	240.0	1	240.0	
11. A/V Equipment Room	80.0	1	80.0	
12.* Common Space			1,650.0	Including electrical room (80m ²)
Sub-Total			4,090.0	
(3)** Other Facilities			975.0	
Sub-Total			975.0	
TOTAL			12,313.0	

*: Common space includes the corridors, staircases, study rooms, laundries, toilets, shower rooms, etc.

** Other facilities include the covered walkway, guard house, etc.

2-3-3 Basic Design

(1) Site Layout Plan

The project site is located to the north side of the existing facility across the Bogyoke Aung San Road. A link between the old and new facilities, to allow easy movement and circulation between both sites should be considered in the plan.

The main approach to the existing facility is located on Bogyoke Aung San Road at the north side of the site. The site is also entered from Morton Road. The Bogyoke Aung San Road and the Yangon PYI Road, major roads in Yangon, cross at the east corner of the Institute of Nursing. This major intersection is busy so that the safety of the students should be considered in the plan.

Based on the discussions with the ION and the related authorities in Myanmar, the main approach to the new site will be from Bogyoke Aung San Road.

The linking of facilities between the old and the new facilities should be covered by the Myanmar side. Security of the pedestrians and a complete system of pedestrian routes should be taken into account. We discussed systems such as 1) pedestrian crossing and signals, 2) pedestrian bridge and 3) pedestrian tunnel, etc. However, an answer was not worked out. (In the final discussion in DOHM on 7th April 1995, a signal system was regarded as reasonable for the Myanmar side.)

A layout plan has been prepared on the basis of the relationship with the existing building, traffic conditions of its environs as well as the points listed below.

<Basic Design Policy>

- Consider distances between buildings and their orientation in order to secure good ventilation and good sunlight conditions throughout the year. Also consider sound-proofing.
- The classroom corridors are of the gallery type in consideration of the climate, with large protruded areas in order for the students not to get wet in the rain during the changing of class rooms.
- Great importance is attached to the functional relationship between the new buildings, existing buildings and the hospitals for practical training.
- Consider effective utilization of external spaces for air circulation such as inner gardens.
- Consider privacy in the dormitories.
- The layout plan shall consider the specific site conditions such as the long length being in the South to North direction.
- The building should harmonize with the surrounding landscape such as the residential houses and trees.
- Consider the future plan for the construction of a complex of the MOH facilities.

(2) Architectural Designs

1) Floor Plan

In terms of floor planning, the calculated areas and the layout plan as mentioned above were used and each facility was planned based on the following criteria:

- a) A corridor enclosing an inner garden shall be considered instead of the single corridor type or center corridor type taking the merit and demerit of the existing ION into consideration.
- b) The functional relationship between each room shall be considered based on the curriculum and syllabus, etc.
- c) Room ventilation will be provided by the opening of windows.
- d) The inner garden will be provided for natural ventilation.
- e) In order to shorten the duration time for the procurement of equipment and construction work, materials should be standardized. To achieve this, set an appropriate module for the building and standardize the span required. The most commonly used modules are 4.0 and 5.0 meter spans in the existing ION and in similar projects in Southeast Asia.
- f) Clearly define the zoning of facilities based on the use of each room (general classrooms such as classrooms and seminar rooms; special classrooms such as laboratory and demonstration room; administration rooms such as teaching staff rooms, etc.).
- g) The area of the dormitory shall be considered the minimum necessary area based on the layout of furniture. Safety against a disaster in the dormitories shall be considered because 400 students will stay there at a time. Emergency routes and staircases shall be designed with consideration of the above.
- h) Consider the size and layout of the educational equipment and furniture in each room.

2) Elevation and Cross-section Plan

In consideration of local building styles, local construction methods, etc., the planning of the elevation and cross section of the school buildings has been based on the following matters:

- a) The level of the ground floor will be raised 50 cm above the present ground level in order to prevent possible inundation by flooding during the rainy season and also from radiant ground heat;
- b) The roof will be sloped in order to quickly discharge the rain water;
- c) The eaves will be protruded to protect classrooms from the direct sunlight;
- d) Ventilation block which allows sunlight and wind to pass through shall be installed in order to protect from rain water;
- e) Wall surfaces will have as a large opening as possible in order to enhance room ventilation and provide a balanced intake of sunlight;
- f) The buildings should harmonize with the existing buildings, Yangon General Hospital and the surrounding landscape.

