Ministry of Health
The Republic of the Union of Myanmar

PREPARATORY SURVEY REPORT
ON
THE PROJECT FOR IMPROVING LASHIO GENERAL HOSPITAL IN SHAN STATE
AND
THE PROJECT FOR IMPROVING LOIKAW GENERAL HOSPITAL IN KAYAH STATE
IN
THE REPUBLIC OF THE UNION OF MYANMAR

May, 2014

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

AZUSA SEKKEI CO., LTD.
YAMASHITA SEKKEI INC.
INTERNATIONAL TOTAL ENGINEERING CORPORATION (ITEC)

PREFACE

Japan International Cooperation Agency (JICA) decided to conduct the preparatory survey and entrust the survey on the Project for Improving Lashio General Hospital in Shan State and the Project for Improving Loikaw General Hospital in Kayah State in the Republic of the Union of Myanmar to the consortium consist of Azusa Sekkei Co., Ltd., Yamashita Sekkei Inc. and International Total Engineering Corporation (ITEC).

The survey team held a series of discussions with the officials concerned of the Government of Myanmar, and conducted a 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 Myanmar for their close cooperation extended to the survey team.

May, 2014

Takao Toda
Director of Human Development Department
Japan International Cooperation Agency

Summary

Summary

① Outline of the Recipient Country

1) Geographical and Climatic Conditions

The Republic of the Union of Myanmar (hereinafter referred to as Myanmar) is located between 10 degrees and 28 degrees north latitudes. It is bordered on the north-east by China, east by Laos, southeast by Thailand, west by Bangladesh, northwest by India and the total length of boundaries is approximately 4,600 km. The seaside is bordered by the Andaman Sea and the Bay of Bengal, and the length of coastline is approximately 2,000 km. The total area of the country is 680,000 km2 (approx. 1.8 times of Japan's) and the population is approximately 63,670,000 (estimated value by IMF, 2012). The administrative divisions in Myanmar consist of 7 Divisions (tain-detha-ji; the area where Burmans mainly live) and 7 States (pyine; the area where other ethnic groups live).

The majority of the country belongs to the tropical or subtropical, but it generates a diversity of climatic conditions depending on areas due to its narrow land stretching from south to north of hills and valleys. Dry season is from the middle of October to March, extreme hot season is from April to May, and rainy season is from June to the middle of October.

Lashio City, one of project locations, is the largest town in northern Shan State. It is located in the hilly area of north east of Myanmar. The hilly area climate is humid subtropical climate, and has little rainfall in winter and the temperature stays mild throughout the year. The lowest temperature in winter gets below 10 degrees Celsius time to time. Lightning strikes occur in rainy season. In addition, earthquakes can occur in Myanmar and the seismic zoning coefficient is set; however, Lashio City is located in the area with relatively few earthquakes.

Loikaw Township, another project location, is located in the hilly area of east of Myanmar. The hilly area climate is humid subtropical climate, same as in Lashio, and lightning strikes occur in rainy season. As to the earthquakes, same as in Lashio City, Loikaw is located in the area with relatively few earthquakes.

2) Socio-Economic Conditions

According to IMF data, the GDP growth rate in Myanmar is increasing from 5.9 % in 2011-12 to 6.4% in 2012-13. Especially from year 2011, the development demand caused by Myanmar Boom led to export of natural gas to Thailand, construction of pipelines to China, foreign and domestic investment in light industry such as needlework, the development of Thilawa and Dawei Special Economic Zone and large-scale real estate in Yangon City. Myanmar has severe power shortage, strict import regulations, and issues on trading,

investment system and environment; however, it has low-cost and high-quality labor force and attracts attention as a candidate investment and consignment production site of labor-intensive industry following China and Vietnam. It is necessary for citizen to get involved in national development; and it is required to improve citizen's health condition by providing health service to the entire citizen.

The 2010-2011 Fiscal Year ratio of GDP by industry sector of Myanmar is 37.9% in the primary industry, 24.1% in the secondary industry, and 38.0% in the tertiary industry. Annually the ratio of the primary industry is decreasing and that of both secondary and tertiary industries is increasing. Up to present, agriculture and forestry occupies 30.5 % and are considered main industry, but the ratio is decreasing every year. Commercial industry, 21.3%, and manufacturing industry, 18.9%, are increasing. The increase of the secondary and tertiary industries indicates their development in accordance with foreign and domestic investment; and it is expected to continuously increase. Health care of citizen who works in the primary, secondary, and tertiary industries has become an essential concern.

② Background and Outline of the Request for Japan's Grant Aid Assistance

The major mortality causes in Myanmar are infectious and cardiovascular diseases followed by perinatal disease, celebral hemorrhage, etc. (statistics: Ministry of Health 2011). Also, compared to neighboring countries, vaccination coverage and antenatal consultation rate in Myanmar are relatively decent; however, Under-5 Mortality Rate and Maternal Mortality Ratio are high (UNICEF World's Children reports, 2013). In addition, health indicator regarding HIV, malaria, and tuberculosis prevalence rates, etc. of Myanmar within Southeast Asia ranks in a lower level.

Under such circumstances, the Government of Myanmar has been implementing on improving the hospital health care service, increase of the bedrooms, improving the performance indicator at the hospitals, reducing the Mortality Rate at the hospitals, etc. continuing its hospital care program after 2006-2011 period regarding the National Health Plan (2011-2016). However, it has not been able to provide fulfilling medical service due to poor development status of medical facilities and equipment in the public health sector.

Myanmar is divided into 17 Health Administrative Divisions, and a Health Department is localed in each Health Administrative Division. The referral system of health and medical institutions consists of National Hospital, State/Regional General Hospital, District Hospital, Township Hospital, Station Hospital and Regional Health Center. Of these, the general hospitals in states that are home to ethnic minorities play the important role of core regional hospitals, yet due to deterioration of the facilities and equipment, they do not properly fulfil the functions of the referral hospitals. For this reason, there is an

urgent need for the health care facilities to be improved so that local residents can be provided with the appropriate health care services.

Against this background, the government of Myanmar cited Lashio General Hospital, which is situated in the center of the Health Administrative District of Shan State (North) and Loikaw General Hospital, which is located in the state capital of Kayah State, both regions inhabited by ethnic minorities, as hospitals for which improvement is a priority.

Lashio General Hospital is located in Lashio City, which is a central city of Shan State (North) Health Administrative Division. It covers the 3rd largest area in the country, and has 300 beds, performs 3,662 operations yearly (2012), and receives 31,719 outpatients annually (2012); it is a core hospital in the region and its catchment population is 1.8 million people (2011). The facilities of the hospital are aged, the oldest from the 1940s, and has become severely deteriorated although repairs have been maed as needed. Also, there is no hallway with a roof connecting each building that are scattered, so circulation between buildings is inefficient. In addition, available curative service is limited because of insufficient quality and quantity of medical equipment. For those who cannot be treated are to be transferred to Mandalay General Hospital, 6 hours away by motor vehicles. Therefore, the development of a system to provide appropriate healthcare service in Shan State (North) Health Administrative Division, including the improvement of Lashio General Hospital, has become a pressing issue.

The Loikaw General Hospital is a State General Hospital situated in Loikaw Township, the state capital of Kayah State. The hospital is the core medical institution in the state, with 200 beds, handling over 1,600 operations annually and treating over 20,000 outpatients. The area it serves extends as far as the southern part of the neighboring Shan State. Since the main building in which are concentrated most of the hospital functions was built in 1964; the building is old and deteriorating, with the bare steel reinforcements showing through the concrete frame in places, and some parts are too dangerous for clinical activities to continue. In addition the medical equipment is inadequate in terms of both quantity and quality, so that the medical care that can be given is limited, and patients that cannot be treated here must be transferred to Yangon General Hospital or Mandalay General Hospital, both over 10 hours distant by road. Under this situation, the development of a system to provide appropriate health care services in the Kayah State Health Administrative Division, including the improvement of the Loikaw General Hospital, has become a pressing issue.

The objective of this project is to improve medical services at Lashio General Hospital and Loikaw General Hospital, and to enhance their function as local core hospitals by upgrading facility and equipment at both hospitals.

③ Outline of the Result of Survey and Contents of the Project (Facility and Equipment Plan)

Based on above mentioned request, Japan International Cooperation Agency decided toconduct preparatory survey and dispatched the survey from October 1st to November 2nd, 2013. The survey team held a series of discussions with the officials concerned of the Government of Myanmar, and conducted a field investigation. As a result of further studies in Japan, the project overview and area investigation was conducted from December 14th to 28th, 2013. The explanation of draft report was conducted from April 20th to 26th, 2014, and the present report was finalized.

This Grant Aid will improve medical services at Lashio General Hospital in Shan State and Loikaw General Hospital in Kayah State. Its goal is to improve health condition of residents in the subjected area. The project was planned based on the following policies; as a result of the request from the Ministry of Health of Myanmar, field investigation and discussions; and in order to construct facilities that provide proper medical service and to procure necessary medical equipment at both hospitals as a core hospital in the regions.

≪Lashio General Hospital≫

1) Facility Policy

a) Function and Scale Policy

Those facilities evaluated to be in dangerous condition in order to continue their medical activities due to deterioration are Specialist Outpatient, Emergency, Surgical, Dental, Eye, ENT, Laboratory, Blood Bank, Physiotherapy and Oncology Departments, etc.; and shall be upgraded or reconstructed.

b) Facilities

- The site area for construction is limited; however, plan 2-story buildings at maximum as existing buildings are, in consideration of patients access.
- Consider the volume of the buildings to match with the existing buildings on site.
- Grade and size of the facilities shall be appropriate in order not to carry excessive operation and maintenance burden.
- Structure shall be rigid in order to serve as a base for medical care and evacuation amongst regional core hospitals; and mechanical planning shall ensure medical activities by elevated water tank and emergency power in case of a disaster.
- Plan deliberately for the infection prevention. Plan to clearly separate clean and septic zones in Operation Department. Also, separate paths or access between general outpatients and low immunity patients diagnosed with cancer or HIV shall be provided.
- Plan to eliminate the risk of radiation exposure to patients and hospital staff in X-ray

Room.

・Provide an easy access through a corridor between existing and new facilities for patients and transporting equipment in case of rain.

c) Equipment

・Equipment that are required in medical activities in the project components shall be the subject of planning.

・Equipment that do not match Myanmar's medical equipment maintenance system or technical level at the hospital, that are not provided with maintenance and management service within Myanmar, and that are hard to replace or repair shall not be included.

・As to proper quantity, the numbers of current medical staff members, planned rooms and existing equipment that are capable of continuous usage shall be taken into consideration.

・As to the quantity of replacement parts and consumables, certain amount shall be included as an initial expense until the procurement system in Myanmar is settle down after equipment installation.

2) Details and Scale

a)Facilities

Planned facilities consist of total of 4 buildings: Main Building (North), SAMSC, Mortuary in Phase 1, and Main Building (South) in Phase 2. The major contents, structure and floor area are shown in Table-i.

Table-i Details of Facility Plan

Phase	Building	Structure	Department	Floor Area (m^2)
Phase 1	Main Building (North)	Reinforced Concrete 2-story Building	Outpatient Department (General, Surgery, Orthopedics, Medicine, Pediatrics, Dermatology), Dental, Eye, Ear, Nose and Throat, Oncology, HIV/AIDS Counseling, Lab, Blood Bank, Physiotherapy, Pharmacy, etc.	2,530.50
	SAMSC	Reinforced Concrete 1-story Building	SAMSC (Detoxification, Methadone), Consultation Room, Nurse Duty Room, etc.	810.00
	Mortuary	Reinforced Concrete 1-story Building	Morgue, Autopsy Room, Changing Room	90.00
Phase 2	Main Building (South)	Reinforced Concrete 2-story Building	Emergency, Operation Department, ICU, Central Sterilization Department, Radiology, etc.	2,133.25
Total				5,563.70

b)Equipment

The quantity and purpose of major planned equipment are shown below.

Table-ii Quantity and Purpose of Major Planned Equipment

Category	Equipment	Purpose	No.
Dental	Dental Chair Unit	Fixing position for dental treatment	1
Emergency	Ambulance	Transferring emergency patients and severely ill patients safely to a superior hospital	1
Ear, Nose and Throat	Instrument set for Ear Micro Surgery	Performing an ear-related operation under a microscope	1
	Surgical Microscope for Ear, Nose and Throat Department	Performing an operation under a microscope	1
Eye	Surgical Microscope for Eye Department	Performing an operation under a microscope	1
Hemodialysis	Hemodialysis Machine	Performing dialysis for patients with kidney disease, etc.	2
ICU	Defibrillator	Correcting life-threatening arrhythmias by delivering a therapeutic dose of electrical energy to the heart in case of ventricular fibrillation	2
	Ventilator (Adult)	For patients who have difficulty with spontaneous breathing in an intensive care	3
Clinical Examination	Coagulation Analyzer	Measuring patients' blood coagulation time and diagnosing a liver disease or a disease involving bleeding and hemostasis	1
	Safety Cabinet	Preventing leakage of the pathogens that exist in the sample to the outside in case of working with pathogens, etc. in a laboratory	1
Laundry	Laundry Machine	Washing the clothes used in the hospital	1
	Iron Pressing Machine	Drying the clothes that are washed and drained	1
Morgue	Mortuary Refrigerator (4- body)	Storing the corpse	1
	Autopsy Table	Fixing position of corpse in an event of autopsy	1
Obstetrics and Gynecology	Infant Warmer	Treating premature infants and newborns while maintaining proper body temperature	3
Operation Theater	Anesthesia Machine (with Ventilator)	Keeping patients in general anesthesia state during surgery	4
	Autoclave (Large)	Sterilizing surgical instruments and linens used in the Operation Theaters by autoclave	2
	Ceiling Lamps (2)	Enabling the part being operated visible with adequate brightness and right color avoiding obstacles during the major surgery	4
	Operation Table	Positioning patients properly for surgery	5
Pediatrics	Infant Incubator	Nursing newborns under proper oxygen concentration, temperature, and humidity in a sealed space until they are capable to adapt to the external environment	1
Physiotherapy	Transcutaneous Electrical Nerve Stimulator	Performing neural stimulation treatment with surface electrode percutaneously for peripheral nerve paralysis, etc.	1
Radiology	General Purpose X-ray Machine	General X-ray imaging of limbs, bones and organ tissues of chest and abdominal	1
General	Adult Bed	For patients in each facility	257

≪Loikaw General Hospital≫

1) Facility Policy

a) Function and Scale Policy

Those facilities evaluated to be in dangerous condition in order to continue their medical activities due to deterioration are Outpatient, Emergency, General Medicine, Surgery (including Operation Theater), Dental, Obstetrics and Gynecology, Eye, ENT, Physical Medicine, Radiology, and Clinical Pathology Departments, etc.; and shall be upgraded or reconstructed.

Scale of the planned bedrooms is total of 159 beds: General Medicine-58 beds, Surgery-37beds, Obstetrics and Gynecology-46 beds, ICU-4 beds, Eye-8 beds, ENT-3 beds, and Physical Medicine-3 beds.

b) Facilities

- The site area for construction is limited; however, plan 2-story buildings at maximum as existing buildings are, in consideration of patients access.
- Consider the volume of the buildings to match with the existing buildings on site.
- Grade and size of the facilities shall be appropriate in order not to carry excessive operation and maintenance burden.
- Structure shall be rigid in order to serve as a base for medical care and evacuation amongst regional core hospitals; and mechanical planning shall ensure medical activities by elevated water tank and emergency power in case of a disaster.
- Plan deliberately for the infection prevention. Plan to clearly separate clean and unclean zones in Operation Department.
- Plan to eliminate the risk of radiation exposure to patients and hospital staff in X-ray Room.

c) Equipment

- Equipment that are required in medical activities in the project components shall be the subject of planning.
- Equipment that do not match Myanmar's medical equipment maintenance system or technical level at the hospital, that are not provided with maintenance and management service within Myanmar, and that are hard to replace or repair shall not be included.
- As to proper quantity, the numbers of current medical staff members, planned rooms and existing equipment that are capable of continuous usage shall be taken into consideration.
- As to the quantity of replacement parts and consumables, certain amount shall be included as an initial expense until the procurement system in Myanmar is settle down after equipment installation.

2) Details and Scale

a)Facilities

Planned facilities consist of New Main Building East, New Main Building West, and accessory structures (corridor, guard ward, electric room, elevated tank, etc.) and major contents, structure and floor areas are shown below.

Table-iii Details of Facility Plan

Building	Structure	Department	Floor Area (m^2)
New Main Building East	Reinforced Concrete 2-story Building	Outpatient Department (General, General Medicine, Surgical, Eye, Psychiatric, Oncology, Dental), Emergency, Imagery, Clinical Pathology, Surgery, Eye,. And Operation Theater Department, etc.	4,416.98
New Main Building west	Reinforced Concrete 2-story Building	Obstetrics and Gynecology, Physical Medicine, ENT, General Medicine Department, etc.	4,349.66
Accessory Structures	Reinforced Concrete	Corridor, Guard Ward, Electric Room, Elevated Tank	469.75
Total			9,236.39

b)Equipment

The quantity and purpose of planned equipment are shown below.

Table-iv Quantity and Purpose of Major Planned Equipment

Category	Equipment	Purpose	No.
General Medicine, etc.	ECG	ECG for the diagnosis of heart disease	3
Dental	Dental Chair Unit	Fixing position for dental treatment	1
Emergency	Ambulance (4WD)	Transferring emergency patients and severely ill patients safely to a superior hospital	1
Clinical Examination	Coagulation Analyzer	Measuring patients' blood coagulation time and diagnosing a liver disease or a disease involving bleeding and hemostasis	1
ENT, Eye	Operating Microscope for ENT	Performing an operation under a microscope	1
	Operation Microscope for Eye	Performing an operation under a microscope	1
Obstetrics and Gynecology, Pediatrics	Incubator	Nursing newborns under proper oxygen concentration, temperature, and humidity in a sealed space until they are capable to adapt to the external environment	2
	Infant Warmer	Treating premature infants and newborns while maintaining proper body temperature	6
Operation, Emergency Operation(including Labor)	Anesthesia Machine with Ventilator	Keeping patients in general anesthesia state during surgery	2
	Autoclave (Large)	Sterilizing surgical instruments and linens used in the	2

Category	Equipment	Purpose	No.
		Operation Theaters by autoclave	
	Shadowless Ceiling Lamp	Enabling the part being operated visible with adequate brightness and right color avoiding obstacles during the major surgery	5
	Electrosurgical Unit	Performing an incision and coagulation of surgical patients' tissue	3
	Endoscope (Upper GI + Colonoscope) with Monitor	Performing the examination and treatment for upper gastrointestinal tract and colon disease	1
	Operation Table	Positioning patients properly for surgery	5
	Labor Bed	Positioning expecting mothers properly for labor	3
	Patient Monitor	Continuously monitoring patients' physical condition	5
	Cardiotocograph Machine	Monitoring fetal heart rate and expectant mothers uterine contraction during labor	1
Imagery	Film Processors	Showing the captured X-ray image on film	1
	3D Ultrasound with Multi-probes	Diagnosing with images of abdominal organs, parts under the epidermis and of gynecology related	1
	Digital X-ray Machine with Accessories	General X-ray imaging of limbs, bones and organ tissues of chest and abdominal	1
General	Adult Bed	Resting and examining patients	39
	Child Bed	Resting and examining infants	16

④ Implementation Schedule and Cost Estimation

In case of implementation by Japan's Grant Aid, the estimated cost to be borne by Myanmar side and implementation schedule for Lashio General Hospital and Loikaw General Hospital are shown below.

≪Lashio General Hospital≫

The estimated cost to be borne by Myanmar side is 23 million yen. This project is to be implemented under B-type government bond. Implementation period for the detailed design is 7 months, for the construction and equipment procurement for Phase 1 is 14 months, and for Phase 2 is 13 months. 4 months period is in between Phase 1 and Phase 2 in order to relocate and demolish existing buildings, which shall be completed by Myanmar side.

≪Loikaw General Hospital≫

The estimated cost to be borne by Myanmar side is 13 million yen. The project would be implemented in a single fiscal year allocating 7 months for the detailed design and 15 months for the construction and equipment procurement.

⑤ Project Evaluation

1) Relevance

In light of the following points, this project is recognized relevant as a target project by Japan's Grant Aid.

The target area of the project is Shan State (North) in which the project site of Lashio General Hospital is located, and Kayah State in which Loikaw General Hospital is located. The catchment area of Lashio General Hospital is the whole Shan State (North) having a population of 1,800,000 (2011), and that of Loikaw General Hospital is including the whole Kayah State and the southern part of Shan State, which counts its catchment population up to 350,000. Those residents will be the direct beneficiary of the project. Both States are mainly occupied by minor races and most of them are poor segments. The project will enhance the medical care services in the targeted states and contribute to the improvement of the health conditions of the inhabitants. Therefore, this project is deemed to be highly necessary and relevant.

This project contributes to ensure quality health care for citizens nationwide, which is one of the goal set forth in Myanmar's long-term health development plan "Myanmar Health Vision 2030". The government of Myanmar raises the improvement of curative services as a priority measure to achieve the above goal. Therefore, this project, which will strengthen the medical care services of regional core hospitals such as Lashio and Loikaw General Hospitals through the construction of hospital buildings and procurement of medical equipment, is exactly in line with the above policy of Myanmar.

The country assistance strategy for Myanmar stipulated in the Japan's ODA data book by country (2012) established by the Ministry of Foreign Affairs of Japan posits following three sectors as a priority area of the assistance: (1) assistance to the improvement of people's living (including local development, agricultural development, and assistance to minor races and poor segments through health care, disaster prevention, agriculture, etc. at the midpoint, (2) assistance to the human resources improvement and system development (including assistance to promote democratization), (3) assistance to the development of infrastructure and systems for continuous economic growth. This project will assist improving health conditions of local inhabitants including minor races, which corresponds to (1) above, and therefore this project is sufficiently consistent with Japan's Assistance Strategy.

2) Effectiveness

Below are the expected target levels of implementing this project for Lashio General Hospital and Loikaw General Hospital.

