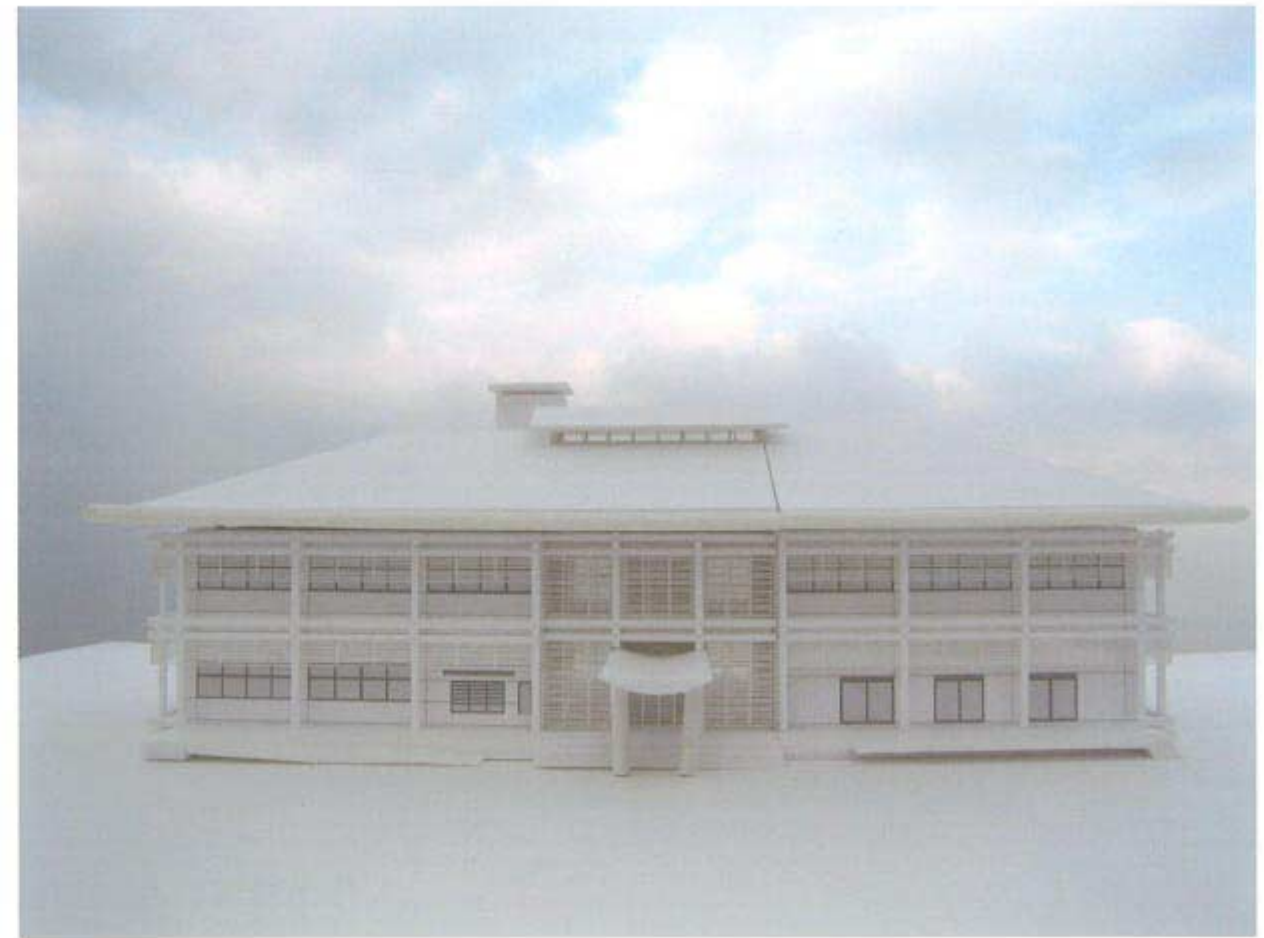
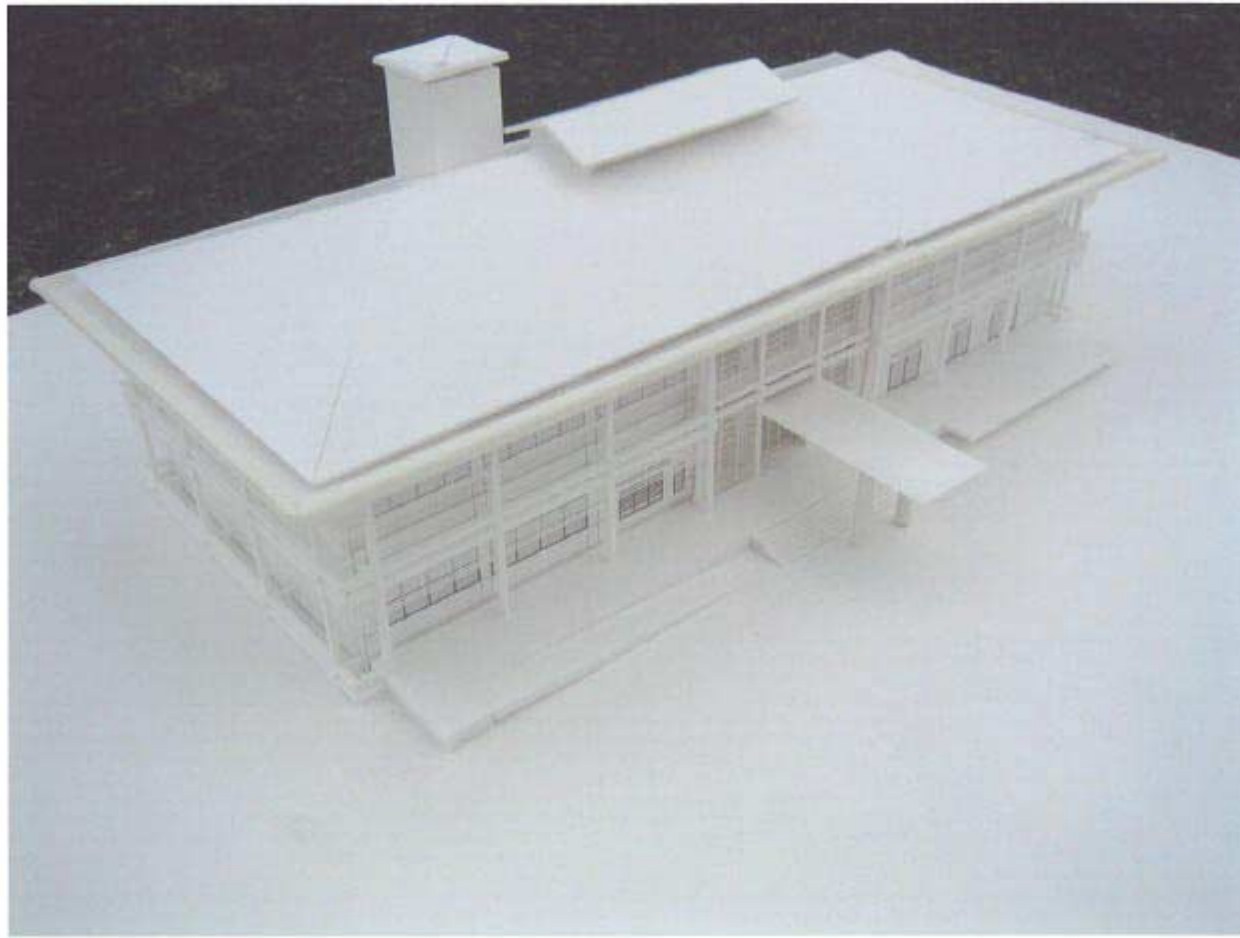


THE PROJECT FOR CONSTRUCTION OF  
THE MYANMAR-JAPAN CENTER FOR HUMAN RESOURCES DEVELOPMENT  
IN THE UNION OF MYANMAR

PACIFIC CONSULTANTS INTERNATIONAL

Model Photos





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Model Photos

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## Abbreviations

CFDTC	Central Forestry Development Training Center
DG	Director General
DHE	Department of Higher Education
ED	Engineering Department
E/N	Exchange of Notes
GDP	Gross Domestic Product
IOE	Yangon Institute of Economics
ION	Institute of Nursing
JICA	Japan International Cooperation Agency
LJCC	Lao-Japan Human Resource Cooperation Center
M/D	Minutes of Discussions
MEP	Ministry of Electrical Power
MEPE	Myanmar Electrical Power Enterprise
MFR	Ministry of Finance and Revenue
MJC	Myanmar-Japan Center for Human Resources Development
MJCC	Mongolia-Japan Human Resource Cooperation Center
MOE	Ministry of Education
MPT	Myanmar Posts & Telecommunications
PW	Ministry of Construction Public Works
SC	Steering Committee
VJCC-HNC	Vietnam-Japan Human Resources Cooperation Center in Hanoi
VJCC-HCMC	Vietnam-Japan Human Resources Cooperation Center in Ho Chi Minh City
YCDC	Yangon City Development Committee
YU	Yangon University
YUFL	Yangon University of Foreign Languages

## **SUMMARY**

## SUMMARY

The Union of Myanmar (hereinafter referred to as "Myanmar") abandoned their socialistic economic policy, etc., when change in government took place in 1988 and instituted measures to adopt market economy and to open up its market to other countries. Thereafter, effects of reform gradually began to take shape five years from 1992 onwards and maintained an economic growth rate exceeding 6% per annum. However, from the aftermath of the 1997 Asian currency and economic crisis, Myanmar's economic growth rate decelerated due to a sharp drop in investment from ASEAN countries and depressed agricultural production brought about by floods, drought and other factors. In recent years, although annual GDP growth rate was maintained at an average of approximately 6% (1994-1999), shortage of foreign currency resulting from marked inflation, an unrealistic exchange rate, inflexible economic structure, etc., has become even more serious.

Now, to reshape Myanmar's economy and to realize sustainable development, reconstructing the various fields of its industry is considered to be the matter of top priority over all others. In particular, what Myanmar requires are to develop human resources, build up foreign trade and foster cooperation between business sectors. It is considered that creating human resources which contribute to activate economy will be the driving force to bring about development in this field.

On the other hand, Myanmar has maintained a good and close relationship with Japan and has been positioned as one of the important countries which Japan assists along with other Southeast Asian nations. Furthermore, at the Myanmar/Japan summit meeting in November, 1999, as then Prime Minister Obuchi expressed Japan's readiness to offer cooperation for Structural Adjustment of Myanmar's Economy. A joint task force consisting of governmental representatives of the two countries, industrial and academic circles was established and cooperation commenced.

Under such circumstances, a Project Formation Study was conducted in March, 2000 to discuss establishment of the Center for Human Resources Development. The main activities of the Center will be to hold "business courses", "Japanese language courses" and "culture exchange programs". Thereafter, in light of the results of the above study, the government of Myanmar requested Japan's Grant Aid for the facility and equipment required to establish the Myanmar - Japan Center for Human Resources Development (hereinafter referred to as "MJC"). Moreover, the government of Myanmar requested that Technical Cooperation Project be initiated relative to the "business courses", "Japanese language courses" and "culture exchange programs" to be implemented by the MJC. In response thereto, the 1<sup>st</sup> and

2<sup>nd</sup> Preliminary Study Team by Technical Cooperation Project were dispatched in May and September, 2002 respectively. The Preliminary Study Team was dispatched to the Vietnam - Japan Human Resources Cooperation Center in Hanoi and the Lao - Japan Human Resources Cooperation Center in November the same year and the 3<sup>rd</sup> Preliminary Study Team was dispatched in January, 2003.

After conducting the above mentioned studies and having a background of circumstances, this Project is to construct required facility and equipment adequate to implement "business courses", "Japanese language courses" and "culture exchange programs" at the MJC in close collaboration with Technical Cooperation Project activities. In the event competent and capable personnel who can cope with market economy through activities of the MJC are brought up in the days and years to come, not only will Myanmar's shift to market economy be facilitated but also anticipated that closer relationship between Myanmar and Japan will become more real.

In response to the said requests, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team to Myanmar between 27 January and 22 February, 2003 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 with officials concerned of the Government of Myanmar on the components of the draft report, JICA dispatched the Basic Design Explanation Team to Myanmar between May 15 and 31, 2003. In consequence, the government of Myanmar's basic agreement was obtained.

For the basic design of this Project, the natural and social conditions of Myanmar, construction and material procurement conditions, implementing organization's maintenance and management capability as well as collaboration and coordination, etc., with the Technical Cooperation Project were taken into consideration and design policy determined. The outline of the final plan is as follows:



< Facility Plan >

	Room Name		Total Area (m <sup>2</sup> )	Remarks
1	Lobby/ Exchange	1.1 Lobby/Exhibition Hall	311.08	Including 2 <sup>nd</sup> Floor Exhibition Space
		1.2 Library	179.00	Including PC Room & Locker Room
		Sub-Total	490.08	
2	Seminar	2.1 Seminar Room	126.00	2 rooms
		2.2 Computer Room	63.00	
		2.3 Culture Exchange Room	66.00	Divided into 2 rooms with partition
		2.4 Culture Exchange Room (Japanese-style Room)	32.00	
		Sub-Total	287.00	
3	Administration	3.1 Director Room	72.00	2 rooms
		3.2 Reception Room	36.00	Can be used as a small meeting room
		3.3 Administration Room	63.00	
		3.4 Instructors Room	63.00	
		3.5 Meeting Room	66.00	Can be used as a seminar room
		3.6 Secretariat for Alumni Association	13.50	
		Sub-Total	313.50	
4	Others	4.1 Auditorium	189.00	
		Interpretation Room Projection Room	15.00	
		4.2 Electronic Room	54.00	
		4.3 Machinery Space	36.50	
		4.4 Storage	16.50	2 rooms
		4.5 Kitchenette	18.30	3 rooms
		4.6 Toilets	55.00	On first & second floor Including Toilets for the disabled
		4.7 Circulation	204.82	
		Sub-Total	589.12	
Total			1,679.70	

< Equipment Plan >

	Category	Content	Number of items
1	Entrance Hall	Large-sized display system 1 unit	13
2	Auditorium	AV system 1 unit	35
3	Furniture	Tables (Library, Auditorium, Seminar, Others), Chairs, Book shelves	700

In case this plan is to be implemented by Japan's Grant Aid, the term of work for the entire project is assumed to be about 18 months including time required for detailed design. The Cost Estimate required for this Project is expected to be approximately 454 million Japanese yen (some 436 million Japanese yen from Japan and Myanmar to shoulder some 18 million Japanese yen). This cost estimate is provisional and would be further examined by the Government of Japan for the approval of the Grant.

The Department of Higher Education, Lower Myanmar (hereinafter referred as to "DHE") will be the Project's implementing organization. According to a trial calculation performed by the Myanmar side, annual running cost (includes fees and charges for electricity, telephone, fuel, water supply and drainage services, etc.) of the MJC is estimated to be approximately 5.9 million Kyat, and personnel expenses are estimated at 2.3 million Kyat according to a trial calculation performed by those involved in the Technical Cooperation Project. DHE is of the intention to apply to the Ministry of Education (hereinafter referred as to "MOE") for a special budget corresponding to running cost, personnel expenses, etc., in addition to expenses it must shoulder to newly establish the Center and it is expected that budget required to implement the Project and to maintain and run the new facilities will be secured. The revenue and expenditure plan in connection with the management and operation budget of the MJC is envisaged to be covered by not only MOE's special budget but also from fees to be collected for the various courses. If the MOE's budget and fees collected for the courses can be secured on a steady basis, it is believed that management of the MJC would not encounter difficulties.

The main effects assumed by implementing this Project are as described hereinafter.

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

- 1) By preparing and arranging for seminar and computer rooms necessary to hold business courses and Japanese language courses, it will become possible to implement the required curriculum for Japanese language education and to bring up competent and capable personnel who will eventually engage in the making of market economy.
- 2) By preparing and arranging for a culture exchange room and Japanese-style room, it will become possible to carry out programs and activities which contribute to promote culture exchange between Myanmar and Japan.
- 3) By preparing and arranging for an auditorium, it will become possible to hold Japanese speech contests, show Japanese movies, hold various lecture meetings and all sorts of exhibitions, workshops, etc., based at the MJC which were hitherto held at the Japanese Embassy or other rental facilities.
- 4) By preparing and arranging for a library which can accommodate approximately 5,000 books related to Japan, economy, etc., as well as provide reading space, it will become possible to make public and to gather information at the MJC which will provide required information to visitors as well exchange information based thereat.

## **(2) Indirect Effects**

- 1) By the planned facilities being established and maintained under the Project and their realizing required activities related to Japanese language education, market economy and culture exchange between Myanmar and Japan, the MJC is anticipated to play the main role in academic and culture exchange between the two nations.
- 2) By the planned facilities being established and maintained under the Project realizing required activities related to Japanese language education, market economy and culture exchange between Myanmar and Japan, intensification of human resources engaged in various sectors of Myanmar's society such as more people learning about Japan and their language, more capable Japanese language teachers becoming available, development of competent and capable persons who contribute towards bringing about market economy, etc., can be expected.
- 3) Again, by the planned facilities being established and maintained under the Project realizing required activities related to Japanese language education, market economy and culture exchange between Myanmar and Japan, all sorts of interchanges at various levels such as state level, academic exchange, private sector exchange, etc., will materialize facilitating mutual understanding.
- 4) Through the planned facilities being established and maintained under the Project and by the MJC strengthening cooperation with other Japan Centers in Asian nations and through various activities, such as information exchange between Japan and other nations all over Asia, should certainly promote mutual understanding between each other as well as intensify human resources of each nation concerned.

In conclusion, recommendations relative to executing this Project are described below.

### **(1) Establishment of Management Organizations in the MJC by the Myanmar Side**

Although management and operation of the presently planned MJC will take the form of joint management between Japan's Technical Cooperation Project and Myanmar, it is actually expected to be largely dependent on those involved in the Technical Cooperation Project. The Myanmar side is now in the course of selecting staff to operate and manage the Center and it is considered that establishing a Myanmar management system will in the real sense lead to educational, economic and culture exchange between both nations and substantial joint activity by staff of both nations. Therefore, establishing a Myanmar management system both in respect to human

resources and financial aspects through the Technical Cooperation Project will be required.

## **(2) Establishment of MJC Functions**

The MJC will aim at establishing the function as the central organ within Myanmar for exchange between Myanmar and Japan. In regard to the future with the Center at the core, there is ample room to scrutinize plans, to expand activities through cooperation and exchange with other universities and research institutes such as implementing scientific activity cooperation with each faculty, etc., of Yangon University where the MJC is situated. Therefore, whilst constantly paying close attention to Myanmar's national educational plans and to the direction in which market economy is heading, by scrutinizing the role of the Center amidst such circumstances, it is felt that expanding the functions of the Center and making it function more effectively will indeed be possible.

