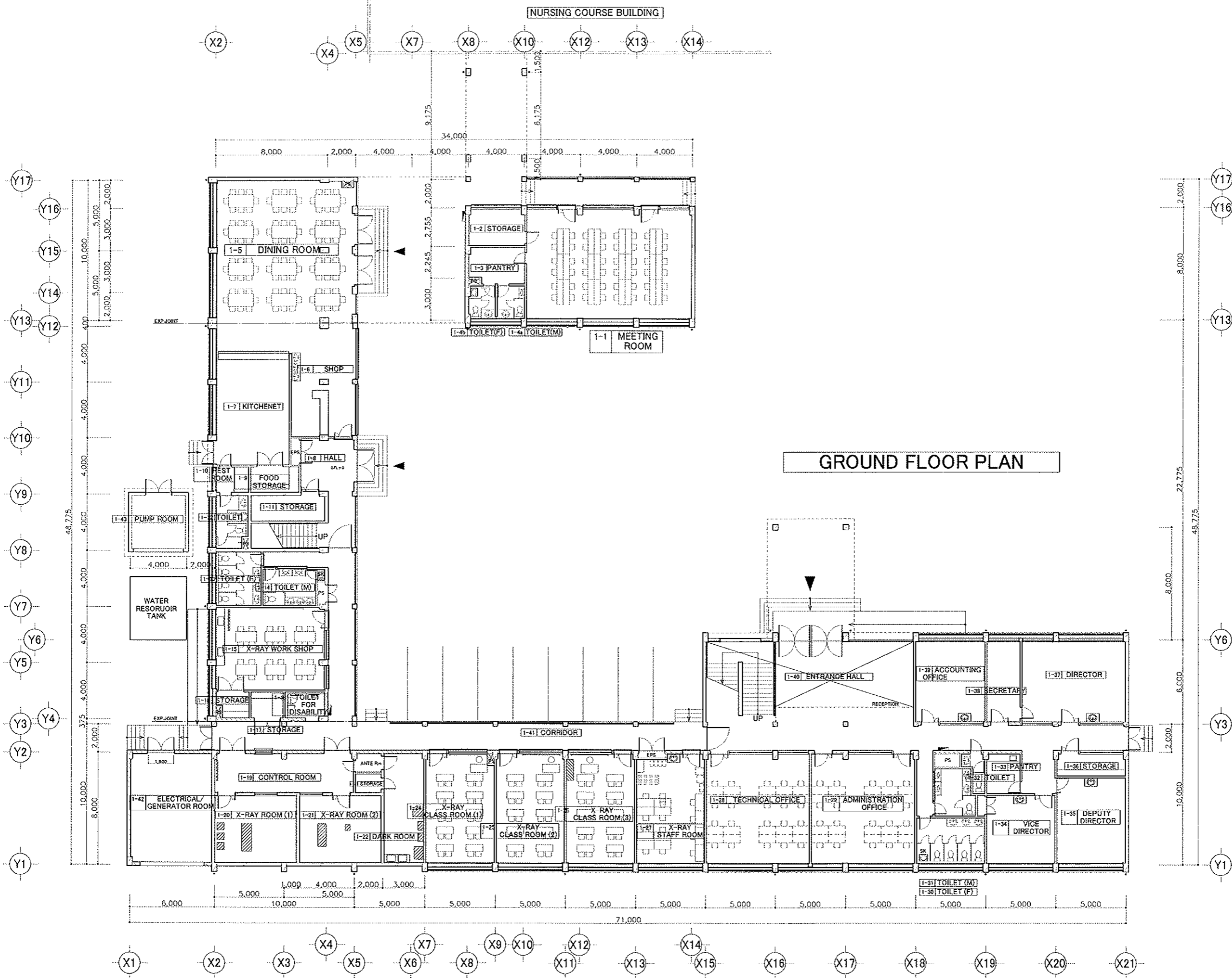


**2-2-3 Basic Design Drawing**

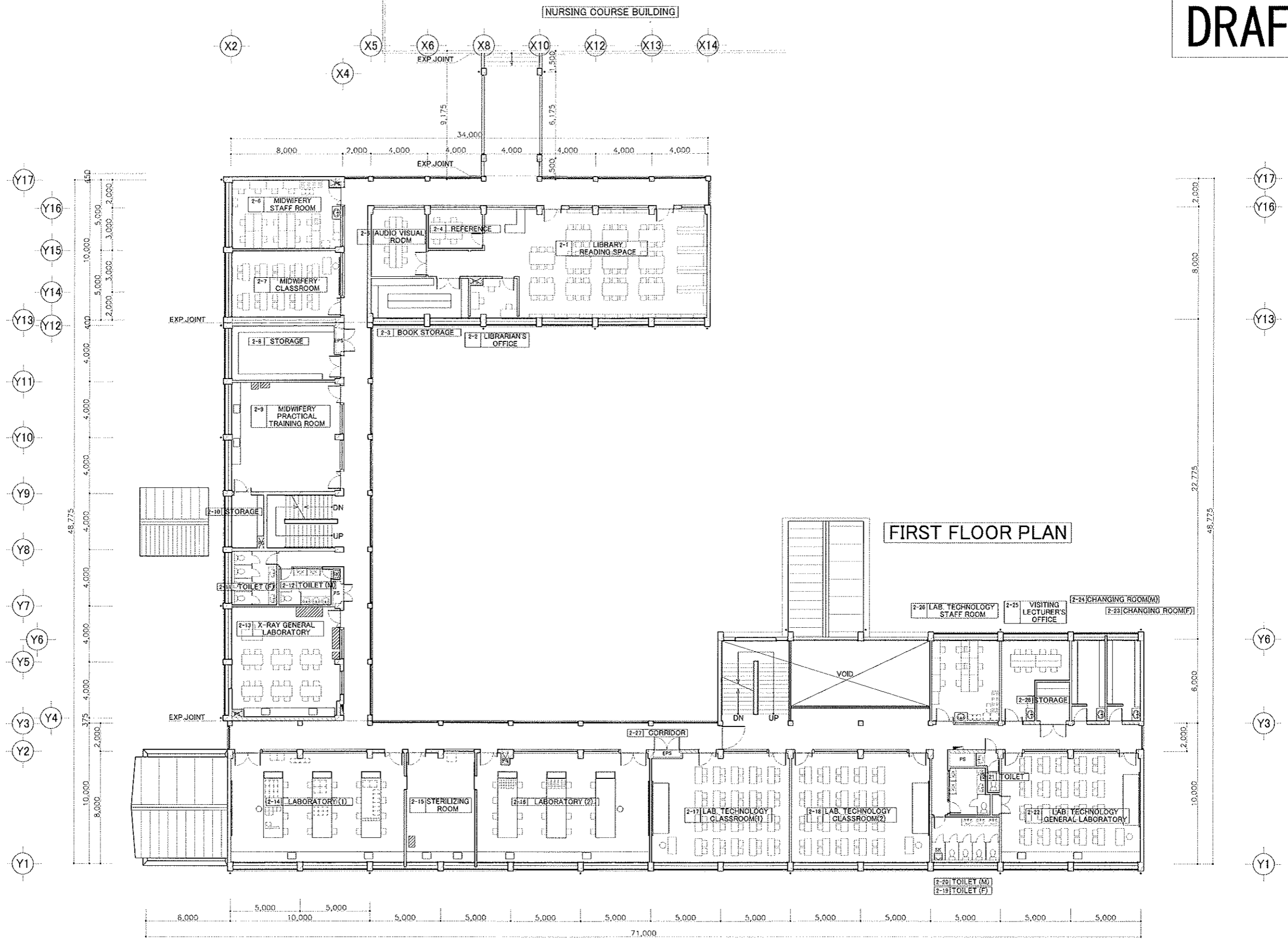




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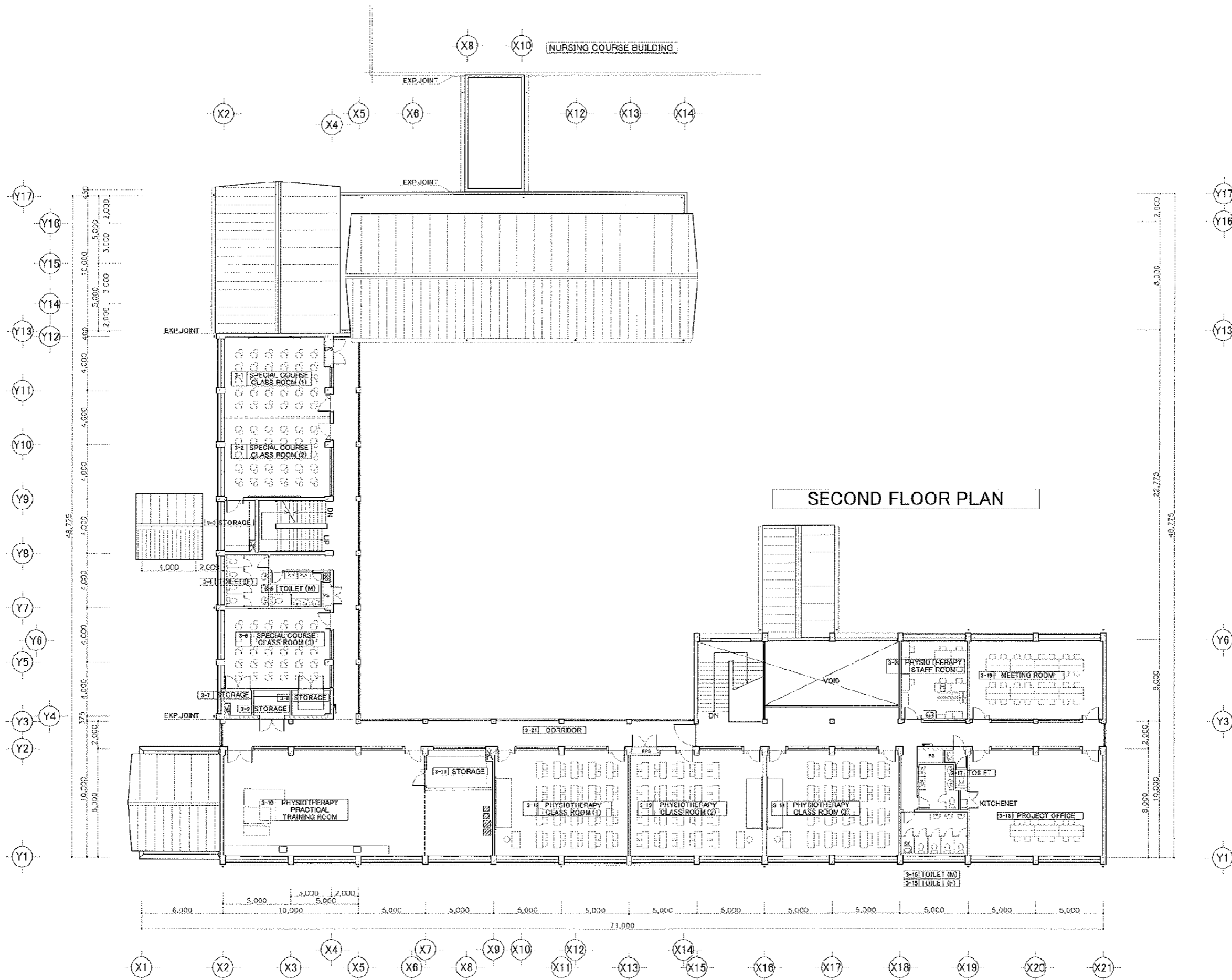
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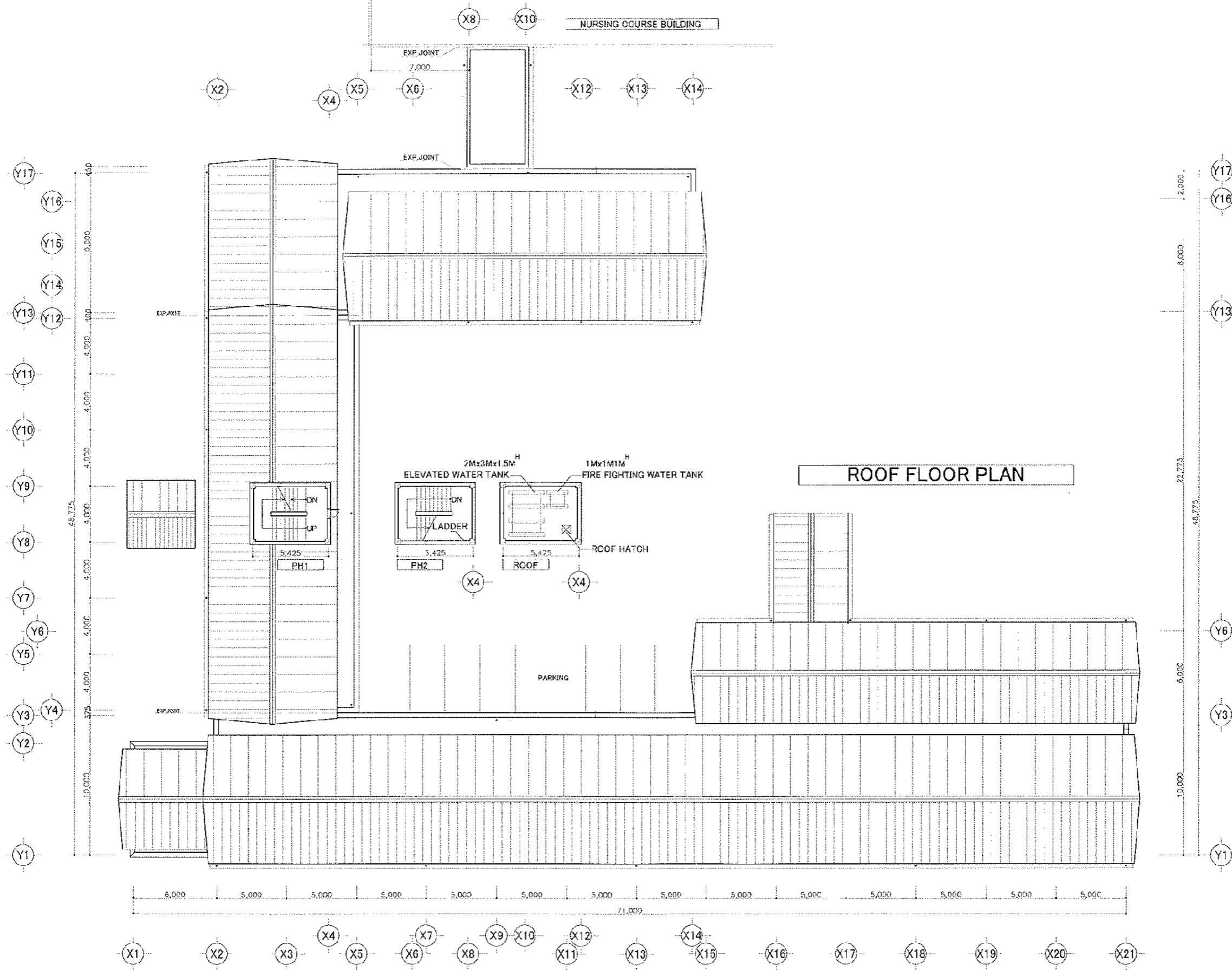
**LEGEND**

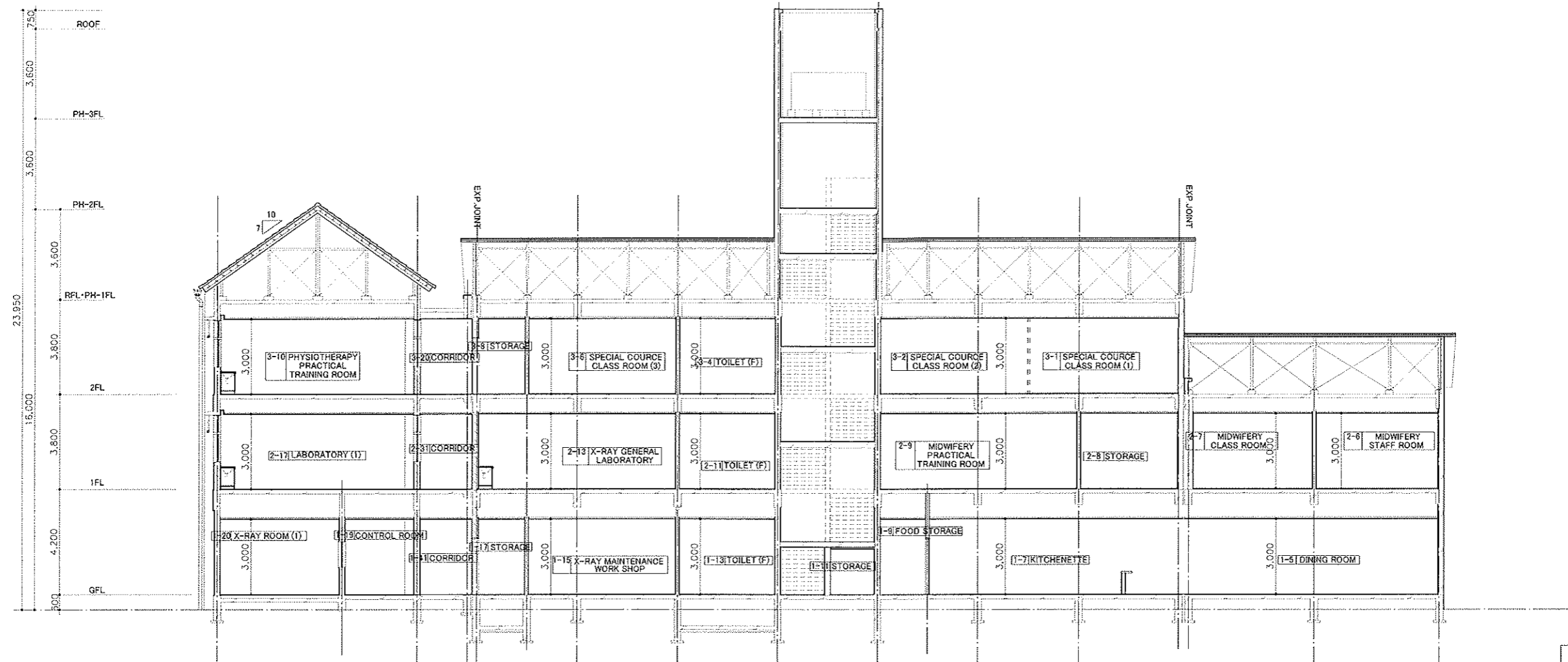
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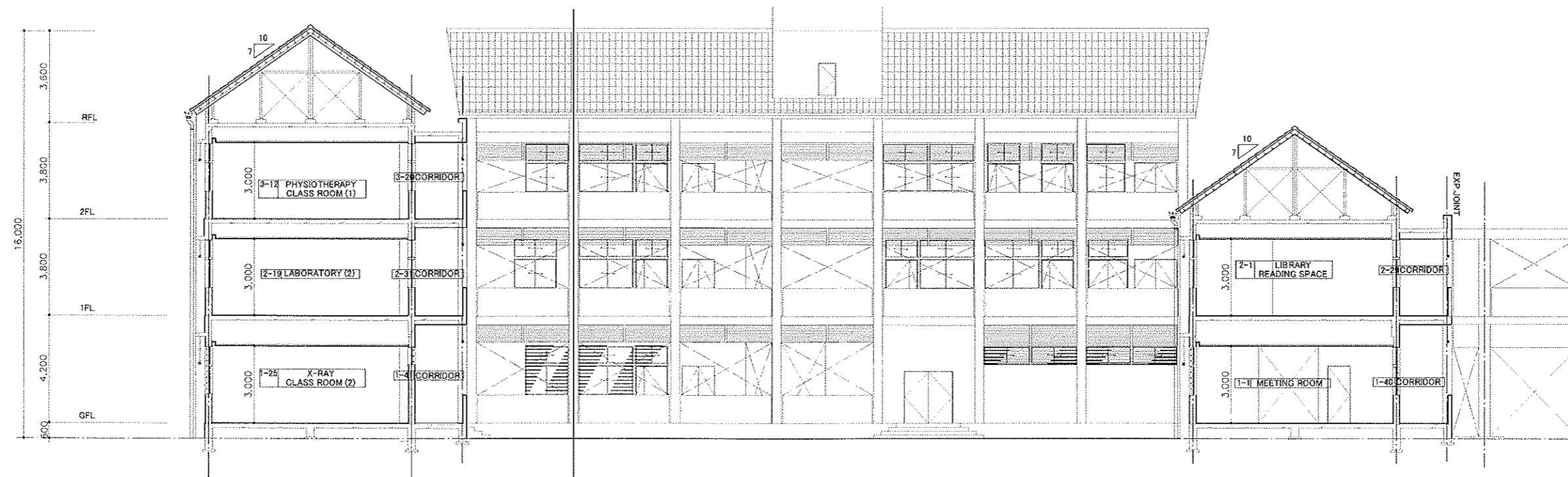
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	W200