≪Lashio General Hospital≫

(1) Quantitative Effects

Table-v Outcome Indicators for Quantitative Effects and Target Value (Lashio General Hospital)

Indicator	Unit	Current Value (2012)	Target Value (2020) 【3 Years After Project Completion】
No. of Total Outpatients (including revisits)	persons	31,719	36,600
No. of Inpatients	persons	13,745	16,700
No. of Operations with General Anesthesia	cases	310	360
Bed Occupancy Rate	%	101	80
No. of Referral to Upper Level Institutions by Ambulance	cases	28	60
No. of Referral from Lower Level Healthcare Facilities	cases	184	360

(2) Qualitative Effects

① Improving the medical services at Lashio General Hospital will allow the acceptance of patients with adequate diagnosis and treatment and prompt response to severely ill patients that the hospital would not previously have been able to handle, and will contribute to optimizing the referral system as a regional core hospital.

② Outpatients are now diagnosed and treated at each ward, therefore, the wards are crowded due to the intersection of inpatients and outpatients. Through the improvement of specialist outpatient department under this project, outpatients will be treated at specialist outpatient department and the congestion at the ward will be mitigated. Additionally, medical record management becomes easy by dividing inpatients and outpatients.

③ Existing imagery department is not protected enough against x-rays, and installing an x-ray room adequately protected will improve safety.

④ Motivation of medical staff will increase through the renewal of facilities and equipment.

⑤ Possibility of the recruitment of highly specialized medical practitioners will increase.

≪Loikaw General Hospital≫

(1) Quantitative Effects

Table-vi Outcome Indicators for Quantitative Effects and Target Value (Loikaw General Hospital)

Indicator	Unit	Current Value (2010-2012*)	Target Value (2019) 【3 Year After Project Completion】
No. of Total Outpatients (including revisits)	persons	20,706(2012)	22,777
No. of Inpatients	persons	8,086(2010)	8,895
No. of Deliveries	cases	1,053(2011)	1,158
No. of Operation with General Anesthesia	cases	566(2010)	623
No. of Referral from Lower Level Healthcare Facilities	cases	744(2012)	1,000

(※ Acceptable performance of current situation is based on the maximum value over the past 3 years as the actual values of the past 3 years vary greatly.)

(2) Qualitative Effects

① Putting the existing scattered medical departments together in one new building will allow provision of efficient and quality medical service.

② Improving the medical services at Loikaw General Hospital will allow the acceptance of patients with adequate diagnosis and treatment and prompt response to severely ill patients that the hospital would not previously have been able to handle, and will contribute to optimizing the referral system as a regional core hospital.

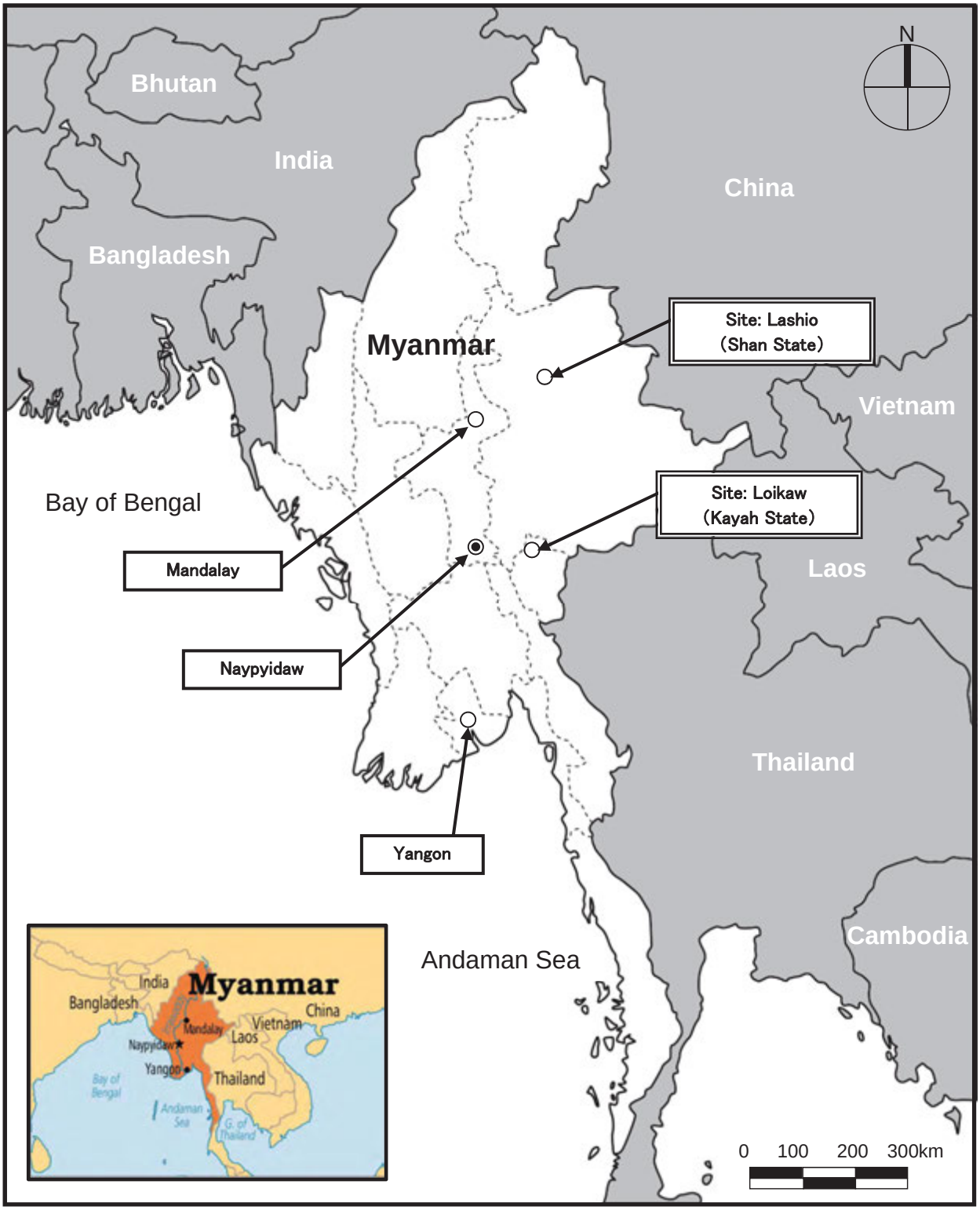
③ Existing imagery department is not protected enough against x-rays, and installing an x-ray room adequately protected will improve safety.

④ Inpatients will be satisfactory at the point of privacy protection through shifting the ward room from existing large room type to small room (six people) type and private room.

⑤ Motivation of medical staff will increase through the renewal of facilities and equipment.

⑥ Possibility of the recruitment of highly specialized medical practitioners will increase.

Contents



Location Map

Perspective
(Lashio General Hospital)

Perspective
(Loikaw General Hospital)

List of Figures and Tables

Abbreviations

Abbreviation	Term
ACEM	Australasian College for Emergency Medicine
AIDS	Acquired Immune Deficiency Syndrome
ASTM	American Society for Testing and Materials
AusAID	Australian Agency for International Development:
AVI	Australian Volunteers International
BME	Biomedical Engineer
BR	Brick Structure
BS	British Standard
CB	Concrete Block Structure
CMSD	Central Medical Store Depot
CPAP	Continuous Positive Airway Pressure
CT	Computed Tomography
DFID	Department for International Development
DIN	Deutsche Industrie Normen
ECG	Electrocardiograph
EIA	Environmental Impact Assessment
E/N	Exchange of Notes
EP	Emulsion Paint
ER	Emergency Room
EU	European Union
G/A	Grant Agreement
GAVI Alliance	Global Alliance for Vaccines and Immunization
GDP	Gross Domestic Product
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GL	Ground Level
HDU	High Dependency Unit
HIV	Human Immunodeficiency Virus
H5N1	Hemagglutinin 5 and Nuaraminidase Type 1
HT	Half Timber Structure
ICD-10	International Statistical Classification of Diseases and Related Health Problems
ICU	Intensive Care Unit
IEE	Initial Environmental Examination
IFEM	International Federation for Emergency Medicine
IMF	International Monetary Fund
IMR	Infant Mortality Rate
JICA	Japan International Cooperation Agency
JIS	Japanese Industrial Standard
LAN	Local Area Network
LCDC	Lashio City Development Committee
MDGs	Millennium Development Goals
MMA	Myanmar Medical Association
MMR	Maternal Mortality Rate
NICU	Neonatal Intensive Care Unit
NGO	Non-Governmental Organization

Abbreviation	Term
NS	Nurse Station
ODA	Official Development Assistant
OPD	Outpatient Department
OT	Operation Theater
PQ	Pre-qualification
RACS	Royal Australasian College of Surgeon
RC	Reinforced Concrete
SARS	Severe Acute Respiratory Syndrome
STD	Sexually Transmitted Disease
U5MR	Under 5 Mortality Rate
UNDP	United Nations Development Program
UNICEF	United Nations Children's Foundation
UNFPA	United Nations Population Fund
USAID	US Agency for International Development
WHO	World Health Organization

Chapter 1 Background of the Project

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1-1 Background of the Request for Japan's Grant Aid Assistance

The major mortality causes in Myanmar are infectious and cardiovascular diseases followed by perinatal diseases, celebral hemorrhage, etc. (statistics: Ministry of Health 2011). Also, compared to neighboring countries, vaccination coverage and antenatal consultation rate in Myanmar are relatively decent; however, Under-5 Mortality Rate and Maternal Mortality Ratio are high (UNICEF World's Children reports, 2013). In addition, health indicator regarding HIV, malaria, and tuberculosis prevalence rates, etc. of Myanmar within Southeast Asia ranks in a lower level.

Under such circumstances, the Government of Myanmar has been implementing on improving the hospital health care service, increase of the bedrooms, improving the performance indicator at the hospitals, reducing the Mortality Rate at the hospitals, etc. continuing its hospital care program after 2006-2011 period regarding the National Health Plan (2011-2016). However, it has not been able to provide fulfilling medical service due to poor development status of medical facilities and equipment in the public health sector.

Myanmar is divided into 17 Health Administrative Divisions, and a Health Department is located in each Health Administrative Division. The referral system of health and medical institutions consists of National Hospital, State/Regional General Hospital, District Hospital, Township Hospital, Station Hospital and Regional Health Center. Of these, the general hospitals in states that are home to ethnic minorities play the important role of core regional hospitals, yet due to deterioration of the facilities and equipment, they do not properly fulfil the functions of the referral hospitals. For this reason, there is an urgent need for the health care facilities to be improved so that local residents can be provided with the appropriate health care services.

Against this background, the government of Myanmar cited Lashio General Hospital, which is situated in the center of the Health Administrative District of Shan State (North) and Loikaw General Hospital, which is located in the state capital of Kayah State, both regions inhabited by ethnic minorities, as hospitals for which improvement is a priority.

Lashio General Hospital is located in Lashio City, which is a central city of Shan State (North) Health Administrative Division. It covers the 3rd largest area in the country, and has 300 beds, performs 3,662 operations yearly (2012), and receives 31,719 outpatients annually [1] (2012); it is a core hospital in the region and its catchment population is 1.8 million people [2](2011). The facilities of the hospital are aged, the oldest from the 1940s, and has become severely deteriorated although repairs have been maed as needed. Also, there is no hallway with a roof connecting each building that are scattered, so circulation between buildings is inefficient. In addition, available curative service is limited because of insufficient quality and quantity of medical equipment. For those who cannot be treated are to be transferred to Mandalay General Hospital, 6 hours away by motor vehicles. Therefore,

[1] *Based on Questionnaire*
[2] *JICA Research Group*

the development of a system to provide appropriate healthcare service in Shan State (North) Health Administrative Division, including the improvement of Lashio General Hospital, has become a pressing issue.

The Loikaw General Hospital is a State General Hospital situated in Loikaw Township, the state capital of Kayah State. The hospital is the core medical institution in the state, with 200 beds, handling over 1,600 operations annually and treating over 20,000 outpatients. The area it serves extends as far as the southern part of the neighboring Shan State. Since the main building in which are concentrated most of the hospital functions was built in 1964; the building is old and deteriorating, with the bare steel reinforcements showing through the concrete frame in places, and some parts are too dangerous for clinical activities to continue. In addition the medical equipment is inadequate in terms of both quantity and quality, so that the medical care that can be given is limited, and patients that cannot be treated here must be transferred to Yangon General Hospital or Mandalay General Hospital, both over 10 hours distant by road. Under this situation, the development of a system to provide appropriate health care services in the Kayah State Health Administrative Division, including the improvement of the Loikaw General Hospital, has become a pressing issue.

The objective of this project is to improve medical services at Lashio General Hospital and Loikaw General Hospital, and to enhance their function as local core hospitals by upgrading facility and equipment at both hospitals.

1-2 Natural Conditions

1-2A Lashio General Hospital

(1) Topographical Conditions

Lashio is a core city of Shan State (North) situated in the Hilly Area in northeastern Myanmar. The road distance from Yangon, Naypyidaw and Mandalay is about respectively 940km, 560km and 280km. It takes 10 hours drive by using the concrete paved highway from Yangon to Mandalay through Naypyidaw. From Mandalay to Lashio, it takes around 6 hours drive as the road has many steep hills although it is asphalt paved.

Lashio city is located on the slope of the hill, and Lashio General Hospital is cited at the center of Lashio city, near the top of the hill. The hospital site area is approximately 63,500 sqm and the shape of the site is kind of a trapezoidal shaped body with a small neck at north side. The base of the trapezoid is approximately 280m, and is facing the main road of the city. The site is steeply sloped up from the entrance gate facing the main road to the inside of the premises. The maximum elevation difference within the site is approximately 22m, therefore, there is no possibility of flood in the site even in the heavy rainy season. The topographical survey drawing is attached in Annex 7-1-1.

(2) Geographical Conditions

According to the boring survey at 4 points in the hospital site, the soil is clayey silt down to 3m depth from the surface and underneath a weathered limestone and limestone bedrock. N value of all layers are over 10 and has enough bearing power. The underground water was not detected down to 20m depth and there is no possibility of liquefaction. It is recommended from the boring surveyor that the foundation of the planned building can be spread foundation and no need for piling. The boring survey result is attached in Annex 7-1-2.

(3) Water Quality

There is a city water pipeline in front of the site running along the main road. The city water is supplied by gravity from the water reservoir at the peripheral of Lashio city, however, the water is cut off during the dry season. Therefore, the hospital is using both city water and the tube well. The result of the water quality analysis detected no serious problems such as arsenic contamination. However, the hospital staff and patients are not drinking those water as the bottled water for drinking is provided everyday by NGO and private donation. The water quality analysis result is attached in Annex 7-1-3.

(4) Climatic Conditions

According to the Koppen Climate Classification system, Lashio has a humid subtropical climate (Cwa), and as shown in Table 1-1, high temperatures and high humidity in summer. However, the

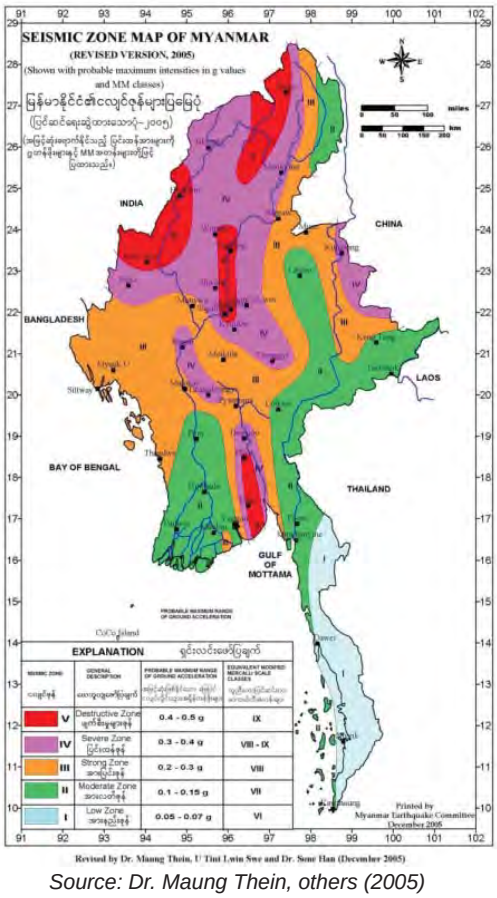
temperature in winter becomes lower than 10 degrees Celsius under few rainfalls and dry conditions. The rainy season is from May to October, but the annual rainfall is less than half of it in Yangon which is 2,700mm. However, it shall be noted that the rain falls heavy in very short time.

Table 1-1 Meteorological Data for Lashio (2009~2012)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
Avg. High Temp.(°C)	26.5	29.5	31.7	32.7	32.7	30.5	29.9	29.8	30.5	30.3	28.2	25.8	29.8
Avg. Temp.(°C)	6.1	7.2	12.1	16.6	19.8	21.8	21.8	21.2	20.7	18.3	12.6	8.3	15.5
Precipitation(mm)	4	0	26	58	145	196	244	254	149	76	16	20	1,187
Avg. Humidity in AM (%)	85	73	70	67	71	81	84	86	84	85	84	89	80
Avg. Humidity in PM (%)	65	50	45	51	62	75	77	81	80	78	78	73	68

(5) Earthquakes

The boundary of India-Australia Plate and Eurasia Plate runs north to south of Myanmar, and therefore, earthquakes often occur in Myanmar. Also there is a record of extreme earthquake along the boundary of Shan State and China. Lashio is situated between those earthquake occurring areas, however, there is no record of earthquakes in Lashio. The seismic zone map of Myanmar shows that Lashio belongs to Zone II "Moderate Zone", which has relatively few earthquake possibility.



Source: Dr. Maung Thein, others (2005)

Figure 1-1 Seismic Zone of Myanmar

1-2B Loikaw General Hospital

(1) Topographical Conditions

Loikaw Township and the peripherals are cited in plain field, a part including gently sloped hills. The soil of Kayah State consist of the alluviums of old to new limestones, however, that of the hospital site consist of the alluviums of sandy, silty, or clayey soil. The result of the topographical survey is attached in Annex 7-2-1.

(2) Floods

Sometimes a part of the center of Loikaw Township gets flooded if the Baluchang Dam discharge the water emergently when the dam is full. However, the frequency of the emergent discharge is almost once in 20 years, and there is no possibility of flood at the hospital site as it is located on the top of moderate hill.

A part of the hospital site sometimes get flooded temporarily due to the heavy rain, but the water

will be drained soon as the site is gently sloped down to the south. Therefore, there is no possiblity of flood for a long stretch of time within the hospital site.

(3) Geographical Condition

Boring survey (4 points, 20m depth each) was carried out during 16 to 20 October 2013, after the rainy season. The result of the survey showed that at all points the soil consisted of sandy silt and clayey silt, and the bearing capacity of the soil down to 5m depth from the surface is in the range from 8 ton/sqm to 20 ton/sqm. There was a little water contained near the surface soil because the survey was carried out just after the rainy season, however, the underground water was not detected down to 20m depth. According to the boring surveyor, the depth of the foundation bottom shall be 2.5m and the common spread foundation is recommended against the 8.61 ton/sqm bearing capacity. The result of the Boring Survey is attached in Annex 7-2-2.

Table 1-2 Outline of Boring Survey Result

Unit: ton/sqm

Depth	Boring Point 1		Boring Point 2		Boring Point 3		Boring Point 4	
	Soil Type	Bearing Capacity	Soil Type	Bearing Capacity	Soil Type	Bearing Capacity	Soil Type	Bearing Capacity
1m	Sandy Silt	9.51	Clayey Silt	8.15	Sandy Silt	9.51	Sandy Silt	10.87
3m	Clayey Silt	21.55	Clayey Silt	21.55	Clayey Silt	24.63	Sandy Silt	27.71
5m	Silty Sand	18.29	Clayey Silt	16.98	Clayey Silt	20.90	Clayey Silt	23.52
7m	Clayey Silt	18.09	Clayey Silt	23.80	Clayey Silt	31.42	Clayey Silt	19.04
9m	Clayey Silt	15.73	Clayey Silt	15.73	Sandy Silt	11.99	Sandy Silt	13.48

(4) Water Quality

There is no city water pipelines around the hospital site. The hospital is using the water from the creek running through the center of Loikaw Township. This Project is also planned to use the same water source, however, the Japan's Loan Project to construct filtration plant and city water pipelines ongoing and the water supply to the hospital shall be connected to this pipeline after the above project is completed.

The water source of the planned filtration plant is the same creek and the result of the water quality test showed no arsenic contamination. The creek water has high turbidity and contains iron about double of WHO water standards for drinking water, however, it is expected to be filtrated and reduced within the standard after the plant is completed.

Table 1-3 Outline of Water Quality Test (Loikaw)

Items	WHO Standard (1993)	Water Source (creek)
pH	6.5~8.5	7.8
Arsenic (As)	0.01mg/l	0mg/l
Color	15TCU	10TCU
Turbidity	5NTU	52NTU
Total Hardness	500mg/l	152mg/l
Iron	0.3mg/l	0.74mg/l

Manganese	0.05mg/l	0.01mg/l
Chloride (as CL)	250mg/l	4mg/l
Sulphate (as SO_4)	200mg/l	18mg/l
Dissolved Solids	1,000mg/l	139mg/l
Fluoride (F)	1.5mg/l	0mg/l
Lead (as Pb)	0.01mg/l	0mg/l
Arsenice (As)	0.01mg/l	0mg/l
Nitrate (N, NO_3)	50mg/l	0.02mg/l
Calcium	200mg/l	16mg/l
Magnesium	150mg/l	33.6mg/l

(5) Climatic Conditions

Loikaw belongs to tropical savanna climate as same as Naypyidaw and Mandalay. The annual rainfall in Loikaw is lower than that in Yangon, which belongs to tropical monsoon climate. The rainy season is from May to October, and the rest is divided to cool dry season from November to February and hot dry season from March to middle of May.

The annual average (from 2009 to 2012) of maximum, minimum and mean temperature is respectively 29.5 ℃, 17.1 ℃ and 23.3 ℃. The maximum temperature in dry season from February to March is around 32 ℃ and hot, and so as that from December to January with the average of around 27 ℃. However, the minimum temperature of December and January is around 10 ℃ and it gets cold in the morning and night time. The mean temperature of rainy season from May to October is over 28 ℃ with the humidity over 80%, and it is hot and humid.