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# **CHAPTER 1**

## **BACKGROUND OF THE PROJECT**

# **CHAPTER 1      BACKGROUND OF THE PROJECT**

## **1-1   Background and Outline of Grant Aid Request**

### **(1)   Background of the Request**

From 1988, the government of the Union of Myanmar (hereinafter referred to as "Myanmar") has instituted measures to adopt market economy and to open up its market to other countries. However, from the aftermath of the 1997 Asian currency and economic crisis, Myanmar's economic growth decelerated due to sharp drop in investment from ASEAN countries and depressed agricultural production brought about by floods, drought and other factors. Thereinafter, the government of Myanmar emphasizes the economic diversity. In order to accomplish activation of the market and sustain economic growth, Myanmar needs to develop human resources, build up foreign trade and foster to cooperation between business sectors. The government of Myanmar has placed special emphasis on to education and training development in order to improve the general educational level of the populace and also to prepare human resources for economic development of Myanmar. However, the institutions of higher education have insufficient number of teachers, budget and curriculum in their human resource funding required to educate people to become scholars, executive officers, businessman, etc., who will bear the future of Myanmar.

On the other hand, Myanmar has maintained a good and close relationship with Japan and has been positioned as one of the important countries which Japan assists along with other Southeast Asian nations. Furthermore, at the Myanmar/Japan summit meeting in November, 1999, as then Prime Minister Obuchi expressed Japan's readiness to offer cooperation for Structural Adjustment of Myanmar's Economy. A joint task force consisting of governmental representative of the two countries, industrial and academic circles was established and cooperation commenced.

Under such circumstances, a Project Formation Study was conducted in March, 2000 to discuss establishment of the Center for Human Resources Development. The main activities of the Center will be to hold business courses, Japanese language courses and culture exchange programs. Thereafter, in light of the results of the above study, the government of Myanmar requested Japan's Grant Aid for the facility and equipment

required to establish the Myanmar - Japan Center for Human Resources Development (hereinafter referred to as "MJC"). Moreover, the government of Myanmar requested that Technical Cooperation Project be initiated relative to the business courses, Japanese language courses and culture exchange programs to be implemented by the MJC. In response thereto, the 1<sup>st</sup> and 2<sup>nd</sup> Preliminary Study Team by Technical Cooperation Project were dispatched in May and September, 2002 respectively. The Preliminary Study Team was dispatched to the Vietnam - Japan Human Resources Cooperation Center in Hanoi and the Lao - Japan Human Resources Cooperation Center in November the same year and the 3rd Preliminary Study Team was dispatched in January, 2003.

After conducting the above mentioned studies and having a background of circumstances, this Project is to construct required facility and equipment adequate to implement "business courses", "Japanese language courses" and "culture exchange programs" at the MJC in close collaboration with Technical Cooperation Project activities. In the event competent and capable personnel who can cope with market economy through activities of the MJC are brought up in the days and years to come, not only will Myanmar's shift to market economy be facilitated but also anticipated that closer relationship between Myanmar and Japan will become more real.

## (2) Outline of the Request and Main Components

The outline and main components of the request from the government of Myanmar about this Project are shown below.

### [Outline of the Project]

- 1) Overall Goal: To promote and develop the market economy in Myanmar and mutual understanding between Myanmar and Japan.
- 2) Project Purpose: To construct the facility of the MJC and develop human resources for the market economy in Myanmar.
- 3) Expected Outputs: To construct facility and install proper equipment necessary for MJC
- 4) Activities and Inputs:
  - A. Contents of request to the Japanese side:
    - Facilities construction: the Center for Human Resources Development
    - Equipment supply: Equipment for educational training, administration and library, and furniture etc.
  - B. Execution plan by the Myanmar side:
    - Conducting the courses using the planned facility and equipment, deploying necessary teachers, and developing operation and maintenance system.
- 5) Target area (site): Yangon University, Yangon, Myanmar. (Nationwide in long term.)
- 6) Direct/Indirect Beneficiaries:
  - A. Direct beneficiary: Students in and around Yangon, officials and enterprises.
  - B. Indirect beneficiary: All the citizens in both countries and enterprises to which MJC brings positive effects.



## **CHAPTER 2**

### **CONTENTS OF THE PROJECT**

## **CHAPTER 2     CONTENTS OF THE PROJECT**

### **2-1   Basic Concept of the Project**

#### **(1)   Overall Goal and Project Purpose**

The Overall Goal of this Project is to promote and develop the market economy in Myanmar and mutual understanding between Myanmar and Japan. The Project should be implemented in close collaboration between facility construction by the Grant Aid and Technical Cooperation Project which provides assistance to the activities of MJC. To realize the overall goal, the main objective of this Project is to provide the facility and equipment necessary for MJC to implement "business courses", "Japanese language courses" and "culture exchange programs" based on the request from the Myanmar side and results of the Basic Design Study.

#### **(2)   Outline of the Project**

This Project is to construct the facility of the MJC and to procure equipment for necessary for activities of MJC in close collaboration with Technical Cooperation Project, and implements three activities which include "business courses", "Japanese language courses" and "culture exchange programs" to realize the above mentioned Overall Goal and Project Purpose. It is expected that the human resources who respond to market economy in Myanmar are developed and the mutual understanding and friendly relations between Myanmar and Japan will also be immensely promoted by this implementation. This Project is to construct the facility of the MJC and to procure equipment necessary for implementation of Technical Cooperation Project activities in MJC.

### **2-2   Basic Design of the Requested Japanese Assistance**

#### **2-2-1   Design Policy**

The basic design of the facilities in this Project is based on the following design policies considered from the results of the field survey, the natural and social conditions of Myanmar, the construction and procurement conditions, the maintenance and management capability of the Implementation Agency, adjustments made in cooperation with Technical Cooperation Project and construction schedule under Japan's Grant Aid.

- (1) Having examined the functions and the activity plan required for MJC, the overall plan for the contents and function levels of new facility and equipment will be designed to satisfy its purpose.
- (2) Having compared/examined relevant similar facilities in Myanmar and by Japan's Grant Aid, the advantages that we could apply for the Project will be referred. On the other hand, the current problems are expected to be improved as much as possible in the Project.
- (3) The environmental condition, local climate (rain, sunshine and wind) and social customs should be taken into consideration in the design of the facilities.
  - 1) The level of the first floor will be raised the same as the existing buildings in campus of Yangon University in order to prevent water infiltration and provide radiant heat protection from the ground.
  - 2) The roof should be sloped in order to provide protection from direct radiation of sunlight and to have positive protection from rain water.
  - 3) Deep eave overhangs and louvers can help to provide shade in the rooms from direct sunlight and intense rainfall and to facilitate natural ventilation.
- (4) The design of the facility and equipment plan should allow low cost and easy maintenance based on the technical support and maintenance/management system from the Myanmar side.
- (5) Rationalizing the construction by lowering the cost are promoted and easy maintenance should be considered through the maximum use of local or third county construction methods and materials.
- (6) Functional technology, durability and practicality should be considered within the appropriated budget. Also, the design should be in harmony with the surrounding environment and have the character of MJC.
- (7) Understanding and rationalizing the equipment which are not contained in the Project should be fully considered.
- (8) Regarding request of equipments, almost all equipments are supplied by the Technical Cooperation Project. However, the furniture, which should be included in the institution, such as desks, chairs, bookshelves will be adjusted with the construction plan. Mutual adjustment will be planned by the institution.

## 2-2-2 Basic Plan (Construction Plan/Equipment Plan)

### 2-2-2-1 Results from Examining the Contents of Request

#### (1) Facility Planning

##### 1) Contents of Request

The contents of request for the facility, which the Basic Design Study covered, were agreed by the Myanmar side after discussion and examination, and described in the Minutes of Discussions signed on February 7, 2003. Table 2-1 shows the confirmed contents of request for the facility.

**Table 2-1 Required Rooms from the Myanmar Side (facilities)**

No.	Items	Contents
1	Lobby/Exchange Zone (1) Lobby (2) Library Reading Desk Internet Booth A/V booth Study Carrel Control Desk Rack Room (3) Guidance Booths	- For 40 persons - For 8 PC booths - 2 video viewing booths - 5 study booths - For 1 librarian - For 5,000 books - 2 booths
2	Seminar Zone (1) Multi-Purpose Room (2) Seminar Room (3) Computer Room (4) Cultural Exchange Room (5) Room for Exchange Program (6) Pantry	- 80 persons, partition into 3. 2 translators booths included. - 30 persons x 2 rooms - For 20 PC's - 1 room with 8 tatami mats - 5 persons x 2 rooms, 15 persons x 1 room - For beverage
3	Administration Zone (1) Director Room (2) Reception Room (3) Administration Office (4) Instructor Room (5) Meeting Room	- 2 rooms - For 6 administration staff - For 9 instructors - 20 persons x 1 Room
4	Others (1) Auditorium (2) Circulation (3) Toilets (4) Machinery Space (5) Storage Space	- 150 persons x 1 room, for seminar and sports competition - Corridors, staircases - As required - Power, pump, generator, air conditioner, etc. - For seminar equipment, office supplies, etc.

## 2) Examination of the Contents of Request

For each requested facility shown in Table 2-1, discussions were held with the Myanmar side in terms of the necessary number and scale of each room, as they have been examined in the Basic Design Study. Concerning the contents of the Minutes of Meetings between the Myanmar side and Technical Cooperation Project Study Team. Further discussions were held in Japan after the Basic Design Study. The results are presented as follows:

### A. Library

Rack room for 5,000 books, reading desks for 40 persons, 8 internet booths and 2 A/V booths etc., were requested by the Myanmar side. Their necessity is acknowledged, and the contents, the form, and the size of the facility have been planned through comprehensive discussions with the Myanmar side and Technical Cooperation Project Study Team.

### B. Seminar Room

2 seminar rooms for 30 persons were requested by the Myanmar side. 1 room each for business Courses and Japanese language courses are acknowledged as necessary.

### C. Computer Room

Computer room for 20 persons was requested by the Myanmar side. Through comprehensive discussions with the Myanmar side, it was confirmed that they would use computers for every class in the business courses and Japanese language courses, one Computer Room for 30 persons was acknowledged as necessary. Also, it was confirmed that existing computer rooms in Yangon Institute of Economics (IOE) and Yangon University of Foreign Languages (YUFL) were used efficiently, so necessity of computer room in MJC was acknowledged as required by the Basic Design Study.



#### D. Auditorium and Multi-Purpose Room (Culture Exchange Room)

Multi-Purpose Room for 80 persons which can be divided into 3 rooms, was requested by the Myanmar side. However, such kind of divided small spaces can be inconvenient for some activities. Through further discussions with the Myanmar side during the Basic Design Study it was agreed that a small-scale auditorium for various kinds of cultural, academic and social programs are suitable for their use. Also, an auditorium is necessary to implement short-term lectures in the business courses. As a result of discussions with Technical Cooperation Project Study Team after the Basic Design Study, it was recognized that a small-scale auditorium is needed for their planned activities. Also, a Culture Exchange Room for multi-purpose use which is not duplicated as the auditorium is appropriate instead of the Multi-Purpose Room above mentioned.

#### E. Administration Office

Each room requested for administration is considered necessary for the operation of MJC. It should be planned considering flexible use and on the second floor for security.

- a) 2-Director Rooms
- b) Reception Room (can be used as a small meeting room)
- c) Administration Office for 6 staff (for use by both the Myanmar side and the Japanese side)
- d) Instructor Room for 9 instructors (for use by both the Myanmar side and the Japanese side)
- e) Meeting Room for 20 persons (can be used as a seminar room)

#### F. Others

Barrier free concept, which is not common in Myanmar, is going to be considered in the facility planning, mainly for the first floor, in order to make MJC people-friendly.

## **(2) Equipment**

### **1) Activity and equipment needed in MJC**

The Technical Cooperation Project Study Team that preceded the Project presented an equipment list showing necessary items and their procurement schedule (shown in Table 2-2). Based on this list and discussions with the Myanmar side and Technical Cooperation Project Study Team, we made examination and survey on the scope of equipment considering consistency with MJC's activity and the facility planning.

### **2) Examination of contents of request**

Based on site survey and several discussions with the Myanmar side and Technical Cooperation Project Study Team, we concluded that the equipment list requested by the Myanmar side was sound for MJC's activities such as business courses, Japanese language courses and culture exchange programs.

Both sides agreed that most of the equipment should be procured by Technical Cooperation Project scheme and that the Project should cover some AV (Audio Visual) system fixed to the facility and furniture closely related to room layout. The final list of equipment is shown in Table 2-2.

The above mentioned AV system and furniture will be included in the facility construction scheme.

**Table 2-2 The List of Necessary Equipment**

Equipment Name	Quantity	Short Specification	Scope of Work (for facility construction)
<b>1. Before Construction</b>			
PC (for Adm.)	10	Desk top type: - For the Japanese side: Vice-director, Coordinator, Coordinator for culture exchange programs - For the Myanmar side: Director, Staff for the business courses, culture exchange programs, Adm. Staff, Short-term experts (2) Notebook type: - For presentation	
Printer	1	Color	
Photocopy Machine	1		
OS in Japanese (Windows XP)	5		
Office XP Professional (in Japanese)	5		
OS in English (Windows XP)	5		
Office XP Professional (in English)	5		
Stabilizer (3kVA)	1	For Photocopy Machine	
Stabilizer (2kVA)	3	For Facsimile and Printer	
Stabilizer (1kVA)	9	For PC	
UPS	10	Same quantity with PC	
Scanner	1	It should be with OCR in Japanese	
Telephone set	1	Including PABX and fixed telephone terminal	
Facsimile	1		
Book Binder	1		
Others	1unit	Digital Camera (2), VTR (2), Camera (2)	
<b>2. Completion of Construction</b>			
(1) PC			
PC (for Adm.)	6	2 for long-term Japanese experts, 2 for Adm.	
PC (for Library)	4	For Internet use	
PC (for Computer room)	25	Including for lecturers	
Server (for Computer room)	1	For network use	
Printer (for Computer room)	3		
UPS		According to the number of PC's and server's	
(2) Equipment for audio-visual			
Large screen, fixed type	1 or 2	For Auditorium	
A/V system, LCD	1 or 2	For Auditorium	
Movable screen	2	For Seminar room	
TV, VTR	6	1 for Lobby, 2 for Seminar rooms, 3 for Library	
Cassette tape deck	4	For Library	
Movable A/V system			
Large size display	1	For Lobby w/satellite transmission system	
(3) Equipment for Adm.			
Photocopy Machine	3		
(4) Furniture			
Desks and chairs		For each room	
White board, fixed type	7	2 for Seminar rooms, 3 for Culture exchange room, 1 for Computer room, 1 for Meeting room	
White board, movable type	5	Except for rooms mentioned above	
Book shelves	5	For Library	
<b>3. After Construction</b>			
Equipment for JICA-Net	1unit	Unclear in detail	

Source: From Technical Cooperation Project

### **2-2-2-2 Site Layout Plan**

The site layout plan for the Project was based on the following points of the overall composition of the facility, giving full consideration to site conditions, such as the natural conditions, the actual site ground contours and the condition of the surrounding area. The following considerations are given as the basic policies for the physical zoning and flow line plan of the facilities.

- (1) The site layout plan of the facility flow lines shall be considered to ensure its functions are independent and incorporate the zoning and building layout at the existing campus of Yangon University.
- (2) It is necessary to examine integration of the location of the new facility on the site and consideration of the existing large tree located in the center of the site. Layout of the facilities should also be integrated in the architectural, structural and utility design. The site layout plan was made in consideration of the request from the Myanmar side to retain the existing large tree. However, there are some possibilities that the tree may die under the influence of the construction work or the foundation of the building would be damaged by the roots in the future. So the investigation and confirmation of these possibilities have been requested to the Myanmar side from the Study Team.
- (3) It is important to consider the layout of the facility in order to incorporate good ventilation and natural lighting and reducing use of mechanical devices throughout the year with consideration of the climate in Myanmar, and it was concluded the facility should face the south direction.
- (4) Safety, accessibility to the facilities from the main gate and security check points should be considered in order to provide an effective security system within the site.
- (5) A good environment suitable for educational activities and Japanese sensitivity and atmosphere would be achieved with effective use of open space (the front garden).
- (6) There is a large garden on the south of the site and a parking lot near University Avenue Road. Site layout plan is arranged symmetrically and pedestrians access through a large garden centrally located directly connected to the main entrance of the building.

### **2-2-2-3 Facility Planning**

#### **(1) Floor Plan**

##### **1) Basic Concept for Determination of Contents and Scale of Facilities**

The selection of the contents and scale of the facilities is based on the study of the number of rooms and the scale of each room. The design concept and determination of the facilities' scale may have an important impact, not only on the function for the facilities, but it will have an important effect on the construction and project cost. The determination of the facility scale is based on the following considerations:

- A. The contents of the facilities and their assumed scale should be based on the contents of the Minutes of Discussions and the discussion with Technical Cooperation Project Study Team after the Basic Design Study. A rational number and scale of facilities should be designed in accordance with the contents of these discussions.
- B. The appropriate floor areas of room per person varies for each purpose. Therefore, the size of major rooms should be confirmed through discussions with the Myanmar side considering the layout plan of the minimum space required for equipment and use of the rooms shown on the drawings. The number of necessary rooms should be minimized by employing multiple usage as much as possible. An optimum facility design is to be formulated through studies of existing similar facilities in other countries as a reference for the Project.
- C. The computation of scale for each room should be planned giving consideration to the basic unit of each room based on their educational needs and the practice activities for the business courses, Japanese language courses and culture exchange programs. Space design for utilities and equipment should be taken into consideration in regard to the safety and functional aspects of the facility.
- D. The flow line plan, zoning plan and facilities plan should be prepared taking into consideration the internal circulation of staff and services, external flow pattern of guests and books for the library, etc.

- E. The scale of facilities should be calculated based on the activity plan (curriculum and number of students) of the business courses, Japanese language courses and culture exchange programs confirmed during the Basic Design Study and by Technical Cooperation Project.
- F. The facilities scale, in terms of operation and maintenance, should be examined rationally based on the number of staff and the organizations of MJC prepared by the Myanmar side and the usage of the facilities.

## 2) Study for the number and the scale of rooms

The scale and number of each room have been determined in accordance with a series of discussions and examinations with the Myanmar side. The computation for scale of each room is planned through discussions with the Myanmar side and studies of other similar projects undertaken with Japan's Grant Aid Assistance as a reference.

While the Basic Design Study Team carried out their survey, the Myanmar side proposed the number, size and function for each room and they were confirmed through discussions with Technical Cooperation Project Study Team. Based on these discussions, each room area has been calculated with consideration of planned activities such as the type of lectures and number of students.