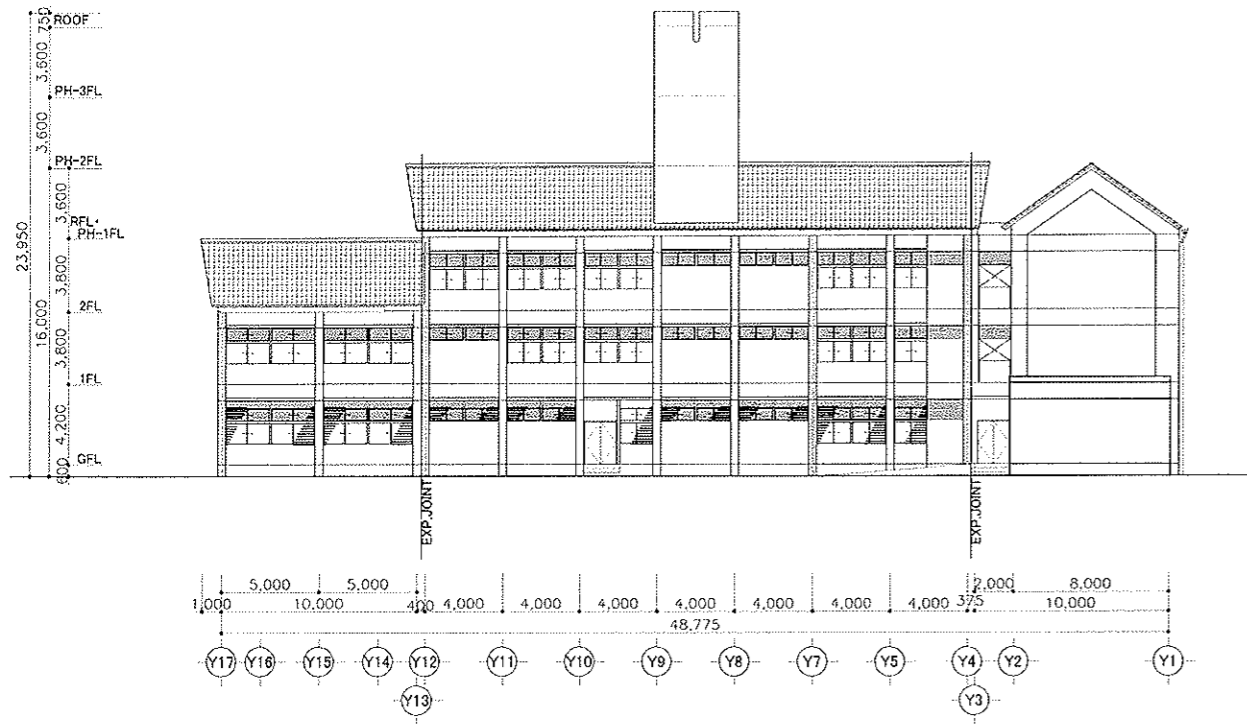




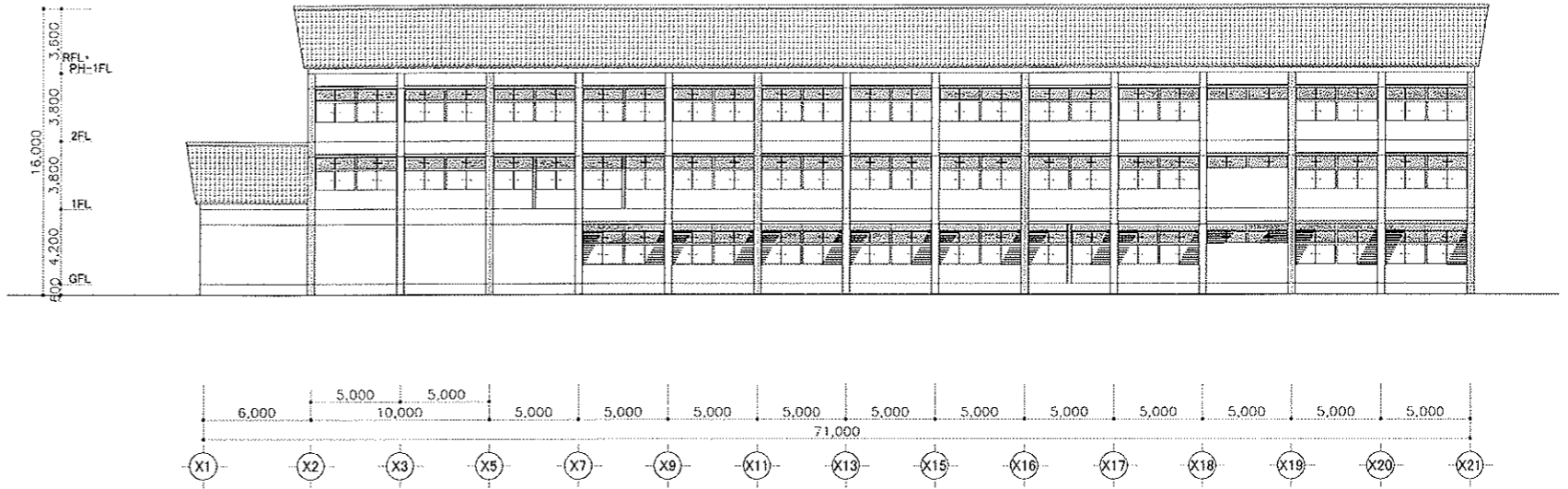
A-A' SECTION



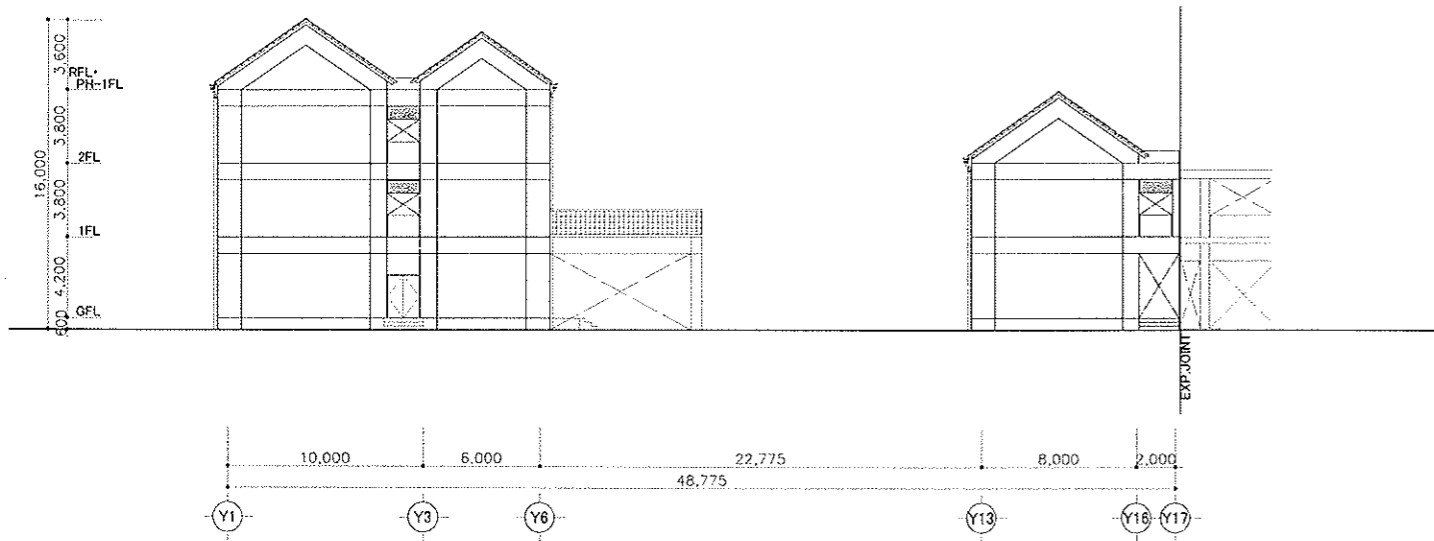
B-B' SECTION



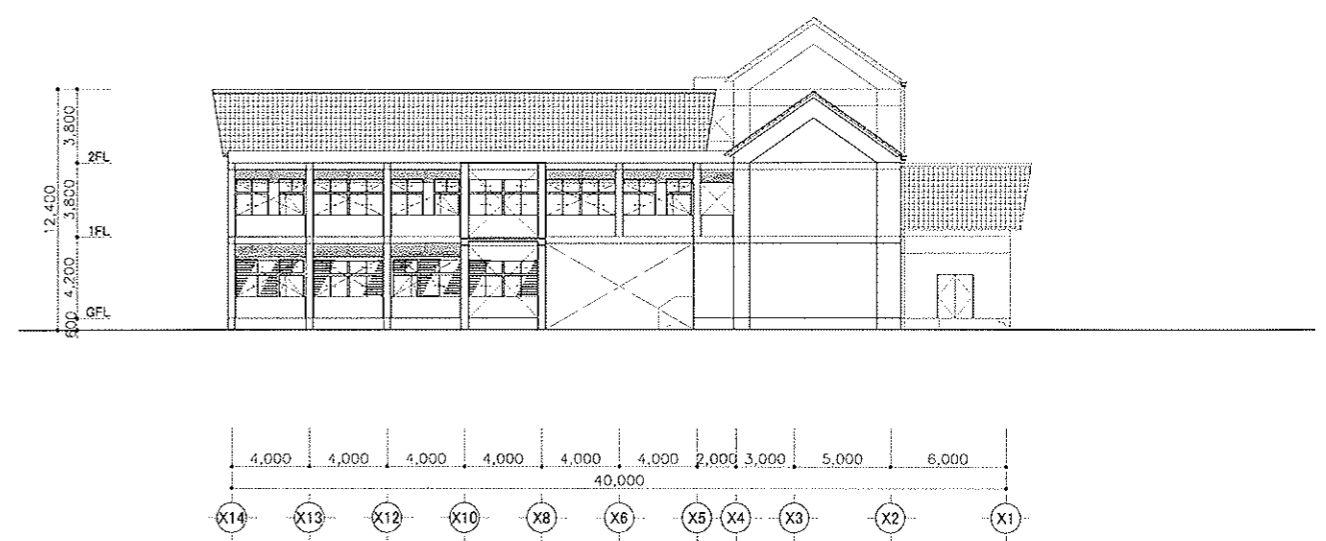
WEST ELEVATION



SOUTH ELEVATION



EAST ELEVATION

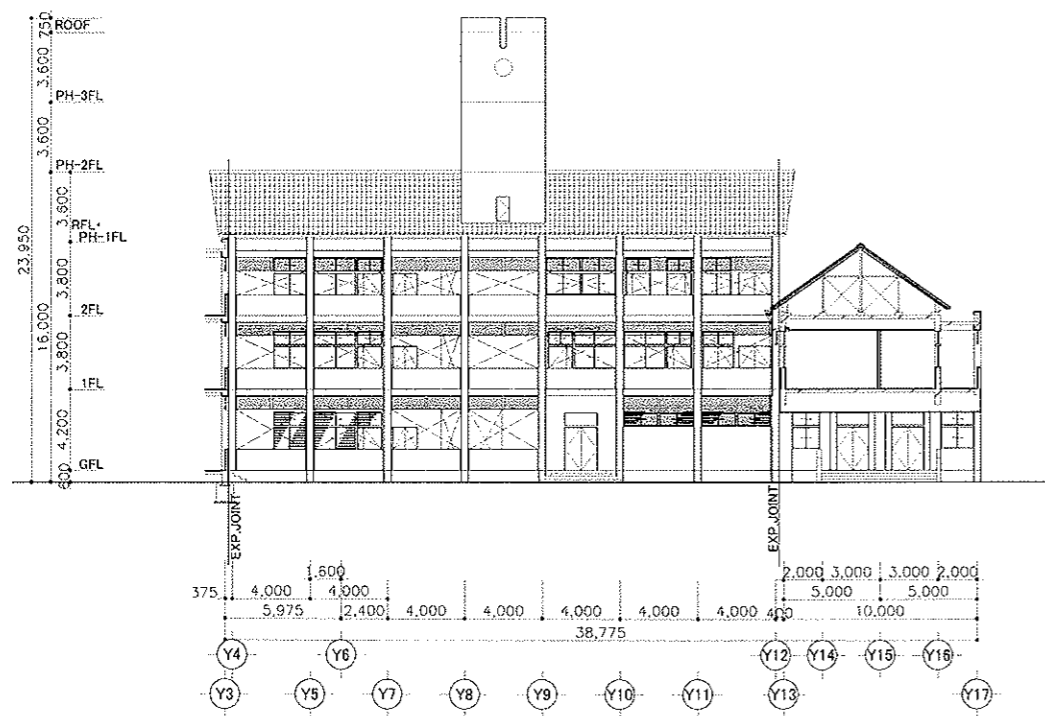


NORTH ELEVATION

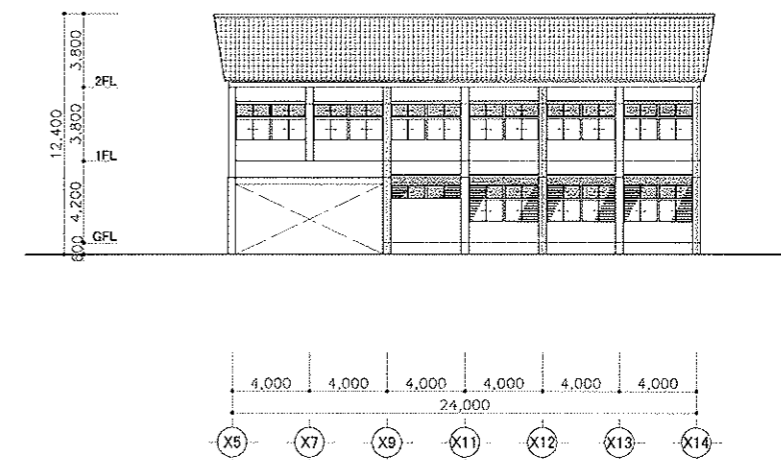




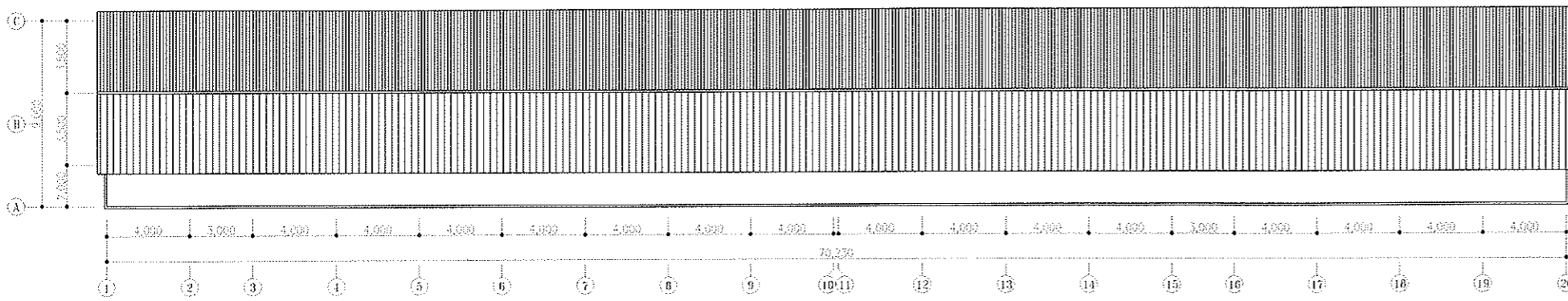
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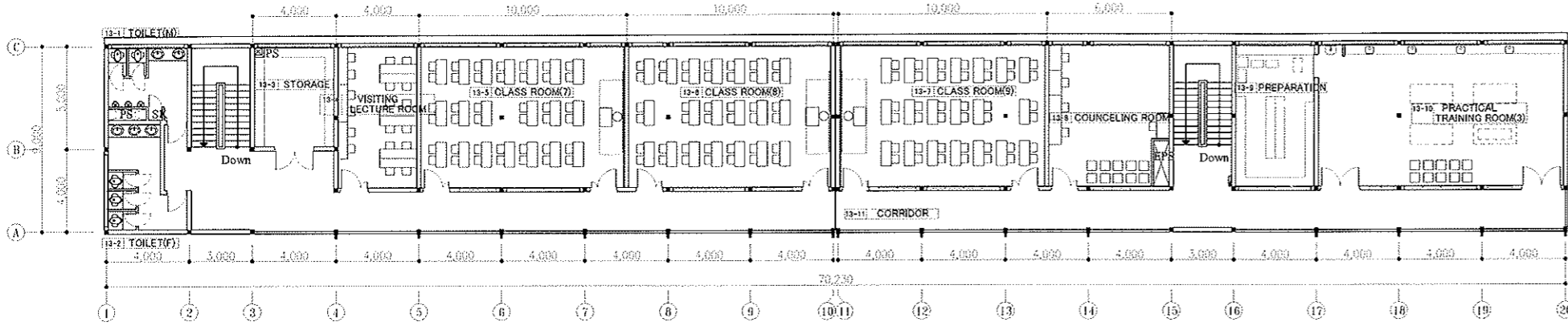
EAST ELEVATION



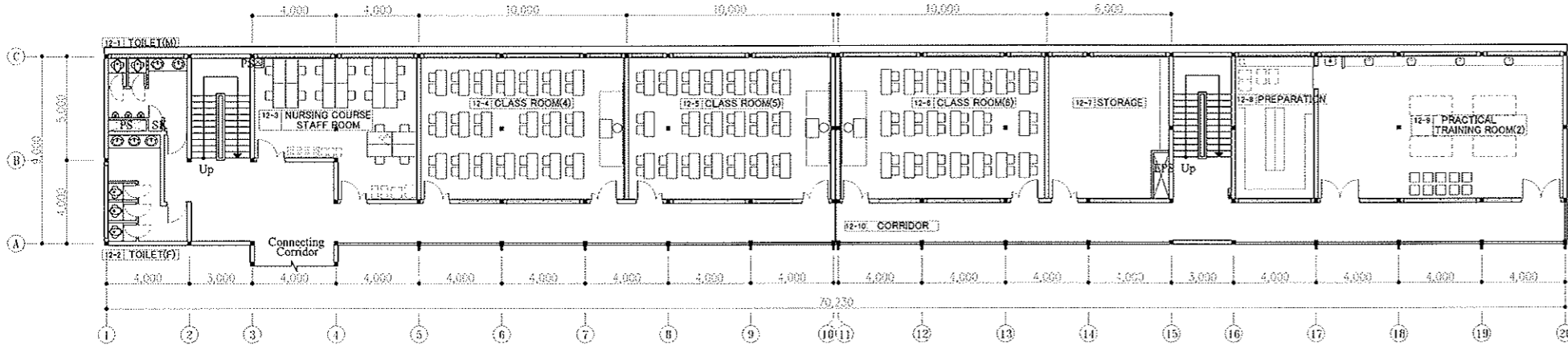
SOUTH ELEVATION



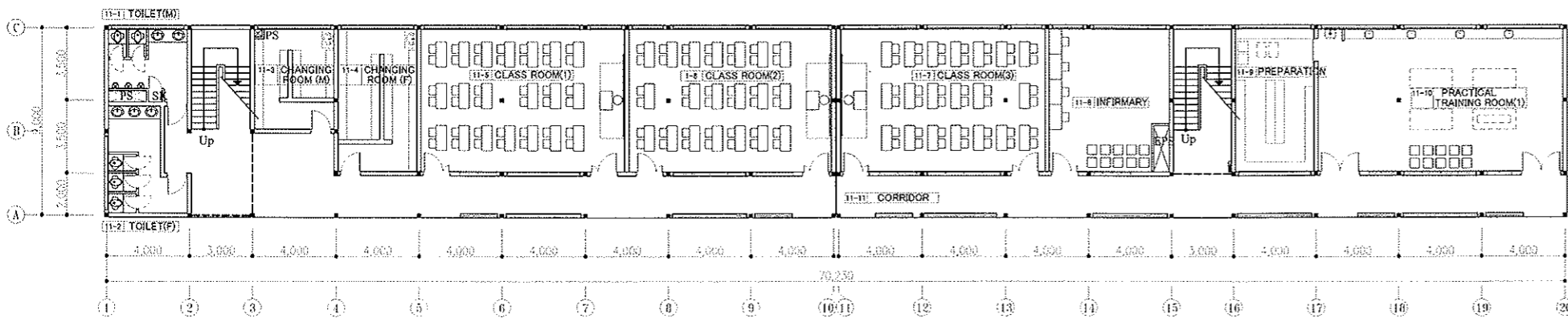
ROOF FLOOR PLAN



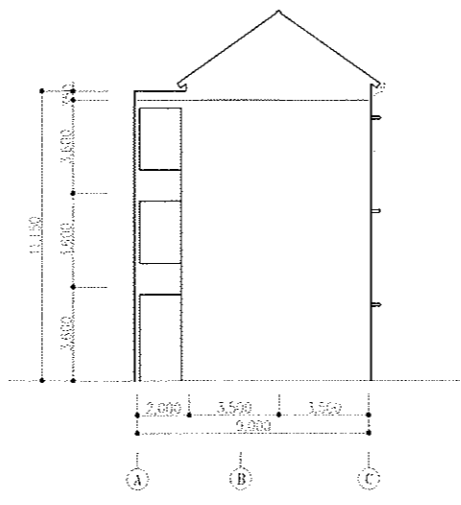
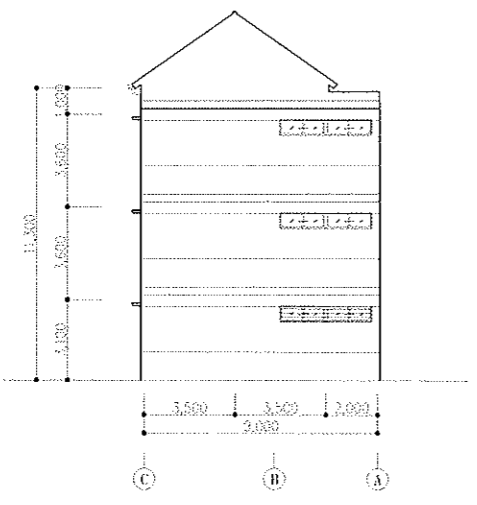
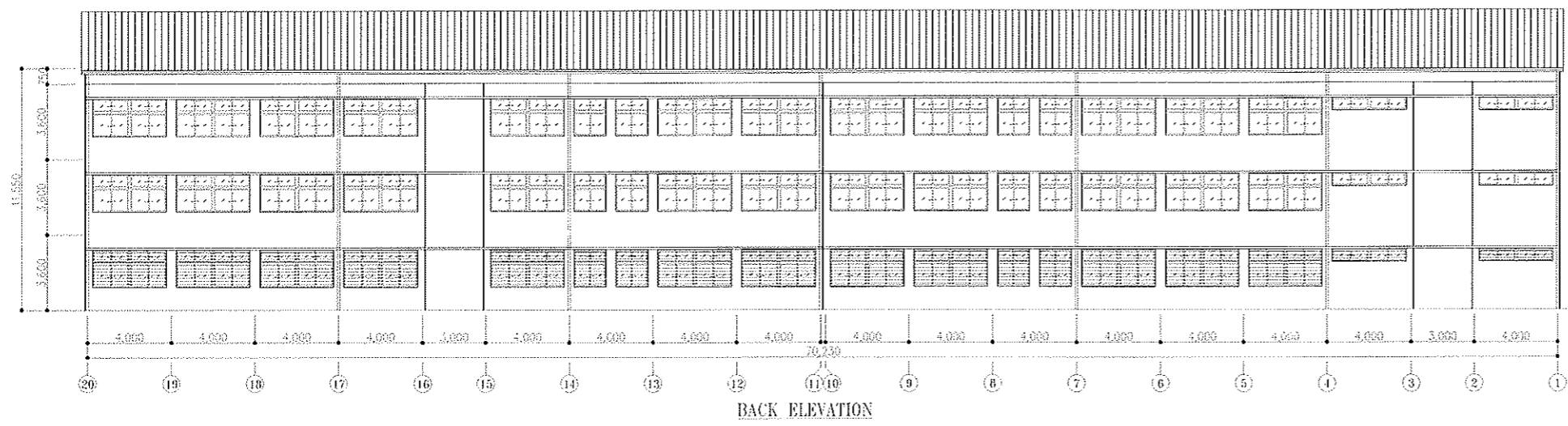
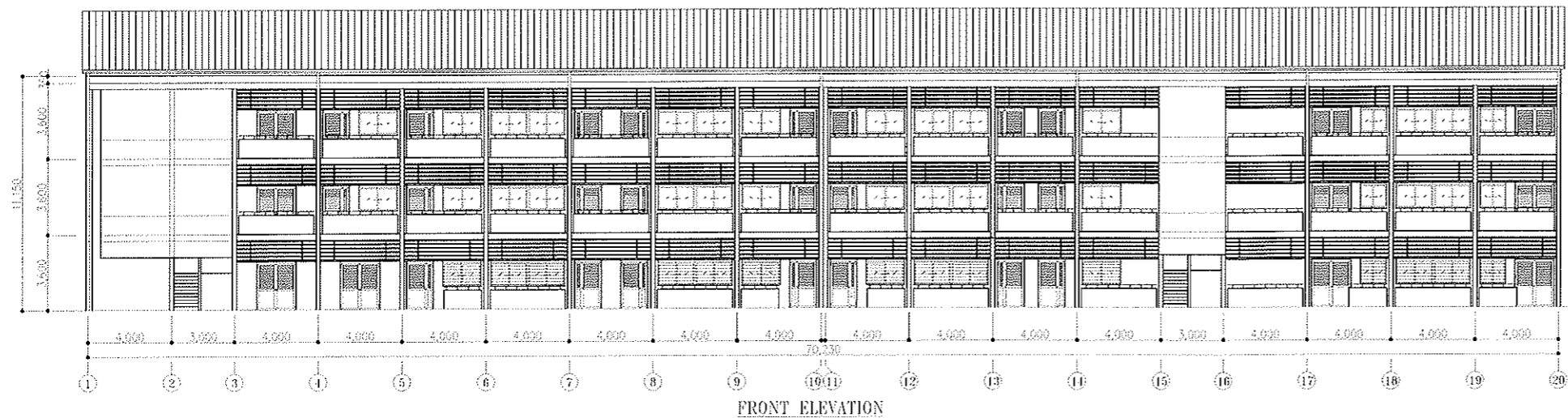
SECOND FLOOR PLAN