Table 1-4 Meteorological Data for Loikaw (2009~2012)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
Avg. Max. Temp.(°C)	27.9	31.9	32.3	33.3	31.2	29.0	28.3	27.9	28.9	28.5	28.4	27.2	29.5
Avg. Min. Temp.(°C)	10.2	11.0	15.4	19.6	21.0	21.1	20.9	20.6	20.6	19.2	14.8	10.6	17.1
Precipitation(mm)	9	1	21	56	182	131	166	305	184	158	21	12	1,245
Avg. Humidity in AM (%)	83	79	74	77	82	88	89	90	89	88	87	85	84
Avg. Humidity in PM (%)	68	65	69	72	79	81	80	83	85	83	76	72	76

(6) Earthquakes

Loikaw is located in the earthquake belt and a lot of earthquakes including mid-scale occurred in the neighboring areas in the past. The most biggest earthquake occurred nearby from September 1969 to December 2004 recorded 6MM ~ 7.3MM, reporting there was a slight damage on the buildings in Loikaw. According to the seismic zone map of Myanmar, Loikaw is situated in Zone II “Moderate Zone”, which has the possibility of earthquakes with 7MM and 0.1 ~ 0.15G ground acceleration.

1-3 Environmental and Social Considerations

This project is an ongoing upgrading plan of a hospital facility. As to environmental impacts, an increase caused by this project on top of the existing hospital's impact will be generated, and some impact by construction and procurement work should be considered. Therefore, the project is assessed as "Category C."

(1) Environmental Impact Assessment : EIA

The Environmental Conservation Law (2012) that was passed by Congress in 2012 is a highly ordered law regarding environmental preservation in Myanmar. However, bylaws regarding environmental protection regulations, EIA and its procedures, and national environmental standards have not yet been established.

Therefore, this project does not require an EIA or Initial Environmental Examination.

(2) Effect on Surroundings

(2)-1 Lashio General Hospital

1) Air, Noise and Vibration

A diesel engine power generator will be brought in as a back-up power source, but its use will be restricted to times when the power fails, and is not considered to have any particular impact.

2) Water Quality

The waste water (raw sewage/miscellaneous drainage) discharged from the facilities to be constructed in this project will be treated in a septic tank, and the clean water discharged to a drainage channel. As the accumulated sludge will be processed by the city service, there will be little impact on the environment.

3) Medical Waste

There are no regulations regarding the disposal of medical waste; however, medical waste such as used disinfecting cotton, syringes, etc. are collected and processed by contractors of the city. Currently, classification of disposal by the hospital is insufficient, but efforts in classifying containers and such are being made. The collection and processing of medical waste by contractors of the city shall be continued after the completion of this project.

4) Laboratory and Medical Liquid Waste

There are no regulations regarding the disposal of laboratory and medical liquid waste; however, it is collected and processed by contractors of the city, which shall be continued after the completion of this project.

5) General Waste

General waste is collected and processed by contractors of the city, which shall be continued after the completion of this project.

6) Medical Practices in New Facilities

The increase of patients and waste by development and expansion of medical services at Lashio General Hospital for new facility and equipment may cause some impact on the surroundings. However, the increase of waste is stated as above and expected to cause little impact. As to the increase of patients, patients within Lashio City come on foot, by motorcycle or by taxi, and only the patients from distant areas use vehicles. Therefore, the increase of vehicles in the city is little and it is expected to cause little impact to the city traffic.

(2)-2 Loikaw General Hospital

1) Air, Noise and Vibration

As with Lashio General Hospital, a diesel engine power generator will be brought in as a back-up power source, but its use will be restricted to times when the power fails, and is not considered to have any particular impact.

2) Water Quality

The waste water (raw sewage/ miscellaneous drainage) discharged from the facilities to be constructed in this project will be treated in a septic tank, and the clean water discharged to a drainage channel. As the accumulated sludge will be processed by the township collection service, there will be no impact on the environment.

3) Medical Waste

As there are no regulations related to the disposal of medical waste, medical waste such as used disinfecting cotton, syringes, etc., are placed in a pit dug on hospital grounds, burned, and then covered with soil. However, after the execution of this project, it is planned for medical waste to be disposed of using a commercial collection service.

4) Laboratory and Medical Liquid Waste

There are no regulations related to the disposal of laboratory and medical liquid waste, which is allowed to soak into the soil on hospital grounds. After the execution of this project, disposal using a commercial collection service is planned.

5) General Waste

A collection service run by Loikaw Township is used for the disposal of general waste, and this collection service will continue to be used.

6) Medical Practices in New Facilities

As with Lashio General Hospital, the increase of patients and waste by development and expansion

of medical services at Loikaw General Hospital for new facility and equipment may cause some impact on the surroundings. However, the increase of waste is stated as above and expected to cause little impact. As to the increase of patients, patients within Loikaw Township come on foot, by motorcycle or by taxi, and only the patients from distant areas use vehicles. Therefore, the increase of vehicles in the city is little and it is expected to cause little impact to the city traffic.

(3) Trees

Myanmar is an exporter of quality teak and other timber, for which Kayah State is a leading production area. For this reason, while the felling of trees on the project site is not prohibited, in the interest of environmental protection, the large trees on the site will be preserved as they are and will not be felled, in so far as they do not hinder construction of the new facilities.

(4) Impact on the Surrounding Area during Construction Work

1) Impact on the Hospital and Patients

Access roads to Lashio General Hospital and Loikaw General Hospital are limited, and it is thought that the traffic of work vehicles and construction workers could interfere with the traffic of patients, hospital staff, and service vehicles. For this reason, it is planned to avoid impact on the patients and hospital by: ①clearly demarcating the construction site with a temporary enclosure, and ② negotiating with the hospital concrete means of separating the access routes for patients and construction vehicles and workers, on the basis of which the construction plan will be drawn up.

2) Impact of Noise and Vibration during Construction Work

It is considered that noise and vibration will affect both hospital facilities. It is assumed that the main source of noise and vibration will be the main frame construction work, such as concrete casting. The impact will be kept to a minimum through the use of a temporary enclosure made of sheet steel to reduce the amount of noise reaching the hospital, and by coordinating work times, etc., with the hospital.

3) Disposal of Construction Waste

Loikaw Township has no regulations related to the disposal of construction waste. The waste will be dumped at a specified location by the main contractor or by a local contractor.

Chapter 2 Contents of the Project

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

2-1-1 Overall Goal and Project Goal

Myanmar is divided into 17 Health Administrative Divisions, and a Health Department is located in each Health Administrative Division. The referral system of health and medical institutions consists of National Hospital, State/Regional General Hospital, District Hospital, Township Hospital, Station Hospital and Regional Health Center. Of these, the general hospitals in states that are home to ethnic minorities play the important role of core regional hospitals, yet due to deterioration of the facilities and equipment, they do not properly fulfill the functions of the referral hospitals. For this reason, there is an urgent need for health care facilities to be improved so that local residents can be provided with appropriate health care services.

The government of Myanmar states in the long-term national development plan "Myanmar Health Vision 2030" that it is one of their objectives to ensure universal coverage of health service for entire nation, providing health and medical services as its main element. The plan sets the target health indicators for 2030/2031, which include life expectancy at birth, infant mortality rate, under-5 mortality rate, and maternal mortality ratio. Data for 2001/02 and 2010/11 and goals for 2030/31 are shown in Table 2-1. The indicators show improvement, but further efforts are necessary to achieve the goals.

Table 2-1 Main Health Indicator Improvements and Goals (Nationwide)

	2001/02	2010/11	2030/2031 (Goals)
Life Expectancy at Birth	60-64	65	75-80
Infant Mortality Rate (IMR) /1,000 LB	59.7	48	22
Under-5 Mortality Rate (U5MR) / 1,000LB	77.8	62	29
Maternal Mortality Ratio (MMR) / 100,000LB	255	*200	90

**Adjusted data based on United Nation's Inter-agency Maternal Mortality Estimates in 2010.*
Source: World's Children reports 2013, Health in Myanmar 2013

Against this background, the government of Myanmar cited Lashio General Hospital, which is situated in the center of the Health Administrative District of Shan State (North) and Loikaw General Hospital, which is located in the state capital of Kayah State, both regions inhabited by ethnic minorities, as hospitals for which improvement is a priority.

The objective of this project is to improve medical services at Lashio General Hospital and Loikaw General Hospital, and to enhance their functions as local core hospitals by upgrading the facility and equipment at both hospitals. The following table is a summary of the overall goal and project goal for this project.

Table 2-2 Overall Goal and Project Goal

Overall Goal	To improve the quality of medical services at Lashio General Hospital in Shan State and Loikaw General Hospital in Kayah State, and to contribute to the improvement of the health conditions of local residents in the areas.
Project Goal	To provide Lashio General Hospital and Loikaw General Hospital with necessary facilities and medical equipment to serve as local core hospitals in their areas.

2-1-2 Outline of the Project

The objective of this project is, through the improvement of the facilities and equipment of the Lashio General Hospital and the Loikaw General Hospital that are presently in the state described above, to improve the medical services of the hospital and thus to contribute to the enhancement of its function as a core hospital for the region. In order to achieve this objective, the facilities in Lashio General Hospital including Specialist Outpatient Department (OPD), Emergency (ER), Surgical Operation Department, Imagery Department, Dental Clinic, Eye Department, Ear, Nose & Throat (ENT) Department, Laboratory, Blood Bank, Physiotherapy and Oncology Ward, and the facilities in Loikaw General Hospital including OPD, ER, General Medicine, Surgery (including operating theaters (OT)), Dental, Obstetrics and Gynecology (OB/GY), Eye, ENT, Physiotherapy, Imagery and Laboratory shall be rebuilt and equipped with necessary medical equipment including those of the departments other than stated above. To ensure that the medical equipment that is procured can be used efficiently for a long time, a soft component shall be implemented aimed at enhancing the operation and maintenance capacity of Lashio General Hospital and Loikaw General Hospital.

2-2 Outline Design of the Japanese Assistance

2-2A Lashio General Hospital

2-2A-1 Design Policy

2-2A-1-1 Basic Policy

(1) Confirmation of Requests

1) Facility

The facility improvement request from Myanmar was to build a new Oncology Ward, which is currently located in the corner of the existing General Medicine Ward, a new Dermatology Department, a new Outpatient Department, and to rebuild the doctor dormitory. However, as a result of an investigation of all the existing facilities, it was discovered that the existing facilities not only the ones stated above but also some others were too deteriorated to continue medical practice, and it was decided to upgrade and improve those buildings as part of this project.

2) Equipment

Prior to the start of the local survey, the Ministry of Health sent a list of requested equipment to the JICA Office. A breakdown of this list contains the requested equipment for the newly constructed buildings and 9 items[1] for existing facilities, but this was thought insufficient for restoring and improving hospital functions. Therefore, immediately after the field survey began, each department was once again asked about their needs, in order to create a request list, which was then used as the final request list. The following criteria were set for the selection of requested equipment after discussions with the Ministry of Health.

- The equipment listed in the Hospital Upgrading Project, Curative Service document and Standard Equipment List for a 200-bed Hospital issued by the Ministry of Health would be upgraded or newly procured.
- Existing equipment would be upgraded.
- Equipment which is highly necessary for functioning as state general hospital but that was not included in the standard list described above would be upgraded or newly procured.

In the process of confirming the request list, 6 items[2] planned for procurement by the Ministry of Health were discovered. Consequently, these items were deleted from the list or their quantities were adjusted.

[1] ICU bed, ventilator (for adult), ambulance, nurse station unit, ventilator (for infant), spare parts for C-PAP ventilator, LED phototherapy unit, infant warmer, and autoclave

[2] ultrasound machine, patient trolley, infant warmer, hematology analyzer, bandage changing trolley, and medicine trolley

(2) Selection of Project Components

1) Building Selection Policy

Most of the existing buildings scattered across the Lashio General Hospital site show deterioration, and even the relatively new Pediatrics, OB/GY, and OT/Delivery Department buildings shows some damages in finishing. In particular, the Eye, ENT, and OPD/ER buildings are structurally dangerous. Therefore, immediate re-construction of these buildings is a pressing issue and shall be made a part of this project.

In addition, the departments that conform to the following 4 selection criteria including reconstruction due to deterioration will be targeted for this project.

① Re-construction needed due to severe deterioration of existing facility.
② Originally requested for the project with a confirmed need for moving/building.
③ Additionally requested as the investigation progresses, and a confirmed need for moving.
④ Need to be included in the project in order for existing buildings to work efficiently.

Table 2-3 Building Selection and Reasons

Building	Department	Rooms	Criteria	Remarks
Main Building (North)	Specialist OPD	Reception, Waiting room, Specialist OPD room (Surgery, General Medicine, Pediatrics, Dermatology), Social Insurance Counseling room, etc.	①&②	Creation of one Outpatient Department to avoid crowding at each ward, and for the simple and efficient management of inpatients and outpatients. (Outpatient examination in the existing building is performed in each ward.)
	Laboratory	Laboratory (Serology room, Microbiology room, Hematology room, Pathology room, Clinical Chemistry room) etc.	①	Requires re-construction as it is part of the severely deteriorated OPD/ER building.
	Blood Bank	Reception, Waiting room, Blood Donation room, Blood Bank, etc.	①	Requires re-construction as it is part of the severely deteriorated OPD/ER building.
	Pharmacy	Pharmacy, Medical storage, etc.	④	Prescribing medicine shall be performed only at the OPD.
	Eye	Waiting, Consultation room, Recovery room, Nurse station, Minor operation room, etc.	①	Requires re-construction as the operation theaters' condition is poor.
	ENT	Waiting room, Consultation room, Recovery room, Nurse station, Minor operation room, etc.	①	Requires re-construction because of severe deterioration.
	Dental	Waiting room, Consultation room, X-ray room, Nurse station, etc.	①	Requires re-construction because of severe deterioration.
	Oncology	Consultation room, Chemotherapy room, Nurse station, etc.	②	Oncology Ward was started in March 2012, but administers medication in the corner of the General Medicine Ward due to space issues.
	HIV/AIDS	Reception, Waiting room,		Requires re-construction as it is part of

Building	Department	Rooms	Criteria	Remarks
	Counseling	Counseling room, Consultation room, etc.		the severely deteriorated OPD/ER building.
	Physiotherapy	Rehabilitation room, Consultation room, etc.	①	Requires re-construction as it is part of the severely deteriorated OPD/ER building.
Main Building (South)	Emergency	Emergency room, Treatment/ Observation room, Nurse station, On-call room, Police Office, etc.	①&②	Follows the Ministry of Health's improvement policy for emergency rooms at local hospitals.
	Operation	Specialist operation room, Changing room, Recovery room, Sterilization room, ICU, On-duty room, etc.	⑤	Shorter route between the new ER and better access between Surgical, Orthopedics, and Radiology Departments. Existing operating room will be available as extras or for OB/GY operations – mainly Cesarean section surgeries, which have increased in recent years.
	Radiology	Waiting room, X-ray room, Ultrasound room, On-duty room, etc.		Insufficient radiation protection in the existing building. Better access from new ER / OT Department.
	Medical Storage	Medical storage, etc.	①&③	Severe deterioration and space issues.
	Laundry	Laundry room, Linen storage, etc.	④	For cleanliness of the operation theatres and efficient management. (Done manually by hospital staff currently.)
SAMSC Building	SAMSC	Consultation, Bedrooms, Nurse station, On-duty room, etc.	①&③	Severe deterioration and poor conditions.
Mortuary Building	Autopsy	Morgue, Autopsy room, Changing room, etc.	①&④	Severe deterioration and limited space for installing requested equipment.

2) Equipment Selection Policy

In addition to the procurement of medical equipment for the target facilities above, equipment procurement for the existing Pediatrics Ward, General Medicine Ward, Surgery Ward, OB/GY Department, Isolation Ward, Dialysis Room, and Orthopedics Department was also targeted for inclusion in the project.

(3) Site Selection

The space for new construction for this project is limited as there are over 50 variously sized buildings on the Lashio General Hospital site. Therefore, existing the OPD/ER building to be reconstructed will be planned as the future Main Building (South) site. In order to maintain its medical functions during construction, the Main Building (North) must be built first, the OPD/ER building moved and dismantled next, and finally the Main Building (South) built.

Other site were selected based on the policies below.

① The Main Building (South & North) shall be located near the front road for easy

access.

② The Main Building shall be located near wards and connected to existing wards with corridors to allow for shorter routes for patients and workers.

③ The SAMSC building shall be adjacent to the existing SAMSC building located on the northern part of the site in order to separate it from other departments' patients.

④ The Mortuary building shall be adjacent to the existing Mortuary building located on the southern part of the site as it is customary to locate it in an area secluded from other services.

(4) Project Components

The following contents were agreed upon in the minutes of meeting after confirming the selected facilities and departments based on the selection criteria stated above, and discussing target facility components including necessary rooms with Myanmar.

Table 2-4 Target Facilities and Departments (Lashio General Hospital)

Building	Department	Major Rooms
Main Building (North)	Specialist OPD	Reception, Waiting Room, Specialist OPD Room (Surgery, General Medicine, Pediatrics, Dermatology), Social Worker, etc.
	Laboratory	Laboratory (Serology Room, Microbiology Room, Hematology Room, Pathology Room, Clinical Chemistry Room) etc.
	Blood Bank	Reception, Waiting Room, Blood Donation Room, Blood Bank, etc.
	Pharmacy	Pharmacy, Medical Storage, etc.
	Eye	Reception, Consultation Room, Recovery Room, Nurse Station, Minor Operation Room, etc.
	ENT	Reception, Consultation Room, Recovery Room, Nurse Station, Minor Operation Room, etc.
	Dental	Reception, Consultation Room, X-ray, Nurse Station, etc.
	Oncology	Consultation Room, Chemotherapy Room, Nurse Station, etc.
	HIV/AIDS Counseling (IHC)	Reception, Waiting Room, Counseling Room, Consultation Room, etc.
	Physiotherapy	Rehabilitation Room, Consultation Room, etc.
Main Building (South)	Emergency	Emergency Treatment, Examination/ Observation, Nurse Station, Dr. Duty Room, Police Surgeon Office, etc.
	Operation	Operation Theater, Changing Room, Recovery Room, Trolley Change, ICU, Nurse Duty Room, etc.
	Radiology	Reception, X-ray Room, Ultrasound Room, Staff Duty Room, etc.
	Medical Storage	Medical Storage, etc.
	Laundry	Laundry, Linen Storage, etc.
SAMSC	SAMSC	Consultation Room, Bedrooms, Nurse Station, Nurse Duty Room, etc.
Mortuary	Mortuary	Morgue, Autopsy Room, Changing Room, etc.

2-2A-1-2 Policy on Natural and Environmental Conditions

This project's construction site is located in Lashio city, a hilly area in northeastern Myanmar. According to the Koppen Climate Classification system, Lashio has a humid subtropical climate (Cwa), and as shown in Table 1-1, high temperatures and high humidity in summer. However, the lack of rain, dry conditions, and low temperatures below 10 degrees

Celsius in winter should be also considered. Specifically, many operable openings shall be installed on exterior walls to provide natural ventilation and prevent room temperatures from rising in summer, and to prevent room temperatures from dropping by closing the openings in winter. Also, a comfortable interior environment shall be provided by enhancing insulation performance in the building.

In addition, Lashio is located in the Moderate Zone of the Seismic Zone Map, and is considered an area with relatively few earthquakes. However, structural calculations were performed based on Japanese structural criteria using the seismic zoning coefficient in Myanmar.

Additionally, the following policies were applied in the planning.

① There is no report of flooding because the site is located on a hill and drains well; however, the floor level shall be 500mm higher than ground level considering the flood damage caused by heavy rain and a side ditch will be installed around the building.

② Considering the priorities in terms of function such as waterproofing, heat insulation, and durability, etc., materials of a certain grade that are relatively easy to maintain will be selected.

③ Considerations will be made for energy-saving by taking advantage of natural light and/or ventilation and an appropriate grade and scale of the building will be planned as not to cause excessive operation and maintenance.

④ Aluminum double-sliding windows are installed in most of the existing buildings. They will be installed in new buildings to match.

⑤ A lightning rod will be installed for lightning strikes during the rainy season.

⑥ The hospital shall be a landmark as a core hospital in the area and be structurally robust even in case of disasters.

2-2A-1-3 Policy on Social and Economic Conditions

(1) Architectural Style

The commonly used structure in Myanmar is a half-timbered structure with wooden framework and concrete block walls. Reinforced-concrete structures are common for buildings higher than 3 stories. For this project as well, the general local structure will be applied accordingly. The frame structure will be reinforced-concrete, exterior walls of mainly concrete blocks, and interior walls with natural ventilation will be of perforated blocks.

(2) Gender Consideration

At Lashio General Hospital, most of the 61 doctors and 105 nurses are female, and patient attendants are mostly female as well. Therefore, the number of bathrooms for females shall be planned accordingly.

2-2A-1-4 Policy on Construction and Procurement Conditions

(1) Construction Plan Approvals and Permits/ Regulations

Obtaining a building permit requires an examination of the design drawings by the Ministry of Health. Once a building permit has been obtained, the drawings are to be submitted to Shan State (North) for notification of the content of the design.

1) Zoning

Planning will be based on the following standards and regulations of Lashio City.

① A distance of between 3 feet (approx. 0.91m) and 5 feet (approx. 1.52m) is to be maintained between the exterior walls of the buildings and the boundary line of the grounds.

② Buildings of up to 3 stories are possible, but in response to a request from the hospital side, the height of the buildings will be 1-story or 2-story.

2) Fire Regulations

The Lashio City Fire Department will review the design drawings. Fire standards indicated by the Fire Department are as follows, and these standards will be taken into consideration in the planning.

① Stairs for evacuation are to be provided.
② Fire alarm system is recommended.

(2) Quality of and Difficulty in Procurement of Local Materials and Equipment

With respect to the principle construction materials and equipment, local products and products imported by agents from ASEAN countries and China can easily be procured on the local market. There does not seem to be any particular problem with the quality of these principle construction materials and equipment, and advantage will be taken of them as locally-available materials and equipment.

(3) Labor Situation

Construction site working hours in Myanmar are generally from 9 till 5, but there are no regulations and night shifts are often worked in order to shorten the construction period. The project site is on the grounds of a functioning hospital, and out of consideration of the impact on inpatients etc., the construction period will be determined on the basis of the ordinary working hours of 9 to 5.

Lashio has few skilled workers of any kind; they tend to be concentrated in the major cities of Myanmar, such as Yangon, Nay Pyi Taw and Mandalay. Therefore, workers will be deployed from these cities.

