

MINISTRY OF HEALTH AND SPORTS  
THE REPUBLIC OF THE UNION OF MYANMAR

**PREPARATORY SURVEY REPORT  
ON  
THE PROJECT FOR IMPROVEMENT  
OF  
MAGWAY GENERAL HOSPITAL  
AND  
DAWEI GENERAL HOSPITAL  
IN  
THE REPUBLIC OF THE UNION OF  
MYANMAR**

**[MAGWAY GENERAL HOSPITAL]**

APRIL 2017

JAPAN INTERNATIONAL COOPERATION AGENCY

YAMASHITA SEKKEI INC.  
BINKO INTERNATIONAL LTD.

HM
JR
17-003

## PREFACE

Japan International Cooperation Agency (JICA) decided to conduct the preparatory survey and entrust the survey to the consortium of Yamashita Sekkei Inc. and Binko International Ltd.

The survey team held a series of discussions with the officials concerned of the Government of the Republic of the Union of Myanmar, and conducted field investigations. As a result of further studies in Japan, the present report was finalized.

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

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of the Union of Myanmar for their close cooperation extended to the survey team.

April, 2017

Ms. Mitsuko Kumagai  
Director General  
Human Development Department  
Japan International Cooperation Agency

# SUMMARY

## 1. Outline of the Recipient Country

The Republic of the Union of Myanmar (Myanmar) is located along the western side of the Indochina Peninsula, and is bordered by the People's Republic of China to the north east, by Laos to the east, Thailand to the southeast, Bangladesh to the west and India to the northwest. The land area is approximately 680,000 square kilometers (about 1.8 times the size of Japan) and the population is about 51.48 million (as of 2014, Census by the Ministry of Labour, Immigration and Population, Government of Myanmar).

The Administrative divisions of Myanmar comprise seven states and seven regions. The Project sites are located in the Magway Region and the Tanintharyi Region, situated at the center and in the southern edge of the country respectively.

Most of the land of Myanmar is in the tropical or subtropical zone, but as the land extends in a narrow strip north to south with highland areas, there are typically large differences in climate depending on the location. A year is generally divided into the dry season from late October to May, in which temperature from April to May is high, and the rainy season from June to mid-October.

Since the transition to civilian government headed by H.E. Mr. Thein Sein in March, 2011, policies to open its economy have been implemented. Its multiple exchange rate system was abolished with unification of foreign exchange markets, then managed floating exchange rate system was introduced in April, 2012. In March, 2016, NLD government headed by H.E. Ms. Aung San Suu Kyi has been inaugurated, then increasing democratization and economic growth are expected for Myanmar. The nominal GDP in 2015 was 66.9 billion USD and the nominal GDP per capita in 2015 was 1,292 USD. The annual growth rate is 9.6 % in April, 2016 as a result of the growth of service and manufacturing industries. Stable annual economic growth of 7 % is assumed in a medium and long term with plenty natural resources, relatively inexpensive labor force, and geopolitical advantage as a node of the member counties of ASEAN (The Associated of Southeast Asian Nations), India and China. Moreover, it is expected that the ASEAN Economic Community, in which Myanmar has participated established at the end of December, 2015 will accelerate economic integration among all member countries.

## 2. Background and Outline of the Project

In the health sector in Myanmar, maternal and child health (72 per 1,000 live births of the under five mortality rate, 282 per 100,000 live births of the maternal mortality rate in 2014) and control of infectious diseases still need to be improved while morbidity and mortality rates of non-communicable diseases and traffic accidents are increasing these days. Adequate medical services with proper medical facilities and medical personnel with competent educational background are fundamental for appropriate treatment.

In Myanmar, the hospital system is comprised with three levels: national hospitals; state/regional general hospitals; and district, township and station hospitals. Among them, state/regional general hospitals are expected to play a key role in regional medical services by receiving patients referred from districts and lower-level hospitals and training medical professionals, however, for many of the state/regional general hospitals it is difficult to provide those necessary medical services because the deterioration and malfunction of facilities and equipment has prevented them from fulfilling their responsibilities. Though patients who are not received in the state/regional hospitals are transferred to tertiary hospitals which

located out of the state or region, it gives the patients physical and economic burden. Thus, in Myanmar, it is urgent to strengthen the medical services of state/regional general hospitals level.

In this connection, in 2015 Japan International Cooperation Agency (JICA) conducted the Data Collection Survey for State/Regional Hub Hospitals in Myanmar. Based on the result of the Survey, two medical institutions, Magway General Hospital (MgGH) in the Magway Region and Dawei General Hospital (DGH) in the Tanintharyi Region, were selected as priority targets, not only because assistance to those hospitals was deemed highly necessary to tackle difficulties in providing proper medical services in those hospitals, but also because feasibility for implementation of new projects such as lands for constructions within the premises of those hospitals were confirmed.

According to the census in 2014 conducted by the Ministry of Labour, Immigration and Population, the under five mortality rate of the Magway Region is 108 per 1,000 live births, which is the highest in Myanmar, also that of the Tanintharyi Region is 84 per 1,000 live births, which is higher than the national average. Furthermore, the medical services of both hospitals have been degraded due to the deterioration and malfunction of facilities and equipment and due to the lack of beds as demonstrated by 150 to 200 % in bed occupancy rate. In other words, some patients under treatment are forced to be discharged and are not able to be operated in some cases, thus it is deemed that the improvement of facilities and equipment in both hospitals is to be significant. Moreover, due to an inefficient layout of the existing buildings, it cannot optimize the circulation of emergency patients. In this sense, for both hospitals it is difficult to fulfill their responsibilities as a regional hub hospital.

In these circumstances, the Project will aim to enhance the medical services of MgGH and DGH as regional medical centers in the Magway Region and the Tanintharyi Region by improving facilities and equipment, which contributes to uplifting life of the nation in Myanmar.

This preparatory survey report will describe the improvement project of MgGH, which has been studied precedently.

### 3. Summary of the Survey Results and Components of the Project

#### (1) Selection of Clinical Departments

In consideration of the above stated background, JICA dispatched a preparatory survey team to Myanmar for the Project from January to September 2016. Through a series of discussions, it was concluded with the Myanmar side that the Project consists of a new building including obstetrics and gynecology, neonatal unit, emergency unit, and operation theater complex, etc. and equipment necessary for medical services in the new building. Major clinical departments included in the Project were selected as follows.

##### 1) Obstetrics and Gynecology Department

The maternal mortality rate (per 100,000 live births) is higher in the Magway Region (344) than the national average of Myanmar (282), which is the highest in the ASEAN countries<sup>1</sup>. In the existing obstetrics and gynecology ward of MgGH, the bed occupancy rate exceeds 150% as 80 to 90 patients are hospitalized every day although the hospital is sanctioned to operate 55 beds in the ward. It is always overcrowded and

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<sup>1</sup> 2014, Population and Housing Census, Department of Population, Ministry of Immigration and Population

suffering the lack of rooms for patients, which hinders daily medical care activities. For example, the recovery room for postnatal patients of the delivery unit is used to accommodate high-risk patients. Besides, because there are only two delivery rooms in the unit though five to eight vaginal deliveries take place in case of concentration, the number of delivery rooms is also insufficient. Furthermore, the building has deteriorated as over 50 years have passed since its completion. In light of the above-mentioned local medical conditions and the current physical situation of MgGH, the improvement of an obstetrics and gynecology department will be included in the scope of the Project with a 60-beds obstetrics ward, a 40-beds gynecology ward and four delivery rooms in a delivery unit.

## 2) Neonatal Unit

The under five mortality rate of the Magway Region is the highest in Myanmar as mentioned previously. While the neonatal unit of MgGH is now sanctioned to operate ten beds, its bed occupancy rate often exceeds 200% as more than 20 patients are hospitalized. As a result, the hospital discharges or limits admission of babies who still need treatment.

At present, MgGH accommodates in-born and out-born babies in separate rooms which located on different floors in different blocks. It makes difficult to manage the entire unit integrally.

The Project will develop a 20-beds neonatal unit which include a 4-beds neonatal intensive care unit (ICU), next to the obstetrics and gynecology department in integrally manner, the MgGH be able to provide consistent medical care from the prenatal to postnatal period.

## 3) Emergency Unit

The leading causes of ill-health and death of MgGH are external injuries, strokes, and ischemic heart diseases. As a secondary level hospital, MgGH is expected to have its emergency care system to fulfill its role. However, emergency patients are treated in an outpatient building because the MgGH has not yet established an efficacious emergency care unit. When the patient needs to undergo detailed examinations or to receive further treatment, the patient needs to go out of the building and head to other building where the diagnostic imaging unit or operation theater complex are located. This inefficient layout of the existing buildings obliges inconvenience to emergency patients.

In order to establish an emergency care system which can reduce the risk of death among emergency and critical patients, the improvement of an emergency unit with five emergency treatment beds and two examination rooms will be included in the scope of the Project, in a way that can promote collaboration with other relevant departments, such as the imaging unit and the operation theater complex.

## 4) Operation Theater Complex

Existing operation theaters in MgGH are located on the first floor without elevators or ramps. As a result, when a patient is taken to an operation theater, two to four staff members carry a stretcher up the stairs to the first floor. Even in the New Operation Theater (OT) & Imaging Complex constructed in 2016 by Ministry of Health and Sports (MoHS), the operation theaters are located on the first floor, to which medical staff needs to carry patients up the stairs as is the existing. This obliges inconvenience to patients and medical staff. Moreover, all of the five operation theaters in the New OT & Imaging Complex are not properly equipped for advanced surgical procedures such as neurosurgery. In light of this current situation,

the improvement of operation theater complex with three operation theaters will be included in the scope of the Project in order to enable more advanced surgical procedures to be performed as well as provide consistent medical care in collaboration with the obstetrics and gynecology wards and the emergency unit to be developed as mentioned above.

## 5) Other Related Departments

In order to respond to sudden changes of critically ill patients, an ICU with four beds and a sterilization unit which is mainly responsible for the sterilization for the operation theater complex in the new building will be included in the scope of the Project.

## (2) Equipment Plan

Equipment necessary for medical services and educational activities will be basically selected in obstetrics and gynecology department, neonatal unit, emergency unit, operation theater complex, and other related departments in the new building constructed in the Project.

The selection will also be made referring to “Standard Equipment List for 200 bedded Hospital” prepared by the MoHS.

It was confirmed that among these items of equipment which can be relocated from the existing buildings to the new building, procured easily in the local market such as patient beds in the wards, complementary medical furniture, and general furniture would be relocated or newly procured by the Myanmar side.

The components of the Project are set as shown in Table I below.

Table I : Components of the Project

<p>■ Facilities</p> <p>Main building : 3-story, Reinforced concrete structure, 6,330m<sup>2</sup></p> <p>Ancillary buildings : Reinforced concrete structure, 690m<sup>2</sup> (including a generator hut, connecting corridors and a ramp)</p> <p>Departments</p> <p>Emergency unit :</p> <p>Emergency treatment, emergency treatment (isolated), examination and recovery, etc.</p> <p>Operation theater complex :</p> <p>Operation theater, recovery, etc.</p> <p>ICU :</p> <p>ICU with four beds including an isolated bed, etc.</p> <p>Sterilization unit :</p> <p>Decontamination, sterilization, clean storage, etc.</p> <p>Delivery Unit :</p> <p>Labor, delivery, recovery, examination, procedure, newborn, etc.</p> <p>Neonatal Unit :</p> <p>Neonatal ICU with four beds, premature (in-born) with eight beds including an isolated room with two beds and premature (out-born) with eight beds including an isolated room with two beds, etc.</p> <p>Gynecology ward :</p> <p>Patient room with 36 beds in total, HDU with four beds in total, etc.</p> <p>Obstetrics ward :</p> <p>Patient room with 54 beds in total, HDU with six beds in total, etc.</p> <p>■ Equipment</p> <p>Medical equipment necessary for medical services in the above-mentioned facilities</p>
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#### 4. Implementation Schedule and Estimated Cost of the Project

Considering the scale of the new building and local construction conditions, etc., the Project will take approximately 48 months for its implementation including 10.5 months for detailed design and bidding, 21 months for construction works, 9.2 months for procurement and installation of the equipment and 13.7 months for soft component. The project cost borne by the Government of Myanmar is estimated to be 1,115,463 thousand MMK.

#### 5. Evaluation of the Project

##### (1) Relevance

The Project is judged relevant as Japanese Grant Aid in light of the following points.

##### 1) Beneficiaries of the Project

Considering that MgGH is the top referral hospital among public hospitals in the Magway Region, the number of beneficiaries of the Project are expected to be the whole population in the Magway District (population in the District: 1.4 million)<sup>2</sup>

##### 2) Contribution to Human Security

It is expected that service availability among poor and older people would be improved by enhancing medical services of MgGH as a regional medical center. Accordingly, in terms of human security, the Project could contribute to Basic Human Needs and public welfare.

##### 3) Contribution to Long Term Health Plan in Myanmar

The Project could contribute to the achievement of the goals of the long term health plan “Myanmar Health Vision 2030” such as “Improvement of health condition of the people”, “Provision of health services to all people”, and “Development of medical personnel”, etc.

##### 4) Alignment of Policy of Japanese Assistance

The Project coincides with “Assistance to improvement of people’s life” such as healthcare improvement, disaster risk reduction, assistance to the minority and the poor in the field of agriculture, regional development, which is one of the important policies of Japanese assistance.

##### (2) Effectiveness

Expected effects of the Project are as follows;

##### 1) Quantitative Effects

Quantitative indicators of which the actual numbers are available as a statistical data at the stage of preparatory survey are shown in Table II. Those indicators were selected to confirm the effectiveness of the Project by improving the facilities and equipment.

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<sup>2</sup> 2014 Population and Housing Census, Department of Population, Ministry of Immigration and Population

Table II : Quantitative Indicators and Target Values

Indicators	Baseline (as of 2015) (case)	Target value (in 2022) three years after project completion (case)
No. of deliveries	1,420	1,633
No. of operation (surgery)	1,572 (0)	1,809 (281)
No. of operation (orthopedics)	1,202 (0)	1,384 (216)
No. of operation (obstetrics and gynecology)	1,868	2,149
Remarks) No. in ( ) is No. of advanced surgical procedures and emergency operations conducted under the well-equipped operation theaters.		

### No. of Operations (Surgery and Orthopedics)

The existing operation theaters at MgGH are not properly equipped for advanced surgical procedures such as neurosurgery. On the other hand, cases required to operate under clean environments have been increased recently, such as hematoma because of traffic accident and hernia patients in orthopedics. The operation theaters to be constructed in the Project are expected to contribute to the prevention of postoperative infection for those cases with better cleanliness than the existing. In addition, since those advanced cases can be suitable educational materials for medical students, one of the operation theaters will be equipped with a camera and a monitor to enable medical students to observe the operation fields simultaneously or after operation with recorded video.

### 2) Other Monitoring Indicators

Following indicators, which are mainly influenced by factors except for the facilities and the equipment of the Project, or which may be influenced as a secondary effect, though they are not included in the Project, are recommendable to be monitored continuously in order to confirm indirect effects of the Project.

### No. of Early Neonatal Death and Death Rate

Considering the fact that approx. 50% of the under five mortality rate is caused by the neonatal death in Myanmar, it is deemed that the reduction of neonatal death is also important for the Magway Region where the under five mortality rate is the highest in Myanmar. The Project would contribute to reducing the neonatal death by improving an environment for treatment of premature babies to cope with causes of neonatal death such as birth asphyxia, premature delivery and jaundice. However, the neonatal mortality does not only depend on facilities and equipment, but also depend on the well-functioned referral system (i.e.: it is necessary to convey a patient immediately to save the patient's life) and sufficient medical skills such as neonatal resuscitation. Thus, the neonatal death is not adequate as the quantitative indicator of the Project. Instead, the number of early neonatal death which is death within seven days after birth, currently recorded at the existing obstetrics and gynecology department of MgGH will be monitored in order to confirm its improvement periodically. The number of early neonatal death within seven days and their average for the past three years are as shown in Table III.



Table III : Other Monitoring Indicators – No. of Early Neonatal Death and Death Rate within Seven Days

	2013	2014	2015	Average*
No. of early neonatal death (person)	23	31	48	34
Early neonatal death rate (%)	22.26	17.4	19.45	19.7

Source: MgGH hospital profile    \*Average is calculated by dividing with No. of babies born in MgGH

### No. of Outpatients at Obstetrics and Gynecology Department

The number of outpatients at the obstetrics and gynecology department may increase as a result of the improvement of the obstetrics and gynecology wards, and the delivery unit, although an outpatient department will not be included in the Project and will be constructed by the Myanmar side in the future. Therefore, it is not appropriate to include No. of outpatients, which is out of scope of the Project as the quantitative indicator of the Project. The number of outpatients at the obstetrics and gynecology department will be monitored periodically to confirm an indirect effect. The number of outpatients for the past three years and its average are shown in Table IV.

Table IV : Other monitoring indicators - No. of Outpatients at Obstetrics and Gynecology Department

	2013	2014	2015	Average
No of outpatients	2,586	2,983	5,508	3,692

Source: MgGH hospital profile

### (3) Qualitative Effects

Expected qualitative effects of the Project are shown in Table V. A questionnaire survey to medical personnel and medical students at MgGH after completion of the Project is assumed for the confirmation of the effects.

Table V : Qualitative Effects

1. Circulation of emergency patients, emergency treatment and transportation from the emergency unit to the existing CT room and the operation theaters will be improved by improving the emergency unit.
2. Clinical educational environment will be improved by the facilities and the equipment of the Project.
3. Safer environment of the operation theaters will be provided by the operation theater complex of the Project.
4. It will be possible to receive cases which cannot be treated in the Region by the improved medical services of MgGH.

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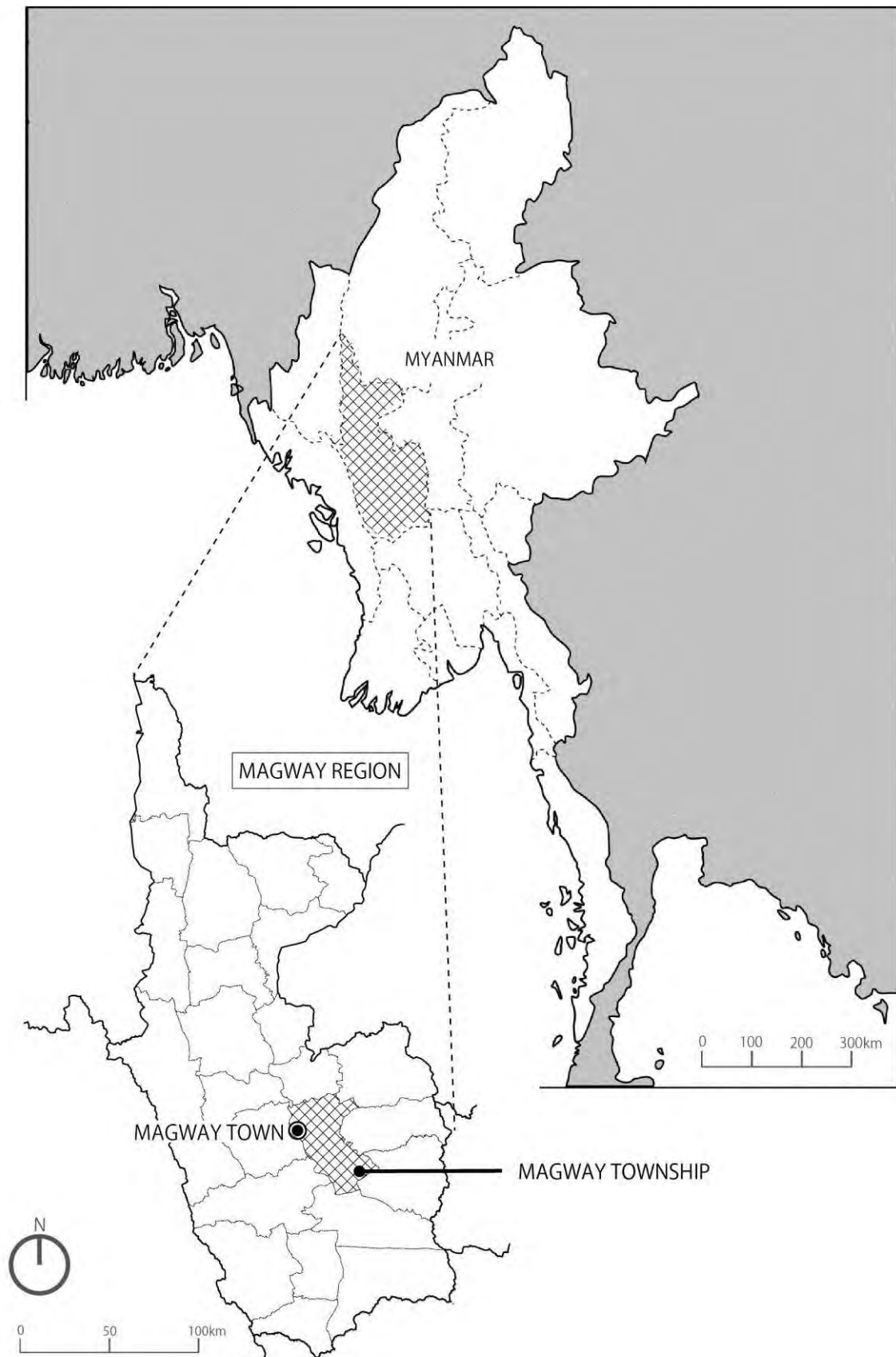


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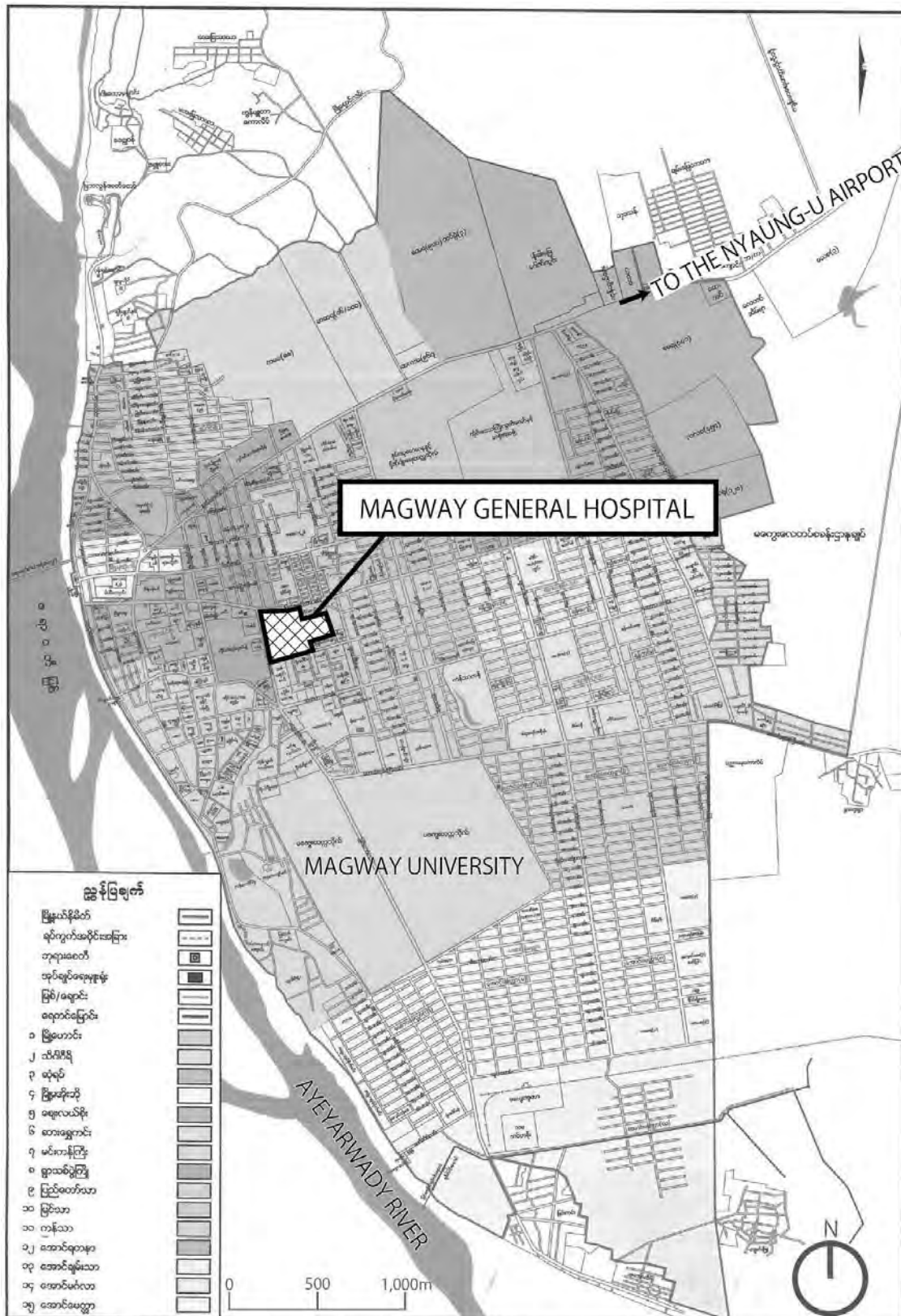


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## ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
ASTM	American Society for Testing and Materials
AVR	Automatic Voltage Regulator
BS	British Standards
CMSD	Central Medical Stores Department
CPAP	Continuous Positive Airway Pressure
CT	Computed Tomography
DGH	Dawei General Hospital
E/N	Exchange of Notes
EIA	Environmental Impact Assessment
ELISA	Enzyme-Linked Immunosorbent Assay
EMP	Environmental Management Plan
EtCO <sub>2</sub>	End Tidal CO <sub>2</sub>
G/A	Grant Agreement
HA	Health Assistant
HDU	High Dependency Unit
HEPA	High Efficiency Particulate Air
HIV	Human Immunodeficiency Virus
ICU	Intensive Care Unit
IEE	Initial Environmental Examination
IMF	International Monetary Fund
ISO	International Organization for Standardization
JIS	Japanese Industrial Standards
LAN	Local Area Network
LED	Light Emitting Diode
M/D	Minutes of Discussion
MgGH	Magway General Hospital
MMK	Myanmar Kyat
MoECAF	Ministry of Environmental Conservation and Forestry
MoHS	Ministry of Health and Sports
MRI	Magnetic Resonance Imaging
OT	Operation Theater
P/Q	Prequalification
PBX	Private Branch eXchange
RC	Reinforced Concrete
UPS	Uninterruptible Power Supply
USD	US Dollar

# Chapter 1 Background of the Project

## 1-1 Background of the Project

In the health sector in the Republic of the Union of Myanmar (Myanmar) maternal and child health (72 per 1,000 live births of the under five mortality rate, 282 per 100,000 live births of the maternal mortality rate in 2014)<sup>1</sup> and control of infectious diseases still need to be improved while morbidity and mortality rates of non-communicable diseases and traffic accidents are increasing these days. Adequate medical services with upgraded medical facilities and medical personnel with appropriate educational background are fundamental for proper treatment for the said maternal and child health, infectious diseases, non-communicable diseases, and trauma caused by traffic accidents, etc.

In Myanmar, the hospital system is comprised with three levels: national hospitals; state/regional general hospitals; and district, township and station hospitals. Among them, state/regional general hospitals are expected to play a key role in regional medical services by receiving patients referred from district and lower-level hospitals and training medical professionals, such as physicians, nurses, and medical students, at the regional level; however, for many of the state/regional general hospitals it is difficult to provide necessary medical services because the deterioration of facilities and equipment has prevented them from fulfilling their responsibilities. Thus, in Myanmar, it is urgent to strengthen the medical services at the level of state/regional general hospital.

In this connection, in 2015 Japan International Cooperation Agency (JICA) conducted the Data Collection Survey for State/Regional Hub Hospitals in Myanmar. Based on the result of the Survey, two medical institutions, Magway General Hospital (MgGH) in the Magway Region and Dawei General Hospital (DGH) in the Tanintharyi Region, were selected as priority targets, not only because assistance to those hospitals was deemed highly necessary to tackle difficulties in providing proper medical services in those hospitals, but also because feasibility for implementation of new projects such as lands for constructions within the premises of those hospitals were confirmed.

According to the census in 2014 conducted by the Ministry of Labour, Immigration and Population, the under five mortality rate of the Magway Region is 108 per 1,000 live births, which is the highest in Myanmar. Furthermore, the medical services of MgGH have been degraded due to the deterioration and malfunction of facilities and equipment and due to the lack of beds as demonstrated by 150 to 200 % in bed occupancy rate. In other words, some patients under treatment are forced to be discharged and are not able to be operated in some cases, thus it is deemed that the improvement of facilities and equipment in MgGH is to be imperative. Moreover, due to an inefficient layout of the existing buildings, it cannot optimize the circulation of emergency patients. In this sense, it is difficult for MgGH to fulfill its responsibilities as a regional hub hospital.

In these circumstances, the Project will aim to enhance the medical services of MgGH as a regional medical center in the Magway Region by improving facilities and equipment, which contributes to uplifting life of the nation in Myanmar.

This preparatory survey report will describe the improvement project of MgGH, which has been

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<sup>1</sup> 2014, Population and Housing Census, Department of Population, Ministry of Immigration and Population

studied precedently.

## 1-2 Natural Conditions

### (1) Topography

The Magway Region spreading along the Ayarwaddy River running through the territory of Myanmar is the second largest among seven regions with the area of 44,820 square kilometers. It is bordered by Sagaing Region to the north, Mandalay Region to the east, Bago Region to the south, and Rakhine State and Chin State to the west.

### (2) Geology

The Project site is located in the area of Irrawaddy Formation. In depth of one to two meter at the site there is the alluvium. Then, deeper than twelve meters firm silty sand layer is observed.

### (3) Groundwater

Water source for the Project is assumed as a tube well considering the fact that the existing facilities rely on mainly well water. In this connection, groundwater survey was conducted with test well during the Preparatory Survey. According to the result of the survey, static water level in the test well, whose diameter was 0.15 meter and depth was approximately 75 meters, was 13.07 meter in depth. Its discharge rate was assumed between 227 and 273 liters per minute. Regarding water quality of the test well, color, turbidity, manganese and iron contents didn't meet WHO drinking water guideline (1993). Major items of the result of the water quality test are shown in Table 1-1 below.

Table 1-1 Result of the Water Quality Test

Item	Test Well	WHO Drinking Water Guideline (1993)
pH	7.4	6.5–8.5
Color: TUC	40	15
Turbidity: NTU	62	5-25
Total Hardness: mg/L	296	500
Arsenic: mg/L	Nil	0.01
Iron: mg/L	0.68	0.3
Manganese: mg/L	0.4	0.05
Chloride(as CL): mg/L	80	250
Sulphate (as SO <sub>4</sub> ): mg/L	86	200
Total Solids: mg/L	708	1,500

### (4) Climate

Most of the Magway Region is in the dry zone stretching at the center of Myanmar, and it is one of the hottest and driest region in the country. It has less precipitation through a year, though the rainy season is known as a period from May to October in general. Meteorological record at the observatory in Magway township is shown Table 1-2 below.

Table 1-2 Meteorological Record in Magway Township

2015		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maximum Temperature (°C)		35.4	38.5	41.8	43.5	44.2	41.3	37.4	37.0	37.5	36.2	35.0	33.5
Minimum Temperature (°C)		11.9	12.1	15.0	21.0	21.8	22.7	21.2	22.5	21.6	19.1	15.5	10.1
Precipitation(mm)		57	0	0	2	65	121	280	247	143	252	very little	4
Relative Humidity(%)		66	47	37	37	53	68	85	80	80	84	72	71
Wind Direction Duration(h)		SW 9	NW 7	NE 21	SE 13	SW 10	SE 7	SW 5	SE 14	SW 5	SW 4	SE 3	NW 3
Rainy Days	1.0mm<	3	NA	NA	NA	2	6	17	11	11	10	NA	NA
	1.0mm≥	NA	0	0	1	NA	NA	NA	NA	NA	NA	1	1
Wind Velocity(m/s)		10.8	8.4	25.2	15.2	12.0	8.4	6.0	16.8	6.0	4.8	3.6	3.6
• Highest Dry Bulb Temperature : 44.2°C 12th.May.15													
• Loest Dry Bulb Temperature : 10.1°C 30th.Dec.15													
• Maximum Precipitation : 71mm/day 13th.Oct.15													
• Maximum Wind Velocity : 25.2m/s 25th.Mar.15													

Source: : Department of Meteorology and hydrology in Magway Township

## (5) Natural Disaster

### 1) Flood

It is deemed that there is no risk of flood in the area where MgGH is located with the fact that its altitude is higher enough than assumed water level of the Ayarwaddy River in the rainy season. While, some lowlands in the region suffer from flash flood due to heavy rain upstream.

### 2) Cyclone

In its history there is no record that a cyclone hit directly the Magway Region, inland of the country. Recently some cyclones passed near the Magway Region, such as Cyclone Giri in 2010 passing north of the Magway Region and Cyclone Mala in 2006 passing in the south west part of the Rakhine state and south of Magway Region, but they didn't cause serious damages in the Magway Region.

### 3) Earthquake

Earthquakes occur around the Magway Region every now and then. Most recently, in 2016 an earthquake of magnitude 6.8 struck Bagan in the Magway Region. According to the earthquake zone map of Myanmar, the Project site is located in Earthquake Zone III (Strong Zone), where the possible peak ground acceleration is estimated at 210-300gal and shakings with intensity scale VII in the Modified Mercalli Intensity Scale can happen.

## 1-3 Social and Environmental Considerations

### (1) Category in “ the JICA Guidelines for Environmental and Social Considerations”

This preparatory survey has not raised any concerns about environmental or social impacts in the Project site. The Project should be categorized as C in accordance with “the JICA Guidelines for Environmental and Social Considerations” because it is likely to have minimal or no adverse

environmental or social impacts.

## (2) Environmental Conservation Law in Myanmar

In Myanmar, the Environmental Conservation Bill was approved by the People's Assembly and enacted into law in 2015. According to the guidelines on the law, the Ministry of Health and Sports (MoHS) must submit their proposals to the Ministry of Environmental Conservation and Forestry (MoECAF), which is the competent authority under the law, to seek a determination by MoECAF as to whether to prepare both Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) reports or to prepare only an IEE report. After it is determined, MoHS must follow the necessary procedures as specified depending on the assessment category. In some cases MoECAF may order elaboration of Environmental Management Plan (EMP) regardless of necessity of IEE and/or EIA. If EMP is planned, MoHS is required to have a third party monitor whether MoHS is implementing according to the EMP in the project implementation stage.

According to the guidelines of the Environmental Conservation Law, at least IEE reports must be required for all hospital construction projects, regardless of their size.

## Chapter 2 Contents of the Project

### 2-1 Basic Concept of the Project

#### (1) Overall Goals and Project Purpose

In Myanmar although state/regional general hospitals are expected to play a key role in regional medical services, for many of them it is difficult to provide necessary medical services because the deterioration and malfunction of facilities and equipment has prevented them from fulfilling their responsibilities. It is urgent to strengthen the medical services at the level of state/regional general hospital.

In order to improve the regional health system, MoHS has been implementing “Myanmar Health Vision 2030” as the long-term health plan and “National Health Plan 2011-2016” as the objective frame of the short-term third five year period of “Myanmar Health Vision 2030” for the improvement of hospital medical services through upgrading hospital facilities, allocation of sufficient number of medical personnel, equipping with medical equipment and medicines, and capacity development of medical personnel by continuous education and training. In particular, for strengthening of the regional health system, specific measures have been put into place by “Hospital Care Program”, one of the eleven programs in “National Health Plan 2011-2016”, which aims specific objectives, such as “to improve the hospital performance indicator”; “to reduce the mortality rates in a hospital”; and “to ensure that every citizen has regular access to safe, high quality, efficacious, low-cost medical services in every healthcare facility.”

In this connection, in 2015 JICA conducted the Data Collection Survey for State/Regional Hub Hospitals in Myanmar. Based on the result of the Survey, two medical institutions, MgGH in the Magway Region and DGH in the Tanintharyi Region, were selected as priority targets, not only because assistance to those hospitals was deemed highly necessary to tackle difficulties in providing proper medical services in those hospitals, but also because feasibility for implementation of new projects such as lands for constructions within the premises of those hospitals were confirmed.

According to the census in 2014 conducted by the Ministry of Labour, Immigration and Population, the under five mortality rate of the Magway Region is 108 per 1,000 live births, which is higher than the national average 72, and the maternal mortality rate of the Magway Region is 344 per 100,000 live births, which is also higher than the national average 282.<sup>1</sup> Therefore, improvement of the maternal and child health is regarded as one of the most important issues in the Region. Furthermore, the medical services of MgGH have been degraded due to the deterioration and malfunction of facilities and equipment and due to the lack of beds as demonstrated by 150 to 200 % in bed occupancy rate. In other words, some patients under treatment are forced to be discharged and are not able to be operated in some cases, thus it is deemed that the improvement of facilities and equipment in MgGH is to be imperative. Moreover, due to the inefficient layout of the existing buildings, it cannot optimize the circulation of emergency patients. In this sense, it is difficult for MgGH to fulfill its responsibilities as a regional hub hospital.

In these circumstances, the Project purpose will be set as the enhancement of the medical services of

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<sup>1</sup> 2014, Population and Housing Census, Department of Population, Ministry of Immigration and Population

MgGH as a regional medical center in the Magway Region by improving facilities and equipment, which contributes to uplifting life of the nation in Myanmar.

## (2) Basic Concept of the Project

To achieve aforementioned objectives, the Project will be formulated including construction of a new building consisting of an obstetrics ward, a gynecology ward, a neonatal unit, an emergency unit, an operation theater complex, and other relevant departments on the existing premises of MgGH as well as provision of equipment required for medical services in the new building.

## 2-2 Outline Design of the Japanese Assistance

### 2-2-1 Design Policy

#### 2-2-1-1 Basic Policy

In consideration of the above stated background, JICA dispatched a preparatory survey team to Myanmar for the Project from January to September 2016. Through a series of discussions, they confirmed that this hospital improvement project should be implemented based on the following principles:

- Universal design of facilities for providing patient-oriented medical services;
- Effective utilization of existing buildings and harmonization with the new building based on a future development plan;
- Favorable educational environment provided to medical personnel including hospital staff and medical students; and
- Facility design for disaster risk reduction to be adopted.

The Project site will be selected considering adequate size and reasonable position to improve functions of MgGH as a whole in accordance with these principles and the future development plan. Selection of the medical equipment will be made focusing on the equipment necessary for the medical services in the new building.