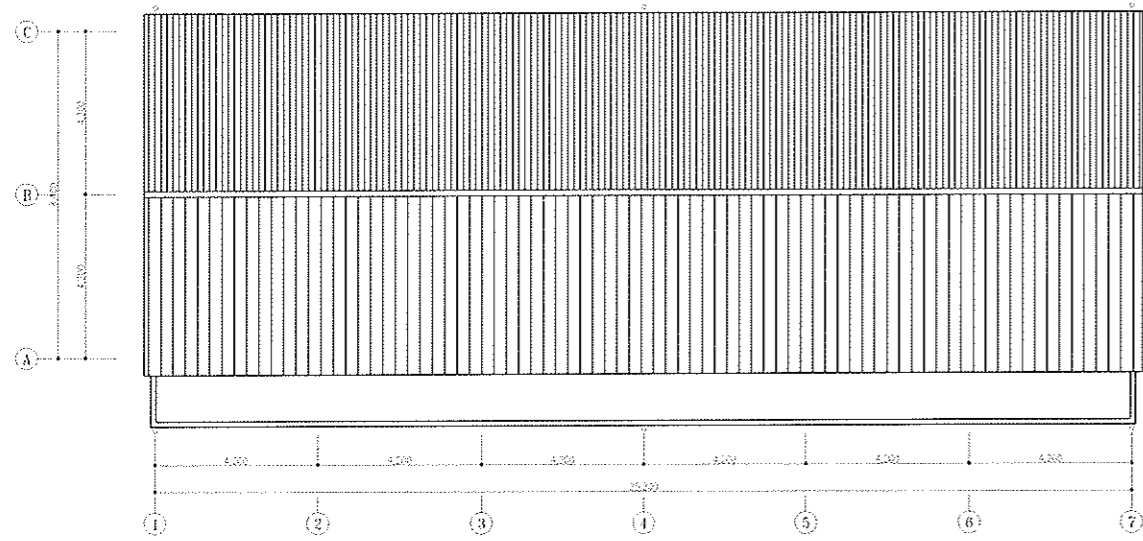
FIRST FLOOR PLAN



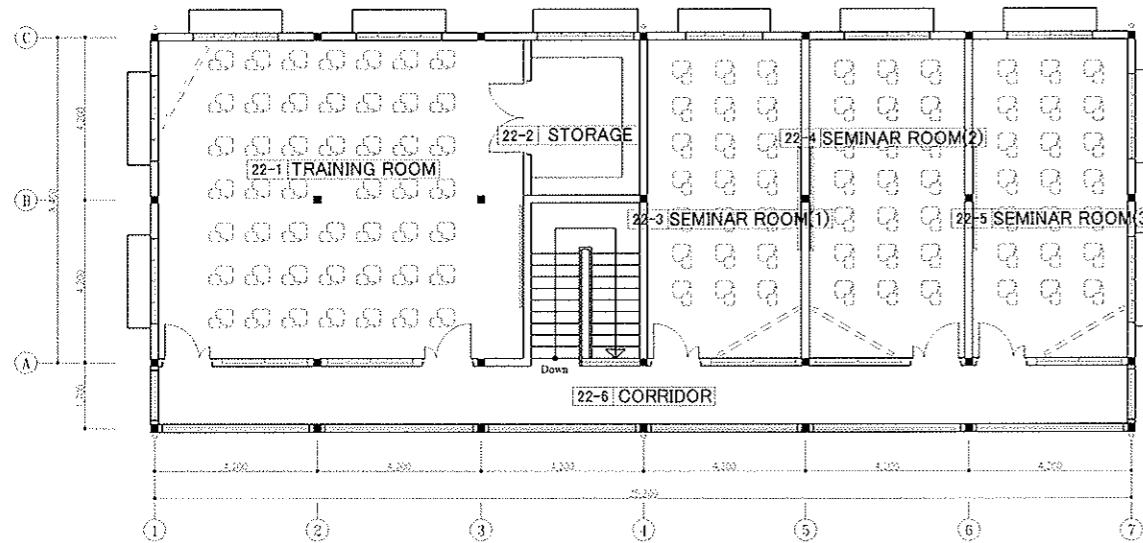
GROUND FLOOR PLAN



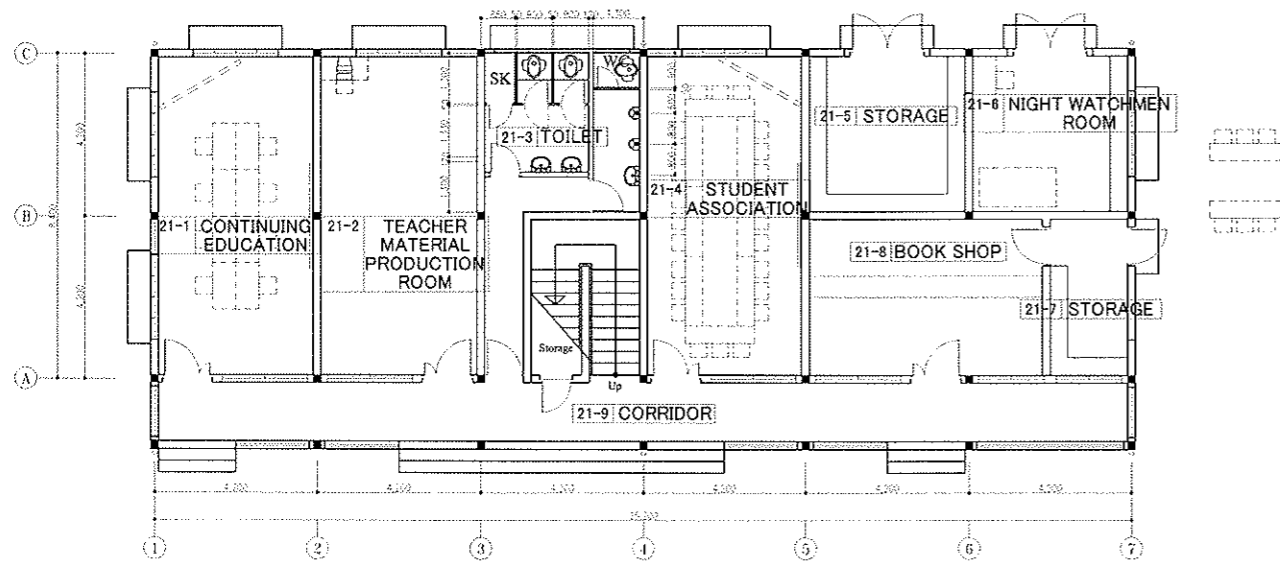
SIDE ELEVATION



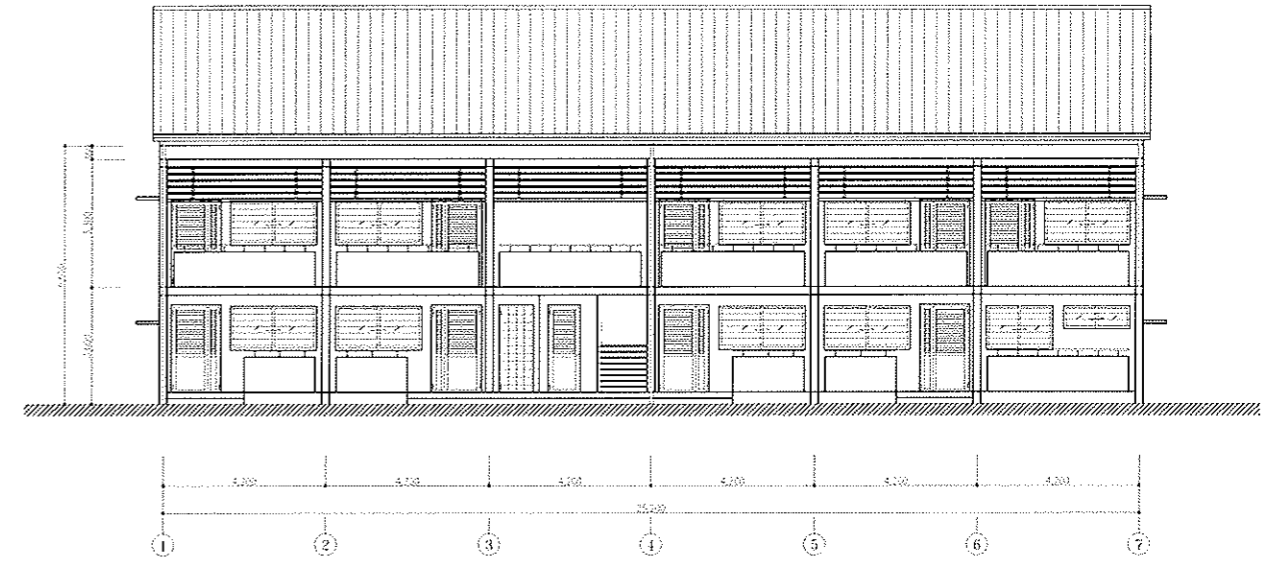
ROOF PLAN



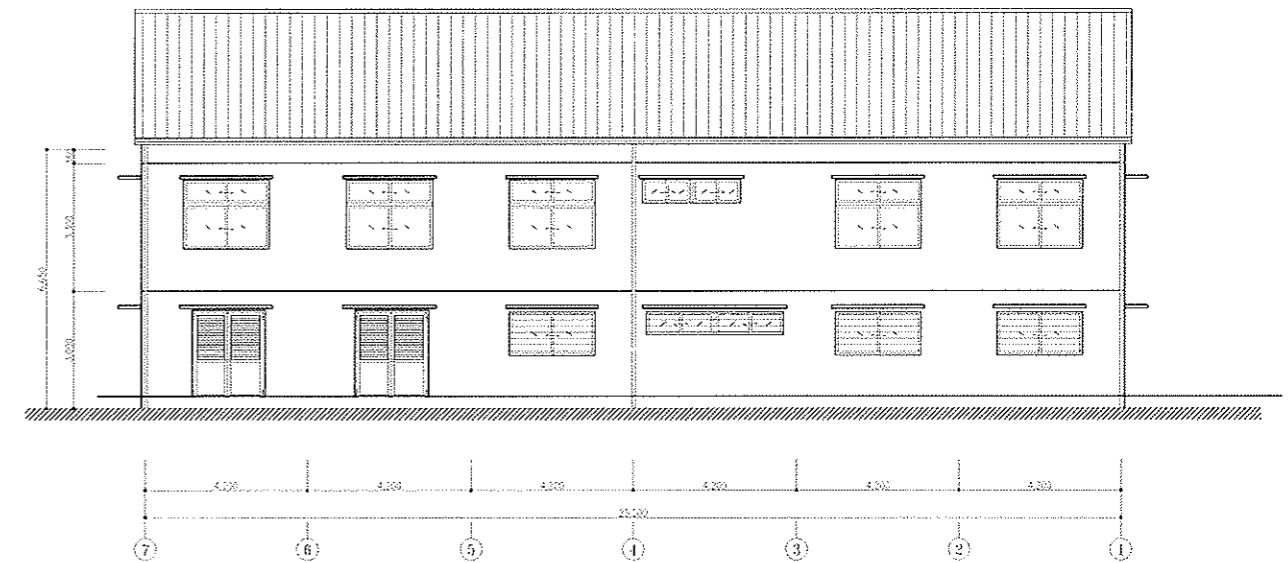
FIRST FLOOR PLAN



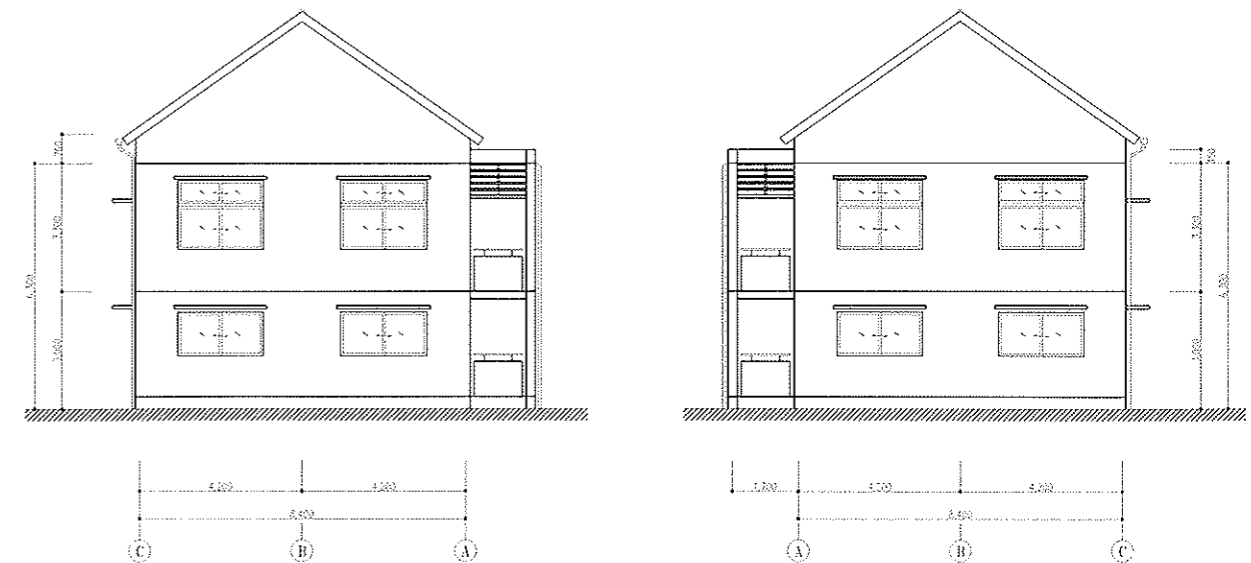
GROUND FLOOR PLAN



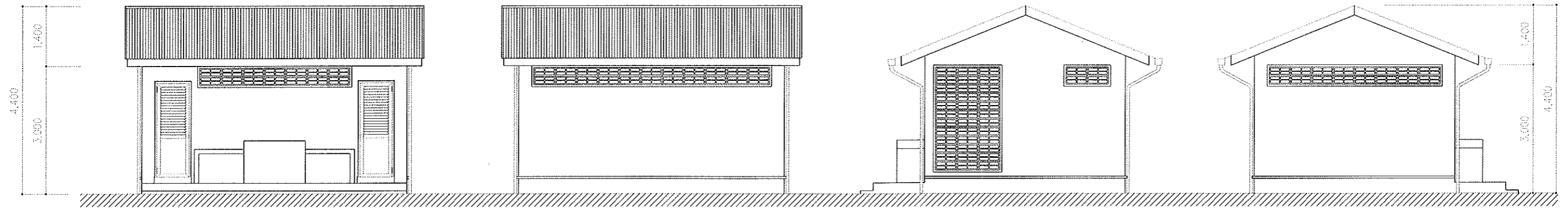
FRONT ELEVATION



BACK ELEVATION



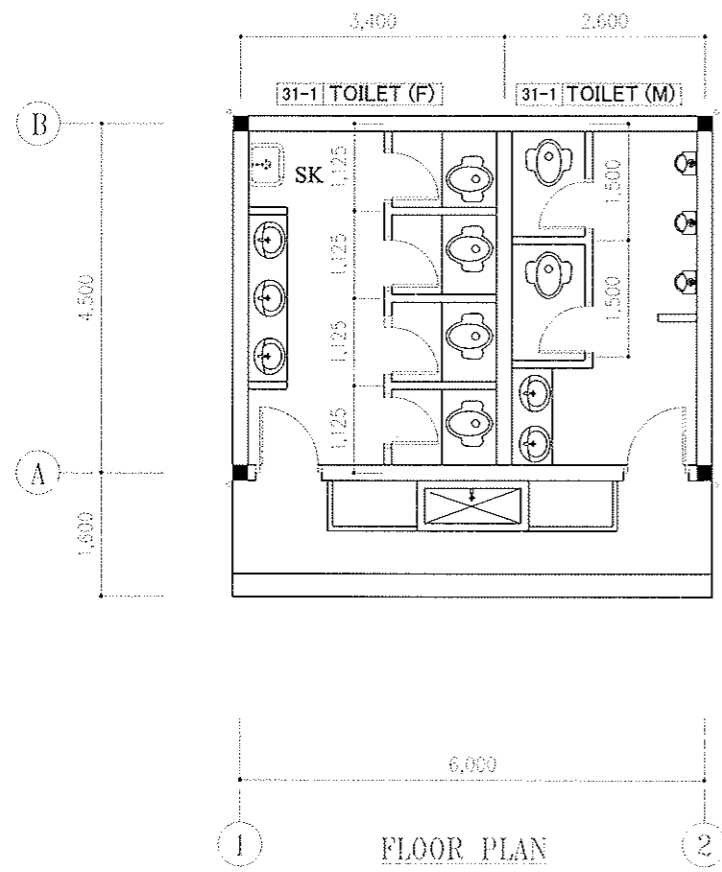
SIDE ELEVATION



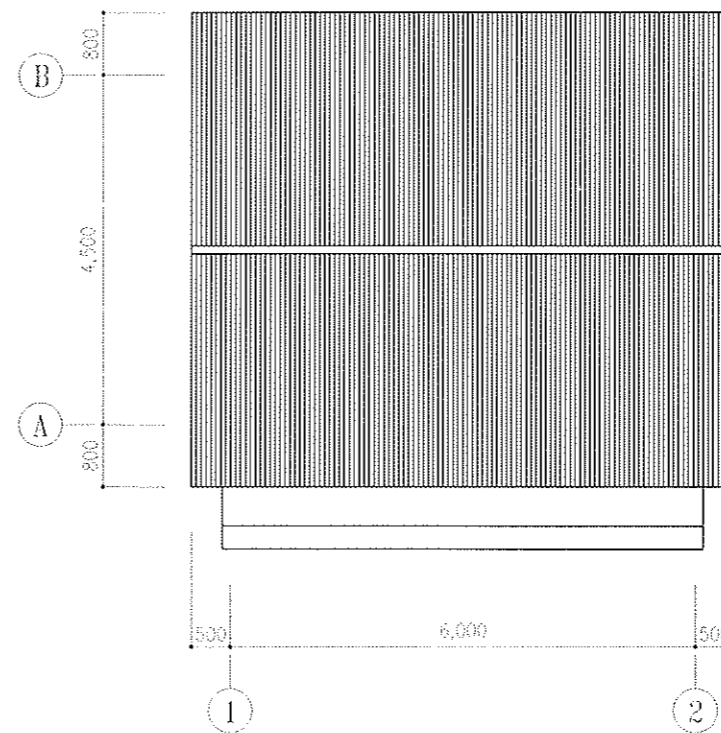
FRONT ELEVATION

BACK ELEVATION

SIDE ELEVATION



FLOOR PLAN



ROOF PLAN

## **2-2-4 Implementation Plan**

### **2-2-4-1 Implementation Policy**

#### **(1) Basic Items**

- 1) The Exchange of Notes (E/N) for the Grant Aid Project shall be concluded between the Government of Japan and the Government of the Kingdom of Cambodia after the cabinet meeting and its approval in Japan.
- 2) With the E/N, Japan shall commit itself officially to assist and initiate specific action.
- 3) After the above-mentioned conclusion, a consultant contract shall be signed between a consultant of Japanese nationality and the Government of Cambodia. Detailed design and supervision services shall start immediately thereafter.

#### **(2) Detailed Design Stage**

- 1) For the Detailed Design, full details of facilities and equipment in the Basic Design should be carefully confirmed and discussed with the implementing agency.
- 2) The consultant shall discuss the technical issues through meetings with the relevant authorities in Japan and Cambodia during the detailed design stage. As the Technical Cooperation Project is in progress in TSMC, the detailed design shall be performed in coordination with the Technical Cooperation Project, and at the same time, the detailed design shall also be agreed upon between Cambodian side and Japanese side.
- 3) The detailed design shall be completed efficiently within 2.5 months after the signing of the E/N.

#### **(3) Tender**

- 1) The tender for the construction of the facility and procurement and installation of equipment shall be conducted in accordance with JICA guidelines.
- 2) Equipment planned in the Project, which include teaching equipment and furniture, occupies rather small portion compared to the whole project. Therefore, the tender shall be conducted as one package with Japanese contractors or with consortiums of Japanese contractors and Japanese trading companies.

- 3) The Consultant will assist the implementing agency for the tendering in accordance with the guidelines of JICA.

**(4) Construction**

- 1) According to the results of the Basic Design Study, local building materials acceptable in quality and supply in Cambodia should be used for the Project as much as possible. However, ensuring and improving quality are the most important items to be noted.
- 2) In regard to the planning of labour supply, the capability of local contractors and level of skilled and semi-skilled labourers may not be satisfactory. Therefore, it is important to have a Japanese prime contractor who should supervise and manage the local contractor to assure the quality required for the Project.

**(5) Implementing Organization**

The responsible agency for the Project is the Director General of the Ministry of Health (MOH), and the implementing agency is TSMC.

The following diagram shows the relationship between the Government of Cambodia, the Japanese consultant and contractor.

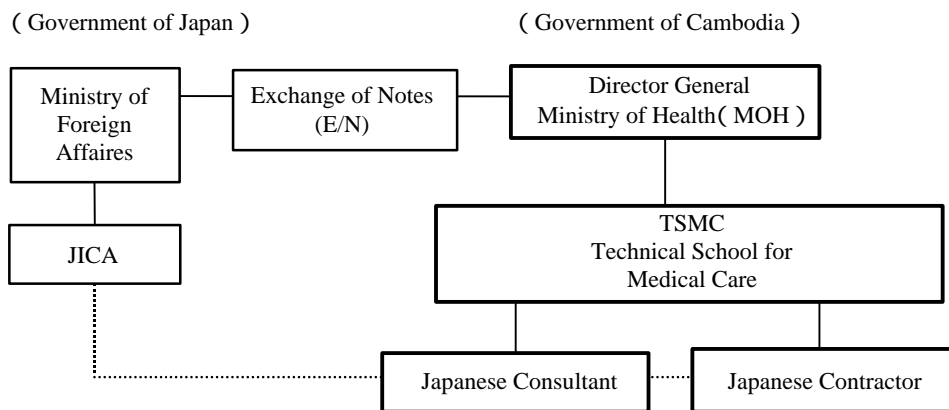


Fig. 2-8 Implementing Organization

## **2-2-4-2 Conditions in Construction and Procurement**

- (1) The construction needs to be well managed and supervised by a Japanese contractor to maintain the quality and to keep the tight schedule, especially for works by methods not common in Cambodia.
- (2) A Japanese contractor will become the prime contractor in accordance with the Grant Aid scheme and they will undertake the construction by letting the works to the local contractors. Local workers will normally be employed and supervised by the local contractor. Local Contractors are classified into 3 categories, from 1st grade to 3rd grade. Especially Local Contractors in 1st and 2nd grades have the level of the overseas contractor; understand the essential of temporary works, and facility. It is necessary to employ efficient supervisors, and provide suitable labor control and site supervision in order to achieve effective construction and to minimize losses. On the above condition, schedule control should be carefully monitored in order to have effective coordination arrangement of workers not to cause delays.
- (3) May to October is the rainy season in Cambodia. For construction planning, the earthworks, substructure and superstructure works should consider the season and be scheduled and completed before or after the rainy season.
- (4) The Cambodian laws, codes and standards and Japanese standards should be followed. American Society for Testing and Materials (ASTM), British Standards (BS), etc., are also to be applied considering the local condition.
- (5) Close and detailed coordination of schedules is required particularly between the facilities construction work and the period of installation of the equipment.
- (6) The project site is located in the campus of TSMC, which is surrounded by private houses. Thus, consideration of the surrounding environment during construction is required as shown below.
  - 1) The construction method with minimum noise pollution, air pollution and other influence to the TSMC and adjacent facilities should be adopted.
  - 2) Safety measures against construction vehicles which carry building materials are required. Also, damage to the existing road should be prevented.
  - 3) A temporary yard and temporary buildings for the construction work will be planned in the site. Therefore, safety measures must be taken not to expose the TSMC staff and students to any danger during the construction.



### 2-2-4-3 Scope of Works

The responsibilities between the Japanese side and the Cambodian side for the implementation of Japan's Grant Aid Project are shown in the table below.

Table 2-18 Extent of Works

Portions by the Japanese Side	Portions by the Cambodian Side
<ul style="list-style-type: none"> <li>(1) Building Works Structure works, finishing works</li> <li>(2) Electrical Works Power/trunk facilities, lighting, power outlets, P/A systems</li> <li>(3) Utilities and Facilities               <ul style="list-style-type: none"> <li>a) Water Supply Construction works for the Water supply from the valve at the water supply meter to the building and all the related internal works for the water supply.</li> <li>b) Sewerage system including piping works up to the connection manhole</li> <li>c) Sanitation facilities (waste water treatment facility)</li> <li>d) Elevated tank and reserve tank</li> <li>e) Fire-extinguishing facilities</li> <li>f) Electrical supply and transformer system Cabling works from the high voltage receiving panel in the Substation to the facilities.</li> <li>g) Telecommunication system Cabling works from MDF to the facilities, including installation of conduit from the cross connection point at the site boundary to MDF</li> <li>h) Lightning Protection System</li> <li>i) Lighting system in the site</li> </ul> </li> <li>(4) External Work Road, path and parking lots within the site</li> <li>(5) Equipment Equipment for Education Training and Operation &amp; Maintenance</li> <li>(6) Electrical/Generator Room, Pump Room</li> </ul>	<ul style="list-style-type: none"> <li>(1) <u>Site Preparation</u> <ul style="list-style-type: none"> <li>a) Pre Construction Works</li> <li>b) Ground preparation works: - Demolition of existing facilities - Site grading and leveling</li> <li>c) Preparation of temporary facilities for construction/renovation period</li> <li>d) Temporary power and water supply for the construction</li> <li>e) Temporary access road for the construction</li> </ul> </li> <li>(2) <u>External Works and Approach Roads</u> - Landscaping, planting, fence, etc within the Site. - Permanent road works around the site</li> <li>(3) <u>Utilities and Facilities</u> <ul style="list-style-type: none"> <li>a) Water Supply Construction from the main feeder to the water valve in the site including the water supply meter.</li> <li>b) Sewerage Piping works from the connection manhole in the site to the existing sewerage line including the repair work of the existing ditch.</li> <li>c) Storm Drainage Drainage line from the site to the existing line including the expansion work of the existing drainage line.</li> <li>d) Electrical Work Cabling works from the existing power supply point</li> <li>e) Telecommunication Work Cabling work (for Direct / Extension / Public telephone) from existing MDF/ PABX to Point Distribution for new MDF/ PABX.</li> <li>f) The provision of gas (LPG).</li> </ul> </li> <li>(4) <u>Others</u> <ul style="list-style-type: none"> <li>a) Governmental works including the application and obtaining Governmental approvals and permissions</li> <li>b) Smooth custom clearance, tax exemptions and prompt internal transportation for the imported construction materials and equipment</li> <li>c) Commissions to the Japanese foreign exchange bank for its banking services based upon the Banking Arrangement (B/A) namely the advising commission of the "Authorization to Pay" and payment commission</li> </ul> </li> <li>(5) Management, operation and maintenance cost for the new building and facilities</li> <li>(6) Tax exemptions and necessary preferential treatment for the construction staff from Japan or a third country</li> <li>(7) Smooth entry, re-entry and departure of Cambodia for the Japanese technical staff</li> <li>(8) All the expenses, other than to be born by the Japan's Grant Aid within the scope of the Project</li> </ul>

#### 2-2-4-4 Consultant Supervision

##### (1) Basic Policy

In order to secure the quality supervision, an architect will be dispatched for the supervisory work that is assigned at the sites during the construction period to coordinate the architectural, mechanical, and electrical and equipment works. Also, technical engineers are dispatched to supervise the important stages of structural, electrical, mechanical, and equipment works. A project manager is dispatched to supervise and inspect during important stages such as beginning of construction, the structure works, the completion and final inspection.

Table 2-19 Plan of Personnel Necessary for Supervision

Supervisor	Period (Month)
Supervisor (Specialized in Architecture)	13.00
Project Manager	Approx. 1.00
Building construction (Architectural Engineers)	Approx. 0.93
Building construction (Structural Engineers)	Approx. 0.33
Building construction (Electrical and Mechanical Engineers)	Approx. 1.33
Equipment (Equipment Engineers)	Approx. 1.83

The supervisory works includes control of construction schedule considering construction method, the number of laborers and procurement of construction materials and equipment. At the same time, quality of materials and construction work, control of construction cost and security for workers is considered. If the construction work being carried out by the Cambodian side is found to be delayed, the consultant may urge acceleration of the construction work as needed to catch up to the work schedule..