### A. Library

The Library is to provide reference books and offer information about Japan and market economy for their perusal. It is planned on the assumptions indicated below.

- a) Numbers of books: 5,000 books, assumed as the number procured by Technical Cooperation Project scheme and portions partially transferred from the Japanese embassy.
- b) Number of seats: 40 seats, as requested from the Myanmar side.

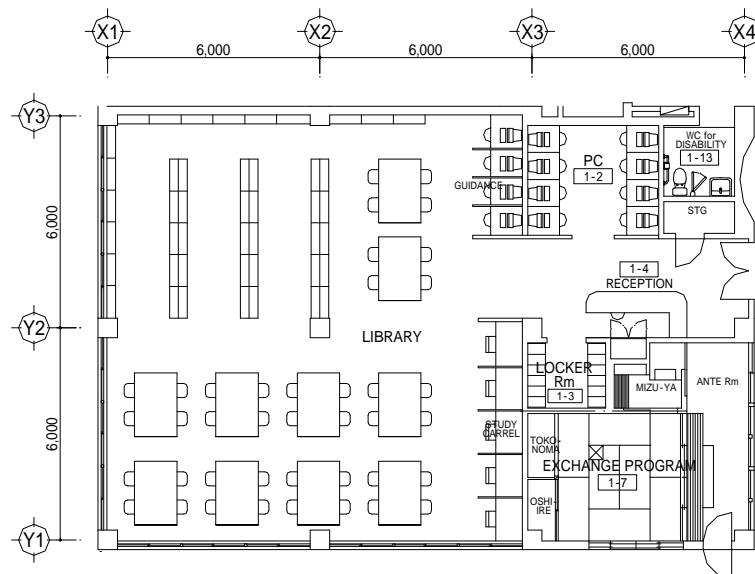
To analyze the architectural planning, approximate floor area (A) for a reading room is calculated according to (a) number of books, (b) number of seats, (n) capacity of books per square meter and (m) capacity for persons per square meter.

**Table 2-3 Approximate Floor Area for a Reading Room**

$A=(a/n + b/m)$	$a = 5,000$
$(margin) = 1.7$	$b = 40$
$(a \text{ standard using high shelves})$	$n = 200 \text{ per m}^2$ $(a \text{ standard using high shelves})$
	$m = 0.55 \text{ per m}^2$ $(a \text{ standard for four-person desks})$
<b><math>A = 166 \text{ m}^2</math></b>	

Source: Construction design data collection (edited by Architectural Institute of Japan)

As there are not only shelves and reading desks but also study booths, reference booths, VTR booths and computer booths in the library, the function and scale are narrowed down to the minimum necessity and the scale of the library should be appropriate and adequate.



**Figure 2-1 Library**

## B. Seminar Room

One Seminar Room each has been planned for the business courses and the Japanese language courses. A basic layout for these rooms is the round-type for the business courses and facing-type for the Japanese language courses. Tables and chairs are the same in both rooms in order to be utilized for any layout plan to have flexibility.

The time for each lecture is shown in the following table 2-4. When the operating ratio is set up to 75%, it is confirmed that one room each is appropriate for the business courses and the Japanese language courses.

**Table 2-4 Study for the Number of Seminar Rooms**

	Courses	Term (months)	Frequency (hours/week)	Remarks
Business Courses	Long Term Course (30 persons)	6	9	
	Medium Term Course (20 persons)		22.5	
	Short Term Course (150 persons)		-	Held in Auditorium
	Total (hours/week)		31.5	
Calculation: $31.5/0.75/42$ (Number of lectures per week) = 1.0				
Japanese Language Courses	Intermediate Level I	6	6	
	Intermediate Level II	3	6	
	Advanced Level I	6	6	
	Advanced Level II	3	6	
	Special Subject Course (Lecturer training courses and Interpreter training courses)		(15)	Not included in the calculation
	Total (hours/week)		24	
Calculation: $24/0.75/42$ (Number of lectures per week) = 0.76				

a) Seminar Room (1) for business courses

Seminar Room (1) for business courses is planned to be used for 30 persons with the round-type layout of tables. It has been planned as 63m<sup>2</sup> in consideration of the activity and the layout plan of furniture.

b) Seminar Room (2) for Japanese language courses

Same as Seminar Room (1), Seminar Room (2) for Japanese language courses is planned to be used for 30 persons with the facing-type layout of tables and it also has been planned as 63m<sup>2</sup>. Comparison of the room size between the Project and similar projects by Japan's Grant Aid assistance is as follows. Area per person, which is 2.1m<sup>2</sup>, is similar to others. Also, it is considered from an architectural planning viewpoint that it has an appropriate area for lectures.

**Table 2-5 Comparison of the Room Size (Seminar Room)**

Seminar Room		Area (m <sup>2</sup> )	Capacity (persons)	Area (m <sup>2</sup> ) per person
<b>The Project</b>	<b>MJC</b>	<b>63.0</b>	<b>30</b>	<b>2.1</b>
Similar Projects	VJCC-HNC*	82.5	40	2.06
	VJCC-HCMC**	58.8	36	1.6
	LJCC***	67.5	30	2.25
	MJCC****	54.0	30	1.8

\* VJCC-HNC: Vietnam-Japan Human Resources Cooperation Center in Hanoi

\*\* VJCC-HCMC: Vietnam-Japan Human Resources Cooperation Center in Ho Chi Minh City

\*\*\* LJCC: Lao-Japan Human Resource Cooperation Center

\*\*\*\* MJCC: Mongolia-Japan Human Resource Cooperation Center

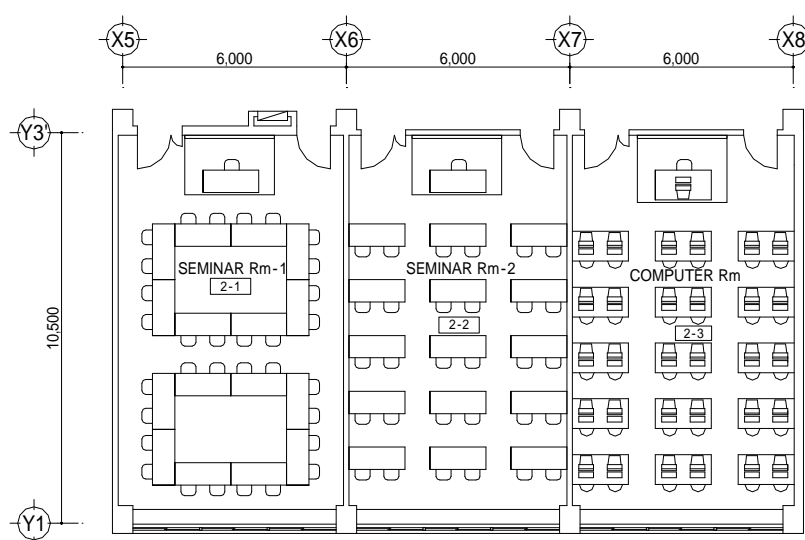


### C. Computer Room

It has been confirmed that computers are used for both business courses and Japanese language courses. Therefore, a Computer Room must be planned where 30 persons are accommodated. Comparison of the room size between the Project and similar projects by Japan's Grant Aid assistance is as follows. Area per person, which is  $2.1\text{m}^2$ , same as the Seminar Rooms, is a bit smaller than the others, but it is considered from an architectural planning viewpoint that it is an appropriate area for the activity.

**Table 2-6 Comparison of the Room Size (Computer Room)**

Computer Room		Area ( $\text{m}^2$ )	Capacity (persons)	Area ( $\text{m}^2$ ) per person
<b>The Project</b>	<b>MJC</b>	<b>63.0</b>	<b>30</b>	<b>2.1</b>
Similar Projects	VJCC-HNC	64.0	20	3.2
	VJCC-HCMC	59.0	20	2.95
	LJCC	60.0	20	3.0
	MJCC	54.0	15	3.6



**Figure 2-2 Seminar Room and Computer Room**

### D. Culture Exchange Room

As culture exchange programs have various kinds of contents, number of participants and frequency, the Culture Exchange Room must be able to respond to such a demand flexibly. Therefore, area of the room is  $66\text{m}^2$  which is almost the same as the Seminar Room and it can be divided into 2 rooms with a movable

partition in order to have flexibility to seminars besides culture exchange programs.

Because various activities are included in culture exchange programs, it is desirable not to provide a fixed space, for Culture Exchange Room but also as a lobby, auditorium, and external space if needed for lectures, exhibitions and meetings. Therefore, the Culture Exchange Room, Auditorium and the external terrace have been arranged adjacent to each other to enable flexibility between these spaces.

#### E. Auditorium

It has been clarified that there is a plan to hold various programs carried out as culture exchange programs in the Japanese embassy until now in MJC and seminars for 150 persons are to be held in the short term business course. Therefore, the necessity for an auditorium has been confirmed. The auditorium is planned as an appropriate space with a projection room, pantry, stage and simultaneous interpretation room to accommodate various activities.

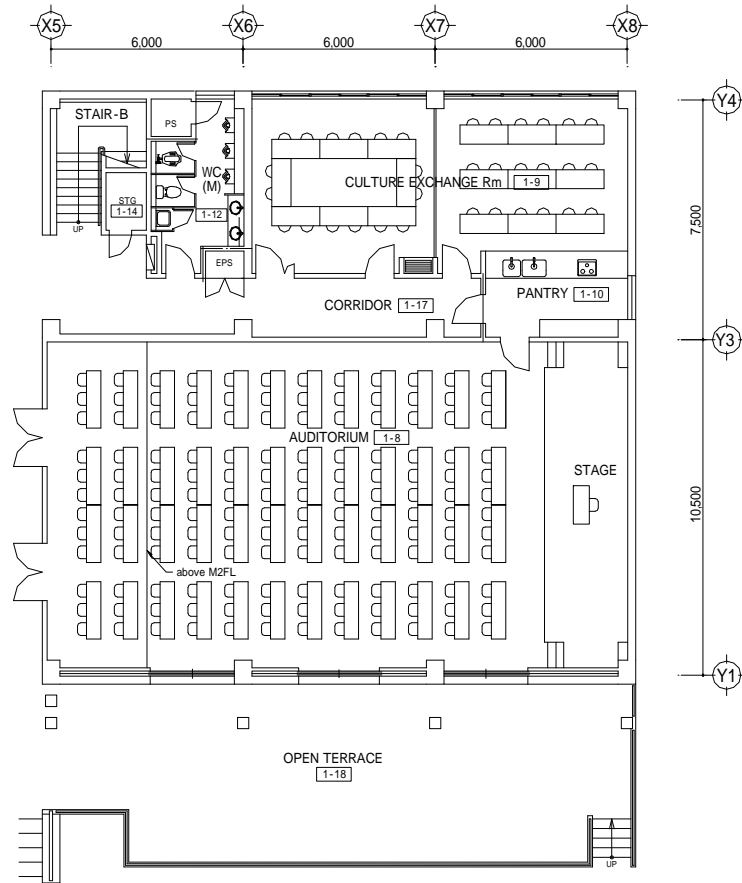
**Table 2-7 Holding Records of Culture Exchange Programs (1999 – 2001)**

<b>Programs</b>	<b>Sponsorship and support</b>	<b>Place</b>	<b>Participants</b>	<b>Frequency</b>	<b>Remarks</b>
Japanese speech contest	Embassy of Japan YUFL*	Embassy of Japan	40 persons	Twice a year	Held in Yangon or Mandalay
Japanese composition contest	Embassy of Japan	Embassy of Japan	70 persons	Once a year	
Japanese capability examination	Embassy of Japan The Japan Foundation AIEJ**	YUFL	700 ~ 1,000 persons	Once a year	
Japanese film festival	Embassy of Japan The Japan Foundation	Embassy of Japan Movie theaters	5,000 ~ 6,000 persons in total	Twice a year	Held in Yangon or Mandalay
Japanese film show	Embassy of Japan The Japan Foundation YUFL	Embassy of Japan	150 persons	Twice a month	Shown Japanese introduction video
Various performances (performance, dance and lecture)	Embassy of Japan The Japan Foundation etc.	Hotels National theater Japanese school Ambassador's official residence	300 ~ 1,800 persons	Once a month	
Various shows (photograph, fine arts and crafts)	Embassy of Japan The Japan Foundation etc.	Hotels Museums	6,000 persons in total	2 or 3 times a year	
Various meetings (conference of former Japanese government scholarship student)	Embassy of Japan	Ambassador's official residence	150 ~ 200 persons	Once a year	
Workshop and bazaar	Embassy of Japan The Japan Foundation	Hotels Ambassador's official residence	1,000 persons in total	2 or 3 times a year	

\* YUFL: Yangon University of Foreign Languages

\*\* AIEJ: Association of International Education, Japan

Source: From Embassy of Japan in Myanmar



**Figure 2-3 Culture Exchange Room and Auditorium**

#### F. Administration Zone

The planned area was designed as 314m<sup>2</sup> in consideration of narrowing down to a minimum required rooms and have the flexibly. Administration zone includes rooms as follows:

##### a) Director Room

Comparison of the room size among the Project and similar projects by Japan's Grant Aid assistance is as follows. Area per person, which is 36m<sup>2</sup>, is similar with the others. As a result of the hearing in Vietnam-Japan Human Resources Cooperation Center in Hanoi (VJCC-HNC), it is confirmed that the scale of the room is satisfactory, and it is considered an appropriate area.

**Table 2-8 Comparison of the Room Size (Director Room)**

Director Room		Area (m <sup>2</sup> )	Capacity (person)	Area (m <sup>2</sup> ) per person
<b>The Project</b>	<b>MJC</b>	<b>36.0</b>	<b>1</b>	<b>36.0</b>
Similar Projects	VJCC-HNC	34.0	1	34.0
	VJCC-HCMC	35.0	1	35.0
	LJCC	27.0	1	27.0
	MJCC	26.0	1	26.0

b) Reception Room

Reception Room is 36m<sup>2</sup> with a flexible layout so that a meeting can be held with 16 persons using a round-type layout of tables. Area per person is 2.25m<sup>2</sup> and it can accommodate meetings in various forms by layout adjustment of tables.

c) Administration Office

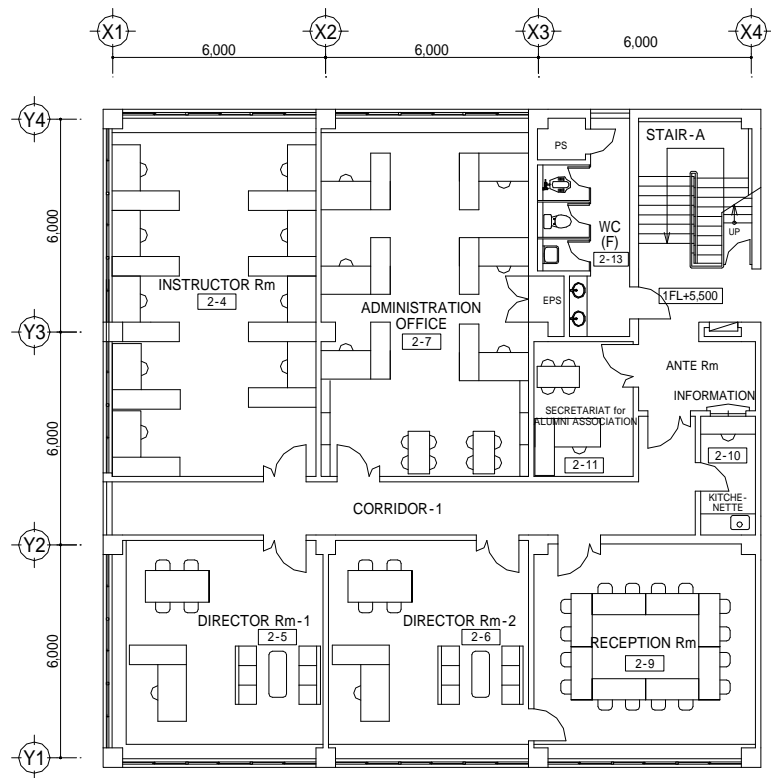
It is planned that four or five workers are for the general office work and one person as the Japanese coordinator do their work in the Administration Office. Arrangement of furniture is referred to the consideration of layout plan. It has been planned as 63m<sup>2</sup> including a meeting space.

d) Instructors Room

Comparison of the room size between the Project and similar projects by Japan's Grant Aid assistance is as follows. Area per person, which is 7.9m<sup>2</sup>, is similar with the others. In each of the business courses, Japanese language courses and culture exchange programs, plan to dispatch Japanese Experts in the long and short term has been set up. Together with Myanmar Instructors, 8 to 10 persons should use this room throughout the year. Based on this, the plan has been made considering the layout of furniture, and the area is 63m<sup>2</sup>.

**Table 2-9 Comparison of the Room Size (Instructors Room)**

Instructor Room		Area (m <sup>2</sup> )	Capacity (person)	Area (m <sup>2</sup> ) per person
<b>The Project</b>	<b>MJC</b>	<b>63.0</b>	<b>8</b>	<b>7.9</b>
Similar Projects	VJCC-HNC (* Including the storage space)	120.0	8	15.0
	VJCC-HCMC	118.0	15	7.9
	LJCC	61.85	7	8.8
	MJCC	52.0	8	6.5



**Figure 2-4 Administration Zone**

e) Meeting Room

Meeting Room for 24 persons, with an area of 63m<sup>2</sup>, has been planned. Although mainly used for staff meetings, it can be used as a seminar room because it is close to the seminar section and uses the same furniture as the seminar rooms, which allows flexible use.

### 3) Required Rooms and Floor Areas

As a result of the field survey and information gathered during the discussion with the Myanmar side, minimum area requirements for required rooms have been established. The area of rooms based on the above mentioned examination is shown in Table 2-10.