2-2A-1-5 Policy on Utilization of Local Contractors

In the past, most construction work was carried out by the state-run construction corporation. However, in the past 10 years, there has been growing privatization of the construction industry and there are now more private-sector contractors. Until recently, the construction market in Myanmar was restricted to small-scale development in Yangon, government-commissioned work mainly in Nay Pyi Taw, and Chinese investment development in Mandalay, but at the present time, many large-scale developments backed by foreign investment to Yangon are being planned. Many local contractors are also capable of working with Japanese contractors. It is important to instruct local contractors in Japanese management methods since the awareness of quality and safety controls in Myanmar is low, and overall construction skills need improvement. Therefore, a Japanese field supervisor shall be assigned to the project to provide instruction on construction using as much help from local contractors as possible.

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

(1) Facility

Facilities and maintenance system at Lashio General Hospital has no significant organization; 2 Technicians are in charge of the electrical maintenance in the facilities, and the Steward is in charge of water supply. When a problem occurs in the facilities or equipment, the repair is outsourced through Medical Superintendent except a minor electrical repair. Therefore, equipment with relatively easy maintenance that are installed in existing facilities or similar facilities shall be selected. Also equipment that requires daily maintenance shall be selected considering its availability of consumables and spare parts as to cut down maintenance cost. An elevator shall be inspected regularly by its manufacturer or local distributor technician, and the cost shall be included in operation and maintenance cost.

(2) Equipment

Currently, there is no department for equipment maintenance management at Lashio General Hospital, with the doctors and nurses of each department performing routine maintenance and simple repairs. If they are not able to do so, repairs are generally outsourced through the Medical Superintendent or Deputy Medical Superintendent to the CMSD under the control of the Department of Health at the Ministry of Health. If repairs are not possible at this level, work is further outsourced to agents of the respective equipment manufacturers. It has been agreed upon with the Ministry of Health that before installation of medical equipment for this project begins, the Ministry of Health will assign new staff to Lashio General Hospital to be in charge of equipment maintenance management. The maintenance management of medical equipment will be implemented with these staff members playing the central role.

To ensure that the procured devices are used effectively and on a long term basis, devices that need supplies and/or replacement parts, or that must be repaired or require periodic inspections, etc. by the manufacturer's agent will generally be selected from manufacturers with agents in Myanmar or neighboring countries. After procurement, a system for maintenance management will also be secured. Moreover, it is necessary for MOH to enter into the maintenance contract with the agents for particular equipment in Imagery Department such as X-ray machine and ultrasound machine.

In general, the procured devices will be products made in Japan or Myanmar. However, conditions will be carefully examined regarding advantages in terms of maintenance management and the level of product dissemination in Myanmar, etc., and if it is preferable to procure a device made in a third country, such procurement will be considered after approval is obtained from both Japan and Myanmar.

Furthermore, when devices are delivered, the equipment procurement company will provide instruction on initial operation and maintenance methods to hospital personnel so that the devices can be used correctly and safely. Soft components will also be implemented with the objective of enhancing maintenance management techniques and systems for the devices to promote their effective and long-term use.

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

(1) Facility

As to the grade for facilities, it shall be set by referring to existing and similar facilities' design and specifications, and employ local methods prioritizing usability, ease of maintenance, and durability. Also, the Standard Design provided by the Ministry of Health (architectural drawings of Laputta General Hospital designed in April 2009) shall be referred to for the size or area of bedrooms and operation theaters.

Additionally, the facilities shall be planned based on the policies below.

① The site area at the construction site is limited, but the facilities shall be 2 stories in consideration of patient traffic and to match existing facilities.
② The size of the buildings and harmony with existing buildings on site shall be considered.
③ The facilities shall be appropriate in grade and size so that the operation and maintenance burden is not excessive.
④ The structure shall be robust to function as a base for treatment and evacuation in case of disaster as a core hospital in the area. Facility planning shall secure infrastructure with an elevated water tank and an emergency power generator in case of emergency to sustain its ability for medical treatment.
⑤ Precautions will be taken for preventing infection.
- The areas around Operation Theaters shall be clearly sectioned into clean and dirty

zones in order to maintain cleanliness.

- Patients with cancer or HIV who have low immune systems shall be separated from general outpatients.

⑥ The risk of exposure to radiation by patients or their family shall be eliminated.

⑦ The corridor shall connect existing facilities and new buildings in order to transport patients and materials in case of rain.

(2) Equipment

Equipment necessary for medical activities in the project components described above will be eligible for inclusion in the project. Equipment which cannot be handled due to the medical device maintenance system of Myanmar and/or the technical skill level of the hospital shall not be included in the project; nor shall equipment be included for which the replacement of parts and/or repair work is difficult due to the absence of manufacturer agents providing maintenance services in Myanmar.

The quantity of devices shall be set appropriately, taking into account the number of current medical staff, the planned number of rooms, and the number of existing devices that can continue to be used. A set quantity of replacement parts and supplies will be included in the plan as an initial allowance to be used after delivery of the device until the Myanmar side has developed a procurement plan.

In contrast to the nominal power supply voltage of 220V, the measured values were approximately +5%, which is within the allowable range for the use of medical devices. However, voltage stabilizers will be included to respond to sudden fluctuations for devices with coils such as motors and transformers, and uninterruptible power supply apparatus will be included with devices using electronic parts that may be damaged by blackouts or overloaded when power is restored.

2-2A-1-8 Policy on Construction/ Procurement Methods and Schedule

(1) Facility

Construction will be stopped completely for approximately 10 days in the middle of April for Thingyan Water Festival. Also, the construction schedule shall be set considering the rainy season between May and October as it is expected to cause negative impact on foundation construction and cause delays in outdoor construction.

It is difficult to manage the proposed construction without moving and dismantling existing facilities, as they are scattered across hospital property. Therefore, there shall be 2 phases of construction: the moving and dismantling of existing facilities after building the Main Building (North), SAMSC, and Mortuary buildings, and then the resumption of building the Main Building (South) in order to sustain medical functions during construction.

All the construction materials and equipment such as building frames and finishing

materials, including mechanical equipment, can be locally obtained. However, since there is a high dependence on imported materials, they shall be carefully selected, considering future maintenance and local construction technology. Preparations for the procurement of materials at each stage are necessary, including a plan for temporary works and labor, transportation plans, work progress plans, etc. The completion schedule for work shall be well-planned for concrete curing, especially when finishing work coincides with the rainy season. The supply of aggregate for concrete placement must be procured in the early stages. Construction materials shall be selected considering the prevention of the early deterioration of facilities caused by mold or rust due to moisture. The procurement of materials, which are mostly imported, greatly impacts the construction schedule. Therefore, being aware of the planned quantity materials and current stock status is required, as not to delay the progress of the work due to insufficient materials.

(2) Equipment

The construction work to be performed by the Japan side will be divided into two phases: one for the Main Building (North) and one for the Main Building (South). After the north building is constructed, the functions of the OPD/ER building will be relocated there. The construction work of the Main Building (South) shall be started after dismantling the existing building by the Myanmar side. Deciding the equipment procurement contractor for the Main Building (North) and the Main Building (South) in one round of tendering will be difficult since it is expected to take approximately 2.5 years from the time of tendering until the equipment for the Main Building (South) is delivered, and because it is only possible to start the construction work for the Main Building (South) after the existing building is dismantled by the Myanmar side, as indicated by their division of responsibilities. Therefore, tendering is planned to be divided into two lots, with the equipment to be installed in the Main Building (North), SAMSC, and the Mortuary as Lot 1, and the equipment to be installed in the Main Building (South) as Lot 2. Additionally, the equipment planned for the existing building will mostly be planned as a part of Lot 1. The quantity of equipment that is spread between the existing buildings and Lot 2 will be planned for Lot 2. The departments included in each lot are shown in the table below.

Table 2-5 Departments by Lot

	Lot 1 (Main Building (North), SAMSC, Mortuary)	Lot 2 (Main Building (South))
New buildings	Specialist OPD, Dental, Eye, ENT, Laboratory, Blood Bank, Blood Collection Room, Physiotherapy Department, Dental X-ray Department, Oncology, Mortuary, SAMSC, IHC	Emergency Department, X-Ray Room, Imagery Department, Operation Theaters, Laundry, ICU
Existing buildings	Pediatrics Ward, OB/GY Ward, Isolation Ward, Dialysis Room, General Medicine Ward, Surgery Ward, Orthopedics Ward	

2-2A-2 Basic Plan (Facility Plan/ Equipment Plan)

2-2A-2-1 Examination of the Content of the Request

The content of original request was to build an Oncology ward, Dermatology and Specialist OPD, and to rebuild the doctor dormitory, and to provide the requested equipment for the new buildings and 9 items of equipment for the existing facilities. After consultations, however, it was determined that the deteriorated OPD/ER building, Eye Department, and ENT Department should be rebuilt in order to function as a core hospital in Shan State (North). In addition, the provision of medical equipment for all departments was also confirmed as necessary.

The 16 departments in need of rebuilding are those in the existing OPD/ER building: ① OPD, ②ER, ③Laboratory, ④Blood Bank, ⑤Physiotherapy, ⑥HIV/AIDS Counseling (IHC); those judged with the necessity to be rebuilt ⑦Eye, ⑧ENT, ⑨Radiology, ⑩Dental, ⑪ Oncology, ⑫SAMSC, ⑬Mortuary, etc.; and those included in the new buildings for hospital functionality ⑭Surgical Operation Department, ⑮ICU, and ⑯CSSD. Construction work for 4 buildings, including the departments above, and related exterior construction work, etc. shall be completed by Japan.

Medical equipment that is necessary for the new buildings and other departments in existing facilities shall also be included in the project.

The facilities and medical equipment to be included in the Lashio General Hospital under the project planned on the basis of the results of the selection of facilities and equipment explained above are as shown in the following table.

Table 2-6 Contents of the Project

<table>
<tr><th></th><th>Outline</th></tr>
<tr><td>Construction of Facilities in Lashio General Hospital</td><td>(1) Building Facilities at Lashio General Hospital
<table>
<tr><th>List</th><th>Area (m^2)</th></tr>
<tr><td>Main Building (North) - 2 stories</td><td rowspan="2">2,530.5m^2</td></tr>
<tr><td>Specialist OPD (General, Surgery, Orthopedic, General Medicine, Pediatrics, Dermatology), Dental, Eye, ENT, Oncology, HIV/ AIDS Counseling (IHC), Laboratory, Blood Bank, Physiotherapy, Pharmacy, etc.</td></tr>
<tr><td>Main Building (South) - 2 stories</td><td rowspan="2">2,133.25m^2</td></tr>
<tr><td>Emergency, CSSD, ICU, Operation Theater, Radiology, etc.</td></tr>
<tr><td>SAMSC – 1 story</td><td>810.00m^2</td></tr>
<tr><td>Mortuary – 1 story</td><td>90.00m^2</td></tr>
<tr><td>Total</td><td>5,563.75m^2</td></tr>
</table>
(2) Facility
• Electrical Facilities: Power Supply (Transformer, Distribution Equipment), Generator System, Lighting System, Socket Outlet, Communication Facility, Fire Alarm System, Lightning Protection System
• Machinery Facilities: Air Conditioning Facilities
• Plumbing System: Sanitary Fixture, Water Supply System, Drainage System, Fire Extinguishing System
• Special Facilities: Medical Gas System, EV</td></tr>
<tr><td>Equipment Provision</td><td>(1) Necessary medical equipment procurement for buildings above and existing facilities.
(2) Maintenance instruction for procured equipment for effective and long-term use.</td></tr>
</table>

2-2A-2-2 Site/ Facility Layout

(1) Hospital Overall Plan

The area of the property is approximately 63,500 m², and Lashio General Hospital is located on an elevated hill in central Lashio City. The site has slight slope from the southeast to northwest sides of the hospital property, and its elevation gap is approximately 22 m. There are over 50 various sized buildings scattered across the site, but most of them are extremely deteriorated and require major rehabilitation work.

In particular, most of the staff dormitories are extremely deteriorated due to their simple constructions of wooden columns and beams, bamboo walls, and thatched roofs. Therefore, Lashio General Hospital has an overall plan, as shown below, with the reconstruction and new construction of staff dormitories as its main plan.

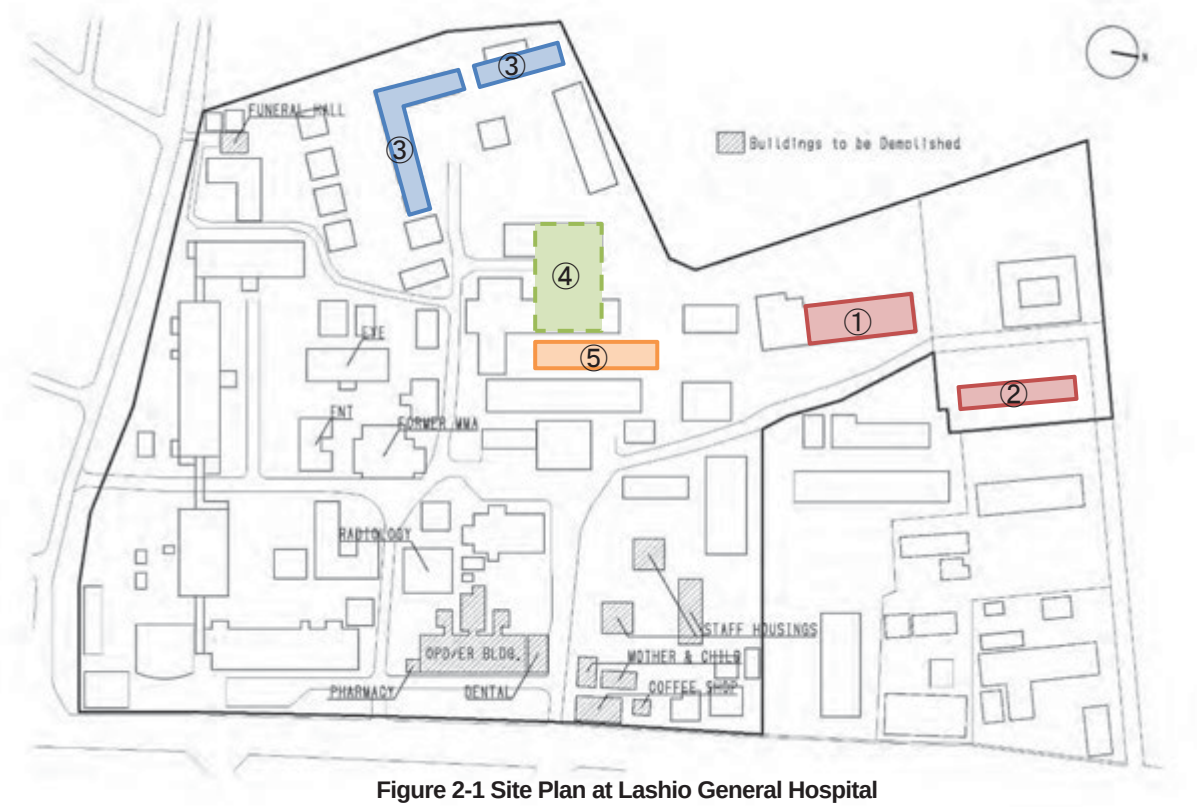


Figure 2-1 Site Plan at Lashio General Hospital

Table 2-7 Lashio General Hospital Overall Plans

Phase	Contents of Construction	Budget	Legend
Construction based on Ministry of Health budget			
Phase 1	① Renovation of staff dormitory (10 rooms)	9.97 million Kyat	
	② New construction of staff dormitory (150 x 30ft, 3-story, 18 rooms)	350 million Kyat	
Phase 2	③ New construction of staff dormitory (15 x 40 ft., Two 2-story buildings, 10 rooms per floor (Total 40 rooms) or 15 x 40ft、Two 3-story buildings, 6 rooms per floor (Total 36 rooms))	300 million Kyat	
Phase 3	④ New construction of General Medicine Ward (200 x 40ft, 2-story)	480 million Kyat	
Construction by Japanese Grant Assistance for Grassroots Human Security Projects (GGP)			
2014/15	⑤ New construction of HIV / AIDS Isolation Ward(120 x 30ft, partially 2-story)	193,894 USD	

(2) Layout Plan

The layout of the facilities in this project has been agreed upon with the Myanmar side as shown in Figure 2-3, based on the site selection policy stated above. The construction site for the Main Buildings (North and South) is located on both sides of the street going toward the main entrance to the superintendent's office building, and the SAMSC building and Mortuary building shall be located adjacent to their existing buildings.

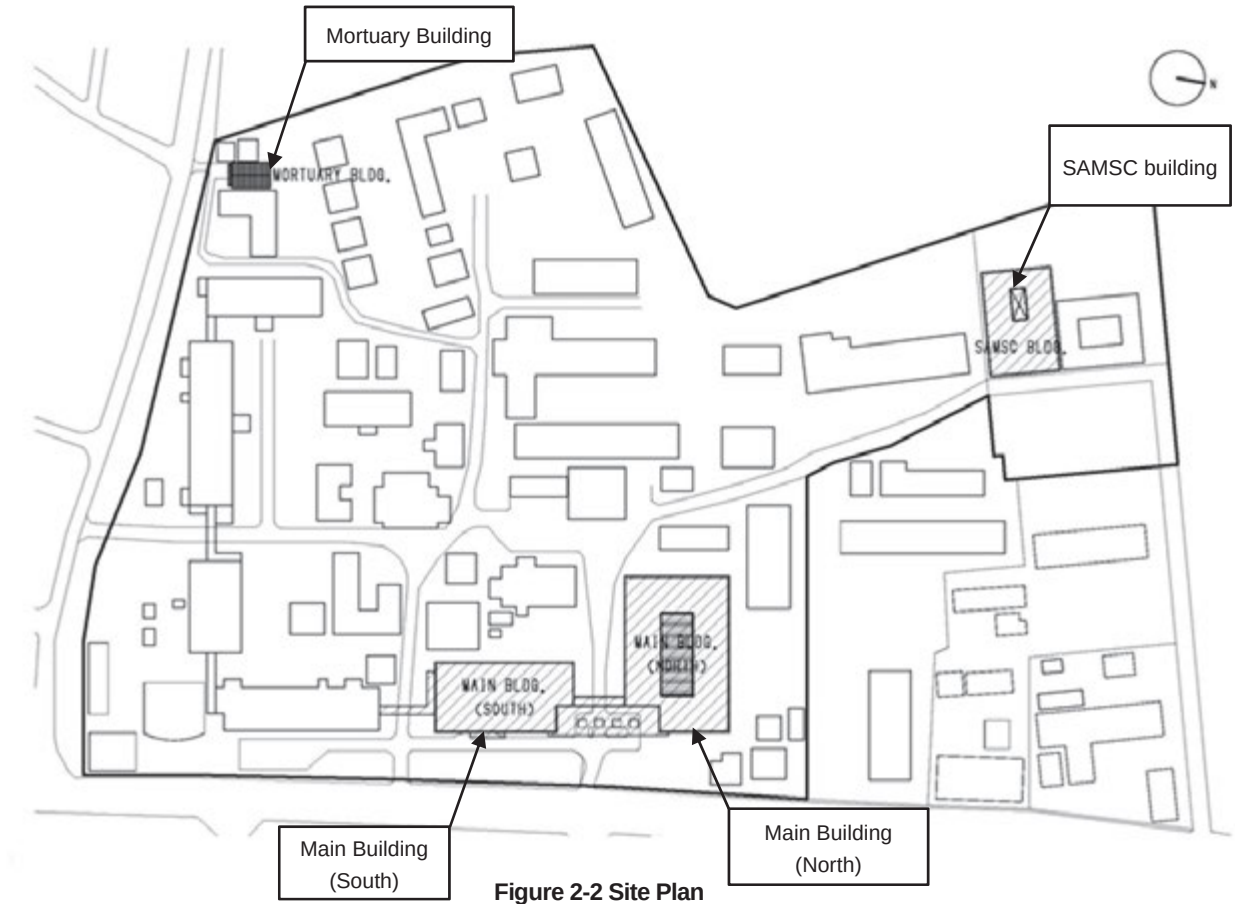


Figure 2-2 Site Plan

As shown in Figure 2-3, there are extremely deteriorated existing buildings such as the OPD/ER building, Dental, Doctor Dormitory, Tea Shop, and Maternal and Child Health office on the site. It is necessary for the Ministry of Health to secure the budget to develop the site, including moving and dismantling work, as part of Myanmar's responsibilities. The procedure shown in Table 2-8 shall be followed as not to interrupt medical functions during the construction period.