Furthermore, a suitable construction schedule will be planned in consideration of the condition of construction and procurement as mentioned in **Section 2-2-4-2**.

##### (2) Contents of Consultant Assignment in Cambodia and Japan

The scope of the works for the supervisor assigned to the Project site is to check and approve the construction plans and drawings, management of the construction schedule regarding building construction and procurement and installation of equipment. Furthermore, the scope of the supervisor shall include coordination works and reporting of construction works to Cambodian Government and JICA Cambodia Office.

The scope of the works for the supervisor in Japan is quality control for building construction and

design through reports by the supervisor at the Project site, reporting of progress of the construction work to JICA, and inspection of equipment procured in Japan from factories before shipping.

**(3) Issuance of Certificates**

The certificates on export of construction materials and equipment, payment for construction, practical completion and completion, etc. shall be issued by the Consultant.

**(4) Submission of Reports, etc.**

Works related to reporting include checking and approving monthly progress reports, completed documents and photos of works from the contractor and submitting to the Government of Cambodia and JICA. And, the completion report shall be prepared and submitted to JICA, in accordance with the guidelines for Japan's Grant Aid Assistance.

**2-2-4-5 Procurement Plan**

**(1) Procurement Plan for Building Construction**

Local materials shall be used as much as possible and the basic policy shall be to reduce cost and to select materials that will have the best quality with low maintenance costs.

The division of procurement of construction materials is as shown in the following Table 2-20. As shown, most of the materials can be obtained in Cambodia. However, most of structural steel materials and finishing materials come from neighboring countries such as Thailand. So it should be confirmed that there are no problems with respect to material quality and production quantity from its locality of procurement.

Table 2-20 Procurement of Construction Materials and Equipment

Name of material	Locally Produced	From Japan	From Third Country	Remarks
<b>Construction materials</b>				
Sand/Gravel				
Cement				
Bricks				
Form/Timber				
Re-bar				Assumed to be procured from Thailand
Structural Steel				Assumed to be procured from Thailand
Concrete Blocks				
Roof materials				Assumed to be procured from Thailand
Wood Fittings, Metal Fittings				Assumed to be procured from Thailand
Tiles				
Waterproofing Materials				Assumed to be procured from Thailand
Paint				
<b>Electrical Materials</b>				
Electric Cables / Conduits				Assumed to be procured from Thailand
Distribution Panel Boards				Assumed to be procured from Thailand
Generator				Assumed to be procured from Thailand
Lighting Appliances				Assumed to be procured from Thailand
Wiring Equipment				Assumed to be procured from Thailand
Communication Appliance				Assumed to be procured from Thailand
Public Address Equipment				Assumed to be procured from Thailand
<b>Utility Materials</b>				
Pumps				Assumed to be procured from Thailand
Elevated Reservoir Tank				Assumed to be procured from Thailand
Pipes / Valves				Assumed to be procured from Thailand
Sanitary Fixtures				Assumed to be procured from Thailand
Air conditioner and Fan				Assumed to be procured from Thailand
<b>Equipment</b>				
Teaching devices for basic medicine				
Teaching devices for nursing practice				
Audio-visual equipment				
Furniture (Desk, Chair, etc.)				Assumed to be procured from Thailand

Table 2-21 Procurement of Construction Equipment

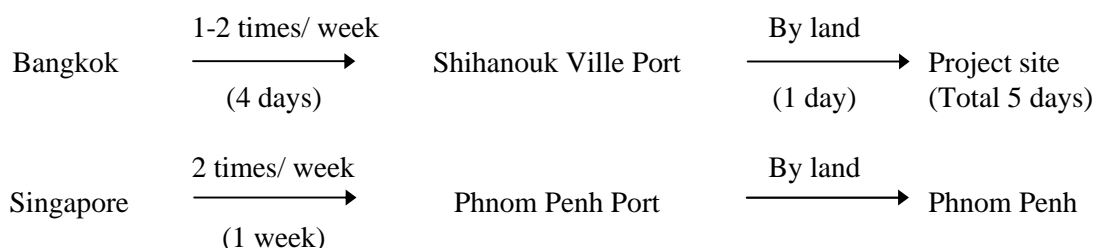
Name of equipment	Locally Produced	From Japan	From Third Country	Remarks
Back hoe				
Bulldozer				
Dump truck				
Vibrating roller				
Tamper				
Water pump				
Re-bar bender				
Concrete pumping car				
Welding machine				
Track crane (30t)				
Generator (35KVA)				
Temporary scaffolding				

**(2) Transportation Plan**

As for the procurement from Japan or third countries, approximately one month for custom clearance (from document submission to finalizing) is anticipated and such time should be considered part of the overall schedule. The transportation means and time are as follows:

1) Transportation by sea

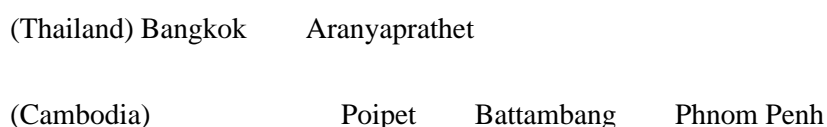
There are two routes for transportation by sea, one from Shihanouk Ville Port, and the other from Phnom Penh Port. Through Phnom Penh Port is closer to the site, only Shihanouk Ville Port has the facility for landing of containers, and therefore, this port will mainly be used. The procedure for customs clearance at port takes almost one week. The schedule and expected transportation routes are described as follows:



The transportation from Japan by sea will take about 10 or 15 days. The domestic land route from above mentioned ports to the project site is in good condition for transportation.

2) Transportation by land

As a result of the Basic Design Study, the transportation route of construction materials and equipment will come from neighboring country such as Thailand to Phnom Penh by land lately. This project will also plan transportation by land. The transportation route from Thailand is as follows, and days required for transportation are about 4-10 days. However, during the rainy season in Cambodia, it will take about one month more to transport by land due to bad road conditions.



In this case, transshipment of freight is required at the border. Freight over 2t/pack are charged additionally due to the use of a special crane.

After taking into consideration safety, route conditions, and clearance, construction materials and equipment when procured.

#### **2-2-4-6 Quality Control Plan**

##### **(1) Basic Policy**

The Detailed Design drawings shall be developed based on the studies analyzed from actual circumstances in Cambodia, maintenance cost, use of local materials and local construction methods. The specification should comply with the Cambodian construction standards, Japanese Regulations such as Japanese Architectural Standard Specification (JASS), British Standards (BS) and American Society for Testing and Materials (ASTM) to ensure the quality of buildings, utilities and equipment. The construction plan, implementation schedule and shop-drawings, which are to be submitted by the contractor during the construction period, shall be examined and approved by the consultant.

##### **(2) Supervision**

The Consultant shall examine the overall implementation plan and construction methodologies for selected major works to be submitted by the Contractor prior to the commencement of each stage of the works, and approve them if the construction materials and the execution methods conform to the Specification. The Consultant should inspect the works as necessary based on the said implementation plan and construction methodologies.

Intermittent inspections of the materials or the execution of work are essential. The manufacturers' warranty on the products shall be sufficient to keep the quality required in the Specifications, which comply with Codes and Regulations related to developed nations mentioned above.

##### **1) Earthwork and Piling Work**

According to the soil investigation report, which was made during the Basic Design Study, the ground condition of the project site is in good condition for construction. However, with a consideration of rainy season, temporary storm water drainage plan, curing plan and construction schedule shall be planned carefully.

##### **2) Reinforcing Bar Work**

The Consultant should confirm the mill-sheet prepared by the manufacturer and submitted by the Contractor. Also, bar strength should be inspected to match yield strength specified in the Specification

### 3) Concrete Work

There are 3 ready mixed concrete plants in Phnom Penh city. They are at a distance of within one hour by delivery truck from the project site and the daily production capacity, the materials storage condition and the quality control in production are acceptable. Therefore, ready mixed concrete shall be adopted for the strength categories required by this report under structural design. The methods of concrete quality control (inspection items and methods) shall be as follows;

#### A. Materials for concrete

Material	Item to be inspected	Method of inspection
Cement	Hydration heat	Dissolution heat
Sand/ Gravel/ Crushed Stone	Grading	Sieve analysis test
	Absolute dry specific gravity	Specific gravity and water absorption test
	Alkali aggregate reaction	Alkali-reactive test
Water	Organic impurities etc.	Water quality test

#### B. Trial mix for ready-mixed concrete

Item to be inspected	Method of inspection
Assumption of compressive strength	Compression test machine
Slump	Slump cone
Concrete humidity	Hygrometer
Air content	Manometer
Chloride volume	Measuring instrument for salt

#### C. Inspection before casting concrete

Item to be inspected	Method of inspection
Time taken for mixing and casting concrete	Review log book / stop watch
Slump	Slump cone
Concrete temperature	Thermometer
Air contents	Manometer / Air pressure gauge
Chloride volume	Chloride test paper

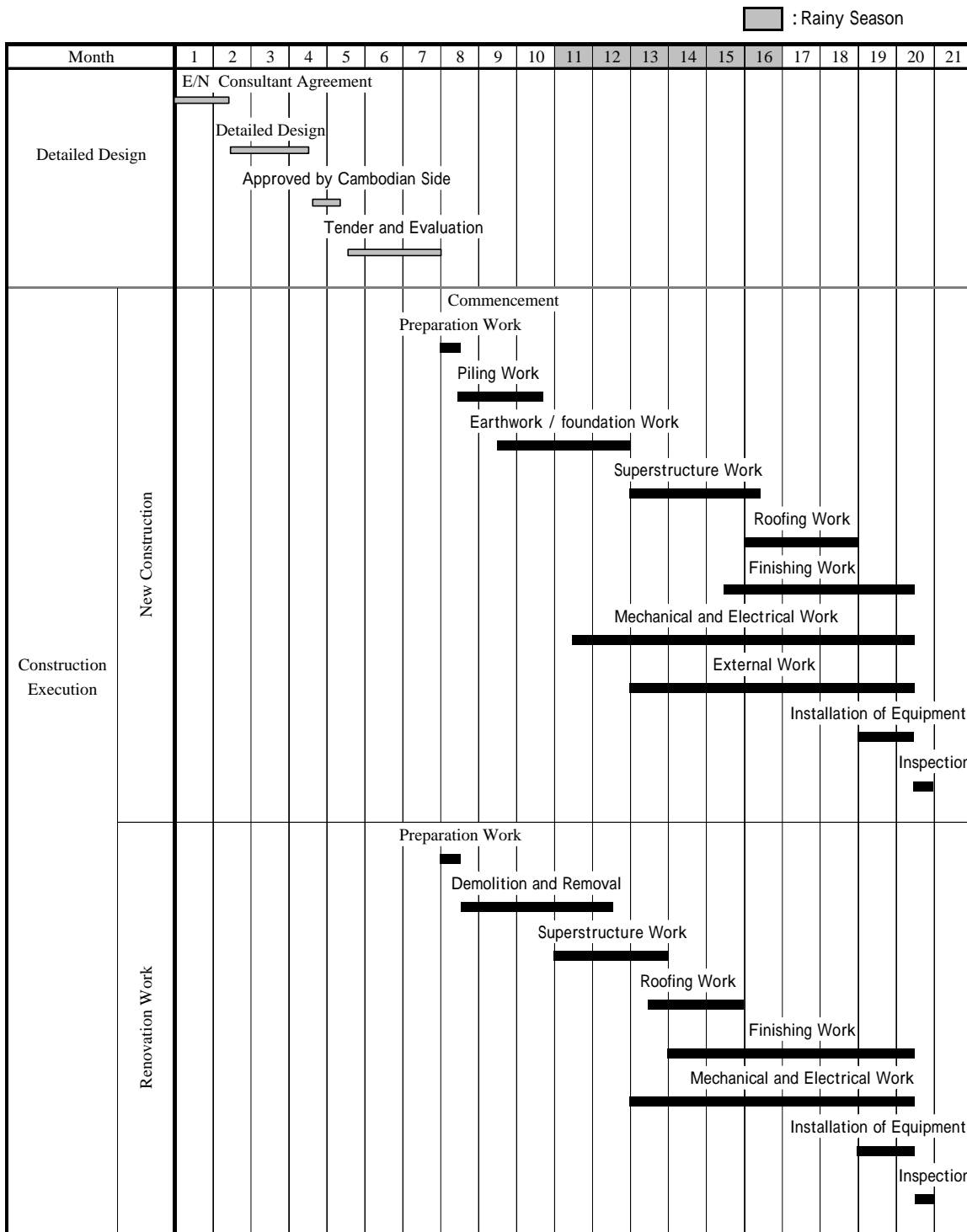
#### D. Inspection of completed concrete work

Item to be inspected	Method of inspection
Compressive strength for structural concrete	Schmidt hammer
Accuracy / precision (plumb)	Plum bob, measuring tape
Accuracy / precision (floor slab levelness)	Auto level, measuring tape
Finish	Visual inspection

### 2-2-4-7 Implementation Schedule

The tentative implementation schedule for the Project is shown in Table 2-22.

Table 2-22 General Project Schedule (Plan)



The influence of the rainy season to the earthwork, foundation work and superstructure work have been taken into consideration in planning the schedule.



## **2-3 Obligation of Recipient Country**

It has been agreed by the Cambodia side that the Cambodia side will secure the necessary budget for and to carry out the following scope of works, when the Project is implemented.

### **2-3-1 Procedural Items of the Cambodian Side**

#### **(1) Tax Exemption**

- 1) Under the Grant Aid Scheme, the equipment and materials purchased for the Project shall be tax-free.
- 2) Based on the contract that was certified, the equipment and service provided, and the Japanese who are involved in this project shall be exempt from custom tariff, domestic tax and other financial taxes.

#### **(2) Assistance with Entry Permit and Visa**

- 1) Based on the certified contract, legal assistance shall be provided in regard to entry permit and visa to Cambodia shall be given to the Japanese staff that will be involved in this project.

### **2-3-2 Portions by the Cambodian Side**

Responsibilities by the Cambodian side for the Project are as follow:

#### **(1) Before Implementation**

- 1) Clearing the site, such as demolishing existing facilities, felling trees, and leveling the site before the construction commencement.
- 2) Relocating the existing inner path and gate, and replacement of approach road as the access road for the construction, if necessary.
- 3) Providing temporary power and water supply for the construction.
- 4) Removing and relocating the existing water pipes and electrical wires within the site.

#### **(2) During Implementation**

- 1) Installation of security fences around the Site
- 2) Landscaping and planting, etc. in the Site

- 3) To purchase and install office furniture and curtains etc. for the new building.
- 4) To construct cabling or piping work for main feeder wiring, water supply and telephone line, etc. to the Site.
- 5) To issue permissions and licenses, etc. necessary for the implementation of the Project, without delay, in due course.

**(3) After Implementation**

- 1) To secure the necessary budget for the maintenance and management of the facility.

**2-3-3 Site Preparation Work and Utility Work**

Among the above-mentioned Cambodian side scope of works, the site preparation works and the utility works are as shown in Table 2-23 herein below. Especially, as for the site preparation work, it was agreed with MOH and TSMC that it is absolutely necessary to complete the site preparation work prior to the commencement of the Project, possibly by the end of November 2004.

Table 2-23 Summary of Preparation Works to be Carried out by Cambodian Side

Site	Item	Contents of Works
TSMC	Site Preparation Work	a) Demolition and removal works for existing steel structure storage building, etc., including felling trees and leveling. b) Arrangement of temporary facilities during construction and/or renovation works.
	Utility Work	a) Installation of new electric cable for the new building. b) Installation of new telephone cable for the new building.

The expenses to be borne by the Cambodian side shall be secured as the supplementary budgets for MOH or TSMC for the year 2004. For that purpose, the application for securing the said supplementary budgets should be submitted to MOEF before August 2004. In order to implement the construction work as tentatively scheduled, the Cambodian side must complete their scope of works as scheduled and coordinate their works with the Japanese side. The Team has also explained the importance thereof. It is necessary for the Japanese side to monitor the progress of this matter.

**2-3-4 Estimated Project Cost**

This cost estimate is provisional and would be further examined by the Government of Japan for the approval of the Grant. Under the conditions described below, Japan and the Kingdom of Cambodia will share the cost as follow:

## (1) Conditions of Estimate

- Date of estimate April 2004
- Exchange rate US\$1 = ¥110.21 = BHT38.94
- Construction period Thirteen (13) months
- Contractor Lump-sum Contract to a Japanese Contractor
- Other The Project shall be implemented in accordance with the guideline for Japan's Grant Aid Assistance.

## (2) Japanese side Share

Estimated Cost Approx. JPY782 million

Technical School for Medical Care in Cambodia  
(New Construction and Renovation) (Total Floor Area: Approx. 6,472m<sup>2</sup>)

Classification		Estimated Cost (million Japanese Yen)	
Building Work	New Construction, Renovation	623	669
Equipment Work		46	
Detailed design, Supervision, Technical Guidance		113	

## (3) Cambodian Side Share

Classification	Estimated Cost (US\$)
1. Site Preparation Work	
1.1 Demolition and Removal of Existing Facilities	33,000.00
1.2 Site Clearance (incl. felling trees)	2,000.00
1.3 Rent for Temporary Facilities (incl. utilities for 14 months)	42,000.00
2. Utility Work	
2.1 Main power distribution line up to Power Receiving Panel	19,861.00
2.2 Incoming telephone lines up to Main Distribution Frame	1,140.00
Total	99,401.00

## 2-4 Project Operation Plan

### 2-4-1 Responsibility Outline

The overall project comes under the responsibility of MOH (Refer to Fig. 2-9: Organization Structure of MOH). Within MOH, the project comes under guidance of the Directorate General for Health. The actual organization that will oversee the project is TSMC (Refer to Fig. 2-10: Organization Structure of TSMC). The Project's main purpose is to help rebuild the medical

system. TSMC is educating the co-medicals, which comes under the guidance of UHS. To enable the Project to be carried out smoothly and successfully, the Directorate General works between MOH and UHS.

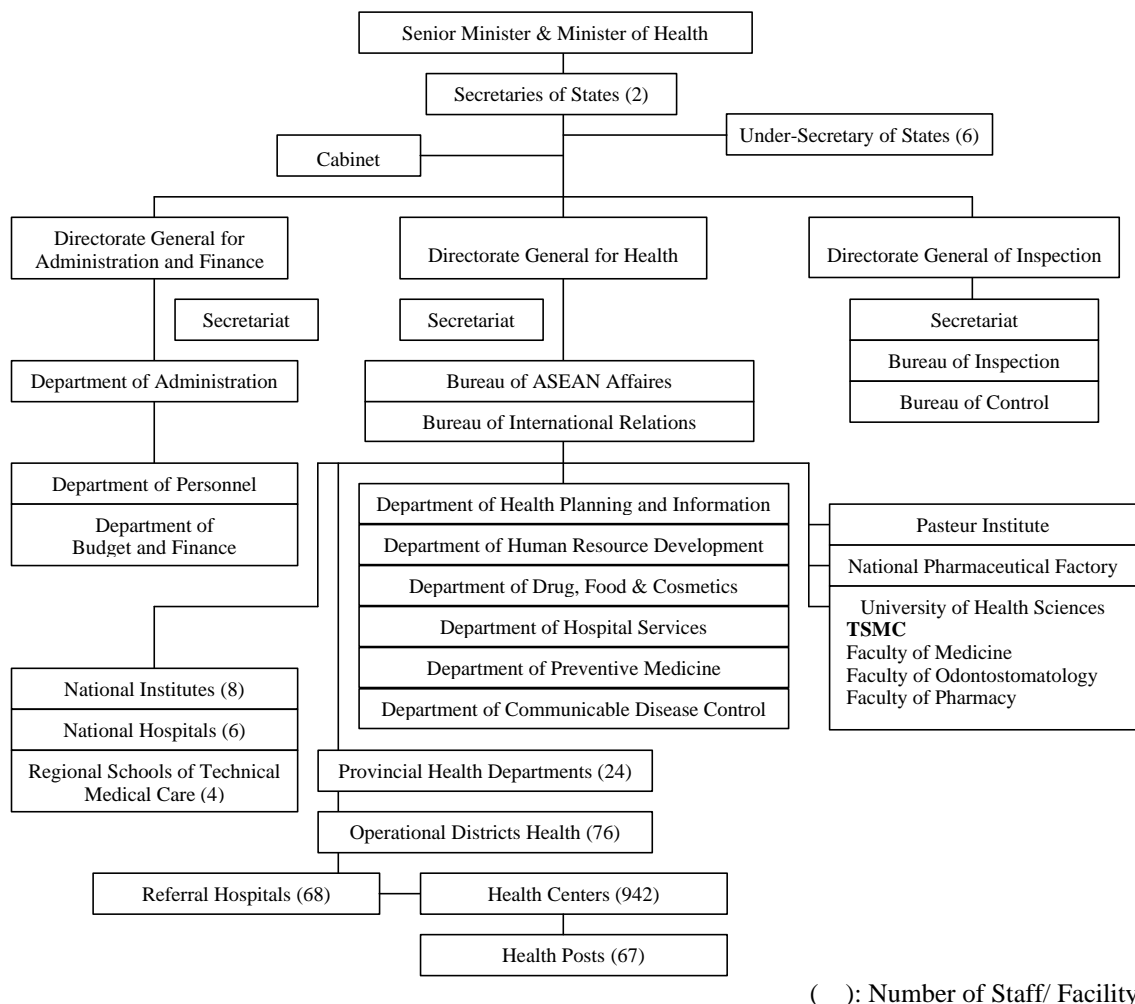


Fig. 2-9 Organization Structure of MOH

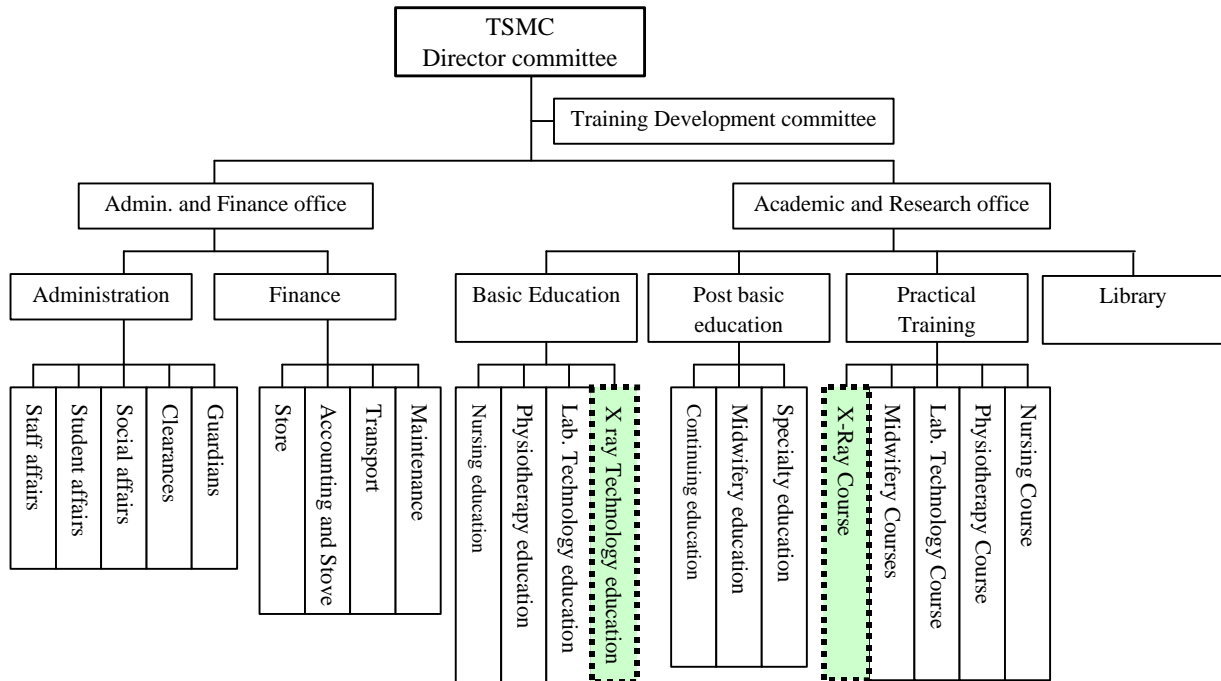



Fig. 2-10 Organization Structure of TSMC

 : X-ray technology course will be start from 2006

## 2-4-2 Position of TSMC

Please refer to Table 2-24 to see how the Co-medicals Education System is set up. The X-ray technology course is not set up yet. It is presently in the preparation stage at MOH, in cooperation with JICA. The term of X-ray technology course is projected to be 3 years, and it will be held at TSMC; this is why X-ray Technology Course is included in this report.

The education for the Medical and Health personnel will be taught at TSMC and 4 Regional Training Center. TSMC is the only institution that teaches Physiotherapists, Laboratory Technicians and has courses for advanced learning in the Medical and Health Fields. After graduating, TSMC has a history of supporting Primary License holders to obtain Secondary License, and also go on to become Mental Health Nurses, Middle Nurse Leaders, and Anesthetic Nurses after taking the courses. The Secondary License course was first started in 1997 under the guidance of MOH to create a system of rank among the different courses. But this course closed and the last class to enter was 2002 (Refer to Table 2-25). Only the nursing school in Stung Treng still has the Primary course leading to the Secondary Course License. Other courses are receiving financial support from various donors. When the financial support runs out, the courses will be cancelled or closed. The Human Resource Section of MOH recognizes the necessity of specialized nursing courses, but will be carried out later when funds become available. TSMC will have the responsibility of teaching such specialties when the funds are made available.