#### 2-2-1-2 Policy for Natural Conditions

##### (1) Consideration for High Temperature and Solar Radiation

In the Magway Region, the maximum temperature exceeds 40 degree Celsius during the dry season; therefore, the new building to be constructed will be designed to control strong sunlight, the main external heat load.

##### (2) Consideration for Rainfall

Although annual precipitation is 40 % of that of Yangon, the area of high rainfall, in the rainy season it has torrential downpour occasionally. At the time of construction works, when earth and foundation works are implemented during the rainy season, dewatering and other appropriate measures should be taken to prevent from delays in construction schedule. In order to prevent flooding in the Project site, the surrounding area of the new building will be elevated and appropriate drainage gutters will be constructed.

#### 2-2-1-3 Policy for Socioeconomic Conditions

In Myanmar, many informal caregivers, most of whom are family members of inpatients, stay overnight in hospital halls and hallways, because they take care of everything for their inpatients in general, except for medical services, such as changing sheets and preparing meals. In light of this local custom, necessary areas for those caregivers will be secured in the new building.



## 2-2-1-4 Policy on Construction Conditions and Procurement Condition

### (1) Policy on Construction Conditions

Because building standards and relevant regulations are being developed and not yet enforced in Myanmar, the new building of the Project will be designed in compliance with a draft version of these standards and regulations or in reference to relevant laws and regulations of Japan. Moreover, since construction works require a building permit in advance from the Magway Township Development Committee, it was confirmed during the preparatory survey that the procedure would be implemented promptly by the Myanmar side.

### (2) Policy on Procurement Conditions

Almost all of the major construction materials are available in the local market as they are locally produced or imported from China and/or ASEAN countries. It is quite possible to obtain construction materials that meet the quality requirements of the construction works of the Project. Therefore, construction materials for the construction works of the Project will in principle be procured from the local market.

The medical equipment will be procured in Myanmar or from Japan based on the principles of Japanese Grant Aid. Procurement from third countries will be considered in case that it is reasonable that competitive bidding is not expected.

## 2-2-1-5 Policy on Use of Local Contractors

Most public and private construction works are undertaken by local contractors. They also participate in many projects funded by international donors and agencies including the Government of Japan. Therefore, it is considered possible to find local construction firms that can meet the quality requirements of the construction works of the Project. In this sense, the new building of the Project will adopt structural designs that are common in Myanmar as well as finishing materials and building equipment that have already been introduced to the country, in order to enable local construction firms to participate in the construction works.

## 2-2-1-6 Policy on Operation and Maintenance

In light of the current facility management at MgGH, it was judged that the new building of the Project should not include building equipment or systems which are not commonly used in Myanmar and which require advanced maintenance skills. Moreover, building equipment requiring daily maintenance should be carefully selected according to the availability of consumables and spare parts so that it will not cause undue financial burden to MgGH.

The medical equipment for the Project will be selected on condition that the engineers from local agents can provide maintenance services of the equipment. The soft component program to enhance the maintenance capability of MgGH will be conducted to strengthen proper operation and maintenance of the equipment of the Project.

## 2-2-1-7 Policy on Grade Setting for Facilities and Equipment

In principle, the grade of facilities will be set considering mainly the easiness of maintenance and the

durability as medical facilities. This decision will be made by referring to similar cases as well as other hospitals and public facilities constructed by the cooperation of the Government of Japan in Myanmar.

In regard to the grade of medical equipment, it will be set just enough to have functions for required medical services referring to operation status of equipment in similar medical facilities. Also, latest models at the time of the design phase will be selected in light of frequent model changes of medical equipment and a time-lag between the design phase and the operation phase, in order not to be obsolete early in the operation phase.

#### 2-2-1-8 Policy on Construction Schedule

The construction schedule will be set by taking into consideration the local conditions, such as the limited supply of workers in provincial areas and possible delays in construction works during the rainy season. Furthermore, the construction time will be estimated by assuming that there will be a need for pile foundation works to cope with soft ground of the Project site.

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

##### 2-2-2-1 Examination of Components of the Project

###### (1) Selection of Clinical Departments

###### 1) Obstetrics and Gynecology Department

###### A) Current Conditions

The maternal mortality rate (per 100,000 live births) is higher in the Magway Region (344) than the national average of Myanmar (282), which is the highest in the ASEAN countries<sup>2</sup>. In the existing obstetrics and gynecology ward of MgGH, the bed occupancy rate exceeds 150% as 80 to 90 patients are hospitalized every day although the hospital is sanctioned to operate 55 beds in the ward. It is always overcrowded and suffering the lack of rooms for patients, which hinders daily medical care activities. For example, the recovery room for postnatal patients of the delivery unit is used to accommodate patients in severe conditions. Besides, because there are only two delivery rooms in the unit though five to eight vaginal deliveries take place in case of concentration, the number of delivery rooms is also insufficient. Furthermore, the building has deteriorated as over 50 years have passed since its completion. In light of the above-mentioned conditions and the current physical situation of MgGH, the improvement of an obstetrics and gynecology department is necessary to be included in the scope of the Project.

###### B) Size of Department

###### a) Number of Beds

An obstetrics ward and a gynecology ward with 100 beds in total will be planned assuming the necessary number of beds in 2022, three years after completion of the Project in 2019 as shown in Table 2-1. In light of the current situation as more patients in severe conditions in the obstetrics than those of

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<sup>2</sup> 2014, Population and Housing Census, Department of Population, Ministry of Immigration and Population

the gynecology, the obstetrics ward will have 60 beds, the gynecology ward will have 40 beds respectively. These beds will be able to be shared with these two wards, depending on their needs.

Table 2-1 Necessary Number of Beds for Obstetrics and Gynecology Wards

	In 2015	In 2022 (Assumption)
Number of Inpatients (person) <sup>3</sup> (a)	4,807	5,522
Average days of hospitalization (day) <sup>4</sup> (b)	6.45	6.45
Total number of hospitalized inpatients (person x day) (c)=(a) x (b)	31,005	35,617
Minimum required beds (beds) (c)/365	85	98

Source : Records in 2015 were provided by MgGH

#### b) Number of Delivery Rooms

The estimated annual number of cases occupying delivery rooms and the average number of cases occupying a delivery room per day are shown in Table 2-2, and 4.5 cases per day on average are expected in 2022. The actual number of delivery cases per day fluctuates day by day. Assuming that there would be nine delivery cases at most per day, which is two times of the average number of cases per day, three delivery cases per room per day would be expected by providing three delivery rooms. This assumption is considered appropriate taking into account that a delivery including cleaning, sanitization, and preparation for next delivery takes three hours at most<sup>5</sup>, that high-risk deliveries are expected in light of the role of MgGH as a secondary care hospital, and that delivery rooms might be occupied for long time by patients going back and forth among examination room, labor room, and delivery rooms. Furthermore a delivery room for patients infected with hepatitis, human immunodeficiency virus (HIV) / acquired immunodeficiency syndrome (AIDS), and any other infectious diseases will also be planned. In conclusion, four delivery rooms in total will be planned in the Project.

<sup>3</sup> The number of inpatients in 2022 was estimated assuming that annual population growth rate in the Magway region is 2%:  $4,807 \times 1.02^7 = 5,522$

<sup>4</sup> Considering the current status of Obstetrics/Gynecology Ward in MgGH the annual number of occupied beds in 2015 is assumed to be 85 on average and the average of hospitalization days in 2015 is calculated based on this 85. The average of hospitalization days in 2022 is assumed the same as 2015.

<sup>5</sup> It is assumed that a delivery takes two hours at most and cleaning, sanitization and preparation for next delivery take one hour.

Table 2-2 Estimated Number of Cases Occupying Delivery Room

	In 2015	In 2022 (Assumption)
Annual number of cases occupying delivery rooms (cases) <sup>6</sup> (a)	1,420	1,632
Average number of cases occupying delivery rooms per day (cases) (b)=(a)/365	3.9	4.5

## 2) Neonatal Unit

### A) Current Conditions

The under-five mortality rate of the Magway Region is the highest in Myanmar at 108<sup>7</sup> per 1,000 live births. While the neonatal unit of MgGH is now sanctioned to operate ten beds, its bed occupancy rate often exceeds 200% as more than 20 patients are hospitalized. When all beds are full, the hospital discharges patients who still need treatment or limits admission of new patients.

At present, MgGH accommodates in-born and out-born babies separately, and these newborn rooms are located on different floors in different blocks respectively, which makes it difficult to manage the entire unit integrally.

In light of the above-mentioned conditions and the current physical situation of MgGH, the improvement of a neonatal unit is necessary to be included in the scope of the Project. By the development of both the obstetrics and gynecology department and the neonatal unit integrally, the Project can help MgGH provide consistent medical care from the prenatal to postnatal period.

### B) Size of Department

The necessary number of beds in the neonatal unit of the Project can be calculated referring to the Central Woman Hospital in Yangon which is a tertiary level hospital in Myanmar. The average number of newborns in the neonatal unit per day in 2022 is assumed as shown in Table 2-3, referring as an approximate data to the proportion of the number of annual in-hospital birth and the average number of neonatal patients per day at the Central Woman Hospital. According to the calculation, 20 beds will be provided for the neonatal unit in the Project, including neonatal intensive care unit ( neonatal ICU) where babies in serious conditions who need for respiratory support are treated. As described above, 20 beds will be appropriate considering that ten beds are available in the existing Neonatal Unit, while bed occupancy is currently 200%.

<sup>6</sup> Among total 2,468 delivery cases, 50% was vaginal delivery, 7.5% was emergency caesarean section from vaginal delivery and 42.5% was immediate caesarean section without passing through delivery room (Data obtained from interview in MgGH). With this fact number of cases occupying delivery rooms in 2015 was calculated:  $2,468 \times 0.575 \div 1,420$  (cases). The estimated number of cases occupying delivery room in 2022 is calculated as follows, assuming that it will be increased at the same rate as annual population growth rate in the Magway Region (2%):  $1,420 \times 1.02^7 = 1,632$  (cases)

<sup>7</sup> 2014, Housing and Population Census, Department of Population, Ministry of Immigration and Population

Table 2-3 Average Number of Newborns in Neonatal Unit

	In 2022 (Assumption)
Number of annual in-hospital birth (person) <sup>8</sup> (a)	2,834
Proportion of the number of annual in-hospital birth and the average number of newborns in the neonatal unit per day to <sup>9</sup> (b)	0.66%
Average number of newborns in the neonatal unit per day (c) = (a) x (b)	19

Source : Survey Team

### 3) Emergency Unit

#### A) Current Conditions

In MgGH, external injuries, strokes and ischemic heart diseases constitute the leading causes of ill-health and death, which means MgGH is expected to have its emergency care system to fulfill its role as a secondary level hospital. Nevertheless, MgGH has not yet established an efficacious emergency unit, and emergency patients are treated in an outpatient building. The building is open for 24 hours to accept emergency patients at any time. In an emergency room in the building with six beds, emergency physicians (assistant surgeons) are stationed to examine and treat emergency patients. As shown in Figure 2-1, emergency patients are first admitted to the outpatient building for the initial examination and treatment. When the patient needs to undergo detailed examinations or receive further treatment, the patient needs to go out of the building and head to the diagnostic imaging and other examination rooms or operation theaters in the main building. This inefficient layout of the existing buildings obliges inconvenience to emergency patients.

In order to establish an emergency care system which can reduce the risk of death among emergency patients, the improvement of an emergency unit is necessary to be included in the scope of the Project in a way that can promote collaboration with other relevant departments, such as the imaging unit and the operation theater complex.

<sup>8</sup> The estimated number of birth in 2022 was calculated based on the number of birth in MgGH in 2015 (2,468 babies) considering annual population growth rate in the Magway region (2%) as follows:  $2,368 \times 1.02^7 = 2,834$  (babies)

<sup>9</sup> In Yangon Central Woman Hospital there was 12,000 in-hospital birth in total in 2015. On the other hand, 80 newborns were hospitalized in the neonatal unit per day in average (Data obtained by interview at Yangon Central Woman Hospital). Proportion of the number of annual in-hospital birth and the number of newborns in the neonatal unit was calculated as follows:  $80/12,000=0.66\%$ .

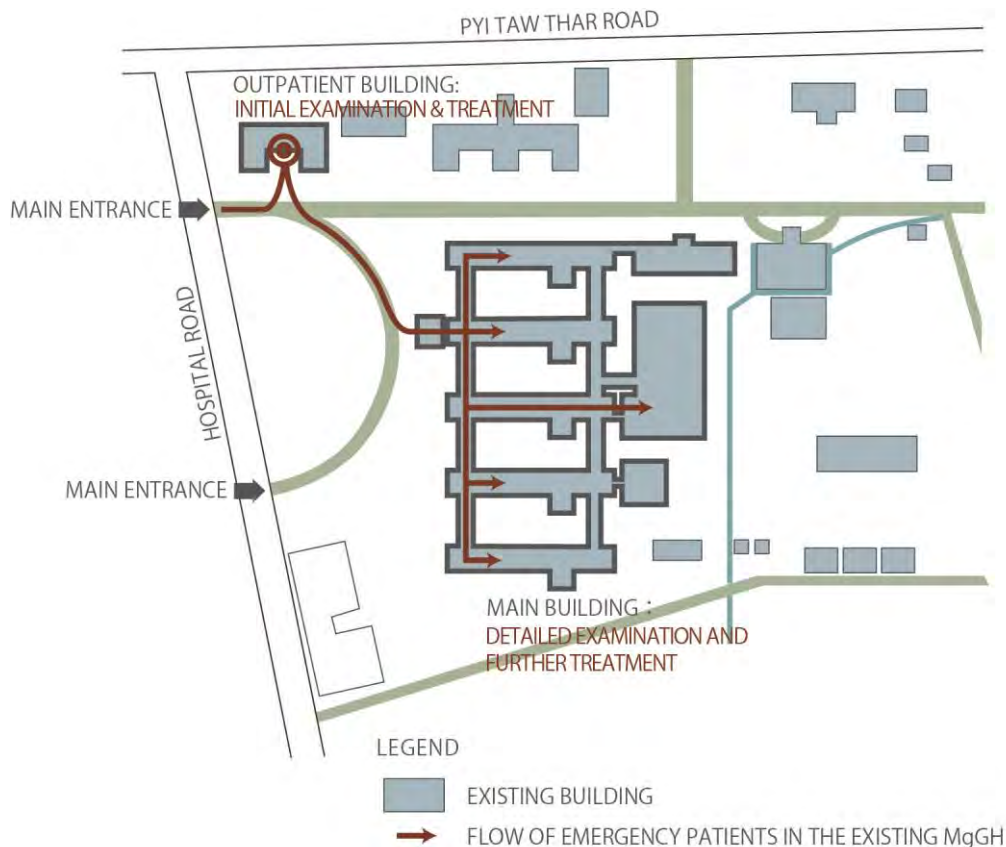


Figure 2-1 Flow of Emergency Patients in the Existing Conditions

#### B) Size of Department

Considering that the existing outpatient building has six beds in total for examination and treatment, for the new building of the Project, four beds for an emergency treatment room and two examination rooms will be provided. In addition, a bed in an isolated emergency treatment room will also be provided for infectious disease cases.

#### 4) Operation Theater Complex

##### A) Current Conditions

Existing operation theaters in MgGH are located on the first floor. However, because there are no elevators or ramps in the existing buildings, when a patient is taken to an operation theater, two to four staff members carry a stretcher up the stairs to the first floor. Even in the New Operation Theater (OT) & Imaging Complex constructed in 2016, the operation theaters are located on the first floor, to which medical staff needs to carry patients up the stairs as is the existing. This obliges inconvenience to patients and medical staff. Moreover, all of the five operation theaters in the New OT & Imaging Complex are not properly equipped for advanced surgical procedures such as neurosurgery in view of air cleanliness. In light of this current situation, the improvement of operation theater complex is necessary to be included in the scope of the Project in order to enable advanced surgical procedures to be performed as well as provide consistent medical care in collaboration with the obstetrics and gynecology wards and the

emergency unit to be developed as mentioned above.

## B) Size of Department

The number of operations in MgGH in 2022 is assumed as in Table 2-4. Emergency operations estimated as ten percent of major/minor<sup>10</sup> surgical and orthopedic operations and advanced operations estimated as ten percent of major surgical and orthopedic operations will be conducted in the operation theaters in the new building. Also, it is assumed that all obstetrics and gynecology operations will be conducted in the new building. The existing three operation theaters will be utilized for other purposes after the commencement of operation of operation theaters in the New OT & Imaging Complex and the new building.

Table 2-4 Estimated Number of Operations

	Number of Operations in 2015 (cases)		Number of Operations in 2022 <sup>11</sup> (cases)		Number of operations in the New OT & Imaging Complex out of the estimated number in 2022 (with five operation theaters) (cases)		Number of operations in the new building out of the estimated number in 2022 (with three operation theaters) (cases)	
	Major	Minor	Major	Minor	Major	Minor	Major	Minor
Surgery	865	707	995	814	796	732	199	82
Orthopedic	661	541	761	623	608	560	153	63
Obstetrics Gynecology	1,459	409	1,678	471	0	0	1,678	471
Dental, ENT, ophthalmology	627	216	722	249	722	249	0	0
Total	5,485		6,313		3,667		2,646	
Number of operations per day per facility /244 days, except for weekends					15.1		10.9	
Number of operations per day per room					3.1		3.7	

Source : Material from MgGH

With this estimation, it is considered appropriate to provide three operation theaters in the new building, in which four operations per day are assumed respectively.

## 5) Other Related Departments

In order to respond to sudden changes of critically ill patients, an ICU with four beds (one each for each of the three operation theaters in order to provide close monitoring for patients after operation and one for infection control) and a sterilization unit which is mainly responsible for the sterilization for the operation theater complex in the new building will be included in the scope of the Project.

## (2) Project Site Selection

The location of the Project site was determined as indicated in Figure 2-2, mainly for the following

<sup>10</sup> A major operation is an operation with general anesthesia. On the other hand, a minor operation is an operation except for the major operation.

<sup>11</sup> Estimated operation number was calculated based on the operation number in 2015 considering annual population growth rate in the Magway Region (2%). The Increase rate of operations from 2015 to 2022 =  $1.02^7 \approx 1.15$

basis:

- It is easy to access to the imaging unit with the computed tomography (CT) and the magnetic resonance imaging (MRI) on the ground floor of the New OT & Imaging Complex, in order to provide integrated emergency care in collaboration with the existing imaging unit;
- This location can minimize demolition and relocation. It can allow MgGH to operate as usual during the construction period; and
- The new building can be directly accessed from three directions from internal roads to have separate entrances, other than the main one, for emergency patients and medical staff / delivery of medical supplies respectively.

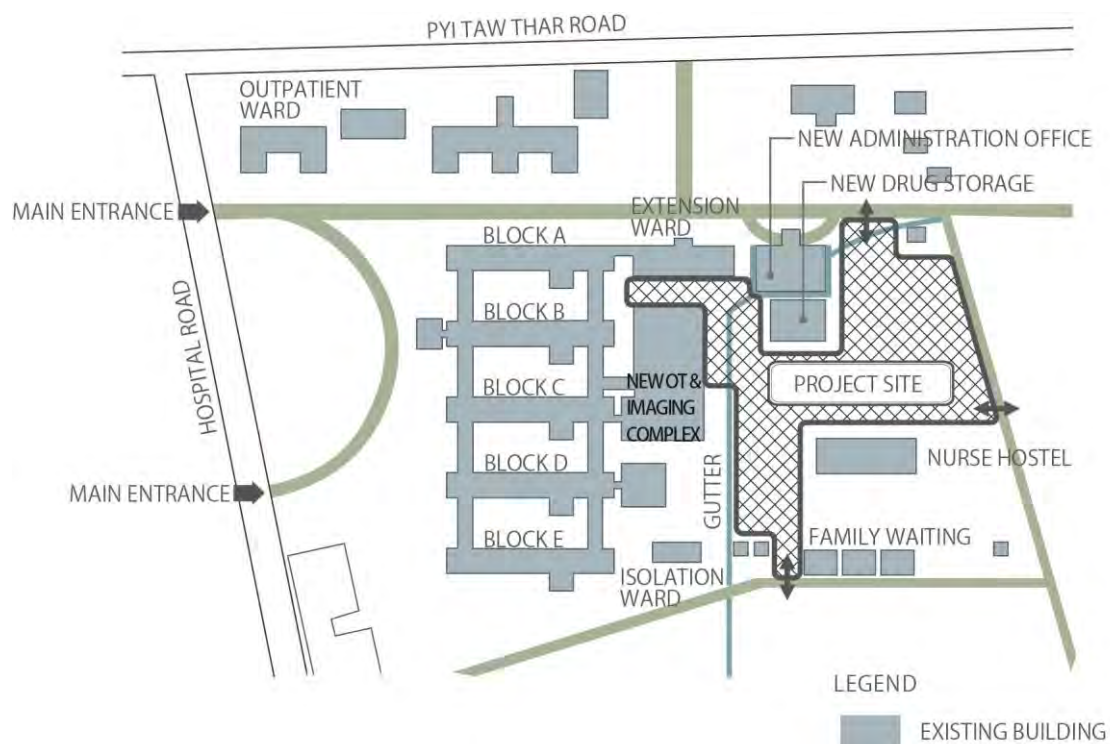


Figure 2-2 Project Site

### (3) Future Development Plan of MgGH

The future development plan of MgGH including the Project was confirmed as shown in Figure 2-3. It illustrates the functional zoning of MgGH with the following basic concept:

- The outpatient zone will be located adjacent to the main entrance, and the zone where New OT & Imaging Complex is located will be renovated and improve into the Central Clinical Zone in order to connect these zones efficiently;
- The new buildings, including the emergency unit, will be adjoining to the Central Clinical Zone, which will be linked on the other side to Ward Zone with connecting corridors, in order to minimize the strain of patients and reduce travel time between sections for medical staff so that they can provide prompt emergency care;
- In light of expansion of wards in the future, their location is assumed in the plan.; and



- Consideration will be given to the staff hostels and other buildings to be constructed by MgGH.

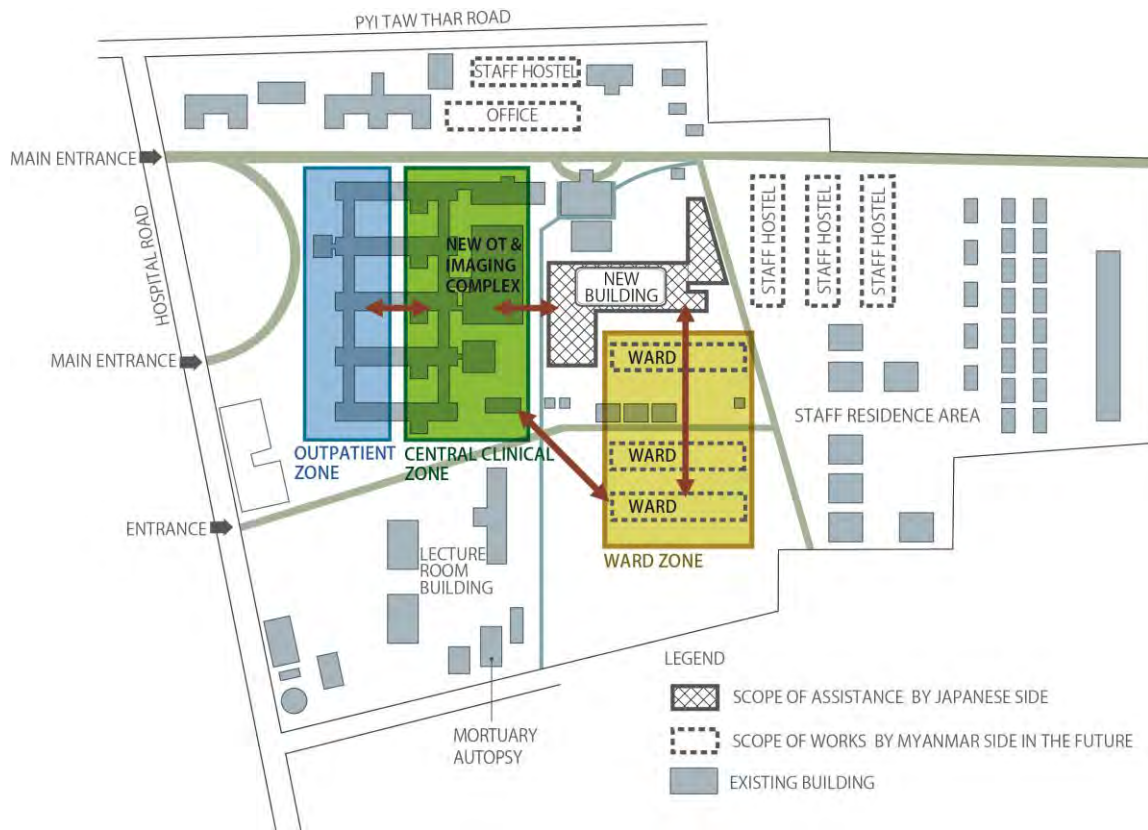


Figure 2-3 Future Development Plan of MgGH

#### (4) Equipment Plan

The Myanmar side requested to provide the medical equipment for the departments to be improved in the Project based on “Standard Equipment List for 200 bedded Hospital” and “Hospital Upgrading Project, Curative Service 2009”. After analyzing these documents, the equipment necessary for medical services in the new building was selected through discussions with departments concerned in MgGH, subsequently the equipment list for the Project was concluded.

Based on the above-mentioned analysis, the components of the Project are set as shown in Table 2-5.

Table 2-5 Components of the Project

■ Facilities

Main building : 3-story, Reinforced concrete structure, 6,330m<sup>2</sup>

Ancillary buildings : Reinforced concrete structure, 690m<sup>2</sup> (including a generator hut, connecting corridors and a ramp)

Departments

Emergency unit :

Emergency treatment, emergency treatment (isolated), examination and recovery, etc.

Operation theater complex :

Operation theater, recovery, etc.

ICU :

ICU with four beds including an isolated bed, etc.

Sterilization unit :

Decontamination, sterilization, clean storage, etc.

Delivery Unit :

Labor, delivery, recovery, examination, procedure, newborn, etc.

Neonatal Unit :

Neonatal ICU with four beds, premature (in-born) with eight beds including an isolated room with two beds and premature (out-born) with eight beds including an isolated room with two beds, etc.

Gynecology ward :

Patient room with 36 beds in total, HDU with four beds in total, etc.

Obstetrics ward :

Patient room with 54 beds in total, HDU with six beds in total, etc.

■ Equipment

Medical equipment necessary for medical services in the above-mentioned facilities

## 2-2-2-2 Construction Plan

### (1) Site Plan and Floor Plan

#### 1) Access

As shown in Figure 2-4, the passage of emergency patients, including walk-in emergency patients, will be clearly separated from that of other patients; the former patients can access the building through the emergency entrance on the southwest side while the latter patients and their accompanying family members can access the building through the entrance on the northeast side. In addition to these two entrances for patients, another entrance will be made for incoming and outgoing of medical staff or delivery of medical supplies.

The new building will be connected to the existing building as follows; the emergency unit and the imaging unit will be linked to each other on the ground floor so that emergency patients can be taken to the imaging unit in a timely manner, also the new building will be linked to existing operation theater complex and existing wards on the first floor so that patients and staff can come and go smoothly between the new and existing buildings.

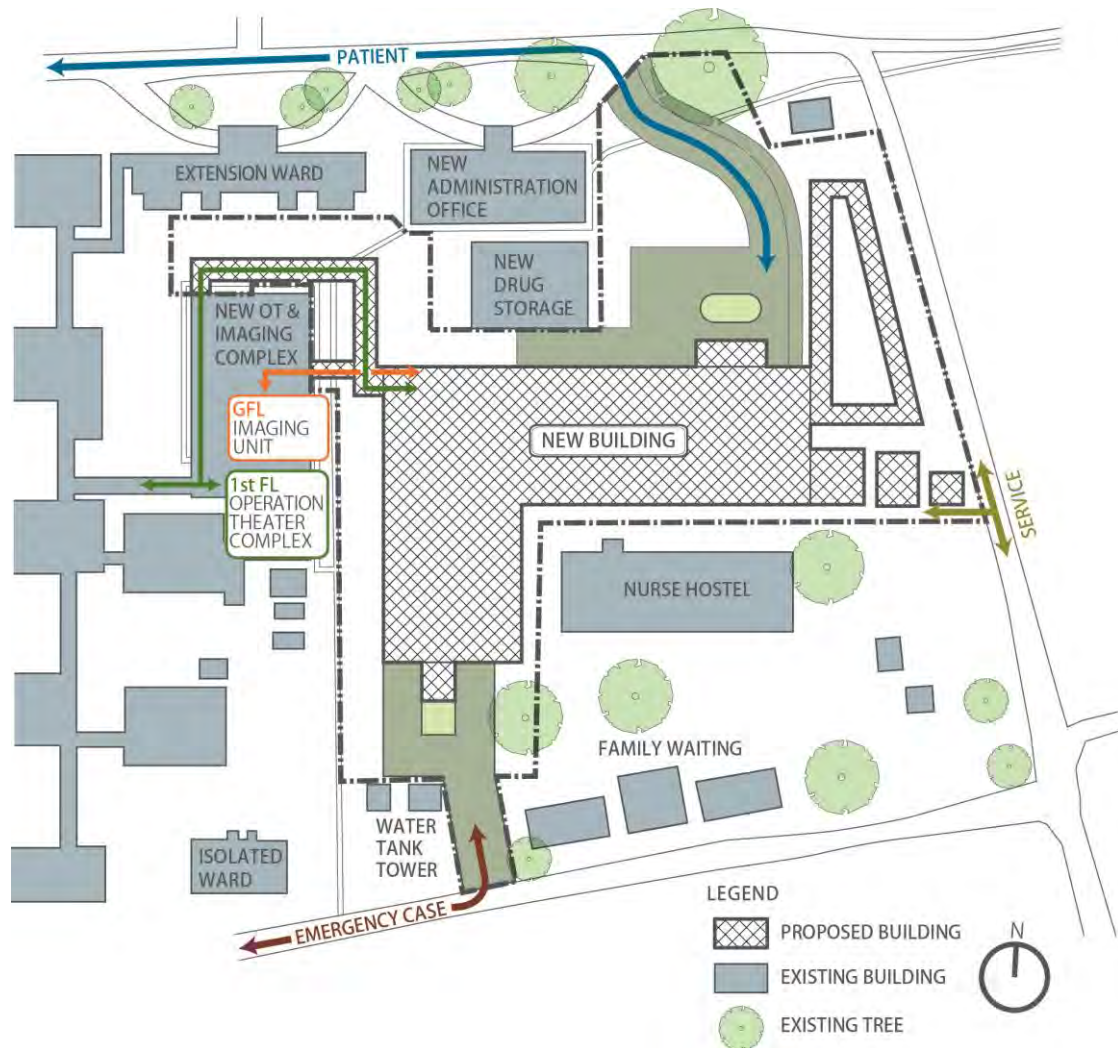


Figure 2-4 Access to the New Building

## 2) Composition of the New Building

In the gynecology ward on the first floor and the obstetrics ward on the second floor, natural ventilation will be adopted. In light of adequate condition for natural ventilation and lighting, the building will be designed in an L-shape with the long leg of the L stretching east and west so that each patient room in these wards has sufficient openings, one on the south and one on the north. Moreover, considering the smooth transfer of patients and the circulation of staff among the new OT & Imaging Complex and existing wards, the emergency unit and operation theaters will be placed on the west side in the new building. Furthermore, a large semi-outdoor area on the ground floor adjoining to the northeast entrance for general patients will be allocated for a family waiting area, and its adjoining area will be zoned for lecture rooms for medical students, in order not to interrupt the flow of patients.

Following the principle of providing patient-oriented medical services, two elevators will be installed in different locations, one for the transfer of patients to the operation theater complex from the emergency unit or obstetrics ward and the other for inpatients. In particular, the location of the former elevator is decided in light of the distance between the elevator hall and the operation theaters on the first floor. In

addition, the positional relationship between the two elevators is considered in order that when one is out of service due to maintenance or failure, the other can complement it. Moreover, a ramp will be constructed for wheelchairs and stretchers in case all the elevators are temporarily out of service when an earthquake or other disaster occurs.

The delivery unit will be located above the operation theater complex for easy access by elevator, and the obstetrics ward and the neonatal unit will be situated on the same floor as the delivery unit to minimize the distance between the departments. The ICU will be located on the same floor as the operation theaters to minimize the distance and simplify the transfer of patients after operation.

In the existing building, both obstetrics and gynecology patients are taken care of in the same rooms; however the new building will be designed to have the gynecology ward on the first floor and the obstetrics ward on the second floor with sensitivity to patients' physical and emotional conditions.

The composition of the new building is shown in Figure 2-5.

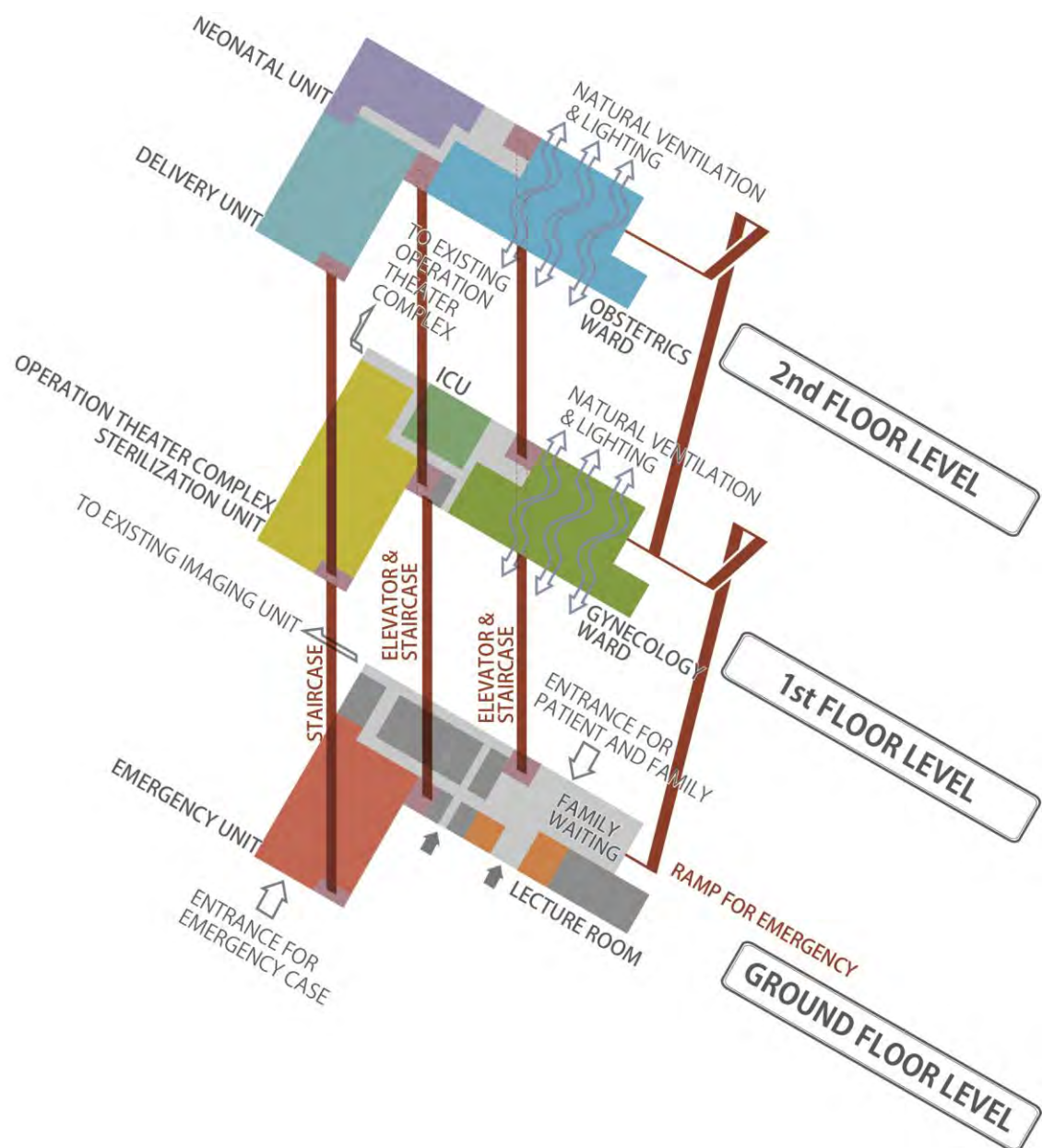


Figure 2-5 Composition of the New Building

### 3) Plan for Major Department

Design for patient-oriented medical services will be focused, taking into account current hospital management system in Myanmar. Moreover, because MgGH is characterized by its responsibility for training medical professionals, each department will be designed to have its own meeting rooms which can be also used for training purposes and staff rooms which can be used by interns and residents as well. Furthermore, consideration is given to disaster risk reductions such as securing a 2-way evacuation route from each room in case of fire. The major departments to be improved in the Project are detailed as follows.



### A) Obstetrics and Gynecology

In order to secure adequate conditions of natural ventilation and lighting in each patient room, the obstetrics and gynecology wards are designed in principle to allocate the patient rooms on the outer sides of the building and the examination and procedure rooms in the center of the building. The staff station will be located where it can control access to the ward, and the high dependency units (HDUs: patient rooms for critically ill patients such as high-risk pregnant women with pregnancy-induced hypertension, postpartum patients with hypertension and patients with eclampsia, etc.) will be situated in its vicinity. The toilets and bath rooms will be located collectively at the end of the building considering ventilation. Moreover, low party walls will be provided between patient rooms and hallways, as is common in Myanmar, in order to enhance interior ventilation, while the building is designed that floor-to-ceiling walls can be provided to keep the privacy of patients in the future. The functional diagram of the obstetrics ward is shown in Figure 2-6.