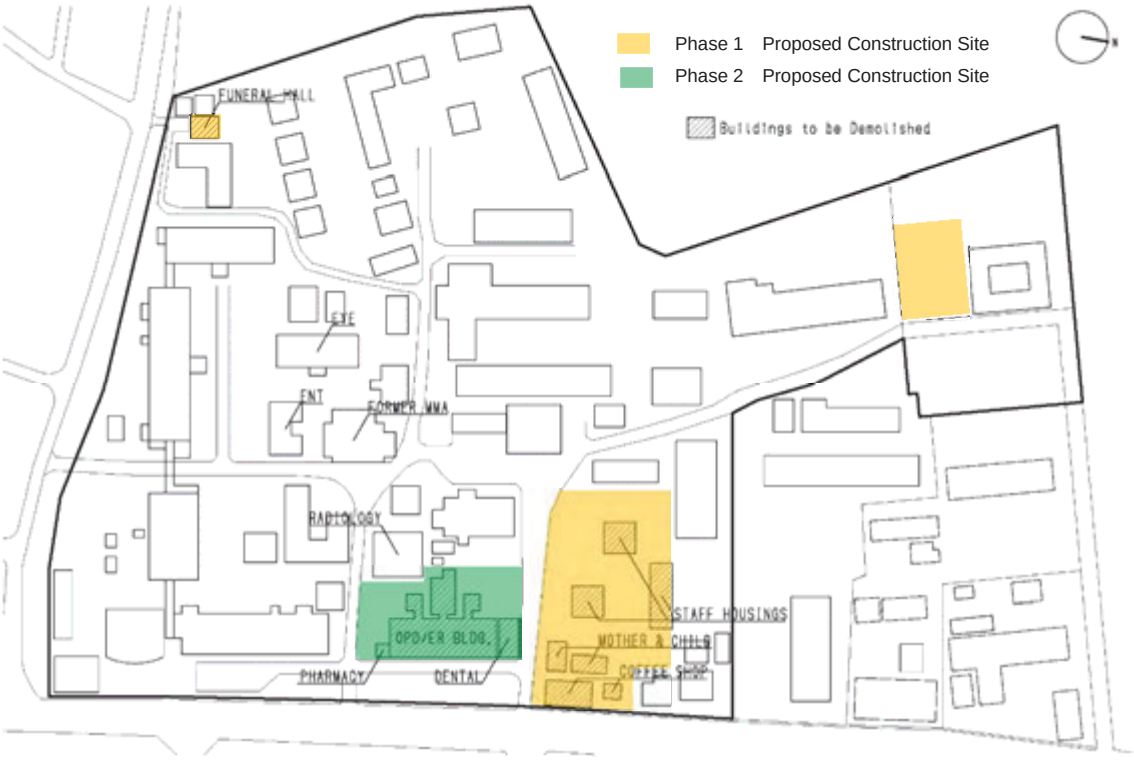


Figure 2-3 Construction Site

Table 2-8 Construction Procedure of Lashio General Hospital

	Procedure	Myanmar	Japan
1	Temporarily relocate the Maternal and Child Health office to an former Myanmar Medical Association building. Relocate the staff dormitory.	✔	
	↓		
2	Remove the staff dormitory, Maternal and Child Health office, and funeral hall, etc. Relocate the electrical wiring on site. Remove trees and other obstacles within the site of the Main Building (North), SAMSC, and Mortuary.	✔	
	↓		
3	Construct the Main Building (North), SAMSC, and Mortuary.		✔
	↓		
4	Relocate functions in OPD/ER Building, Dental, ENT, Eye, Oncology, and Dental to the Main Building (North). Relocate Maternal and Child Health office.	✔	
	↓		
5	Remove OPD/ER Building, Dental, and Pharmacy. Remove trees and other obstacles within the site of the Main Building (South).	✔	
	↓		
6	Construct Main Building (South).		✔
	↓		
7	Relocate ICU, Radiology, and Medical Storage to the Main Building (South).	✔	

The hospital confirmed that these construction sites are within its property and the hospital has ownership. However, because there are some buildings not owned by the hospital within the premises such as the student dormitory for a nursing school and Myanmar Medical Association office building, it is necessary for the Ministry of Health and hospital to request that new buildings are not constructed on the Project site.

2-2A-2-3 Facility Plan

(1) Target Scale

This project is scheduled to be completed in July 2017, and the size of each facility shall be estimated based on the number of patients in 2020, 3 years after completion, when the effect of this project is expected.

1) Calculation of the Number of Inpatients and Outpatients

The number of Cesarean section operations has increased to 586 in 2012 from 286 in 2011, and is expected to keep increasing. This project will allow existing operation theaters to be available for the OB/GY Department and more operations to be performed. Therefore, the number of outpatients and inpatients of OB/GY is expected to grow compared to other departments.

The number of inpatients at the OB/GY Department in 2020 is expected to be doubled, and the number of outpatients is expected to be 1.5 times greater. Also, assuming the number of inpatients and outpatients in all departments increases as the population grows by 6.4% annually, the list below shows the number of patients at each department.

Table 2-9 Numbers of Patients

	Number of Inpatients		Total Number of Inpatients		Total Number of Outpatients	
	2012	2020 (Goal)	2012	2020 (Goal)	2012	2020 (Goal)
General Medicine	2,997	3,189	15,453	16,442	1,722	1,832
Surgery	2,617	2,784	12,063	12,835	1,396	1,485
Obstetrics	1,972	4,196	3,955	8,416	5,438	8,679
Gynecology	422	449	6,489	6,904		0
Pediatrics	3,837	4,083	17,709	18,842	1,716	1,826
Eye	135	144	655	697	4,271	4,544
ENT	338	360	940	1,000	2,783	2,961
Dental					1,995	2,123
SAMSC	1,121	1,193	9,625	10,241	713	759
Orthopedic	306	326	5,336	5,678	2,142	2,279
Outpatient					9,543	10,154
Total	**13,745**	**16,724**	72,225	81,055	**31,719**	**36,642**

2) Calculating the Number of Hospital Beds

Bed occupancy rate is listed in Table 2-10 based on the number of inpatients and number of

beds in each department in 2012. General Medicine, Pediatrics, and the SAMSC exceeded 100% and shows the lack of beds. The number of beds in each department shall be at least more than the number of sanctioned beds in 2012, and be enough to cover the estimated total number of inpatients in 2020. In other words, the bed occupancy rate in 2020 shall not exceed 100%.

Based on the calculations above, the number of bedrooms to be provided is shown in Table 2-10, and total number at Lashio General Hospital is 250 beds. Also, the total number of inpatients in OB/GY is doubled compared to 2012, with the bed occupancy rate below 100%. The figures are 43% in 2012, and 92% in 2020, showing that the current staff numbers is sufficient.

Table 2-10 Numbers of Planned Beds

	Total Number of Inpatients		Number of Beds		Bed Occupancy Rate(%)	
	2012	2020 (Goal)	2012 (Sanctioned)	Number of Planned Beds	2012	2020 (Goal)
General Medicine	15,453	16,442	40	45	106%	100%
Surgery	12,063	12,835	40	40	83%	88%
Obstetrics	3,955	8,416	25	25	43%	92%
Gynecology	6,489	6,904	25	25	71%	76%
Pediatrics	17,709	18,842	25	52	194%	99%
Eye	655	697	5	5	36%	38%
ENT	940	1,000	5	5	52%	55%
Dental						
SAMSC	9,625	10,241	10	28	264%	100%
Orthopedic	5,336	5,678	25	25	58%	62%
Total	72,225	81,055	200	**250**	101%	**79%**

3) Calculating the Number of Operation Theaters

A new Operation Department will be constructed in this project as the new Emergency Department is far from the existing Operation Department. The existing Operation Department will mainly conduct Obstetrics and Gynecology-related operations, and the new Operation Department will mainly conduct Surgery and Emergency-related operations. Therefore, to calculate the number of operation theaters, the number of OB/GY operations shall be excluded. Using the current rate of 4 operations per room per day, as shown in Table 2-11, 4 operation theaters shall be planned – 3 theaters plus 1 theater for infectious diseases.

Table 2-11 Number of Operation Theaters

	Operation	Unit	2012	2020 (Goal)
①	Cesarean section	case	586	
②	Total hysterectomy surgery	case	48	
③	Appendectomy	case	111	
④	Hernia	case	88	
⑤	Breast cancer	case	32	
⑥	Others	case	2,797	
⑦	Total	case	3,662	
⑧	Total, not including OB/GY operations (⑦－①－②)	case	3,028	3,896
⑨	Numbers of operations per day (⑧ ÷ no. of days (except Sat., Sun. & holidays)	case	12.4	13.2
⑩	Number of required operation theaters, estimating 4 operations per room per day (⑨ ÷ 4)	room	**3**	**3**

(2) Floor Plans

【Main Building (North) Ground Floor】

The Main Building (North) will mainly function for outpatients and have other functions on the ground floor as listed below.

- Specialist OPD
- ENT Department
- Eye Department
- Dental Clinic
- Others (Medical storage, social insurance counseling room, toilet, storage, etc.)

a. Specialist OPD

- The OPD will be located near the main entrance; a slope will be placed at the entrance for wheelchair accessibility.
- The waiting space will be an open area with an atrium in order to alleviate the patients' burden while waiting.
- Outpatients will proceed to the Specialist OPD rooms as needed after being examined at the General OPD (Triage) Room.
- Specialist OPD rooms will be located in front of General OPD room and will be easily accessible to patients.
- Based on requests by Myanmar, Specialist OPD Rooms will have a surgical treatment room that is accessible directly from both surgery and orthopedic rooms as well as general medicine, dermatology, and pediatrics.

b. Eye Department and ENT Department

- Based on requests by Myanmar, recovery rooms will be provided for outpatients coming from distant areas in the ENT Department and the Eye Department. As mentioned previously, 5 beds will be provided for each.
- In addition, a minor operation room will be located in both the ENT and Eye Departments. They will be located near the recovery room in order to provide close access after surgery.
- There will be only 1 consultation room in each department as there is only 1 medical specialist for each.

c. Dental

- Two dental examination tables (equal to current number; however, one of them is extremely old and cannot be used) and an appropriate amount of space around them shall be provided.
- As dental X-rays were taken in an exposed area in the existing building, the risk of exposure was extremely high and dangerous. Therefore, a dental X-ray room will be placed in order to ensure the safety of patients and hospital staff by providing radiation protection.
- Also, independent waiting rooms for each department (ENT, Eye, and Dental) will be created in order to prevent spreading infection from contact with general outpatients.

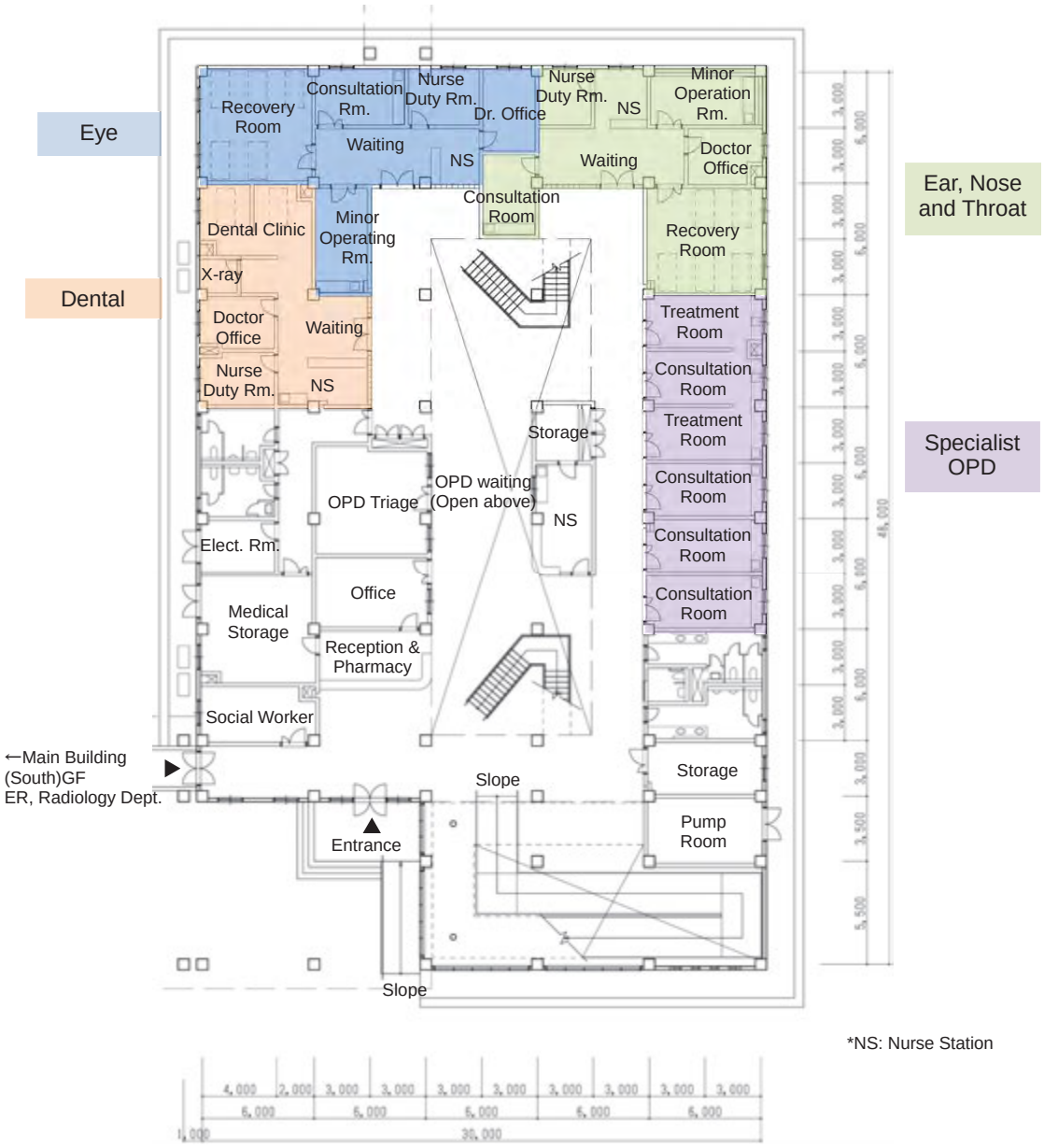


Figure 2-4 Main Building (North) Ground Level Floor Plan

【Main Building (North) First Floor】

In addition to the main entrance, the first floor of the Main Building (North) will have another entrance from the west side of the building to take advantage of its sloped land. This entrance is mainly for patients accessing to the Oncology Department and HIV/AIDS Counseling Department (Integrated Health Care, IHC Department), so that patients with reduced immune function will not be exposed to infection from other outpatients. The functions listed below will be located on the first floor.

- Oncology Department
- HIV/AIDS Counseling Department (IHC Department)
- Laboratory

- Blood Bank
- Physiotherapy Department

a. Oncology Department

- Hospitalization at Lashio General Hospital is not available for patients with cancer, only medication. Therefore, there will be 5 beds for the chemotherapy only.
- Direct access from the first floor entrance to the Oncology Department will available so that patients with reduced immune function are prevented from coming in contact with other patients as much as possible, and to maintain patient privacy.

b. HIV/AIDS Counseling Department (IHC Department)

- Direct access from the first floor entrance to the HIV/AIDS Counseling Department will be available.
- Medical storage and a drug release room will be created for prescription drug distribution.

c. Laboratory

- As with the existing Laboratory, the following 5 separate rooms will be created: Serology Room, Microbiology Room, Hematology Room, Pathology Room, and Clinical Chemistry Room.
- The Microbiology Room will have an adjacent anteroom, which will maintain negative pressure to prevent air flow into other rooms.

d. Blood Bank

- An open reception and waiting room is planned to give blood donors easy access.
- The Blood Donation Room will be equipped with 6 beds. (Currently 5 beds.)

e. Physiotherapy Department

- The Physiotherapy Department will be located on the first floor to provide barrier-free access through the connecting corridor from existing Surgery Department (first floor).
- Rooms with hot pack units will be planned separately from other rehabilitation rooms, as is with the existing rehabilitation room.

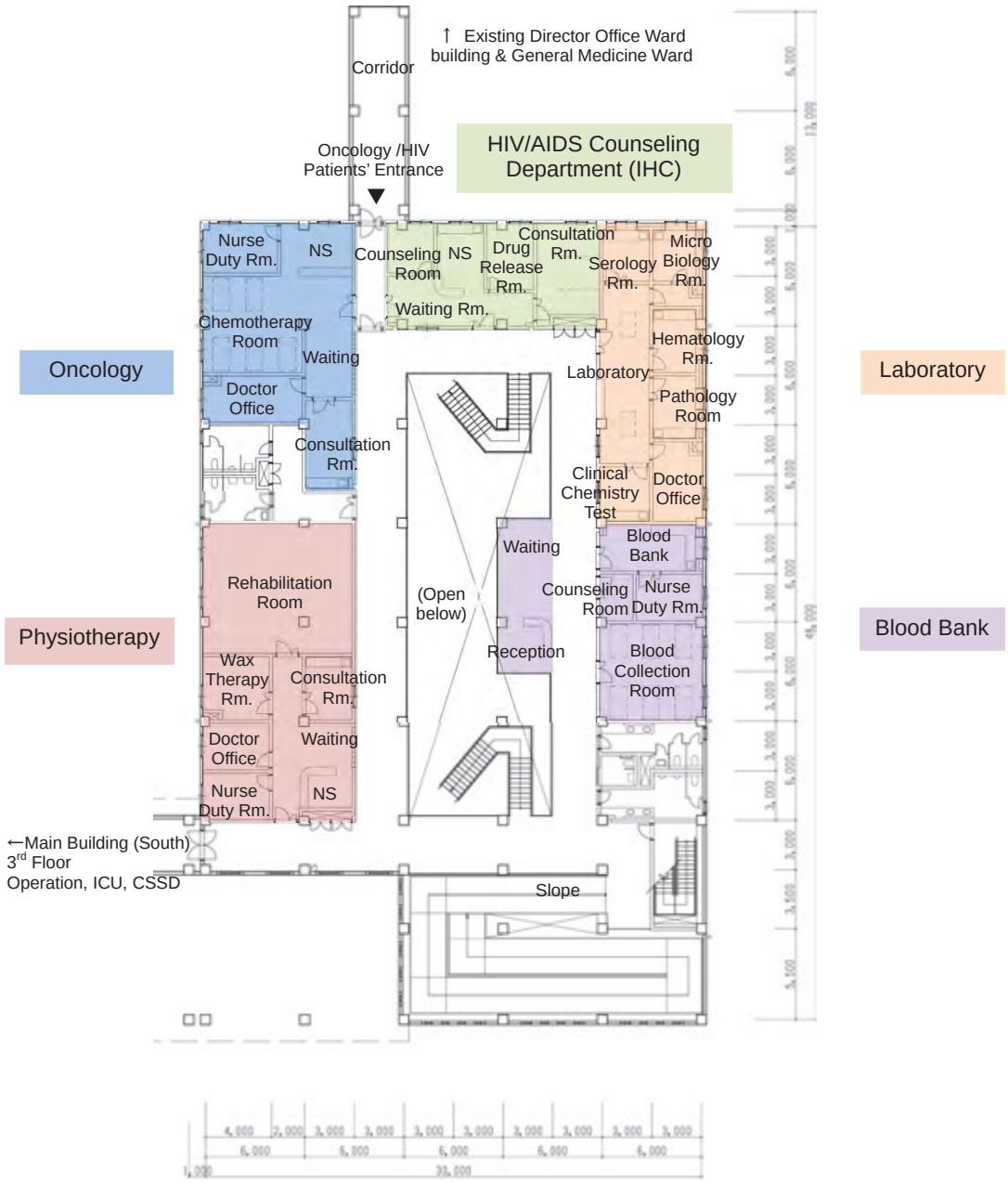


Figure 2-5 Main Building (North) 1st Level Floor Plan

【Main Building (South) Ground Level Floor】

The Emergency Department shall be placed on the ground floor of the Main Building (South) near the hospital main entrance for easy emergency transport. The Radiology Department, Laundry, and Medical Storage, etc. are also planned for this area.

a. Emergency Department

- A linear route from the Emergency Department entrance to the Emergency Room will be created for stretcher access.
- A shower room shall be provided to clean the patients with dirt, etc.

- The ER shall be connected with the first floor of the Main Building (South) by elevator in order to shorten transport distance to OT in cases of emergency.
- As with the existing OPD/ER Department, an office for the police surgeon will be provided in order to check the condition of victims, etc.

b. Imagery Department

- Two (2) X-ray Rooms shall be provided as same as the existing . The X-ray machine currently in operation will be moved to one room and a new digital X-ray machine will be installed in the other room.
- The Control Room and Dark Room will be located between the two X-ray rooms to allow access from both X-ray rooms.
- An X-ray film storage shall be provided in order to keep the existing X-ray machine.
- In addition, an Ultrasound Room shall be provided as is currently available.

c. Laundry

- The Laundry Room will have doors directly accessible from the outside; separate flow lines between used surgical gowns and sheets, etc. and clean linen storage shall be established.

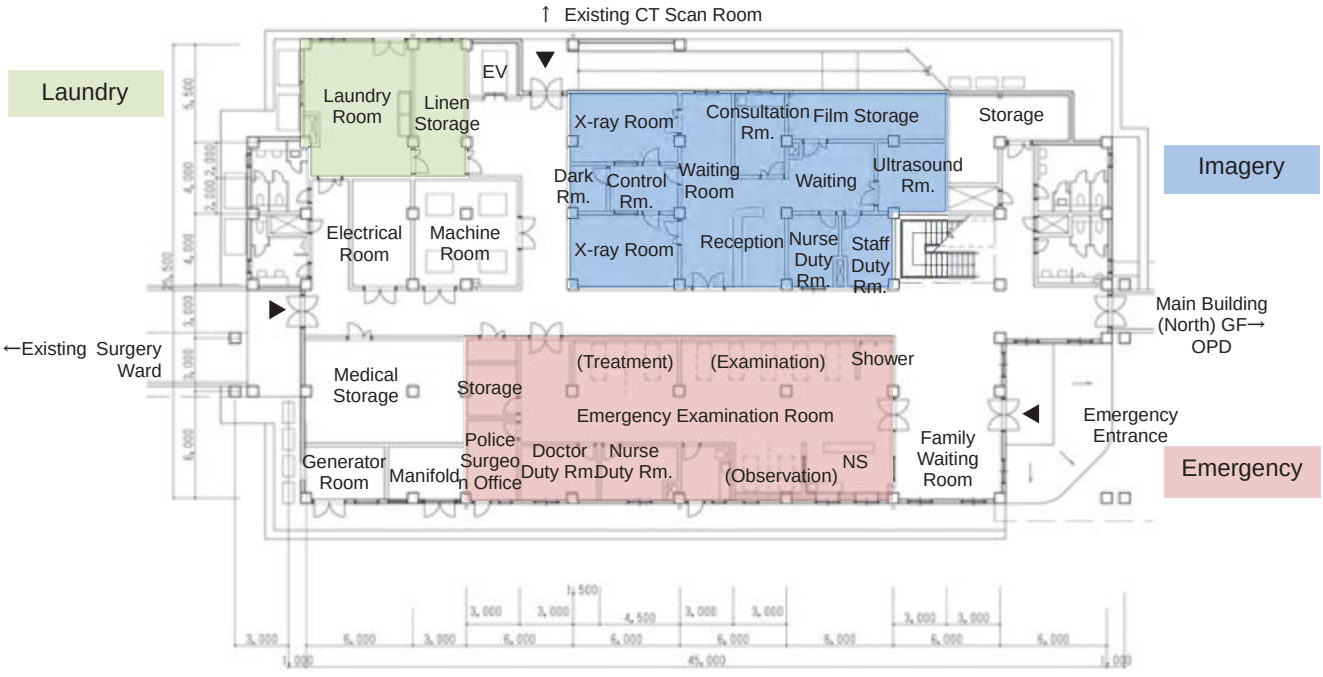


Figure 2-6 Main Building (South) Ground Level Floor Plan

【Main Building (South) 1st Floor】

The Surgical Operation Department shall be located on Main Building (South) 1st floor, and the elevator shall be provided for patient transport from the ground floor Emergency Department. In addition, the Main Building (South) shall be connected to the adjacent Surgery Ward building at this floor level for easy access. Also, the ICU shall be located in the

clean Operation Hall zone, and the CSSD shall be adjacent to the Operation Department.

a. Operation Department

- Four (4) Operation Theaters shall be provided based on the aforementioned size calculations.
- One (1) of the Operation Theaters shall be separated from other 3 in order to perform operations on infectious patient in isolation.
- The Trolley Change shall be located at the entrance to the Operation Department to clearly distinguish the clean zone.
- A Septic Corridor shall be located in the back of Operation Theaters in order to collect used equipment, etc.

b. ICU

- As with the Operation Hall and Operation Theaters, clean air within the rooms shall be maintained.
- It shall be located adjacent to the Operation Hall in order to transport patients to Operation Theaters immediately.
- There will be 4 ICU rooms, which is equal to the currently existing number.

c. Central Sterilization Department (CSSD)

- Two (2) autoclaves shall be installed.
- A flow shall be established for cleaning, assembling, sterilizing, and storing, separating the entry for used equipment and the exit for sterilized equipment.