Table 2-24 Co-Medical Worker Education System in Cambodia

Age	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Post-Basic Education	PROFESSIONAL CATEGORIES										
Grade	1	2	3	4	5	6	7	8	9	10	11	12	Basic Education														
Education	Primary School						Lower Secondary School.						Upper Secondary School						NURSING 3 years						REGISTERED NURSE		
																									MIDWIFERY 1 YEAR	MIDWIFE	
																									PUBLIC HEALTH NURSING	PUBLIC HEALTH NURSE	
																									PUBLIC HEALTH MIDWIFERY	PUBLIC HEALTH NURSE MIDWIFE	
																									EXPERIENCE (2 - 3 YEARS)	ANESTHETIC NURSING	ANESTHETIC NURSE
																									EXPERIENCE (2 - 3 YEARS)	PSYCHIATRIC NURSING	PSYCHIATRIC NURSE
																									EXPERIENCE (4 - 5 YEARS)	CHIEF NURSING	CHIEF NURSE
																									PHYSIOTHERAPY 3 years	PHYSIOTHERAPIST	
																									LABORATORY 2 years	LAB. TECHNICIAN	
																									* X-ray 3 years	X-RAY TECHNICIAN	

\*  New Course from 2006

Table 2-25 Change of Number of New Student

Year	Basic education				Post-basic education				Post-graduate education		
	Regist-Nurse	Second-Midwife	Lab Tech	Physio-therapist	Second-Nurse	Midwife	Second-Lab Tech	Second-Physio therapist	Anesthe-nurse	Psychiatric Nurse	Chief Nurse
1997	108	12	8	10	30	9	20	1	12	-	-
1998	9	4	3	0	19	16	12	0	0	-	-
1999	14	13	9	0	30	9	17	1	16	-	-
2000	45	24	10	0	35	7	10	0	0	10	-
2001	56	-	17	8	41	16	3	-	12	10	-
2002	63	-	16	15	54	19	4	-	0	0	24
2003	91	-	24	24	-	18	0	-	0	9	0
Total	386	56	87	57	209	94	66	2	40	29	24

### 2-4-3 Education Plan of Co-Medicals

Medical health student's basis of education consists of 3 areas to choose from, Medical Science, Dentistry, and Pharmacy at UHS. TSMC teaches Physiotherapy, Laboratory Technology and Nursing as basic education and midwifery as post-basic education. Four (4) RTC only teach Nursing. There is also an advanced midwifery course at four (4) RTC. TSMC has advanced courses in Anesthetic Nurses, Psychiatric Nurses, and Operation Nurses (Refer to Table 2-26).

Table 2-26 Education Plan for Co-Medicals

Education Program	2004			2005			2006			2007		
	Scholarship	Paying	Total	Scholarship	Paying	Total	Scholarship	Paying	Total	Scholarship	Paying	Total
Basic Course												
Nursing Course	59	60	119	60	60	120	60	60	120	60	60	120
Physiotherapy Course	22	25	45	20	20	40	20	20	40	20	20	40
Lab Technology Course	16	20	36	20	20	40	20	20	40	20	20	40
X-ray Technology Course	-	-	-	-	-	-	10	10	20	10	10	20
Post-basic Course												
Midwifery Course	18	-	18	20	-	20	20	-	20	20	-	20
(* Enroll twice a year)	15	-	15	20	-	20	20	-	20	20	-	20
Chief Nurse Training Course	24	-	24	-	-	-	-	-	-	-	-	-
Psychiatric Nursing Course	11	-	11	-	-	-	-	-	-	-	-	-
Anesthetic Nursing Course	-	-	-	-	-	-	-	-	-	-	-	-
Operation Nursing Course	-	-	-	-	-	-	-	-	-	-	-	-

Note: Questionnaire to TSMC / Feb. 2004

**(1) Nurse’s Education System**

Nurses’ education is taught at TSMC and 4 Regional Training Centers. This makes a total of 5 schools. TSMC is responsible for their jurisdiction. (Refer to Fig. 2-9: School Jurisdiction).

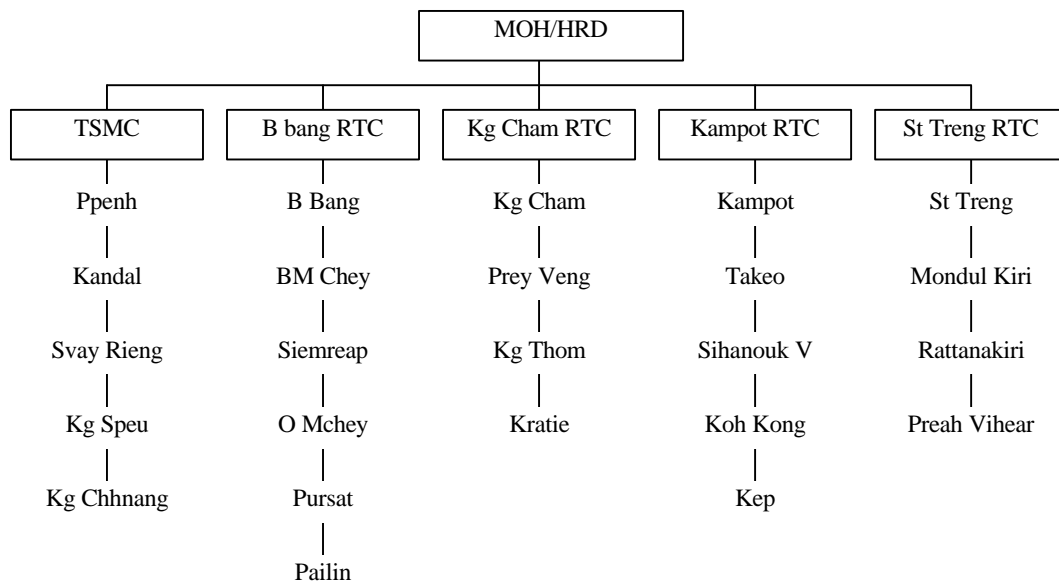


Fig. 2-11 School Jurisdiction

In 2003, the 4 RTC had a total of 645 students where at TSMC had 120 per grade. TSMC has 60 scholarship students and 60 paying students. The paying students pay \$650 per year, which is a 3 year course. Students need to have a High School Diploma to enter TSMC. When the students graduate from TSMC, they receive a diploma of a Registered Nurse. TSMC also has a Post- Basic Midwife Course that runs for 6 months, so TSMC recruits students twice a year. It has space for 20 students at a time, but actually only 18 to 19 are taking the course each time.

TSMC is teaching advanced medical training at the request of MOH for the purpose of improving the Medical Health Care System. The advanced courses are, Anesthetic Course for 9 months, Operating Nurse Course for 1 year, Chief Nurse Course for 9 months, and Psychiatric Nurse Course for 18 months. All of these courses were started because of overseas donations, which has in turn pushed up the level of nursing throughout Cambodia. Hospital OJT (On-the-Job-Training) is the main part of the nurses' education and is conducted at each Regional Hospital and Health Center. The total hours of OJT are 1574 in Cambodia as compared to 1035 hours in Japan. Students take their graduation examinations and by passing, they will be given 3 months clinical OJT and then they receive their diploma. Right now, only the Psychiatric Nurse Course is opened as a Post – Basic Education. The reason for this is that each student receives \$150 per month in the form of a grant. It is difficult to get grants because financial aid is tight.

The Psychiatric Course Post – Basic Education will finish before or around 2005. The future planning for this course has not been decided yet. The conditions for Psychiatric Nurses from an Oslo University survey states that the number of PTSD people is 28.4% as compared to the International rate of 1-3%. Depression of life is 13% as compared to the International rate of 5-12%, and most cases are unsupported and medically untreated. The need for a Psychiatric Nurse Course is great.

Note: (Sihanouk Hospital: Out of Clinic Psychiatric / Oslo University Survey Report 2000)

## **(2) Laboratory Technician Education System**

TSMC is the only school to offer the Laboratory Technology Education, which runs for two years. The total number of students per grade is 40, where 20 of the students are on scholarship and the other 20 students pay their own way. For the students that pay for their tuition fee the cost per year is \$650. It is the same price as the nurse's course. OJT is given at the main hospital in Phnom Penh. The first year of study is through lectures and the second year's curriculum consists of mainly OJT. This course originally started in 1967 and was a 3-year course. It reopened in 1981 after the civil war had finished. The new curriculum was introduced and supported by the French and is now a 2 year course. The CPA requires more than one Laboratory Technician per Referral Hospital. After the UNTAC, 370 Laboratory Technicians have graduated, but the number is still far short of the requirements and needs of the rural hospitals.

## **(3) Physiotherapist Education System**

TSMC is the only school in Cambodia that teaches Physiotherapists, which is 3 year course. The total amount of study time is about 3200 hours. Theory (logic) and OJT are 1500 hours each. According to amount of material and supplies they have and the numbers of facilities, the physically



handicapped patients that have lost hands, legs, arms, etc. receive limited care and for those patients who are paralyzed receive joint mobility treatment. This Physiotherapist Course was started in 1989, but actually started teaching the course in 1991 after the curriculum was revised. After the UNTAC, only 110 students have graduated from the school. The number of employed Physiotherapist required in CPA Hospital is low. This is particularly due to the fact that doctors do not understand the needs for these specialists. This greatly hampers their employment prospects.

#### **(4) X-ray Technicians Education System**

This course is now in the planning stage so it is not started yet. Cambodia has 8 licensed X-ray Technicians who were trained in Hungary, Belgium, and Germany. There are other doctors and nurses that trained as X-ray Technicians for 6-9 months at Calmette Hospital, CENAT, and Hope Hospital (private). At the Referral Hospitals, they have people trained as X-ray Technician. There are 43 doctors of whom 12 have a MA and 75 nurses of which 11 are primary nurses. Demand for X-ray Technician is expected to increase in the future.

#### **(5) Post-basic Education and Continuing Education**

In addition to the training of nurses, laboratory technicians, physiotherapists and X-ray technicians described above, various post-basic education including long-term course, short course program and special program are conducted at TSMC. Midwifery Course is also regularly conducted at TSMC as one-year post-basic education course taking 18 to 19 students twice a year.

As for the courses and programs relevant to the post-basic educations which MOH and TSMC conducted to date or are currently being planned, it was confirmed in detail with MOH, TSMC and the Technical Cooperation Project so that the implementation thereof could be collaborated with the activities of the Technical Cooperation Project (Refer to APPENDIX-13).

### **2-4-4 Management and Administration of the Project**

#### **(1) Management of TSMC**

TSMC has 8 information staff that had 2-3 months training in 1990. They have worked there for over 10 years so it is felt that they have enough experience to run the basic school management. We do not see much problem with them. The management style will have to change into one of less government control and more of an independent nonprofit type organizational style management. They need to be trained in the latest school management. This issue can be considered later.

Although the student / teacher ratio is acceptable, the main problem is in controlling the attendance of full time teachers. However, it is expected that this problem will be solved in the future. For students taking advanced courses, they also have training after school for each course, such as education for specialist of Psychiatric Nurses and Anesthetic Nurses. Teachers training at the 4 RTCs to be future leaders and nurses taking advanced training courses are showing good results. As for the quality of the teachers, they all have a license in a specialized profession. They also try to improve themselves through furthering their education. They believe in a higher education and have enough to be part of the school's management and activities.

As for the classroom maintenance and usage, they have a homeroom style and the students waste little time in moving from class to class. Also the teachers have their own rooms that keep control over and the student change classrooms, not the teachers. This does not cause confusion among the student and maintains a good environment with strong learning spirit among the students. Demonstrations can be arranged according to the classroom's schedule.

**(2) Structure and Numbers of Teaching Staff**

TSMC is a technical school for medical care that falls under the guidelines of UHS. Medical Science, Pharmacy, and Dentistry are taught at the UHS.

Teaching staff at TSMC have second level or higher certification with some having MAs or MDs. Teachers with this level of education, quality education can be taught. For the number of teachers for each course, please refer to Table 2-27. The number of teachers and their education qualification are sufficient.

Table 2-27 Teaching Staff at TSMC

Name of Course	Full-time	Part-time	Other	Total
Nursing	24	10	0	34
Physiotherapy	3	9	0	12
Laboratory Technology	10	5	0	15
Midwifery	8	0	0	8

(TSMC Status Report, Feb., 2004)

Late attendance by full time teachers is practiced because they can't take care of each student's personal needs one by one. Also, the report cards results are not as good in comparison to RTC students. For example, the Physiotherapy Course has 70% part time teachers (9 out of 12). With such conditions, risks of class cancellations are quite high. Many of the teachers have no clinical experience. It may be hard to get the students to understand and learn actual scientific techniques

and knowledge. The biggest concern is to solve the attendance problem of full time teachers and to also find and hire more full time teachers and to try and raise their teaching skills.

### **(3) Facilities Maintenance and Management Plan**

Currently, maintenance and management of the facilities at TSMC are implemented with the responsibility of TSMC, and seven (7) maintenance staff is assigned for that purpose. It is planned to further strengthen the structure for the maintenance and management including thoroughgoing of daily cleaning and putting everything in order, and it seems that the sufficient budget for the strengthening of maintenance and management structure is allowed for the budget plan being prepared by TSMC. Therefore, it is assumed that there would be no problems for the maintenance and management of the facilities.

### **(4) Equipment Maintenance and Management Plan**

Even though most planned equipment are rather simple but some electronic equipment such as general X-ray diagnostic system, mobile X-ray diagnostic system, automatic film processor, ultrasound diagnostic system, audio-visual devices and so forth needs outside service assistance for maintenance and repairing works. There are agents or distributors of European and Japanese manufacturers of medical equipment in Phnom Penh but the stock of spare parts appears insufficient and technical assistance may be needed from affiliated agents in neighboring countries.

Calmette Hospital recently introduced a CT Scanner and an MRI, which were bought through a dealer in Phnom Penh but the engineers from Singapore supported installation. It is assumed that the engineers from Singapore would also support the due maintenance. Equipment planned here for the TSMC is much less complicated than CT and MRI but the maintenance of the equipment may have to be supported by engineers from neighboring countries.

As for audio-visual and office equipment, there are a considerable number of dealers and agents from the U.S.A., European and Japanese manufacturers in Phnom Penh, some of which have after-sales service centers with engineers and spare parts. But the life of product in this field is so short that it is difficult for agents or service centers to keep competent engineers and spare parts for the new products all the time. Thus, they may have to get support of technique, spare parts and consumables from near-by counties.

Maintenance Department of the MCH usually provides repair service to the medical equipment under MOH, and it is assumed that the same level of services would be provided to TSMC, if so requested. Although the agents, dealers or distributors should carry out the necessary repair works

during the warranty period, TSMC may ask for service from MCH depending on the scale of repair work, after the warranty period was expired.

Furthermore, Laboratory Technology Course and X-ray Technology Course are planning to teach the method of regular checkup and simple repair work of the equipment as part of their hands-on practice. It would be most desirable situation, if the initial or simple repair work can be provided by TSMC.

**(5) Budget**

UHS became autonomy in October 2002 by Royal Decree, and therefore, TSMC which is one of the faculties of UHS shall also be treated the same.

Although a budget application should be made directly to MOEF and the budget should be secured by using "CHAPTER 12", UHS still apply for the budget including the budget for TSMC through MOH. Then, MOH apply to MOEF the budget including the budget request received from UHS. Then, MOH distributes the budget to UHS for the amount being approved by MOEF. UHS is financially separated from other departments of MOH, and therefore, one of the seven (7) financial controllers assigned with MOH from MOEF is looking after the budget for UHS.

However, in the "Medium Term Expenditure Framework 2003-2007 for the Ministry of Health" and its supplementary document "Program Budget Fiscal Year 2002-2006 Program / Sub-program for the Ministry of Health", MOH allowed estimated expenditures for UHS and TSMC up to the year 2007, and it is expected that MOH will extend the necessary financial supports to TSMC even after the year 2007. And, it seems that the expenses to be incurred for leasing temporary facilities required during the construction and renovation of the Project and the expenses deemed necessary for the maintenance and management of the facilities and equipments after the completion of the Project are allowed for in the budget planned for the year up to 2007 which is being prepared by TSMC (Refer to Table 2-26). Therefore, it is assumed that the necessary budget required for the implementation of the Project and the expenses deemed necessary for the maintenance and management of the facilities and equipments after the completion of the Project will be secured.

Table 2-28 Budget for TSMC

( US\$ )

Year	Past Record			Future Plan			
	2001	2002	2003	2004	2005	2006	2007
<b>Revenue</b>							
1. Government Fund	243,750	300,500	312,500	343,750	398,975	507,200	515,625
1.1 Central Government	243,750	300,500	312,500	343,750	398,975	507,200	515,625
1.2 Provincial Government							
4. School Fee			84,100	137,450	190,800	190,800	190,800
<b>Total</b>	243,750	300,500	396,600	481,200	589,775	698,000	706,425
<b>Expense</b>							
1. Staff salaries & Welfare	68,250	75,075	115,075	146,000	175,010	186,000	186,000
2. Administration Cost	104,850	109,100	140,390	216,200	304,900	273,300	266,800
(1) Office Requisites	23,850	24,600	32,800	61,000	70,000	70,000	70,600
(2) Running Cost	26,000	27,000	39,000	57,400	105,600	75,200	68,100
(3) Maintenance Cost (Bldg.)	30,000	31,500	31,590	41,200	71,800	72,000	72,000
(4) Maintenance Cost (Equipment)	25,000	26,000	37,000	56,000	57,500	56,100	56,100
3. Technical & Scientific Subsidy	9,150	10,000	20,000	45,000	51,000	62,000	61,800
4. Renovation/Major Repairing Work	32,500	33,000	42,000	21,200	32,000	41,000	42,000
5. Other Expenditure	20,000	73,325	79,135	52,800	26,865	135,700	149,825
<b>Total</b>	234,750	300,500	396,600	481,200	589,775	690,800	706,425

Table 2-29 Budget for MOH

( US\$ )

Item	2001		2002		2003	
	Budget	Expenditure	Budget	Expenditure	Budget	Expenditure
<b>Central Total</b>	16,565,000	15,260,725	28,315,000	25,524,161	25,037,500	20,772,159
Salaries & Allowances	950,000	809,325	1,081,250	1,615,285	1,320,000	1,117,562
Operating Costs	15,407,500	14,345,575	19,280,000	17,327,633	21,853,750	18,512,725
Drugs	11,657,500	11,090,375	13,350,000	10,627,769	16,366,250	15,056,697
Excluding Drugs	3,750,000	3,255,200	5,930,000	6,699,864	5,487,500	4,639,388
Program of Action			7,750,000	6,473,239	1,770,000	1,130,504
Social Interventions	207,500	105,825	197,500	103,915	87,500	6,256
International social Intervention	16,565,000	15,260,725	6,250	4,089	6,250	5,112
<b>Province Total</b>	11,932,500	8,544,750	14,610,000	14,416,887	17,504,692	6,442,827
Salaries & Allowances	3,120,000	2,374,450	3,326,250	4,247,092	5,424,692	3,835,946
Operating Costs	5,000,000	2,898,875	5,821,250	4,670,316	6,022,500	4,057
PAP13	3,625,000	3,222,500	3,750,000	3,956,667	4,250,000	1,690,183
ADD13			1,500,000	1,463,076	1,500,000	829,313
Social Interventions	187,500	48,925	212,500	79,736	307,500	83,327

ADD: Accelerated District Development

PAP: Priority Action Program

## 2-4-5 Administration, Operation and Maintenance Cost

### (1) Expenses Required for TSMC

The running cost (expenses for water, electricity, fuel, etc.) for the TSMC are calculated as follows:

#### 1) Electricity Cost

##### A. Assumption

Maximum Demand	250 kw
Load Factor	0.15

##### B. Tariff of Electricity Charge by Electricite du Cambodge (EDC)

Fixed Charge	0 US\$/ month	
Demand Charge	0 US\$/ kw	
Energy Charge	0.19 US\$/ kwh	For Governmental Use

##### C. Monthly Electricity Cost

Fixed Charge		=	0
Energy	$250 \text{ kw} \times 600 \text{ Hours/ month} \times 0.15 \times 0.2 \text{ US$/ kwh}$	=	4,500 (US\$/ month)

##### D. Annual Electricity Cost

4,500 US\$/ month	$\times 11 \text{ months/ year}$	49,500 (US\$/ year)
-------------------	----------------------------------	------------------------

#### 2) Telephone Cost

##### A. Assumption

Trunk Line (For Interior) :	8-Lines
Trunk Line (For International):	2-Lines

##### B. Tariff of Telephone Charge by Ministry of Post &Telecommunication (MPT)

City call charge	0.01 US\$/ min
In Local Area call charge	0.06 US\$/ min
Out of Local area call charge	0.08 US\$/ min
International call charge	1.00 US\$/ min

##### C. Assumed call time

City call	900 min/ month/line
In Local Area call	200 min/ month/line
Out of Local Area call	100 min/ month/line
International call	30 min/ month/line

D. Monthly Telephone Cost

City call	900	×	0.01 US\$/ min	×	8 lines	=	72
In Local Area call	200	×	0.06 US\$/ min	×	8 lines	=	96
Out of Local Area call	100	×	0.08 US\$/ min	×	8 lines	=	64
International call	30	×	1.00 US\$/ min	×	2 lines	=	60
Total							292

(US\$ month)

E. Annual Telephone Cost

$$292 \text{ US\$/ month} \times 12 \text{ months/ year} = 3,504 \text{ (US\$ year)}$$

3) Fuel Cost

A. Assumption

Conditions Stand-by Generator 50 KVA 3 415V 50Hz: 1 No.

Fuel consumption: 8.2litters/ hour

Assuming One (10) hour running a week

B. Fuel cost

Diesel Fuel 0.5 US\$/ litters

C. Annual Fuel Cost

$$8.2 \text{ Litters/ hour} \times 1 \text{ hour/ week} \times 52 \text{ weeks/ year} = 426 \text{ (litters/ year)}$$

$$426 \text{ Litters/ year} \times 0.5 \text{ US\$/ litters} = 213 \text{ (US\$/ year)}$$

4) Internet Access Cost

A. Assumption

Internet Access Time 60 (min/ line/ month)  
 Internet Access Lines 2 (lines)

B. Tariff of Internet Access ( According to the Tariff of CAMNET)

A. Monthly Fee (Free Use 100 Hours) 180 US\$/ month  
 B Usage Charge 1.2 US\$/ hour  
 C VAT 10 %

C. Monthly Internet Access Times

$$60 \text{ Min/line/ month} \times 2 \text{ lines} \times 25 \text{ Days/ month} = 3,000 \text{ min/ month}$$

50 hours/ month

D. Annual Internet Access Cost

180 US\$/ month	×	12 Months/ year	=	2,160		
1.2 US\$/ hour	×	50 hours/ month	×	12 Mounths/ year	=	720
(2,160 + 720)	US\$/year	×	10 %	=	288	
Total					3,168	
					(US\$/ year)	

5) Water Supply and Sewage Cost

A. Maximum consumption per day of water Supply and Sewage 61 cu.m/ day

B. Tariff of Water Supply (\* According to Tariff of PPWA) 0.26 US\$/ cu.m

a) Cost for Water Supply	0.26 US\$/ cu.m
b) Cost for Maintenance of Meter	0.5 US\$/ month
c) Cost for Sewage	10% of [(1)+(2)]

C. Annual Water and Sewage Cost

61 cu.m/ day	×	360 days/ year	×	0.26 US\$/ cu.m	=	5,710
0.5US\$/ month	×	12 months/ year	=	6		
(5,710US\$ /year + 6US\$/ year)	×	10%	=	572		
Total						6,288
						(US\$/ year)

6) LPG Cost

A. Maximum consumption of LPG

6 kg/ hour	×	2hours/ meal	×	3meals/ day	×	22 days	=	792
								(kg/month)
792(kg/ month)	×	12months/ year	=	9,504				
								(US\$/ year)

B. LPG Cost

15kg LPG Cylinder Price	9 US\$/set
	0.6US\$/kg

C. Annual LPG Cost

9,504 (US\$/ year)	×	0.6US\$/ kg	=	5,702
				(US\$/ year)



7) Maintenance Cost for Sewerage Water Treatment Plants (STP)

A. Maintenance Frequency

STP of 3.8cu.m/ day	4 times/ year
STP of 20 cu.m/ day	4 times/ year
<u>Total</u>	<u>8 times/ year</u>

B. Annual Quantity of Sludge Disposal

STP of 3.8cu.m/ day	3 cu.m/ year
STP of 20 cu.m/ day	6 cu.m/ year
<u>Total</u>	<u>9 cu.m/ year</u>

C. Maintenance Cost for STP

Maintenance Cost	30 US\$/ time
Sludge Disposal Cost	10 US\$/ cu.m

D. Annual Maintenance Cost

8 times/ year	×	30 US\$/ time	=	240
9 cu.m/ year	×	10 US\$/ cu.m	=	90
<u>Total</u>				<u>330</u>

(US\$/ year)

8) Garbage Disposal

$$20\text{US\$}/ \text{month} \times 12 \text{ months} = 240\text{US\$}/ \text{year}$$

9) Annual Running Cost

Electricity Cost	49,500
Telephone Cost	3,504
Fuel Cost	213
Data Communication Cost	3,168
Water Supply and Sewage Cost	6,288
LPG Cost	5,702
Maintenance Cost	330
Garbage Disposal	240
<u>Total</u>	<u>68,945</u>
	Approximately
	69,000

(US\$/ year)

However, it is assumed that the above-mentioned LPG Cost of US\$ 5,702.00 shall be borne by the contracted kitchen operator, and therefore, the total running costs to be borne by TSMC shall be approximately US\$ 63,300.00, which is within the planned budget of US\$68,000.00 for the running costs for the year 2006.