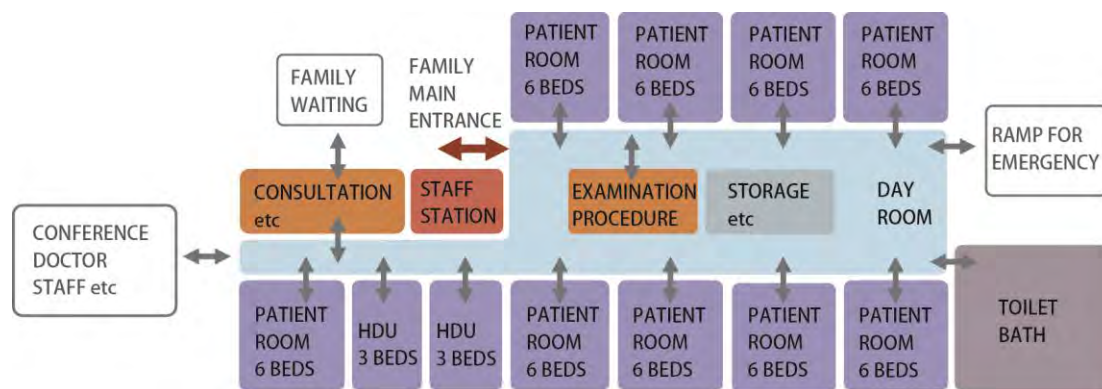


Figure 2-6 Functional Diagram of Obstetrics Ward

### B) Delivery Unit

In principle, the delivery unit will be designed to ensure the smooth flow of the natural childbirth process from labor through delivery to recovery. The labor, delivery, and examination and procedure rooms will be located close to each other because examinations and procedures might be required during labor to delivery. Moreover, one of the four delivery rooms will be designed for infection control. Furthermore, the newborn nursery will be situated where it can be directly monitored from the staff station. The functional diagram of the delivery unit is shown in Figure 2-7.

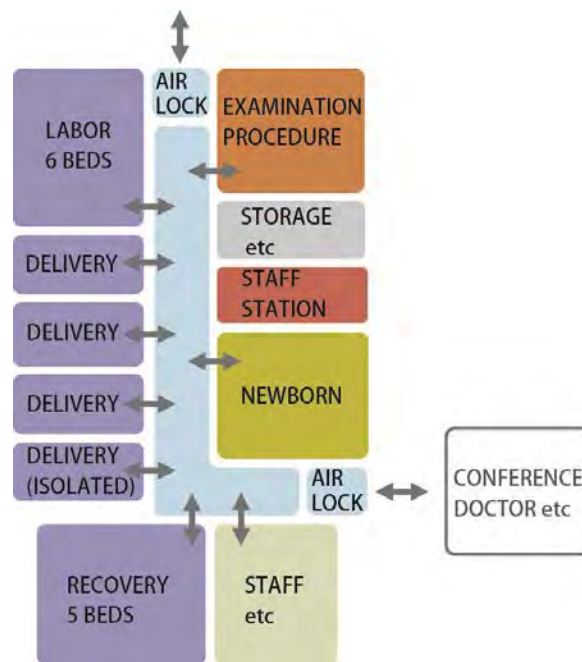


Figure 2-7 Functional Diagram of Delivery Unit

### C) Neonatal Unit

The neonatal unit will be designed to have a neonatal ICU with four beds and premature nurseries to accommodate premature babies discharged from the neonatal ICU and infants with slightly low birth weights. The premature infants born outside the hospital will be accommodated separately from those born inside the hospital, as is common in Myanmar for infection control. This is because it is difficult to identify out-born infants with infectious diseases when they are admitted. Next to the premature nursery, there will be a waiting room to accommodate mothers staying to breastfeed their babies or receive guidance on home care. Moreover, the neonatal unit will be designed to have anterooms for parents to get gowned when they need to enter the neonatal unit to breastfeed or see their babies or receive guidance on home nursing. The functional diagram of the neonatal unit is shown in Figure 2-8.

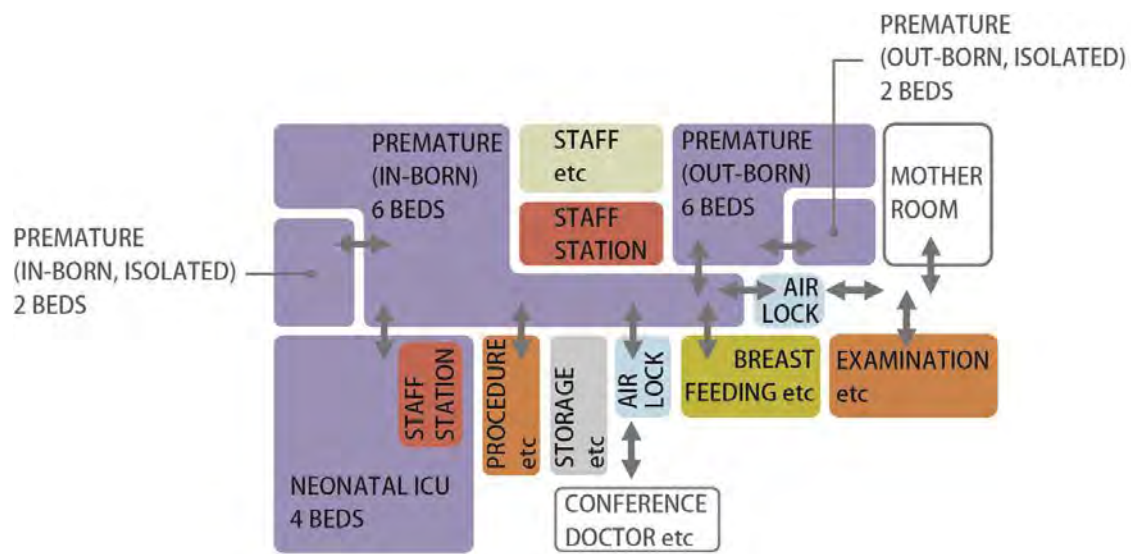


Figure 2-8 Functional Diagram of Neonatal Unit

#### D) Emergency Unit

The emergency unit will consist of two areas: an emergency treatment area for patients brought in by ambulances and monitored until they are moved to their respective wards and an examination area to treat walk-in emergency patients. The latter area will be designed to have a triage counter adjacent to the entrance in order to assess the seriousness of each case and distinguish patients to be escorted straight to the emergency treatment room from those to be ushered into the emergency waiting room. Moreover, there will be a washing area near the emergency entrance because some patients (e.g., those who have suffered injuries in traffic and labor-related accidents) should be washed while on the stretcher before treatment. The staff station will be placed not only in the vicinity of emergency treatment beds but also adjacent to the triage counter in order to enable the minimum number of medical staff to manage the unit. The recovery room will be equipped with a central monitoring system, which will be procured and installed in the equipment works of the Project, in order to monitor patients from staff station through the system. The functional diagram of the emergency unit is shown in Figure 2-9.



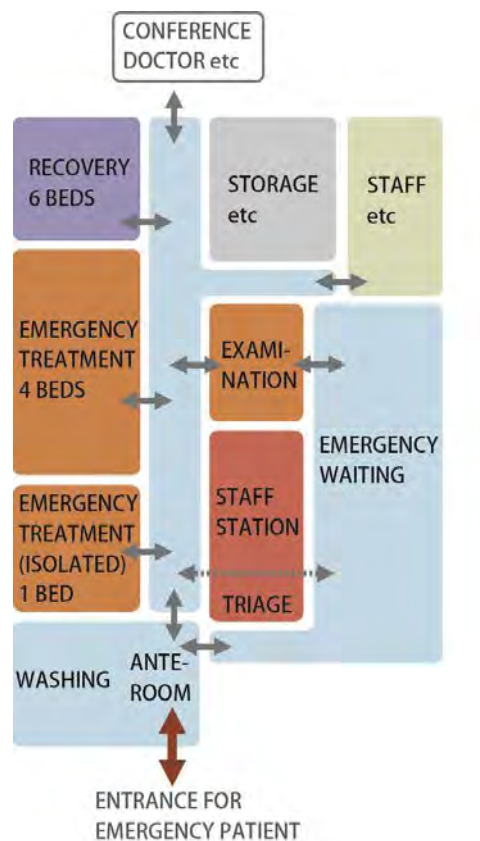


Figure 2-9 Functional Diagram of Emergency Unit

#### E) Operation Theater Complex and Sterilization Unit

The operation theater complex will be designed to be easily operated by local medical staff and to save the floor area by placing the operation hall at the center. Operation Theater 1, located the closest to the entrance, will be used for emergency surgery; Operation Theater 3, located the furthest from the entrance, for relatively advanced surgical procedures; and Operation Theater 2, situated between them, for cesarean section basically, though they are designed to be used flexibly depending on cases. Moreover, Operation Theater 3 will be designed to provide radiation protection so that X-ray equipment can be used in the future.

The sterilization unit to be attached to the operation theater complex will be designed to facilitate smooth flow of the sterilization process from decontamination through packing and sterilization to the clean storage. The functional diagram of the operation theater complex and sterilization unit is shown in Figure 2-10

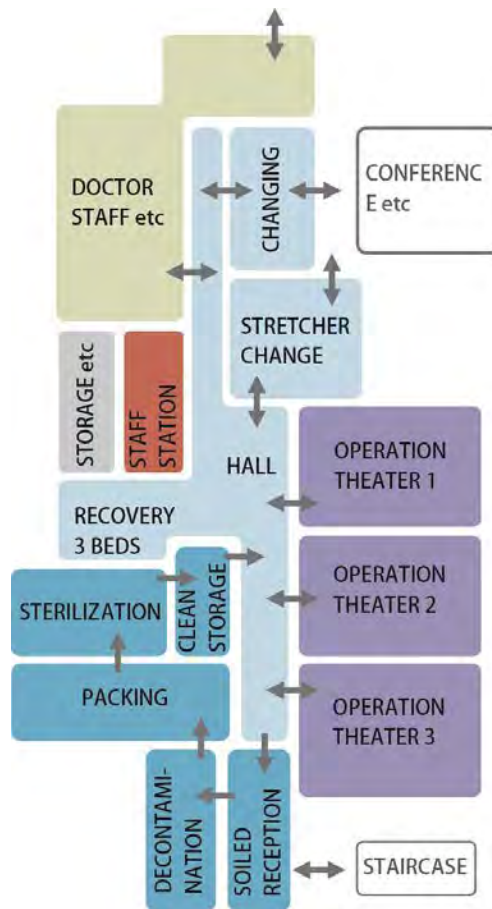


Figure 2-10 Functional Diagram of Operation Theater Complex and Sterilization Unit

#### 4) Floor Areas

Table 2-6 below shows the floor areas of major rooms.

Table 2-6 Floor Areas of Major Rooms

Dept.	Floor Level	Room / area name	Area per room (m <sup>2</sup> )	Description
Emergency unit	GL	Emergency waiting	76	Waiting area for walk-in emergency patients
	GL	Examination	15	Two rooms
	GL	Emergency treatment	94	One room with four beds
	GL	Recovery	40	Central patient monitor to be installed
Operation theater complex	1 <sup>st</sup>	Operation theater	61~66	Three rooms
	1 <sup>st</sup>	Recovery	32	One room with three beds
ICU	1 <sup>st</sup>	ICU	67	One room with three beds
	1 <sup>st</sup>	ICU(isolated)	17	One room with one bed for a patient with communicable disease
Sterilization unit	1 <sup>st</sup>	Decontamination	55	Including areas for soiled reception and decontamination of items to be sterilized
	1 <sup>st</sup>	Sterilization	54	Including areas for packing and sterilization of items to be sterilized
	1 <sup>st</sup>	Clean storage	15	Storage for sterilized items

Dept.	Floor Level	Room / area name	Area per room (m <sup>2</sup> )	Description
Gynecology ward	1 <sup>st</sup>	Patient room	39	Six rooms with six beds each
	1 <sup>st</sup>	HDU	39	One room with four beds
Obstetrics ward	2 <sup>nd</sup>	Patient room	39	Nine rooms with six bed each
	2 <sup>nd</sup>	HDU	25	Two rooms with three beds each
Delivery unit	2 <sup>nd</sup>	Labor	47	One room with six beds
	2 <sup>nd</sup>	Delivery	23	Four rooms including an isolated room
	2 <sup>nd</sup>	Recovery	44	One room with five beds
	2 <sup>nd</sup>	Newborn	18	To monitor newborns for a while after birth
	2 <sup>nd</sup>	Examination	13	To conduct examination related to delivery
	2 <sup>nd</sup>	Procedure	18	To conduct procedure related to delivery
Neonatal unit	2 <sup>nd</sup>	Premature (in-born)	49	One room with six beds
	2 <sup>nd</sup>	Premature (in-born, isolated)	12	One room with two beds
	2 <sup>nd</sup>	Premature (out-born)	46	One room with six beds
	2 <sup>nd</sup>	Premature (out-born, isolated)	12	One room with two beds
	2 <sup>nd</sup>	Neonatal ICU	41	One room with four beds

## (2) Cross-sectional Plan

Cross-sectional plan to prompt air flow within and through the building and to reduce direct sunlight into the building will be applied for the natural ventilation zone such as wards, namely the openings will have sufficient areas for natural air flow and lighting with sunshades and/or louvers, etc.

On the other hand, windows in the air-conditioned area such as emergency unit, operation theater complex, delivery unit and neonatal unit will be minimized mainly considering reduction of solar heat gain.

## (3) Interior and Exterior Finishing

### 1) Basic Policy

Policy for selection of the finishing materials is as follows:

- A) Use as many materials available in the local market as possible to reduce the construction period and cost, and
- B) Select materials that can be maintained locally.

### 2) Finishing Material

Major exterior finishing materials are listed in Table 2-7 below.

Table 2-7 Major Exterior Finishing Materials

Part	Finishing materials	Notes
Roof	Protective concrete layer on asphalt water proofing with thermal insulation	Considering thermal insulation
Exterior wall	Paint	Considering maintenance
Doors and windows	Aluminum fitting	Considering durability

Major interior finishing materials are listed in Table 2-8 below.

Table 2-8 Major Interior Finishing Materials

Room	Finishing materials				Notes
	Floor	Skirting	Wall	Ceiling	
Examination, etc.	Terrazzo tile	Terrazzo tile	Paint	Mineral fiber board	Typical in Myanmar
Patient room, etc.	Terrazzo tile	Ceramic tile	Ceramic tile (paint on the upper part)	Paint	Ditto
Operation theater	Vinyl sheeting	Vinyl sheeting	Composite panel	Paint	Easiness of cleaning is considered
Office	Terrazzo tile	Terrazzo tile	Paint	Mineral fiber board	Typical in Myanmar
Lecture room	Terrazzo tile	Terrazzo tile	Paint	Mineral fiber board	Ditto
Corridor, etc.	Terrazzo tile	Terrazzo tile	Paint	Paint	Ditto
Toilet, etc.	Ceramic tile	Ceramic tile	Ceramic tile (paint on the upper part)	Paint	Ditto
Storage, etc.	Terrazzo tile	Terrazzo tile	Paint	Paint	Ditto
Machine room	Dust-proof paint	Paint	Paint	Paint	Ditto

#### (4) Structural Design

##### 1) Ground Conditions of the Project Site and Foundation Structure Design

The subsoil of the Project site is consisted of alternation of silty sand and clayey sand with N-value of 10 – 20 up to a depth of 10 – 12m. Then, deeper than 12m, silty sand with N-value of 50 – 60 is observed. Therefore, a pile foundation will be adopted to the new building assuming that the silty sand layer would be a supporting layer.

##### 2) Superstructure Design

Reinforced concrete frame and concrete block walls for non-anti-seismic elements will be adopted, which are common in Myanmar.

##### 3) Load

The buildings will have necessary structural resistance against natural disasters assumed in the region such as earthquakes. Considering the local climate and geographical conditions, the external forces and loads are assumed as follows.

##### A) Dead Load

The dead load is calculated by adding up the weight of all structural and finishing materials to be used for the new building.

#### B) Wind Load

The wind load is calculated in accordance with the Japanese building codes.

#### C) Live Load

The live load is calculated in accordance with the Japanese building codes.

#### D) Seismic Load

The seismic load is estimated in reference to the earthquake zone map of Myanmar. According to the map, the Project site is located in Earthquake Zone III (Strong Zone), where the possible peak ground acceleration is estimated at 210-300 gal and shakings with intensity scale VII in the Modified Mercalli Intensity Scale can happen.

#### 4) Structural Material

Major structural materials are listed in Table 2-9 below.

Table 2-9 Major Structural Materials

Materials	Specifications
Concrete	Design strength: $F_c=24\text{N/mm}^2$
Reinforcing bar	Yield Strength: $345\text{ N/mm}^2$ , $295\text{ N/mm}^2$

#### (5) Electrical System Design

##### 1) Service Drop and Transformer System

Electricity will be supplied through an 11 kV high-voltage cable installed by the Myanmar side for the new building. It will be stepped down through a new transformer and distributed to the electrical room. An automatic voltage regulator (AVR) to cope with voltage fluctuation will be installed in order to protect medical equipment from burn-out accident.

##### 2) Power Supply System

Electricity will be supplied from a main distribution board in the electrical room to switchboards and control panels in the new building.

In light of frequent power failures, a backup generator will be installed to keep essential services of the new building as a hospital. It will supply power to the emergency unit, operation theater complex, neonatal unit, ICU, pumps, and elevators, etc. For medical equipment with computers such as ultrasound scanner, uninterruptible power supply (UPS) devices will be provided in the equipment works in order to supply electricity continuously until the backup generator runs after a power failure occurs

##### 3) Lighting Fixtures and Socket Outlets

A lighting distribution switchboard will be installed on each floor with an appropriate circuit configuration. Conduit wiring work from the switchboards to lighting fixtures and socket outlets will be conducted.

##### A) Lighting Fixtures

- General lighting : mainly light emitting diode (LED) lighting fixtures will be installed

- Special lighting : operation lamps for the operation theaters will be installed in the equipment works
- Emergency and exit lighting : battery-operated lighting fixtures will be installed

#### B) Socket Outlets

All socket outlets will be earthed. The circuit configuration for medical equipment will meet its layout and power supply requirements.

#### 4) Telephone System

There is no extension in the private branch exchange (PBX) of the existing building, therefore a new PBX will be installed in the control room of the new building. The system will provide internal phone extension for rooms in the new building as well as in the existing buildings where the existing telephone system is installed. Connecting work to the new system in the telephone room in the existing building will be conducted by the Myanmar side.

#### 5) Local Area Network (LAN) System

Conduit installation work for future LAN system from the control room where switches will be located to necessary rooms will be conducted.

#### 6) TV Reception System

TV outlet will be installed in necessary rooms. A TV antenna will be installed on the roof of the new building.

#### 7) Fire Alarm System

Fire alarms will be installed where they are necessary. A fire alarm panel will be installed in the control room of the new building.

#### 8) Lightning Protection

A lightning protection system will be installed on the roof for protection against lightning strikes.

### (6) Mechanical System Design

#### 1) Air Conditioning System

In light of easiness of procurement and maintenance, package air conditioning units will be installed in the following room:

- Rooms for patients with serious conditions and rooms for medical services necessary for temperature control such as the operation theaters, ICU, and emergency treatment rooms, etc.
- Rooms necessary for temperature control to maintain functions of medical equipment and reduce heat load from equipment such as control room of the new building, etc.
- Rooms necessary for temperature control in view of work efficiency such as the doctor rooms, etc.

Ceiling or wall mounted fans will be installed in non air conditioned rooms. At air outlet of the operation theater a high efficiency filter will be installed, whose replacement period is longer than that of a high efficiency particulate air (HEPA) filter<sup>12</sup>.

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<sup>12</sup> High efficiency filter is a filter which has 98% or more collecting efficiency in JISB9908:2011 dust-spot efficiency.

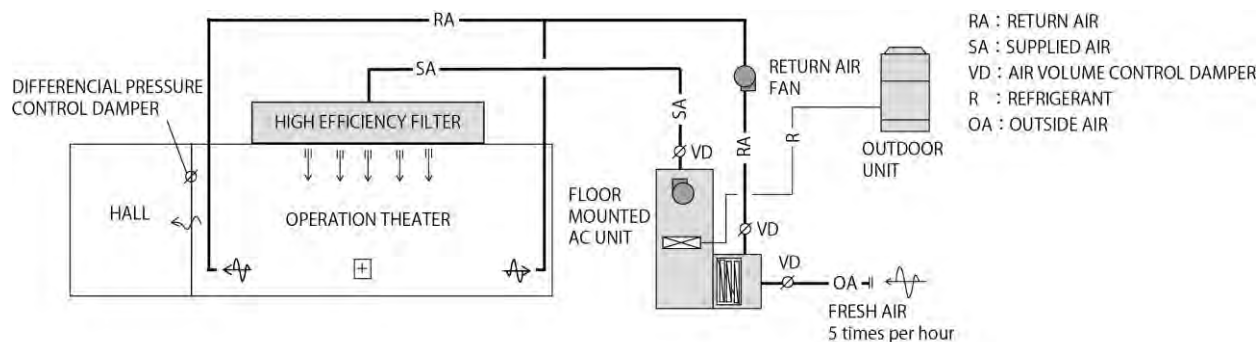


Figure 2-11 Air Conditioning System for Operation Theater

## 2) Ventilation system

Though natural ventilation will be adopted basically, mechanical ventilation system will be installed for the following rooms:

- Air conditioned rooms except for rooms where sufficient natural ventilation is expected.
- Rooms where smell and moisture will be generated such as the dirty rooms and the toilets, etc.
- Rooms not facing outside, where natural ventilation is not expected.

## 3) Plumbing System

### A) Sanitary Appliance

Sanitary appliances such as western-style low-tank toilets, squat-type toilet, urinals with flush-valves and wash basins will be selected according to the purpose of use. Hand showers for the toilets will also be installed.

### B) Water Supply System

Water will be supplied with gravity from an elevated water tank lifted up through a receiving tank sourced from a new deep well. Water purified in the existing building will be used for medical services in the new building as is with the existing buildings. For other purposes, water from the deep well will be used after raw water is filtered to meet with the required standard of water quality.

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Generally replacement frequency of HEPA filter and high efficiency filter is one time per three years and ten years respectively.

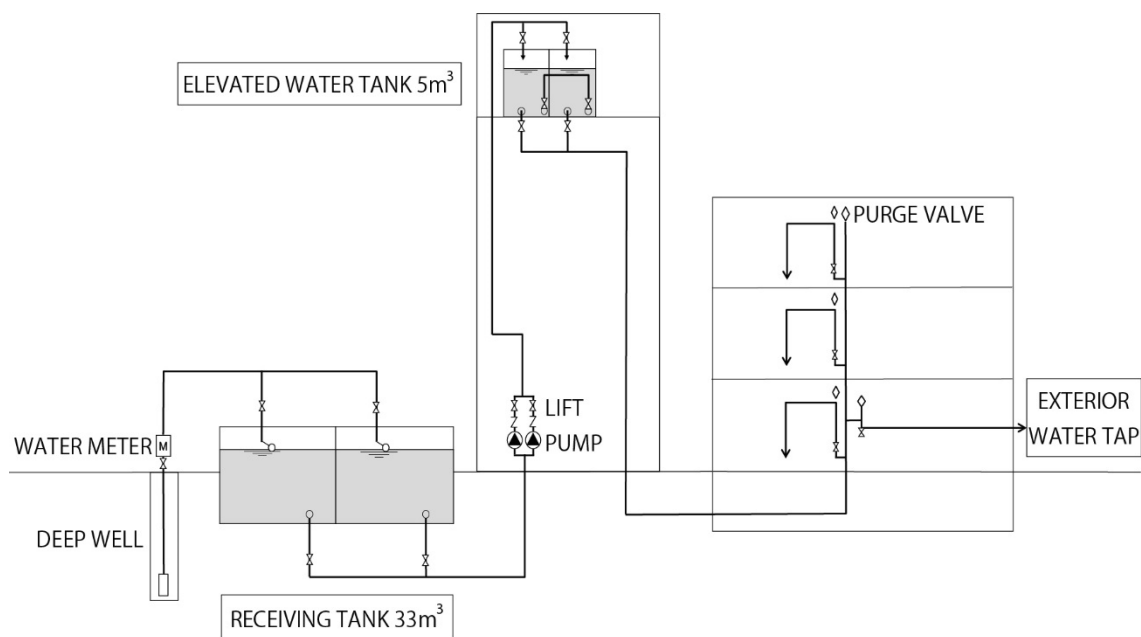


Figure 2-12 Water Supply System

### C) Drainage System

Miscellaneous wastewater and Sewage water will be discharged to the existing gutter or a soak pit after treatment through a combined septic tank.

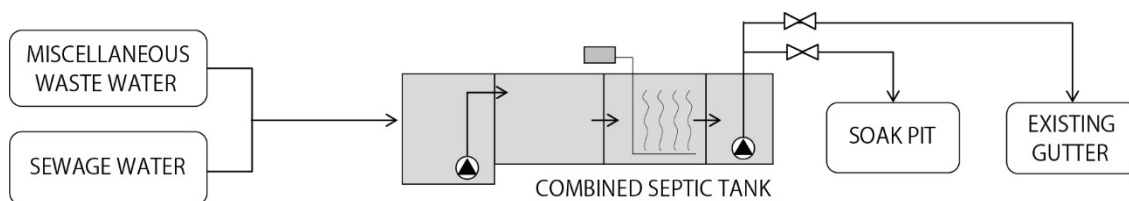


Figure 2-13 Drainage System

### D) Firefighting System

Based on instructions of the Fire Services Department of the Magway District, firefighting systems such as fire extinguishers, firefighting water tank, indoor fire hydrant system, and integrated hydrant system will be installed.

### E) Hot Water Supply System

Electrical hot water supply systems will be installed for medical equipment, washing in the emergency unit, showers and baby bathing. On the other hand, only water will be available for the bathrooms in the wards as is with the existing buildings because the hot water supply system might not be utilized properly by patients considering that the system is still not common for general public in the region.



## F) Medical Gas System

Medical oxygen will be provided via a central piping system because it is judged that the system could be operated and maintained properly as a similar system is installed in the existing building. Though medical air, suction and nitrous oxide will be provided by medical equipment, piping work and outlet installation of medical air and suction will be included in the Project securing area for building equipment such as pumps and compressors for the system considering functional improvement in the future. Also, an exhaust air system will be installed in order to protect medical staff from health problems because of nitrous oxide.

## 2-2-2-3 Equipment Plan

### (1) Equipment Selection Policy

The Myanmar side requested to select the medical equipment for the departments to be improved in the Project based on “Standard Equipment List for 200 bedded Hospital” and “Hospital Upgrading Project, Curative Service 2009”. Accordingly, the list of requested equipment was made including other necessary items of equipment for medical services of the target clinical departments. Through discussions with departments concerned in MgGH, the selection was made from the view point of replenishment of items of equipment which are lacking and/or renewal of the existing items of equipment whose continuous use after relocation to the new building is considered difficult. In addition, a blood gas analyzer, which MgGH currently doesn’t have, but is necessary for monitoring conditions of post-operative patients at ICU or emergency patients, and an enzyme-linked immunosorbent assay (ELISA) machine to confirm safety of infusion blood will be newly introduced.

It was confirmed that among these items of equipment which can be procured easily in the local market such as patient beds in the wards, complementary medical furniture, and general furniture would be newly procured or relocated from the existing building to the new building by the Myanmar side.

### (2) Equipment Plan

#### 1) Obstetrics and Gynecology Wards

In the obstetrics ward two CTGs (fetal act cardiograph) will be provided in order to monitor fetal heart rates and contraction interval of high-risk pregnant women. There will be an examination room and a procedure room in each ward, therefore four OB/GY examination tables will be installed in total. Furthermore ten patient monitors for ten beds in the HDUs will be provided at respective bedsides. For the patient rooms and the HDUs, a suction machine, an infusion pump, and two infusion stands will be provided in each room.

In the staff station, a pharmaceutical refrigerator for medicine, an ECG, a medicine trolley, and five diagnostic sets will be provided in each ward. Major equipment in the obstetrics and gynecology wards is as shown in Table 2-10.

Table 2-10 Major Equipment in the Obstetrics and Gynecology Wards

No.	Name	Q'ty	Priority
10	CTG	2	A
13	Diagnostic set	10	A
14	ECG	2	A
27	Infusion pump	18	A
28	Infusion stand	36	A
38	Medicine trolley	2	A
40	OB/GY examination table	4	A
44	Oxygen flowmeter and humidifier	10	A
46	Patient monitor A (standard parameters )	10	A
49	Pharmaceutical refrigerator	2	A
54	Suction machine	18	A

Furthermore, the existing items of equipment recently procured by MoHS such as a colposcope, a cryotherapy, two infant incubators, five suction units, and three glucose meters will be relocated from the existing building to the obstetrics and gynecology wards in the new building.

## 2) Delivery Unit

In the delivery unit, two OB/GY examination tables will be installed in the examination room and the procedure room. Because there will be four delivery rooms, four delivery beds will be installed in the respective delivery rooms. In addition, in the examination room, an ultrasound scanner will be provided in order to examine babies. In the labor room, six labor beds and three CTGs are necessary for long time continuous monitoring on first and/or high-risk pregnancy. Furthermore, a defibrillator will be provided for emergency at the time of delivery. Major equipment in the delivery unit is as shown in Table 2-11.

Table 2-11 Major Equipment in the Delivery Unit

No.	Name	Q'ty	Priority
10	CTG	3	A
11	Defibrillator	1	A
12	Delivery bed	4	A
32	Labor bed	6	A
40	OB/GY examination table	2	A
58	Ultrasound scanner, portable	1	A

## 3) Neonatal Unit

six infant incubators with functions of temperature / moisture control and medical oxygen supply, and six infant warmers with a function of temperature control, on which surgical procedures can be conducted will be provided in the Project, in addition to incubators and warmers relocated from the existing buildings in order to secure 20 beds in the neonatal unit. In the neonatal ICU where neonates in serious conditions are treated, a patient monitor at each bedside and a central monitor will be installed in order to enable the minimum number of medical staff to monitor conditions of patients.

In addition, a bilirubin meter with centrifuge to measure bilirubin level with blood and a transcutaneous bilirubin meter to measure with a transdermal way and six phototherapy units will be provided in order to cope with hyperbilirubinemia which is common for neonates. In regard to the

phototherapy units two types of equipment will be provided: one can irradiate light from upper side only while the other for serious jaundice case can irradiate light from upper and lower side. Furthermore, four continuous positive airway pressure (CPAP) units, the same number of beds in the neonatal ICU will be provided in order to support neonates to breathe. Major equipment in the neonatal unit is as shown in Table 2-12.

Table 2-12 Major Equipment in the Neonatal Unit

No.	Name	Q'ty	Priority
3	Bilirubin meter with centrifuge	1	A
8	Central monitor	1	A
9	CPAP unit	4	A
25	Infant incubator	6	A
26	Infant warmer	6	A
48	Patient monitor C (for neonates)	4	A
50	Phototherapy unit (irradiation from upper side)	5	A
51	Phototherapy unit (irradiation both from upper and lower side)	1	A
56	Transcutaneous bilirubin meter	1	A

Furthermore, the existing equipment such as three neonatal weighing scales, two suction units, six oxygen concentrators, two pulse oximeters, a medicine trolley, 12 phototherapy units, four baby cots, three infant warmers, two infant incubators, an infusion pump, and two syringe pumps will be relocated from the existing building to the neonatal unit in the new building.

#### 4) Emergency Unit

In the emergency unit the equipment necessary for examination such as patient monitors to check status of vital signs, ECG, ultrasound scanner, mobile X-ray unit, and the equipment necessary for emergency treatment such as airway management and quick insertion of ventilator will be provided. The 6-bedded recovery room will not be so close to the staff station that a patient monitor at each bedside in the emergency treatment rooms and the recovery room and a central monitor will be installed in the staff station to monitor status of vital sign of patients. A blood gas analyzer will also be provided in order to confirm the blood test result rapidly. Major equipment in the emergency unit is as shown in Table 2-13.

Table 2-13 Major Equipment in the Emergency Unit

No.	Name	Q'ty	Priority
4	Blood gas analyzer	1	A
8	Central monitor	1	A
14	ECG	2	A
39	Mobile X-ray unit	1	A
46	Patient monitor A (standard parameters )	11	A
58	Ultrasound scanner	3	A
61	Ventilator	1	A

#### 5) Operation Theater Complex

There will be three operation theaters, and an operation table, an electrosurgical unit, a patient monitor,

an operation lamp, a stool for surgeon and an anesthesia machine will be provided in each operation theater.

Because for advanced surgical procedures such as neurosurgery, it is necessary to control body position of a patient with accuracy, in the operation theater 3, an operation table B with electronic hydraulic drive system will be installed. On the other hand, the rest of operation theaters will have an operation table A with hydraulic drive system.

With regard to the patient monitor in operation theater 3, it is necessary for advanced surgical procedure to monitor the ventilatory status of a patient by measuring EtCO<sub>2</sub> (End tidal CO<sub>2</sub>) gas, so that a patient monitor which can display EtCO<sub>2</sub> parameter will be provided. The rest of two operation theaters will have standard patient monitors respectively.

In each operation theater, an operation lamp with a supplementary lamp will be installed to secure adequate illuminance at operation fields. In the operation theater 3, a camera and a display will be included in the operation lamp, so that medical students will be able to observe the operation fields simultaneously. In addition, a blood bank refrigerator will be installed in staff station for emergency blood transfusion. In the recovery room, three patient monitors will be provided at respective bedsides in order to monitor patients after operation. Major equipment in the operation theater complex is as shown in Table 2-14.

Table 2-14 Major Equipment in the Operation Theater Complex

No.	Name	Q'ty	Priority
1	Adjustable stool for surgeon	3	A
2	Anesthesia machine with ventilator	3	A
5	Blood bank refrigerator	1	A
6	Operation lamp (two lamps with camera and display)	1	A
7	Operation lamp B (two lamps)	2	A
15	Electrosurgical unit	3	A
41	Operation table A (Hydraulic drive system)	2	A
42	Operation table B (Electronic hydraulic drive system)	1	A
46	Patient monitor A (standard parameters )	5	A
47	Patient monitor B (standard parameters and EtCO <sub>2</sub> )	1	A

Furthermore, an existing ultrasound scanner will be relocated from the existing building to the operation theater complex in the new building.

## 6) ICU

In the ICU, respiratory management by ventilator, strict intravenous drip control and monitoring of vital signs are required. Thus, a ventilator, a syringe pump, an infusion pump, and a patient monitor will be provided for each bed. A central monitor will be installed in order to enable the minimum number of medical staff to monitor patients. Major equipment in the ICU is as shown in Table 2-15.

Table 2-15 Major Equipment in the ICU

No.	Name	Q'ty	Priority
8	Central monitor	1	A
27	Infusion pump	4	A
46	Patient monitor A (standard parameters )	4	A
55	Syringe pump	4	A
61	Ventilator	4	A

### 7) Sterilization Unit

A middle-sized sterilizer (approx. 400L capacity) and a small-sized sterilizer (approx. 80L capacity) will be installed for sterilization of instruments and linens used in the operation theaters, emergency unit, and delivery unit in the new building. Also, three linen carts will be provided. It is deemed that enough sterilization capacity will be expected by operating the middle sized 2-three times and the small sized 2-4 times per day.<sup>13</sup> Equipment in the sterilization unit is as shown in Table 2-16.

Table 2-16 Equipment in the Sterilization Unit

No.	Name	Q'ty	Priority
22	High pressure steam sterilizer M	1	A
23	High pressure steam sterilizer S	1	A
34	Linen cart	3	A

### 8) Others

In the medicine storages in the new building, three medicine cabinets, a medicine rack, and a pharmaceutical refrigerator will be installed. Furthermore for the existing clinical laboratory, an ELISA machine which is normally used for definitive diagnosis after rapid tests will be installed for screening of transfusion blood in order to supply safe blood.

The equipment list and specifications of major equipment in the Project are as shown in Table 2-17 and Table 2-18.

<sup>13</sup> In MgGH, two times operation of the existing 600L class sterilizer a day gives 1200L/day in sterilizing capacity. It covers three operation theaters, delivery unit and all patient wards. The same capacity as the existing sterilization unit is considered appropriate.