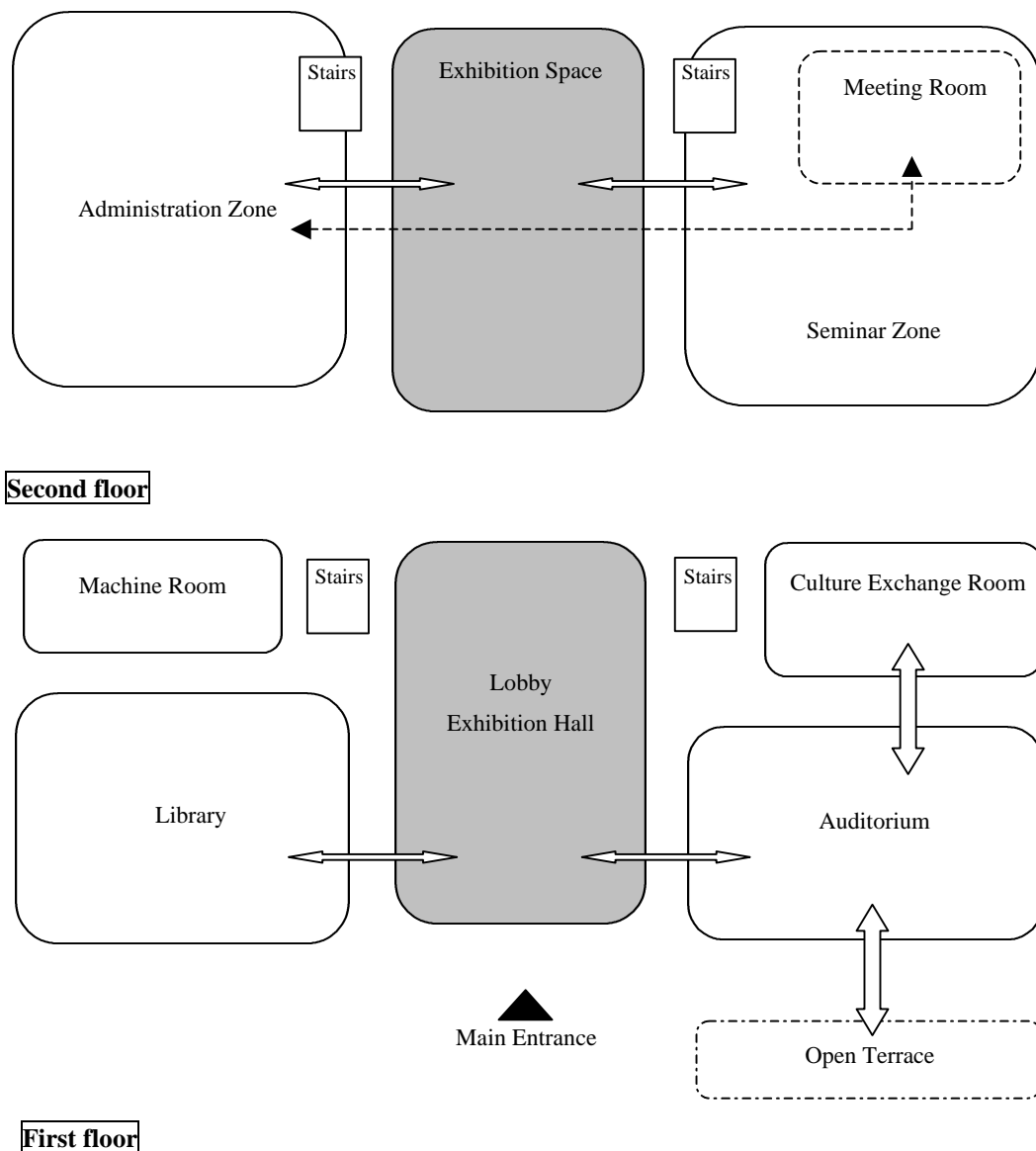
**Table 2-10 Required Rooms and Their Floor Areas**

	Room Name		Total Area (m <sup>2</sup> )	Remarks
1	Lobby/ Exchange	1.1 Lobby/ Exhibition Hall	311.08	Including 2 <sup>nd</sup> Floor Exhibition Space
		1.2 Library	179.00	Including PC Room &Locker Room
		Sub-Total	490.08	
2	Seminar	2.1 Seminar Room	126.00	2 rooms
		2.2 Computer Room	63.00	
		2.3 Cultural Exchange Room	66.00	Divided into 2 rooms with partition
		2.4 Cultural Exchange Room (Japanese-style Room)	32.00	
		Sub-Total	287.00	
3	Administration	3.1 Director's Room	72.00	2 rooms
		3.2 Reception Room	36.00	Can be used as a small meeting room
		3.3 Administration Office	63.00	
		3.4 Instructors Room	63.00	
		3.5 Meeting Room	66.00	Can be used as a seminar room
		3.6 Secretariat for Alumni Association	13.50	
		Sub-Total	313.50	
4	Others	4.1 Auditorium	189.00	
		Interpretation Room Projection Room	15.00	
		4.2 Electronic Room	54.00	
		4.3 Machinery Space	36.50	Including 2 AC Rooms
		4.4 Storage	16.50	2 rooms
		4.5 Kitchenette	18.30	3 rooms
		4.6 Toilets	55.00	On first & second floor Including Toilet for the disabled
		4.7 Circulation	204.82	
		Sub-Total	589.12	
Total			1,679.70	

In terms of floor planning, the calculated areas and the layout plan as mentioned above are used, and each facility is planned on the basis of the following criteria:

- A. The floor plan should be coordinated considering the relationship between each room. Contents and function of each room shall be considered in the floor plan so that the facility can be integrated effectively.
- B. The zoning is clarified by preparing a void in the center of the building. The void space can be used effectively for various kinds of exhibitions.
- C. The plan should be symmetrical, and the flow planning should be functional and clear.
- D. Library, auditorium and rooms for culture exchange programs should be on the first floor, because it is considered that there are many users from the outside. Since the administration section and seminar rooms are for limited use, they are installed on the second floor in consideration of security.
- E. It is important to integrate required rooms and equipment effectively so as to create flexibility in planning. Structure Grid layout should be a standard module. Building should be planned with most economical and common module considering layout plans of computers, equipment, furniture, etc., for economical construction. The basic structural frame spans shall be examined and considered.
- F. The size and layout of equipment and furniture in each room should be considered in the design.
- G. Considering local climatic conditions at the construction site, the facility should be planned in order to provide protection from rainfall and strong sunlight. However, minimum air conditioning should be considered and a comfortable indoor environment should be maintained by both air conditioning and natural ventilation.





**Figure 2-5 Zoning Plan**

## (2) Elevation and Cross-Section Plan

Myanmar is located in the tropical monsoon zone which is hot and has high humidity, and therefore the building must consider how natural ventilation is utilized and how heat load can be mitigated from severe heat-load from sunlight must be considered. For planning of elevation and cross-section of the building, the local climate should be considered on the basis of the following policies:

- 1) The analysis of the site ground level and floor height of the existing buildings shall be taken into consideration in order to determine the floor level and cross section. In particular, the height difference in the site should be examined.
- 2) The level of the first floor will be raised the same as the existing buildings in campus of Yangon University in order to prevent water infiltration and radiant heat from the ground.
- 3) The roof should be sloped in order to provide protection from sun radiation and direct sunlight and to have positive protection from rain water.
- 4) Deep eave overhangs and louvers can help to protect the rooms from direct sunlight and intense rainfall and louvers to provide shade by breaking direct sunlight.
- 5) Wall surfaces should have adequate openings to facilitate room ventilation and provide balanced natural lighting, and also to reduce the running cost of electrical lighting and equipment.
- 6) The building elevation design should consider harmony with the surrounding environment and the existing buildings in campus of Yangon University.

### **(3) Cost Reducing Measures**

Various cost reduction factors have to be considered in the course of design works for the new facilities. The following cost performance and the maintenance costs must be taken into account for building design:

- 1) The overall size of the facility is rationalized so as to enhance the utilization rate of the rooms and to promote the effective use of rooms, utilities and equipment.
- 2) The standardization of space is necessary to give flexibility in the design of the buildings. The basic module should be determined by considering how it will be combined to form the overall buildings. Through extensive investigations, the economical span and standard module has been successfully determined for incorporation into the Basic Design.
- 3) In principal, natural ventilation and lighting is to be applied as much as possible and mechanical ventilation and artificial lighting is to be minimized to reduce maintenance

costs. However, some of the rooms in the building will need mechanical systems. In this case, independent systems will be used in place of a central system.

- 4) Local construction materials should be effectively used so as to reduce the costs for construction and maintenance. Also, in the long term view of the project, together with the consideration of the maintenance costs of the facilities, the finishing materials will be selected considering the building life span and maintenance characteristics of the materials.
- 5) Positive consideration shall be given to the installation of high energy efficient equipment and insulation material in order to reduce operational costs.
- 6) As mentioned above, cost reduction measures shall be considered in the course of the design work. The reduction of the initial cost shall be considered carefully so as not to cause any cost increase in operations and maintenance and deterioration in quality.

#### **2-2-2-4 Structural Plan**

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

The structural plan for the Project should be formulated after a full review of the existing site conditions and considering the results of the soil investigation. The structure shall be designed to prevent serious defects such as cracks caused by structural member deflection and ground settlement, etc. Additionally, the building shall have sufficient factor of safety and durability against earthquakes, strong winds, etc. Consideration should also be given to local construction methods, materials and case of maintenance.

##### **(2) Standard for Structural Design**

The building code of Myanmar is improving its local original standards. Generally, the construction standards follow the British Standards (BS) and material standards follow ASTM. In this Project, the material standards shall follow ASTM and construction standards in accordance with BS. In addition, the analysis method and design of structure shall refer to the structure design standard of the AIJ (Architectural Institute of Japan) as required.

### **(3) Construction Methods and Materials**

#### **1) Method of Construction**

The superstructure is to be reinforced concrete and the walls are of brick which are economical and widely used materials in Myanmar. Although the walls are based on brick structure, the earthquake resistance of a building is increased by earthquake resisting walls which are superficially arranged to provide sufficient lateral stability. In Myanmar, in order to raise sound insulation and airtightness, the outer walls are double brick masonry.

A steel structural frame is to be provided in some portions of the building, such as roof trusses, to achieve the required strength and be cost effective.

#### **2) Reinforcement Cement**

In Myanmar, import of reinforcing bars and cements are forbidden fundamentally. Moreover, giving priority to local materials are practiced as a general policy.

#### **3) Steel**

The steel products are made in Thailand, Malaysia, Singapore, Vietnam, etc., and transported and assembled in the Myanmar.

### **(4) Soil Conditions and Foundation Design**

The results of the soil investigations indicate that sub-strata from ground level to a depth of 14.15 meters are of Sandy clay or Silty clay (N value is 4 ~ 6) and the layers from 14.15m to 30.50m are Sand (N value is 9 ~ 39). Although soil investigations have been carried out to GL-30.50m, good bearing subsoil (N value, beyond 50) could not be confirmed. In order to design a two-story building, average bearing pressure is considered to be 55 kN/m<sup>2</sup>. Therefore, the spread footing foundation (mat foundation) support over the Sandy clay layer (N values 4 ~ 6 near GL-2.00m) may be assumed. As a result of calculating the amount of consolidation settlement between GL-2.0m and 14.15m, the maximum settlement is 11cm in the center of the building, and 4cm at the building corners. If this amount of settlement occurs within the construction period, the said amount of settlement will be acceptable and admissible as calculated.

## (5) Design Load

- 1) Wind load : The wind load is calculated in reference to the British Standards. Basic wind speed is assumed as 30 m/sec.
- 2) Seismic Force : Myanmar was hit by big earthquakes, as exemplified by the peg earthquake in 1930 and the Rangoon earthquake in 1970. The Seismic Force is calculated as referenced similar to past Japan's Grant Aid projects in Myanmar. Base shear coefficient is  $K=0.15$ .
- 3) Dead load : Load conditions are to be determined considering the equipment layout and use. Location should be considered for rooms such as Workshop, Mechanical Room and Electrical Room where live loads are relatively higher therefore should be located at first floor level for a more economical slab design.

## (6) Materials

Consideration of use should be given as follows:

Concrete	From footing to 1st floor	Flexural Strength: C25 (Specified concrete strength $21\text{N/mm}^2$ )
	From 1st floor Column and Wall to Roof	Flexural Strength: C30 (Specified concrete strength $24\text{N/mm}^2$ )
Reinforcement	Round steel bar	6 ~ 9
	Deformed bar SD295A	D10 ~ D16
	Deformed bar SD345	D19 ~ D25
Steel	Shape steel, Steel plate	SS400, SSC400

### 2-2-2-5 Utility and Building Facility Plan

### (1) Plumbing Work

### 1) Water supply system

### A. Source of potable water

Yangon University will distribute well water from the existing elevated tank nearby the MJC site as potable water. Since the Myanmar side is still considering digging a new deep well for the Project, it is planned to provide a water receiver tank that is constructed at ground level to store well water. Well water will be treated by a sand filter and fed up to an elevated water tank, and then be distributed within the MJC.

Capacity of elevated water tank will be one day's water consumption.

### B. Estimated water demand per day

Occupants;	Permanent staff	15 persons
	Part-time lecturers	5 persons
	Students	90 persons
	<u>Visitors</u>	<u>150 persons</u>
	Total	260 persons

Unit water consumption; Staff; 80 liters/person/day

Student and Visitor 20 liters/person/day

Water demand is calculated based on the population and the above unit water consumption rate as follows:

Staff       $20 \text{ persons} \times 80 \text{ liters/person/day} = 1,600 \text{ liters/day}$

Students and Visitor  $240 \text{ persons} \times 20 \text{ liters/person/day} = 4,800 \text{ liters/day}$

Total	6,400 liters/day
-------	------------------

Irrigation water for the site is added to the above figure;

$$5\text{mm/day} \times 2,000\text{m}^2 = 10,000 \text{ liters/day}$$

Total water demand      6,400 liters/day + 10,000 liters/day = 16,400 liters/day

16m<sup>3</sup>/day

## 2) Sewerage System

It is planned to equip the MJC with a sewerage water treatment plant (STP). The wastewater generated from the MJC will be treated by the STP, and then be discharged to the existing sewerage network at the Campus of Yangon University. According to the Yangon City Development Committee (YCDC), it was found that there are no requirements for effluent water quality from the STP. However, the design quality of effluent water from the STP is set to be less than BOD (Biological Oxygen Demand) 50ppm so as to prevent the adjacent environment from pollution. The design flow rate of the STP is calculated based on the return rate of 100% for consumed potable water.

Capacity of the STP; Quality of treated water; Less than BOD 50ppm

Design Flow Rate; 6m<sup>3</sup>/day

Rainwater from the facility and pavement will be collected and be soaked into the soil as much as possible. Through discussions with the Myanmar side, it was confirmed that the Myanmar side would prepare the manholes to finally connect to the existing Yangon University sewerage network.

## 3) Plumbing Fixtures

Most of the water closets equipped in the existing Yangon University are Asian type. Meanwhile, we found that almost all water closets are Western type according to the site survey on the buildings currently constructed in Yangon City. We plan to provide the MJC with Western type water closets with low tank and Asian type.

## 4) Fire Fighting Facilities

According to the meeting with the fire service department, it is confirmed that the Project does not have to comply with the Myanmar fire code due to the classification and scale of the Project. However, we will provide fire extinguishers and indoor hydrant system to secure safety in accordance with the Japanese fire code.

## (2) Air Conditioning and Ventilation Work

### 1) Air conditioning system

Yangon City is located near the equator at a latitude of 16°9' north and an altitude of approximately 20 meters. The climate is hot and humid throughout the year. According to the air conditioning design standard of ASHRAE (American Society of Heating, Refrigerating and Air-conditioning Engineers, Inc.), the outdoor design condition should be as follows,

Outdoor: Dry Bulb 35°C, Wet Bulb 28°C, Daily Range 14°C

( ASHRAE Fundamentals 1997: at Yangon )

In the light of the usage of the existing Vietnam- Japan Human Resources Cooperation Center in Hanoi and the above mentioned outdoor conditions, we are planning to install air conditioning system (A/C system) in every Seminar room, Library, Culture exchange room, Instructors room, Auditorium and Administration office that will be occupied by a large number of people in order to maintain appropriate indoor conditions. Since the spacious entrance hall at the first floor is two-story high and will be able to obtain natural ventilation and effective sunshade, it won't be provided with an A/C system. Split type air conditioners will be used for individual type air conditioning system for every air conditioned area.

### 2) Ventilation system

We are planning to provide lavatories, electrical rooms and mechanical rooms with mechanical ventilation systems so as to discharge odor, heat and humidity outside. According to the Japanese standard of the Ministry of Land, Infrastructure and Transport and the ASHRAE standard, the recommended standard of mechanical ventilation is shown in Table 2-11,

**Table 2-11 Design Standard of Mechanical Ventilation**

Room	Method of Ventilation	Unit Air Flow Rate	Remarks
Toilet	Exhaust only	10 Round/hour	To eliminate odor
Storage	Exhaust only	5 Round/hour	
Pantry	Exhaust only	10 Round/hour	
Pump room	Exhaust only	5 Round/hour	
Electrical room	Exhaust only	10 Round/hour	To eliminate heat



### (3) Electrical Works

#### 1) Power Supply System

In the existing Yangon University, two medium voltage power supply lines (3 $\phi$  3W,6.6KV) are led-in by the Myanmar Electrical Power Enterprise (MEPE). The medium voltage power is stepped down to low voltage power (3 $\phi$  4W,440/220V) by the existing four transformers and then is distributed to all facilities. Based on the site survey and discussions with MEPE through the Basic Design Study, the existing transformer near MJC site does not have enough capacity to supply additional power to the MJC. Therefore we are planning to obtain medium voltage power from the Yangon University power supply network and to provide a new substation in MJC.

**Table 2-12 The Estimated Power Load**

Description	Load Density (VA/m <sup>2</sup> )	Floor Area (m <sup>2</sup> )	Total Load (KVA)	Remarks
Lighting and Small Appliance	40	1,800	72	
Air conditioning Equipment	100	1,200	120	
Plumbing Equipment			10	
Total			202	

Thus, the estimated power load is approximately 200 KVA.

Assuming that demand factor is 60%, the estimated power demand is calculated as follows,

$$200\text{KVA} \times 0.6 = 120\text{KVA}$$

Based on the result of discussions with the engineers in the MEPE and the Yangon University, the condition of power supply in Yangon City by MEPE is not stable. That is, voltage fluctuation sometimes damage electrical devices and power outages frequently occur especially in the rainy season. Therefore, we concluded that a stand-by generator should be provided for the MJC. We are also planning to equip an Automatic Voltage Regulator (AVR) in order to stabilize quality of power supply for the MJC. Some non-robust equipment such as computers should be provided individually with Uninterrupted Power Supply units (UPS) or Automatic Voltage Regulator (AVR).

## 2) Stand-by Generator

A stand-by generator will be supplied to maintain power supply for the minimum activity of the MJC in the case of power outage. The generator will also provide back-up emergency power supply to the hydrant pump, in accordance with the requirements of the Fire Code. We will prepare change-over circuits, from duty to emergency drive, of the generator to effectively utilize stand-by power.

The capacity of the generator is estimated to be equivalent to 50% of peak demand (200KVA).