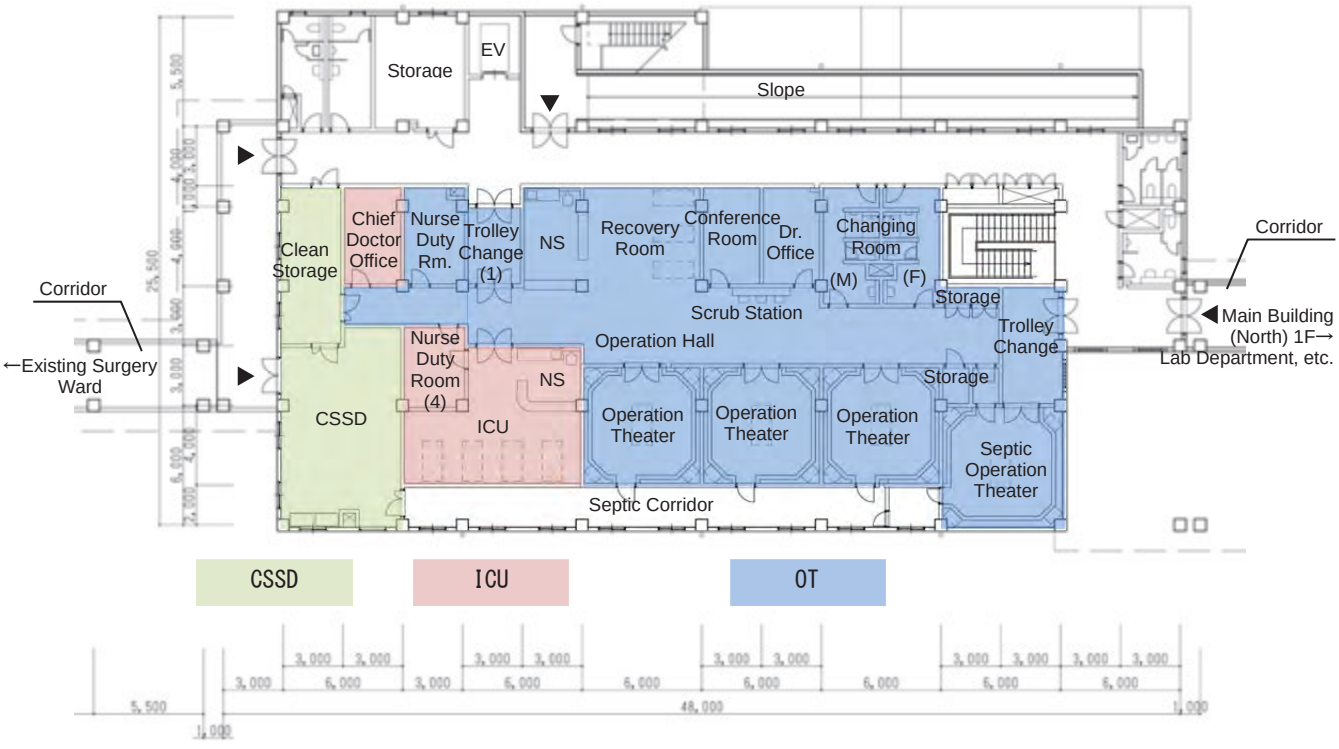


Figure 2-7 Main Building (South) 1st Floor Plan

【SAMSC Ward】

The SAMSC Ward is where mainly drug-addicted patients are hospitalized or receive outpatient treatment. Shan State is a part of the "Golden Triangle" bordering Laos and Thailand, where the illicit production of stimulant drugs is rampant. Therefore, it is necessary to expand the SAMSC at Lashio General Hospital as the number of drug-addicted patients in Shan State (North) is extremely high in Myanmar. The ward is planned as described below.

- Upon the hospital's request, there will be 2 separate areas for hospitalized patients; one to perform procedural sedation and the other to perform a detoxification treatment shall be planned.
- Iron bars shall be installed on all the windows in the area, and padlocks provided to lock all the doors from outside so that inpatients cannot go out without permission.
- The number of beds shall be 28, based on the aforementioned calculation.
- Two private bedrooms shall be planned in each area in order to separate critical condition patients from others.
- A terrace shall be placed in the center for light exercise.
- Facing the entrance, a counter shall be provided for medicine distribution and an examination room planned for outpatients.

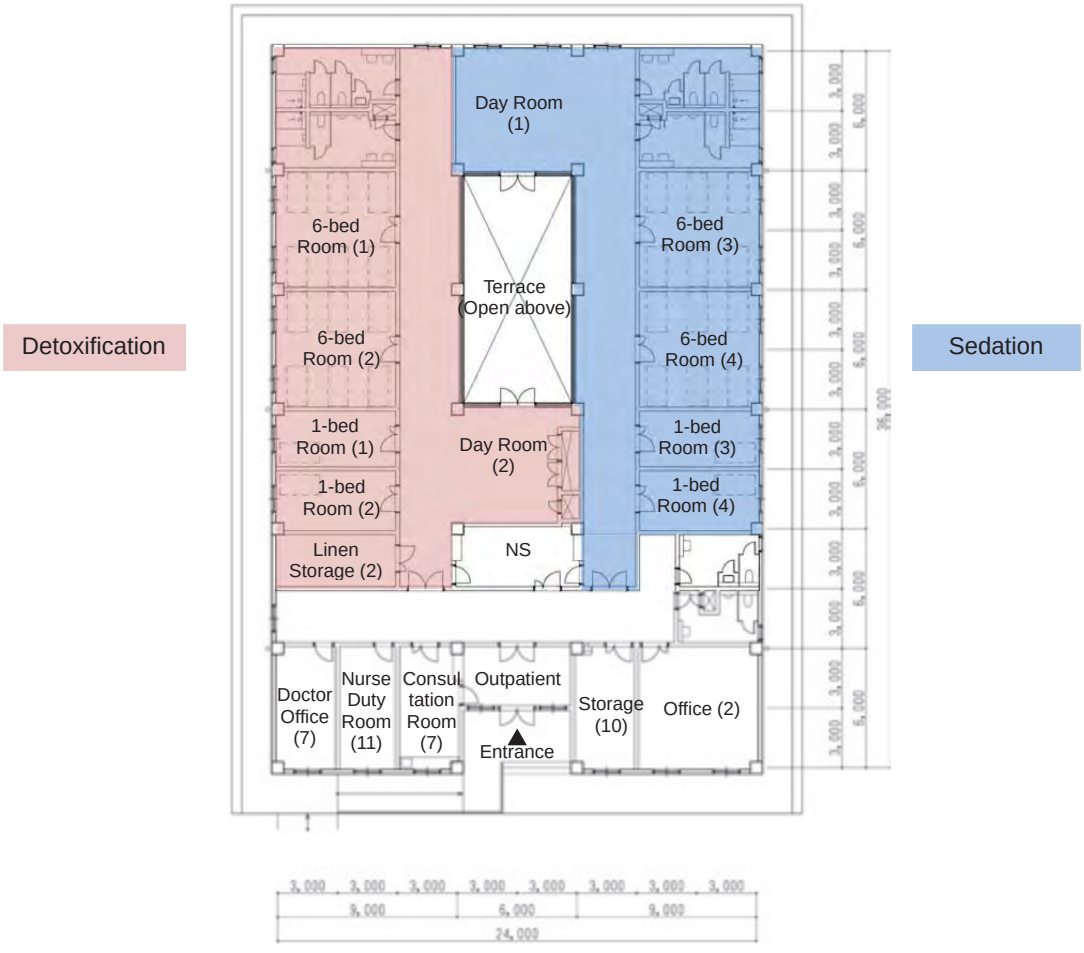


Figure 2-8 SAMSC Ward Ground Level Floor Plan

【Mortuary Building】

- The Mortuary Building shall be adjacent to the existing Mortuary Building located at the southwest portion of the site as it is customary in Myanmar to isolate it from other services.
- Its reconstruction is urgent as the existing Mortuary Building has no air-conditioning or plumbing.
- Upon the hospital's request, a 4-body refrigerator shall be installed and an Autopsy Room shall be placed behind the Morgue.

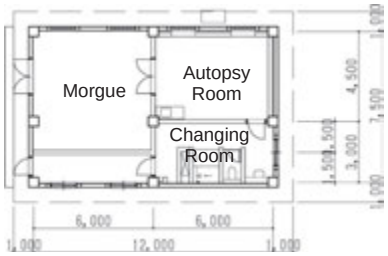


Figure 2-9 Mortuary Floor Plan 1/200

【Floor Size Table】

Table 2-12 Floor Area of Each Building

Building	Department	Room	No. of Rooms	Area per Room (m^2)	Total Area (m^2)
Main Building (North) Ground Floor	Specialist OPD	Entrance Hall	1	144.00	144.00
		Reception & Pharmacy	1	18.00	18.00
		Office	1	24.00	24.00
		OPD Triage	1	36.00	36.00
		OPD Waiting	1	189.00	189.00
		Nurse Station	1	18.00	18.00
		Storage	1	9.00	9.00
		Specialist OPD room	6	18.00	108.00
		Medical Storage	1	36.00	36.00
		Social Worker	1	18.00	18.00
	Eye	Waiting	1	18.00	18.00
		Nurse Station	1	9.00	9.00
		Consultation Room	1	15.00	15.00
		Minor Operation Room	1	18.00	18.00
		Recovery Room	1	36.00	36.00
		Nurse Duty Room	1	12.00	12.00
		Doctor Office	1	13.50	13.50
	ENT	Waiting	1	24.00	24.00
		Nurse Station	1	9.00	9.00
		Consultation Room	1	13.50	13.50
		Minor Operation Room	1	18.00	18.00
		Recovery Room	1	36.00	36.00
		Nurse Duty Room	1	9.00	9.00
		Doctor Office	1	12.00	12.00
	Dental	Waiting	1	23.00	23.00
		Nurse Station	1	15.00	15.00
		Dental Clinic	1	24.00	24.00
		X-ray	1	4.00	4.00
		Nurse Duty Room	1	12.00	12.00
		Doctor Office	1	12.00	12.00
	Others	Corridor, Slope, WC, Storage, etc.			399.00
				Total	1,332.00
Main Building (North) First Floor	Oncology	Waiting	1	22.50	22.50
		Nurse Station	1	13.50	13.50
		Consultation Room	1	16.50	16.50
		Chemotherapy Room	1	36.00	36.00
		Nurse Duty Room	1	13.50	13.50
		Doctor Office	1	18.00	18.00
	IHC	Waiting	1	21.00	21.00
		Nurse Station	1	12.00	12.00
		Counseling Room	1	9.00	9.00
		Consultation Room	1	4.00	24.00
		Drug Release Room	1	12.00	12.00
	Laboratory	Laboratory	1	33.00	33.00

		Serology Room	1	10.50	10.50
		Micro Biology Room	1	10.50	10.50
		Anteroom	1	4.50	4.50
		Hematology Room	1	12.00	12.00
		Pathology Room	1	12.00	12.00
		Clinical Chemistry Room	1	10.50	10.50
		Doctor Office	1	15.00	15.00
	Blood Bank	Reception	1	9.00	9.00
		Waiting	1	8.00	18.00
		Blood Donation Room	1	36.00	36.00
		Counseling Room	1	6.00	6.00
		Blood Bank	1	18.00	18.00
		Nurse Duty Room	1	12.00	12.00
	Physiotherapy	Waiting	1	29.00	29.00
		Nurse Station	1	9.00	9.00
		Consultation Room	1	12.00	12.00
		Rehabilitation Room	1	72.00	72.00
		Wax Therapy Room	1	16.00	16.00
		Nurse Duty Room	1	12.00	12.00
		Doctor Office	1	12.00	12.00
	Others	Corridor, Stair, Slope, Toilet, etc.			549.00
				Total	1,116.00
Main Building (North) Rooftop, etc.	Water Tank	Water Tank	1	39.00	39.00
	Others	Stairs, Duct Space			43.50
				Total	82.50
Main Building (North) Floor Area					2,530.50
Main Building (North) Construction Area					1,479.00

Building	Department	Room	No. of Rooms	Area/ Room (m^2)	Total Area (m^2)
Main Building (South) Ground Floor	Emergency	Entrance, Waiting	1	54.00	54.00
		Emergency Room (Examination & Treatment)	1	126.00	126.00
		Nurse Station	1	15.00	15.00
		Observation	1	12.00	12.00
		Utility	1	9.00	9.00
		Nurse Duty Room	1	13.50	13.50
		Doctor Duty Room	1	13.50	13.50
		Police Surgeon	1	13.50	13.50
		Storage	1	9.00	9.00
	Radiology	Reception	1	12.00	12.00
		Waiting	1	58.25	58.25

		Consultation Room	1	14.25	14.25
		X-ray Room	2	24.00	48.00
		Control Room	1	11.00	11.00
		Dark Room	1	5.50	5.50
		Ultrasound Room	1	16.00	16.00
		Film Storage	1	24.75	24.75
		Nurse Duty Room	1	12.00	12.00
		Staff Duty Room	1	12.00	12.00
	Laundry	Laundry	1	45.00	45.00
		Linen Storage	1	22.50	22.50
	Others	Stairs, Toilet, Storage, Machine Room etc.			474.50
				Total	1,021.25
Main Building (South) First Floor	Operation Department	Trolley Change	1	12.00	12.00
		Operation Hall	1	105.00	105.00
		Nurse Station	1	15.00	15.00
		Recovery Room	1	30.00	30.00
		Conference Room	1	15.00	15.00
		Doctor Office	1	15.00	15.00
		Changing Room	2	18.00	36.00
		Operation Theater	4	36.00	144.00
		Trolley Change	1	18.00	18.00
		Nurse Duty Room	1	15.00	15.00
		Chief Doctor Office	1	15.00	15.00
	ICU	ICU	1	45.00	45.00
		Nurse Station	1	9.00	9.00
		Nurse Duty Room	1	12.00	12.00
	CSSD	CSSD	1	57.00	57.00
		Clean Storage	1	24.00	24.00
	Others	Stairs, Slope, Corridor, Toilet, Storage etc.			455.00
				Total	1,022.00
Main Building (South) Rooftop, etc.	Others	Stairs, Storage, Duct Space, etc.		90.00	90.00
				Total	90.00
Main Building (South) Total Floor Area					2,133.25
Main Building (South) Total Construction Area					1,189.50

Building	Department	Room	No. of Rooms	Area/ Room (m^2)	Total Area (m^2)
SAMSC Ground Floor	SAMSC	Entrance Hall	1	18.00	18.00
		Consultation Room	1	18.00	18.00
		Nurse Duty Room	1	18.00	18.00
		Doctor Office	1	18.00	18.00
		Storage	1	18.00	18.00
		Office	1	36.00	36.00
		Nurse Station	1	18.00	18.00
		1-bed Room	4	18.00	72.00
		6-bed Room	4	36.00	144.00
	Radiology	Day Room	2	36.00	72.00

		Linen Storage	1	18.00	18.00
		Toilet & Shower	4	18.00	72.00
	Others	Corridor, Toilet, etc.			252.00
				Total	774.00
SAMSC Rooftop, etc.	Water Tank	Water Tank		36.00	36.00
				Total	36.00
SAMSC Total Floor Area					810.00
SAMSC Total Construction Area					808.00
Mortuary	Autopsy	Morgue	1	36.00	36.00
		Autopsy Room	1	27.00	27.00
		Changing Room	1	18.00	18.00
	Others	Corridor	1	9.00	9.00
Mortuary Total Floor Area					90.00
Mortuary Total Construction Area					90.00
Others	Corridor Total Floor Area				141.00
	Entrance Canopy Total Floor Area				216.00
Total Floor Area					5,563.75
Total Construction Area					3,923.50

(3) Cross-Section Plan

- The building shall be 2 stories to match the existing facility.
- The level difference between the east and west sides of the main entrance at the construction site is approximately 3.5 m. The Ground Level is set at the east side of the building and access provided on the 1st floor level from the west side through the Main Building (North).
- In order to avoid flooding caused by concentrated rainfall, the ground level floor shall be 500 mm above the GL. Therefore, a slope at the entrance for wheel chairs, stretchers, or loading shall be provided.
- A canopy and eaves are provided to prevent rain as well as direct sunlight from coming into the room.
- The main building floor height shall be 4.2 m based on the ceiling heights shown below.
- The ceiling height in a room with air-conditioning shall be 2.8 m.
- The ceiling height in rooms or corridor without air-conditioning shall be 3.2m, considering the clearance needed to install a ceiling fan.
- A comfortable space shall be provided for patients by creating an open area above the OPD waiting area and its circulation area, as well as by maintaining appropriate ventilation and air circulation in rooms without air-conditioning.
- An underground pit shall be provided in order to improve the maintainability of pipes.
- Glasswools shall be installed in the ceiling and cavity walls installed to improve the efficiency of air-conditioning in the Fan Room.

A cross-section of Main Building (North) is shown below.

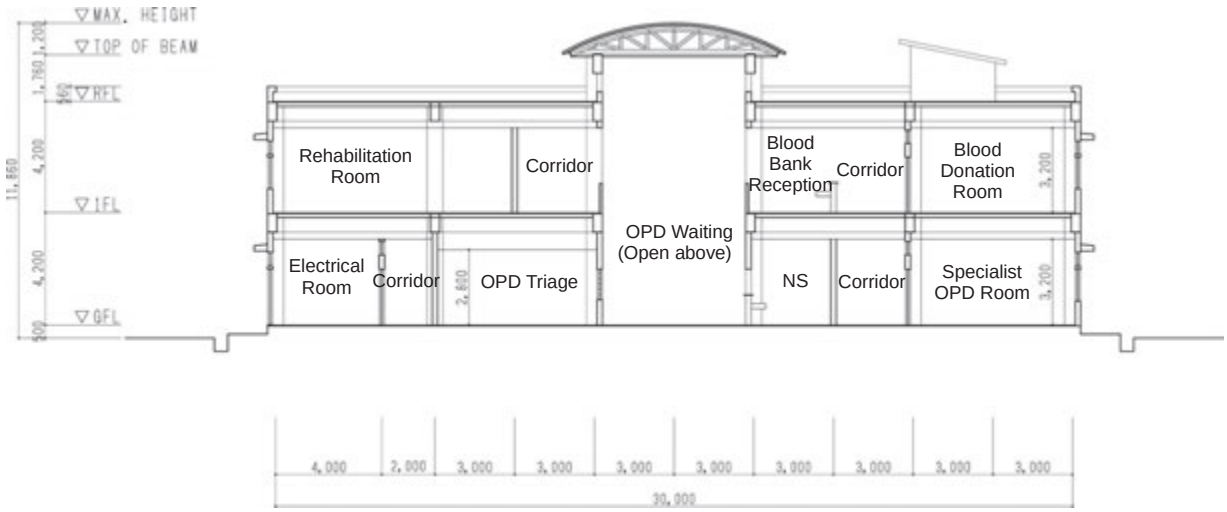


Figure 2-10 Section

(4) Structural Plans

1) Structural Planning Conditions

- Earthquakes: The border between Indo-Australian Plate and Eurasian Plate lies along the center of Myanmar, and earthquakes occasionally occur in Myanmar. There was a large earthquake along the border with China recorded in the past. Lashio is located between earthquake-prone zones, but Lashio has no record of a large earthquake in the past. According to 'seismic zoning in Myanmar, it belongs to a Moderate Zone and is considered an area with few earthquakes.
- Wind Pressure: Myanmar is a country with many floods and strong winds, but Lashio, which is located in a mountainous area, has not been damaged by flood or strong wind. However, past records show there have been 25 m/s winds and the wind pressure can be considered somewhat similar to Japan.
- Soil Conditions: The current ground at the site slopes down from the west side to the east side of the site. According to the 4-boring investigation of the site, a silt layer of 0 ~ 3 m from the surface and weathered limestone layer beneath have been formed. Both layers have an N factor of 10 or greater.

2) Structural Plans

- Type of Structure: The main structure shall be reinforced concrete construction considering the ease of material procurement, cost, and performance locally.
- Framing: A rigid frame shall be applied without concrete walls, except for X-ray rooms and some staircases, since there are few earthquakes and the accuracy of formwork is poor.

3) Foundation Plans

- The planned buildings are 2 stories. Spread foundation (continuous footing or mat foundation) shall be planned as the pillar axial force is not large.
- The foundation bed shall have a plate loading test to check the bearing capacity of the soil.
- Groundwater Level: The groundwater level was not observed from GL to 20m depth during the boring investigation. Therefore, no impact by groundwater is expected during or after the construction.

4) Design Load

- Earthquake load: The main frame shall be designed for medium-sized earthquakes based on the Japanese Building Code taking into account the possibility of earthquake, even though there are relatively few earthquakes in Lashio. The seismic load shall be 3/4 of the Japanese seismic force for design.
- Wind load: No record of typhoon can be confirmed, but from recorded wind speeds, the wind load for the main frame shall be determined based on the Japanese Building Code. The roughness category is determined to be III and V0 = 34 m, which is the same as in Tokyo.
- Movable load: Shown below based on the Japanese Building Code and the Enforcement Ordinance of Construction Standard Law.