Table 2-17 Equipment List

No.	Name	Q'ty
1	Adjustable stool for surgeon	3
2	Anesthesia machine with ventilator	3
3	Bilirubin meter with centrifuge	1
4	Blood gas analyzer	1
5	Blood bank refrigerator	1
6	Operation lamp A (two lamps ,with camera and display)	1
7	Operation lamp B (two lamps)	2
8	Central monitor	3
9	CPAP unit	4
10	CTG	5
11	Defibrillator	4
12	Delivery bed	4
13	Diagnostic set	15
14	ECG	4
15	Electrosurgical unit	3
16	ELISA machine	1
17	Emergency trolley	5
18	Examination bed	2
19	Examination lamp	5
20	Fetal doppler	3
21	Hand scrub station	2
22	High pressure steam sterilizer M	1
23	High pressure steam sterilizer S	1
24	ICU bed	4
25	Infant incubator	6
26	Infant warmer	6
27	Infusion pump	36
28	Infusion stand	43
29	Instrument cabinet	6
30	Instrument cart	6
31	Instrument trolley	3
32	Labor bed	6
33	Laryngoscope set	6
34	Linen cart	3
35	Low continuous suction machine	6
36	Medicine cabinet	3
37	Medicine rack	1
38	Medicine trolley	2
39	Mobile X-ray unit	1
40	OB/GY examination table	6
41	Operation table A (Hydraulic drive system)	2

No.	Name	Q'ty
42	Operation table B (Electronic hydraulic drive system)	1
43	Oxygen concentrator	2
44	Oxygen flowmeter and humidifier	29
45	Oxygen inhalation set	4
46	Patient monitor A (standard parameters)	32
47	Patient monitor B (standard parameters and EtCO2)	1
48	Patient monitor C (for neonates)	4
49	Pharmaceutical refrigerator	4
50	Phototherapy unit (irradiation from upper side)	5
51	Phototherapy unit (irradiation from upper and lower side)	1
52	Recovery bed	15
53	Stretcher	7
54	Suction machine	29
55	Syringe pump	17
56	Transcutaneous bilirubin meter	1
57	Ultrasonic nebulizer	3
58	Ultrasound scanner	1
59	Ultrasound scanner, portable	1
60	Vein finder	3
61	Ventilator	5
62	Wheel chair	4
63	UPS (1.0kVA)	3
64	UPS (2.0kVA)	2

Table 2-18 Specifications of Major Equipment

No.	Name	Q'ty	Purpose of Use, Validity of Equipment Grade
2	Anesthesia machine with ventilator	3	To make a patient into state of general anesthesia by inhalation of anesthetic.
4	Blood gas analyzer	1	To confirm respiratory function, to manage respiration and mechanical ventilation and to measure electrolytes and pH.
5	Blood bank refrigerator	1	To store screened transfusion blood at the appropriate temperature.
6	Operation lamp A (two lamps with camera and display)	1	To provide adequate illumination with no shadow in operation fields. Because the new building is required to provide favorable educational environment, a camera and a display will be also provided so that medical students can observe operation fields.
7	Operation lamp B (two lamps)	2	To provide adequate illumination with no shadow in operation fields.
8	Central monitor	3	To be installed in staff stations of neonate ICU, ICU and Emergency Unit in order to monitor conditions of patients remotely.
9	CPAP unit	4	To help neonate or infant breathe by positive pressure.
10	CTG	5	To monitor the level of labor and fetal heart beats continuously. A woman with late pregnancy or a woman during labor wears a sensor belt on the abdomen.
11	Defibrillator	4	To deliver electric shocks to a patient and recover the patient from

No.	Name	Q'ty	Purpose of Use, Validity of Equipment Grade
			systolic during atrial fibrillation or ventricular fibrillation is happening.
14	ECG	4	To record the wavelength of cardiac electrical signal and find out diseases such as arrhythmia.
15	Electrosurgical unit	3	To resect the affected tissue and used for hemostasis and coagulation during surgery.
16	ELISA machine	1	To identify the diseases such as Hepatitis B, Hepatitis C, HIV/AIDS, syphilis and sepsis.
21	Hand scrub station	2	Surgeon and assistant medical staff wash their hands with this equipment prior to surgery so as not to bring bacteria into the Operation field.
22	High pressure steam sterilizer M	1	To sterilize instruments and linens.
23	High Pressure steam sterilizer S	1	
25	Infant incubator	6	To provide a neonate an environment with temperature and humidity control and oxygen supply to prevent from infection.
26	Infant warmer	6	To provide a neonate an environment with temperature control and venue to conduct surgical procedure.
39	Mobile X-ray unit	1	To take X-ray picture for a patient hard to move to X-ray rooms.
41	Operation table (Hydraulic driven )	2	To control body position of a patient during operation depending on a case. A hydraulic driven type will be provided.
42	Operation table (Electronic hydraulic driven )	1	To control body position of a patient during operation depending on a case. For advanced surgical procedures such as neurosurgery it is necessary to control the position with accuracy, thus an electric hydraulic driven type will be provided.
46	Patient monitor A (standard parameters )	32	To monitor condition of a patient with standard parameters such as ECG and respiratory rate.
47	Patient monitor B (standard parameters + EtCO <sub>2</sub> )	1	To monitor condition of a patient with standard parameters such as ECG, respiratory rate and EtCO <sub>2</sub> gas.
48	Patient monitor C (for neonates)	4	To monitor condition of a neonate with standard parameters such as ECG and respiratory rate. Accessories for neonates such as probes will be included.
51	Phototherapy unit B (irradiation from upper and lower side)	1	To reduce bilirubin by irradiating light from upper and lower side.
57	Ultrasound scanner	1	To examine the abdomen and cardiac problem and other body areas of an emergency patient by ultrasound scanning in non-invasive way.
58	Ultrasound scanner, portable	1	To examine status of fetus growth and measure fetus height and head diameter, etc. by ultrasound scanning in non-invasive way on abdomen of a pregnant woman.
60	Ventilator	5	To support breathing of a patient who is not able to breathe by him/herself.



### 2-2-3 Outline Design Drawing

The following outline design drawings are presented on the following pages.

Site plan

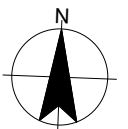
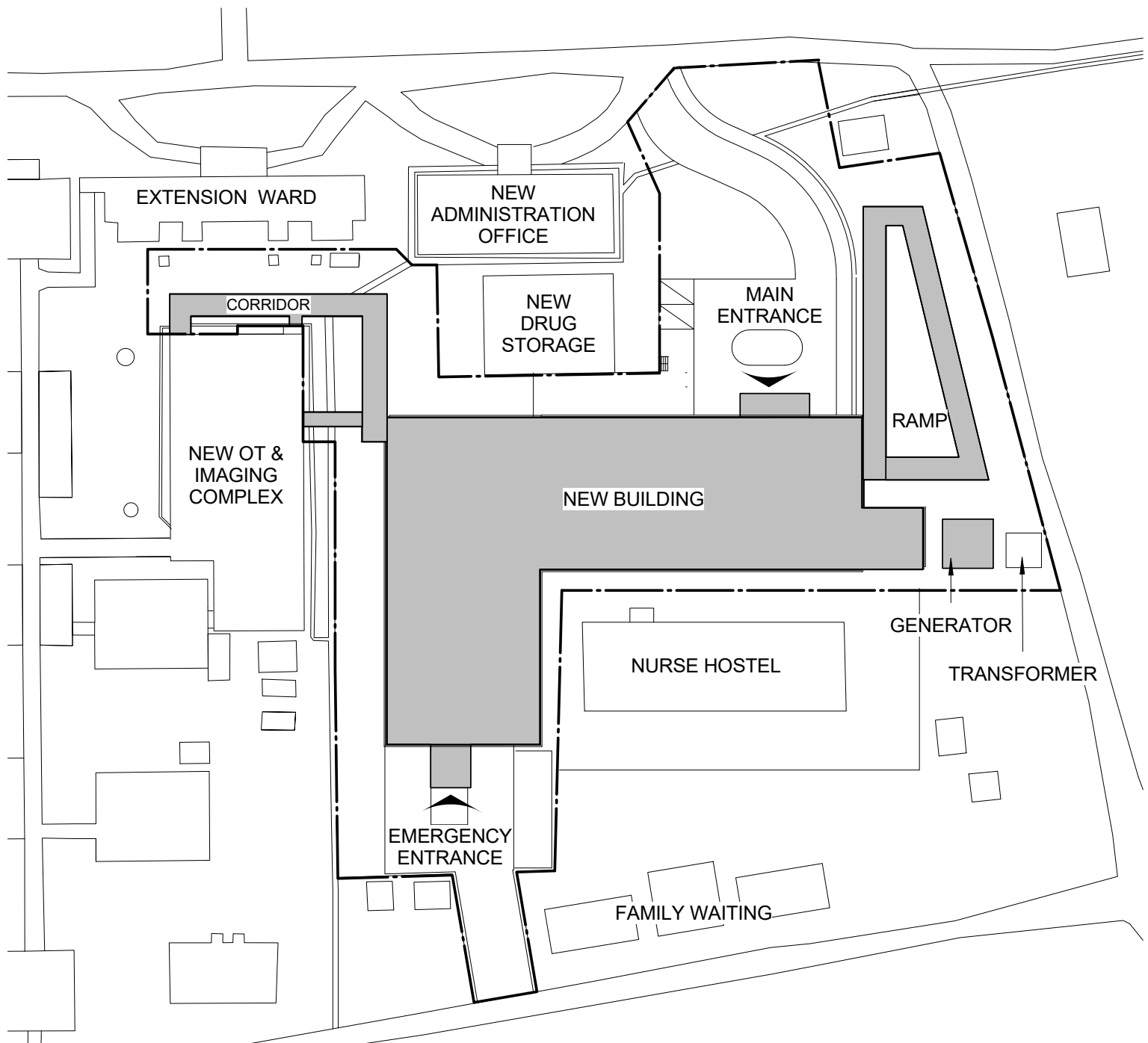
Ground floor plan

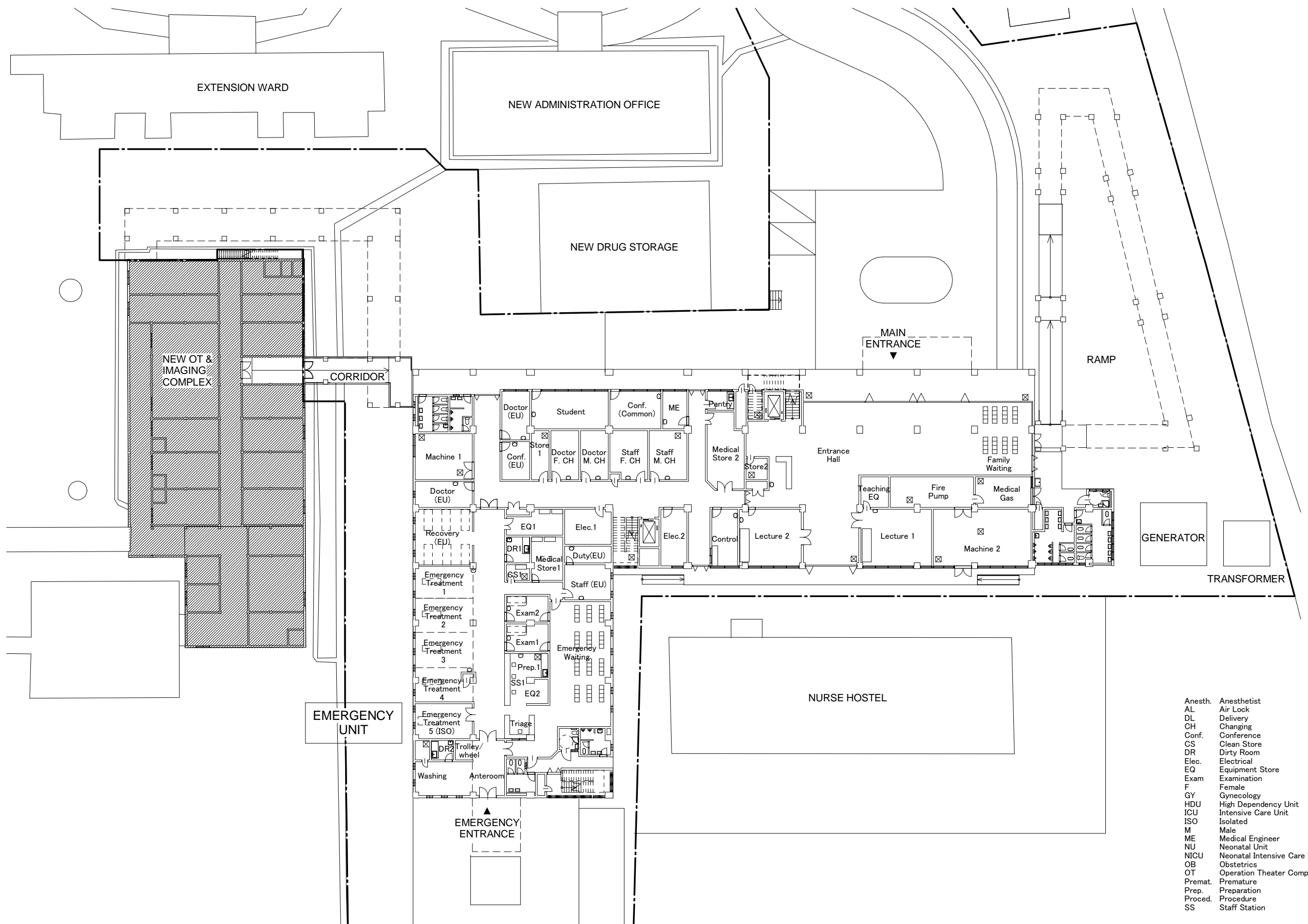
First floor plan

Second floor plan

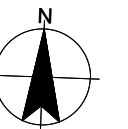
Elevations

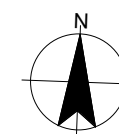
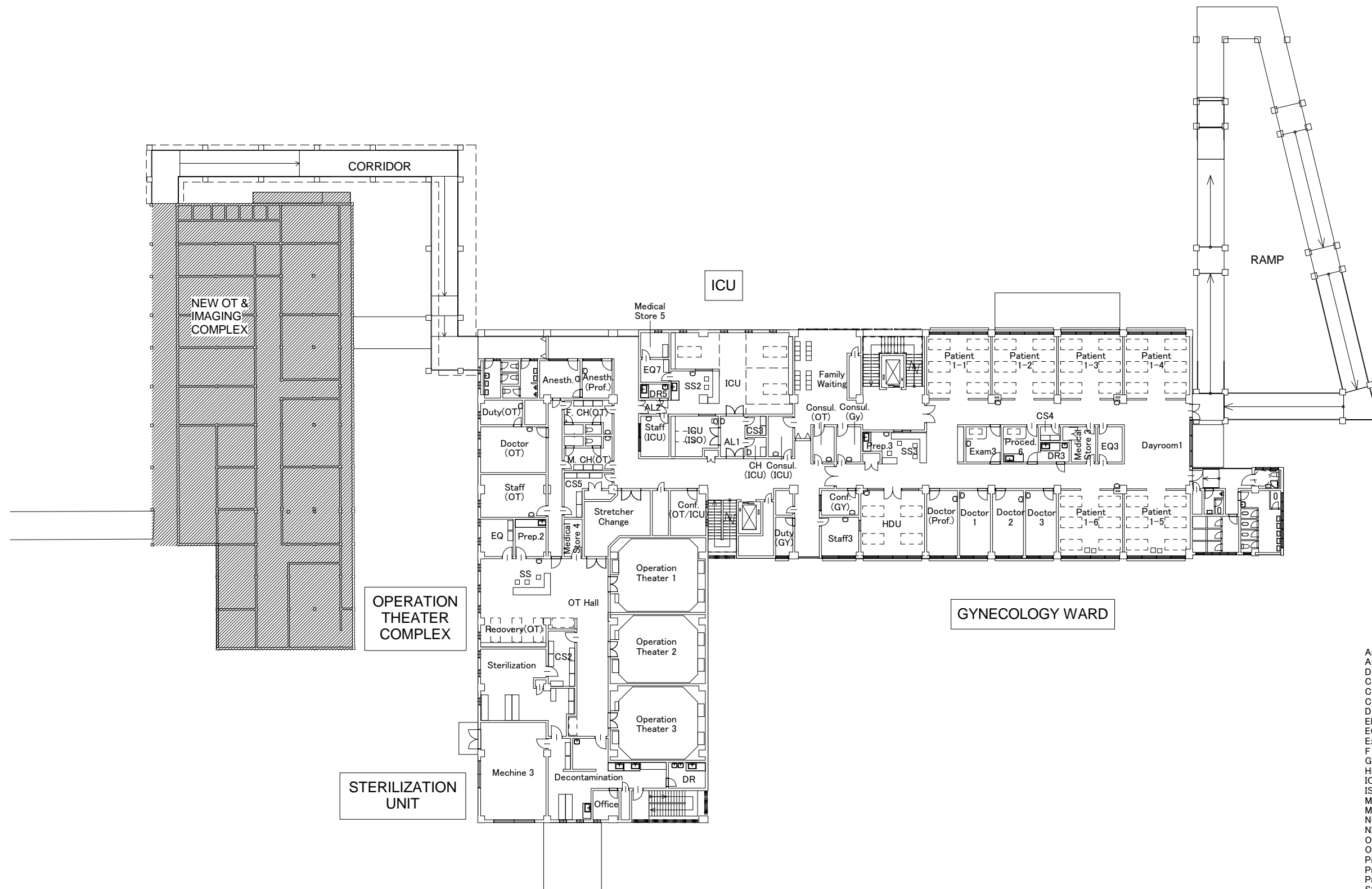
Sections

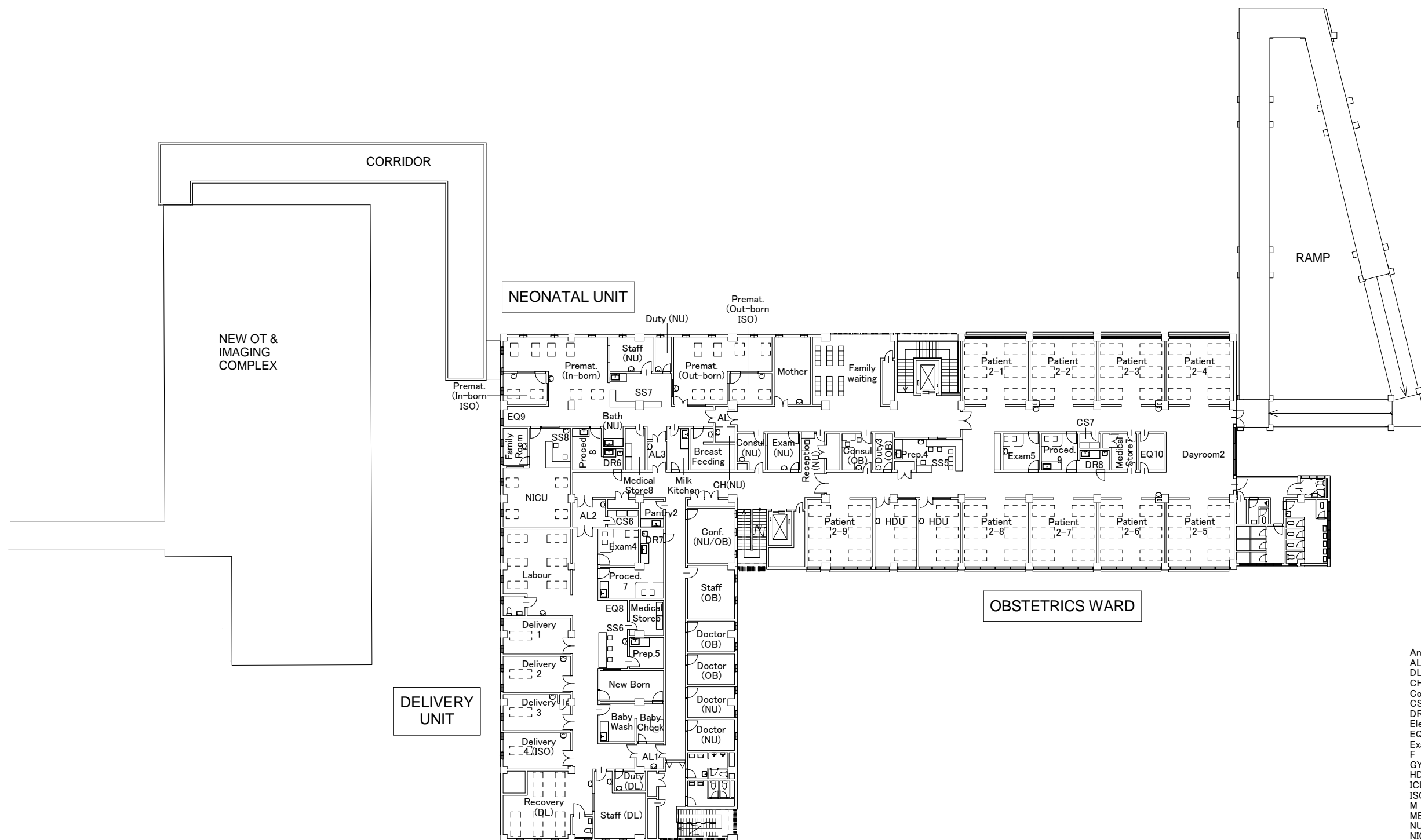




Anesth.	Anesthetist
AL	Air Lock
DL	Delivery
CH	Changing
Conf.	Conference
CS	Clean Store
DR	Dirty Room
Elec.	Electrical
EQ	Equipment Store
Exam	Examination
F	Female
GY	Gynecology
HDU	High Dependency Unit
ICU	Intensive Care Unit
ISO	Isolated
M	Male
ME	Medical Engineer
NU	Neonatal Unit
NICU	Neonatal Intensive Care Unit
OB	Obstetrics
OT	Operation Theater Complex
Premat.	Premature
Prep.	Preparation
Proced.	Procedure
SS	Staff Station

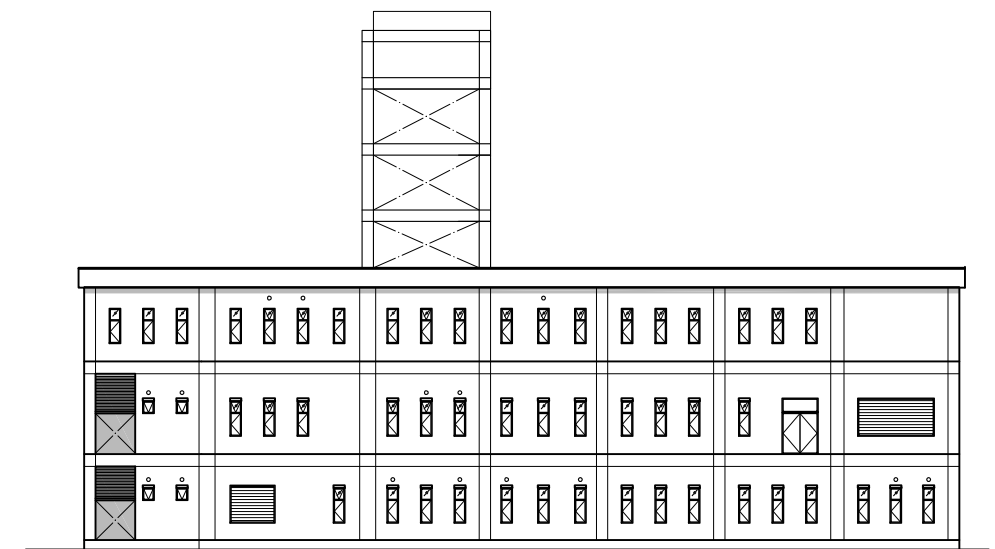




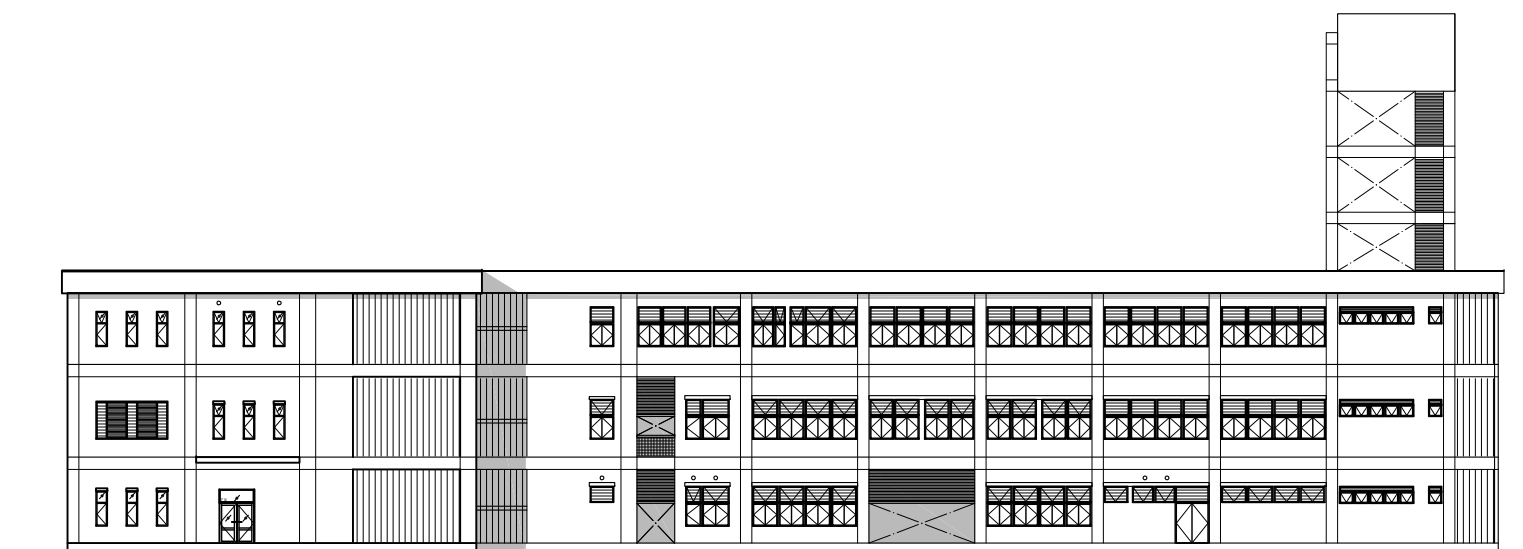




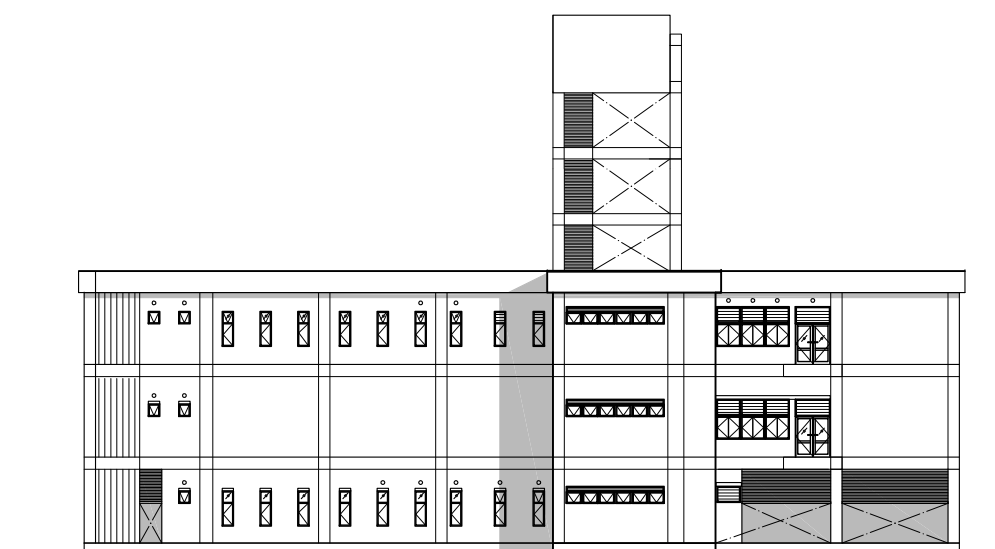
NORTH ELEVATION



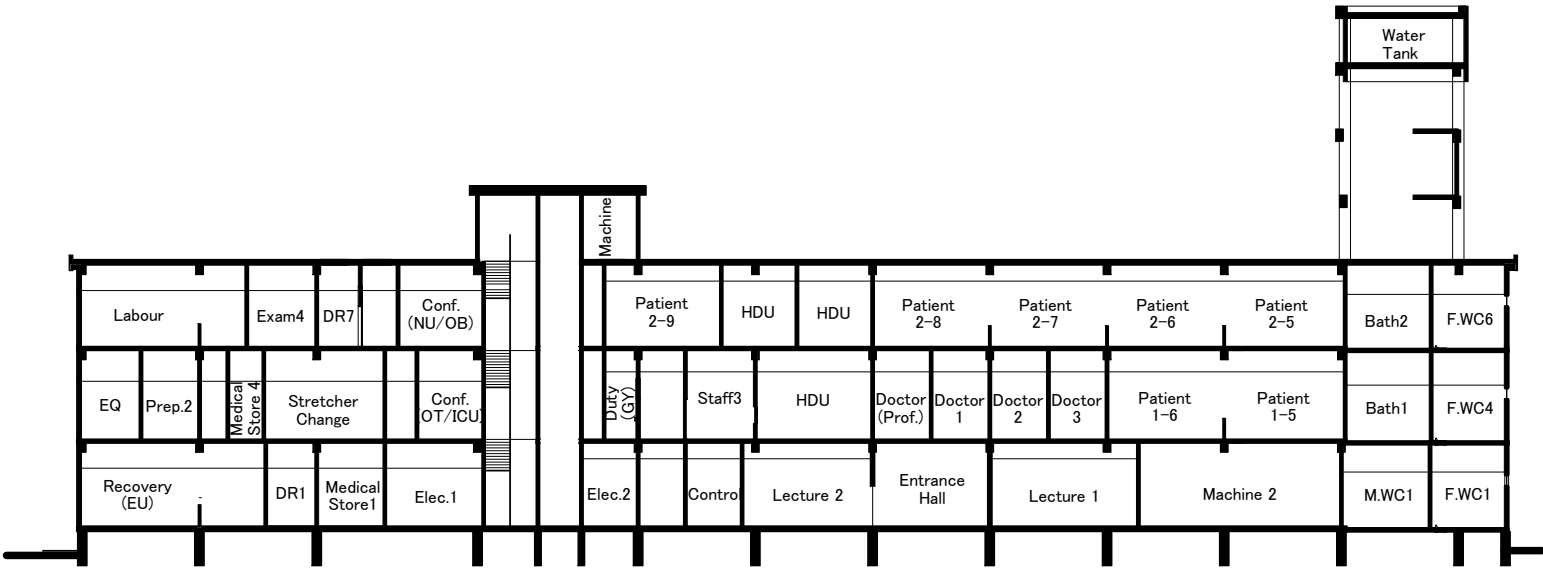
WEST ELEVATION



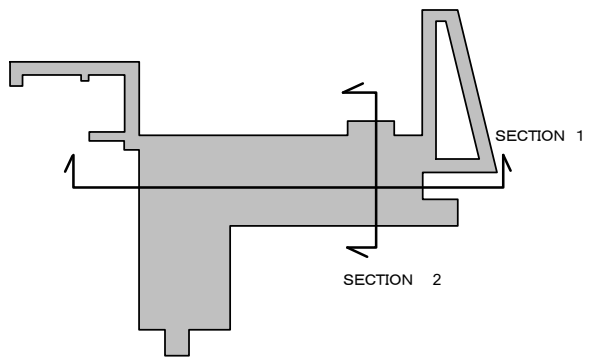
SOUTH ELEVATION



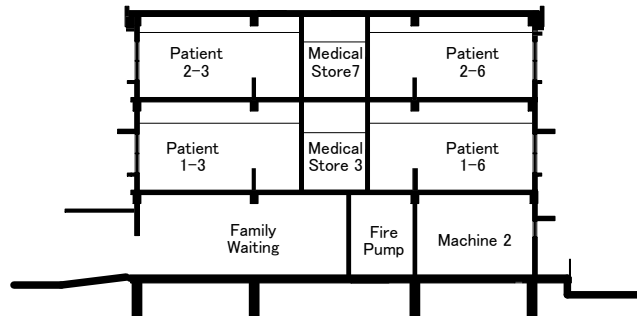
EAST ELEVATION



SECTION 1



KEYPLAN



SECTION 2

- |         |                              |
|---------|------------------------------|
| AL      | Air Lock                     |
| DL      | Delivery                     |
| CH      | Changing                     |
| Conf.   | Conference                   |
| CS      | Clean Store                  |
| DR      | Dirty Room                   |
| Elec.   | Electrical                   |
| EQ      | Equipment                    |
| F       | Female                       |
| GY      | Gynecology                   |
| ICU     | Intensive Care Unit          |
| M       | Male                         |
| ME      | Medical Engineer             |
| NU      | Neonatal Unit                |
| NICU    | Neonatal Intensive Care Unit |
| OB      | Obstetrics                   |
| OT      | Operation Theater Complex    |
| Premat. | Premature                    |
| Prep.   | Preparation                  |
| Proced. | Procedure                    |
| SS      | Staff Station                |

## 2-2-4 Implementation Plan

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

The Project will be implemented in accordance with Japanese Grant Aid Scheme. After the Project is approved by the Japanese Cabinet, the Governments of Japan and Myanmar will sign an Exchange of Notes (E/N), which will be followed by the conclusion of a Grant Agreement (G/A) between JICA and the Government of Myanmar. Subsequently, the Government of Myanmar will enter into a consulting services agreement for the Project with a Japanese consulting firm. Then, detailed design drawings and bidding documents will be prepared for the bidding. The Japanese contractors who will be awarded the relevant contracts will construct facilities and procure and install equipment for the Project.

Those agreements and contracts need to be verified by JICA to become effective under the Grant Aid Scheme.

Once the construction works start, implementation organization will be formed consisting of the implementing agency of the Myanmar side, the Japanese consultant and contractors.

#### (1) Project Implementation Organization

The line agency and the executing agency of the Government of Myanmar for the Project is the Department of Medical Services, MoHS. The responsible officials of the Department of Medical Services will be a signatory of the consultant agreement and contracts for construction works and equipment works. A person in charge of the Project in the Department of Medical Services and the medical superintendent of MgGH will serve as coordinators to manage operations during the implementation of the Project.

#### (2) Consultant

After the E/N and G/A are signed, the Department of Medical Services, MoHS will conclude a consulting services agreement for the Project with a Japanese consulting firm and obtain verification from JICA in accordance with the Grant Aid Scheme. After the agreement is verified, the consultant will prepare detailed design drawings and bidding documents based on this preparatory survey report and meetings with the Department of Medical Services. Eventually, these documents will be explained to the Department of Medical Services to gain their consent.

During the bidding and the construction, the consultant will assist in the bidding process and supervise the construction works based on the detailed design drawings and contract documents. For equipment procurement and installation, the consultant will also assist in the bidding process and supervise delivery, installation, commissioning, and initial operation training of the equipment. The detailed tasks and responsibilities of the consultant are described as follows.

##### 1) Detailed Design

Based on this preparatory survey report, the consultant will prepare a detailed plan, review the equipment plan, and prepare bidding documents consisting of relevant drawings, specifications, instructions to bidders, drafts of contracts for construction works and equipment works. The consultant will also estimate the costs of the construction works and equipment works.



## 2) Assistance in Bidding

The consultant will assist the executing agency in biddings to select contractors. The consultant will also report the results of the biddings to JICA.

## 3) Construction and Procurement Supervision

The consultant will be responsible to confirm whether the contractors perform their works properly as specified in the contracts of the construction works and equipment works and to give them advice and instructions as well as coordinate all parties concerned from an impartial stance to facilitate the smooth implementation of the Project. The major tasks of the consultant are described below:

- Examine and confirm the construction plans, shop drawings, equipment specifications, and other relevant documents submitted by the contractors of the construction works and equipment works;
- Conduct pre-shipment inspection to examine and confirm the quality and performance of the construction materials, furniture, and equipment delivered;
- Ensure that building installations and equipment are delivered and installed and that initial operation training are given and demonstrated;
- Monitor and report the progress of the construction works and equipment works; and
- Witness the commissioning of the completed facilities and equipment.

The consultant will also report the progress of the works, the process of payment, the commissioning of completed facilities and equipment, and other relevant matters to the entities concerned in Japan such as JICA.

## (3) Contractors

Contractors will be selected by open bidding in which only qualified Japanese corporations are eligible to participate. In principle, the lowest bidders of respective biddings for construction works and equipment works will be awarded the contracts with the Department of Medical Services, MoHS. In accordance with the contracts, the contractors will construct facilities, and procure, deliver, and install equipment as well as provide the Myanmar side with initial operation training for the equipment respectively. Additionally, the contractor for equipment works will provide logistic support based on the cooperation with the relevant manufacturers and local agencies so that the MgGH can purchase spare parts and consumable supplies and receive paid technical training after one year from the date when the equipment is handed over to them.

## (4) JICA

Under the Grant Aid Scheme, JICA will conduct necessary operation for monitoring and promoting the Project implementation as the implementing agency of the Government of Japan for the Project.

## (5) Local Consultants and Contractors

Considering various tasks for a Japanese resident supervisor, it is advisable to employ responsible local consultants for the supervision work as assistants.

For construction works, some local contractors who have considerable resource and engineering capability are found and they are acceptable as subcontractors of the Japanese contractor of the construction works.

## 2-2-4-2 Implementation Conditions

### (1) Points to Be Considered for Construction Works

#### 1) Schedule Management

One of the most important points in terms of the schedule management will be works during rainy season from May to October. To secure a temporary work area and service roads where not submerged and to develop a construction plan against precipitation for foundation and external works, etc. will be required in particular.

#### 2) Safety Management

The construction works will be conducted on the premises of the hospital where medical services will have been provided. To secure safety of patients and medical staff of MgGH, security personnel should be deployed at entrances of the premises of the hospital and along internal roads toward the Project site where necessary. Furthermore, the Project site will be temporarily fenced with minimum number of gates in order to control circulation of construction equipment, materials and workers.

#### 3) Anti-theft Measures of Materials

To prevent materials from thefts, a 24-hour security will be introduced to the Project site.

### (2) Points to Be Considered for Equipment Works

The equipment for the Project will include a medium sized high pressure steam sterilizer, LAN cabling between central monitor and each personal patient monitor, which require coordination with construction works at the time of installation. Therefore, it is necessary to control the schedule of installation in close coordination between the consultant and the construction contractor.

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

The Project is implemented by mutual cooperation between the Governments of Japan and Myanmar. The demarcation of responsibilities between the Governments of Japan and Myanmar in the implementation of the Grant Aid Scheme is as follows.

### (1) Undertakings by the Government of Japan

The following undertakings on consulting services, construction of facilities, and procurement and installation of equipment of the Project are to be provided by the Government of Japan.

#### 1) Consulting Services

- Preparation of detailed design of facilities and equipment as well as bidding documents
- Operational support for bidding procedure for selection of the contractors
- Supervision of construction works and delivery, installation, commissioning, and initial operation training of equipment
- Execution of the Soft Component (Technical Assistance) for improvement of maintenance capability of medical equipment

## 2) Facility Construction and Procurement and Installation of Equipment

- Construction of the proposed facilities
- Procurement of construction materials and equipment for the proposed facilities and their transportation and delivery to the Project site.
- Installation, trial run, and adjustment of the equipment procured for the Project
- Initial operation training of the equipment procured for the Project

## (2) Undertakings to be taken by the Government of Myanmar

Undertakings to be taken by the Government of Myanmar are shown in Table 2-19 below.

Table 2-19 Undertakings to be Taken by the Government of Myanmar

Items related to the construction works
Secure a lot of land necessary for the Project
Level the ground of the Project site including demolition of existing buildings and removal of trees
Relocate existing wiring and piping system
Install high voltage lines and a service drop for the new building
Acquire building permission and environmental license
Planting and gardening works around the new building
Items related to the equipment procurement
Relocate necessary existing equipment to the new building
Procure and install medical equipment, general furniture, PCs, OA equipment, white coats, linen and models other than those provided by the Government of Japan
Items related to operation and maintenance
Procure consumables and spare parts required to maintain the facilities and equipment
Utilize and maintain the facilities and equipment properly and effectively
Secure necessary medical personnel
Bear per diem, accommodation and transportation expense for attendees of the soft component (technical assistance) program
Items related to administration procedures
Bear commissions for the Banking Arrangement (B/A), payment to a consultant and contractors, Authorization to Pay (A/P) and amended A/P
Obtain permissions, licenses and other authorizations necessary for the Project
Ensure prompt unloading, customs clearance and tax exemption of the construction material and equipment imported for the Project
Exempt the Japanese nationals and corporate entities and parties concerned from third countries engaged in the Project from customs duties, taxes, and any other levies and charges in Myanmar
Make necessary arrangement for the above-mentioned Japanese nationals and parties concerned from third countries enter into and stay in Myanmar to engage themselves in the Project
Bear all expenses, other than those covered by Japanese Grant budget, necessary for the Project

## 2-2-4-4 Consultant Supervision

### (1) Consultant Supervision

Based on the result of the preparatory survey, the consultant forms a project team to be involved in the whole process of the Project from the detailed design stage to the supervision stage in order to ensure the smooth implementation of services, in accordance with the guidelines for the Grant Aid Scheme.