- A. Type: Indoor packaged diesel driven generator  
Low noise and radiator cooling type
- B. Capacity: 3 Phase 3 Wire 440V 50Hz 100KVA
- C. Fuel: Diesel oil (10 hours)
- D. Quantity: 1 (one) number

## 3) Main Feeder Wiring System

- A. Wiring Method: Cable ladder. Conduit piping
- B. Power Distribution Main Feeder: 3 $\phi$  4W 230V/440V
  - For lighting and small appliance 1 $\phi$  2W 230V
  - For power 3 $\phi$  3W 440V

## 4) Lighting System

Every room, entrance hall and corridor will be equipped with fluorescent lamps since it will reduce energy consumption and fluorescent lamps are easy to maintain. The lighting intensity level to be adopted is based on international standards and JIS (Japanese Industrial Standards) as follows;

**Table 2-13 Standard of Lighting Intensity Level**

Room	Lighting Intensity (lux)	Remarks
Entrance hall	200	
Seminar room	400	
Auditorium	400	
Library, Computer room	400	
Administration office	300	
Corridor	100	
Toilet, Storage	100	

Exit lights with batteries should be installed at every staircase and exit.

5) Telephone System

It is planned to provide the MJC with a telephone system including a Private Automatic Branch Exchanger (PABX), 25 extension telephones and necessary cabling work. Through the discussion with the Myanmar side, it was confirmed that the Myanmar side will be responsible for the following items;

- a) Application and subscription fee for 5 new telephone trunk lines by MEPE
- b) Expense for the installation of in-coming line from outside to the Main Distribution Panel to be provided by the Project

6) Public Address System

We are planning to provide a public address system so as to make announcements to students and staff in common areas and seminar rooms. An amplifier will be equipped in the administration office.

7) Master Antenna Television System

Master antennas for VHF wave band of domestic TV station, Myanmar Radio and Television (MRTV) and Myawaddy Television (MWD), and Communication Satellite (BS NHK) will be installed on the roof and TV outlets are to be provided in offices and seminar rooms.

8) LAN (Local Area Network) System

Technical Cooperation Project is planning to supply personal computers for the computer room, library and administration office. We will equip pre-wired Local Area Network (LAN) system and install LAN outlets and interconnected cabling so as to easily link these personal computers within the MJC. The planned LAN system will be of fast ether-net (100Base-T) and consist of sub-networks such as library loop, computer room loop and administrative loop. The LAN system may be able to access to the Internet through routers. However, installation of network equipment such as switching hubs and routers is out of the scope since concept of network architecture is not finalized at the present time.

#### 9) Fire Alarm System

A manual fire alarm system will be provided. We are planning to install combination panels that consist of an alarm bell, an indicator lamp and a push button in each alarm area. The fire control panel is to be installed in the administrative office on the second floor.

#### 10) Lightning Protection System

Lightning protection system will be provided to prevent serious damage to the building structure and electrical facilities.

### **(4) Garbage and Waste Disposal**

The staff belonging to the Department of Administration & Finance periodically collects all garbage and waste generated in the existing Yangon University. The amount of garbage and waste is not so much and collected waste is brought to a dump station or burnt away. The small amount of waste generated by the MJC will be collected by Yangon University as it is.

## **2-2-2-6 Building Material Plan**

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

The building material plan shall be formulated based on the climatic conditions, the location of the site, the local construction situation, construction period, construction cost, and maintenance and operation costs. The following shall be matters of Basic Policy:

- 1) The local procurement of construction materials shall be considered to reduce construction costs and shorten the construction period. However, it has to be confirmed if those are acceptable in quality and supply in Myanmar.
- 2) The maintenance and operational costs shall be reduced by considering the adaptation to the local climate, resistance against climate and the selection of materials that are easy to maintain and also, materials that are easily obtained locally.

- 3) It is important to note that the selection of material should be made to satisfy the essential functions of MJC and must be considered along with the utility and equipment plans.
- 4) Selection and determination of the building materials shall be based on the studies on local procurement or application of local construction methods.

## **(2) Building Material Plan**

The local construction situation and construction schedule as well as method for minimizing operation and maintenance costs should be taken into consideration for the prominent building material plan, referring to the analysis of materials for other similar projects. Materials for structural works and some finishing works can be procured in Myanmar, but most of the materials for finishing work come from neighboring countries such as Thailand.

The materials of the existing buildings which are made by local materials and local construction method in Yangon University are as follows:

The roof materials are tile roofing, Exterior wall materials are trowelled mortar with paint on brick masonry or reinforced concrete, Interior wall materials are trowelled mortar with paint on brick masonry, Ceiling materials are non-combustible plaster board or asbestos mill board, Windows are aluminum sash, Floor materials are cement tile.

The policy of selection of materials for the Project is to adopt local materials which are acceptable in quality and supply in Myanmar, considering harmony with the existing buildings. The selection of materials for the Project will aim at maximizing the adoption of local construction methods and selection of local materials, mainly under the supervision of a Japanese contractor. This policy is intended to reduce the construction cost. In reference to the surveys and studies of materials of existing buildings and similar projects, it is considered that this policy will enable proper selection and procurement of building materials under the scheme of Japan's Grant Aid assistance. The results of these considerations are as follows:

### **1) Structural Materials**

In principle, the typical local construction method and materials, which are reinforced concrete for main frames with bricks walls, will be adopted for this Project. However,

for the oblique roof structure, lightweight steel frame and reinforced concrete roof slab will be adopted considering ceiling insulation and water leaks from the roof.

## 2) Exterior Finishing

### A. Exterior Wall

Exterior wall finishing will be mainly long-lasting weatherproof paint such as sprayed epoxy painting. It is necessary to consider the adoption of quality material and local construction methods. In particular, the degeneration of paint agent, mold and cracks will not only increase the maintenance expense after completion of construction, but will also affect the degradation of concrete frames from water leak. While ensuring that the quality of plastering work is maintained, the use of local available epoxy paint is adopted for external use for its performance and durability. As such, quality of plaster works and paint works shall be controlled together.

### B. Roofs

Tile roofing will be adopted for the new building which is supported by ridged light weight steel frame roof structure taking into consideration the durability and to avoid sound transmission from heavy rain and heat absorption from strong sunlight and also maintenance. Also the appearance of the roof tile will match the surrounding landscape and be designed as associating with Japanese-style.

### C. Windows and Doors

For provision of better durability and air tightness for external openings, such as windows and doors, in order to plan the air conditioning in most of the rooms, local available aluminum sash will be adopted for the new building. Also, steel sash will be used for the some openings facing outside. These materials have been used for openings of external walls of the existing buildings and similar projects.

The security grill on the front or back face of the windows will be adopted to provide protection against theft.

#### D. Exterior Floor

Natural stone which is popularly used in Myanmar will be adopted for the floor finish materials for the outside terrace. However, it should be confirmed they are acceptable in quality and supply in Myanmar. The surface of the floor shall carefully be finished to prevent slippage when wet.

#### E. GRC Louvers

Louvers, which protect the rooms from direct sunlight and intense rainfall and incorporate good ventilation and natural lighting throughout the year are planned to be made of GRC (Glass fiber Reinforced Cement), which are results in consideration of durability and functionality. However, it is important to examine the attachment details, etc., and supervise the construction because it has not been used thereafter for buildings in Myanmar.

### 3) Interior Finishing

#### A. Floors

Ceramic tile, which are generally used in Myanmar, will be adopted in the new buildings considering the quality and durability. Natural stone will be adopted for the entrance hall. PVC tile will be adopted for the rooms equipped with free-access floors in order to facilitate maintenance of computer and electrical wiring. Ceramic tile will be adopted for the toilets. Epoxy paint on mortar base will be adopted for mechanical room and storage.

#### B. Walls

Paint on mortar base will be used as the finishing materials for interior walls. This is generally used in Myanmar and it is used for the existing facilities. Sound absorption and reflection should be considered to select the finishing for the Auditorium. As such, quality of plaster works and paint works shall be controlled together, the same as for the exterior walls.

### C. Ceilings

Suspended ceilings using rock-wool insulated boards and paint on mortar will be used in the new buildings. Sound absorption and reflection should be considered by proposal to select the finishing material for the Auditorium.

### (3) Proposed Main Materials

The criteria for building materials have been analyzed and studied. Based on the analysis, main materials proposed are as follows;

**Table 2-14 Main Materials Proposed**

Structure		Reinforced Concrete, partially steel structure						
Floor Height		5,500mm for First Floor and 4,500mm for Second Floor						
External Finish	Roof	Clay Tile						
	Eaves	Mortar trowel, EP Paint						
	External Wall	Mortar trowel EP Paint Louvers: GRC w/ EP						
	Doors & Windows 1) Windows 2) Doors	Aluminum Aluminum (Anodized) and Steel						
	External Floor	Non-Slip Ceramic Tile on mortar base						
Internal Finish		Entrance Hall	Rooms for Administration	Seminar Room	Computer Room	Auditorium	Corridors	Staircase
	Floor	Natural stone	Ceramic Tile on Mortar Base	Ceramic Tile on Mortar Base	Free-access Floor & PVC Tile	Hard Wood w/ OSCL	Ceramic Tile on Mortar Base	Ceramic Tile on Mortar Base
	Baseboard	Natural stone	Ceramic Tile	Ceramic Tile	Hard Wood	Hard Wood	Ceramic Tile	Ceramic Tile
	Wall	Natural stone (a part)	Paint on Plastered Wall	Paint on Plastered Wall	Paint on Plastered Wall	Hard Wood w/ OSCL	Paint on Plastered Wall	Paint on Plastered Wall
	Ceiling	Rockwool Board (System ceiling)	Rockwool Board (System ceiling)	Rockwool Board (System ceiling)	Rockwool Board (System ceiling)	Rockwool Board	Plaster Board w/EP	Cement Board w/EP
	Toilet	Floor Wall Ceiling	Ceramic Tile Ceramic Tile Plaster Board w/VP					

Legend: EP Enamel Paint  
VP Vinyl Paint  
PVC Polyvinyl Chloride



## **2-2-2-7 Equipment Planning**

### **(1) The Contents of the Planned Equipment**

The Project will provide an AV system in the Auditorium, Lobby Display system and furniture as shown in Table 2-2.

### **(2) Necessity of Requested Equipment**

#### **1) AV system in Auditorium**

AV system is indispensable for effective activity in the Auditorium that accommodates from 90 to 150 people. The AV system will consist of a LCD projector, screen, amplifier and speakers. Installation work of the equipment relates closely to building construction because it needs power supply, cabling work and conduit piping work to function properly. Therefore, it would be appropriate to provide the AV system under the scope of equipment work by the Project.

#### **2) Lobby Display System**

This type of Lobby Display System was equipped on the similar projects, namely, the Vietnam-Japan Human Resources Cooperation Center in Hanoi and the Mongolia-Japan Human Resource Cooperation Center by Japan's Grant Aid. Since the display system is useful to disseminate information regarding Japan by broadcasting Japanese TV programs, it would be reasonable to provide it by the Project.

#### **3) Furniture**

The layout and quantity of furniture is examined according to the accommodation number and the use in each room. It is planned to use the same type of movable furniture in each room, to allow flexible use of the rooms when the layout and quantity of furniture are changed.

The main planned equipment is as follows:

**Table 2-15 Specifications of the Main Planned Equipment**

No.	Description	Q'ty	Location	Remarks
1.	Lobby Display System			To be installed in lobby
1-1	Wide plasma display	1	Lobby	50" diagonal, Multi system, Wall mount type
1-2	Stereo speaker	1	Lobby	Rated input; 8W
1-3	AV Switcher	1	Library	
1-4	TV Tuner	1	Library	VHF,UHF、 Multi system
1-5	BS Tuner	1	Library	
1-6	Video tape recorder	1	Library	VHS tape、 NTSC
1-7	DVD Player	1	Library	DVD-A、 DVD-R、 CD、 CD-R/RW
1-8	Remote Controller	1	Library	To select input signal, Video, RGV and AUX.
1-9	Color monitor TV	1	Library	14" Diagonal, Multi system
1-10	Personal computer	1	Library	Desk top type, with 15" CRT
1-11	Equipment Rack	1	Library	To install above mentioned equipment
1-12	Cable and Connector	1 Lot.		Necessary cable and connector for the "Lobby Display System"
2.	AV System			To be installed in Auditorium
2-1	Audio Mixer	1	Projection room	
2-2	Monitor Speaker	1 set	Projection room	
2-3	Cassette Tape Recorder	1	Projection room	
2-4	AV Switcher	1	Projection room	
2-5	Monitor TV	1	Projection room	9" Diagonal, multi system
2-6	Video Tape Recorder	1	Projection room	VHS Tape, NTSC
2-7	DVD/CD Player	1	Projection room	Multi system, DVD-A,V, DVD-R, CD, CD-R/RW
2-8	Power Control Unit	1	Projection room	
2-9	Overhead Camera	1	Auditorium	Multi system,
2-10	Screen Control Switch	1	Projection room	
2-11	Wireless Tuner	1	Projection room	
2-12	Digital Equalizer	1	Projection room	
2-13	Power Amplifier	1	Projection room	Rated power output 120W+120W
2-14	Main Speaker	1 set	Auditorium	Power handling capacity; 160W
2-15	Sub Speaker	1 set	Auditorium	Power handling capacity; 160W
2-16	LCD Projector	1	Auditorium	Brightness 3,200 ANSI
2-17	120-inch Motorized Screen	1	Auditorium	
2-18	Wireless Antenna	1 set	Auditorium	
2-19	Wireless Microphone	4 set	Auditorium	Hand type, Tie-pin type
2-20	Dynamic Microphone	2 set	Auditorium	With Table-top type stand and Floor type stand
2-21	Cable & Connector	1 lot		Necessary cable and connector for the "AV System"