**CHAPTER 3**  
**PROJECT EVALUATION AND**  
**RECOMMENDATIONS**

## **CHAPTER 3 PROJECT EVALUATION AND RECOMMENDATIONS**

### **3-1 Project Effect**

It is expected that the following direct and in-direct effects and some improvement to current educational environment as shown in Table 3-1 herein below will be achieved by the implementation of the Project.

#### **(1) Direct Effects**

- 1) Although classrooms and practical training rooms for each course at TSMC are relatively small and deteriorating, the learning environment would be greatly improved and upgraded, as an appropriate size of the facilities, and its broadened scale would be provided by the Project.
- 2) It would be much easier to implement an education and practical training curriculum for each course as planned, because an appropriate size and number of classrooms and practical training rooms would be provided by the Project. And, consequently, overall education quality for co-medicals would be improved and upgraded.
- 3) Quality in education and practical training at TSMC would be improved and upgraded, as the Project would provide appropriate and substantial educational equipments.
- 4) The first X-ray technology course in Cambodia would be established at TSMC as the necessary facilities and equipments would be provided by the Project, and thus, it would be possible to train X-ray technicians.
- 5) It would be much easier to schedule and organize post-basic and post-graduate education programs intended for working nurses nation-wide, such as for chief nurse, psychiatric nurse, anesthetic nurse, and so on, as appropriate size and number of classrooms and seminar rooms would be provided by the Project.
- 6) By improving and upgrading the facilities and educational equipments at TSMC by the Project, on-going Technical Cooperation Project would be smoothly and effectively implemented.

#### **(2) In-direct Effects**

- 1) The Project will fulfill a shortage of co-medicals at public health-care institutions such as hospitals, health centers, etc. And, consequently, the implementation system of appropriate health-care services will be improved.

- 2) Quality of the health-care services provided at the public and private health-care institutions will be improved, as it is expected to increase the number of well-qualified co-medicals.
- 3) By increasing the number of well-qualified X-ray technicians, it is expected to enhance the capability of medical diagnosis and treatment.
- 4) In general, health of the people in Cambodia will be promoted by improving the implementation system of appropriate health care services. This will be a result of improving the overall quality of co-medicals.

Table 3-1 Expected Effects and Improvements

Current Conditions and Problems at TSMC	Input / Assistance By the Project	Output / Effect and/or Improvement
Floor area for classrooms and practical training rooms are relatively small i.e. excessive number of students per classroom and facilities are deteriorating. Thus, it is difficult to conduct a class effectively.	To calculate necessary number of classrooms and practical training rooms by planning an appropriate size thereof i.e. to set a number of students per classroom to 40 (1.75m <sup>2</sup> ~2.0m <sup>2</sup> /student). However, as to planning the necessary number of classrooms and practical training rooms, renovation of the existing facilities must first be considered.	Learning environment would be improved, as an appropriate and sufficient floor area per student will be secured.
Although post-basic education is conducted at TSMC in addition to basic education, a part of dormitory are currently used for that purpose because of shortage of classrooms and seminar rooms.	To provide sufficient number of classrooms and seminar rooms for post-graduate programs and courses.	Scheduling and organizing post-graduate programs and courses would be easy as sufficient number of classrooms and seminar rooms will be provided.
A necessary and sufficient study and training cannot be conducted because of insufficient and deteriorating equipments.	To provide appropriate and sufficient equipments for practical training and to provide preparation room for storing thereof.	Quality of study and training would be improved by providing appropriate and sufficient equipments.
Unqualified X-ray technicians in many cases currently conduct X-ray examinations. This may cause rise in professional negligence in medical diagnosis and treatment.	To provide necessary rooms and equipments along with establishment of new X-ray technology course.	X-ray examinations would be conducted by well-qualified X-ray technicians, which will enhance the capability of medical diagnosis and treatment.
Teachers' lecture notes and prints thereof are quite essential teaching materials for students, and furthermore, not many reference books are available at the library. However, because lack of equipments, teachers are unable to produce appropriate teaching materials.	To provide a teaching materials production room with appropriate and sufficient equipment for producing teaching materials and equipments for presentation in classes, etc.	Effective study and training in classrooms and practical training rooms would be conducted by producing appropriate teaching materials and distribution thereof to students.
There is insufficient study and reading space at the existing library as well as at the dormitory.	To provide library with sufficient space for study and reading.	Learning environment would be improved, as self-study efficiency for each student would be increased.

### **3-2 Recommendations**

The following suggestions shall be reviewed and dealt with by Cambodian side in order to realize the afore-mentioned direct effects and in-direct effects to be expected through improvement and upgrading of the facilities and equipment for TSMC by the Project and to enhance its ripple effect.

#### **(1) Promotion and Strengthening of Education System for Co-medicals**

In order to realize the overall goal of the Project which is “to improve technical quality of co-medicals”, it is considered most necessary to promote and strengthen the education system for co-medicals at TSMC by Cambodian side.

To be specific, Cambodian side should further instigate the following:

- 1) To secure quality of the students at the time of new enrollment.
- 2) To conduct classes including practical trainings as scheduled by full-time teachers and/or lecturers by increasing the numbers thereof.
- 3) To give feedback to the results of improvements by monitoring thereof.
- 4) To secure necessary budgets for operation and maintenance continuously.

#### **(2) Strengthening of Collaboration with Technical Cooperation Project**

In order to take advantage of facilities and equipment to be improved and/or provided by the Project to have maximum practical use, it is essential to strengthen collaboration with the Technical Cooperation Project, which was started in September 2003 and scheduled to continue until September 2008. And, for the said collaboration, it is inevitable to receive support in operation and maintenance from MOH and UHS.

#### **(3) Possibility of Collaboration with Other Donors**

As for the health-care service sector in Cambodia, various donors such as WHO, World Bank, ADB, French Cooperation and GTZ extend many kind of support. It is essential to collaborate with such donors so as to let the implementation of the Project works effectively, although it is confirmed that the Project is not duplicated in any way.

Especially, it is deemed quite important to collaborate with the French Cooperation that has conducted post-basic education for midwife, anesthetic nurse, and chief nurse, and ADB that has

constructed the multi-purpose hall with the dormitory at TSMC and supplied the X-ray equipment and the operating instruments to the referral hospitals, as well as the World Bank that deployed the sub-project for the capacity building for the measures to be taken against infectious diseases and overall health care services by setting up an office at MOH.

Through the collaboration with other donors described above, anticipated benefits by the implementation of the Project will be enhanced and, at the same time, it is expected to enhance the quality of overall health care services in Cambodia.

#### **(4) Possibility of Technical Cooperation by Japan**

The Technical Cooperation Project, which was started in September 2003 and scheduled to continue until September 2008 is directly involved with the implementation of the Project. The Technical Cooperation Project is expected to “train co-medicals aiming to improve their technical quality for public health care institutions” and their office is set up at MOH and TSMC respectively. The Technical Cooperation Project is aiming to provide quality health care services through the improvement of the learning environment for basic education necessary for training co-medicals. In order to materialize their project purpose, Japanese experts in the field of Nursing, Laboratory Technology and Radiology are and have been assigned to support their specialty. And, as for the recruiting of teachers and/or lecturers for a new X-ray Technology Course, the Technical Cooperation Project plays an important role in the selection of candidates and their training programs along with MOH. Therefore, it is most essential that the Project and the Technical Cooperation Project should work in cooperation with each other.

Beside the Technical Cooperation Project, volunteers (Japan Overseas Cooperation Volunteers: JOCV) specialized in diagnostic radiology specialist and clinical laboratory technician are dispatched to referral hospitals and there is a record of dispatching senior volunteers specialized in pathology and cytology and clinical laboratory technician to MCH.

As described above, Japan’s Technical Cooperation is extended in many fields and comprehensively expresses TSMC as a place for education, hospital as a place for education and practice, and MOH as a place for administration and policy making. It is realized that it would be most effective to continue such technical cooperation in order to enhance the quality of overall health care services in Cambodia.

## **APPENDICES**

Basic Design Study on the Project for  
Renovation of Technical School for Medical Care  
in the Kingdom of Cambodia

**APPENDICES**

1. Members List of the Study Team
2. Survey Schedule
3. List of Persons Concerned in the Recipient Country
4. Minutes of Discussions (24 February 2004, 3 June 2004)
5. Extent of Works
6. Balance of Co-Medicals in Cambodia (Supply and Demand)
7. Employment Results
8. Documents of Land Ownership
9. Technical Analysis of Existing Buildings
10. Existing Equipment
11. Planned Equipment
12. Rough Specifications of Planned Equipment
13. Post-basic Education Courses and Programs



**Basic Design Study On  
The Project for Renovation of Technical School for Medical Care**

**Member List of the Study Team  
The Basic Design Study**

1. Mr. Seiji Kaiho:  
Team Leader  
Deputy Managing Director  
Grant Aid Management Dept.  
Japan International Cooperation Agency
2. Ms. Satsuki Honda :  
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1st Expert Service Division, Bureau of International Cooperation  
International Medical Center of Japan  
Ministry of Health, Labour & Welfare
3. Mr. Takatsugu Shimada :  
Project Manager/Facilities and Utilities Planner  
Pacific Consultants International
4. Ms. Kazue Yajima :  
Health Staff Education and Training System Survey  
Gunma Paz College School of Nursing
5. Mr. Mitsuo Ochi :  
Architectural Planner I  
Pacific Consultants International
6. Mr. Yuichi Imasato :  
Equipment Planner  
Pacific Consultants International
7. Mr. Keiji Yamazaki:  
Facilities and Utilities Planner  
Pacific Consultants International
8. Mr. Takayuki Yonemaru :  
Procurement Planner/Cost Estimator/Construction Management Planner  
Pacific Consultants International
9. Ms. Masako Sugita :  
Procurement and Cost Estimator  
Fujita Planning Co., Ltd.
10. Mr. Ken'ichiro Matsuoka :  
Architectural Planner II  
Pacific Consultants International

**Draft Report Explanation Study On  
The Project for Renovation of Technical School for Medical Care**

**Member List of the Study Team  
The Draft Final Report Explanation Study**

1. Mr. Hiroto Mitsugi:  
Team Leader  
Deputy Resident Representative  
Japan International Cooperation Agency Cambodia Office
  
2. Mr. Seiki Tateno :  
Technical Advisor  
Director of 1st Expert Service Division, Bureau of International Cooperation  
International Medical Center of Japan  
Ministry of Health, Labour & Welfare
  
3. Mr. Takatsugu Shimada :  
Project Manager/Facilities and Utilities Planner  
Pacific Consultants International
  
4. Mr. Mitsuo Ochi :  
Architectural Planner I  
Pacific Consultants International
  
5. Mr. Yuichi Imasato :  
Equipment Planner  
Pacific Consultants International
  
6. Mr. Ken'ichiro Matsuoka :  
Architectural Planner II  
Pacific Consultants International

**Basic Design Study On  
The Project for Renovation of Technical School for Medical Care**

**Survey Schedule  
The Basic Design Study (February 1 – March 9, 2004)**

Remarks	A: Mr.Kaiho, B: Ms. Honda, C: Mr. Shimada, D: Ms. Yajima, E: Mr. Ochi, F: Mr. Imasato, G: Ms. Sugita, H: Mr. Yamazaki, I: Mr. Yonemaru, J: Mr. Matsuoka
Abbreviation	NRT: Narita, BKK: Bangkok, PNH: Phnom Penh

No	Date	Member, Movement, Accommodation	Activity
1.	Feb. 11 (Wed)	C, D, E, F, J <u>NRT10:55 BKK15:55(JL717)</u> <u>BKK17:30 PNH18:45(TG698)</u>	
2.	Feb. 12 (Thu)	C, D, E, F, J	Courtesy Call on JICA Office Courtesy Call on Embassy of Japan Courtesy Call on and Explanation of Inception Report and Discussion with Ministry of Health (MOH) and National Technical School for Medical Care (TSMC)
3.	Feb. 13 (Fri)	C, D, E, F, J	Discussion with TSMC
4.	Feb. 14 (Sat)	C, D, E, F, J	Site Survey
5.	Feb. 15 (Sun)	B <u>NRT10:45 BKK15:45(TG647)</u> <u>BKK17:30 PNH18:45(TG698)</u>	
		C, D, E, F, J	Analysis of Data and Information Internal Meeting
6.	Feb. 16 (Mon)	B, C, D, E, F, J	Discussion with TSMC Visit to Maternal and Child Health Center (MCH), and CENAT
7.	Feb. 17 (Tue)	B, C, D, E, F, J	Courtesy Call on Secretary of State, MOH Visit to Carmette Hospital, Sihanouk Hospital, WB
8.	Feb. 18 (Wed)	A <u>Tashkent12:05 BKK19:50</u>	
		B, C, D, E, F, J	Discussion with TSMC Visit to French Cooperation, WHO
9.	Feb. 19 (Thu)	A <u>BKK15:00 16:05Phnom Penh</u>	Internal Meeting
		B, C, D, E, F, J	Discussion with TSMC Visit to GTZ
10.	Feb. 20 (Fri)	A, B, C, D, E, F, J	Discussion with TSMC Visit to UHS, ADB
		G, H, I <u>NRT10:55 BKK15:55(JL717)</u> <u>BKK17:30 PNH18:45(TG698)</u>	
11.	Feb. 21 (Sat)	A, B, C, D, E, F, G, H, I, J	Internal Meeting
12.	Feb. 22 (Sun)	A, B, C, D, E, F, J	Analysis of Collected Data and Information
		G, H, I	Site Survey on TSMC

No	Date	Member, Movement, Accommodation	Activity
13.	Feb. 23 (Mon)	A, B, C, D, E, F, J	Discussion on Preparation for Minutes with MOH and TSMC
		G, H, I	Site Visit to TSMC
		I	Preparation for Natural Condition Survey
14.	Feb. 24 (Tue)	A, B, C, D, E, F, J	Signing Minutes of Discussion with MOH Report to JICA Office Report to Embassy of Japan
		A, B <u>PNH20:25 BKK21:30(TG699)</u> <u>BKK23:40</u>	
		G	Procurement Survey
		H	Site Survey on TSMC and Infrastructure
		I	Natural Condition Survey
15.	Feb. 25 (Wed)	A, B <u>NRT07:30</u>	
		C, D, E, F, J	Site Survey and Internal Meeting
		G	Procurement Survey
		H	Site Survey on TSMC and Infrastructure
		I	Procurement Survey and Natural Condition Survey
16.	Feb. 26 (Thu)	C, D, E, F, H, J	Site Survey at TSMC Visit to STEPSAM
		G, I	Procurement Survey
17.	Feb. 27 (Fri)	C, D	Collection of Questionnaire and Survey
		E, H, J	Site Survey at TSMC
		F, G	Site Survey on Equipment and Procurement Survey
		I	Procurement Survey
18.	Feb. 28 (Sat)	C, E, F, G, H, I, J	Analysis of Collected Data and Information Internal Meeting
		D <u>PNH20:25 BKK21:30(TG699)</u> <u>BKK22:55</u>	
19.	Feb. 29 (Sun)	C, E, F, G, H, I, J	Analysis of Collected Data and Information Internal Meeting
		D <u>NRT06:35(JL704)</u>	
20.	Mar. 1 (Mon)	C, E, H, I, J	Study on Tentative Plan and Management Plan with TSMC
		F, G	Study on Management Plan with TSMC Procurement Survey
		I	Procurement Survey
21.	Mar. 2 (Tue)	C, E, H, I, J	Study on Tentative Plan and Management Plan with TSMC
		F, G	Study on Management Plan with TSMC Procurement Survey
		I	Procurement Survey

No	Date	Member, Movement, Accommodation	Activity
22.	Mar. 3 (Wed)	C, E, F, J	Study on Tentative Plan and Management Plan with MOH and TSMC
		G, H, I <u>PNH10:20 BKK11:25(TG697)</u>	Procurement Survey at Bangkok
23.	Mar. 4 (Thu)	C, E, F, J	Examination of Tentative Plan and Management Plan with MOH and TSMC
		G, H, I	Procurement Survey at Bangkok
24.	Mar. 5 (Fri)	C, E, F, J	Confirmation of Tentative Plan and Management Plan with MOH and TSMC Report to JICA Office
		G, H, I <u>BKK08:30 NRT16:10(JL708)</u>	
25.	Mar. 6 (Sat)	C, E, F, J	Analysis of Collected Data and Information Internal Meeting
26.	Mar. 7 (Sun)	C, E, F, J <u>PNH10:20 BKK11:25(TG697)</u>	
27.	Mar. 8 (Mon)	C, E, F, J	Procurement Survey at Bangkok
28.	Mar. 9 (Tue)	C, E, F, J <u>BKK08:30 NRT16:10(JL708)</u>	

**Basic Design Study On  
The Project for Renovation of Technical School for Medical Care**

**Survey Schedule  
The Draft Final Report Explanation Study (May 23 – June 6, 2004)**

Remarks	A: Mr. Mitsugi, B: Mr. Tateno, C: Mr. Shimada, D: Mr. Ochi, E: Mr. Imasato, F: Mr. Matsuoka
Abbreviation	NRT: Narita, BKK: Bangkok, PHN: Phnom Penh

No	Date	Member, Movement, Accommodation	Activity
1.	May 23 (Sun)	C, D, E, F <u>NRT11:30 BKK15:30(JL719)</u> <u>BKK18:30 PHN19:35(PG926)</u>	
2.	May 24 (Mon)	C, D, E, F	Courtesy Call on JICA Office Courtesy Call on Ministry of Health (MOH) Courtesy Call on Embassy of Japan
3.	May 25 (Tue)	C, D, E, F	Courtesy Call on and Explanation of DF Report with University of Health Science (UHS) Courtesy Call on Technical School for Medical Care (TSMC) Courtesy Call on & Explanation of DF Report with MOH & TSMC
4.	May 26 (Wed)	B <u>NRT11:00 BKK15:30(TG641)</u> <u>BKK16:30 PHN17:45(TG698)PHN</u> C, D, E, F	Explanation and Discussion of DF Report with Budgeting and Financial Affairs of MOH
5.	May 27 (Thu)	B, C, D, E, F	Discussion with TSMC
6.	May 28 (Fri)	B, C, D, E, F	Discussion with TSMC Courtesy Call on CDC Council for the Development of Cambodia (CDC)
7.	May 29 (Sat)	B, C, D, E, F	Discussion with JICA Technical Assistance Team
8.	May 30 (Sun)	B, C, D, E, F	Analysis of Data and Information Internal Meeting
9.	May 31 (Mon)	A, B, C, D, E, F	Courtesy Call on and Explanation of DF Report with Director of MOH Discussion of M/D with MOH and TSMC
10.	June 1 (Tue)	B, C, D, E, F B PHN18:50 BKK19:55(TG699) BKK22:15 (NRT06:15)(JL708)	Analysis of Data and Information Internal Meeting
11.	June 2 (Wed)	A, B, C, D, E, F B <u>NRT06:15(JL708)</u>	Discussion of Basic Design with TSMC and JICA Technical Assistance Team
12.	June 3 (Thu)	C, D, E, F E <u>PHN18:50 BKK19:55(TG699)</u>	Signing on the Minutes of Discussions Procurement Survey
13.	June 4 (Fri)	C, D, F E <u>BKK08:35 NRT16:35(JL708)</u>	Confirmation of Basic Plan with TSMC and JICA Technical Assistance Team
14.	June 5 (Sat)	C, D, F <u>PHN10:50 (TG699) BKK11:55</u>	Procurement Survey
15.	June 6 (Sun)	C, D, F <u>BKK08:35 NRT16:35(JL708)</u>	

List of Persons Concerned in the Recipient Country  
The Basic Design Study

1. Embassy of Japan
  - Mr. Kazumi Jigami : Counselor, Chief of Economic Cooperation Section
  - Ms. Chinami Hanazono : Special Advisor
2. JICA Cambodia Office
  - Mr. Hiroto Mitsugi : Deputy Resident Representative
  - Mr. Tsuyoshi Yusa : Assistant Resident Representative
  - Mr. Hiroaki Yamazaki : JICA Expert  
Project for Human Resource Development for Co-medicals
  - Ms. Husako Kakikawa : JICA Expert  
Project for Human Resource Development for Co-medicals
  - Mr. Toshinori Komba : JICA Expert  
Project for Human Resource Development for Co-medicals
  - Mr. Shinichiro Kojima : JICA Expert  
Project for Human Resource Development for Co-medicals
  - Mr. Masaru Iizuka : JICA Expert, National Tuberculosis Control Project
  - Mr. Kazuhiro Kakimoto : JICA Expert, Maternal and Child Health Project
  - Ms. Izumi Suzumori : JICA Expert, Maternal and Child Health Project
  - Mr. Tsuyoshi Matsuo : JICA Expert, STEPSAM
  - Mr. Hiroshi Kikuchi : JICA Expert, STEPSAM
3. Ministry of Health
  - Dr. Mam Bunheng : Secretary of State for Health
  - Prof. Eng Huot : Director General for Health
  - Dr. Kuyseang Te : Director General of Administration and Finance
  - Ms. Keat Phuong : Director of Human Resource Development Department
  - Mr. Chea Kim Long : Director of Finance Department
  - Ms. Youk Sambath : Chief of Financial Planning
  - Prof. Kaeut Meach : Director of Personnel Department
  - Mr. Ee Sarorm : Supervisor, National Rehabilitation Center
4. Public Authorities
  - Mr. Samreth Sovithia : Phnom Penh Water Supply Authority
  - Mr. Doung Chon Sarath : Sewage and Garden Unit
  - Mr. Suon Sopheak : Phnom Penh Municipal Police Fire Brigade
  - Mr. Yim Nolson P.E : Electricite du Cambodge
  - Ms. Pot Sreang : Ministry of Posts and Telecommunication
  - Ms. Chiep Sivorn : Ministry of Environment
5. Technical School for Medical Care (TSMC)
  - Dr. Huy Sovath : Director
  - Dr. Pheav Sao : Deputy Director
  - Dr. Lim Sunly : Deputy Director
  - Mr. Phon Saphan : Chief Administrator
  - Ms. Chhim Pum : Chief of Tech. Office
  - Mr. Keu Praseth : Accountant

List of Persons Concerned in the Recipient Country  
The Draft Final Report Explanation Study

1. Embassy of Japan
  - Mr. Kazumi Jigami : Counselor, Chief of Economic Cooperation Section
  - Ms. Chinami Hanazono : Special Advisor
  
2. JICA Cambodia Office
  - Mr. Hiroto Mitsugi : Deputy Resident Representative
  - Mr. Tsuyoshi Yusa : Assistant Resident Representative
  - Mr. Hiroaki Yamazaki : JICA Expert  
Project for Human Resource Development for Co-medicals
  - Ms. Husako Kakikawa : JICA Expert  
Project for Human Resource Development for Co-medicals
  - Mr. Shinichiro Kojima : JICA Expert  
Project for Human Resource Development for Co-medicals
  
3. MOH
  - Dr. Mam Bunheng : Secretary of State for Health
  - Prof. Eng Huot : Director General
  - Dr. Kuyseang Te : Director General of Administration and Finance
  - Ms. Khout Thavary : Chief of Financial Planning Office
  - Ms. Keat Phuong : Director of Human Resource Development Department
  
4. Ministry of Economy and Finance (MOEF)
  - Mr. Chan Sothy : Director, Department of Investment and Cooperation
  - Mr. Ieng Sunly : First Deputy Director, Budgeting and Financial Affairs  
Department
  - Ms. Neang Sopheavy : Financial Controller for MOH
  
5. CDC Council for the Development of Cambodia (CDC)
  - Ms. Heung Sokun : Director of Bilateral Aid Coordination Department
  
6. Technical School for Medical Care (TSMC)
  - Dr. Huy Sovath : Director
  - Dr. Pheav Sao : Deputy Director
  - Dr. Lim Sunly : Deputy Director
  - Mr. Phon Saphan : Chief Administrator
  - Ms. Chhim Pum : Chief of Tech. Office
  - Mr. Keu Praseth : Accountant for TSMC and UHS
  
7. University of Health Science (UHS)
  - Prof. Vu Kim Por : Under-secretary of State, Rector, University of Health Science



**MINUTES OF DISCUSSIONS  
ON THE BASIC DESIGN STUDY  
ON THE PROJECT FOR RENOVATION OF TECHNICAL SCHOOL FOR  
MEDICAL CARE IN THE KINGDOM OF CAMBODIA**

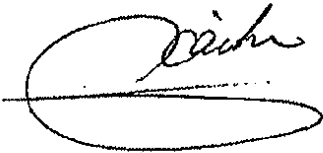
Based on the results of the Preparatory Study, the Government of Japan decided to conduct a Basic Design Study on the Project for Renovation of Technical School for Medical Care (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to the Kingdom of Cambodia (hereinafter referred to as "Cambodia") the Basic Design Study Team (hereinafter referred to as "the Team") headed by Mr. Seiji Kaiho, Deputy Managing Director, Grant Aid Management Department, JICA, and is scheduled to stay in Cambodia from February 11 to March 7, 2004.