#### 1) Consultant Supervision Policy

The policies for the supervision of the construction works and equipment works of the Project are as follows:

- Keep in close contact with the responsible persons of the relevant agencies of Myanmar and Japan to ensure that the construction of facilities and the installation of equipment will be completed without delay.
- Give prompt and appropriate advice and instructions to the contractors of construction works and equipment works from an impartial stance.
- Provide proper advice and instructions to the contractors on the operation and maintenance of the facilities and equipment after their installation and commissioning

#### 2) Consultant Supervision Plan

In addition to a resident supervisor and local engineers stationed at the Project site, throughout the construction period including defect notification period, engineers in the following fields will be dispatched to Myanmar according to the progress of the construction.

- |                                  |   |
|----------------------------------|---|
| • Project manager:               | Overall coordination and supervision of process and quality control   |
| • Architect:                     | Explanation of design intent and confirmation of materials  |
| • Structural engineer:           | Confirmation of bearing capacity of soil and structural materials   |
| • Mechanical engineer:           | Explanation of design intent and midterm and final inspection of plumping, air-conditioning and ventilation works |
| • Electrical engineer:           | Explanation of design intent and midterm and final inspection of electrical works                                 |
| • Engineer for final inspection: | Inspection before the expiration of defect notification period after completion of the construction works         |

The following engineers will be dispatched during installation and initial operation training of the equipment:

- |                                    |  |
|------------------------------------|--|
| • Procurement supervisor :         | Supervision of installation<br>Coordination with the building contractor,<br>Supervision of quantity check,<br>Supervision of initial operation training |
| • Inspector for final inspection : | Inspection before the expiration of defect notification period after completion of the equipment works   |

### 3) Procurement Supervision

Procurement supervision consists of the following work:

#### A) Coordination with the contractor and confirmation of equipment production drawing (work in Japan)

The consultant confirms the following items with the contractor and coordinate accordingly: 1) the procurement schedule and its progress (including ordering, inspection, loading, transportation, and installation work) 2) The formation of the contractor (personnel and reporting procedure, etc.) 3) The document required in the contract document (equipment production drawing, layout drawing, and utility list, etc)

#### B) Pre-shipment Inspection (work in Japan)

Some items of equipment will be assembled at the manufacturer factories and shipped to the specified warehouse being packed for export. Therefore for these items, inspection before packing at the manufacturer factories will be took place.

#### C) Pre-loading Inspection (work in Japan or third countries)

The consultant will select third party inspection agencies for the pre-loading inspection, prepare the technical specifications for the inspection and confirm the inspection certificate. After that the consultant will submit the inspection report to the Department of Medical Services, MoHS.

#### D) Procurement supervision (on the Project site)

The consultant will supervise the quantity check, confirmation of procured equipment, installation work, adjustment and commissioning, and initial operation training conducted by the contractor on the Project site. The consultant will also confirm whether manufacturers, models and specifications of the procured equipment meet the contract document for the equipment works. In regard to initial operation training, attendee lists of the training where name, department, and position of attendees are recorded and the completion certificates with instructor's signature will be confirmed. After that, the consultant will submit the acceptance reports of the equipment works to the person in charge of the Project in the Department of Medical Services, MoHS and complete necessary procedures. The procurement supervisor is responsible for the works mentioned above and he or she will be stationed on the Project site during the period from the commencement of the installation work to acceptance and handing over.

#### E) Inspection at the end of the defect notification period (on the Project site)

The procured equipment will be inspected before the expiration of defect notification period and an inspection report will be submitted.

### (2) Construction Management by the Contractor

To complete facilities consistent with the contract documents within the schedule, the contractor will be required to manage the works in collaboration with local contractors smoothly. Understanding the characteristic of the target facilities, the contractor needs to station an experienced construction manager who is familiar with the local conditions in order to materialize the designated quality.

### (3) Procurement Management by the Contractor

Procurement Supervision by the contractor consists of the following works:

#### 1) Confirmation of equipment production drawing (work in Japan)

The contractor will clarify the following items and obtains the consensus from the consultant: 1) the procurement schedule and its progress (including ordering, inspection, loading, transportation, installation work) 2) the formation of the contractor (personnel, procedure of reporting) 3) the document required in the contract document (equipment production drawing, layout drawings, utility list)

#### 2) Pre-shipment Inspection (work in Japan)

The equipment such as image diagnostic equipment will be assembled at the manufacturer factories and shipped to the specified warehouse being packed for export, therefore, pre-shipment inspection will be conducted at the factories before packing. On the other hand pre-shipment inspection for other types of equipment will be conducted at the warehouse specified by the manufacturer or forwarder.

#### 3) Pre-loading Inspection (work in Japan or third countries)

The contractor will attend the pre-loading inspection conducted by the third party inspection agencies appointed by the consultant. After the loading, the contractor will submit the copy of series of shipping document (Bill of Lading, Insurance Policy, Signed Commercial Invoice, Packing List) to the third party inspection agencies. The inspection will be conducted at the shipping port of each procurement country.

#### 4) Procurement supervision (on the Project site)

The contractor will conduct the quantity check, confirmation of procured equipment, installation work, adjustment and commissioning, and initial operation training as specified in the contract document on the Project site under the witness of the person in charge of the Project in the Department of Medical Services, MoHS and the consultant.

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

#### (1) Construction

To secure the quality of the construction works, construction supervision is conducted based on the standards commonly applied in Myanmar or Japanese standard.

Table 2-20 shows the quality control plan for major works.

Table 2-20 Quality Control Plan

Work	Control parameter	Control policy	Inspection method	Standard	Inspection frequency	Recording method
Earth work	Bearing capacity of soil	According to structural plan and spec.		International standard*		Report
	Slope angle		Gauge, visual inspection		As needed	Photos, inspection documents
	Leveling tolerance		Level visual inspection		Same as above	Same as above
	Thickness of replaced soil		Same as above		Same as above	Same as above

Work	Control parameter	Control policy	Inspection method	Standard	Inspection frequency	Recording method
Reinforcement work	Reinforcement cover thickness  Shape tolerance  Tensile test	According to structural plan and spec.	Visual inspection, measurement  Same as above  Sampling at the work site or at the time of shipment	International standard*	As needed  Same as above Every 200t of steel bars of each diameter; three test pieces at each test	Photos, inspection documents Same as above Report
Concrete work	Compression strength  Slump value  Chloride content Air content  Concrete temperature Shape tolerance	According to structural plan and spec.	Test with attendance  Test with attendance  Test with attendance Test with attendance Test with attendance Measurement	International standard*	Three or more test pieces per batch and every 50m <sup>3</sup> Casting  Same as above Same as above Same as above At the time of form removal	Report  Photos, inspection documents Same as above Same as above Same as above Same as above
Masonry work (concrete block)	Compression strength	According to control value of respective fabricators	Test with attendance after the fabricator is selected	International standard*	Once before shipment from the factory	Report
Plastering, painting, roofing, doors and windows works	Materials, storage methods, work methods, mixing, coating thickness, curing, tolerance	According to technical spec.	Same as left	Same as left	As needed	Photos, inspection documents
Plumbing work	Water supply pipes  Drainage pipes	Confirmation of leakage	Water pressure test  Water filling test	International standard*	Inspect at the completion of the work	Report
Electrical work	Cables	According to technical spec.	Insulation test  Conductivity test	International standard*	Inspect at the completion of the work	Report

\*British Standards (BS), American Society for Testing and Materials (ASTM), Japanese Industrial Standards (JIS) and other international standards

## (2) Equipment

Japanese product should be conformed to Pharmaceutical Affairs Law (Japan) and it is confirmed by submitting Marketing Authorization Holder (MAH) certification in order to ensure the quality of medical

equipment.

In connection with the product in third countries, it should be manufactured in a factory conforming to ISO13485 (International Standards for quality assurance of medical equipment).

## 2-2-4-6 Procurement Plan

### (1) Construction

#### 1) Procurement Policy

Most of major construction materials and equipment for the Project are available in Myanmar, then, in principle they will be procured locally. On the other hand, materials which are not available in the local market will be procured from Japan or third countries.

#### 2) Procurement Plan

##### A) Structural Work

Sands and aggregates for structural work and concrete blocks for partition walls will be procured locally. Deforming bars, structural steels, and cements will also be procured in the local market as imported, or the contractor will procure directly from third countries such as Thailand and/or China, etc.

##### B) Finishing Work

Timbers will be procured locally. Aluminum fittings, tiles, metal roof sheets, paint, and glass, etc. will also be procured in the local market as imported, or the contractor will procure directly from third countries such as Thailand and/or China, etc.

##### C) Plumbing Work

Pumps, tanks, sanitary appliance, and pipes, etc. will be procured in the local market as imported, or the contractor will procure directly from third countries such as Thailand and/or China, etc.

##### D) Air Conditioning and Ventilation Work

Chiller units, pumps, air conditioners, fans, and pipes, etc. will be procured in the local market as imported, or the contractor will procure directly from third countries such as Thailand and/or China, etc.

##### E) Electrical Work

Lighting fixtures, power panels, cables / wires, and conduits, etc. will be procured in the local market as imported, or the contractor will procure directly from third countries such as Thailand and/or China, etc.

##### F) Labor

Common building laborers will be recruited around Magway town area. On the other hand, skilled workers will be recruited from big cities such as Yangon and Mandalay.

Table 2-21 shows procurement plan for major construction materials for the Project.



Table 2-21 Procurement Plan for Major Construction Materials

	Procurement location			Note
	Myanmar	Japan	Third countries	
Scaffolding	○		○	Commonly imported from Thailand and China, etc.
Temporary fence	○		○	Same as above
Portland cement	○		○	Same as above
Aggregate	○			
Deforming bar	○		○	Commonly imported from Thailand and China, etc.
Formwork plywood	○		○	Same as above
Concrete block	○			
Structural steel	○		○	Commonly imported from Thailand and China, etc.
Waterproofing material	○		○	Same as above
Light gauge steel	○		○	Same as above
Metal roof sheet	○		○	Same as above
Aluminum fitting	○		○	Same as above
Wooden door and window	○			
Glass	○		○	Commonly imported from Thailand and China, etc.
Tile	○		○	Same as above
Acoustic board	○		○	Same as above
Fiber cement board	○		○	Same as above
Paint	○		○	Same as above
Pump	○		○	Same as above
Pipe	○		○	Same as above
Sanitary appliance	○		○	Same as above
Power panel	○		○	Same as above
Cable, wire and conduit	○		○	Same as above
Lighting fixture	○		○	Same as above
Lightning rod	○		○	Same as above
Elevator	○		○	Same as above
Medical gas pipe	○	○	○	Commonly imported from Thailand, China and Japan, etc.

## (2) Equipment

The equipment for the Project will be basically products made in Japan or Myanmar. In regard to equipment for which it is preferable to procure a product made in third countries considering its maintenance, if the product meets the following conditions, its procurement will be examined:

- There is a local agent or branch office and it is possible to provide maintenance services for the product
- There is no product made in Japan or Myanmar which would possibly inhibit competitive biddings.
- The product is generally used in similar medical facilities in Myanmar
- Maintenance costs for spare parts and consumables of the product are inexpensive

The procurement plan for major equipment is shown in Table 2-22.

Table 2-22 Procurement Plan for Major Medical Equipment

Department	No.	Equipment name	Procurement location		
			Myanmar	Japan	Third countries
Operation theater complex, ICU	2	Anesthesia machine with ventilator		○	○
	5	Blood bank refrigerator		○	
	6	Operation lamp A (two lamps, with camera and display)		○	○
	7	Operation lamp B (two lamps)		○	○
	8	Central monitor		○	○
	11	Defibrillator		○	○
	15	Electrosurgical unit		○	○
	21	Hand scrub station		○	
	41	Operation table A (Hydraulic drive system)		○	
	42	Operation table B(Electronic hydraulic drive system)		○	
	46	Patient monitor A (standard parameters)		○	○
	47	Patient monitor B (standard parameters and EtCO2)		○	○
	61	Ventilator		○	○
Sterilization unit	22	High pressure steam sterilizer M		○	
	23	High pressure steam sterilizer S		○	
Obstetric ward Gynecology ward Delivery Unit	10	CTG		○	○
	11	Defibrillator		○	○
	14	ECG		○	
	46	Patient monitor A (standard parameters)		○	○
	59	Mobile X-ray unit		○	
Neonatal Unit	8	Central monitor		○	○
	9	CPAP unit		○	○
	25	Infant incubator		○	
	26	Infant warmer		○	
	48	Patient monitor C (for neonates)		○	○
	51	Phototherapy unit B (irradiation from upper and lower side )		○	
Emergency Unit	4	Blood gas analyzer		○	○
	8	Central monitor		○	○
	11	Defibrillator		○	○
	14	ECG		○	
	39	Mobile X-ray unit		○	
	46	Patient monitor A (standard parameters)		○	○
	58	Ultrasound scanner		○	
	61	Ventilator		○	○
Others	16	ELISA machine		○	○

#### 2-2-4-7 Initial Operation Guidance / Operational Guidance Plan

After the delivery, installation, and commissioning of equipment is completed, initial operation training will be conducted by the contractor. The consultant supervises that the training is conducted appropriately. The contents of the training and acceptance certificate will be confirmed with the Department of Medical Services, MoHS, the consultant, and the contractor.

#### 2-2-4-8 Soft Component (Technical Assistance) Plan

The training for improvement of medical equipment maintenance capability will be conducted for hospital administrative officers (MS and/or Deputy MS), medical staff in clinical departments, and persons in charge of medical equipment maintenance assigned by MS and other maintenance staff, so that the equipment procured for the Project can be used in good condition for the prescribed period. (See Appendix 5)

#### 2-2-4-9 Implementation Schedule

The following steps will be taken until commencement of the construction works in the implementation of the Project in accordance with the Grant Aid Scheme of the Government of Japan:

- The Governments of Japan and Myanmar will sign E/N and JICA and the Government of Myanmar will conclude G/A.
- JICA will recommend a Japanese consulting firm who conducted the preparatory survey on the Project in principle to the Government of Myanmar.
- The Department of Medical Services, MoHS and the consulting firm will enter into a consulting services agreement.
- The detailed design stage will be followed by bidding procedure. After conclusion of contracts, construction works and equipment works will be commenced.

##### (1) Detailed Design

Based on the preparatory survey, the consultant will make a detailed plan and bidding documents consisting of detailed design drawings, specifications, instructions to bidders, etc. The consultant will have close consultations with the Department of Medical Services, MoHS in the initial and final phase of detailed design stage and submit the final product. Upon their concurrence, detailed design phase will be completed.

##### (2) Bidding

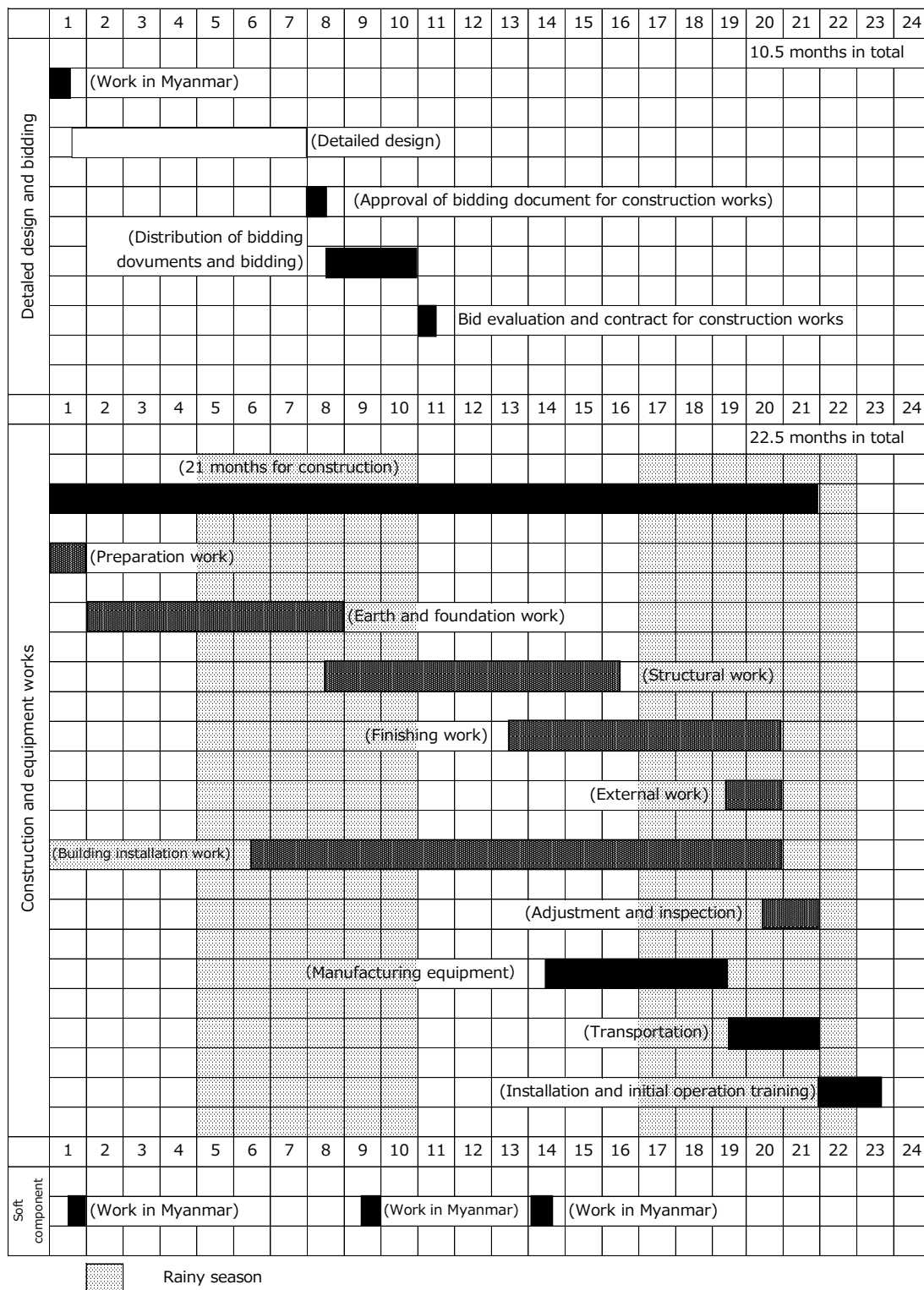
After the detailed design stage, the prequalification (P/Q) of the bidding for the construction works will be announced in Japan. Then, the Department of Medical Services, MoHS will invite the construction companies that meet the P/Q criteria to the bidding. In case that bidding for the equipment works is held separately, the Department of Medical Services, MoHS will invite equipment supply companies to the another bidding. After respective biddings are made properly in the presence of parties concerned, the lowest bidders, whose bids are deemed appropriate, will be awarded the contracts with the Department of Medical Services, MoHS for construction works and equipment works.

##### (3) Construction Works and Equipment Works

After the signing of the contracts, the contractors will obtain verification from JICA to commence construction works and equipment works respectively. Given the scale of the proposed facilities and conditions of local construction situations, approximately 22.5 months in total will be required for construction works, procurement and installation of equipment including initial operation training. This prospect presupposes smooth procurement of materials and equipment and prompt procedures of relevant organizations of the Myanmar side, and smooth implementation of undertakings of the Myanmar side.

Table 2-23 shows implementation schedule of the Project.

Table 2-23 Project Implementation Schedule



## 2-3 Obligations of Recipient Country

The Project will be implemented under the Grant Aid Scheme of the Government of Japan, and the Government of Myanmar will be responsible for the following tasks.

### (1) Items Related to the Construction Works

- Secure a lot of land necessary for the Project
- Level the ground of the Project site including demolition of existing buildings and removal of trees
- Relocate existing wiring and piping system
- Install high voltage lines and a service drop for the new building
- Acquire building permission and environmental license
- Planting and gardening works around the new building

### (2) Items Related to the Equipment Procurement

- Relocate necessary existing equipment to the new building
- Procure and install medical equipment, general furniture, PCs, OA equipment, white coats, linen and models other than those provided by the Government of Japan

### (3) Items Related to Operation and Maintenance

- Procure consumables and spare parts required to maintain the facilities and equipment
- Utilize and maintain the facilities and equipment properly and effectively
- Per diem, accommodation and transportation expense for Soft Component(Technical Assistance) Program attendees

### (4) Items Related to Administration Procedures

- Bear commissions for the Banking Arrangement (B/A), payment to the consultant and contractors, Authorization to Pay (A/P) and amended A/P
- Obtain permissions, licenses and other authorizations necessary for the Project
- Ensure prompt unloading, customs clearance and tax exemption of the construction material and equipment imported for the Project

#### Tax exemption procedure for imported materials for construction works

- First of all, the contractor for construction works will submit a master list (a list of construction materials) and a recommendation letter issued by JICA Myanmar office to the Ministry of Finance through MoHS. Thereafter, tax exemption certificate will be issued from the Ministry of Finance to MoHS. Ministry of Finance will also distribute the tax exemption certificate to concerned custom offices at seaports and/or airports.
- After that, the contractor for construction works will submit necessary documents to the custom department in accordance with required formats.

#### Tax exemption procedure for imported equipment for equipment works

- First of all, the contractor for equipment works will submit invoice, packing list, insurance policy and concerned contract to the Ministry of Finance through MoHS. Thereafter, tax exemption certificate will be issued from the Ministry of Finance to

MoHS. Ministry of Finance will also distribute the tax exemption certificate to concerned custom offices at seaports and/or airports.

—After that, the contractor for equipment works will submit invoice, packing list, insurance policy other related documents to the custom department in accordance with required formats.

- Exempt the Japanese nationals and corporate entities and parties concerned from third countries engaged in the Project from customs duties, taxes, and any other levies and charges in Myanmar
- Make necessary arrangement for the above-mentioned Japanese nationals and parties concerned from third countries enter into and stay in Myanmar to engage themselves in the Project
- Bear all expenses, other than those covered by Japanese Grant, necessary for the Project

## 2-4 Project Operation Plan

### 2-4-1 Operation and Maintenance Plan

#### (1) Operation Structure

It is necessary to deploy medical staff in each department as shown in Table 2-24 so that the new building and equipment of the Project can be utilized appropriately and the required level of medical services can be achieved. It is required to increase the number of medical staff generally in MgGH as the number of beds and operation theaters increases. Currently there is no neonatologist and emergency physician in MgGH, thus medical specialists in these fields are especially required for legitimate medical services. MoHS is currently focusing on the nurture of medical specialists, nurses, technicians, especially emergency physicians who is not common in Myanmar, and also focusing on the in-service education of physicians.

Furthermore it is mentioned in the “Hospital Management Manual” issued in 2011 by Ministry of Health (as of 2011) that the deployment of medical equipment maintenance engineers is mandatory in order to maintain the medical equipment in order.

Table 2-24 Medical Staff Required for the Departments to be Upgraded

Category	O/G	Neonatal unit	Operation			ICU	sterilization	Emergency
			Surgery	Orthopedics	Anesthesiology			
Professor	1	1						
Associate Professor	1			1	1			
Lecturer	3	1						
Assistant Lecturer	4	1	1		1			
Senior Consultant	1							
Junior Consultant								1
Senior Assistant Surgeon					2			1
Assistant Surgeon	5	1	2	3				7
Post Graduate	21		4					
Physicians total	36	4	7	4	4			9
Chief Nurse	4	1			2			2
Nurse	16	8			6	3		12
Trained nurse	20	11			15	5		20
Nurses Total	40	20			23	8		34
Medical Equipment Maintenance Engineer	1							
Medical Assistant	2				6			
Comedical total	3				6			
Sterilizing worker							1	
Worker	6	4			6		1	2
Other staff total	6	4			6		2	2
Grand total	85	28			50	8	2	45

## (2) Maintenance system

### 1) Facilities

Currently an electrical technician and four technicians in charge of plumbing installation are assigned for basic facility maintenance in MgGH. Complicated maintenance and repair works which they cannot cope with are outsourced through the medical superintendent of MgGH. Those technicians will be able to engage in daily maintenance works for the new building, on the other hand repair of building elements and periodical inspections requiring expertise, etc. will be outsourced as is with the existing condition.

### 2) Equipment

Currently an electrical technician is working in MgGH and he can fix minor matters such as replacement of operation lamp bulb in operation theaters or repair of suction machines. For complicated repairs, a repair request is made through the medical superintendent of MgGH to Central Medical Stores Department (CMSD) of the Department of Medical Services, MoHS. In case even CMSD cannot repair the equipment, CMSD calls local agents and ask them to repair it.

At the completion of the Project, necessary medical equipment maintenance engineers are expected to be deployed for MgGH.

## 2-4-2 Maintenance Plan

### (1) Facilities

The maintenance of facilities is categorized into two types: (i) daily cleaning and (ii) repair of parts from wear and tear, damage, and deterioration. The daily cleaning will be able to encourage people to use facilities carefully as well as detect damages and/or malfunctions in early stage. The repair of facilities mainly consists of the renovation and restoration of the interior and exterior finish on the structure. Facilities should be refurbished every decade to retain their functions. Items for regular inspection and repair which affect the life span of facilities will be presented in the Maintenance Manuals submitted by the contractor at the commissioning of the facilities. Detailed inspection and cleaning methods will be also explained at that time.

Regular inspection points are summarized in Table 2-25 below.



Table 2-25 Summary of regular inspection points of facilities

	Inspection and maintenance points	Frequency
Exterior	Restore and repaint exterior walls	Repaint every five years; Restore every three years
	Inspect and restore roofs	Inspect every three years; Restore every ten years
	Clean gutters and drainage surroundings regularly	Every year
	Inspect and repair exterior door and window sealants	Every year
	Inspect and clean ditches, manholes, etc.	Every year
Interior	Renovate the interior	As necessary
	Restore and repaint partition walls	As necessary
	Replace ceiling materials	As necessary
	Adjust doors and windows to fit the openings	Every year
	Replace door handles, hinges, etc.	As necessary
	Periodical inspection for elevators	once three months

## (2) Building Equipment

Daily preventive maintenance before there arises a need to repair defects and replace parts is important for maintaining building equipment. Its lifespan can be extended by normal operation and daily inspection, lubrication, tune-up, cleaning, and repair. Daily maintenance can prevent defects and accidents as well as chain reactions.

Equipment such as a backup generator and water pumps needs periodical inspection and maintenance. It is important for these kinds of equipment to have annual inspection. The general lifespan of major building equipment is shown below in Table 2-26.

Table 2-26 Life span of building equipment

	Equipment	Lifespan
Electrical installations	Distribution board	20~30 years
	LED lamp	20,000~40,000 hours
	Fluorescence lamp	5,000~10,000 hours
	Backup generator	30 years
Plumbing installations	Pump, pipe and valve	15 years
	Tank	20 years
	Sanitary appliance	25~30 years
Air conditioning and ventilation installations	Pipe	15 years
	Exhaust fan	20 years
	Air conditioner	10 years

## (3) Equipment

It is necessary to establish a maintenance formation in the Department of Medical Services, MoHS and MgGH based on the requirements for the medical equipment and medical furniture maintenance described in the “Hospital Management Manual” issued in 2011 by Ministry of Health (as of 2011). The proposed maintenance formation is shown in Table 2-27. The medical equipment is categorized into operation theater, labor room, radiology, clinical laboratory, ICU, laundry, and others in the manual mentioned above.

Table 2-27 Proposed Maintenance Formation

The scope of Department of Medical Services, MoHS	The Scope of Administration department in MgGH	The Scope of Maintenance department in MgGH
<ul style="list-style-type: none"> <li>• To create maintenance plan</li> <li>• To ensure and allocate the budget</li> <li>• To create personnel deployment plan</li> <li>• To create personnel training plan</li> </ul> <p>* Department of medical services will approve for allotment of human resource, budget and implementation policy to be approved by Department of Medical Services after evaluation of requests from hospitals</p>	<ul style="list-style-type: none"> <li>• To arrange the budget requests from each clinical department and apply them to MoHS</li> <li>• To apply personnel plan</li> <li>• To manage inventory list</li> <li>• To hear the situation from each clinical department</li> <li>• To share the information with MS and other administrators (Regular Report)</li> <li>• To plan and implement training (Medical staff, Technicians)</li> <li>• To ask the local agent to repair (Order to manufacturer local agent)</li> </ul>	<ul style="list-style-type: none"> <li>• To clarify the scope of work of MS/the person in charge of the maintenance/ end-users</li> <li>• To manage the inventory list of each clinical department</li> <li>• To instruct on the equipment usage to end users (including daily check and periodical check)</li> <li>• To confirm the lack of parts and consumables</li> <li>• To report the serious malfunction(to the Administration and ask them to apply the repair request)</li> <li>• To adjust or repair the equipment with not so serious malfunction</li> <li>• To identify the malfunction parts</li> <li>• To inspect the repaired equipment on receipt</li> <li>• Notes (for each department)</li> </ul> <p>Operation Theater :</p> <ul style="list-style-type: none"> <li>• To maintain the medical gas station under the supervision of anesthetist, to conduct basic maintenance,</li> <li>• To maintain medical electronic devices</li> </ul> <p>Labor room :</p> <ul style="list-style-type: none"> <li>• the same scope as operation theater</li> </ul> <p>Radiology :</p> <ul style="list-style-type: none"> <li>• To maintain the electrical system by Electrician</li> <li>• To clean up the equipment under the supervision of radiologist</li> </ul> <p>Laboratory :</p> <ul style="list-style-type: none"> <li>• To call CMSD(Central workshop) in case Blood Bank Refrigerator do not work well,</li> </ul> <p>ICU:</p> <ul style="list-style-type: none"> <li>• To maintain the medical gas pipe and ICU equipment by qualified technician</li> </ul> <p>Laundry :</p> <ul style="list-style-type: none"> <li>• To conduct basic maintenance for electrical equipment</li> </ul>

Currently there are some problems with medical equipment maintenance in MgGH such as that daily check is not conducted based on standardized procedure and it is not conducted in a planned manner. Soft Component program will be included in the Project considering problems mentioned above in order to improve the maintenance management system.

## 2-5 Project Cost Estimation

### 2-5-1 Initial Cost Estimation

#### (1) Estimated Cost to Be Borne by the Government of Myanmar

Estimated cost to be borne by the Government of Myanmar during the Project implementation is 1,115,463 thousand MMK as shown in Table 2-28 below.

Table 2-28 Estimated Cost to be Borne by the Government of Myanmar

Item	Estimated cost (thousand MMK)	Estimated cost (thousand JPY)
Level the ground of the Project site including demolition of existing buildings and removal of trees	47,377	4,370
Relocate existing wiring and piping system	37,468	3,456
Install high voltage lines and a service drop for the new building	441,508	40,721
Obtain approval of IEE/EIA if applicable	12,957	1,195
Obtain the planning, zoning, building permit	240,669	22,197
Procure and install general furniture	142,720	13,163
Procure and install medical equipment	104,662	9,653
Planting and gardening works around the new building	13,011	1,200
Per diem, accommodation and transportation expense for Soft Component Program attendees	8,609	794
Allocate medical personnel and employment cost	39,352	3,629
Commissions for Authorization to Pay, payment to a consultant and contractors	27,130	2,502
Total	1,115,463	102,880

#### (2) Conditions for Estimation

Conditions for estimation is assumed as follows:

- Estimation time: March 2016
- Exchange rate: 1USD=119.47JPY  
1MMK=0.09223JPY
- Construction and procurement period: See the Project implementation schedule for the detail design, the bidding, the construction works, and equipment works
- Other: The cost shall be estimated in accordance with Japanese Grant Aid Scheme

### 2-5-2 Operation and Maintenance Cost

#### (1) Operation and Maintenance Cost

Estimated annual operation and maintenance cost for the facilities and equipment is 563,635 thousand MMK as shown in below.

Table 2-29 Estimated operation and maintenance cost (thousand MMK per year)

Item	Estimated expenditures after completion of the Project
1) Human resource	157,406
2) Electricity	32,921
3) Fuel	15,707
4) Medical gas	29,784
5) Facility maintenance	14,067
6) Medicine	283,766
7) Medical materials	23,004
8) Consumables for the equipment	6,980
Total	563,635

Price escalation rate of 36 %<sup>14</sup> up to 2019, when operation of the facilities and equipment will start is included.

#### 【Basis of Calculation】

##### 1) Human Resource

As mentioned in “2-4 Project Operation Plan”, it is necessary to increase the number of medical staffs which would be followed by the increase of personnel cost as shown in Table 2-30 in order to utilize the facilities and the equipment of the Project and provide required medical services appropriately.

Table 2-30 Estimated Increase of Personnel Cost due to the Project (MMK per year)

Category	Salary paid in 2016 <sup>15</sup> (A)	Personnel cost considering price fluctuation (A) x 1.36	Number (person)	Total
Neonatologist	3,720,000	5,059,200	1	5,059,200
General neonatologist	3,000,000	4,080,000	2	8,160,000
Emergency Physician	3,240,000	4,406,400	1	4,406,400
Anesthesiologist	3,600,000	4,896,000	1	4,896,000
Medical Equipment Maintenance Engineer	2,160,000	2,937,600	1	2,937,600
Nurses	1,980,000	2,692,800	49	131,947,200
Total				157,406,400 Approx. 157,406 thousand MMK

##### 2) Electricity

In light of the existing buildings and their electricity charge in MgGH, the electricity charge for the Project is calculated as follows:

<sup>14</sup> Price escalation rate is calculated based on inflation rates of consumer price in the world economic outlook database, April 2016 by IMF

<sup>15</sup> Personnel costs set by MoHS: The data obtained by interview in May 2016

$$39,309,780\text{MMK} \times 7,020\text{m}^2 / 11,400\text{m}^2 \times 1.36 \approx 32,921 \text{ thousand MMK per year}$$

Where it is assumed that the electricity charge of MgGH in 2014 / 15 is 39,309,780 MMK, Total floor area of existing buildings in MgGH is 11,400m<sup>2</sup> and price escalation rate is 36%.

### 3) Fuel

An assumption is made that the backup generator works half an hour every day. Based on this assumption, the annual fuel cost is calculated as follows:

$$56\text{L} / \text{h} \times 0.5\text{h} \times 365\text{days} \times 1,130\text{MMK} / \text{L} \times 1.36 \approx 15,707 \text{ thousand MMK per year}$$

Where it is assumed that the fuel consumption of the generator is 56L / h, operation time a day is 0.5 h, unit price of fuel oil is 1,130MMK / L and price escalation rate is 36%.

### 4) Medical Gas

Medical gas cost (medical oxygen) for the new building is calculated as follows:

$$2,190 \times 10,000\text{MMK} / \text{cylinder} \times 1.36 = 29,784 \text{ thousand MMK per year}$$

Where it is assumed that necessary volume of medical oxygen per year in 7,000 L cylinder is 2,190, unit price of medical oxygen in 7,000 L cylinder is 10,000MMK and price escalation rate is 36%.

### 5) Facility Maintenance

#### A) Building Repair Cost

Although the building repair cost varies each year, the annual average cost for the first 10 years from the completion of the facilities is assumed to be equal to 0.1%<sup>16</sup> of the construction cost of finishing works.

$$4,147 \text{ thousand MMK per year}$$

#### B) Building Equipment Maintenance Cost

Although the cost is rarely incurred for the first five years from the completion of the facilities, the frequency of replacement of spare and defective parts will increase after that. The annual average building equipment maintenance cost for the first 10 years is assumed to be equal to 0.2%<sup>17</sup> of the construction cost of building equipment that needs to be replaced.

$$7,120 \text{ thousand MMK per year}$$

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<sup>16</sup> Average building repair cost for ten years is assumed to be 0.1% of the construction cost of finishing works, considering maintenance cost of similar buildings.

<sup>17</sup> Average building repair cost for ten years is assumed to be 0.2% of the construction cost of building equipment considering maintenance cost of similar buildings.

### C) Elevator Maintenance Cost

Periodical maintenance is fundamental for safety operation of elevators. The annual cost for periodical inspections of two elevators in the new building every three months is as follows:

2,800 thousand MMK per year

Thus, the facility maintenance cost in total 14,067 thousand MMK per year

### 6) Medicine

In 2014/2015 fiscal year, the cost for the medicine used in MgGH was 802,500 thousand MMK. The medicine cost is estimated in Table 2-31 assuming that the consumption of medicine remains the same level.

Table 2-31 Estimated Medicine Cost for the Project

Annual medicine cost	283,766 thousand MMK
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It is estimated based on 36% of price fluctuation rate up to 2019, source: International Monetary Fund (IMF)

Basis of the calculation is as follows;

$$31,240\text{MMK} \times 6,679 \times 1.36 = 283,766 \text{ thousand MMK per year}$$

Where it is assumed that annual medicine cost per inpatient<sup>18</sup> is 31,240 MMK<sup>19</sup>, expected annual number of inpatients in the new building is 6,679<sup>20</sup> and price escalation rate is 36%.

### 7) Medical material cost

Medical materials used in the new building are gauze, syringe, catheter, cotton, and bandages, etc. Annual medical material cost is estimated in Table 2-32.

Table 2-32 Annual Medical Material Cost Used in the New Building

Medical material cost	23,004 thousand MMK
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It is estimated based on 36% of price fluctuation rate up to 2019, source: IMF

### 8) Consumables for Equipment

Medical equipment used in the new building is comprised of the one newly procured under the Project and the other relocated from the existing building by the Myanmar side. Consumables of the medical equipment are shown in Table 2-33 and Table 2-34 below.

<sup>18</sup>Currently medicine for free is distributed only to inpatients at hospitals in Myanmar.

<sup>19</sup>Annual medicine cost per inpatient is calculated by the total medicine cost in 2015 divided as the total number of inpatients in 2015.

<sup>20</sup>It is assumed that number of patients in the obstetrics and gynecology department and neonatal unit will be increase 1.15 times of the number in 2015, the same incremental ration applied to the calculation for the number of patients in the operation theater complex.