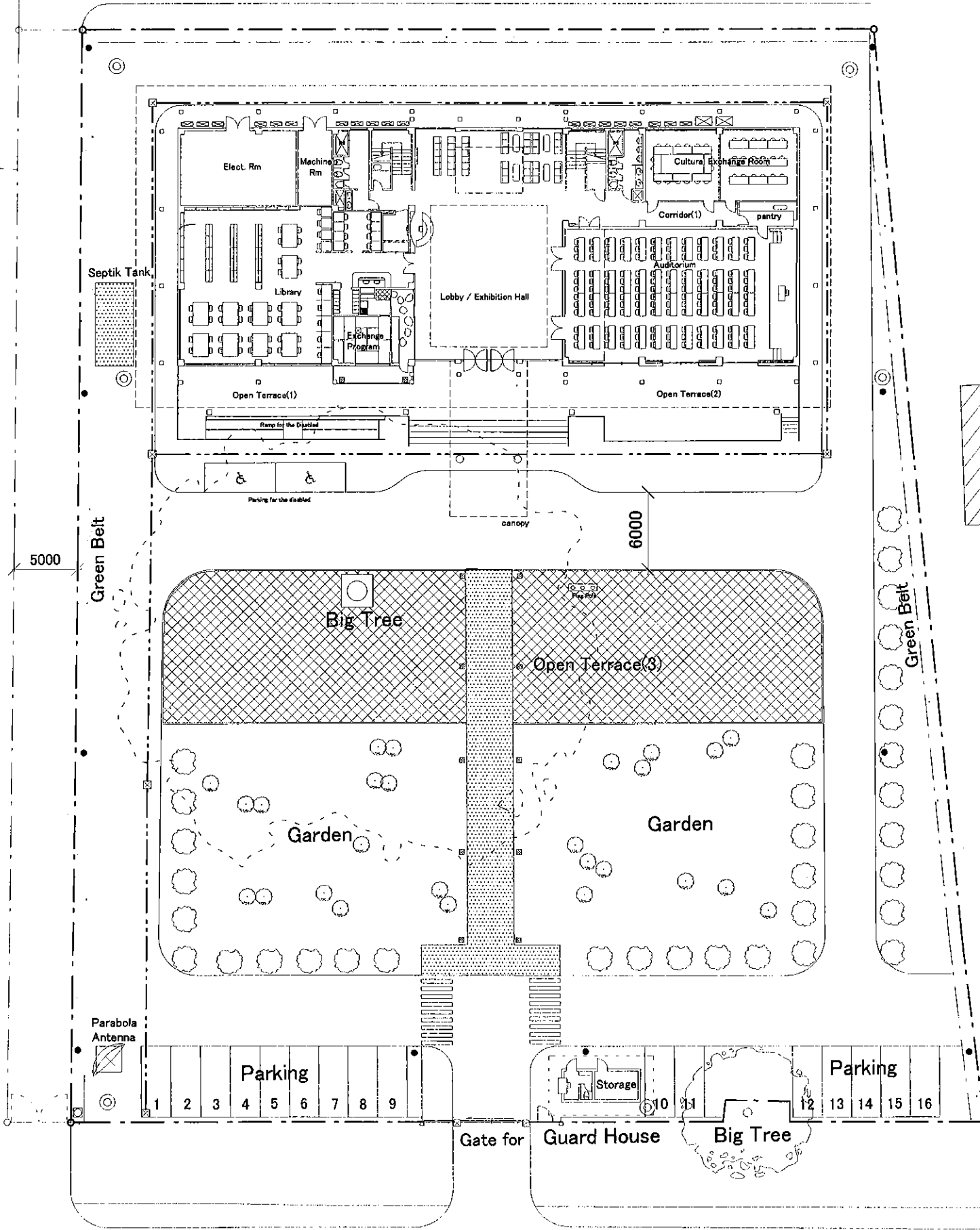
**2-2-3 Basic Design Drawing**

Staff House

Staff House

Staff House

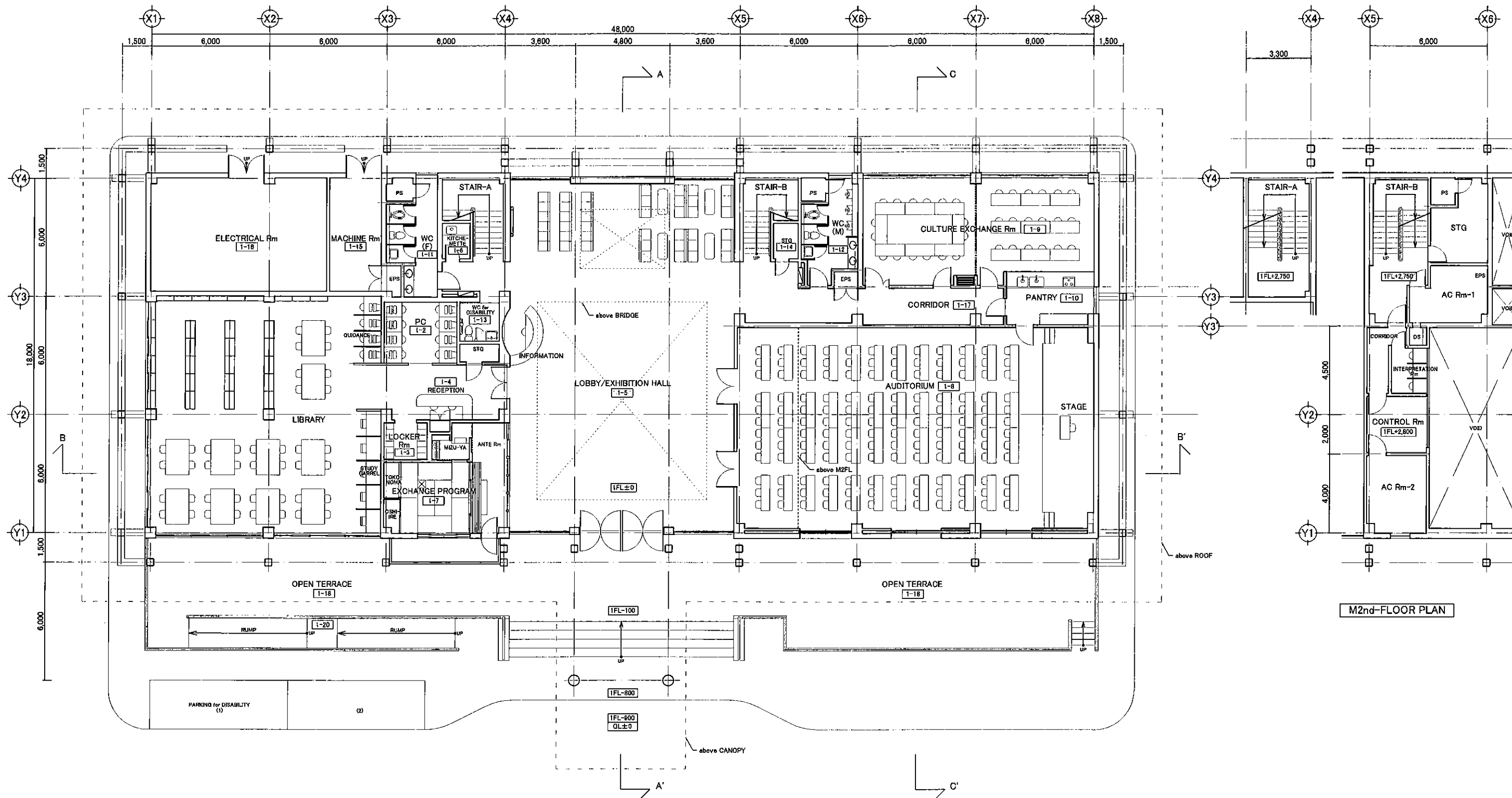
Staff House



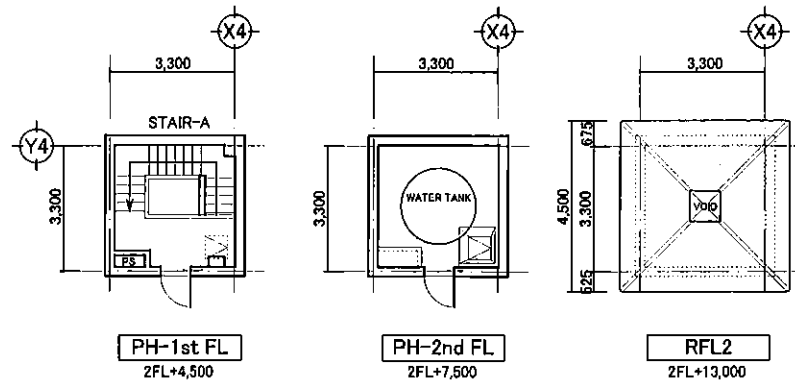
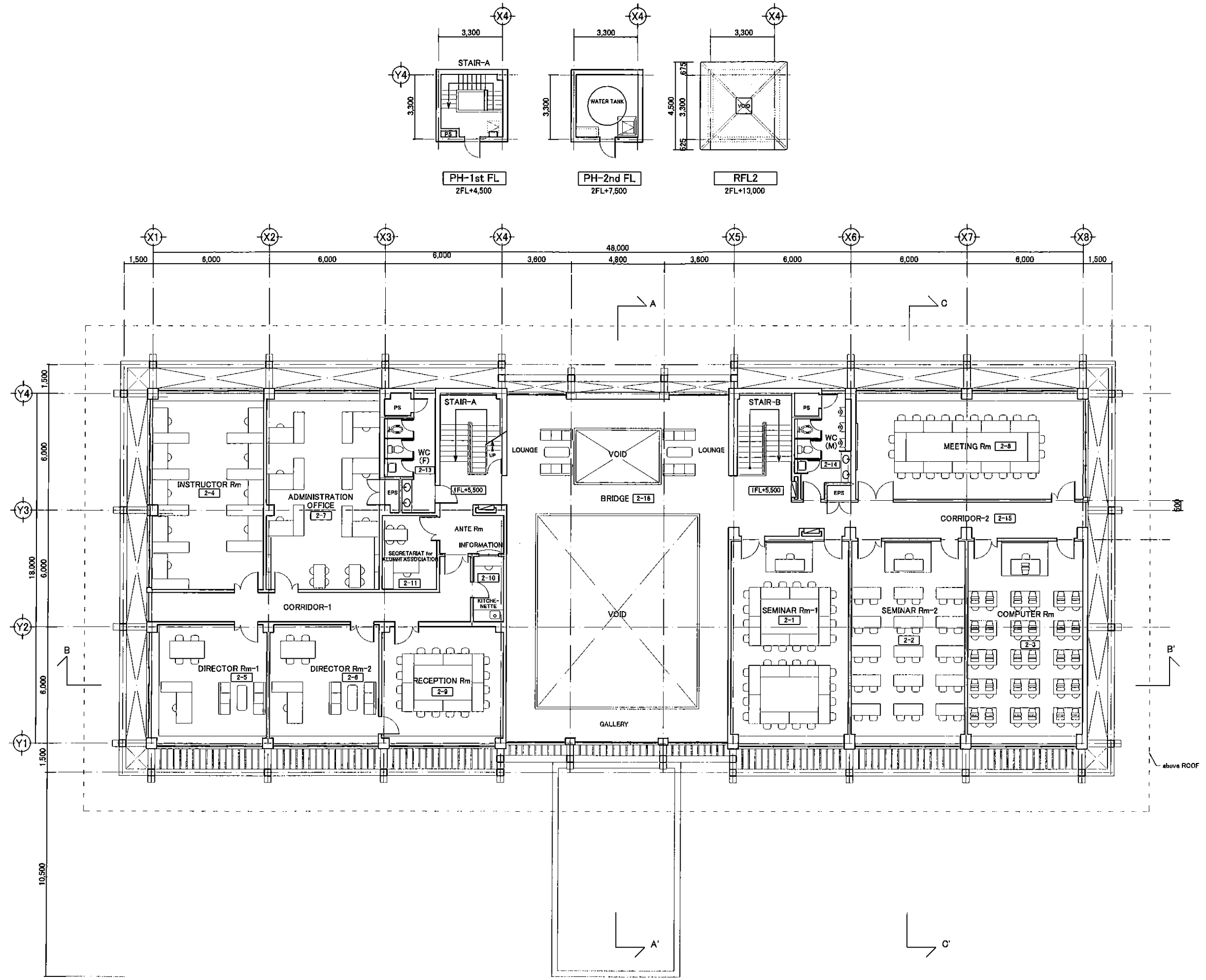
LEGEND

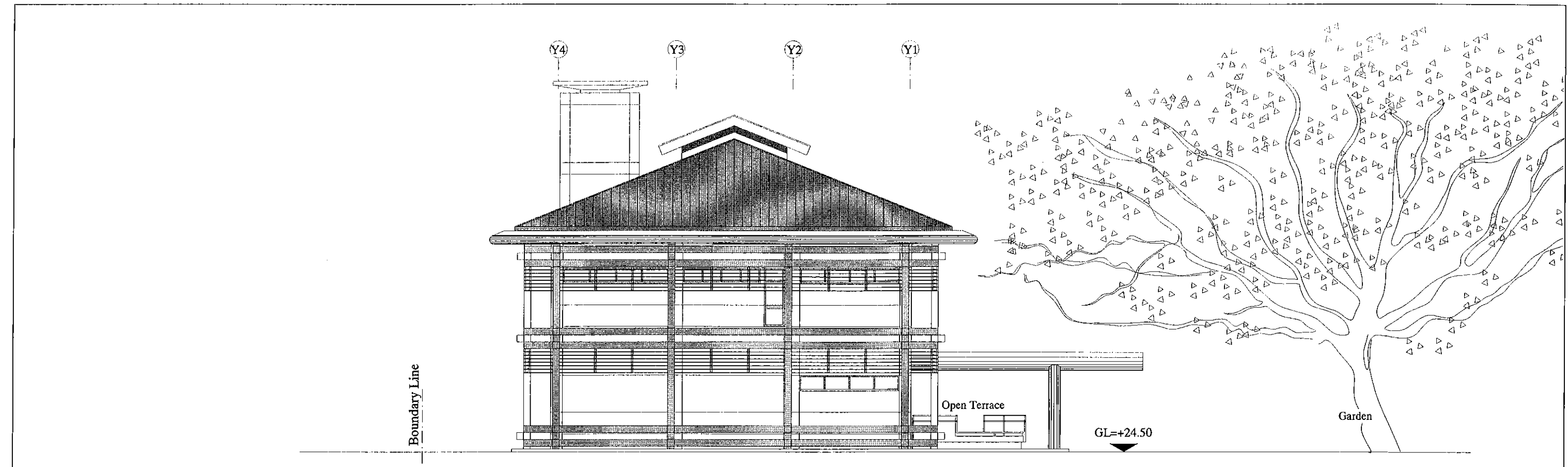
- SITE BOUNDARY LINE
- STORM WATER PIT & PIPE
- FOOT LIGHT ( LANTERN TYPE )
- LIGHTING POLE
- LIGHTING BOX ( LANTERN TYPE )
- TELEPHONE POLE
- GARDEN LIGHT
- PERMEANT PIT



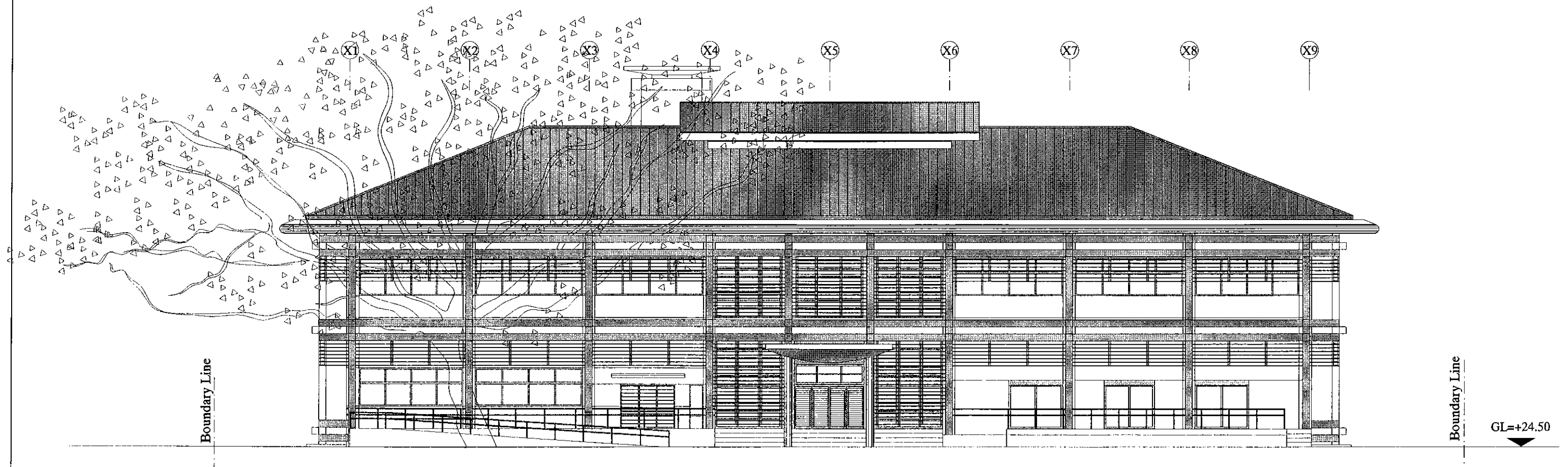


M2nd-FLOOR PLAN





WEST ELEVATION



SOUTH ELEVATION

PROJECT TITLE

THE PROJECT FOR  
CONSTRUCTION OF THE MANMAR-JAPAN CENTER  
FOR HUMAN RESOURCES DEVELOPMENT

GENERAL NOTE

SCALE

1/200

DATE

SOUTH & WEST ELEVATION

04

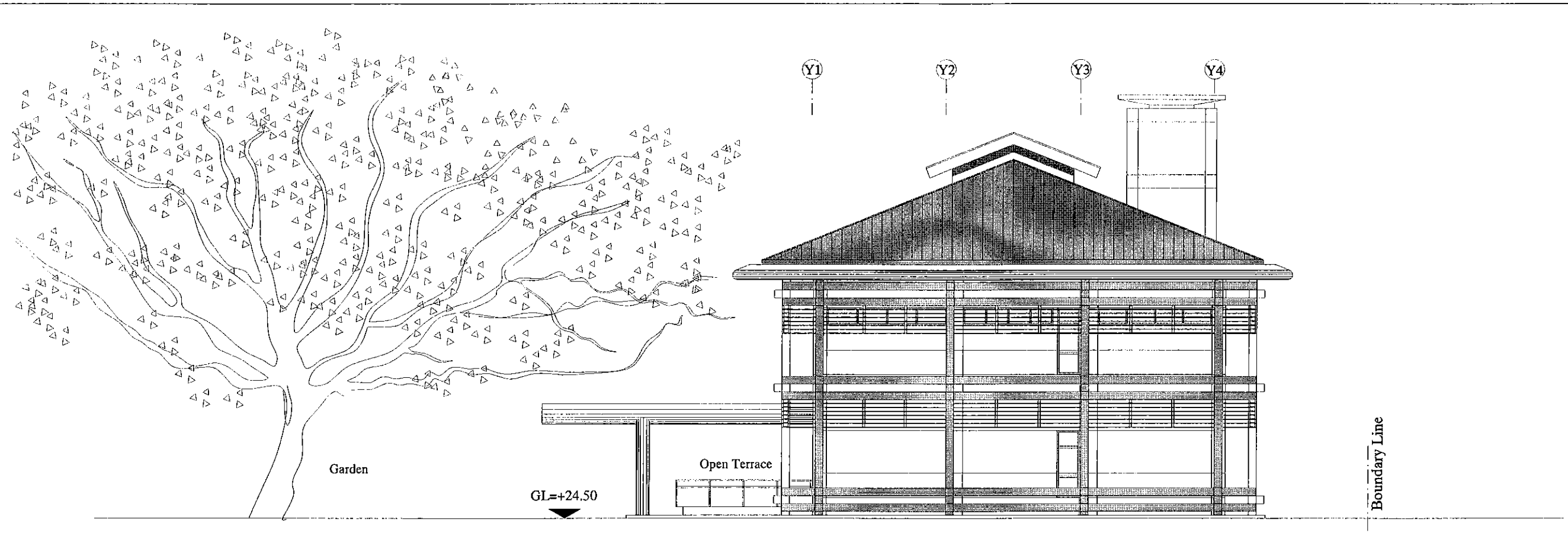
DATE

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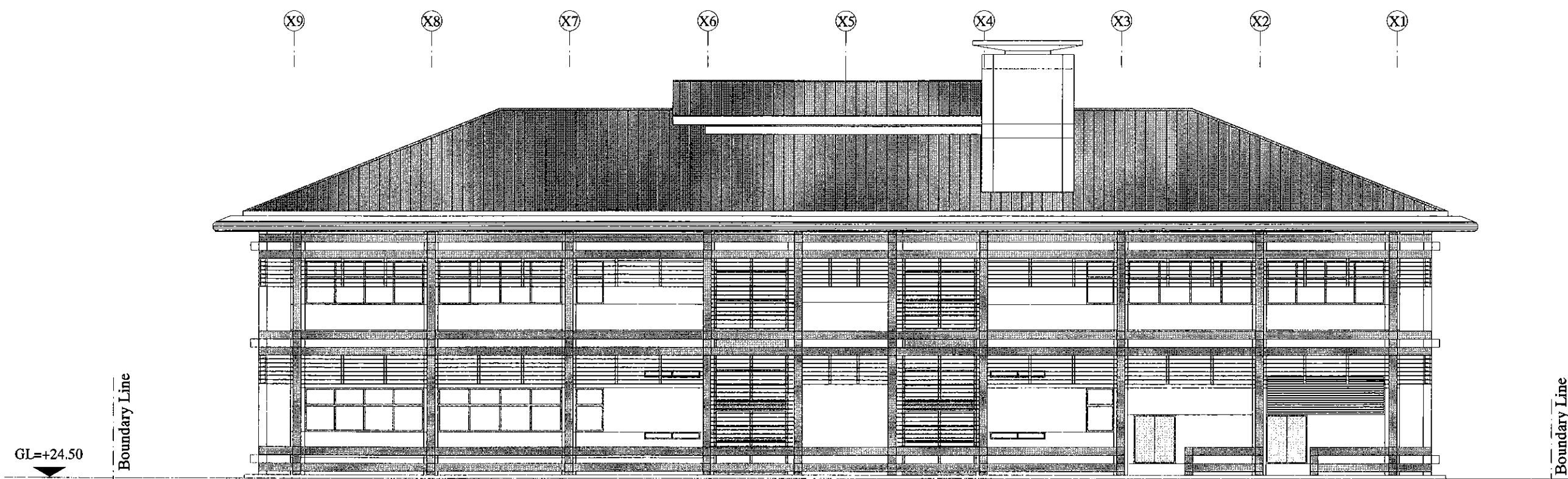
DESIGNED BY