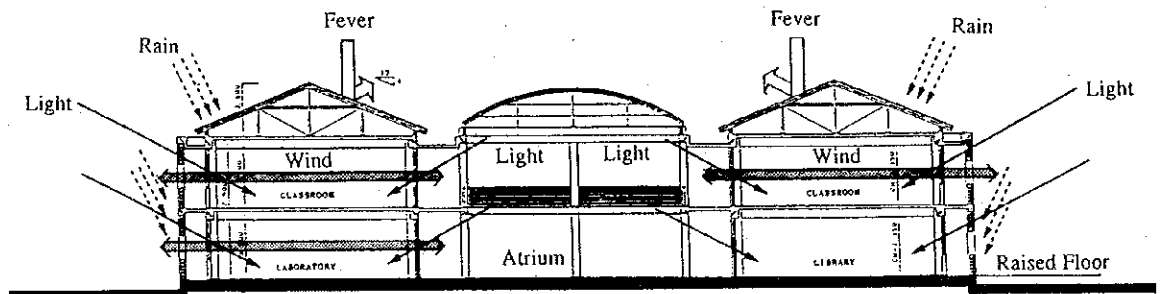


Figure 2-6 Elevation and Cross-section Plan

(3) Structural Plan

1) Basic Policy

The structural design method shall be required to withstand long-term loads such as bending and vibration. In addition, the building shall have sufficient safety to withstand short-term loads, and not lose its durability for earthquakes, strong winds, etc. The structure plan and implementation methods of Myanmar should be sufficiently clear with consideration also given to local construction and maintenance conditions.

2) Standard for Structural Design

In Myanmar, British Standards are commonly used for structural designs. The design will be supplemented in accordance with actual conditions of Myanmar and the Building Code of Japan and Standards of Architectural Institute of Japan. However it should not be over designed.

3) Methods and Materials

The superstructure will be a concrete frame type in most parts, which is widely used in Myanmar and is economical. Usually reinforcing steel and concrete materials are available in locally, but an appropriate measure of quality control will be required.

4) Basic Structure

A soil survey was carried out in the site. On the basis of the sub-soil condition, the buildings of the proposed facility will be supported by independent footings or continuous footings, as in case of the existing buildings. The bearing capacity for the design is applied 10.0 t/m² (long term).

5) Design Load

a) Dead Load (G: Kg/m²)

The load of fixed items for the buildings such as structural and finishing materials is calculated in accordance with the actual conditions.

b) Live Load (P: Kg/m²)

Live Load is calculated in accordance with the actual conditions. Generally, the design load value is for building is given by the standards of Yangon, and otherwise supplemented by the Standards of Architectural Institute of Japan.

	(kg/m ²)		
	Floor	Frame	Seismic Force
Administration & Training Building	230	210	110
Dormitory	180	130	60
Dining Room	230	210	110

c) Earthquake Load (Seismic force) (K: kg/m²)

Earthquake zones exist in Myanmar, and earthquakes have occurred such as the Pegu earthquake in 1930 and the Rangoon earthquake (Level 4-5) in 1970. A lateral seismic coefficient $K = 0.15$ is to be used against structure weights based on discussions with the PW engineers.

d) Combination of Loads

The loads are as follows for the allowable design method.

Long-term design load (permanent):
Dead load (G) + Live Load (P)

Short-term design load (at the time of earthquake):
Dead load (G) + Live Load (P) + Seismic force (K)

e) Permissible Stresses in Materials (kg/m²)

As the result of discussions with the PW, the permissible stress of concrete in Myanmar is 158 kg/m². In this project, the permissible stress of concrete is 180 kg/m² based on the existing ION. The permissible stress of steel also will following the same standard based on the existing ION.

Concrete : 180 kg/m²

Steel (Plain reinforcing bar):	Long term 1,600 kg/cm ² , Short term 2,400 kg/cm ² (SR 235)
(Deformed reinforcing bar):	Long term 2,000 kg/cm ² , Short term 3,000 kg/cm ² (SD 295)
	Long term 2,200 kg/cm ² , Short term 3,500 kg/cm ² (SD 345)
(Structural steel):	Long term 1,600 kg/cm ² , Short term 2,400 kg/cm ² (SS 400)
	Long term 2,200 kg/cm ² , Short term 3,000 kg/cm ² (SM 490)