Table 2-33 Consumables for Equipment Newly Procured under the Project

No.	Equipment name	Consumables	Necessary Q'ty	Unit cost (MMK)	Total (MMK)
2	Anesthesia machine with ventilator	CO <sub>2</sub> canister 7.2L/set	12 Sets	10,493	125,916
		Patient breathing circuit (25 circuit/set)	4 Sets	29,146	116,584
		Mask (10pcs./set)	4 Sets	12,591	50,364
4	Blood gas analyzer	Reagent kit (1000 tests/pack)	4 Sets	380,065	1,520,260
		Printer paper for 1500 tests(4 rolls/set)	4 Sets	2,332	9,328
		Wash waste bottle (4pcs./set)	12 Sets	32,644	391,728
10	CTG	Belts for doppler transducer (3pcs./set)	1 Set	5,246	5,246
		Gel (250ml x 12pcs./box)	4 Sets	6,995	27,980
		Recording paper (20pack/box)	4 Sets	19,819	79,276
11	Defibrillator	Disposable electrode set (150 pcs./box)	4 Sets	6,383	25,532
		Contact gel (100g x 2tubes/box)	4 Sets	816	3,264
		Recording paper (30m x 10rolls/set)	4 Sets	3,020	12,080
14	ECG	Recording paper (210mm x 30m, 10rolls/ set)	8 Sets	12,241	97,928
		ECG paste (70g x 2 pcs./box)	8 Sets	874	6,992
		Disposable electrodes (pediatric/adult) each 10sets (100pcs. x 5/set)	4 Sets	6,266	25,064
15	Electrosurgical unit	Patient pad , disposable (50pcs./set)	4 Sets	29,146	116,584
25	Infant incubator	Access port cover (20pcs./set)	4 Sets	5,246	20,984
		Filter (5pcs./set)	4 Sets	6,820	27,280
26	Infant warmer	Skin temperature probe (5mm OD Yellow)	4 Sets.	27,980	111,920
		Probe pad(80pcs./box)	8 Sets	5,538	44,304
27	Infusion pump	Infusion set(100pcs./pack)	4 Sets	5,829	23,316
39	Mobile X-ray unit	Dryfilm 14 x 17 (100sheets/pack)	8 Sets	17,488	139,904
46	Patient monitor A (standard parameters)	Disposable ECG electrode for adult (60pcs./box)	20 Sets	2,798	55,960
		Disposable ECG electrode for pediatrics (60pcs./box)	20 Sets	3,498	69,960
		Recording paper 50mm x 30m, 100/box	4 Sets	2,915	11,660
47	Patient monitor B (standard parameters and EtCO <sub>2</sub> )	Disposable ECG electrode for adult (150pcs/box)	8 Sets	6,383	51,064
		Disposable ECG electrode for pediatrics (150pcs/box)	8 Sets	7,869	62,952
50	Photography unit (irradiation from upper side)	Spare fluorescent lamp (10pcs./set)	4 Sets	9,910	39,640
		Eye mask S (12pcs./box)	4 Sets	4,663	18,652
		Eye mask M (12pcs./box)	4 Sets	4,663	18,652
		Eye mask L (12pcs./box)	4 Sets	4,663	18,652
51	Phototherapy unit (irradiation from upper and lower side)	Pad cover (L) 50pcs/box	4 Sets	16,322	65,288
		Pad L	4 Sets	93,267	373,068
		Eye mask M (50pcs/box)	4 Sets	15,855	63,420
		Bili pajama(cot type)	4 Sets	12,824	51,296
54	Suction machine	Suction bottle(3000ml) with cover(float equipped)	4 Sets	13,990	55,960
		Suction bottle(3000ml) with cover(no float)	4 Sets	13,116	52,464
		Suction tube (with adapter)	4 Sets	4,864	19,456
55	Syringe pump	Syringe 10mL (100pcs./pack)	4 Sets	3,031	12,124

No.	Equipment name	Consumables	Necessary Q'ty	Unit cost (MMK)	Total (MMK)
		Syringe 20mL (100pcs./pack)	4 Sets	3,847	15,388
		Syringe 30mL (50pcs./pack)	4 Sets	4,080	16,320
		Syringe 50mL (50pcs./pack)	4 Sets	5,683	22,732
58	Ultrasound scanner	Printer paper (18m x 10 rolls/set)	4 Sets	29,146	116,584
		Gel (300g x 12pcs/box)	4 Sets	29,146	116,584
59	Ultrasound scanner, portable	Printer paper (18m x 10 rolls/set)	4 Sets	29,146	116,584
		Gel (300g x 12pcs/box)	4 Sets	29,146	116,584
61	Ventilator	Respiratory circuit tube set (reusable)	4 Sets	75,780	303,120
Grand total					4,845,998

Table 2-34 Consumables for Equipment Relocated from the Existing Building

Department	Equipment name	Consumables	Necessary Q'ty	Unit cost (MMK)	Total (MMK)
Obstetrics and Gynecology wards	Infant warmer	Skin temperature probe (5mm OD Yellow)	4 Sets	27,980	111,920
		Probe pad(80pcs./box)	8 Sets	5,538	44,304
	Suction machine	Suction bottle(3000ml) with cover(float equipped)	10 Sets	13,990	139,900
		Suction bottle(3000ml) with cover(no float)	10 Sets	13,116	131,160
		Suction tube (with adapter)	20 Sets	4,864	97,280
	Glucose meter	Measurement wire	260 Pcs.	90	23,400
Neonatal unit	Suction machine	Suction bottle(3000ml) with cover(float equipped)	4 Sets	13,990	55,960
		Suction bottle(3000ml) with cover(no float)	4 Sets	13,116	52,464
		Suction tube (with adapter)	8 Sets	4,864	38,912
	Phototherapy unit A	Spare fluorescent lamp (10pcs./set)	29 Sets	9,910	287,390
		Eye mask S (12pcs./box)	30 Sets	4,663	139,890
		Eye mask M (12pcs./box)	30 Sets	4,663	139,890
		Eye mask L (12pcs./box)	30 Sets	4,663	139,890
	Infant warmer	Skin temperature probe (5mm OD Yellow)	10 Sets	27,980	279,800
		Probe pad(80pcs./box)	12 Sets	5,538	66,456
	Infant incubator	Access port cover (20pcs./set)	4 Sets	5,246	20,984
		Filter (5pcs./set)	6 Sets	6,820	40,920
	Infusion pump	Infusion set(100pcs./pack)	4 Sets	5,829	23,316
	Syringe pump	Syringe 10mL (100pcs./pack)	4 Sets	3,031	12,124
		Syringe 20mL (100pcs./pack)	4 Sets	3,847	15,388
		Syringe 30mL (50pcs./pack)	4 Sets	4,080	16,320
		Syringe 50mL (50pcs./pack)	4 Sets	5,683	22,732
Operation theater complex	Ultrasound scanner	Printer paper (18m x 10 rolls/set)	4 Sets	29,146	116,584
		Gel (300g x 12pcs/box)	4 Sets	29,146	116,584
Grand total					2,133,568



The consumable cost for the medical equipment utilized in the new building is shown in Table 2-35.

Table 2-35 Consumable Cost for the Equipment (thousand MMK per year)

The equipment procured under the Project	4,846
The equipment relocated from the existing buildings	2,134
Total	6,980

Most of consumables are overseas product and their price is supposed to be stable, thus price escalation rate is not considered in this estimation.

## (2) Feasibility of Budget Allocation to the Operation and Maintenance

The total operation and maintenance cost of MgGH in 2019 (expected commencement year of the operation of the new building and equipment) is calculated as shown in Table 2-36 below.

Table 2-36 Total estimated operation and maintenance cost of MgGH in 2019 (thousand MMK per year)

item	2015/16	2019/20
Operation and maintenance cost for existing buildings in MgGH	1,766,036	2,401,809 <sup>21</sup>
Operation and maintenance cost for the new building and equipment	-	563,635
Total	1,766,036	2,965,444

It is necessary to maintain the annual growth rate of 13.8%<sup>22</sup> or more from the budget in 2015 / 16 in order to accommodate 2,965,444 thousand MMK as the total operation and maintenance cost of MgGH in 2019. Considering the facts that the average annual increase rate in recent five years in expense is approx. 80%, furthermore its budget has sharply increased nine times in recent five years as shown in Table 2-37 below, it is assumed as reasonable.

Table 2-37 Expense of MgGH in recent five years (thousand MMK)

2011/12	2012/13	2013/14	2014/15	2015/16
193,180	328,095	793,961	1,486,284	1,766,036

<sup>21</sup> Including 36% of price escalation from 2015 to 2019

<sup>22</sup>  $\sqrt[4]{(2,965,444/1,766,036)} \approx 1.138$

## Chapter 3 Project Evaluation

### 3-1 Preconditions

Since the selected land belongs to the Government of Myanmar, there is no hindrance to the land for the Project. It is necessary to monitor the Project site not to be used for other development projects of MgGH until the commencement of the construction works of the Project. As mentioned in “2-3 Obligations of Recipient Country”, the implementation of the Project presupposes smooth execution of undertakings by the Myanmar side such as demolition of the existing buildings, removal of trees and leveling the ground within the Project site, acquisition of building permission and environment license, installation of high voltage lines and a service drop for the Project site, procurement of medical equipment and general furniture, etc. other than those provided by the Government of Japan, per diem, accommodation and transportation expenses for attendees of the soft component (technical assistance) program, tax exemption, and issuance of Banking Arrangement (B/A) and Authorization to Pay (A/P).

### 3-2 Necessary Input by Recipient Country

Following measures shall be taken by the Myanmar side in order to keep effectiveness of the Project.

- Procurement of necessary consumables and spare parts for the facilities and the equipment of the Project
- Recruitment of necessary medical personnel in order to utilize and maintain effectively and appropriately the facilities and the equipment of the Project

### 3-3 Important Assumptions

Following conditions need to be satisfied in order to keep effectiveness of the Project.

- Patients could keep receiving medical services at MgGH with affordable medical costs as a result of the current medical cost reduction policy maintained by MoHS.
- Necessary medical personnel such as emergency physicians and neonatologists who can provide appropriate medical services assumed in the Project would be trained and deployed to MgGH.

### 3-4 Project Evaluation

#### 3-4-1 Relevance

##### (1) Beneficiaries of the Project

Considering that MgGH is the top referral hospital among public hospitals in the Magway Region, the number of beneficiaries of the Project are expected to be the whole population in the Magway District (population in the District: 1.4 million)<sup>1</sup>

##### (2) Contribution to Human Security

It is expected that the service availability among poor and older people would be improved by enhancing medical services of MgGH as a regional medical center. Accordingly, in terms of human security, the Project could contribute to Basic Human Needs and public welfare.

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<sup>1</sup> 2014 Population and Housing Census, Department of Population, Ministry of Immigration and Population

### (3) Contribution to Long Term Health Plan in Myanmar

The Project could contribute to the achievement of the goals of the long term health plan “Myanmar Health Vision 2030” such as “Improvement of health condition of the people”, “Provision of health services to all people” and “Development of medical personnel”, etc.

### (4) Alignment of Policy of Japanese Assistance

The Project coincides with “Assistance to improvement of people’s life” such as healthcare improvement, disaster risk reduction, assistance to the minority and the poor in the field of agriculture, regional development, which is one of the important policies of Japanese assistance.

## 3-4-2 Effectiveness

Expected effects of the Project are as follows;

### (1) Quantitative Effects

Quantitative indicators of which the actual numbers are available as a statistical data at the stage of preparatory survey are shown in Table 3-1. Those indicators were selected to confirm the effectiveness of the Project by improving the facilities and equipment.<sup>2</sup>

Table 3-1 Quantitative Indicators and Target Values

Indicators	Baseline (as of 2015) (case)	Target value (in 2022) three years after project completion (case)
No. of deliveries	1,420	1,633
No. of operation (surgery)	1,572 (0)	1,809 (281)
No. of operation (orthopedics)	1,202 (0)	1,384 (216)
No. of operation (obstetrics and gynecology)	1,868	2,149

Remarks) No. in ( ) is No. of advanced surgical procedures and emergency operations conducted under the well-equipped operation theaters.

### No. of Operations (Surgery and Orthopedics)

The existing operation theaters at MgGH are not properly equipped for advanced surgical procedures such as neurosurgery. On the other hand, cases required to operate under clean environments have been increased recently, such as hematoma because of traffic accident and hernia patients in orthopedics. The operation theaters to be constructed in the Project are expected to contribute to the prevention of postoperative infection for those cases with better cleanliness than the existing. In addition, since those advanced cases can be suitable educational materials for medical students, one of the operation theaters will be equipped with a camera and a monitor to enable medical students to observe the operation fields simultaneously or after operation with recorded video.

### (2) Other Monitoring Indicators

Following indicators, which are mainly influenced by factors except for the facilities and the equipment

<sup>2</sup> See “2-2-1 Examination of Request, (1) Selection Criteria of Clinical Departments” for the calculation of base and target values.

of the Project, or which may be influenced as a secondary effect, though they are not included in the Project, are recommendable to be monitored continuously in order to confirm indirect effects of the Project.

#### 1) No. of Early Neonatal Death and Death Rate

Considering the fact that approx. 50% of the under five mortality rate is caused by the neonatal death in Myanmar, it is deemed that the reduction of neonatal death is also important for the Magway Region where the under five mortality rate is the highest in Myanmar. The Project would contribute to reducing the neonatal death by improving an environment for treatment of premature babies to cope with causes of neonatal death such as birth asphyxia, premature delivery and jaundice. However, the neonatal mortality does not only depend on facilities and equipment, but also depend on the well-functioned referral system (i.e.: it is necessary to convey a patient immediately to save the patient's life) and sufficient medical skills such as neonatal resuscitation. Thus, the neonatal death is not adequate as the quantitative indicator of the Project. Instead, the number of early neonatal death which is death within seven days after birth, currently recorded at the existing obstetrics and gynecology department of MgGH will be monitored in order to confirm its improvement periodically. The number of early neonatal death within seven days and their average for the past three years are as shown in Table 3-2.

Table 3-2 Other Monitoring Indicators – No. of Early Neonatal Death and Death Rate within Seven Days

	2013	2014	2015	Average*
No. of early neonatal death (person)	23	31	48	34
Early neonatal death rate (%)	22.3	17.4	19.5	19.7

Source: MgGH hospital profile    \*Average is calculated by dividing with No. of babies born in MgGH

#### 2) No. of Outpatients at Obstetrics and Gynecology Department

The number of outpatients at the obstetrics and gynecology department may increase as a result of the improvement of the obstetrics and gynecology wards, and the delivery unit, although as mentioned in “Future Development Plan of MgGH” in the chapter 2, the outpatient department will be constructed by the Myanmar side in the future. Therefore, it is not appropriate to include No. of outpatients, which is out of scope of the Project as the quantitative indicator of the Project. The number of outpatients at the obstetrics and gynecology department will be monitored periodically to confirm an indirect effect. The number of outpatients for the past three years and its average are shown in Table 3-3.

Table 3-3 Other monitoring indicators - No. of Outpatients at Obstetrics and Gynecology Department

	2013	2014	2015	Average
No of outpatients	2,586	2,983	5,508	3,692

Source: MgGH hospital profile

### (3) Qualitative Effects

Expected qualitative effects of the Project are shown in Table 3-4. A questionnaire survey to medical personnel and medical students at MgGH after completion of the Project is assumed for the confirmation of the effects. Respondents, who will have been working for MgGH since before the Project, will be requested to answer in comparison with conditions of MgGH before the Project, while other respondents, who will be assigned to work for MgGH after the Project, will be requested to answer in comparison with similar hospitals for which the respondents have worked before.

Table 3-4 Qualitative Effects

1. Circulation of emergency patients, emergency treatment and transportation from the emergency unit to the existing CT room and the operation theaters will be improved by improving the emergency unit.
2. Clinical educational environment will be improved by the facilities and the equipment of the Project.
3. Safer environment of the operation theaters will be provided by the operation theater complex of the Project.
4. It will be possible to receive cases which cannot be treated in the Region by the improved medical services of MgGH.

## Appendices

1. Member List of the Survey Team
2. Survey Schedule
3. List of Parties Concerned in the Recipient Country
4. Minutes of Discussions
5. Soft Component (Technical Assistance) Plan
6. Other Relevant Data
7. References

## 1. Member List of the Study Team

Field Survey 1-1: 10th of January - 6th of February, 2016

Position	Name	Organization
Team Leader	Mr. Taro KIKUCHI	Japan International Cooperation Agency
Coordinator	Ms. Aki HASHIZUME	Japan International Cooperation Agency
Advisor for Medical Services	Ms. Kaori OHARA	National Center for Global Health and Medicine
Project Manager / Architectural Planning	Mr. Hiroaki MOCHIZUKI	Yamashita Sekkei Inc.
Deputy Project Manager / Architectural Planning	Mr. Shingo KURODA	Yamashita Sekkei Inc.
Architectural Design 1-a / Natural Condition Surveys	Mr. Kohei NISHIKAWA	Yamashita Sekkei Inc.
Architectural Design 1-b	Mr. Mineo NAGAOKA	Yamashita Sekkei Inc.
Architectural Design 2	Ms. Fei Kai SHUM	Yamashita Sekkei Inc.
Structural Design 1	Mr. Lennie Naing	Yamashita Sekkei Inc.
Structural Design 2	Mr. Win Min Oo	Yamashita Sekkei Inc.
Mechanical Planning 2	Mr. Norikazu KAMEDA	Yamashita Sekkei Inc.
Mechanical Planning 1	Mr. Anthony AGRIFOGLIO	Yamashita Sekkei Inc.
Construction Planning / Cost Survey 1	Mr. Motoharu YOKOYAMA	Yamashita Sekkei Inc.
Equipment Planning / Operation & Management Planning	Ms. Yasuko ASANUMA	Binko International Ltd.
Procurement Planning / Cost Survey	Mr. Naoki KAYANO	Binko International Ltd.
Health and Medical Care Planning	Ms. Akiko OKITSU	Binko International Ltd.

Field Survey 1-2: 22nd of February - 27th of February, 2016

Position	Name	Organization
Coordinator	Ms. Aki HASHIZUME	Japan International Cooperation Agency
Advisor for Medical Services	Ms. Kaori OHARA	National Center for Global Health and Medicine
Project Manager / Architectural Planning	Mr. Hiroaki MOCHIZUKI	Yamashita Sekkei Inc.
Architectural Design 1-a / Natural Condition Surveys	Mr. Kohei NISHIKAWA	Yamashita Sekkei Inc.
Equipment Planning / Operation & Management Planning	Ms. Yasuko ASANUMA	Binko International Ltd.



## Field Survey 2: 21st of February - 19th of March, 2016

Position	Name	Organization
Project Manager / Architectural Planning	Mr. Hiroaki MOCHIZUKI	Yamashita Sekkei Inc.
Deputy Project Manager / Architectural Planning	Mr. Shingo KURODA	Yamashita Sekkei Inc.
Architectural Design 1-a / Natural Condition Surveys	Mr. Kohei NISHIKAWA	Yamashita Sekkei Inc.
Architectural Design 1-b	Mr. Mineo NAGAOKA	Yamashita Sekkei Inc.
Architectural Design 2	Ms. Fei Kai SHUM	Yamashita Sekkei Inc.
Structural Design 1	Mr. Lennie Naing	Yamashita Sekkei Inc.
Structural Design 2	Mr. Win Min Oo	Yamashita Sekkei Inc.
Mechanical Planning 1	Mr. Akikazu SUGIYAMA	Yamashita Sekkei Inc.
Electrical Planning 1	Mr. Anthony AGRIFOGLIO	Yamashita Sekkei Inc.
Electrical Planning 2	Mr. Fumihiko HIRENZAKI	Yamashita Sekkei Inc.
Construction Planning / Cost Survey 1	Mr. Motoharu YOKOYAMA	Yamashita Sekkei Inc.
Construction Planning / Cost Survey 2	Ms. Yuka KOBAYASHI	Yamashita Sekkei Inc.
Equipment Planning / Operation & Management Planning	Ms. Yasuko ASANUMA	Binko International Ltd.
Procurement Planning / Cost Survey	Mr. Naoki KAYANO	Binko International Ltd.
Health and Medical Care Planning	Ms. Akiko OKITSU	Binko International Ltd.

## Explanation of Draft Final Report for Magway General Hospital: 27th of August - 3rd of September, 2016

Position	Name	Organization
Team Leader	Mr. Kozo WATANABE	Japan International Cooperation Agency
Coordinator	Ms. Aki HASHIZUME	Japan International Cooperation Agency
Project Manager / Architectural Planning	Mr. Hiroaki MOCHIZUKI	Yamashita Sekkei Inc.
Deputy Project Manager / Architectural Planning	Mr. Shingo KURODA	Yamashita Sekkei Inc.
Equipment Planning / Operation & Management Planning	Ms. Yasuko ASANUMA	Binko International Ltd.
Structural Design 2	Mr. Win Min Oo	Yamashita Sekkei Inc.

## 2. Study Schedule

# Field Survey 1-1: 10th of January - 6th of February, 2016

			JICA Officials & Advisor		Project Manager / Architectural Planning	Deputy Project Manager / Architectural Planning	Architectural Design 1-a / Natural Condition Surveys	Architectural Design 1-b	Architectural Design 2	Structural Design 1	Structural Design 2	Mechanical Planning 2	Mechanical Planning 1	Construction Planning / Cost Survey 1	Equipment Planning / Operation & Management Planning	Procurement Planning / Cost Survey	Health and Medical Care Planning
					Mr. Hiroaki MOCHIZUKI	Mr. Shingo KURODA	Mr. Kohei NISHIKAWA	Mr. Mineo NAGAOKA	Ms. Fei Kai SHUM	Mr. Lennie Naing	Mr. Win Min Oo	Mr. Norikazu KAMEDA	Mr. Anthony AGRIFOGLIO	Mr. Motoharu YOKOYAMA	Ms. Yasuko ASANUMA	Mr. Naoki KAYANO	Ms. Akiko OKITSU
1	10 Jan	Sun	TKO-> YGN			TKO-> YGN		BGN-> YGN			TKO-> YGN						
2	11 Jan	Mon	->NPT MTG w/ MoHS			->DWI SVY & MTG in MgGH & RHD	->MWY SVY & MTG in MgGH		->DWI SVY & MTG in MgGH & RHD	->NPT MTG w/ MoHS	->DWI SVY & MTG in MgGH & RHD		->MWY SVY & MTG in MgGH	->NPT MTG w/ MoHS	->MWY SVY & MTG in MgGH		->NPT MTG w/ MoHS
3	12 Jan	Tue	MTG in NPT, ->YGN	->MWY SVY & MTG in MgGH		SVY & MTG in DGH	SVY & MTG in MgGH		SVY & MTG in MgGH	->MWY SVY & MTG in MgGH	SVY & MTG in DGH, IVW w/ Local Firms & Authorities		SVY & MTG in MgGH, IVW w/ Local Firms	->MWY SVY & MTG in MgGH	SVY & MTG in MgGH		->MWY SVY & MTG in MgGH
4	13 Jan	Wed	->MWY	SVY & MTG in MgGH, IVW w/ Local Firms & Authorities		SVY & MTG in DGH, IVW w/ Local Firms & Authorities	SVY & MTG in MgGH, IVW w/ Local Firms & Authorities		SVY & MTG in DGH, IVW w/ Local Firms & Authorities	SVY & MTG in MgGH	SVY & MTG in DGH, IVW w/ Local Firms & Authorities		SVY & MTG in MgGH, IVW w/ Local Firms	SVY & MTG in MgGH			
5	14 Jan	Thu	MTG in MgGH			SVY & MTG in DGH, IVW w/ Local Firms & Authorities	SVY & MTG in MgGH, IVW w/ Local Firms & Authorities		SVY & MTG in DGH, IVW w/ Local Firms & Authorities	MTG in MgGH	SVY & MTG in DGH, IVW w/ Local Firms & Authorities		SVY & MTG in MgGH, IVW w/ Local Firms & Authorities	MTG in MgGH	SVY & MTG in MgGH		MTG in MgGH
6	15 Jan	Fri	MTG in MgGH			SVY & MTG in DGH, IVW w/ Local Firms & Authorities	SVY & MTG in MgGH, IVW w/ Local Firms & Authorities		SVY & MTG in DGH, IVW w/ Local Firms & Authorities	MTG in MgGH	SVY & MTG in DGH, IVW w/ Local Firms & Authorities		SVY & MTG in MgGH, IVW w/ Local Firms & Authorities	MTG in MgGH	SVY & MTG in MgGH		MTG in MgGH
7	16 Jan	Sat	-> YGN			SVY in DGH	SVY in MgGH		SVY in DGH	->YGN	SVY in DGH		SVY in MgGH	->YGN			
8	17 Jan	Sun	-> DWI		TKO-> YGN	Team MTG				->DWI	Team MTG			-> DWI			
9	18 Jan	Mon	MTG in DWI			SVY & MTG in DGH, PLN	SVY & MTG in MgGH, PLN		SVY & MTG in DGH	MTG in DWI	SVY & MTG in DGH, IVW w/ Local Firms & Authorities		SVY & MTG in MgGH	MTG in DWI			
10	19 Jan	Tue	MTG in DWI ->YGN			SVY & MTG in DGH, PLN	SVY & MTG in MgGH, PLN		SVY & MTG in DGH	MTG in DWI		SVY & MTG in DGH, IVW w/ Local Firms & Authorities	SVY & MTG in MgGH	MTG in DWI ->YGN	SVY & MTG in DGH	MTG in DWI	
11	20 Jan	Wed	->NPT MTG w/ MoHS			SVY & MTG in DGH, PLN	SVY & MTG in MgGH, PLN		SVY & MTG in DGH	SVY & MTG in DGH			SVY & MTG in MgGH	->NPT MTG w/ MoHS	SVY & MTG in DGH		
12	21 Jan	Thu	MTG w/ MoHS ->YGN			SVY & MTG in DGH, PLN	SVY & MTG in MgGH, PLN		SVY & MTG in DGH	SVY & MTG in DGH			SVY & MTG in MgGH	MTG w/ MoHS ->NPT	SVY & MTG in DGH	SVY & MTG in DGH	
13	22 Jan	Fri	Team MTG, MTG w/ JEJO YGN->			SVY & MTG in DGH, PLN	->YGN->	SVY & MTG in MgGH, PLN	SVY & MTG in DGH	SVY & MTG in DGH			SVY & MTG in MgGH	Team MTG, MTG w/ EOJ	IVW w/ local firms YGN->	SVY & MTG in DGH	
14	23 Jan	Sat	->TKO	->DWI SVY in DGH	-> MWY SVY in MgGH	SVY in DGH	->TKO	SVY in MgGH	SVY in DGH	SVY in DGH			SVY in MgGH	-> DWI SVY in DGH	-> TKO	SVY in DGH	

			JICA Officials & Advisor	Project Manager / Architectural Planning	Deputy Project Manager / Architectural Planning	Architectural Design 1-a / Natural Condition Surveys	Architectural Design 1-b	Architectural Design 2	Structural Design 1	Structural Design 2	Mechanical Planning 2	Mechanical Planning 1	Construction Planning / Cost Survey 1	Equipment Planning / Operation & Management Planning	Procurement Planning / Cost Survey	Health and Medical Care Planning
				Mr. Hiroaki MOCHIZUKI	Mr. Shingo KURODA	Mr. Kohei NISHIKAWA	Mr. Mineo NAGAOKA	Ms. Fei Kai SHUM	Mr. Lennie Naing	Mr. Win Min Oo	Mr. Norikazu KAMEDA	Mr. Anthony AGRIFOGLIO	Mr. Motoharu YOKOYAMA	Ms. Yasuko ASANUMA	Mr. Naoki KAYANO	Ms. Akiko OKITSU
15	24 Jan	Sun		Team MTG				Team MTG	YGN->MWY	Team MTG			Team MTG			Team MTG
16	25 Jan	Mon		SVY & MTG in DGH, PLN	SVY & MTG in MgGH, PLN	SVY & MTG in DGH, PLN		SVY & MTG in MgGH, PLN	SVY & MTG in MgGH	SVY & MTG in DGH			SVY & MTG in MgGH	SVY & MTG in DGH		SVY & MTG in DGH
17	26 Jan	Tue		SVY & MTG in DGH, PLN	SVY & MTG in MgGH, PLN	SVY & MTG in DGH, PLN		SVY & MTG in MgGH, PLN	SVY & MTG in MgGH	SVY & MTG in DGH			SVY & MTG in MgGH	SVY & MTG in DGH		SVY & MTG in DGH
18	27 Jan	Wed		MTG in DGH ->YGN	MTG in MgGH ->NPT	MTG in DGH ->YGN		MTG in MgGH ->NPT	SVY & MTG in MgGH	MTG in DGH ->YGN	SVY & MTG in DGH		SVY & MTG in MgGH	MTG in DGH ->YGN		MTG in DGH ->YGN
19	28 Jan	Thu		->NPT MTG w/ MoHS	MTG w/ MoHS	->NPT MTG w/ MoHS		MTG w/ MoHS	SVY & MTG in MgGH	->NPT MTG w/ MoHS	SVY & MTG in DGH		SVY in MgGH ->YGN->	->NPT MTG w/ MoHS		->NPT MTG w/ MoHS
20	29 Jan	Fri		->YGN Survey in YGN YGN->				->YGN SVY in YGN YGN->	SVY & MTG in MgGH	->Yangon SVY in Yangon	SVY in DGH ->Yangon->		SVY in YGN	->YGN SVY in YGN YGN->		->YGN SVY in YGN YGN->
21	30 Jan	Sat		->TKO				->TKO	SVY in MgGH ->YGN	SVY in YGN	->TKO		SVY in YGN	->TKO		->TKO
22	31 Jan	Sun							->DGH	DOC			DOC			
23	1 Feb	Mon							SVY & MTG in DGH				SVY in YGN YGN->			
24	2 Feb	Tue							SVY & MTG in DGH				->TKO			
25	3 Feb	Wed							SVY & MTG in DGH							
26	4 Feb	Thu							SVY & MTG in DGH							
27	5 Feb	Fri							SVY in DGH ->YGN->							
28	6 Feb	Sat							->BGN							

## Field Survey 1-2: 22nd of February - 27th of February, 2016

			JICA Official & Advisor	Project Manager / Architectural Planning	Architectural Design 1-a / Natural Condition Surveys	Equipment Planning / Operation & Management Planning	Equipment Planning / Operation & Management Planning	
				Mr. Hiroaki MOCHIZUKI	Mr. Kohei NISHIKAWA	Ms. Yasuko ASANUMA	Ms. Yasuko ASANUMA	
1	22 Feb	Mon		TKO->BKK				
2	23 Feb	Tue		MTG w/ TICA, Pahol Hospital in Kanchanaburi Province				
3	24 Feb	Wed		Team MTG ->NPT				
4	25 Feb	Thu	MTG w/ MoHS					
5	26 Feb	Fri	Team MTG ->BKK->	->YGN SVY in YGN ->BKK->				
6	27 Feb	Sat	->TKO					

## Field Survey 2: 21st of February - 19th of March, 2016

			Project Manager / Architectural Planning	Deputy Project Manager / Architectural Planning	Architectural Design 1-a / Natural Condition Surveys	Architectural Design 1-b	Architectural Design 2	Structural Design 1	Structural Design 2	Mechanical Planning 1	Electrical Planning 1	Electrical Planning 2	Construction Planning / Cost Survey 1	Construction Planning / Cost Survey 2	Equipment Planning / Operation & Management Planning	Procurement Planning / Cost Survey	Health and Medical Care Planning		
			Mr. Hiroaki MOCHIZUKI	Mr. Shingo KURODA	Mr. Kohei NISHIKAWA	Mr. Mineo NAGAOKA	Ms. Fei Kai SHUM	Mr. Lennie Naing	Mr. W/in Min Oo	Mr. Akikazu SUGIYAMA	Mr. Anthony AGRIFOGLIO	Mr. Fumihiko HIRENZAKI	Mr. Motoharu YOKOYAMA	Ms. Yuka KOBAYASHI	Ms. Yasuko ASANUMA	Mr. Naoki KAYANO	Ms. Akiko OKITSU		
1	21 Feb	Sun				TKO->YGN							TKO->YGN			TKO->YGN			
2	22 Feb	Mon				->MWY MTG in MgGH		->MWY MTG in MgGH					->MWY MTG in MgGH			->MWY MTG in MgGH			
3	23 Feb	Tue				SVY & MTG in MgGH						SVY & MTG in MgGH				SVY & MTG in MgGH			
4	24 Feb	Wed				SVY & MTG in MgGH								SVY & MTG in MgGH			SVY & MTG in MgGH		
5	25 Feb	Thu				SVY & MTG in MgGH								SVY & MTG in MgGH			SVY & MTG in MgGH		
6	26 Feb	Fri				SVY & MTG in MgGH								SVY & MTG in MgGH			SVY & MTG in MgGH		
7	27 Feb	Sat				SVY in MgGH								SVY in MgGH			SVY in MgGH		
8	28 Feb	Sun				Team MTG						TKO->YGN		TKO->YGN	Team MTG			Team MTG	FOK ->YGN

			Project Manager / Architectural Planning	Deputy Project Manager / Architectural Planning	Architectural Design 1-a / Natural Condition Surveys	Architectural Design 1-b	Architectural Design 2	Structural Design 1	Structural Design 2	Mechanical Planning 1	Electrical Planning 1	Electrical Planning 2	Construction Planning / Cost Survey 1	Construction Planning / Cost Survey 2	Equipment Planning / Operation & Management Planning	Procurement Planning / Cost Survey	Health and Medical Care Planning
			Mr. Hiroaki MOCHIZUKI	Mr. Shingo KURODA	Mr. Kohei NISHIKAWA	Mr. Mineo NAGAOKA	Ms. Fei Kai SHUM	Mr. Lennie Naing	Mr. Win Min Oo	Mr. Akikazu SUGIYAMA	Mr. Anthony AGRIFOGLIO	Mr. Fumthiko HIRENZAKI	Mr. Motoharu YOKOYAMA	Ms. Yuka KOBAYASHI	Ms. Yasuko ASANUMA	Mr. Naoki KAYANO	Ms. Akiko OKITSU
9	29 Feb	Mon		TKO->YGN		SVY & MTG in MgGH			->MWY SVY & MTG in MgGH			->MWY SVY & MTG in MgGH		SVY & MTG in MgGH		SVY & MTG in MgGH	->MWY SVY & MTG in MgGH
10	1 Mar	Tue		SVY in YGN ->MWY	SVY & MTG in MgGH							SVY & MTG in MgGH		SVY & MTG in MgGH		SVY & MTG in MgGH	
11	2 Mar	Wed		SVY & MTG in MgGH	SVY & MTG in MgGH							SVY & MTG in MgGH		Natural Condition SVYs		SVY & MTG in MgGH	
12	3 Mar	Thu		SVY & MTG in MgGH, IVW w/ Authorities		->YGN	SVY & MTG in MgGH, IVW w/ Authorities					SVY & MTG in MgGH, IVW w/ Authorities		Natural Condition SVYs		SVY & MTG in MgGH	
13	4 Mar	Fri		SVY & MTG in MgGH		SVY in YGN YGN->	SVY & MTG in MgGH					SVY & MTG in MgGH		SVY & MTG in MgGH		SVY & MTG in MgGH	
14	5 Mar	Sat		SVY in MgGH		->TKO	SVY in MgGH					SVY in MgGH		SVY in MgGH		SVY in MgGH ->YGN	SVY in MgGH
15	6 Mar	Sun	TKO->YGN	Team MTG	TKO->YGN		Team MTG	SVY in MgGH ->YGN		TKO->YGN		SVY in MgGH ->YGN		Team MTG	TKO->YGN	->DWI SVY in DGH	SVY in MgGH ->YGN
16	7 Mar	Mon	->DWI SVY & MTG in DGH	SVY & MTG in MgGH, PLN	->DWI SVY & MTG in DGH		SVY & MTG in MgGH, PLN	->DWI SVY & MTG in DGH					SVY & MTG in MgGH, PLN	->MWY SVY & MTG in MgGH	->MWY SVY & MTG in DGH	SVY & MTG in DGH	->DWI SVY & MTG in DGH
17	8 Mar	Tue	SVY & MTG in DGH	SVY & MTG in MgGH, PLN	SVY & MTG in DGH		SVY & MTG in MgGH, PLN	Natural Condition SVYs	SVY & MTG in DGH	SVY & MTG in DGH, IVW w/ Authorities			SVY & MTG in MgGH, PLN	SVY & MTG in MgGH	SVY & MTG in DGH ->YGN	SVY & MTG in DGH	
18	9 Mar	Wed	SVY & MTG in DGH, IVW w/ Authorities	SVY & MTG in MgGH, PLN	SVY & MTG in DGH, IVW w/ Authorities		SVY & MTG in MgGH, PLN	SVY & MTG in DGH, IVW w/ Authorities	SVY & MTG in DGH	SVY & MTG in DGH, IVW w/ Authorities			SVY & MTG in MgGH, PLN	SVY & MTG in MgGH	IVW w/ local firms	SVY & MTG in DGH	
19	10 Mar	Thu	SVY & MTG in DGH, PLN	SVY & MTG in MgGH, PLN	SVY & MTG in DGH, PLN		PLN ->YGN	SVY & MTG in DGH, IVW w/ Authorities	SVY & MTG in DGH	SVY & MTG in DGH, IVW w/ Authorities			SVY & MTG in MgGH, PLN	SVY & MTG in MgGH	IVW w/ local firms, MTG w/ CMSD	SVY & MTG in DGH ->YGN	
20	11 Mar	Fri	SVY & MTG in DGH, PLN	SVY & MTG in MgGH, PLN	SVY & MTG in DGH, PLN		SVY in YGN YGN->	SVY & MTG in DGH	SVY & MTG in DGH	SVY in DGH ->YGN->			SVY & MTG in MgGH, PLN	SVY & MTG in MgGH	IVW w/ local firms YGN->	SVY in YGN YGN->	
21	12 Mar	Sat	SVY in DGH, PLN	SVY in MgGH, PLN	SVY in DGH, PLN		TKO	SVY in DGH ->YGN	SVY in DGH	->TKO			SVY in MgGH, PLN	SVY in MgGH ->YGN	TKO	FOK	
22	13 Mar	Sun	Team MTG, PLN	Team MTG, PLN	Team MTG, PLN			->BGN	SVY in DGH				Team MTG, PLN	->DWI SVY in DGH			
23	14 Mar	Mon	SVY & MTG in DGH, PLN	SVY & MTG in MgGH, PLN	SVY & MTG in DGH, PLN				SVY & MTG in DGH					->YGN	SVY & MTG in DGH		