REVIEWED BY

PACIFIC CONSULTANTS INTERNATIONAL

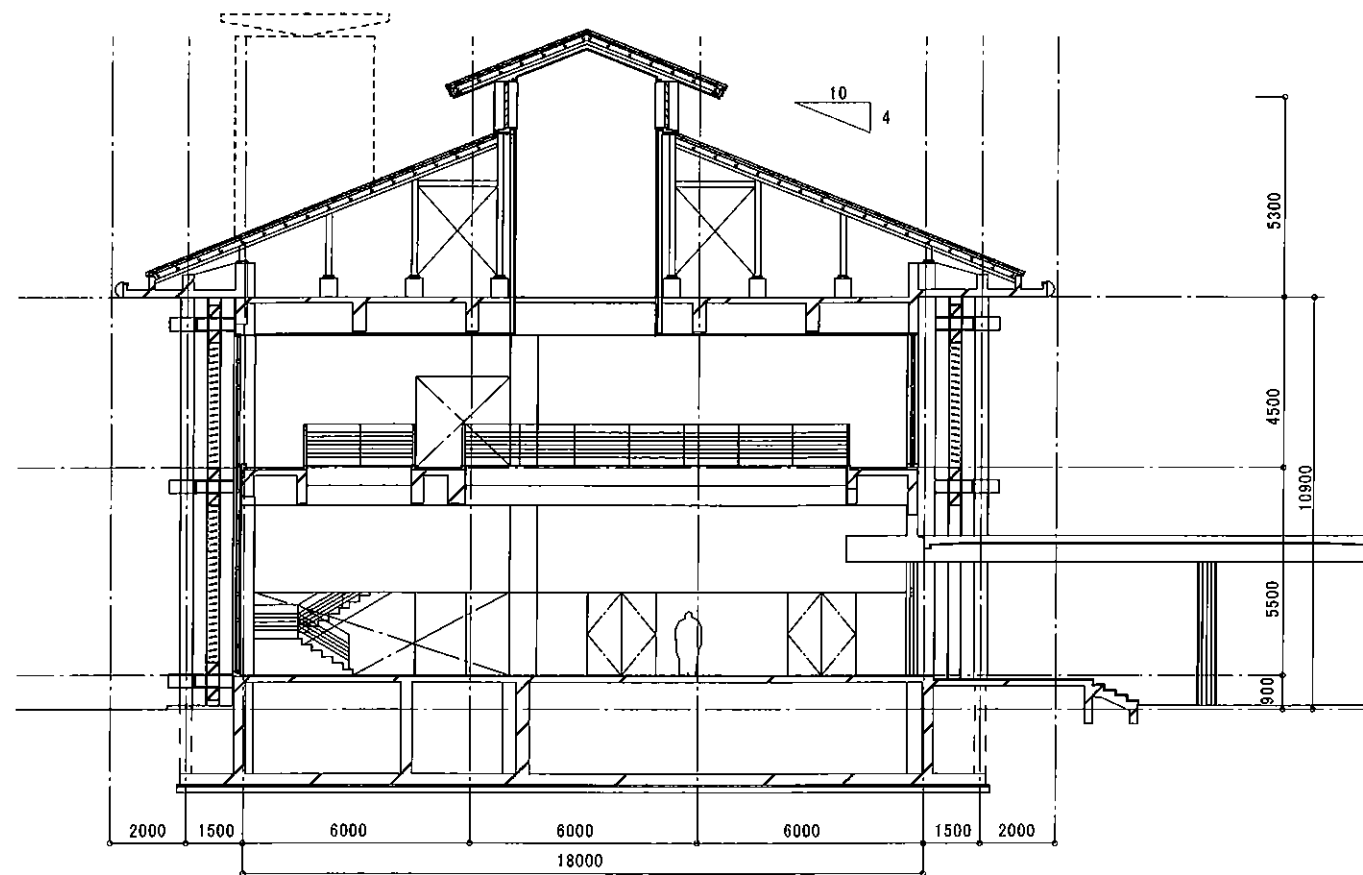


EAST ELEVATION

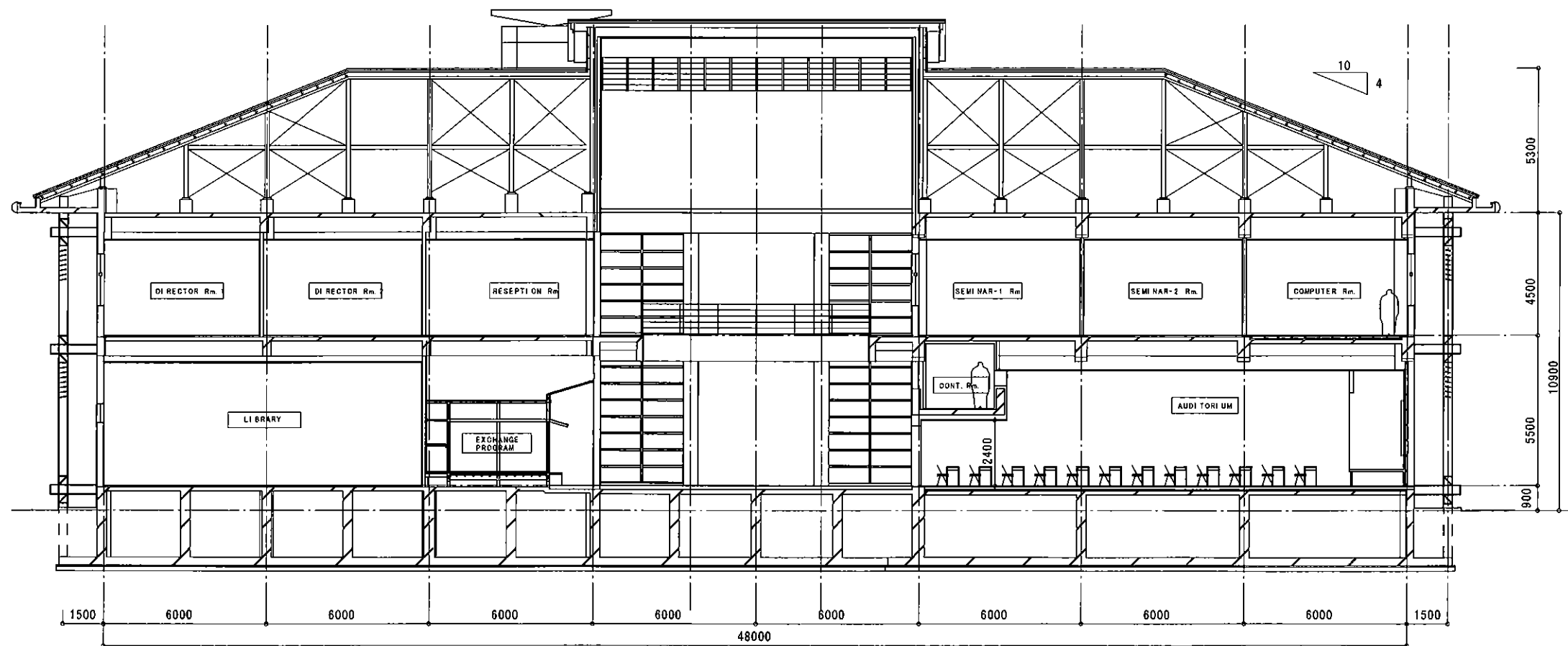


NORTH ELEVATION

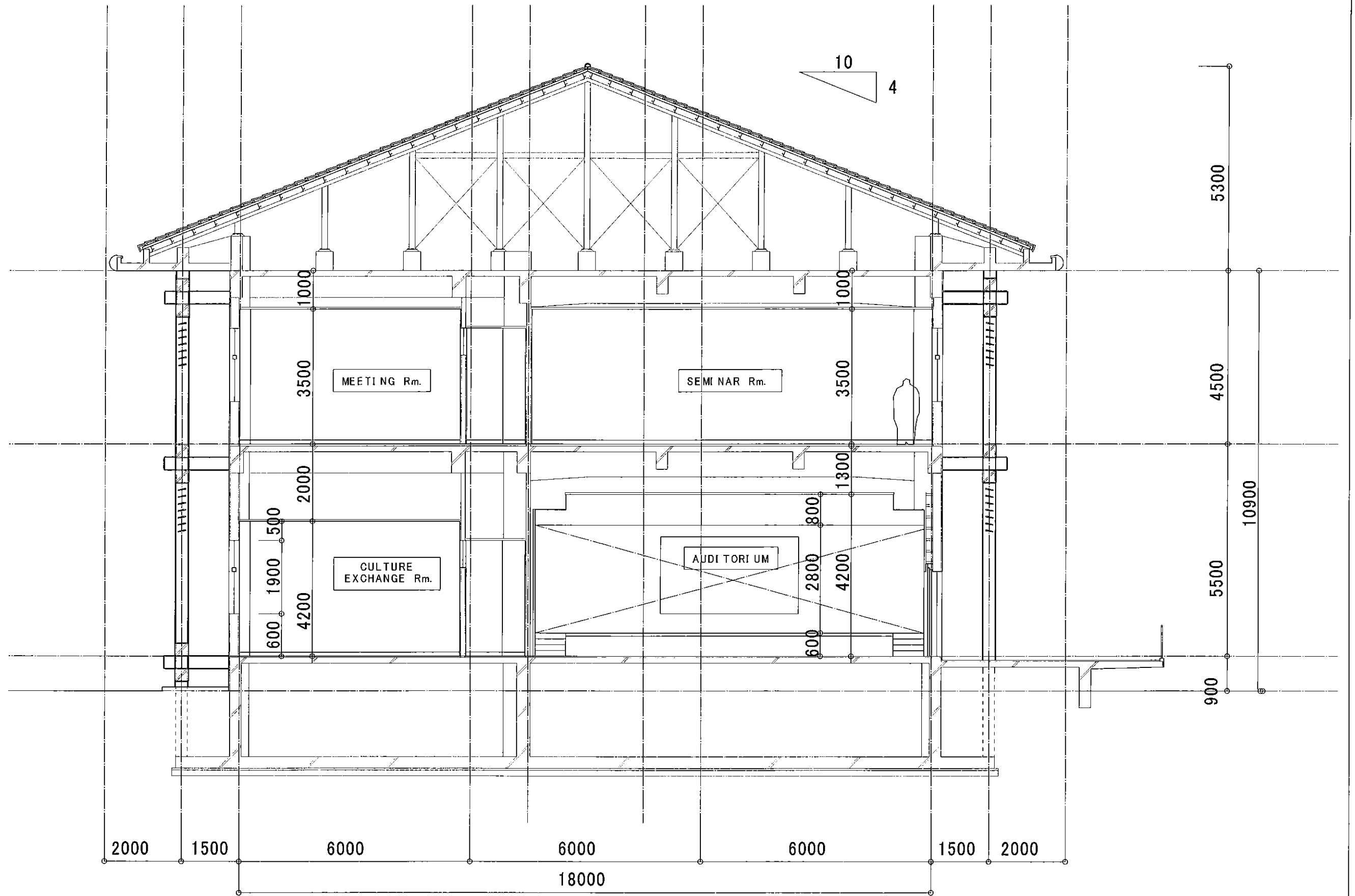




A-A' SECTION



B-B' SECTION



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

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

#### **(1) General**

- 1) The Exchange of Notes (E/N) for the Grant Aid Project shall be concluded between the Government of Japan and the Government of Myanmar after the cabinet meeting and decision by the Government of 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 agreement shall be signed between a consultant of Japanese nationality and the Government of Myanmar and detailed design and supervision services shall be started immediately.

#### **(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 implementation agency.
- 2) The consultant shall discuss the technical issues through meetings with the relevant authorities in Japan and Myanmar during the detailed design stage.
- 3) The detailed design will probably require approximately 3 months for completion after the agreement 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 the guidelines of JICA's Grant Aid Scheme.
- 2) Equipment in the Project, which are utilities for the facility or furniture, is a small portion compared with the whole project and needs to be adjusted to the facility construction work. Through the discussions in Japan they will be included in the facility construction scheme. Therefore, the tender shall be conducted as one package with contractors of Japan.

- 3) The Consultant will assist the implementation agency for the construction contract in accordance with the guidelines of JICA.

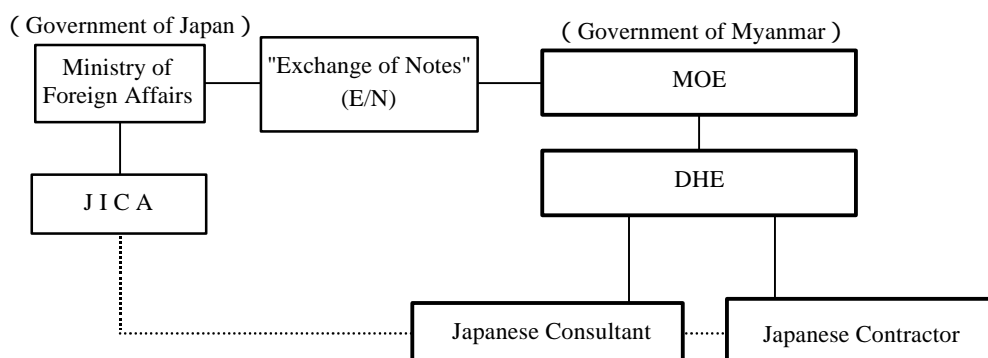
#### (4) Construction

- 1) According to the result of the Basic Design Study, local building materials which are acceptable in quality and supply in Myanmar should be used for the Project as much as possible. However, ensuring and improving quality are the most important items to be noted.
- 2) For the planning of labor supply, it is important that a Japanese contractor, as the prime contractor, should supervise and manage the local contractor and his laborer to maintain the quality required for the Project.

#### (5) Implementation Organization

The organizations involved in this Project are as shown below:

The organization responsible for the Project is the Department of Higher Education, Lower Myanmar (DHE) under the Ministry of Education (MOE) and the executing organization is also DHE. The following diagram shows the relationship between the Government of Myanmar, the Japanese consultant and contractor.



**Figure 2-6 Implementation Organization**

#### 2-2-4-2 Implementation Conditions

- (1) The construction needs to be well managed and supervised by a Japanese contractor to maintain the quality and tight schedule, especially with works by methods not common in Myanmar.

- (2) A Japanese contractor will be the prime contractor in accordance with the Grant Aid scheme and they will undertake the construction by sub-letting the works to the local sub-contractor. Local workers would normally be employed by the sub-contractor and supervised. Therefore, 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 done most carefully considering the effective arrangement of workers.
- (3) May to October is the rainy season in Myanmar. For construction planning, the earthworks, substructure and superstructure works should be scheduled and completed before the rainy season. However, the case that these works are carried out during the rainy season, should be considered, bearing in mind the whole project's implementation schedule. In this case, construction planning such as temporary works must be carefully examined.
- (4) Myanmar laws, codes and standards and British standards should be followed. However, Japanese standards, etc., are also to be applied considering the local situation.
- (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 in the campus of Yangon University and teacher residences are close to the east and west side of the site, consideration of the surrounding environment during construction is required as shown below.
  - 1) The construction method which has the minimum influence to the adjacent teacher residences should be adopted. Construction methods to minimize noise pollution and air pollution 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 students and residents to any danger during the construction.
  - 4) As students and residents pass along the road adjacent to the site, measures of securing safe passage are needed during the construction.

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

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

**Table 2-16 Extent of Works**

Portions by the Japanese Side	Portions by the Myanmar Side
<ul style="list-style-type: none"> <li>(1) Building Works: Structural works, finishing works, furniture, etc.</li> <li>(2) Electrical Works: Power trunk facilities, lighting, power outlets, P/A systems, etc.</li> <li>(3) Utilities and Facilities <ul style="list-style-type: none"> <li>a) Water Supply: Providing water tanks, pumps and related internal piping work</li> <li>b) Sewerage system including piping works up to the connection manhole</li> <li>c) Sewage treatment plant</li> <li>d) Fire-hydrant and extinguishing facilities</li> <li>e) Electrical supply and transformer system, cabling work from main switchgear panel to the facilities.</li> <li>f) Telecommunication system: Providing a new PABX, MDF, telephones and wiring work</li> <li>g) Lightning Protection System</li> <li>h) Lightning system in the site</li> <li>i) Air conditioning system</li> <li>j) Mechanical ventilation system</li> </ul> </li> <li>(4) Exterior Work: Road, path and parking lots within the site</li> <li>(5) Electric Room, Electric Generator Room, Pump Room</li> </ul>	<ul style="list-style-type: none"> <li>(1) Site Preparation <ul style="list-style-type: none"> <li>a) Ground preparation works: - Clearing the Site (such as demolishing staff-houses, guard-house and storage, felling trees and relocating the existing inner path and gate) - Replacement of approach road for the new path - Soil-filling and leveling of the Site</li> <li>b) Temporary power and water supply for the construction</li> <li>c) Access road</li> </ul> </li> <li>(2) External Works: <ul style="list-style-type: none"> <li>a) Installation of fences around the Site</li> <li>b) Landscaping, planting, etc., in the Site</li> </ul> </li> <li>(3) Utilities and Facilities <ul style="list-style-type: none"> <li>a) Water Supply - Providing potable water supply</li> <li>b) Waste Drainage - Providing connecting point to the existing sewerage network.</li> <li>c) Electrical Work - Relocating the existing lighting and electrical poles - Providing medium voltage power supply and paying the charge</li> <li>d) Telecommunication Work - Providing new telephone lines and paying the charge</li> </ul> </li> <li>(4) General Furniture not included in the portion by the Japanese side</li> <li>(5) Other Procedures <ul style="list-style-type: none"> <li>a) Procedures of the permission and approval to Myanmar Government</li> <li>b) Building permission application procedures, all service line connection application procedures, duty free procedures and customs clearance procedures</li> <li>c) Commission to A/P</li> </ul> </li> <li>(6) Expenses for the maintenance, administration, and management</li> <li>(7) Tax exemption and necessary preferential treatment for the construction staff from Japan or a third country</li> <li>(8) Smooth entry, re-entry and departure from Myanmar for the Japanese technical staff</li> <li>(9) All the expenses, other than those to be borne by Japan's Grant Aid within the scope of the Project</li> </ul>

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

##### (1) Basic Policy

A consultant supervisor (a professional in the field of architecture) is dispatched to coordinate the architectural, mechanical and electrical works. Also, technical engineers are dispatched to supervise the important stages of structural, electrical and mechanical works, etc. A resident engineer is dispatched to supervise and inspect during important stages such as beginning of construction, the structure works, the completion and final inspection.

**Table 2-17 Plan of Personnel necessary for Supervision**

Supervisor	Period (Month)
Supervisor (Architecture)	10.5
Resident Engineer	<b>Approx. 1.7</b>
Building construction (Architectural engineers)	<b>Approx. 0.7</b>
Building construction (Structural engineers)	<b>Approx. 1.0</b>
Building construction (Electrical and Mechanical engineers)	<b>Approx. 3.0</b>

The supervision works are to control the construction schedule considering construction method, the number of laborer 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 shall be considered. If the construction work being carried out by the Myanmar side is found to be delayed, the consultant may urge acceleration of the construction work. Furthermore, a suitable construction schedule will be planned in consideration of the construction and procurement circumstances as mentioned in 2-2-4-2.

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

The scope of the works for the supervisor at the project site is to check and approve the construction plans and drawings, management of the construction schedule to monitor building construction and procurement and installation of equipment. The scope of the works for the supervisor in Japan is quality control for building construction methods and materials and design through reports by the supervisor at the project site, reporting progress of the construction work to JICA, and inspection of equipment procured from Japan in factories before shipment.