Table 2-13 Major Movable Load Capacity

Room	Movable Load (N/m^2)			Remarks
	For Floor	For Frames	For Earthquake	
Consultation Rooms, Waiting Rooms	2,900	1,800	800	
X-Ray Room	4,900	2,400	1,300	Heavy Machines
Offices	2,900	1,800	800	
Wards, Toilets	1,800	1,300	600	
Storage	7,800	6,900	4,900	

Based on Building Code of Japan, etc.

5) Materials

- Concrete: A temporary concrete batcher plant shall be provided, and on-site mixing is planned since there is no ready-mixed concrete plant nearby. Cement to be used shall be the one available in Myanmar including the ones imported from a third country.
- Reinforcing Bar: Deformed bar from the third country, procurable in Myanmar shall be used. Materials on site shall be uploaded by crane (25t). Bendings shall be performed at a temporary bending space on site. As to quality control for reinforcing bar, tensile strength tests shall be performed at a public testing institution.
- Steel: Shall be procurable in Myanmar, and steel processed in a factory in Yangon or Mandalay will be delivered. Erection shall be performed by crane (25t).

(5) Electrical Facility Plans

1) Power Plan

- Cable for new buildings will be run by 11kV overhead lines along the road within the hospital site. An outside transformer will be installed near the service point to degrade voltage and supply power into the buildings.
- A generator is installed as the new facility has significant rooms such as Operation Theaters, ICU, etc. However, keeping the generator to its minimum necessary capacity is important for hospital management as routine maintenance is required.

2) Weak Electric Current Plan

- Ducting for telephone lines are provided where necessary. An intercom is provided where needed for medical purposes.

3) Lightning Protection Plan

- Lightning protection equipment is provided as there are many lightning strikes in the area.

(6) Machinery Facility Plan

1) Water Supply Plan

- The regular water source for this facility shall be drawn from the public water main, which is lying along the front road. A well shall be installed as a reserve water source, since public water is cut off during dry season.
- Intake water shall be temporarily stored in a concrete water tank, and then pumped to the elevated tank to supply water throughout the building by a gravity method.
- Water is supplied in the Mortuary Building by branching out pipes from existing water pipes nearby, as the Mortuary Building is small and separated from other buildings.

2) Hot water Plan

- An electric instant water heater shall be installed in both the Emergency Department and CSSD in the Main Building (South).

3) Drainage Plan

- Sewage and wastewater will be separated in buildings and integrated at the first outer manhole.
- Sewage is discharged into the rainwater gutter after processing and passing through septic tanks beside each building.
- Biochemical oxygen demand of the wastewater out from the septic tanks shall be BOD30ppm.
- X-ray film development waste liquid and medical sewage from laboratory rooms are stored in separate containers, and the City Development Committee (CDC) and/or NGO collect it at no charge, as is performed in existing buildings.

4) Plumbing Fixture Plan

- Plumbing fixtures such as toilet, lavatory, etc. shall be installed. Upon request of the Lashio General Hospital, one of toilets shall be Western style and others shall be squat toilets.

5) Fire Control Plan

- A fire extinguisher will be provided for safety, according to the instruction from the fire department. An indoor fire hydrant will not be installed as it is difficult to operate at the local site.

6) Air Conditioning Plan

- Air-conditioning that is similar to existing facilities shall be installed.
- Air-conditioning shall be a single-packaged air conditioner for cooling only.
- Positive air pressure in Operation Theaters and ICU is maintained in order to keep fresh air in those rooms.

7) Ventilation Plan

- Natural ventilation is planned as much as possible in non-air-conditioned rooms to reduce the maintenance and operating cost.
- Where partial ventilation is needed such as CSSD, Dark Room, toilets, etc., Type 3 Ventilation System (exhausting by machine) shall be provided.
- The Air-conditioning Room shall be provided with a mechanical ventilation system, but will be simple for maintenance.

8) Medical Gas Plan

- Only oxygen shall be centrally-supplied to Operation Theaters, ICU, Emergency rooms, Observation rooms, and Emergency Treatment rooms.
- Suction shall be individually handled as it is difficult to maintain large centralized equipment.
- Anesthetic gas shall be individually supplied since the usage and frequency of use are low.

9) Elevator Plan

- Upon the hospital's request, an elevator is installed for hospital use.

(7) Construction Material Plans

1) Basic Policy

- Most of construction materials in Myanmar will be imported, but can be purchased locally. Therefore, local materials shall be selected as much as possible in order to cut construction costs and shorten the construction period.

- Material that is suitable for the local climate and conditions, is weather resistant, and easily maintained shall be selected to cut maintenance costs.

2) Material

① Structural Material

A combination of reinforced concrete and concrete blocks walls, which is generally adopted locally, shall be applied.

② Exterior Finish

The following table shows exterior finishes.

Table 2-14 Exterior Finish

Parts	Finishing	Remarks
Roof	Flat roof: asphalt waterproofing & protecting concrete above concrete roof slab Vaulted roof: steel structure, metal roofing on asphalt waterproof sheet and fiber cement board	Water resistance and durability are priorities. In general, local availability and workability are priorities.
Exterior Wall	synthetic resin emulsion paint (EP) on mortar trowel	In general, local availability and workability are priorities.
Exterior Doors & Windows	Aluminum sash	Watertightness and durability are priorities.

① Interior Finish

The following table shows interior finishes.

Table 2-15 Interior Finish

Rooms	Finishing				Remarks
	Floor	Base board	Wall	Ceiling	
Entrance Hall	Terrazzo tile	Terrazzo tile	Ceramic tile, EP above	Rock wool acoustic board	Durability and cleanability are priorities.
Consultation Room, Treatment Room, etc.	Same as above	Same as above	Same as above	Same as above	Durability and cleanability are priorities.
Offices, Wards, Nurse Station, etc.	Same as above	Same as above	Same as above	Same as above	Durability and cleanability are priorities.
Corridors, Stairs	Same as above	Same as above	EP	Same as above	Durability and cleanability are priorities.
Operation Theater, Autopsy	Same as above	Same as above	Ceramic tile	EP	Durability and cleanability are priorities.
Utility, Toilet, Shower Room, etc.	Same as above	Same as above	Same as above, EP above	Same as above	Durability and cleanability are priorities.
Medical Storage, Storage, etc.	Same as above	Same as above	EP	Rock wool acoustic board	Durability and cleanability are priorities.
Machine Room, Generator Room, Electric Room	Dust preventive resin	Mortar trowel	Mortar trowel	Same as above	Durability and cleanability are priorities.

2-2A-2-4 Equipment Plan

Based on the aforementioned policy, the necessity and relevance of the requested equipment was examined and an overall determination was made following the criteria below. The results of individual equipment studies are shown in Annex 7-3-1, Examination List of the Requested Equipment.

① Classification

Table 2-16 Classifications of Requested Equipment

Classification	Content
Upgrade	Equipment for existing equipment upgrades.
New	Newly procured equipment for target facilities with no record of, or experience with using such.
Addition	Equipment for supplementing quantities of the same type of existing equipment.

② Equipment Selection Criteria

Table 2-17 Equipment Selection Criteria

Investigation Item		Investigation Summary
① Intended purposes	○	Equipment that is consistent with activities of the target facilities.
	△	Equipment for which simpler alternative equipment exists. Equipment that should be separated in the request content and examined individually or integrated and examined together, or for which quantities must be adjusted.
	×	Equipment that is not consistent with activities of the target facilities.
② Necessity	○	Equipment that has been deemed essential for activities of the target facilities.
	×	Equipment that has a low level of necessity from the viewpoint of activities, which can be handled with current equipment, and equipment that can easily be procured by the recipient country.
③ Skill level	○	Equipment that is appropriate for current skill levels.
	×	Equipment that requires a high level of skill for handling, and does not contribute to the improving skill levels in the future.
④ Operating system	○	Equipment for which staff members have been allocated for operation or are expected be allocated.
	×	Equipment for which staff members have not been allocated for operation and are not expected to be allocated.
⑤Maintenance management system	○	Equipment for which maintenance management is simple and can currently be handled by staff members, and equipment for which the manufacturer has a maintenance management system, and for which supplies and replacement parts can be easily obtained locally.
	×	Equipment for which maintenance management is difficult and maintenance problems are expected to occur after installation, and equipment for which supplies and replacements parts are difficult to obtain locally.
⑥Operation and maintenance expenditures	○	Equipment for which operation and maintenance management expenditures are mostly unnecessary, and equipment that will not be a burden on the partner country's budget provisions due to upgrades for current equipment.
	×	New or additional equipment that requires a vast amount of operation and maintenance expenditure, causing problems with budget provisions.
⑦ Overall determination	○	Equipment that is judged to be relevant and targeted for inclusion in the project.
	×	Equipment that will not be included in the project.

The investigation results for the major requested equipment in each department are described below. The list of equipment to be installed in each department is as shown in Annex 7-5-1.

- Central Operation Department

  The Central Operation Theaters are located in the 2-story building on the south side of the site; there are with 4 Operation Theaters on the first floor with 1 operating table in each room. Operation Theater 1 is for general and orthopedic operations. Operation Theater 2 is for Caesarean sections and operations for abnormal deliveries. Operation Theater 3 is for neurosurgery operations. Operation 4 is an extra room for operations on infectious patients, etc.

  The 4 new Operation Theaters to be built for this project are each planned to be equipped with an operating table, overhead shadowless operating light, electrical scalpel, infusion pump, oxygen concentrator, patient monitoring system, and aspirator, etc.

- ICU (Intensive Care Unit)

  The ICU at this hospital is a 4-bed room adjacent to the Central Operation Department. Staff from the Surgical Department are assigned concurrently to the ICU, run by 1 senior consultant specialist (SCS), 1 junior consultant surgeon (JCS), 7 assistant surgeon (AS) supporting doctors, and 15 nurses of various types. The equipment planned for this project include 1 boiling sterilizer, 1 defibrillator, 4 adjustable beds (Gatch bed), 1 oxygen concentrator, 2 patient monitoring systems, 1 pulse oximeter, 2 aspirators, 1 adult ventilator and 1 pediatric ventilator.

- Imagery Department

  In December 2012, a Hitachi CT scanner (16-slice) was procured for the Diagnostic Imaging Department using the Ministry of Health's budget. The facility housing this equipment is an independent building used exclusively for the CT scanner, and training for the operator is currently being implemented. The only radiological imaging apparatus currently in operation is one Shimadzu 200mA, general purpose bucky unit.

  An average of about 10-12 outpatients are received daily by Radiology in the hospital's Imagery Department. With only one X-ray machine, it is difficult to sufficiently handle the particularly needed chest x-rays, and the diagnoses and treatment in orthopedics. Therefore, for this project, 1 general imaging machine will be added to operate as part of a 2-machine system. The planned specification will be a digital machine that does not require developing fluid or film, and that will reduce the amount of radiation exposure to patients.

  In regard to the originally requested equipment for the Ultrasound Room, although

there is one Hitachi monochrome ultrasound machine procured in 2003, the images produced are unclear due to deterioration of the probe and device over time. Therefore, one ultrasound machine (general purpose, adult use) was planned for this project. However, since it was confirmed that this is duplicated on the 2013 device procurement item list planned by the Myanmar Ministry of Health, it was excluded from the project.

- Outpatient/Emergency Department

  The OPD/ER Department is located in the center of the ground floor in the 2-story OPD/ER Building and consist of 2 rooms: one for general outpatients and one for emergencies. A new dedicated facility/ building for outpatient examinations and emergency examinations is planned for this project. For outpatient treatment, 9 examination tables, and 9 desk and chair sets for doctor consultations are planned. For emergency treatment, 2 examination tables, 2 treatment tables, and 2 wall-mounted examination lamps will be provided.

- Obstetrics (Delivery) and OB/GY Ward

  Obstetrics (Delivery) is located on the ground floor of the Central Operation Department, and consists of a 4-bed labor room, 2 delivery rooms (4 beds), and a 4-bed postpartum room. In 2012, there were 1,102 natural births, 0 forceps deliveries, 181 vacuum extractions, and 586 Caesarian sections for a total of 1,869 deliveries. Approximately 1.28 deliveries per birthing table per day were performed.

  Since there are no monitoring devices to accurately predict the time of birth placed in the labor rooms, 1 new device will be provided for the 4 beds.

  In the OB/GY Ward, the autoclave (upright style) used to sterilize small surgical instruments is currently out of order due to deterioration with age. Therefore, 1 autoclave of approximately the same size will be provided. Since the boiling sterilizer is also currently out of order, 2 devices of the same type will be provided as upgrade devices.

- Laboratory

  The Laboratory is located on the first floor of the existing OPD/ER Building. The Laboratory consists of partitioned rooms including the Biochemistry Room, Hematology Room, and Pathology/Serology Room. In the fiscal year of January ~ December 2012, the number of laboratory tests conducted included 13,257 biochemistry tests, 10,136 hematology tests, and 6,085 pathology/serology tests.

  For this project, the Laboratory will have independent rooms for clinical chemistry, hematology, pathology, serology, and microbiology sections. Clinical chemistry will be provided with 1 spectrophotometer, 1 constant temperature water tank, 1 automatic pipette set, and 1 ELISA test machine, etc. Hematology will be provided with 1 clot

timer, 1 hematocrit centrifuge, and 1 platelet agitator, etc. Since the existing equipment in pathology and serology is usable, this will continue to be used. Microbiology will be provided with 1 autoclave (upright type), 1 dry heat sterilizer, 1 microscope, and 1 safety cabinet. As a common use for all above 5 sections, 2 center tables for experiments will be provided.

- Blood Bank

  The Blood Bank is adjacent to the Laboratory and consists of the Blood Collection Room, Sample Testing Room, and the Blood Storage room, etc. In the fiscal year of January ~ December 2012, the number of laboratory tests conducted at the blood bank included 82 pathology tests and 6,003 serology tests. Although 1,007 pathology test were conducted in 2011, this number declined sharply in 2012. The reason for this was that testing became impossible due to malfunctions of the blood storage refrigerator, centrifugal separation apparatus, dry heat sterilizer, and microscope, etc. For this project, 1 blood storage refrigerator, 1 centrifuge, and 1 microscope will be provided, as well as 6 blood donation chairs for blood donors.

- Pediatric Ward

  The existing ward is an independent 2-story building located on the southeast side of hospital property. The ground floor is the ward, with the NICU, laboratory, treatment rooms, and examination rooms located on the first floor.

  The number of beds in this ward is 25 sanctioned with 40 actual beds. Thus, the hospital bed occupancy rate is 194% based on the 25 sanctioned beds, and 121% based on the 40 actual beds. As of August 2013, the number of outpatients has a 1-day average of approximately 15 patients and a 2-day average of approximately 50 infants and their mothers admitted for 5 days after birth. Therefore, when formulating this project, an upgrade was planned for 18 pediatric beds and 34 beds for mothers in order to alleviate the constant 100% occupancy rate of the beds and to contribute to the provision of quality medical services.

  The highest ranking primary causes of death in recent years at this hospital have been reported as low birth weight (premature infants) and birth asphyxia. Since respiratory management will make the possibility of saving lives much greater and an improvement in the quality of medical care can be sufficiently expected, this project will provide 3 new CPAP (continuous positive airway pressure) machines with ventilators as lifesaving apparatus for infants with difficulty breathing on their own.

- General Medicine Ward

  A 2-story independent building, the ground floor for female ward and the first floor for male, each equipped with nurse station, examination and treatment rooms, etc. The

number of beds in this ward is 40 sanctioned with 70 actual beds. Thus, the hospital bed occupancy rate is 105% based on the 40 sanctioned beds, and 61% based on the 70 actual beds. In the formulation of this project, a total of 45 (adult) beds for inpatients in the male and female wards will be provided as an upgrade for some of the beds that have deteriorated with age. A total of 14 bedside cabinets will also be provided for the male and female wards. In addition, 2 electrocardiographs, 2 infusion pumps, and 2 patient monitoring systems, etc. will also be provided.

- Dialysis

For this department, equipment and devices are located on the right side of the first floor entrance of the General Medicine Ward. The existing devices include 1 Japanese machine, and 2 machines from a well-known non-Japanese manufacturer. These machines are currently in operation without problem, but in recent years, the number of patients needing dialysis treatment has risen. The number of dialysis patients up to September 2013 has averaged 12 per week (excluding Saturdays and Sundays), who are treated using the three machines.

Since 5 machines are required for the estimated current number of patients, 2 new machines will be provided in this project. One reverse osmosis machine required for the dialysis machines will also be provided.

- Surgery/Orthopedics Ward

The Surgery/Orthopedics Ward is a 2-story independent building with approximately two-thirds of the south side as the Surgery Department Ward, and the ground floor as male/female separated wards. The Nurse Station, Treatment Rooms, and Examination Rooms, etc. are located on each floor. The number of beds in this ward is 40 sanctioned with 50 actual beds. Thus, the hospital bed occupancy rate is 83% based on the sanctioned beds of 40 and 66% based on the actual beds of 50. Therefore, for this project, 20 beds for the male ward and 20 beds for the female ward for a total of 40 beds will be provided as an upgrade for some of the beds that have deteriorated with age in the Surgery Department Ward. The number of beds in the Orthopedics Ward is 25 sanctioned with 40 actual beds. Thus, the hospital bed occupancy rate is 58% based on the sanctioned beds of 25, and 37% based on the actual beds of 40. For this project, a total of 25 beds for the male and female wards will be provided as an upgrade for some of the beds that have deteriorated with age.

Additional equipment that will be provided for the Surgery Ward includes 1 autoclave (upright type), 2 electrocardiographs, 1 oxygen concentrator, 1 pulse oximeter, 1 examination lamp, and 1 aspirator, etc. For the Orthopedics Ward, 1 autoclave (upright type), 1 oxygen concentrator, and 1 chair for patient, etc. will be provided.

- ENT Department

  The ENT ward is an independent single-story building located in front of the OB/GY Ward. This concrete-block construction built in 1962 is very old, and deterioration has progressed; water stains from rain leaks are observed in multiple places. The number of outpatients for this department averages approximately 40 per week. There are 3 consultation days per week, and it is staffed by 1 JCS, 1 sister (S/S), and 3 senior nurses (S/N).

  For this project, a Minor Operation Room and Recovery Room will be built within the ENT Department facilities in the new Main Building (North). Therefore, 5 adult beds, 1 manually adjustable operating table for the Operation Room, and 1 wall-mounted shadowless lamp will be provided. Additionally, 1 audiometer, 1 headlamp (battery-powered), 1 otorhinolaryngology surgical instruments set, and 1 otorhinolaryngology surgical microscope, etc. will also be provided.

- Eye Department

  The existing ward was built at the same time as the ENT Ward and deterioration is progressing. The building is adjacent to the ENT Ward building and in front of the OB/GY Ward. The number of outpatients for this department averages approximately 50 per week. There are 5 consultation days per week, and it is staffed by 1 JCS, 1 sister, 3 S/N and 2 training nurses (T/N).

  For cataracts, glaucoma, and pterygium (a disease in which vision is decreased due to abnormal cells under the cornea causing the pterygium to enter the cornea), 20~30 patients undergo surgery each month. As equipment related to these surgeries, 1 microscope for ophthalmologic surgery will be provided as an upgrade for the deteriorated microscope, 1 set of instruments each will be upgraded for cataract, glaucoma, and general eye surgeries, and 1 tonometer necessary for glaucoma examinations will be provided as an upgrade.

  For this project, a Minor Operation Room and Recovery Room will be built within the Eye Department facilities in the new Main Building (North). Therefore, 5 adult beds, 5 bedside cabinets, and 1 boiling sterilizer will be provided.

- Dental

  The existing ward is a single-story construction adjacent to the OPD/ER Building built in 1987 as an extension. There are 2 Treatment Rooms, of which 1 contains a dental treatment table (1992, U.S.-made) that is currently operational. The other room contains a dental treatment table (1962, German-made) that became unusable about 10 years ago due to long-term deterioration. Although 2 assistant dentists, 1 senior nurse, and 1 training nurse have been assigned to this department, since there is only 1 dental examination table, the average number of patients per day is limited to approximately

15 people.

In the formulation of this project, 1 dental treatment table and 1 dental x-ray machine will be upgraded to alleviate patient waiting times and to contribute to the provision of quality medical services. One set of general dentistry treatment instruments will also be provided as an upgrade. Using 2 dental treatment rooms, 1 room will be equipped with a Japan-side dentistry unit, and 1 room will be equipped with the existing hospital-side dentistry unit. Also, automatic developer for dental X-ray will be provided.

- Physiotherapy

Existing Physiotherapy Department is located at the rear of the ground floor in the OPD/ER Building. The daily average number of patients for this department is 20 or less in a 5-day week that excludes Saturdays, Sundays, and holidays.

As equipment to be installed in the Rehabilitation Room of the Physiotherapy Department in the new Main Building (North) planned for this project, 1 set of parallel bars, 1 set of extension/traction equipment, 1 tilt table for training in standing up, and 1 shoulder wheel for shoulder joint and muscle strength training will be upgraded. As new equipment for the planned wax therapy room, 1 infrared radiant heater, 1 stimulation treatment apparatus, 1 ultra-short wave therapy apparatus, 1 hot pack humidifier, and 1 percutaneous electrical stimulation device, etc. will be provided.

- Mortuary Building

Located at the southernmost part of the hospital property, the severe deterioration of the building due to age has progressed. The autopsy room has a concrete autopsy table. Once or twice per week, a chief forensic doctor comes to the hospital from Mandalay and 20-25 bodies per month are autopsied by the hospital's autopsy doctor apprentice under the guidance of the autopsy doctor.

Since a new Morgue/Autopsy Room Building are planned for this project, 1 autopsy table, 1 shadowless autopsy lamp, 1 refrigerator for storing bodies (4-body capacity), 1 sink, and 1 suction device, etc. will be provided as new equipment.

- Emergency Department/Ambulance

The hospital is currently using a used, normal motor vehicle supplied by the Ministry of Health in 2010 as an ambulance. However, it has not been equipped to ambulance specifications, and no medical devices or instruments whatsoever have been installed. Patients with emergencies are transported to the Mandalay General Hospital with this vehicle as necessary. There has been a rising trend in the number of transports conducted, with 10 trips in FY 2010, 15 trips in 2011, and 28 trips in 2012. In addition to transporting patients, other uses for the vehicle include providing transport when purchasing oxygen tanks and pharmaceuticals. If its use is limited to the transport of

patients, the number of trips made would likely rise further.