			Project Manager / Architectural Planning	Deputy Project Manager / Architectural Planning	Architectural Design 1-a / Natural Condition Surveys	Architectural Design 1-b	Architectural Design 2	Structural Design 1	Structural Design 2	Mechanical Planning 1	Electrical Planning 1	Electrical Planning 2	Construction Planning / Cost Survey 1	Construction Planning / Cost Survey 2	Equipment Planning / Operation & Management Planning	Procurement Planning / Cost Survey	Health and Medical Care Planning
24	15 Mar	Tue	Mr. Hiroaki MOCHIZUKI	Mr. Shingo KURODA	Mr. Kohei NISHIKAWA	Mr. Mineo NAGAOKA	Ms. Fei Kai SHUM	Mr. Lennie Naing	Mr. Win Min Oo	Mr. Akikazu SUGIYAMA	Mr. Anthony AGRIFOGLIO	Mr. Fumihiko HIRENZAKI	Mr. Motoharu YOKOYAMA	Ms. Yuka KOBAYASHI	Ms. Yasuko ASANUMA	Mr. Naoki KAYANO	Ms. Akiko OKITSU
			MTG in DGH ->YGN	MTG in MgGH ->NPT	MTG in DGH ->YGN				MTG in DGH ->YGN					SVY in YGN YGN->	MTG in DGH ->YGN		
25	16 Mar	Wed	->NPT MTG w/ MoHS	MTG w/ MoHS	->NPT MTG w/ MoHS				->NPT MTG w/ MoHS					->TKO	->NPT MTG w/ MoHS		
26	17 Mar	Thu	Team MTG						Team MTG						Team MTG		
27	18 Mar	Fri	->YGN MTG w/ JICA, SVY in Similar hospitals YGN->						->YGN						->YGN MTG w/ JICA, SVY in Similar hospitals YGN->		
28	19 Mar	Sat	->TKO												->TKO		

**Explanation of Draft Final Report for Magway General Hospital:  
27th of August - 3rd of September, 2016**

			JICA Officials	Project Manager / Architectural Planning	Deputy Project Manager / Architectural Planning	Equipment Planning / Operation & Management Planning	Structural Design 2	
				Mr. Hiroaki MOCHIZUKI	Mr. Shingo KURODA	Mrs. Yasuko ASANUMA	Mr. Win Min Oo	
1	27 Aug	Sat		TKO->YGN Team MTG	Team MTG	TKO->YGN Team MTG		
2	28 Aug	Sun		TKO->YGN	-> MWY			
3	29 Aug	Mon		MTG in YGN	MTG in MgGH			
4	30 Aug	Tue	MTG in YGN	MTG in MgGH ->NPT				
5	31 Aug	Wed	Team MTG					
6	1 Sep	Thu	MTG w/ MoHS ->YGN					
7	2 Sep	Fri	Team MTG, MTG w/ EOJ YGN ->					
8	3 Sep	Sat	->TKO					

TKO: Tokyo  
YGN: Yangon  
NPT: Nay Pyi Taw  
MWY: Magway  
DWI: Dawei  
BGN: Bagan  
BKK: Bangkok  
EOJ: Embassy of Japan  
MoHS: Ministry of Health and Sports  
RHD: Regional Health Department  
SVY: Survey  
MTG: Meeting  
IVY: Interview  
PLN: Planning  
DOC: Documentation

### 3. List of Parties Concerned in the Recipient Country



## List of Parties Concerned in the Recipient Country

Organization		Name	position
Ministry of Health and Sports	Department of Medical Services	Dr. Myint Han	Director General
		Dr. Thida Kyu	Deputy Director General
		Dr. Aung Win	Deputy Director General
		Dr. Hlay Surp	Deputy Director General
		Dr. Moe Khaing	Director
		Dr. Than Naing Htut	Assistant Director
		Dr. Phet Mon Than	Medical officer
Magway General Hospital	Obstetrics and Gynecology	Dr. U Paw Htun	Medical Superintendent
		Dr. Zin Minn Phway	Assistant Medical Superintendent
		Dr. Saw Kler Ku	Professor
	Pediatrics	Dr. Kyi Kyi Sein	Associate Professor
		Dr. Myo Mo Mo	Associate Professor
		Dr. Yi Yi Khin	Professor
		Dr. Tin Moe Phyu	Associate Professor
		Dr. Cho Cho Win	Senior Consultant
		Dr. Ye Kyaw Pnu	Lecturer
		Dr. Pyo Thartor Htay	Assistant Lecturer
	Radiology Surgical	Dr. Htet Tun Lwin	Assistant Surgeon
		Dr. Than Than New	Senior Consultant
		Dr. Moe Moe Tin	Professor
		Dr. Khaing Khaing Soe	Associate Professor
		Dr. Min Thet	Assistant Lecturer
		Dr. Aye Man	Specialist Assistant Surgeon
		Dr. Thida Myint	Postgraduate Student
	Orthopedics	Dr. Son Hlaing	Professor
		Dr. Soe Win	Associate Professor
		Dr. Zayar Htun	Postgraduate Student
		Dr. Thant Tin Hun	Assistant Surgeon
	Ophthalmology	Daw Khin Laymun	Nurse
	Rehabilitation	Daw Ni Lar Oo	Officer
	Psychiatry	Dr. Myo Kyaw Thu	Specialist Assistant Surgeon
		Daw Man Sye	Sister
	Emergency OPD	Dr. Aung Myint Than	Assistant Surgeon
		Dr. Mye Peint Phyu	Assistant Surgeon
	OT & ICU	Dr. Nai Nai Aung	Senior Consultant
		Dr. Hla Htuy Myint	Specialist Assistant Surgeon
	Administration	Sr. Ae Ae Kyaw	Assistant Surgeon
		U Chit Tin	Technician (Electrical)
		U Ye Tint	Technician (Water supply)
		U Myat Kyaw	Sanitary
Ministry of Agriculture, Livestock and Irrigation	Department of Agricultural Land Management and Statistic	U Paing Paw Tun	Assistant Director
		U Aung Myint Oo	Surveyer
		Electric Power Dept	
		U Kyaw Myint Sein	Township Engineer
Fire Service Department		U Aung Win Sein	Deputy Director
		U Naing Win Tun	

Organization	Name	position
Magway Township	U Htin Aung	Deputy Director
Development Committee	U Sein Than Ngwe	Excutive Engineer
	U Min Min Than	Asstant Engineer
Electric Supply Enterprise (Magway)	U Aye Win	Regional Director, Super Intendent Engineer
	U Htwa Nyunt	District Director, Executive Engineer
	U Kyaw Myint Sein	Township Enginner
Department of Meteorology and Hydrology (Magway)	U Lwin Oo Maung	Director

#### 4. Minutes of Discussions

(1) Field Survey 1-1

**MINUTES OF DISCUSSIONS**  
**ON THE PREPARATORY SURVEY ON THE PROJECT FOR**  
**IMPROVEMENT OF MAGWAY GENERAL HOSPITAL AND DAWEI GENERAL HOSPITAL**  
**IN**  
**THE REPUBLIC OF THE UNION OF MYANMAR**

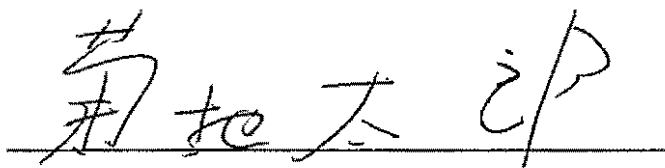
In response to a request from the Government of Republic of the Union of Myanmar (hereinafter referred to as "Myanmar"), the Government of Japan decided to conduct a Preparatory Survey on the Project for Improvement of Magway General Hospital and Dawei General Hospital (hereinafter referred to as "the Project ") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent the Preparatory Survey Team (hereinafter referred to as "the Team") to Myanmar, which is headed by Mr.Taro Kikuchi, Director of Health Division 4, Human Development Department, JICA, and is scheduled to stay in the country from January 10 to January 22.

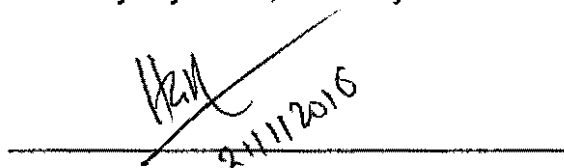
The Team held discussions with the officials concerned of the Government of Republic of the Union of Myanmar and conducted a field survey.

As a result of discussions and field survey, both sides confirmed the main issues described in the attachment. The Team will proceed to further works and prepare the Preparatory Survey Report.

Nay Pyi Taw, January 21st 2016



Mr.Taro Kikuchi  
Team leader  
Preparatory Survey Team  
Japan International Cooperation Agency  
Japan



Dr. Myint Han  
Director General  
Department of Medical Services  
Ministry of Health  
Republic of the Union of Myanmar



## ATTACHMENT

### 1. Objective of the Project

The objective of the Project is to make better the quality of healthcare services and educational environment at Magway General Hospital (MgGH) and Dawei General Hospital (DGH) by developing facilities and providing equipment.

### 2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as "the Preparatory Survey on the Project for Improvement of Magway General Hospital and Dawei General Hospital".

### 3. Project sites

The project sites are located in MgGH and DGH. The proposed layouts of the construction at the sites are shown in the Master Plan (Annex 1)

### 4. Responsible and Implementing Agency

Department of Medical Services, Ministry of Health (MOH).

### 5. Items requested by the Government of the Union of Myanmar

5-1 The requested facilities and the requested equipment are described in Annex-2, but not limited to.

5-2 JICA will assess the appropriateness of the items for approval by the Cabinet of the Government of Japan.

### 6. Japan's Grant Aid

The Myanmar side understands the scheme of Japan's Grant Aid and its procedures described in the Annex 3, 4 and 5 for smooth implementation of the Project as a condition for the Japanese Grant Aid to be implemented. Moreover, the Annex 6, articulating the undertakings to be taken by the Government of Republic of the Union of Myanmar, will be detailed as the Preparatory Survey progresses and shall be agreed at the time of the explanation of the draft Preparatory Survey Report, and then will finally be attached to the Grant Agreement.

## 7. Schedule of the Study

- 7-1. The consultants will continue the first field survey in Myanmar until February 6 2016, and conduct the second survey from February 21 to March 19, 2016.
- 7-2. JICA will prepare a draft Preparatory Survey Report in English and carry out the third survey in order to explain its contents around August 2016.
- 7-3. After the contents of the draft Preparatory Survey Report is accepted in principle and the undertakings described in the Annex 6 are fully agreed by the Myanmar side, JICA will produce the final version and send its copies to the Myanmar side around October 2016.
- 7-4. The above schedule is tentative and subject to change.

## 8. Environmental and Social Considerations

- 8-1. The Myanmar side confirmed to give due environmental and social considerations during the implementation of the Project and after completion of the Project, in accordance with the JICA Guidelines for Environmental and Social Considerations (April, 2010).
- 8-2. The Myanmar side shall confirm the necessary procedures concerning the environmental assessment based on the Guidelines of Initial Environmental Examination (IEE) and the Environmental Impact Assessment (EIA) under the Environmental Conservation Law. If the project is found applicable to the Guidelines, the Myanmar side shall take necessary measures to obtain environmental license before the tender and report it to JICA Myanmar office.

## 9. Necessity of Soft Component

Both sides confirmed the necessity of soft component on basic skills and proper use of the equipment. That will be provided under the Project. The team will examine the appropriateness and make the detailed plan by August 2016.

## 10. Other Relevant Issues

MOH will discuss with the concerned department on the Myanmar side over the guideline for Initial Environmental Examination (IEE) and the Environmental Impact Assessment (EIA) under the Myanmar Environmental Conservation Law.

Japanese side requested the Myanmar side to ensure recruitment and distribution of the sufficient staff in order to provide quality medical services at the both hospitals.

At the level of the MgGH, Japanese side encouraged the Myanmar side to consider facilitating the collaboration with other JICA cooperative operations in the area of medical education.

Japanese side requested the Myanmar side to provide the result of on-going discussion with the international agency that will develop emergency department in DGH.

The deputy minister from the MOH, Myanmar met with the Team during his visit to Dawei and discussed about the Project in DGH. Deputy Minister emphasized that the proposed hospital building in the Project should be at least 3 or 4 storied one, if it is possible since DGH will be upgraded to 500 bedded hospital in the near future. He insisted that the priority of the Project should be the hospital building because the necessary medical equipment will be possibly contributed by the Myanmar side. The Project should be designed in the manner how the concept described in the Annex 2 is realized.

END

Annex 1 Master Plan (MgGH, DGH)

Annex 2 Project Concept

Annex 3 Japan's Grant Aid

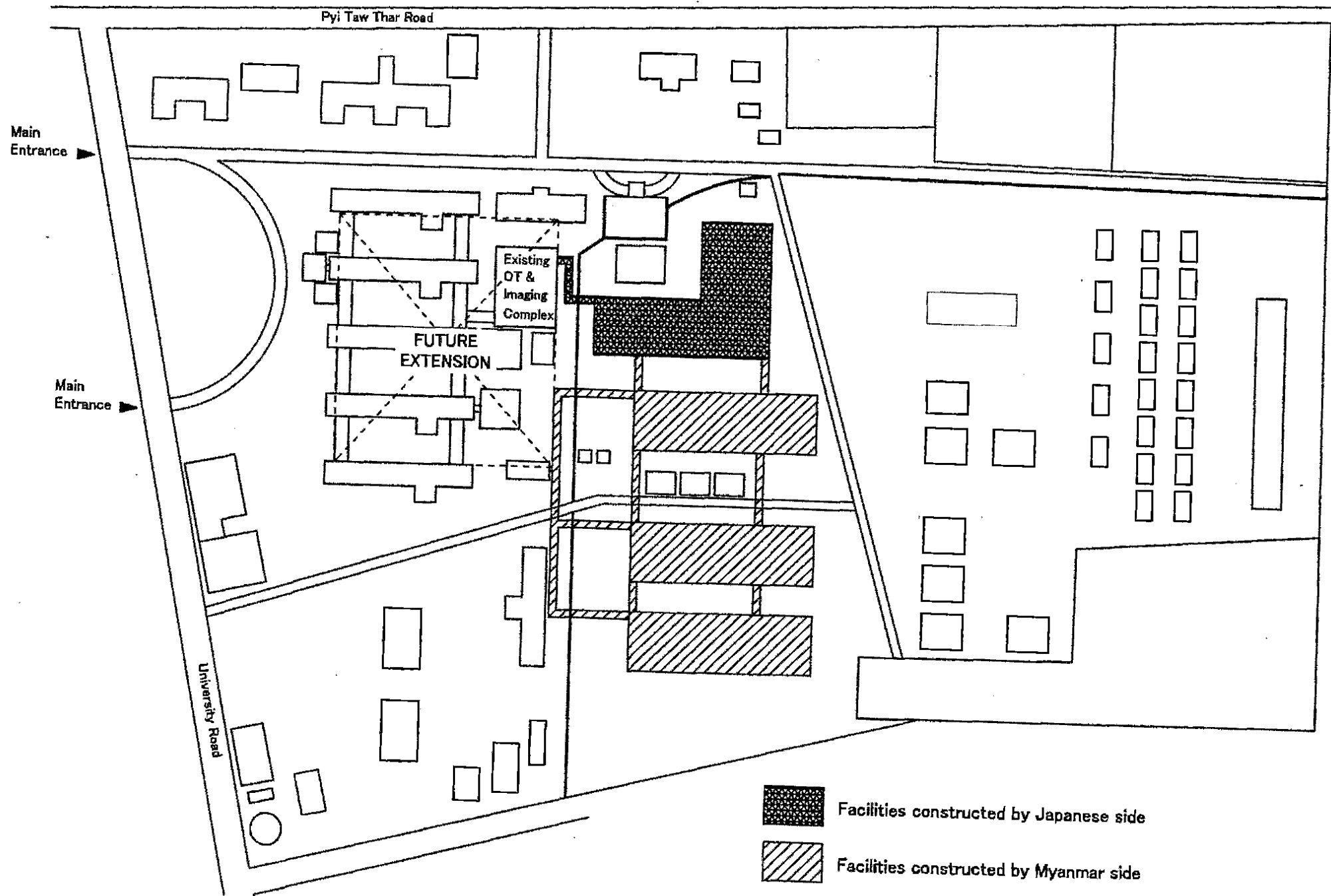
Annex 4 Flow Chart of Japanese Grant Aid Procedures

Annex 5 Financial Flow of Japanese Grant Aid

Annex 6 Major Undertakings to be taken by the Government of Republic of the Union of Myanmar



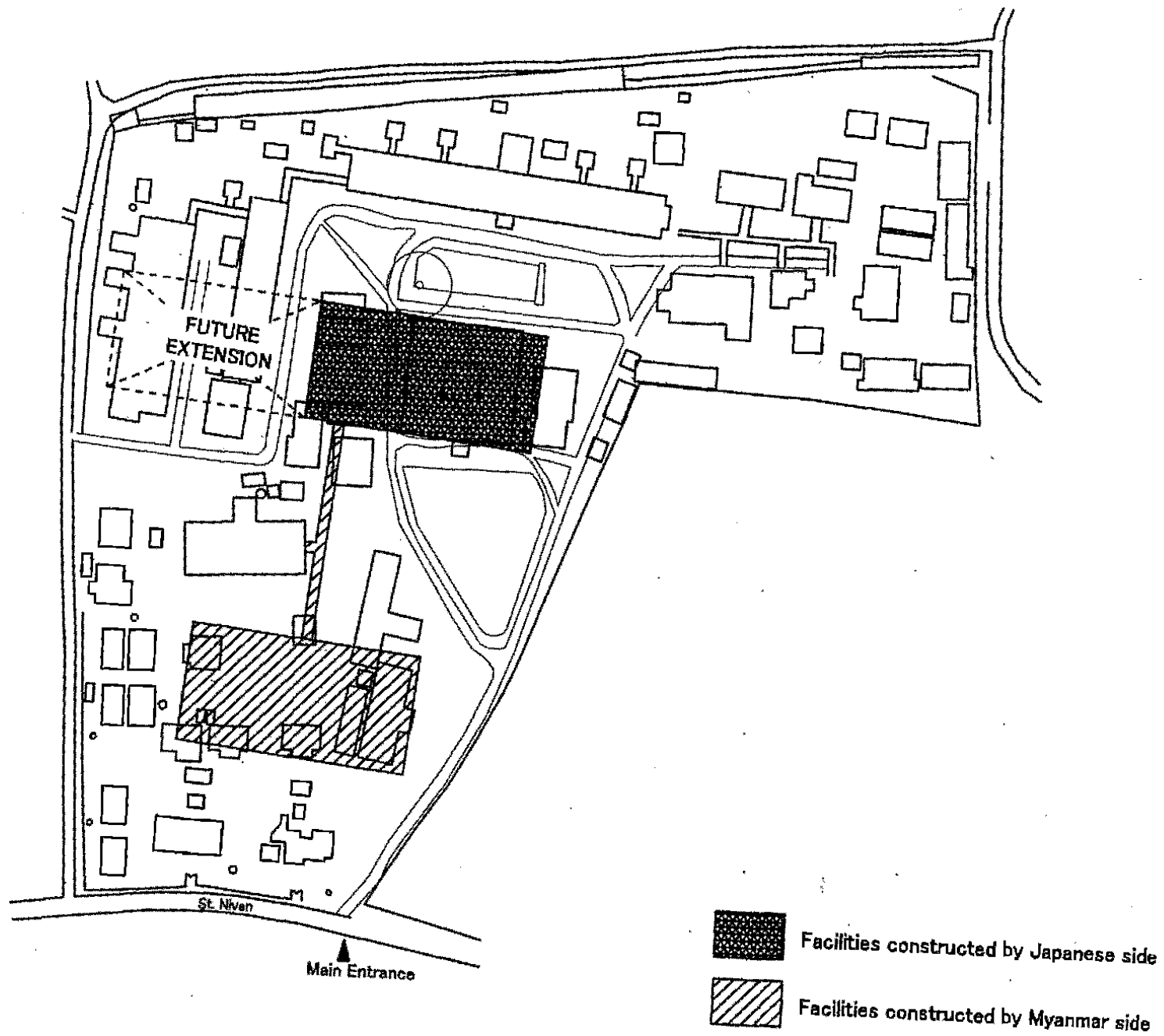
# ANNEX-1 Master Plan (MgGH)



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# ANNEX-1 Master Plan (DGH)



**Concept of the Project for Improvement of Regional General Hospitals**  
**(Magway and Dawei)**

- Universal design of facilities with international standards for delivering patient-centered healthcare services
- Effective utilization of existing facilities and harmonization with the new facilities installed under the Master Plan
- Favorable educational environment provided to human resource for health such as hospital staff and medical students
- Disaster reduction

**1. Facilities**

- Magway General Hospital
  - Obstetrics and Gynecology
  - Neonatal Unit
  - Operation Theater
  - Intensive Care Unit
  - Central Sterile and Supply Department
  - Emergency Room
  
- Dawei General Hospital
  - Out Patient Department
  - Diagnostic Imaging Department (e.g. place for MRI)
  - Emergency Room
  - Operation Theater
  - Central Sterile and Supply Department
  - Intensive Care Unit
  - Laboratory Department including Blood Bank

**2. Equipment**

Essential equipment for better functioning of the above-mentioned facilities.

END

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### **Annex 3: Japan's Grant Aid**

The Government of Japan (hereinafter referred to as "the GOJ") is implementing the organizational reforms to improve the quality of ODA operations, and as a part of this realignment, a new JICA law was entered into effect on October 1, 2008. Based on this law and the decision of the GOJ, JICA has become the executing agency of the Grant Aid for General Projects, for Fisheries and for Cultural Cooperation, etc.

The Grant Aid is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

#### **1. Grant Aid Procedures**

The Japanese Grant Aid is supplied through following procedures:

- Preparatory Survey
  - The Survey conducted by JICA
- Appraisal & Approval
  - Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet
- Authority for Determining Implementation
  - The Notes exchanged between the GOJ and a recipient country
- Grant Agreement (hereinafter referred to as "the G/A")
  - Agreement concluded between JICA and a recipient country
- Implementation
  - Implementation of the Project on the basis of the G/A

#### **2. Preparatory Survey**

##### **(1) Contents of the Survey**

The aim of the preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of a outline design of the Project.
- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant Aid project. The Outline Design of the Project is confirmed based on the guidelines of the Japan's Grant Aid scheme.

JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is



confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

**(2) Selection of Consultants**

For smooth implementation of the Survey, JICA employs (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

**(3) Result of the Survey**

JICA reviews the Report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the appropriateness of the Project.

**3. Japan's Grant Aid Scheme**

**(1) The E/N and the G/A**

After the Project is approved by the Cabinet of Japan, the Exchange of Notes(hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the recipient country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

**(2) Selection of Consultants**

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

**(3) Eligible source country**

Under the Japanese Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When JICA and the Government of the recipient country or its designated authority deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals".

**(4) Necessity of "Verification"**

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

**(5) Major undertakings to be taken by the Government of the Recipient Country**

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as Annex 6.

**(6) "Proper Use"**

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

(7) "Export and Re-export"

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

(8) Banking Arrangements (B/A)

- a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.
- b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

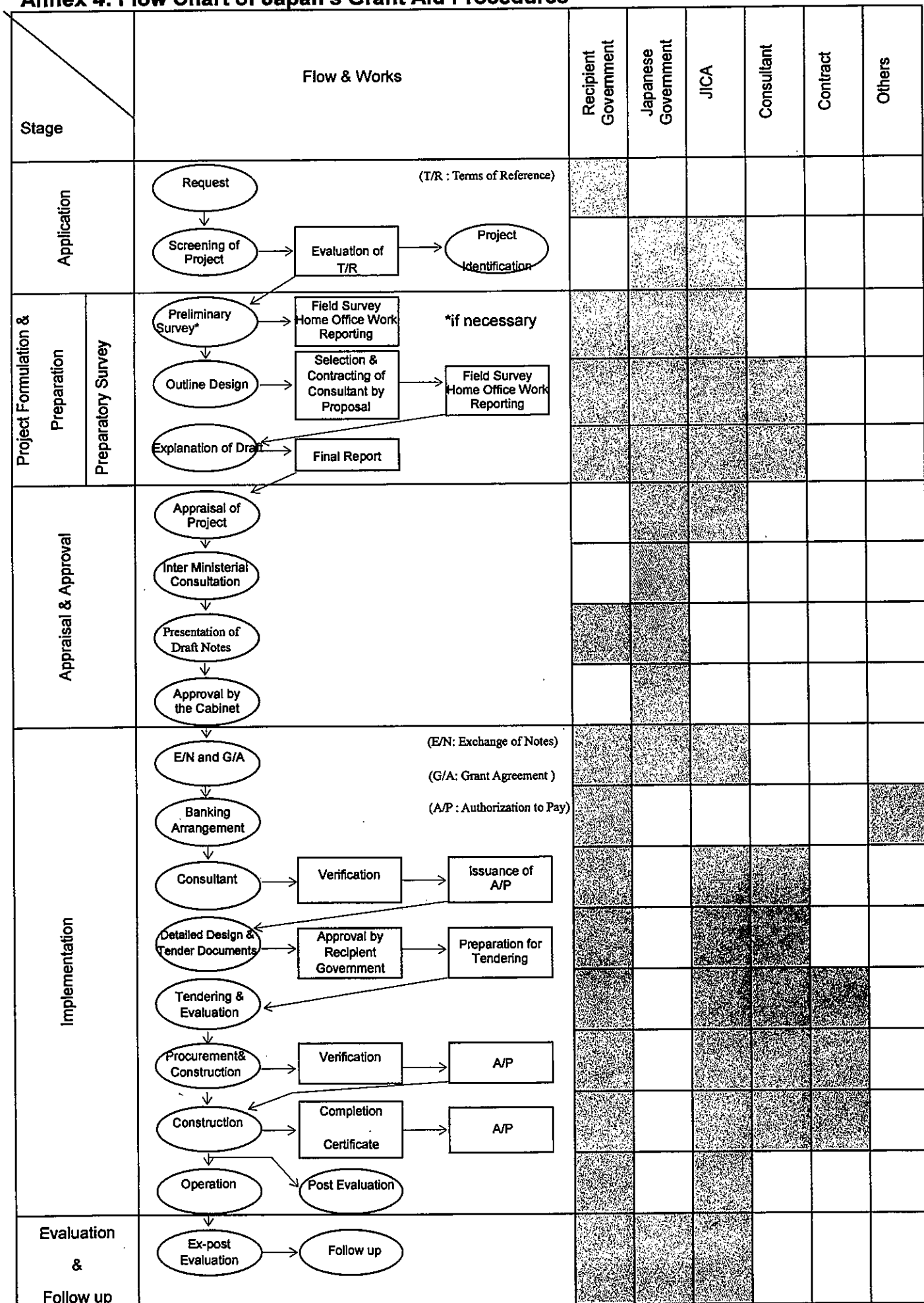
(9) Authorization to Pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

(10) Social and Environmental Considerations

A recipient country must carefully consider social and environmental impacts by the Project and must comply with the environmental regulations of the recipient country and JICA socio-environmental guidelines.

# Annex 4: Flow Chart of Japan's Grant Aid Procedures



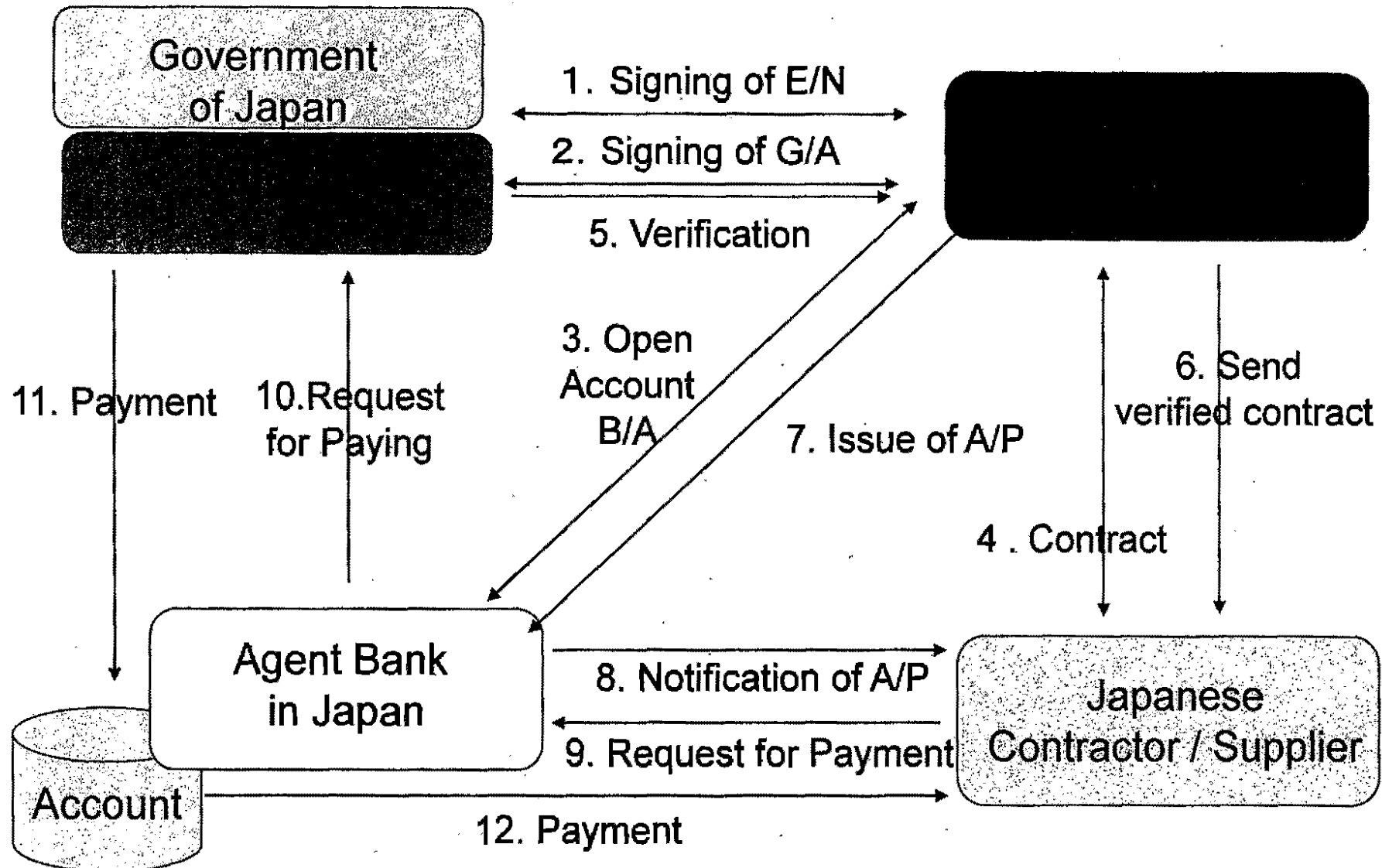
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Annex 5

# Financial Flow of Japan's Grant Aid

11/11



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# Annex 6: Major Undertakings to be taken by the Government of Republic of the Union of Myanmar and covered under Japan's Grant Aid (Draft)

## Major Undertakings to be taken by Government of Republic of the Union of Myanmar

### 1. Before the Tender

NO	Items	Deadline	In charge	Cost	Ref.
1	To open Bank Account (Banking Arrangement (B/A))	within 1 month after G/A			
2	To take necessary measures to obtain environmental license, if confirmed necessary, and report it to JICA Myanmar office.	before notice of the tender document			
3	To secure the Project site including building area and temporary construction yard and stock yard within the Project area	before notice of the tender document			
4	To obtain the planning and/or building permit	before notice of the tender document			
5	To clear, level and reclaim the Project site including removal of the existing buildings, the existing pavement, underground obstacles and trees if necessary	before notice of the tender document			

### 2. During the Project Implementation

NO	Items	Deadline	In charge	Cost	Ref.
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A				
	1) Advising commission of A/P	within 1 month after the signing of the contract			
	2) Payment commission for A/P	every payment			
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country				
	1) Tax exemption and customs clearance of the products at the port of disembarkation	during the Project			
3	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work	during the Project			
4	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be exempted; Such customs duties, internal taxes and other fiscal levies mentioned above include VAT, commercial tax, income tax and corporate tax of Japanese nationals, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract	during the Project			
5	To bear all the expenses, other than those to be borne by the Grant Aid	during the Project			
6	To construct the following facility				
	1) The fences in and around the site	before the completion of the construction			
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities				
	1) Electricity The distributing power line to the site.	6 months before completion of the construction			
	2) Water Supply The city water distribution main to the site, if available	6 months before completion of the construction			
	3) Drainage The city drainage main ( for storm water, sewer and others ) to the site, if available	6 months before completion of the construction			

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	4) Telecommunications Telephone line and Internet line to the MDF and server room in new building, if necessary.	6 months before completion of the construction			
8	To submit environmental monitoring report to JICA Myanmar Office, if applicable	during the Project			

### 3. After the Project

NO	Items	Deadline	In charge	Cost	Ref.
1	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid by: 1) Allocation of sufficient budget for operation and maintenance 2) Training of staff on the specialized medical services 3) Contracting with agents for maintenance of specialized medical equipment and lift 4) Regular collection and proper disposals of medical waste and waste water	after completion of the construction			
2	To appoint and retain sufficient staff with appropriate skills and experiences for operation and maintenance of new facilities and equipment provided under the Grant Aid	after completion of the construction			
3	To provide general furniture and equipment, other than those to be borne by the Grant Aid, if necessary	after completion of the construction			

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)

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## Major Undertakings to be covered under the Japan's Grant Aid

No	Items	Deadline	Cost Estimated (Million Japanese Yen)*	
1	To construct hospital and to procure equipment			
	1) To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country			
	a) Marine(Air) transportation of the products from Japan to the recipient country			
	b) Internal transportation from the port of disembarkation to the project site			
	2) To construct access roads			
	a) Within the site			
	3) To construct the temporary building			
	4) To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities			
	a) Electricity			
	- The drop wiring and internal wiring within the site			
	- The main circuit breaker and transformer			
	b) Water Supply			
	- The supply system within the site ( receiving and/or elevated tanks )			
	c) Drainage			
	- The drainage system ( for toilet sewer, ordinary waste, storm drainage and others ) within the site			
	d) Furniture and Equipment			
	- Project equipment			
2	To implement detailed design, tender support and construction supervision (Consultant)			
	Total			

\*; The cost estimates are provisional. This is subject to the approval of the Government of Japan.

(2) Explanation of Draft Final Report (MgGH)

**Minutes of Discussions**  
**on the Preparatory Survey for the Project for**  
**Improvement of Magway General Hospital and Dawei General Hospital**  
**(Explanation on Draft Preparatory Survey Report)**

On the basis of the discussions and field assessment of the above mentioned survey in the Government of Republic of the Union of Myanmar (hereinafter referred to as " Myanmar") in January, 2016, and the subsequent technical examination of the results in Japan, the Japan International Cooperation Agency (hereinafter referred to as "JICA") prepared a draft Preparatory Survey Report (hereinafter referred to as "the Draft Report") on the Project for Improvement of Magway General Hospital and Dawei General Hospital (hereinafter referred to as "the Project"). The Draft Report herewith presented contains only Magway General Hospital and will add Dawei General Hospital later on.

In order to explain the Draft Report and to consult with the concerned officials of the Government of Myanmar on its contents, JICA dispatched the Preparatory Survey Team (hereinafter referred to as "the Team") to Myanmar, headed by Kozo Watanabe, Deputy Director General, Human Development Department, and is scheduled to stay in the country from 28<sup>th</sup>, August to 3rd, September, 2016.

As a result of the discussions, both sides confirmed the main items described in the attached sheets.

Nay Pyi Taw, 1 September, 2016



Mr. Kozo Watanabe

Leader

Preparatory Survey Team

Japan International Cooperation Agency

Japan



Dr. Myint Han

Director General

Department of Medical Services

Ministry of Health and Sports

The Republic of the Union of Myanmar

## ATTACHEMENT

1. Objective of the Project

The objective of the Project is to make better the quality of healthcare services and educational environment at Magway General Hospital (MgGH) by developing facilities and providing equipment thereby contributing to enhance the quality of people's life in Myanmar.

2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as "the Preparatory Survey for the Project for Improvement of Magway General Hospital and Dawei General Hospital".

3. Line Agency

Both sides confirmed the line agency is Department of Medical Services, Ministry of Health and Sports, which would coordinate with all the relevant agencies to ensure smooth implementation of the Project.

4. Project Site

Both sides confirmed that the site of the Project is in MgGH, which is shown in Annex 1.

5. Contents of the Draft Report

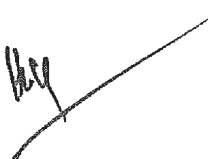
After the explanation of the contents of the Draft Report by the Team, the Myanmar side agreed in principle to its contents.

6. Soft Component of the Project

Considering the sustainable operation and maintenance of the provided facility, technical assistance is planned to be provided under the Project. The Myanmar side confirmed that it would assign necessary number of competent and appropriate C/Ps as described in the Draft Report and their costs.

7. Expected outcomes and Indicators

Both sides agreed that key indicators for expected outcomes are as follows. The Myanmar side has responsibility to monitor the progress of the indicators and achieve the target in year 2022.



[Quantitative Effect]

Indicators	Original (Yr 2015)	Target (Yr 2022)	
		Total No. in MgGH	No. in the Project's facility
Number of delivery (cases)	1,420	1,632	1,632
Number of operations (Surgery)	1,572	1,809	281
Number of operations(Orthopedic)	1,202	1,384	216
Number of operations(Obstetrics/Gynecology)	1,868	2,149	2,149
No. of Ultrasound scanning for Pregnant Women	0 (no data)	4,896	4,896
No. of babies cared by Incubators located at NICU	0 (no data)	146	146

[Qualitative Effect]

- Emergency flow line will be improved by constructing emergency unit in the new building and emergency patients will be treated and transferred to examination room and operation theater complex more effectively.
- Clinical practice environment of medical personnel will be improved through the provision of facilities and equipment.
- Operation will be conducted in safe conditions by constructing operation theater complex.
- Improvement of medical services in MgGH will make it possible to accept patients with difficult diseases.

8. Ex-Post Evaluation

JICA will conduct ex-post evaluation three (3) years after the project completion with respect to five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact, Sustainability) of the Project. Result of the evaluation will be publicized. The Myanmar side is required to provide necessary support for them.

9. Japanese Grant Scheme

The Myanmar side understands the Japanese Grant Scheme and its procedures as described in Annex 2, and necessary measures to be taken by the Government of Myanmar.

10. Project Implementation Schedule

The Team explained to the Myanmar side that the expected implementation

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schedule is as attached in Annex 3.

#### 11. Undertakings Taken by Both Sides

11-1. Both sides confirmed to undertakings described in Annex 4. The Myanmar side assured to take the necessary measures and coordination including allocation of the necessary budget which are preconditions of implementation of the Project. It is further agreed that the costs are indicative, i.e. at Outline Design level. More accurate costs will be calculated at the Detailed Design stage. Contents of Annex 4 will be updated as the Detailed Design progresses, and will finally be used in the contract document.