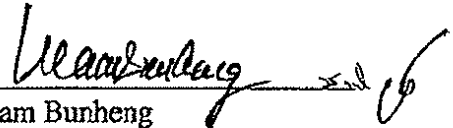
The Team held discussions with the officials concerned of the Royal Government of Cambodia and conducted field survey at the study areas.

In the course of discussions and the field survey, both parties confirmed the main items described on the attached sheets. The Team will proceed with further study and prepare the Basic Design Study Report.

Phnom Penh, February 24, 2004



Mr. Seiji KAIHO  
Leader  
Basic Design Study Team  
Japan International Cooperation Agency



Dr. Mam Bunheng  
Secretary of State for Health  
Ministry of Health  
Kingdom of Cambodia

Witnessed by:



Mr. Hiroto MITSUGI  
Acting Resident Representative  
Japan International Cooperation Agency  
Cambodia Office

## ATTACHMENT

### 1. Objective of the Project

The objective of the Project is to strengthen and upgrade the education quality in Technical School for Medical Care.

### 2. Project Site

The site of the Project is Technical School for Medical Care, Avenue Yothapul Khemarak Phumin, Phnom Penh.

### 3. Responsible and Implementing Agency

3-1. The Responsible Agency is Ministry of Health.

3-2. The Implementing Agency is Technical School for Medical Care.

### 4. Items requested by the Government of Cambodia

After discussions with the Team, the facilities described in Annex-1 and equipment plan described in Annex-2 were finally requested by Cambodian side.

### 5. Japanese Grant Aid Scheme

5-1. Cambodian side understood the Japanese Grant Aid Scheme explained by the Team, as described in Annex-3.

5-2. Cambodian side will take necessary measures, as described in Annex-4 for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented.

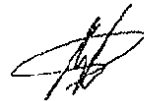
### 6. Schedule of the Study

6-1. JICA will prepare the draft report in English and dispatch a mission in order to explain its contents around the end of May 2004.

6-2. In case that the contents of the report are accepted in principle by the Government of Cambodia, JICA will complete the Basic Design Study Report and send it to Cambodia by the end of August 2004.

6-3. After the Team leaves the country, further discussions necessary for the Basic Design of the Project will be made through such means as facsimile and e-mail.

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7. Other relevant issues

7-1. Cambodian side agreed to secure sufficient budget and appropriate personnel necessary for the proper and effective operation and maintenance of the facilities and equipment covered by the Project as well as for the management of TSMC as a whole.

7-2. Cambodian side agreed to complete the following undertakings prior to the commencement of the construction and/or renovation works.

- (1) Demolishing and clearance of the existing facilities (storage etc.) and utilities in the project site.
- (2) Upgrading of the existing main distribution lines for electrical power supply and city water supply into the project site.
- (3) Preparation of classrooms, practical training rooms, laboratories and other facilities in order to transfer the functions thereof temporarily during the construction and/or renovation works.
- (4) Land preparation for storage of construction materials etc.

7-3. Both sides confirmed that total annual intake, sum of scholarship and paying students, for each course at TSMC shall be as follows assuming that new X-ray Technology Course shall be started as soon as the necessary facilities and equipment become available by implementing the Project:

(1) Nursing Course	120	students
(2) Physiotherapy Course	40	students
(3) Laboratory Technology Course	40	students
(4) Midwifery Course	20	students (half yearly intake)
(5) X-ray Technology Course	20	students

7-4. Both sides agreed that renovation of the existing classroom building and administration building and construction of new building(s) for classrooms, practical training rooms and other facilities would be studied in the Basic Design.

7-5. Both sides agreed that further analysis and elaboration in the facility plan will be made during the course of the Basic Design Study, and therefore, minor modification might be arisen.

7-6. Both sides also agreed that further design criteria, specifications and other minor modifications for facilities and equipment described in Annex-1 and Annex-2 would be made in conjunction with on-going Japanese Technical Cooperation Project for Human Resource Development of Co-Medicals and on the basis of appropriateness and cost effectiveness of the Project etc. during the Basic Design Study and finally presented to the Cambodian side at the time of Draft Report discussion.

### Requested Facilities for the Project

The contents of the requested facilities by Cambodian side for the Project.

Courses / Fields	Facilities
1. Nursing	- Classroom - Practical Training Room - Staff Room - Store
2. Physiotherapy	- Classroom - Practical Training Room - Staff Room - Store
3. Laboratory Technology	- Classroom - Laboratory - Preparation Room - Sterilization Room - Staff Room - Store
4. Midwifery	- Classroom - Practical Training Room - Staff Room - Store
5. X-ray Technology	- Classroom - X-ray Room/ Dark Room - Laboratory - Staff Room - Store
6. Speciality Program/ Short Course	- Classroom - Practical Training Room - Visiting Tutors' Room - Store
7. Others	- Library - Administration Office - Meeting Room - Student Association Room - Bookshop/ Cafeteria - Garage - Guard House - Generator House

- Note
1. Both sides confirmed that the facility mentioned above includes the related common spaces such as corridors, storage and machine room and the necessary utilities such as electricity, water supply, sewage and telecommunication, etc. The details of such common spaces and utilities will be discussed further between the Japanese and Cambodian side.
  2. The size and capacity of the facility will be determined after further study.

## REQUESTED EQUIPMENT

A: High Priority

B: Mid Priority

C: Low Priority

## Nursing

Item No.	Department	Description	A	B	C
N- 1	Nursing	Anatomical human model		○	
N- 2	Nursing	Human skeleton model		○	
N- 3	Nursing	Pregnant uterus model		○	
N- 4	Nursing	Phantom for delivery		○	
N- 5	Nursing	Breast cancer simulator			○
N- 6	Nursing	Injection Simulator			○
N- 7	Nursing	Height&weight measuring devices			○
N- 8	Nursing	Body function measuring devices			○
N- 9	Nursing	Delivery instrument set			○
N- 10	Nursing	Desk		○	
N- 11	Nursing	Chair		○	

## Clinical Lab

Item No.	Department	Description	A	B	C
C- 1	Clinical Lab	Spectrophotometer			○
C- 4	Clinical Lab	Differential blood cell counter			○
C- 6	Clinical Lab	Tabletop centrifuge			○
C- 7	Clinical Lab	Water bath			○
C- 8	Clinical Lab	Incubator			○
C- 9	Clinical Lab	Autoclave			○
C- 10	Clinical Lab	pH meter			○
C- 11	Clinical Lab	Water distilling apparatus			○
C- 12	Clinical Lab	Electronic analytical balance	○		
C- 13	Clinical Lab	Haematocrit centrifuge	○		
C- 14	Clinical Lab	Binocular microscope	○		
C- 14-a	Clinical Lab	Teaching microscope	○		
C- 27	Clinical Lab	Glassware set			○
C- 27-a	Clinical Lab	Lab instruments set			○
C- 28	Clinical Lab	View box			○
C- 29	Clinical Lab	Test tube mixer			○
C- 30	Clinical Lab	Magnetic stirrer			○
C- 32	Clinical Lab	Deep Freezer	○		
C- 33	Clinical Lab	Micro pipette set			○
C- 49	Clinical Lab	Experiment table		○	
C- 50-a	Clinical Lab	Desk		○	
C- 50^b	Clinical Lab	Chair		○	

## Physiotherapy

Item No.	Department	Description	A	B	C
P- 10	Physiotherapy	Training mat			○
P- 11	Physiotherapy	Mat platform			○
P- 18	Physiotherapy	Treatment table			○
P- 28	Physiotherapy	Wheel chair		○	
P- 29	Physiotherapy	Skeleton model		○	
P- 30	Physiotherapy	Joint phantom model	○		
P- 31	Physiotherapy	Desk		○	
P- 32	Physiotherapy	Chair		○	

X-ray

Item No.	Department	Description	A	B	C
X- 1	X-ray	General X-ray unit	○		
X- 2	X-ray	Mobile X-ray apparatus		○	
X- 6	X-ray	Automatic X-ray film processing system	○		
X- 7	X-ray	Manual X-ray film processing system	○		
X- 8	X-ray	X-ray film dryer		○	
X- 9-1	X-ray	Cassette set	○		
X- 9-1a	X-ray	Screen set	○		
X- 10-1	X-ray	X-ray film hanger set	○		
X- 10-5	X-ray	X-ray film hanger set	○		
X- 11	X-ray	Liquid thermometer	○		
X- 12	X-ray	Dark room timer		○	
X- 13	X-ray	Dark room lamp	○		
X- 14	X-ray	Air ventilator	○		
X- 15	X-ray	Air intake window	○		
X- 18	X-ray	Patient name printer	○		
X- 19	X-ray	Film mark set	○		
X- 20	X-ray	Negatoscope, portable	○		
X- 21	X-ray	Negatoscope, desktop	○		
X- 22	X-ray	X-ray protective apron	○		
X- 23	X-ray	X-ray protective floor screen set	○		
X- 25	X-ray	Ultrasound scanner	○	○	
X- 27	X-ray	Examination bed	○	○	
X- 29	X-ray	Experiment table	○		
X- 30	X-ray	C-arm with fluorography		○	
X- 31	X-ray	Cranial phantom (dry bone)			○
X- 32	X-ray	Cranial phantom (bone equivalent)	○		
X- 33	X-ray	Joint phantom set (bone equivalent)	○		
X- 34	X-ray	Film densitometer			○
X- 35	X-ray	Aluminum step phantom			○
X- 36	X-ray	Resolution test chart	○		
X- 37	X-ray	Acrylic phantom	○		
X- 38	X-ray	Positioning block			○
X- 39	X-ray	X-ray multi-function meter			○
X- 40	X-ray	Decubitus cassette holder			○
X- 41	X-ray	Desk		○	
X- 28	X-ray	Chair		○	

Teaching Material Production & Lecture (TMP&L)

Item No.	Department	Description	A	B	C
L- 2	TMP&L	Overhead projector			○
L- 4	TMP&L	TV set			○
L- 5	TMP&L	LCD projector	○	○	
L- 6	TMP&L	Screen			○
L- 7	TMP&L	Video cassette recorder			○
L- 8	TMP&L	Lecture table		○	
L- 9	TMP&L	Digital video camera	○		
L- 12	TMP&L	Digital camera			○
O- 1	TMP&L	Copy machine			○
O- 2	TMP&L	Computer desktop	○		
L- 13	TMP&L	Printer for computer	○		
L- 14	TMP&L	Computer laptop			○
L- 15	TMP&L	Scanner	○		
L- 16	TMP&L	Visual presenter	○		
L- 17	TMP&L	Binding machine			○
L- 18	TMP&L	Fax machine			○
L- 11	TMP&L	Desk		○	
L- 11a	TMP&L	Chair		○	

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## Japan's Grant Aid Program

### 1. Japan's Grant Aid Procedures

(1) The Japan's Grant Aid Program is executed by the following procedures.

<b>Application</b>	(request made by a recipient country)
<b>Study</b>	(Basic Design Study conducted by JICA)
<b>Appraisal &amp; Approval</b>	(appraisal by the Government of Japan and approval by the Cabinet of Japan)
<b>Determination of Implementation</b>	(Exchange of Notes between both Governments)
<b>Implementation</b>	(implementation of the Project)

(2) Firstly, an application or a request for a Grant Aid project submitted by the recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Japan's Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using (a) Japanese consulting firm(s).

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Program, based on the Basic Design Study Report prepared by JICA and the results are then submitted to the cabinet for approval.

Fourth, the project approved by the cabinet becomes official with the Exchange of Notes signed by the Government of Japan and the recipient country.

Finally, for the implementation of the Project, JICA assists the recipient country in preparing contracts and so on.

### 2. Contents of the Study

(1) Contents of the Study

The purpose of the Basic Design Study conducted by JICA on a requested project is to provide a basic document necessary for appraisal of the project by the Japanese Government. The contents of the Study are as follows:

- a) confirmation of the background, objectives, benefits of the project and also institutional capacity of agencies concerned of the recipient country necessary for project implementation,
- b) evaluation of the appropriateness of the project for the Grant Aid Scheme from a technical, social and economical point of view,



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- c) confirmation of items agreed on by the both parties concerning a basic concept of the project,
- d) preparation of a basic design of the project,
- e) estimation of cost of the project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

Final project components are subject to approval by the Government of Japan and therefore may differ from an original request. Implementing the project, the Government of Japan requests the recipient country to take necessary measures involved which are itemized on Exchange of Notes.

(2) Selection of Consultants

For smooth implementation of the study, JICA uses (a) registered consulting firm(s). JICA selects (a) firm(s) based on the proposals submitted by the interested firms. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA.

The consulting firm(s) used for the study is (are) recommended by JICA to a recipient country after Exchange of Notes, in order to maintain technical consistency and also to avoid any undue delay in implementation should the selection process be repeated.

### 3. Japan's Grant Aid Scheme

(1) What is Grant Aid?

The Grant Aid Program provides a recipient country with non reimbursable funds to procure the equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials or such.

(2) Exchange of Notes (E/N)

Both Governments concerned extend Japan's Grant Aid in accordance with the Exchange of Notes in which the objectives of the Project, period of execution, conditions and amount of the Grant Aid etc., are confirmed.

(3) "The period of the Grant Aid" means one Japanese fiscal year which the Cabinet approves the Project for. Within the fiscal year, all procedure such as Exchange of Notes,





concluding a contract with (a) consulting firm(s) and (a) contractor(s) and a final payment to them must be completed.

(4) Under the Grant, in principle, products and services of origins of Japan or the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant may be used for the purchase of products or services of a third country.

However the prime contractors, namely, consulting, contractor and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

(5) Necessity of the "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. The Government of Japan shall verify those contracts. The "Verification" is deemed necessary to secure accountability to Japanese tax payers.

(6) Undertakings Required to the Government of the Recipient Country

In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the following:

a) to secure land necessary for the sites of the project prior to the installation work in case the project is providing equipment,

b) to provide facilities for distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,

c) to secure buildings prior to the installation work in case the project is providing equipment,

d) to ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,

e) to exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the Verified Contracts,



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f) to accord Japanese nationals whose services may be required in connection with the supply of the products and services under the Verified Contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

(7) Proper Use

The recipient country is required to maintain and use the equipment purchased under the Grant Aid properly and effectively and to assign staff necessary for the operation and maintenance as well as to bear all expenses other than those covered by the Grant Aid.

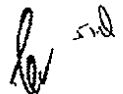
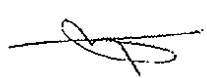
(8) Re-export

The products purchased under the Grant Aid shall not be re-exported from the recipient country.

(9) Banking Arrangement (B/A)

a) The Government of the recipient country or its designated authority shall open an account in the name of the Government of the recipient country in a bank in Japan. The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the bank to the Government of Japan under an Authorization to Pay issued by the Government of the recipient country or its designated authority.

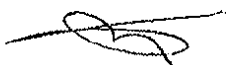


## Major Undertakings to be taken by Each Government ( Construction )

NO	Items	To be covered by Grant Aid	To be covered by Recipient side
1	To secure land		•
2	To clear level and reclaim the site when needed		•
3	To construct gates and fences in and around the site		•
4	To construct the parking lot	•	
5	To construct roads		
	1) Within the site	•	
	2) Outside the site		•
6	To construct the building	•	
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1)Electricity		
	a.The distributing line to the site		•
	b.The drop wiring and internal wiring within the site	•	
	c.The main circuit breaker and transformer	•	
	2)Water Supply		
	a.The city water distribution main to the site		•
	b.The supply system within the site ( receiving and/or elevated tanks )	•	
	3)Drainage		
	a.The city drainage main ( for storm, sewer and others ) to the site		•
	b.The drainage system ( for toilet sewer, ordinary waste, storm drainage and others ) within the site	•	
	4)Gas Supply		
	a.The city gas main to the site		•
	b.The gas supply system within the site	•	
	5)Telephone System		
	a.The telephone trunk line to the main distribution frame / panel (MDF) of the building		•
	b.The MDF and the extension after the frame / panel	•	
	6)Furniture and Equipment		
	a. General furniture		•
	b. Project equipment	•	
8	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P		•
	2) Payment commission		•

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9	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
1)	Marine(Air) transportation of the products from Japan to the recipient	•	
2)	Tax exemption and customs clearance of the products at the port of disembarkation		•
3)	Internal transportation from the port of disembarkation to the project site	( • )	( • )
10	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		•
11	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		•
12	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		•
13	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment		•





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MINUTES OF DISCUSSIONS  
ON BASIC DESIGN STUDY  
ON THE PROJECT FOR RENOVATION OF TECHNICAL SCHOOL FOR  
MEDICAL CARE IN THE KINGDOM OF CAMBODIA  
(EXPLANATION ON DRAFT REPORT)

In February, 2004, the Japan International Cooperation Agency (hereinafter referred to as " JICA ") dispatched a Basic Design Study Team on The Project for Renovation of Technical School for Medical Care (hereinafter referred to as " the Project ") to the Kingdom of Cambodia (hereinafter referred to as " Cambodia "), and through discussions, field survey, and technical examination of the results in Japan, JICA prepared a draft report of the study.

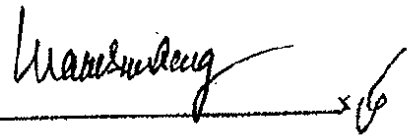
In order to explain and to consult the Cambodian side on the components of the draft report, JICA sent to Cambodia the Draft Report Explanation Team (hereinafter referred to as " the Team "), which is headed by Mr. Hiroto Mitsugi, Deputy Resident Representative, JICA Cambodia Office, from May 23 to June 6, 2004.

In the course of discussions and field survey, both parties have confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Basic Design Study Report.

Phnom Penh, June 3, 2004



Mr. Hiroto Mitsugi  
Leader  
Draft Report Explanation Team  
Japan International Cooperation Agency



Dr. Mam Bunheng  
Secretary of State for Health  
Ministry of Health  
Royal Government of Cambodia

## ATTACHMENT

### 1. Components of the Draft Report

The Royal Government of Cambodia agreed and accepted in principle the components of the draft report explained by the Team. The finally agreed lists of facilities and equipment are as shown in the ANNEX-1 and ANNEX-2 attached herewith.

### 2. Japan's Grant Aid Scheme


Cambodian side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Royal Government of Cambodia as explained by the Team and described in Annex-3 and Annex-4 of the Minutes of Discussions signed by both parties on February 24, 2004.

### 3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed items and send it to the Royal Government of Cambodia by the end of August 2004.

### 4. Other Relevant Issues

- 4-1. Cambodian side agreed to secure the enough budgets to implement the Project smoothly in line with the budget plan to be prepared, considering the responsibilities to be undertaken by Cambodian side, which described in Annex-4 of the Minutes of Discussions signed by both parties on February 24, 2004.
- 4-2. Cambodian side agreed to prepare the Project site through such works as demolishing existing facilities, felling trees, and leveling the site either by the end of November 2004 or immediately after the completion of the Project as indicated on ANNEX-3 attached herewith. Cambodian side also agreed to secure and allocate the enough budgets for such site preparation works. Japanese side will monitor the progress of the said site preparation works.

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- 4-3. Cambodian side agreed to secure and allocate the enough budgets for the connection of the utilities for the Project, such as main electricity distributing line up to power receiving panel and telephone trunk line up to main distribution frame. Cambodian side also agreed to complete the said connection of the utilities by the end of December 2005.
- 4-4. Cambodian side agreed to submit the proposed relocation plan to JICA Cambodia Office on or before June 15, 2004. This relocation plan including the estimated cost thereof must be prepared to continue the teaching and training as usual in TSMC during the construction and/or renovation works under the Project. Cambodian side also confirmed that the relocation plan should include the arrangement of the temporary facilities to be leased outside of TSMC, if necessary.
- 4-5. Cambodian side agreed to secure and allocate the enough budgets and appropriate personnel to operate and maintain the constructed and/or renovated facilities and procured equipment under the Project as well as the existing facilities and equipment. Cambodian side also agreed to submit the budget projection for the operation and maintenance costs for the management of TSMC as a whole to the Team on or before June 5, 2004.
- 4-6. Cambodian side agreed to utilize the facilities and equipment properly according to the use originally designed for.



## Required Rooms for Facility

	Name of Building	Name of Course / Zone	Name of Room
New Construction	Main Building	Administration Zone	Director
			Secretary
			Deputy Directors
			Administration
			Technical Office
			Visiting Lecturers' Room
			Meeting Room
			JICA Project Office
		X-ray Technology Course	Storage
			General Classroom
			Control Room
			X-ray Room
			Dark Room
			Ante Room
			Workshop
			General Laboratory
			Staff Room
			Storage
		Laboratory Technology Course	General Classroom
			General Laboratory
			Laboratory
			Preparation Room
			Staff Room
		Midwifery Course	Storage
			General Classroom
			Practical Training Room
		Physiotherapy Course	Staff Room
Storage			
General Classroom			
Practical Training Room			
Special Program	Staff Room		
	Storage		
Others	General Classroom		
	Storage		
	Dining Hall / Kitchen		
	Library		
	Machine Room		
Renovation Work	Nursing Course Building	Nursing Course	Pump Room
			Common Space
			General Classroom
			Practical Training Room
			Preparation Room
	Others	Staff Room	
		Visiting Lecturers' Room	
		Storage	
		Infirmary	
		Counselling	
Seminar House	Short Program	Common Space	
		Seminar Room	
		Training Room	
	Others	Continuing Education Office	
		Storage	
		Students Association	
		Teaching Materials Production	
Toilet Building	Toilet	Bookshop	
		Common Space	
		Male Toilet	
			Female Toilet

## Notes :

- Both sides confirmed that the facility mentioned above includes the necessary utilities such as electricity and water.
- The size and capacity of the facility will be determined after further studies.