### **(3) Issuance of Certificates**

The certificates on export of construction materials and equipment, the payment for construction, practical completion and final completion, etc., are issued.

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

Checking and approving monthly progress reports, completion documents and photos of works from the contractor and submitting to the Government of Myanmar and JICA. The completion report shall be prepared and submitted to JICA in accordance with the Grant Aid guidelines.

### **(5) Others**

Help expedite and monitor the schedule of works to achieve smooth operation of related works executed by the Government of Myanmar, as necessary.

## **2-2-4-5 Quality Control Plan**

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

The Detailed Design drawings shall be developed based on the studies analyzed from actual circumstances in Myanmar, maintenance cost, use of local materials and local construction methods. The specification should comply with Myanmar's 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) Quality Examination**

The Consultant shall examine the implementation plan submitted by the Contractor prior to the commencement of each stage of the works, and approve it if the construction materials and the execution methods conform to the Specification. The Consultant should inspect necessary portions of work based on the implementation plan and Specifications.



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 to Codes and Regulations related to developed nations mentioned above.

### 1) Earthwork

According to the soil investigation report which was made in the Basic Design Study, the ground condition of the project site is not bad. The progress schedule should be examined to consider the rainy season in order to assure safety and schedule.

### 2) Reinforcing Bar Work

The Mill-Sheet and so on, showing re-bar content submitted by the Contractor should be confirmed by the Consultant. Also bar strength should be inspected to match yield strength in the specification.

### 3) Concrete Work

There are 3 ready mixed concrete plants in and near Yangon city. They are at a distance of one hour by car from the project site and the production capacity, the storage condition and the quality control are acceptable. Therefore, ready mixed concrete shall be adopted for the strength categories required by this report under structural design. The important items for the supervision works are as follows:

#### A. Items to be inspected for concrete material

Material	Item to be inspected	Method of inspection
Cement	Hydration Heat	Dissolution Heat
Sand/ Gravel/ Crushed Stone	Grading	Sieve analysis
	Absolute dry specific gravity	Specific gravity & ratio of water absorption
	Alkali aggregate reaction	Alkali aggregate reaction test
Water	Organic impurities	Quality test of water

#### B. Items to be inspected for the mixing test

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

C. Items to be inspected for the concrete placing

Item to be inspected	Method of inspection
Time from mixing to completion of concrete placing	Check time of completion of concrete placing (one hr. or less)
Slump	Slump cone
Concrete humidity	Hygrometer
Air content	Manometer
Chloride volume	Measuring instrument for salt

D. Items to be inspected in the progress schedule (Inspection for the accuracy of concrete placing)

Item to be inspected	Method of inspection
Estimate test for structural concrete	Compression test machine
Accuracy for the openings of door & windows	Measurement
Accuracy for horizontal level of concrete slab	Spirit level & measurement
Status of Finishing	Visual inspection

## 2-2-4-6 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 2-18. As shown, most of the materials can be obtained in Myanmar. However, most of materials for finishing work 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 2-18 Procurement Situation of Construction Materials**

Name of material	Locally Produced	From Japan	From Third Country	Remarks
<b>Construction materials</b>				
Sand/Gravel				
Cement				Ban on import
Bricks				
Form/Timber				
Re-bar				Ban on import
Steel frames				Thailand
Concrete Blocks				
Roof materials				
Wood Fittings, Metal Fittings				
Tiles				
Waterproof Agent				
Paint				
<b>Electric Materials</b>				
Electric Cable/Conduit				Thailand, Singapore, Malaysia
Distribution Panel Board				Ditto
Lighting Appliances				Ditto
Wiring Equipment				Ditto
Communication Appliance				Ditto
Public Address Equipment				
<b>Utility Materials</b>				
Pumps				Thailand, Singapore, Malaysia
Elevated Reservoir Tank				Ditto
Pipes/Valves				Ditto
Sanitary Fixtures				Ditto
Air conditioner and Fan				Ditto
<b>Equipment</b>				
Lobby Display System				
AV system				
Furniture (Desk, Chair, etc.)				

**Table 2-19 Procurement Situation 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 (25t)				
Generator (50KVA)				
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. All transportation is considered ocean freight and the transportation time are as follows:

- 1) Procurement from Japan: The route via Singapore for the ocean freight should be considered.

### Freight Days from Japan to Yangon

Tokyo Port <approximately four times per month/customs clearance - two days>  
(voyage seven to ten days) Transshipment at Singapore (four or five days)  
Yangon Port (approximately three weeks in all)

- 2) Procurement from third countries: mainly from Bangkok.

### Freight Days from Bangkok to Yangon

Bangkok <three times/week> (voyage twelve to fourteen days) Yangon Port  
(approximately two weeks in all)

- 3) Time required for transportation of imports

The time required for transportation of imports to the project site shall be the sum of the time required for ocean freight, import duty procedure, procedure of the customs clearance and the transportation from the ports to the project site. The master list system that imports are judged and approved in advance for import duty is adopted in Myanmar. It takes approximately three weeks for the procedure to clear import duty. Compared with the time required for above-mentioned procedure and transportation, this is the time required for transportation of imports.

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

The tentative implementation schedule for the Project is expected to be as shown in Table 2-20.

**Table 2-20 General Project Schedule**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Detailed Design	E/N Consultant Agreement																			
		Detailed Design, Preparation of Tender Documents																		
							Tender & Evaluation													
Construction Execution										Groundbreaking										
										Site Preparation										
										Temporary Work										
										Earth Work		Foundation Work								
												Superstructure Work								
													Roof Work							
														Finishing Work						
														Utilities & Facility Work						
																	External Work			
																		Inspection		

- 1) The influence of the rainy season to the earth work, foundation work and superstructure work is taken into consideration. The suitable time necessary for completion of plastering work is considered to avoid the frequent occurrence of cracks.

## **2-3 Obligations of the Myanmar side**

In the case the Project is implemented, the Myanmar side will carry out the following scope of works, and it has been confirmed that the Myanmar side agree to execute their scope of works during the Basic Design Study.

### **(1) Responsibilities of the Myanmar side**

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

- Under the Japan's Grant Aid Scheme, the equipment and materials purchased for the Project shall be tax free.
- Based on the contract that was verified, the equipment and service provided, and the Japanese who are involved in this Project shall be exempt from custom tariff, income tax and other domestic taxes.

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

- Based on the verified contract, assistance with entry permit and visa will be provided in Myanmar to the Japanese nationals who will be involved in this Project.

### **(2) Portions by the Myanmar Side**

The portions, except "Table 2-16 Extent of works" by the Myanmar side are noted as follows:

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

- Clearing the Site, such as demolishing staff-houses, guard-house and storages, removal of trees, and back-filling and leveling of the Site before the construction starts.
- Relocating the existing inner path and gate, and replacement of approach road as the access road for the construction as necessary.
- Providing temporary power and water supply for the construction.
- Removing and relocating the existing elevated electric wires in the Site.

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

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

- To purchase and install office furniture, curtains and carpets, etc., for the new building.
- Construct cabling or piping work for main feeder wiring, water supply and telephone line, etc., to the Site.
- To issue permissions and licenses, etc., necessary for the implementation of the Project, without delay.

### 3) After Implementation

- Securing the expense for the operation and maintenance of the facility.

For the portions by the Myanmar side, in order to carry out the Project smoothly, sufficient explanation of the contents, schedule, etc., should be given.

The budget for the portions by the Myanmar side is to be prepared with a special budget. In order to facilitate the construction according to the schedule, the Myanmar side must complete their scope of works on schedule and coordinate their works with the Japanese side, in order to achieve the final completion date. The Basic Design Study Team has also explained this importance. It is necessary for the Japanese side to monitor the progress in regard to this matter.

## 2-4 Project Operation Plan

### (1) Maintenance and Operation Plan for Facilities

At this time, there are fourteen personnel in the Engineering Department who are mainly in charge of maintenance and operation of the utilities of Yangon University. They comprise the following:

- 8 persons in charge of maintenance and operation of facilities,
- 6 persons in charge of maintenance and operation of utilities,

On the other hand, Yangon University is outsourcing maintenance and operation of electrical utilities to Myanmar Electrical Power Enterprise (MEPE). They maintain and operate the electrical utilities in the facilities of Yangon University from the low voltage line outside.

Through the discussions with the Myanmar side, it has been clarified that the maintenance and operation of the new facility is going to be performed by the personnel in Yangon

University. Education and training of the personnel regarding implementation of a scheduled inspection or maintenance of relevant documents are necessary.

## (2) Equipment/Operation, Maintenance and Management Plan

Planned equipment includes only some audiovisual equipment. Maintenance staff of the MJC will conduct daily maintenance. In the case of serious damage of the equipment, the manufacturer's service centers will be commissioned in the neighboring countries such as Thailand or Singapore. Therefore, it would be difficult to have repairs made promptly. Thus, it should be required to train and educate equipment maintenance staff as well as facility maintenance staff.

## 2-5 Cost Estimate of the Project

### 2-5-1 Cost Estimate of the Project

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 in item (3), the cost breakdown of the Japanese side and the Myanmar side are as follows:

#### (1) Portions by the Japanese Side

##### Cost Estimate

Approximately 436million Japanese yen

Item of expenditure		Cost Estimate (million yen)	
Facility	The MJC Building (Seminar rooms, Library, Auditorium, etc.)	344	365
	Furniture	6	
	Equipment (AV system, Large-sized display system)	15	
Fee for Detail Design, Tender preparation and Site supervision		71	

#### (2) Portions by the Myanmar Side

Item of expenditure	Cost Estimate (Kyat)
1) Site preparation	9,009,280
2) External Works	21,575,588
3) Utility and Facilities (electricity, telephone, etc.)	35,996,500
4) Others	900,000
Total	67,481,368

(Approximately 18.3million Japanese yen)



**(3) Additional Conditions:**

- 1) Time of the Cost Estimate : January, 2003
- 2) Exchange Rate : 1US\$ = 122.06 Japanese yen  
1US\$ = 450 Kyat (1FEC = 1US\$)
- 3) Term of construction : 10.5 months
- 4) Others : This Project is implemented by Japan's Grant Aid Scheme.

**2-5-2 Administration, Operation and Management Cost**

**(1) Expenses Required for MJC**

The running cost (expenses for water, power and fuel) for the MJC are calculated as follows:

1) Electricity Cost

A. Assumption

Maximum Demand 130 kw

Load Factor 0.35

B. Tariff of Electricity Charge by Myanmar Electric Power Enterprise (MEPE)

Fixed Charge	0 Kyat/ Month	
Demand Charge	0 Kyat/ kw	
Energy Charge	5 Kyat/ kwh	For Governmental Use

C. Monthly Electricity Cost

Fixed Charge		=	0
Demand	130 kw × 0 Kyat/ kw	=	0
Energy	130 kw × 720 H/ Month × 0.35 × 5 Kyat/ kwh	=	163,800
Total			163,800
			(Kyat/Month)

D. Annual Electricity Cost

163,800 Kyat/ Month	×	12 Months/ Year	=	1,965,600
				(Kyat/Year)

## 2) Telephone Cost

### A. Assumption

Direct Line: 2-Lines

Trunk Line: 3-Lines

### B. Schedule of Telephone Charge by Myanmar Post & Telecommunication (MPT)

Local call charge 3.0 Kyat/ min

Long distance charge (101 ~ 200 miles) 5.4 Kyat/ min

International call charge 190.0 Kyat/ min

### C. Assumed call time

Local call 900 min/ Month/ Line

Long distance call 300 min/ Month/ Line

International call 150 min/ Month/ Line

### D. Monthly Telephone Cost

Local call	900	×	3 Kyat/ min	×	5 Lines	=	13,500
Long distance call	300	×	28 Kyat/ min	×	5 Lines	=	42,000
International call	150	×	190 Kyat/ min	×	2 Lines	=	57,000
Total							112,500
							(Kyat/ Month)

### E. Annual Telephone Cost

$$112,500 \text{ Kyat/ Month} \times 12 \text{ Months/ Year} = 1,350,000 \text{ (Kyat/ Year)}$$

## 3) Fuel Cost

### A. Assumption

Conditions Stand-by Generator 100 KVA 3 415V 50Hz: 1 No.

Fuel consumption: 26L/ Hour

Assuming Ten (10) hours running a week

### B. Fuel cost

Diesel Fuel 40 Kyat/ L (For Governmental Use)

C. Annual Fuel Cost

$$\begin{aligned}
 26 \text{ L/Hour} \times 10 \text{ Hours/ week} \times 52 \text{ Weeks/ year} &= 13,520 \text{ (L/ year)} \\
 13,520 \text{ L/year} \times 40 \text{ Kyat/ L} &= 540,800 \text{ (Kyat/ year)}
 \end{aligned}$$

4) Data Communication Cost

According to the Tariff of Bagan Cybertech

A. Inter-net Access Cost (256kbs)	120,000 Kyat/ month
Total	120,000 Kyat/ month

B. Annual Data Communication Cost

$$\begin{aligned}
 120,000 \text{ Kyat/ month} \times 12 \text{ Months/ year} &= 1,440,000 \\
 \text{Annual Fee} &180,000 \\
 \hline
 \text{Total} &1,620,000 \text{ (Kyat/ year)}
 \end{aligned}$$

5) Water Supply and Sewage Cost

A. Maximum consumption per day of water Supply and Sewage	15 cu.m/ day
B. Unit Cost for water Supply and Sewage	100 Kyat/ cu.m
C. Annual Water and Sewage Cost	
15 cu.m/ day $\times$ 360days/ year $\times$ 0.7 $\times$ 100 Kyat/ cu.m	= 378,000 (Kyat/ Year)

6) Annual Running Cost

Electricity Cost	1,965,600
Telephone Cost	1,350,000
Fuel Cost	540,800
Data Communication Cost	1,620,000
Water Supply and Sewage Cost	378,000
Total	5,854,400
Approximately	5,900,000 (Kyat/ year)

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

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

### **3-1   Project Effects**

#### **(1)   Direct Effects**

- 1) By preparing and arranging for seminar and computer rooms necessary to hold business courses and Japanese language courses, it will become possible to implement the required curriculum for Japanese language education and to bring up competent and capable personnel who will eventually engage in the making of market economy.
- 2) By preparing and arranging for a culture exchange room and Japanese-style room, it will become possible to carry out programs and activities which contribute to promote culture exchange between Myanmar and Japan.
- 3) By preparing and arranging for an auditorium, it will become possible to hold Japanese speech contests, show Japanese movies, hold various lecture meetings and all sorts of exhibitions, workshops, etc., based at the MJC which were hitherto held at the Japanese embassy or other rental facilities.
- 4) By preparing and arranging for a library which can accommodate approximately 5,000 books related to Japan , economy, etc., as well as provide reading space, it will become possible to make public and to gather information at the MJC which will provide required information to visitors as well exchange information based thereat.

#### **(2)   Indirect Effects**

- 1) By the planned facilities being established and maintained under the Project and their realizing required activities related to Japanese language education, market economy and culture exchange between Myanmar and Japan, the MJC is anticipated to play the main role in academic and culture exchange between the two nations.
- 2) By the planned facilities being established and maintained under the Project realizing required activities related to Japanese language education, market economy and culture exchange between Myanmar and Japan, intensification of human resources engaged in

various sectors of Myanmar's society such as more people learning about Japan and their language, more capable Japanese language teachers becoming available, development of competent and capable persons who contribute towards bringing about market economy, etc., can be expected.

- 3) Again, by the planned facilities being established and maintained under the Project realizing required activities related to Japanese language education, market economy and culture exchange between Myanmar and Japan, all sorts of interchanges at various levels such as state level, academic exchange, private sector exchange, etc., will materialize facilitating mutual understanding.
- 4) Through the planned facilities being established and maintained under the Project and by the MJC strengthening cooperation with other Japan Centers in Asian nations and through various activities, such as information exchange between Japan and other nations all over Asia, should certainly promote mutual understanding between each other as well as intensify human resources of each nation concerned.

**Table 3-1 Summary of Effect and Improvement through the Project**

Current situation and existing problems	Activities of the Project	Effect and improvement
1. The organization which can receive the education regard to the market economy in Myanmar is only the MBA course of the Yangon Institute of economics, and the business related courses of CHRD. Now, a matter of great urgency is to improve educational environment with limited attendance capacity, shortage of number and quality of lecturers etc.	A seminar room (30 persons) required for business courses, a computer room (30 persons), an auditorium (150 persons), and a library are improved by implementation of this Project.	It is expected that the human resources who respond to market economy in Myanmar be developed to 1,980 persons every year by implementation of the business courses such as the long-term course (30 person x 2 time/year), a medium term course (30 person x 4 time/year), and a short term course (150 person x 12 time/year).
2. For promotion of the mutual understanding between Myanmar and Japan, a Japanese speech contest, a Japanese movies, various lecture meetings, various shows, the workshop, etc., have been held at the Japanese embassy or other rental facilities. Now it is urgent and necessary to hold above programs at one location.	An auditorium, a culture exchange room (a Japanese-style room is also included), an exhibition space, and a seminar room for Japanese language courses are improved by implementation of this Project.	It becomes possible to carry out each culture exchange programs by this center to provide a base. Moreover, the increase in those who study Japan and Japanese language, and the number of Japanese language teachers and improvement in quality teaching methods are expected. The exchange in various fields levels, such as exchange on the national level of two countries, exchange between arts and sciences, and exchange in the private sector, are realized, and mutual understanding is promoted.

## **3-2 Recommendations**

In conclusion, the recommendations relative to executing this Project are described below.

### **(1) Establishment of Management Organizations in the MJC by the Myanmar side**

Although management and operation of the presently planned MJC will take the form of joint management between Japan's Technical Cooperation Project and Myanmar, it is actually expected to be largely dependent on those involved in the Technical Cooperation Project. The Myanmar side is now in the course of selecting staff to operate and manage the Center and it is considered that establishing a Myanmar management system will in the real sense lead to educational, economic and culture exchange between both nations and substantial joint activity by staff of both nations. Therefore, establishing a Myanmar management system both in respect to human resources and financial aspects through the Technical Cooperation Project will be required.

### **(2) Establishment of MJC Functions**

The MJC will aim at establishing the function as the central organ within Myanmar for exchange between Myanmar and Japan. In regard to the future with the Center at the core, there is ample room to scrutinize plans, to expand activities through cooperation and exchange with other universities and research institutes such as implementing scientific activity cooperation with each faculty, etc., of Yangon University where the MJC is situated. Therefore, whilst constantly paying close attention to Myanmar's national educational plans and to the direction in which market economy is heading, by scrutinizing the role of the Center amidst such circumstances, it is felt that expanding the functions of the Center and making it function more effectively will indeed be possible.