11-2. To ensure that, especially customs duties and commercial tax, and other fiscal levies which will be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be exempted. If above mentioned duties would not be exempted, those cost would be borne by Ministry of Health and Sports. The Myanmar side confirmed that necessary procedure for tax exemption above mentioned would be taken promptly to avoid delay in implementing the Project.

#### 12. Issues to be Considered for the Smooth Implementation of the Project

Both sides confirmed to the issues to be considered and taken necessary measures for the smooth implementation of the Project described in Annex 5. The Myanmar side clarifies the schedule of budgeting process and take necessary procedure on time.

#### 13. Monitoring during the Implementation

The Project will be monitored and reported every months by the line agency and using the Project Monitoring Report (PMR) in Annex 6.

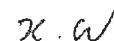
#### 14. Cost Estimation

Both sides confirmed that the project cost estimation described in the Draft Report was provisional and would be examined further by the Government of Japan for its final approval.

#### 15. Confidentiality of the Cost Estimation and Specifications

Both sides confirmed that the project cost estimation and technical specifications in the Draft Report should neither be duplicated nor disclosed to any third parties until







all the contracts of the Project are concluded.

16. Schedule of the Study

JICA will complete the Final Report of the Preparatory Survey in accordance with the confirmed items and send it to the Myanmar side around October.

17. Environmental and Social Considerations

17-1 General Issues

The project is likely to have minimal adverse impact on the environment under the 'JICA Guidelines for Environmental and Social Considerations (April 2010)'.

18. Other Relevant Issues

18-1. Modification of the title of the Project

The Team explained the title of the Project shall be registered respectively as the implementation schedules will be different in each targeted hospital. The possible name of the project for Magway General Hospital will be "the Project for Improvement of Magway General Hospital" and for Dawei General Hospital will be "the Project for Improving Dawei General Hospital". The Myanmar side understood the necessity of modification of the title of the Project. The official title will be finally confirmed in the E/N if the Project will be implemented.

18-2. Schedule of Explanation on the Draft Report for Dawei General Hospital

The team informed that the Explanation on the Draft Report for Dawei General Hospital will be conducted separately in November or December, 2016.

18-3. Disclosure of Information

Both sides confirmed that the study results excluding the Project cost will be disclosed to the public after completion of the Preparatory Survey. All the study results including the project cost will be disclosed to the public after all the contracts for the Project are concluded.

【Annex 1 Project Site】

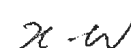
【Annex 2 Flow Chart of Japanese Grant Procedures】

【Annex 3 Project Implementation Schedule】

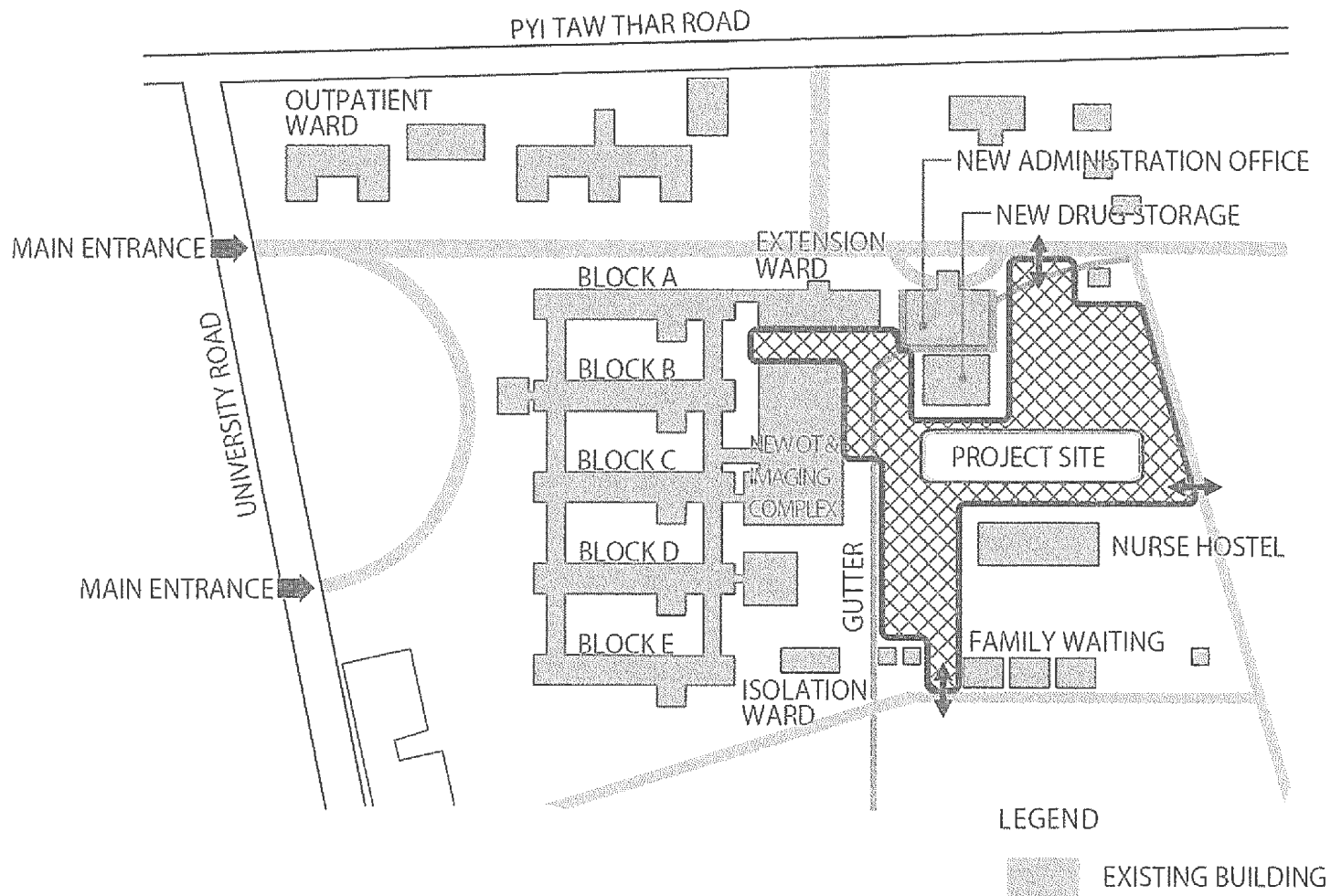
【Annex 4 Major Undertakings to be taken by Each Government】

【Annex 5 Budget Preparation Approval Process】

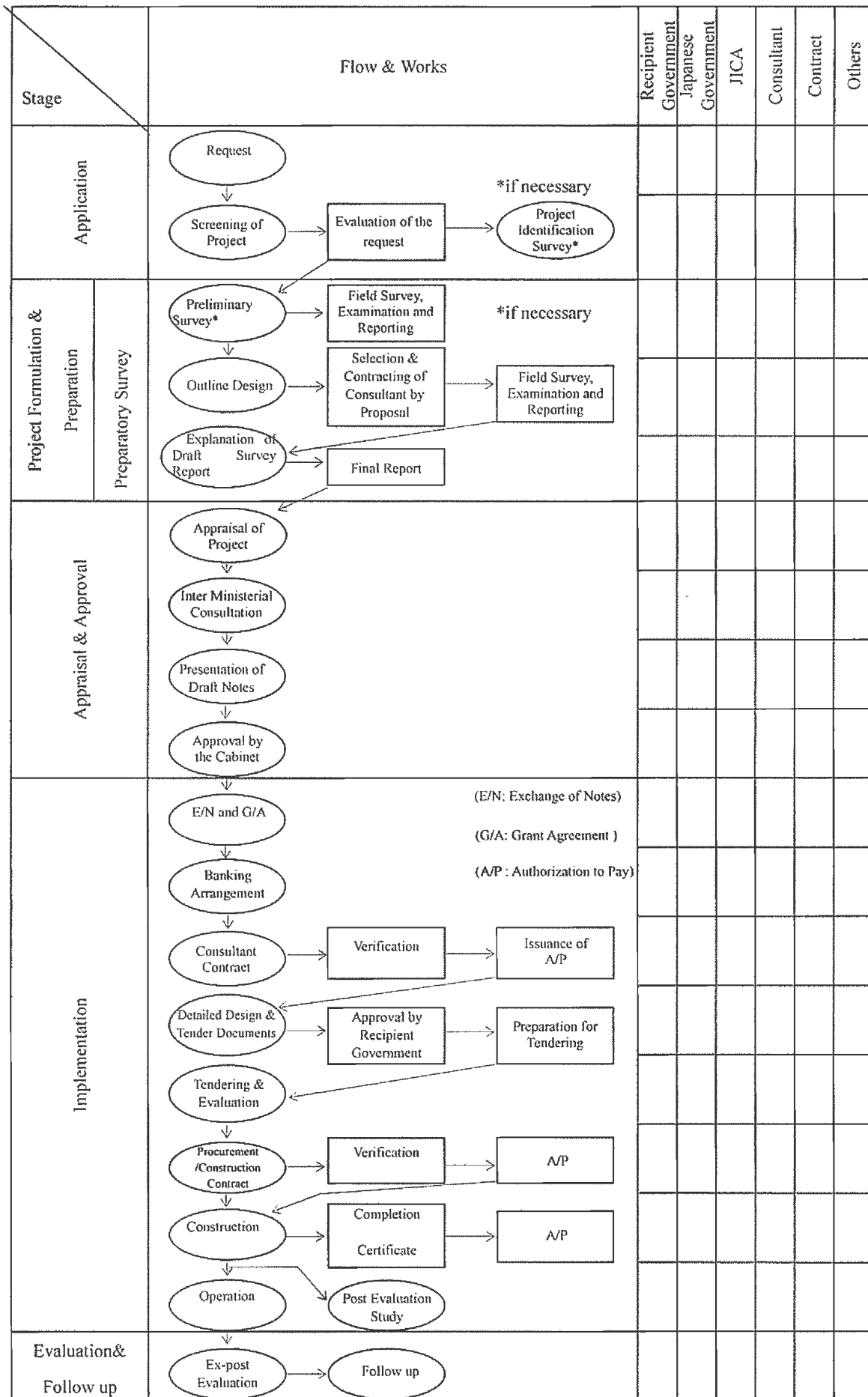
【Annex 6 Project Monitoring Report (template)】



Project Site in MgGH



## FLOW CHART OF JAPANESE GRANT PROCEDURES



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## Major Undertakings to be taken by Recipient Government

## 1. Before the Tender

NO	Items	Deadline	In charge	Cost	Ref.
1	To open Bank Account (Banking Arrangement (B/A))	within 1 month after G/A	MOF		
2	To obtain approval of IEE/EIA if applicable	within 1 month after G/A	MOHS	12,957,000 MMK	
3	To secure the following lands 1) Project site for the new building (approx. 7,000m2) in the Magway General Hospital 2) temporary construction yard and stock yard near the Project area 3) borrow pit and disposal site near the Project area	before notice of the tender document	MOHS		
4	To clear, level and reclaim the following sites 1) Demolition and reconstruction out of the Project site -Building for kitchen for the existing ward -Building for bathroom for the nurse quarter -Building for kitchen for the nurse quarter -Washing are for the nurse quarter -Fence for the nurse quarter -Septic tank for the extension ward 2) Diversion of supply line -Power supply line -Water supply line 3) Removal of trees in the Project site 4) Vacation of the office room on the ground floor in the OT & imaging complex	before notice of the tender document	MOHS	84,845,000 MMK	
5	To obtain the planning, zoning, building permit	before notice of the tender document	MOHS	240,669,000 MMK	
6	To submit the result of DD	end of DD	MOHS		
7	To take necessary procedures for budgetary requests	See Annex 5	MOHS		

## 2. During the Project Implementation

NO	Items	Deadline	In charge	Cost	Ref.
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A				
	1) Advising commission of A/P	within 1 month after the signing of the contract and the agreement	MOHS	165,000 MMK	
	2) Payment commission for A/P	every payment	MOF	26,965,000 MMK	
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country				
	1) Tax exemption and customs clearance of the products at the port of disembarkation	during the Project	MOHS		
	2) Internal transportation from the port of disembarkation to the project site	during the Project			

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3	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work	during the Project	MOHS		
4	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the Products and/or the Services be exempted; Such customs duties, internal taxes and other fiscal levies mentioned above include VAT, commercial tax, income tax and corporate tax of Japanese nationals, resident tax, fuel tax, but not limited, which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract	during the Project	MOHS MOF		
5	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment	during the Project	MOHS		
6	To submit Project Monitoring Report.	every month	MOHS		MD
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities				
	1) Electricity Install high voltage lines and a service drop for the new building	1 month before completion of the construction	MOHS	441,508,000 MMK	
	2) General furniture Procure and install general equipment	1 month after completion of installation work of the equipment by Japanese side	MOHS	113,020,000 MMK (2019)	
	3) Medical equipment Procure and install medical equipment	1 month after completion of installation work of the equipment by Japanese side	MOHS	104,662,000 MMK (2019)	
	4) Planting and gardening Planting and gardening works around the new building	1 month after completion of installation work of the equipment by Japanese side	MOHS	13,011,000 MMK	
8	To ensure that proper personnel will be allocated for utilizing equipment effectively				
	1) Soft Component Per diem, accommodation and transportation fee for Management Guidance Program attendees	during implementation of the Soft Component by Japanese side	MOHS	8,609,000 MMK	
	2) Medical personnel Allocate medical personnel and employment cost	1 month before commencement of installation work of the equipment by Japanese side	MOHS	12,090,000 MMK (2019)	

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### 3. After the Project

NO	Items	Deadline	In charge	Cost	Ref.
1	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of maintenance cost 2) Operation and maintenance structure 3) Routine check/Periodic inspection	After completion of the construction	MOHS	122,784,000 MMK annually	

(B/A: Banking Arrangement, A/P: Authorization to pay, N/A: Not Applicable)



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## Major Undertakings to be Covered by the Japanese Grant

No	Items	Deadline	Cost Estimated (Million Japanese Yen)*	
1	To construct facilities and procure equipment - Facilities - Equipment		This page is closed due to the confidentiality	
1)	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country			
a)	Marine(Air) transportation of the products from Japan to the recipient country			
b)	Internal transportation from the port of disembarkation to the project site			
2)	To construct access roads			
a)	Within the site			
3)	To construct the temporary building			
4)	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities			
a)	Electricity			
-	The drop wiring and internal wiring within the site			
-	The main circuit breaker and transformer			
b)	Water Supply			
-	The supply system within the site ( receiving and/or elevated tanks )			
c)	Drainage			
-	The drainage system ( for toilet sewer, ordinary waste, storm drainage and others ) within the site			
d)	Furniture and Equipment			
-	Project equipment			
2	To implement detailed design, tender support, supervision and soft component (Consultant)			
3	Contingencies			
	Total			

\*; The cost estimates are provisional. This is subject to the approval of the Government of Japan.



## Annex 5

### Total estimated costs to be included in the budget proposal for parliament's approval

An implementing agency of the Government of Myanmar is responsible for submitting a budget proposal to be approved for the next fiscal year's (FY) budget or the current year's supplementary budget. The budget proposal shall include both estimated costs borne by the Government of Myanmar and the grant provided by the Government of Japan. If the proposed budget spans multiple years, it must be appropriated and approved for each fiscal year.

\*Expenses to be borne by the Government of Myanmar are subject to change depending on the progress of project implementation. The actual amount to be requested each FY shall be amended accordingly.

#### Magway General Hospital

	FY2016	FY2017	FY2018	FY2019	FY2020
Expenses to be borne by the Government of Myanmar	13,123 Thousand MMK	327,327 Thousand MMK	12,353 Thousand MMK	699,136 Thousand MMK	6,562 Thousand MMK
Grant to be provided by the Government of Japan	This page is closed due to the confidentiality				
Amount to be requested each FY for budget approval					
Total project expenses					

### Budget preparation/approval process in Myanmar

Budget proposal for next fiscal year	Budget proposal for supplementary budget of current year	Process
August - October	August	Line ministries and departments prepare and submit budget proposal to the Ministry of Planning and Finance (MOPF)
September - December	September - October	The Budget Department scrutinizes and compiles budget proposals, which are to be vetted by a Vice-President and submitted to the Financial Commission
December - January	October - November	The Financial Commission discusses the budget proposals and submits them to the Cabinet with recommendations
December to January	October - November	Union Budget Bill is discussed and approved by the Cabinet
January - March	November	Union Budget Bill is discussed and approved by Pyidaungsu Hluttaw
March	December	Union Budget Law is enacted by Pyidaungsu Hluttaw and approved by the President
April -	December	MOPF allocates budget to each ministry for execution

\*The schedule is subject to change every year.

\*\*If the budget proposal cannot be processed and approved at the above-mentioned timings, the implementation agency shall seek alternative ways to secure the necessary budget.

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**Project Monitoring Report**  
**on**  
**Project Name**  
**Grant Agreement No. XXXXXXXX**  
20XX, Month

**Organization Information**

<b>Authority (Signer of the G/A)</b>	<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> Person in Charge <div style="border-bottom: 1px solid black; margin-bottom: 5px; text-align: center;">(Division)</div> Contacts      Address: <div style="border-bottom: 1px solid black; width: 100%;"></div> Phone/FAX: <div style="border-bottom: 1px solid black; width: 100%;"></div> Email: <div style="border-bottom: 1px solid black; width: 100%;"></div>
<b>Executing Agency</b>	<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> Person in Charge <div style="border-bottom: 1px solid black; margin-bottom: 5px; text-align: center;">(Division)</div> Contacts      Address: <div style="border-bottom: 1px solid black; width: 100%;"></div> Phone/FAX: <div style="border-bottom: 1px solid black; width: 100%;"></div> Email: <div style="border-bottom: 1px solid black; width: 100%;"></div>
<b>Line Agency</b>	<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> Person in Charge <div style="border-bottom: 1px solid black; margin-bottom: 5px; text-align: center;">(Division)</div> Contacts      Address: <div style="border-bottom: 1px solid black; width: 100%;"></div> Phone/FAX: <div style="border-bottom: 1px solid black; width: 100%;"></div> Email: <div style="border-bottom: 1px solid black; width: 100%;"></div>

**Outline of Grant Agreement:**

<b>Source of Finance</b>	Government of Japan: Not exceeding JPY _____ mil. Government of (_____): _____
<b>Project Title</b>	THE PROJECT FOR IMPROVEMENT OF MAGWAY GENERAL HOSPITAL IN MAGWAY REGION
<b>E/N</b>	Signed date: _____ Duration: _____
<b>G/A</b>	Signed date: _____ Duration: _____

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## 1: Project Description

### 1-1 Project Objective

In response to the request from the Government of Myanmar, the Government of Japan dispatched a preparatory survey team to Myanmar for the Project from January to March 2016. Through a series of discussions, they confirmed that this hospital development project should be implemented based on the following principles:

- Universal design of facilities for providing patient-centered healthcare services;
- Effective utilization of existing buildings and harmonization with the new building based on a future development plan;
- Favorable educational environment provided to medical personnel including hospital staff and medical students; and
- Facility design for disaster risk reduction to be adopted.

### 1-2 Necessity and Priority of the Project

- Consistency with development policy, sector plan, national/regional development plans and demand of target group and the recipient country.

The Magway Region has the highest under-five mortality rate in Myanmar at 1081 per 1,000 live births far above the national average of 72. The maternal mortality rate per 100,000 live births is also higher in the region at 286 than the national average of 2552. These health indicators suggest that it is particularly urgent to improve maternal and child healthcare services in the Magway Region. Meanwhile, the medical services of MgGH have been degraded due to the deterioration and damage of facilities and equipment and due to the lack of beds as demonstrated by the bed occupancy rate exceeding 100%. In other words, some patients under treatment are forced to be discharged and are not able to take necessary operations in some case, thus it is deemed that improvement of facilities in MgGH is significant. Also, due to lack of facilities, equipment and medical specialists, some patient are not received or referred to other medical institutions in Mandalay, approximately 300km away from Magway. In this sense, MgGH cannot fulfill its responsibilities as a regional hub hospital. Moreover, because circulation of patients and medical staff is not adequately considered in the existing buildings, challenges in the provision of adequate medical services such as long transfer time for emergency patients are observed. In addition, educational environment for medical personnel is not favorable due to lack of conference and lecture rooms for hospital staff and students. In these circumstances, the Project for Improvement of Magway General Hospital (hereinafter referred to as "the Project") will be implemented to achieve the overall goal of quality and comprehensive health service for all citizen. In particular in the Magway Region, the Project will aim to strengthen the capacity of MgGH as a regional hub hospital by constructing a new building consisting of an obstetrics ward, a gynecology ward, a neonatal unit, an emergency unit, an operation theater complex, and other relevant departments on the existing premises of MgGH as well as providing equipment required for appropriate healthcare services.

### 1-3 Effectiveness and the indicators

- Effectiveness by the project

Quantitative Effect (Operation and Effect indicators)			
Indicators	Original (Yr 2015)	Target (Yr 2022)	
		Total No. in	No. in the

<sup>1</sup> Source: Census in 2014

<sup>2</sup> 2009, Central Statistical Organization, Ministry of Planning and Finance <http://www.csostat.gov.mm/Myanmar.asp>

		MgGH	Project's facility
Number of Delivery (cases)	1,420	1,632	1,632
Number of operations (Surgery)	1,572	1,809	281
Number of operations(Orthopedic)	1,202	1,384	216
Number of operations(Obstetrics/ Gynecology)	1,868	2,149	2,149
No. of Ultrasound scanning for Pregnant Women	0 (no data)	4,896	4,896
No. of babies cared by Incubators located at NICU	0 (no data)	146	146
<b>Qualitative Effect</b>			
<ul style="list-style-type: none"> <li>• Emergency flow line will be improved by constructing Emergency Unit in the new building and emergency patients will be treated and transferred to Examination Room and Operation Theater Complex more effectively.</li> <li>• Clinical practice environment of medical personnel will be improved through the provision of facilities and equipment.</li> <li>• Operation will be conducted in safe conditions by constructing Operation Theater Complex.</li> <li>• Improvement of medical services in MgGH will make it possible to accept patients with difficult diseases.</li> </ul>			

## 2: Project Implementation

### 2-1 Project Scope

Table 2-1-1a: Comparison of Original and Actual Location

Location	Original: (M/D) Magway General Hospital in the Magway Region Attachment(s):Map	Actual: (PMR)  Attachment(s):Map
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Table 2-1-1b: Comparison of Original and Actual Scope

Items	Original	Actual
New facilities of MgGH	<p>Main building : 3-story, Reinforced concrete structure, 6,330m2</p> <p>Ancillary buildings: Reinforced concrete structure, 690m2 (including a generator hut, connecting corridors and a ramp)</p> <p>Departments: Emergency unit, Operation theater complex, ICU, Sterilization unit, Delivery Unit, Neonatal Unit, Gynecology ward, and Obstetrics ward.</p>	(PMR)

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Equipment	Medical equipment necessary for clinical activities in the above-mentioned facilities	Please state not only the most updated schedule but also other past revisions chronologically.
Soft Component	Improvement of medical equipment maintenance capability	All change of design shall be recorded regardless of its degree.

2-1-2 Reason(s) for the modification if there have been any.

(PMR)

## 2-2 Implementation Schedule

### 2-2-1 Implementation Schedule

Table 2-2-1: Comparison of Original and Actual Schedule

Items	Original		Actual
	DOD	G/A	
Cabinet Approval	Nov 2016		(PMR) As of (Date of Revision)  Please state not only the most updated schedule but also other past revisions chronologically.
E/N	Dec 2016		
G/A	Dec 2016		
Detailed Design	Jan 2017 - Aug 2017		
Tender Notice	Aug 2017		
Tender	Nov 2017		
Construction Period	Jan 2018 - Sep 2019		
Installation of Equipment	Aug 2019 - Nov 2019		
Soft component	Sep 2019 - Oct 2020		
Project Completion Date*	Oct 2020		
Defect Liability Period	Nov 2020		

\*Project Completion was defined as \_\_\_\_\_ at the time of G/A.

2-2-2 Reasons for any changes of the schedule, and their effects on the project.

## 2-3 Undertakings by each Government

### 2-3-1 Major Undertakings

See Attachment 2.

### 2-3-2 Activities

See Attachment 3.



2-3-3 Report on RD  
See Attachment 4.

2-4 Project Cost

2-4-1 Project Cost

Table 2-4-1a Comparison of Original and Actual Cost by the Government of Japan  
(Confidential until the Tender)

Items			Cost (Million Yen)	
	Original	Actual	Original	Actual
Construction Facilities	Main building : 3-story, Reinforced concrete structure, 6,330m <sup>2</sup> Ancillary buildings: Reinforced concrete structure, 690m <sup>2</sup> (including a generator hut, connecting corridors and a ramp)  Departments: Emergency unit, Operation theater complex, ICU, Sterilization unit, Delivery Unit, Neonatal Unit, Gynecology ward, and Obstetrics ward.		This page is closed due to the confidentiality	Please state not only the most updated schedule but also other past revisions chronologically
Equipment	Medical equipment necessary for clinical activities in the above-mentioned facilities			
Consulting Services	- Detailed design - Tender Support - Supervision - Soft Component			
Contingency				
Total				

Note: 1) Date of estimation: March 2016  
2) Exchange rate: 1 US Dollar = 119.47 Yen  
1MMK=0.09223Yen

Table 2-4-1b Comparison of Original and Actual Cost by the Government of Myanmar

Items			Cost (Thousand MMK)	
	Original	Actual	Original	Actual
Construction works	Level the ground of the Project site including demolition of existing buildings and removal of trees		47,377	Please state not only the most updated schedule but also other past revisions



				chronologically.
	Relocate existing wiring and piping system		37,468	
	Install high voltage lines and a service drop for the new building		441,508	
	To obtain approval of IEE/EIA if applicable		12,957	
	To obtain the planning, zoning, building permit		240,669	
Equipment procurement	Procure and install general furniture		104,662	
	Procure and install medical equipment		8,609	
Soft Component	Per diem, accomodation and transportation fee for Soft Component Program attendees		13,011	
	Allocate medical personnel and employment cost		12,090	
	Planting and gardening works around the new building		27,130	
Administrative procedures	Commissions for Authorization to Pay, payment to a consultant and contractors		240,669	
Total			1,058,501	

Note: 1) Date of estimation: March 2016  
2) Exchange rate: 1 US Dollar = ¥119.47  
1MMK=¥0.09223

2-4-2 Reason(s) for the wide gap between the original and actual, if there have been any, the remedies you have taken, and their results.

(PMR)

## 2-5 Organizations for Implementation

### 2-5-1 Line Agency:

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

Original: (M/D)

Department of Medical Services, Ministry of Health and Sports

Actual, if changed: (PMR)

**2-6 Environmental and Social Impacts**

- The results of environmental monitoring as attached in Attachment 5 in accordance with Schedule 4 of the Grant Agreement.
- The results of social monitoring as attached in Attachment 5 in accordance with Schedule 4 of the Grant Agreement.
- Information on the disclosed results of environmental and social monitoring to local stakeholders, whenever applicable.

<b>3: Operation and Maintenance (O&amp;M)</b>
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**3-1 O&M and Management**

- Organization chart of O&M
- Operational and maintenance system (structure and the number ,qualification and skill of staff or other conditions necessary to maintain the outputs and benefits of the project soundly, such as manuals, facilities and equipment for maintenance, and spare part stocks etc)

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Original: (M/D)

(1) Operation Structure

It is necessary to deploy medical staff in each department as shown in Table 3-1 so that the new building and equipment of the Project can be utilized appropriately and the required level of medical services can be achieved. It is required to increase the number of medical staffs generally in MgGH as the number of beds and operation theaters increases. Currently there is no neonatologist and emergency physician in MgGH, thus medical specialists in these fields are especially required for legitimate clinical activities. MOHS is currently focusing on the nurture of medical specialists, nurses, technicians, especially emergency physicians who is not common in Myanmar, and also focusing on the in-service education of physicians.

Furthermore it is mentioned in the "Hospital Management Manual" issued in 2011 by Ministry of Health (as of 2011) that the deployment of medical equipment maintenance engineers is mandatory in order to maintain the medical equipment in order.

Table 3-1 Medical Staff Required for the Departments to be Upgraded

Category	O/G	Neonatal unit	Operation			ICU	sterilization	Emergency
			Surgery	Orthopedics	Anesthesiology			
Professor	1	1						
Associate Professor	1			1	1			
Lecturer	3	1						
Assistant Lecturer	4	1	1		1			
Senior Consultant	1							
Junior Consultant								1
Senior Assistant Surgeon					2			1
Assistance Surgeon	5	1	2	3				7
Post Graduate	21		4					
Physicians total	36	4	7	4	4			9
Chief Nurse	4	1		2				2
Nurse	16	8		6		3		12
Trained nurse	20	11		15		5		20
Nurses Total	40	20		23		8		34
Medical Equipment Maintenance Engineer	1							
Medical Assistant	2			6				
Sterilizing worker							1	
Worker	6	4		6			1	2

## (2) Maintenance System

### ● Facilities

Currently an electrical technician and four technicians in charge of plumbing installation are assigned for basic facility maintenance in MgGH. Complicated maintenance and repair works which they cannot cope with are outsourced through the medical superintendent of MgGH. Those technicians will be able to conduct daily maintenance works for the new building, on the other hand repair of building elements and periodical inspections requiring expertise etc. will be outsourced as is with the existing condition.

### ● Equipment

Currently an electrical technician is working in MgGH and he can fix minor matters such as replacement of ceiling light bulb in operation theaters or repair of suction machines. For complicated repairs, a repair request is made through the medical superintendent in MgGH to CMSD (the Central Medical Stores Depot) under the Department of Medical Services, MOHS. In case even CMSD cannot repair the equipment, CMSD call the local agent and ask them to repair it.

At the completion of the Project, a medical equipment maintenance engineer is expected to be deployed for MgGH.

## (3) Facility maintenance plan

The maintenance of facilities is categorized into two types: (i) daily cleaning and (ii) repair of parts from wear and tear, damage, and deterioration. The daily cleaning will be able to behavior which handles facilities carefully as well as early detection of damages and/or malfunctions. The repair of facilities mainly consists of the renovation and restoration of the interior and exterior finish on the structure. Facilities should be refurbished every decade to retain their functions. Items for regular inspection and repair which affect the lifespan of facilities will be presented in the Maintenance Manuals submitted by the contractor at the commissioning of the facilities. Detailed inspection and cleaning methods will be also explained at that time.

Regular inspection points are summarized in Table 3-2 below.

Table 3-2 Summary of regular inspection points of facilities

	Inspection and maintenance points	Frequency
Exterior	Restore and repaint exterior walls	Repaint every 5 years; restore every 3 years
	Inspect and restore roofs	Inspect every 3 years; Restore every 10 years
	Clean gutters and drainage surroundings regularly	Every year
	Inspect and repair exterior door and window sealants	Every year
	Inspect and clean ditches, manholes, etc.	Every year
Interior	Renovate the interior	As necessary
	Restore and repaint partition walls	As necessary
	Replace ceiling materials	As necessary
	Adjust doors and windows to fit the openings	Every year
	Replace door handles, hinges, etc.	As necessary
	Periodical inspection for elevators	once 3 months

(4) Building Equipment maintenance plan

Daily preventive maintenance before there arises a need to repair defects and replace parts is important for maintain building equipment. Its lifespan can be extended by normal operation and daily inspection, lubrication, tune-up, cleaning, and repair. Daily maintenance can prevent defects and accidents as well as chain reactions.

Equipment such as a backup generator and water pumps needs periodical inspection and maintenance. It is important for these kinds of equipment to have annual inspection. The general lifespan of major building equipment is shown below in Table 3-3.

Table 3-3 Lifespan of building equipment

	Equipment	Lifespan
Electrical installations	Distribution board	20~30 years
	LED lamp	20,000~40,000 hours
	Fluorescence lamp	5,000~10,000 hours
	Backup generator	30 years
Plumbing installations	Pump, pipe and valve	15 years
	Tank	20 years
	Sanitary appliance	25~30 years
Air conditioning and ventilation installations	Pipe	15 years
	Exhaust fan	20 years
	Air conditioner	10 years

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(5) Equipment maintenance plan

It is necessary to establish the maintenance formation in the Department of Medical Services, MOHS and MgGH based on the requirements for the medical equipment and medical furniture maintenance described in the "Hospital Management Manual" issued in 2011 by Ministry of Health (as of 2011). The proposed maintenance formation is shown in Table 3-4. The medical equipment is categorized into operation theater, labor room, radiology, clinical laboratory, ICU, laundry and others in the manual mentioned above.

Table 3-4 Proposed Maintenance Formation

The scope of Department of Medical Services, MOHS	The Scope of Administration department in MgGH	The Scope of Maintenance department in MgGH
<ul style="list-style-type: none"> <li>• To create maintenance plan</li> <li>• To ensure and allocate the budget</li> <li>• To create personnel deployment plan</li> <li>• To create personnel training plan</li> </ul>	<ul style="list-style-type: none"> <li>• To arrange the budget requests from each clinical department and apply them to MOHS</li> <li>• To apply personnel plan</li> <li>• To manage inventory list</li> <li>• To hear the situation from each clinical department</li> <li>• To share the information with MS and other administrators (Regular Report)</li> <li>• To plan and implement training (Medical staff, Technicians)</li> <li>• To ask the local agent to repair (Order to manufacturer local agent)</li> </ul>	<ul style="list-style-type: none"> <li>• To clarify the scope of work of MS/the person in charge of the maintenance/ end-users</li> <li>• To manage the inventory list of each clinical department</li> <li>• To instruct on the equipment usage to end users (including daily check and periodical check)</li> <li>• To confirm the lack of parts and consumables</li> <li>• To report the serious malfunction(to the Administration and ask them to apply the repair request)</li> <li>• To adjust or repair the equipment with not so serious malfunction</li> <li>• To identify the malfunction parts</li> <li>• To inspect the repaired equipment on receipt</li> <li>• Notes (for each department)</li> </ul> <p>Operation Theater :</p> <ul style="list-style-type: none"> <li>• To maintain the medical gas station under the supervision of anesthetist, to conduct basic maintenance,</li> <li>• To maintain medical electronic devices</li> </ul> <p>Labor room :</p> <ul style="list-style-type: none"> <li>• the same scope as operation theater</li> </ul> <p>Radiology :</p> <ul style="list-style-type: none"> <li>• To maintain the electrical system by Electrician</li> <li>• To clean up the equipment under the supervision of radiologist</li> </ul> <p>Laboratory :</p> <ul style="list-style-type: none"> <li>• To call CMSD(Central workshop) in case Blood Bank Refrigerator do not work well,</li> </ul> <p>ICU:</p> <ul style="list-style-type: none"> <li>• To maintain the medical gas pipe and ICU equipment by qualified technician</li> </ul> <p>Laundry :</p> <ul style="list-style-type: none"> <li>• To conduct basic maintenance for electrical equipment</li> </ul>

Currently there are some problems with medical equipment maintenance in MgGH such as that daily check is not conducted based on standardized procedure and it is not conducted in a planned manner. Soft Component program will be included in the Project considering problems mentioned above in order to improve the maintenance management system.

Actual: (PMR)

- The actual annual O&M cost for the duration of the project up to today, as well as the annual O&M budget.

**Original: (M/D)**

Annual operation and maintenance cost for the facilities and equipment is estimated as shown in below.

Table 3-5 Estimated operation and maintenance cost (thousand MMK per year)

Item	Estimated expenditures after completion of the Project
1) Human resource	12,090
2) Electricity	32,921
3) Fuel	15,707
5) Medical gas	29,784
7) Facility maintenance	14,067
8) Medicine	11,235
9) Consumables for the equipment	6,980
Total	122,784

#### 4: Precautions (Risk Management)

- Risks and issues, if any, which may affect the project implementation, outcome, sustainability and planned countermeasures to be adapted are below.

##### Original Issues and Countermeasure(s): (M/D)

Potential Project Risks	Assessment
1. Delay in the Project Implementation (Description of Risk) Delay and/or shortage of C/P's budget may affect project implementation schedule.	Probability: H/M/L Impact: H/M/L Analysis of Probability and Impact: Issues to be Considered for the Smooth Implementation of the Project Mitigation Measures: Clarifies the schedule of budgeting process and take necessary procedure on time. Action during the Implementation: Clarifies the schedule of budgeting process and take necessary procedure on time. Contingency Plan (if applicable):
2. Delay in allocation of necessary human resources (Description of Risk) Delay in allocation of necessary human resources may affect operation and maintenance of the hospital services.	Probability: H/M/L Impact: H/M/L Analysis of Probability and Impact: Issues to be Considered for the effective implementation.

	Mitigation Measures:
	Clarifies the schedule of budgeting process and take necessary procedure on time.
	Action during the Implementation:
	Clarifies the schedule of budgeting process and take necessary procedure on time.
3. (Description of Risk)	Contingency Plan (if applicable):
	Probability: H/M/L
	Impact: H/M/L
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action during the Implementation:
	Contingency Plan (if applicable):
Actual issues and Countermeasure(s) (PMR)	

## 5: Evaluation at Project Completion and Monitoring Plan

### 5-1 Overall evaluation

Please describe your overall evaluation on the project.

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### 5-2 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

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### 5-3 Monitoring Plan for the Indicators for Post-Evaluation

Please describe monitoring methods, section(s)/department(s) in charge of

monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

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Attachment

1. Project Location Map
2. Undertakings to be taken by each Government
3. Monthly Report
4. Report on RD
5. Environmental Monitoring Form / Social Monitoring Form
6. Monitoring sheet on price of specified materials (Quarterly)
7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)  
(Final Report Only)





## Monitoring sheet on price of specified materials

## 1. Initial Conditions (Confirmed)

	Items of Specified Materials	Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=A×B	1% of Contract Price D	Condition of payment	
						Price (Decreased) E=C-D	Price (Increased) F=C+D
1	Item 1	● ● t	●	●	●	●	●
2	Item 2	● ● t	●	●	●		
3	Item 3						
4	Item 4						
5	Item 5						

## 2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ● ●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

	Items of Specified Materials	1st ● month, 2015	2nd ● month, 2015	3rd ● month, 2015	4th	5th	6th
1	Item 1						
2	Item 2						
3	Item 3						
4	Item 4						
5	Item 5						

(3) Summary of Discussion with Contractor (if necessary)

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Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)  
(Actual Expenditure by Construction and Equipment each)

	Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost	(A/D%)	(B/D%)	(C/D%)	
Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost	(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost	(A/D%)	(B/D%)	(C/D%)	
Total	(A/D%)	(B/D%)	(C/D%)	