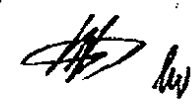


## Planned Equipment



Item No.	Location	Description	Q'ty
N- 1	Nursing/Midwifery	Anatomical human body	1
N- 2	Nursing/Midwifery	Human skeleton	1
N- 4	Nursing/Midwifery	Phantom for delivery	1
N- 5	Nursing/Midwifery	Breast cancer simulator	1
N- 6	Nursing/Midwifery	Injection simulator	8
N- 7	Nursing/Midwifery	Infant height&weight scale	2
N- 10	Nursing/Midwifery	Desk	**
N- 11	Nursing/Midwifery	Chair	**
P- 28	Physiotherapy	Wheel chair	2
P- 29	Physiotherapy	Skeleton model	1
P- 30	Physiotherapy	Joint phantom model	1
P- 31	Physiotherapy	Desk	**
P- 32	Physiotherapy	Chair	**
C- 12	Lab Technology	Electronic analytical balance	1
C- 13	Lab Technology	Haematocrit centrifuge	2
C- 14	Lab Technology	Binocular microscope	15
C- 14a	Lab Technology	Teaching microscope	2
C- 32	Lab Technology	Deep Freezer	1
C- 50a	Lab Technology	Desk	**
C- 50b	Lab Technology	Chair	**
X- 1	X-Ray Technology	General X-ray unit	1
X- 2	X-Ray Technology	Mobile X-ray apparatus	1
X- 6	X-Ray Technology	Automatic film processor	1
X- 7	X-Ray Technology	Manual film processor	2
X- 8	X-Ray Technology	X-ray film dryer	1
X- 9-1	X-Ray Technology	Cassette set	4
X- 9-1a	X-Ray Technology	Screen set	8
X- 10-1	X-Ray Technology	X-ray film hanger	4
X- 10-5	X-Ray Technology	X-ray film hanger	4
X- 11	X-Ray Technology	Liquid thermometer	4
X- 12	X-Ray Technology	Dark room timer	2
X- 19	X-Ray Technology	Film mark set	5
X- 20	X-Ray Technology	Negatoscope, portable	2
X- 21	X-Ray Technology	Negatoscope, desk top	2
X- 22	X-Ray Technology	X-ray Protective Apron	3
X- 23	X-Ray Technology	X-ray protective floor screen	3
X- 25	X-Ray Technology	Ultrasound scanner	1
X- 27	X-Ray Technology	Examination bed	1
X- 32	X-Ray Technology	Cranial phantom (bone equiv)	1
X- 33	X-Ray Technology	Joint phantom set (bone equiv)	1
X- 36	X-Ray Technology	Resolution test chart	1
X- 37	X-Ray Technology	Acryl phantom	1
X- 41	X-Ray Technology	Desk	**
X- 28	X-Ray Technology	Chair	**

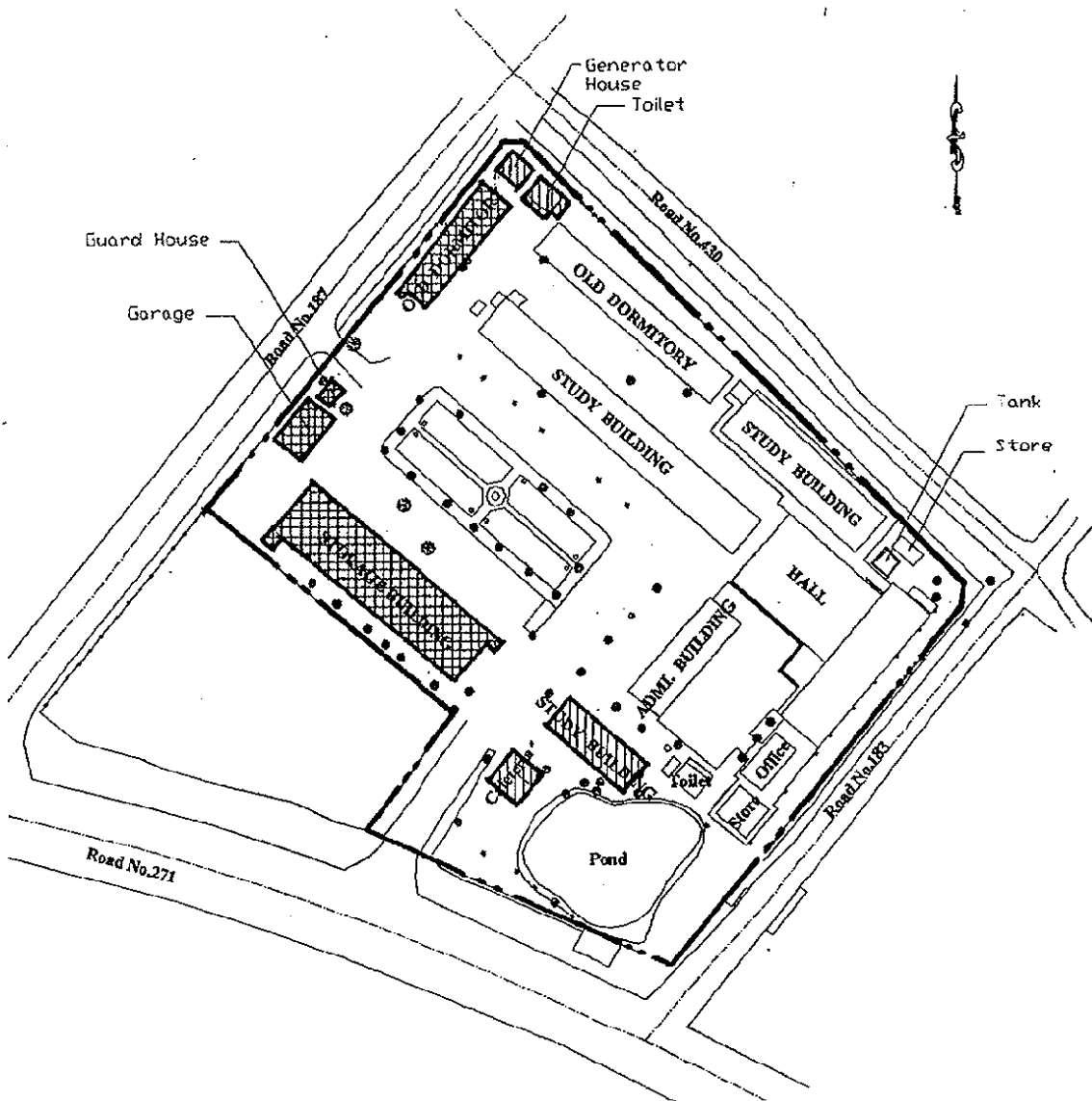
Item No.	Location	Description	Q'ty
L- 5	Teach'g Material Prod	LCD projector	4
L- 9	Teach'g Material Prod	CCD video camera	4
L- 12	Teach'g Material Prod	Digital camera	4
O- 2	Teach'g Material Prod	Computer	2
L- 13	Teach'g Material Prod	Printer for computer	2
L- 15	Teach'g Material Prod	Scanner	4
L- 16	Teach'g Material Prod	Visual presenter	4
L- 11	Teach'g Material Prod	Desk	**
L- 11a	Teach'g Material Prod	Chair	**

\*\* : included in the plan

✓  


**NOTES :**

1. Demolition of the existing facilities indicated on the Layout Plan shall be completed as follows: -
  -  To be completed by the end of November 2004, including felling trees and leveling the site.
  -  To be completed immediately after the completion of the Project, including leveling the site.
2. Broken lines on the following Layout Plan indicate the boundary lines for TSMC compound.



**LAYOUT PLAN FOR EXISTING FACILITIES**

5



**Basic Design Study on The Project for Renovation of Technical School for Medical Care  
Extent of Works**

<b>Portions by the Japanese Side</b>	<b>Portions by the Cambodian Side</b>	<b>Budget (Rough Estimation, US\$)</b>
(1) Building Works	(1) Site Preparation	(1) (1) Site Preparation
Structure works, finishing works	a) Pre Construction Works	a) ( ) include temporary access road)
(2) Electrical Works	b) Ground preparation works:	b) - US\$33,500.00
Power/trunk facilities, lighting, power outlets, P/A systems	- Demolition of existing facilities	- US\$3,000.00
(3) Utilities and Facilities	- Site grading and leveling	c) - US\$42,000.00
a) Water Supply	c) Preparation of temporary facilities for construction/renovation period	d) -N/A
Construction works for the Water supply from the valve at the water supply meter to the building and all the related internal works for the water supply.	d) Temporary power and water supply for the construction	e) -N/A
b) Sewerage system including piping works up to the connection manhole	e) Temporary access road for the construction	(2) <u>External Works and Approach Roads</u>
c) Sanitation facilities (waste water treatment facility)	(2) <u>External Works and Approach Roads</u>	-
d) Elevated tank and reserve tank	- Landscaping, planting, fence, etc within the Site.	-
e) Fire-extinguishing facilities	- Permanent road works around the site	(3) <u>Utilities and Facilities</u>
f) Electrical supply and transformer system	(3) <u>Utilities and Facilities</u>	a) -N/A
Cabling works from the high tension receiving panel in the Substation to the facilities.	a) Water Supply	b) -N/A ( include Storm Drainage )
g) Telecommunication system	Construction from the main feeder to the water valve in the site including the water supply meter.	c) -N/A
Cabling works from MDF to the facilities, including installation of conduit from the cross connection point at the site boundary to MDF	b) Sewerage	d) - US\$19,861.00 incl. Connection Fee etc. (Connection Charge US\$ /kVA) (Consumer Deposit US\$ /kVA) (Stump Duty US\$)
h) Lightning Protection System	Piping works from the connection manhole in the site to the existing sewerage line including the repair work of the existing ditch.	e) - US\$1,140.00 (Connection Charge US\$/month
i) Lighting system in the site	c) Storm Drainage	f) - US\$/line·time)
(4) Exterior Work	d) Drainage line from the site to the existing line including the expansion work of the existing drainage line.	
Road, path and parking lots within the site	e) Electrical Work	
(5) Equipment	Cabling works from the existing power supply point	
Equipment for Education Training and Operation & Maintenance	Telecommunication Work	
Electric Room, Electric Generator Room, Pump Room	Cabling work ( for Direct / Extension / Public telephone) from existing MDF/PABX to Point Distribution for new IDF/PABX .	
	The provision of gas (LPG).	

Portions by the Japanese Side	Portions by the Cambodian Side	Budget (Rough Estimation, US\$)
	<p>(4) Others</p> <p>a) Governmental works including the application and obtaining Governmental approvals and permissions</p> <p>b) Smooth custom clearance, tax exemptions and prompt internal transportation for the imported construction materials and equipment</p> <p>c) Commissions to the Japanese foreign exchange bank for its banking services based upon the Banking Arrangement (B/A) namely the advising commission of the “Authorization to Pay” and payment commission</p> <p>(5) Management, operation and maintenance cost for the new building and facilities</p> <p>(6) Tax exemptions and necessary preferential treatment for the construction staff from Japan or a third country</p> <p>(7) Smooth entry , re-entry and departure of Cambodia for the Japanese technical staff</p> <p>(8) All the expenses, other than to be born by the Japan’s Grant Aid within the scope of the Project</p>	<p>(4) Others</p> <p>a) NIL</p> <p>b) -</p> <p>c) -</p> <p>(5) -</p> <p>(6) -</p> <p>(7) -</p> <p>(8) -</p>

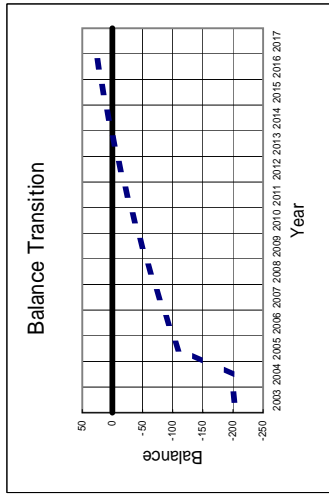
**Balance of Co-medicals in Cambodia (Supply and Demand)**

**Nurse**

Summary of Demand

	No. of Nurses		Demand	Shortage
	a	b	c=a-b	
Public				
Health Inst.	768	952	-184	
Hospital etc.	77	95	-18	
Co-medical				
Non-medical				
Public sub-total	845	1047	-202	
Private				
Health Inst.	601	601	0	
Hospital etc.	206	206	0	
103 Orgs.				
Co-medical				
Non-medical				
Private / NGO sub-Total	807	807	0	
Total Demand	1652	1855	-202	

only in Phnom Penh



Balance

Graduate Year	Supply				Demand								
	No. of Intake d	No. of Grad. rate : 98% e=d*98%	Independent * rate : 20% f=e*20%	No. of Supply 80% g=e*80%	Balance h=g+l	Total Demand I=H+H+P	Balance in Last Year j	Public Inst. No. of Workers k	Natural Reduction 5% l=k*-5%	Private Inst. No. of Workers m	Natural Reduction 2% n=m*-2%	Demand in Last Year o	Demand in Private Sector Growth of Hospital 2% p
2003	100	91	18	73	-203	-275	-202	881	-44	844	-17	601	-12
2004	100	98	20	78	-198	-276	-203	876	-44	866	-17	613	-12
2005	210	206	41	165	-110	-274	-198	915	-46	931	-19	626	-13
2006	119	117	23	93	-94	-188	-110	916	-46	959	-19	638	-13
2007	120	118	24	94	-79	-173	-94	917	-46	987	-20	651	-13
2008	120	118	24	94	-64	-158	-79	918	-46	1014	-20	664	-13
2009	120	118	24	94	-50	-145	-64	919	-46	1041	-21	677	-14
2010	120	118	24	94	-38	-132	-50	920	-46	1067	-21	691	-14
2011	120	118	24	94	-25	-120	-38	921	-46	1093	-22	705	-14
2012	120	118	24	94	-14	-108	-25	922	-46	1118	-22	719	-14
2013	120	118	24	94	-4	-98	-14	923	-46	1143	-23	733	-15
2014	120	118	24	94	6	-88	-4	924	-46	1167	-23	748	-15
2015	120	118	24	94	14	-80	6	925	-46	1191	-24	763	-15
2016	120	118	24	94	22	-72	14	926	-46	1214	-24	778	-16
2017	120	118	24	94	30	-64	22	927	-46	1237	-25	794	-16

\* The Supply ratio is as shown below.

Public Facilities	50%
Private Facilities	50%

Note:

- (1) Independent \* indicates co-medical staff working individually.
- (2) Demand in Private Sector may increase in the future.

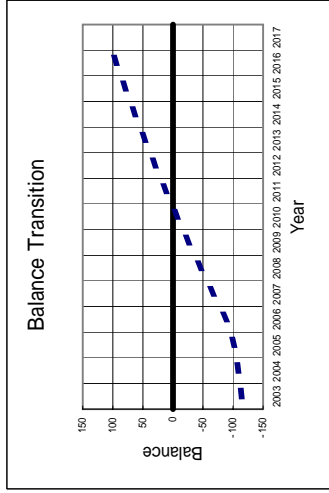
**Balance of Co-medicals in Cambodia (Supply and Demand)**

**Physiotherapist**

Summary of Demand

	Health Inst.	Hospital etc.	Co-medical Non-medical	No. of Nurses a	Demand b	Shortage c=a-b
Public				44	86	-42
Public sub-total						
Private	Health Inst.	Hospital etc.	Co-medical	44	86	-42
NGO	103 Orgs.		Non-medical	0	75	-75
Private / NGO sub- Total				0	75	-75
<b>Total Demand</b>				<b>44</b>	<b>161</b>	<b>-117</b>

Actually no worker



Balance

Graduate Year	Supply					Demand						
	No. of Intake d	No. of Grad. rate : 98% e=d*98%	Independent * rate : 20% f=e*30%	No. of Supply 70% g=e*70%	Balance h=g+l	Balance in Last Year j	Public Inst.		Private Inst.		Demand in Private Sector Growth of Hospital 2% p	
							No. of Workers k	Natural Reduction 5% l=k* -5%	No. of Workers m	Natural Reduction 2% n=m* -2%		
2003	15	9	3	6	-115	-117	47	-2	3	0	75	-2
2004	14	14	4	10	-109	-119	50	-2	8	0	77	-2
2005	16	16	5	11	-103	-114	53	-3	13	0	78	-2
2006	25	25	7	17	-90	-108	59	-3	22	0	80	-2
2007	40	39	12	27	-69	-96	69	-3	35	-1	81	-2
2008	40	39	12	27	-48	-75	80	-4	48	-1	83	-2
2009	40	39	12	27	-28	-55	89	-4	61	-1	84	-2
2010	40	39	12	27	-9	-36	99	-5	73	-1	86	-2
2011	40	39	12	27	10	-17	107	-5	85	-2	88	-2
2012	40	39	12	27	28	1	116	-6	97	-2	90	-2
2013	40	39	12	27	45	18	124	-6	109	-2	91	-2
2014	40	39	12	27	62	34	131	-7	121	-2	93	-2
2015	40	39	12	27	78	50	138	-7	132	-3	95	-2
2016	40	39	12	27	93	66	145	-7	143	-3	97	-2
2017	40	39	12	27	108	81	152	-8	154	-3	99	-2

\* The Supply ratio is as shown below.

Public Facilities	50%
Private Facilities	50%

Note:

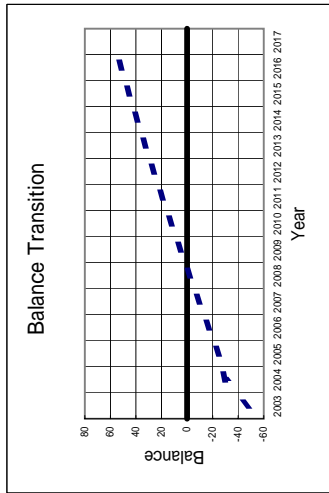
- (1) Independent \* indicates co-medical staff working individually.
- (2) Demand in Private Sector may increase in the future.

## Balance of Co-medicals in Cambodia (Supply and Demand)

### Laboratory Technician

#### Summary of Demand

	Health Inst.	Hospital etc.	Co-medical	No. of Nurses	Demand	Shortage
				a	b	C=a-b
Public			Co-medical	370	415	-45
			Non-medical			0
Public sub-total				370	415	-45
Private	Health Inst.	Hospital etc.	Co-medical	95	95	0
NGO	103 Orgs.		Non-medical			0
Private / NGO sub-Total				95	95	0
<b>Total Demand</b>				<b>465</b>	<b>510</b>	<b>-45</b>



#### Balance

Graduate Year	Supply					Total Demand I=H+H+P	Balance h=g+l	Balance in Last Year j	Public Inst.			Private Inst.			Demand in Private Sector Demand in Last Year o	Growth of Hospital 2% p
	No. of Intake d	No. of Grad. rate : 98% e=d*98%	Independent * rate : 20% f=e*20%	No. of Supply 80% g=e*80%	No. of Supply 80% g=e*80%				No. of Workers k	Natural Reduction 5% l=k*-5%	No. of Workers m	Natural Reduction 2% n=m*-2%	Demand in Last Year o	Growth of Hospital 2% p		
2003	25	24	5	19	19	-68	-45	380	-19	105	-2	95	-2			
2004	54	53	11	42	42	-72	-49	382	-19	124	-2	97	-2			
2005	36	35	7	28	28	-53	-30	377	-19	135	-3	99	-2			
2006	40	39	8	31	31	-49	-25	374	-19	148	-3	101	-2			
2007	40	39	8	31	31	-41	-18	371	-19	161	-3	103	-2			
2008	40	39	8	31	31	-34	-10	368	-18	173	-3	105	-2			
2009	40	39	8	31	31	-27	-3	365	-18	186	-4	107	-2			
2010	40	39	8	31	31	12	5	363	-18	198	-4	109	-2			
2011	40	39	8	31	31	19	12	360	-18	209	-4	111	-2			
2012	40	39	8	31	31	25	19	358	-18	221	-4	114	-2			
2013	40	39	8	31	31	32	25	356	-18	232	-4	116	-2			
2014	40	39	8	31	31	39	32	353	-18	243	-5	118	-2			
2015	40	39	8	31	31	45	39	351	-18	254	-5	120	-2			
2016	40	39	8	31	31	51	45	350	-17	265	-5	123	-2			
2017	40	39	8	31	31	57	51	348	-17	275	-5	125	-3			

\* The Supply ratio is as shown below.

Public Facilities	50%
Private Facilities	50%

Note:

- (1) Independent \* indicates co-medical staff working individually.
- (2) Demand in Private Sector may increase in the future.

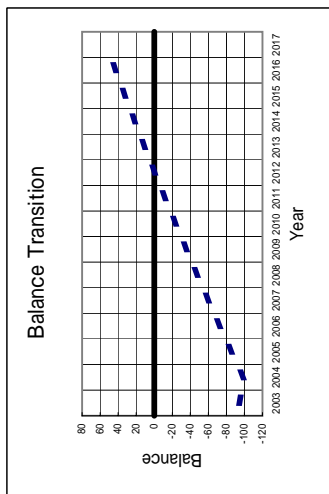


## Balance of Co-medicals in Cambodia (Supply and Demand)

### Midwife

#### Summary of Demand

	Health Inst.	Hospital etc.	Co-medical Non-medical	No. of Nurses a	Demand b	Shortage C=a-b
Public				599	671	-72
Public sub-total						0
Private	Health Inst.	Hospital etc.	Co-medical	599	671	-72
NGO	103 Orgs.		Non-medical	31	31	0
Private / NGO sub- Total				31	31	0
<b>Total Demand</b>				<b>630</b>	<b>702</b>	<b>-72</b>



#### Balance

Graduate Year	Supply					Demand						
	No. of Intake d	No. of Grad. rate : 98% e=d*98%	Independent * rate : 20% f=e*10%	No. of supply 90% g=e*90%	Balance h=g-I	Balance in Last Year j	Public Inst. No. of Workers k	Natural Reduction 5% l=k*-3.5%	Private Inst. No. of Workers m	Natural Reduction 2% n=m*-2%	Demand in Demand in Last Year o	Growth of Hospital 2% p
					I=H+H+p							
2003	0	0	0	0	-94	-72	599	-21	31	-1	31	-1
2004	18	18	2	16	-100	-94	586	-21	38	-1	32	-1
2005	40	39	4	35	-87	-122	583	-20	55	-1	32	-1
2006	40	39	4	35	-74	-109	580	-20	72	-1	33	-1
2007	40	39	4	35	-61	-96	578	-20	88	-2	34	-1
2008	40	39	4	35	-49	-84	575	-20	104	-2	34	-1
2009	40	39	4	35	-37	-72	573	-20	120	-2	35	-1
2010	40	39	4	35	-25	-60	570	-20	135	-3	36	-1
2011	40	39	4	35	-13	-48	568	-20	150	-3	36	-1
2012	40	39	4	35	-1	-37	566	-20	164	-3	37	-1
2013	40	39	4	35	10	-26	564	-20	179	-4	38	-1
2014	40	39	4	35	21	-15	562	-20	193	-4	39	-1
2015	40	39	4	35	32	-4	560	-20	207	-4	39	-1
2016	40	39	4	35	42	7	558	-20	220	-4	40	-1
2017	40	39	4	35	52	17	556	-19	233	-5	41	-1

\* The Supply ratio is as shown below.

Public Facilities	50%
Private Facilities	50%

Note:

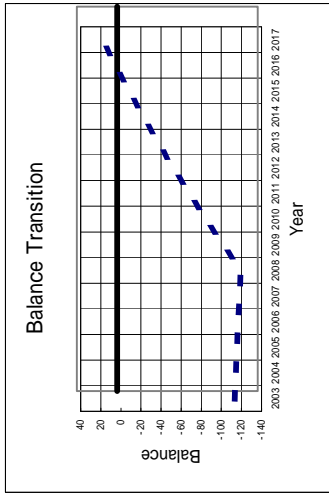
- (1) Independent \* indicates co-medical staff working individually.
- (2) Demand in Private Sector may increase in the future.

X-Ray Technician

Balance of Co-medicals in Cambodia (Supply and Demand)

Summary of Demand

	Health Inst.	Hospital etc.	Co-medical	No. of Nurses	Demand	Shortage
				a	b	C=a-b
Public			Co-medical	7	77	-70
			Non-medical	0	0	0
Public sub-total				7	77	-70
Private	Health Inst.	Hospital etc.	Co-medical	0	42	-42
NGO	103 Orgs.		Non-medical	0	0	0
Private / NGO sub-Total				0	42	-42
<b>Total Demand</b>				<b>7</b>	<b>119</b>	<b>-112</b>



Balance

Graduate Year	Supply						Demand							
	No. of Intake		No. of Grad. rate : 98%		Independent * rate : 20%		No. of Supply 100%		Balance		Total Demand		Balance in Last Year	
	d	e-d*98%	f-e*98%	g-e*100%	h=fg+I	i=j+I+H+P	j	k	l=k*-5%	m	n=m*-2%	o	p	
2003		0	0	0	-113	-113	-112	7	0	0	0	42	-1	
2004		0	0	0	-114	-114	-113	7	0	0	0	43	-1	
2005		0	0	0	-116	-116	-116	6	0	0	0	44	-1	
2006		0	0	0	-117	-117	-116	6	0	0	0	45	-1	
2007		0	0	0	-118	-118	-117	6	0	0	0	45	-1	
2008		0	0	0	-119	-119	-118	5	0	0	0	46	-1	
2009	20	20	0	0	-101	-121	-119	15	10	0	0	47	-1	
2010	20	20	0	0	-84	-104	-101	24	19	0	0	48	-1	
2011	20	20	0	0	-68	-88	-84	33	29	-1	-1	49	-1	
2012	20	20	0	0	-52	-72	-68	41	38	-1	-1	50	-1	
2013	20	20	0	0	-37	-57	-57	49	47	-1	-1	51	-1	
2014	20	20	0	0	-22	-42	-37	56	56	-1	-1	52	-1	
2015	20	20	0	0	-8	-28	-22	63	65	-1	-1	53	-1	
2016	20	20	0	0	5	-14	-8	70	73	-1	-1	54	-1	
2017	20	20	0	0	18	-1	5	76	81	-2	-2	55	-1	

\* The Supply ratio is as shown below.

Public Facilities	50%
Private Facilities	50%

Note:

- (1) Independent \* indicates co-medical staff working individually.
- (2) Demand in Private Sector may increase in the future.

## ACTUAL RESULTS OF EMPLOYMENT FOR TSMC GRADUATES

Name of Course	Place of Employment	Number of Beds	Total Number of Employee	Total Number of Graduates (1980-2003)	Actual Results of Employment	
					TSMC Graduates	Other Graduates
Nursing Course	Calmette Hospital	268	164		162	RTC 37
	Sihanouk Hospital	500	181		262	RTC 47
	National Pediatric Hospital	114	113		118	
	Hope Center	23~25	N/A		Nursing : 66 X-ray : 2	
	Kuntha Bopha	311	135		157	RTC 5
	Health Centers	-	593		21	
<b>Sub-total for Nursing Course</b>				<b>3,930</b>	<b>720 (18.3%)</b>	<b>89</b>
Midwifery Course	Calmette Hospital	266	26		24	
	National MCH Center	154	116		136	
	Red Cross	-	0		9	
	Municipal HP & HC	150	103		90	
<b>Sub-total for Midwifery Course</b>				<b>643</b>	<b>259 (40.3%)</b>	<b>14</b>
Laboratory Technology Course	Institute of Pasteur	-	6		7	
	Blood Bank	-	7		6	
	National TB Center	150	14		14	
<b>Sub-total for Laboratory Technology Course</b>				<b>621</b>	<b>27 (4.3%)</b>	
Physiotherapy Course	Calmette Hospital	266	1		0	
	Sihanouk Hospital	500	4		1	
	National Pediatric Hospital	114	1		0	
	Kuntha Bopha	311	3		2	
	Poean Nasomak Hospital	250	5		2	
	National TB Center	150	3		4	
	Districts					
	- Takeo				2	
	- Prey Veng				1	
	- Svay Reang				2	
	- Kg Chhnang				2	
	- Pursat				3	
	- Battambang				4	RTC 2
- Kg Som				1		
<b>Sub-total for Physiotherapy Course</b>				<b>147</b>	<b>24 (16.3%)</b>	<b>2</b>
<b>GRAND TOTAL</b>				<b>5,341</b>	<b>1,030</b>	<b>105</b>

Source : Data from MOH (2003) and Annual Summary of TSMC Graduates (2003)

Remark : All hospitals and medical institutions TSMC send students for practical training have been surveyed.