In April 2014, a new fully equipped ambulance was distributed to the hospital by MOH and now there are 2 ambulances in the hospital. However, MOH is planning to transfer the new ambulance to other hospital, and therefore, limiting its usage to transporting patients, an ambulance pre-equipped with medical equipment such as a pulse oximeter, manual resuscitator, and stretcher, etc. will be included for provision in the project. Use of the existing old vehicle, which is distributed in 2010 by MOH, will be limited to procurement operations for materials and equipment including the purchase and delivery of oxygen tanks and pharmaceuticals.

- SAMSC Ward

  Located on the north side of the hospital property, severe deterioration of the building due to age has progressed. In particular, the existing patient beds in the accommodation rooms are in extremely poor condition.

  For the new independent ward facilities planned for this project, 28 adult beds and 1 table and chair set for the consulting doctor will be provided.

- Isolation Ward

  In the existing Isolation Ward, 10 adult beds and bedside cabinets will be provided in both the male and female sections for inpatients.

- Oncology Ward

  In the new Oncology Ward, 5 adult beds and bedside cabinets will be provided in both the male and female sections for inpatients.

- HIV/AIDS Counseling (IHC)

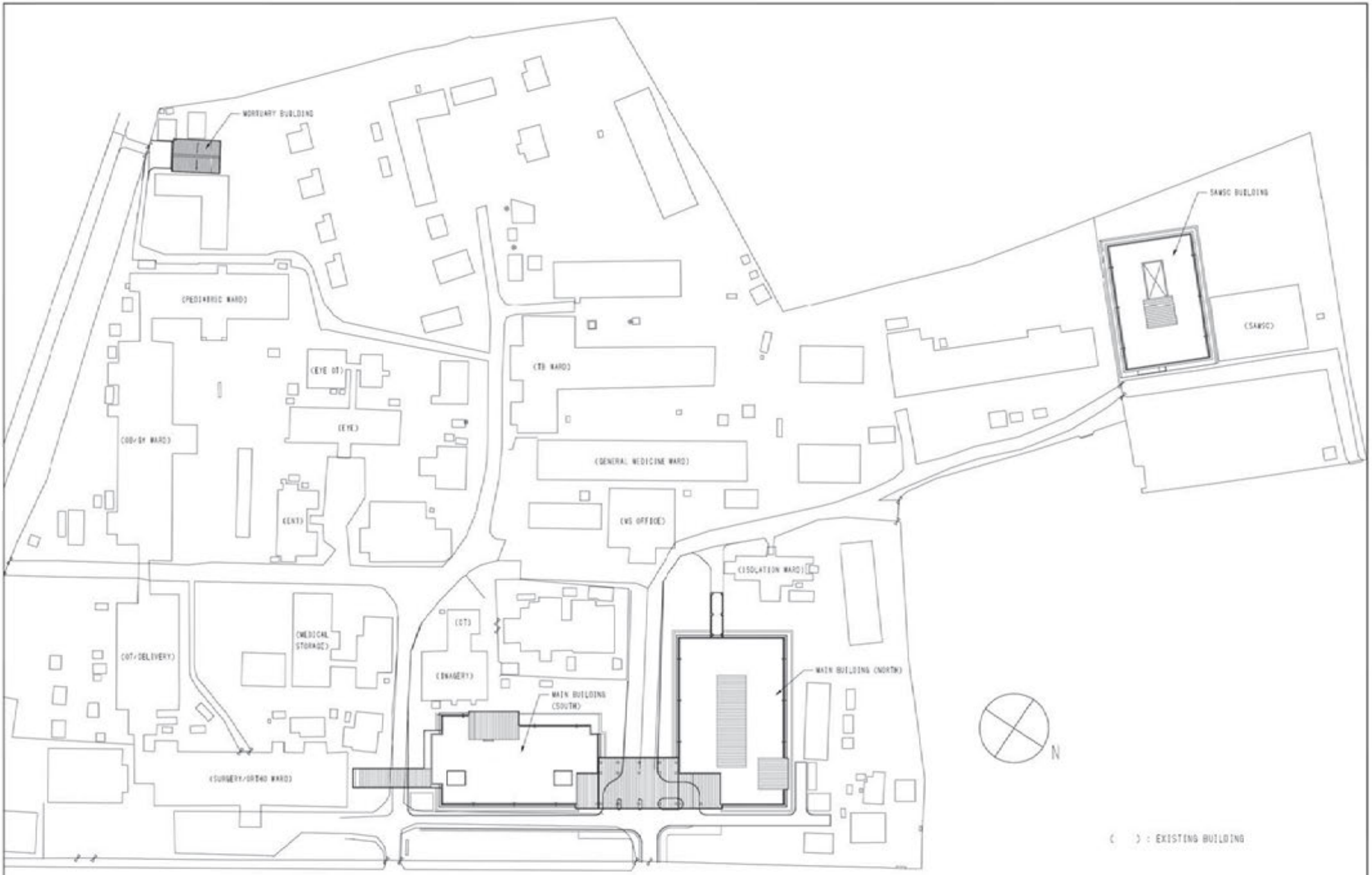
  The existing room is located in a rear side of the deteriorated OPD/ER Building. In the IHC Department on the first floor of the new Main Building (North) planned for this project, a consultation table for counseling and care of HIV patients, privacy curtains, a desk and chair set for the doctor, and a patient chair will be provided.

- Medical Records Department

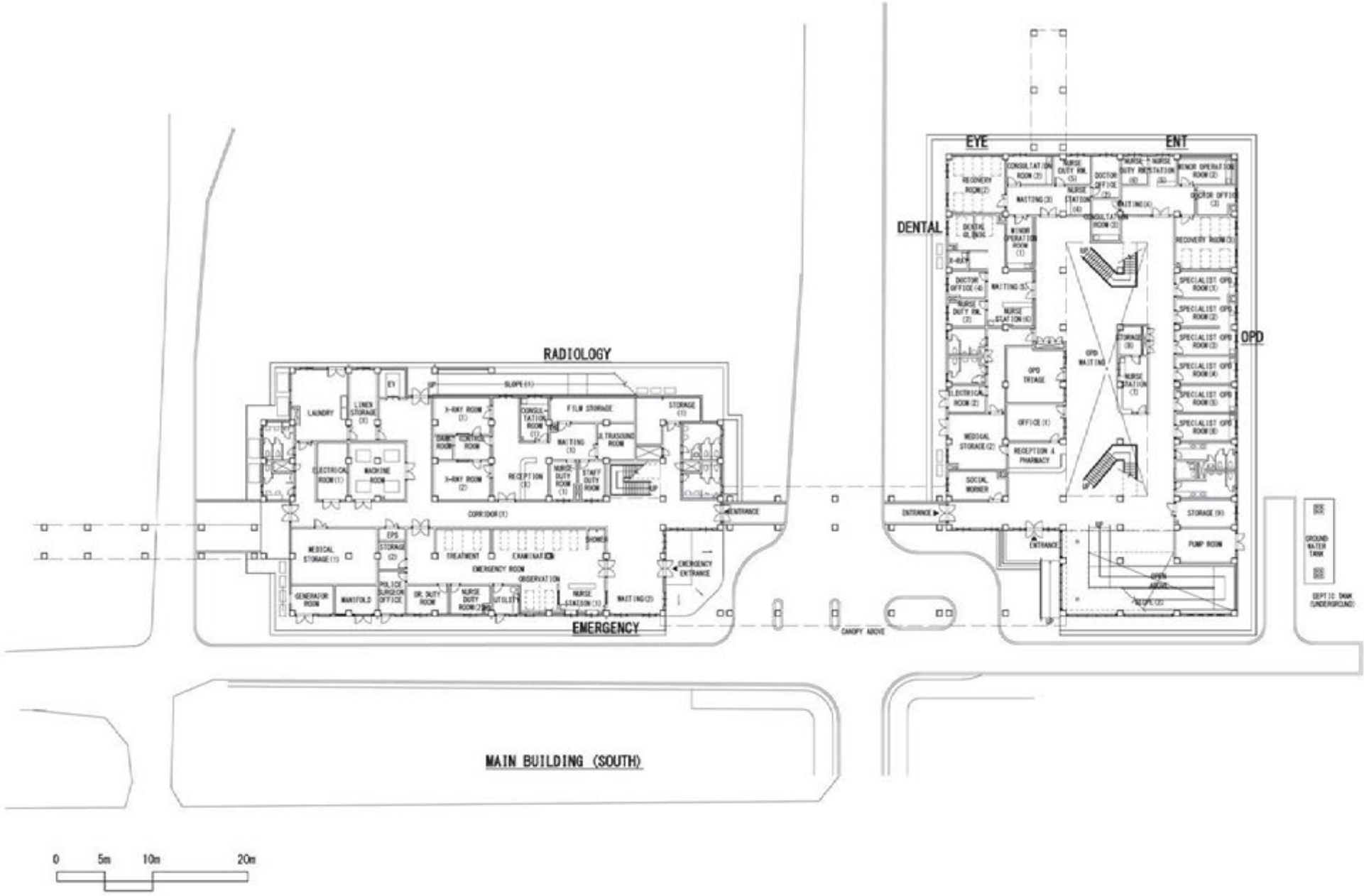
  One personal computer will be provided with the purpose of formulating procurement plans for supplies and replacement parts for medical devices, and for creating annual maintenance management budgets. It will be a desktop computer, and as a soft component, guidance will be provided regarding the creation of the aforementioned data. Management will be personally conducted by the Medical Superintendent at first, with management duties shifted to a staff member in charge of maintenance management as a maintenance management system is created.

2-2A-3 Outline Design Drawings

No.	Drawing Name
A-01	Overall Site Plan
A-02	Main Building (North & South) Ground Floor Plan
A-03	Main Building (North & South) 1st Floor Plan
A-04	Main Building (North & South) Elevations
A-05	Main Building (North & South) Sections
A-06	SAMSC & Mortuary Ground Floor Plan
A-07	SAMSC & Mortuary Elevations



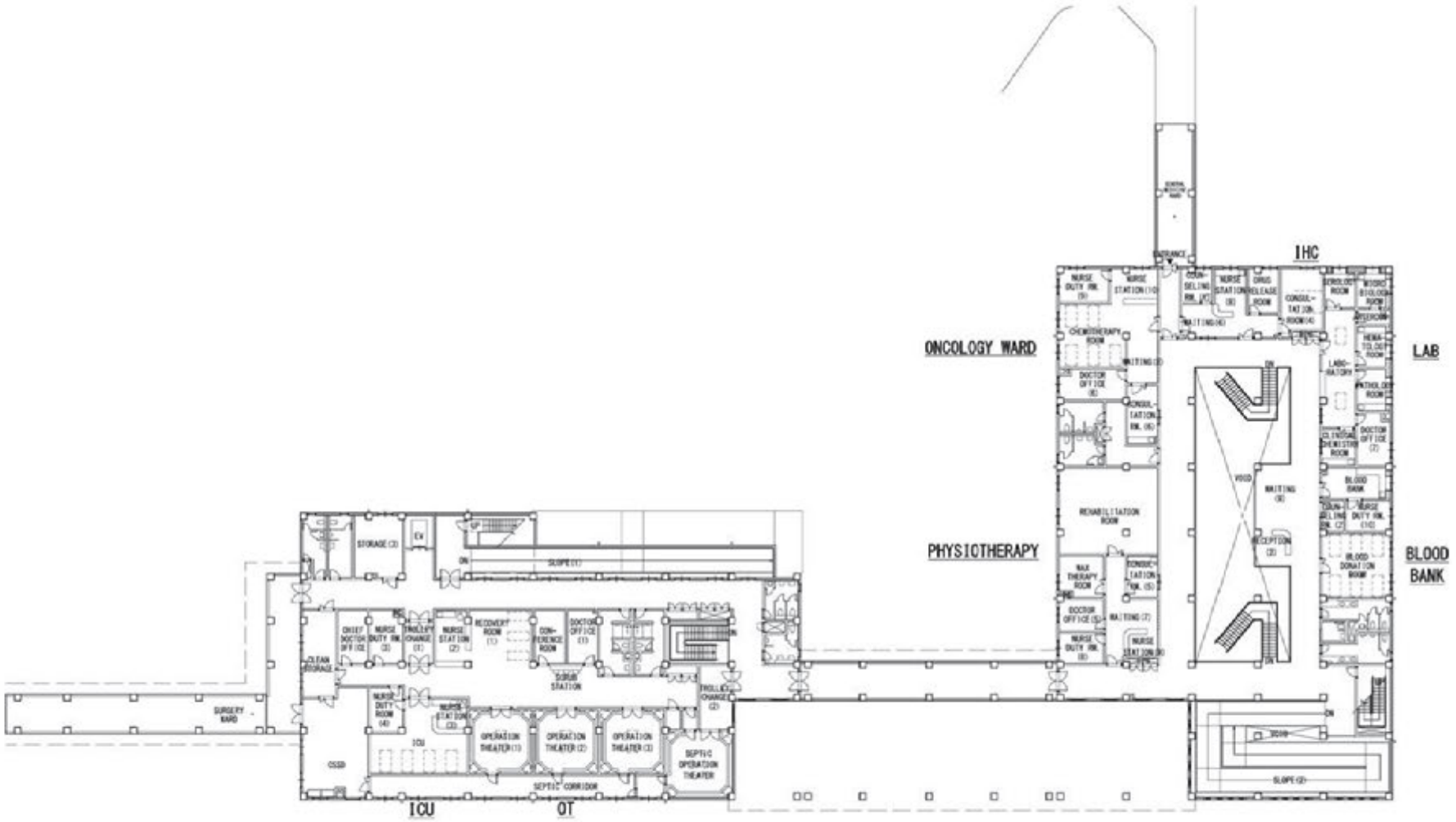
REF. NO.	CHECKED	PROJECT FOR IMPROVING STATE HOSPITALS IN MYANMAR (LASHIO GENERAL HOSPITAL)	JOB NO.	DRAWING NO.
DRAWN	CHECKED		15034	A — 01
		SITE PLAN	SCALE 1/1000	DATE OCT 2013



PROJECT FOR IMPROVING STATE HOSPITALS IN MYANMAR
(LASHIO GENERAL HOSPITAL)

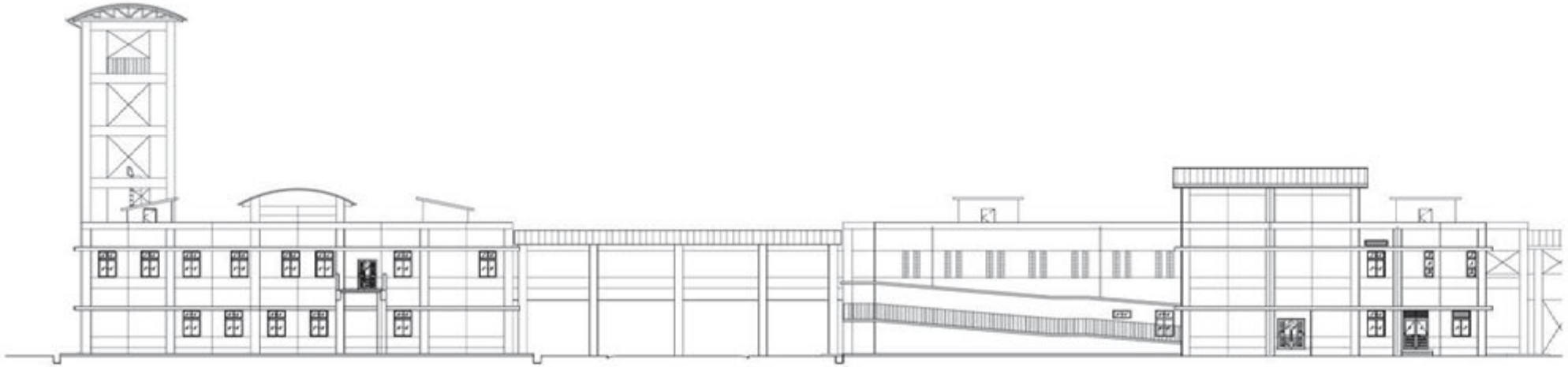
MAIN BUILDING – GROUND FLOOR PLAN

DRAWING NO. A — 02



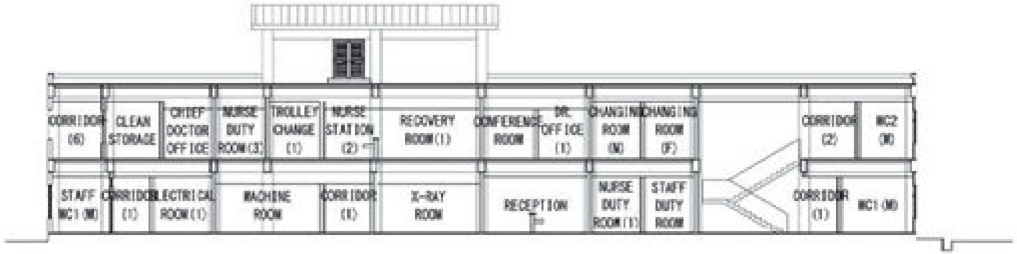
			PROJECT FOR IMPROVING STATE HOSPITALS IN MYANMAR (LASHIO GENERAL HOSPITAL)	JOB NO. 15074A	DRAWING NO. A — 03
			MAIN BUILDING – FIRST FLOOR PLAN	SCALE A3:1/400 A1:1/200	DATE OCT 2015

Main Building (North & South) East Elevation

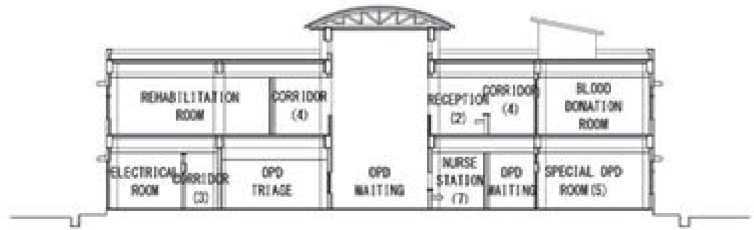


Main Building (North & South) West Elevation

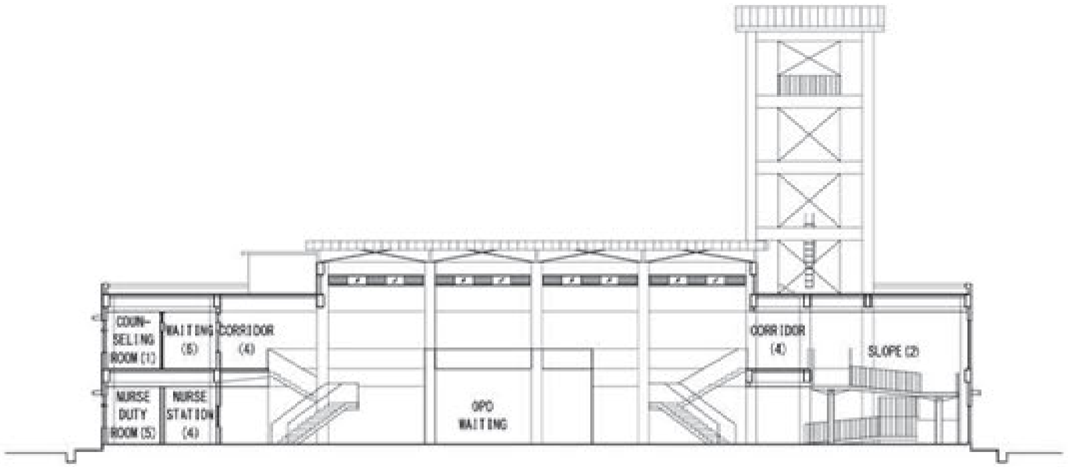
			PROJECT FOR IMPROVING STATE HOSPITALS IN MYANMAR (LASHIO GENERAL HOSPITAL)	JOB NO. 15074	DRAWING NO. A — 04
			MAIN BUILDING – ELEVATION 1	SCALE NO NO	DATE OCT 2015



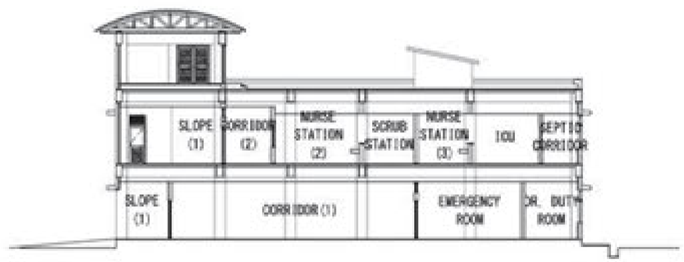
Main Building (South) Section



Main Building (North) Section



Main Building (North) Section



Main Building (South) Section

PROJECT FOR IMPROVING STATE HOSPITALS IN MYANMAR (LASHIO GENERAL HOSPITAL)

SECTION

A — 05

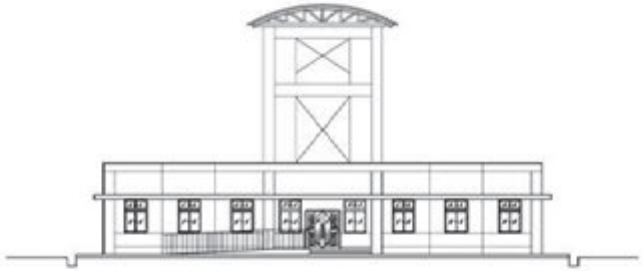
OCT 2015

0 5m 10m 20m

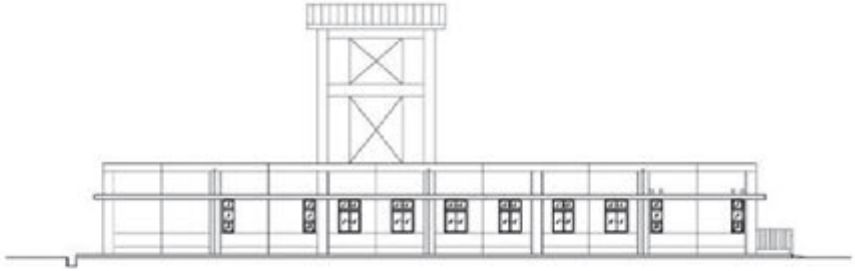
SAMSC BUILDING

MORTUARY BUILDING

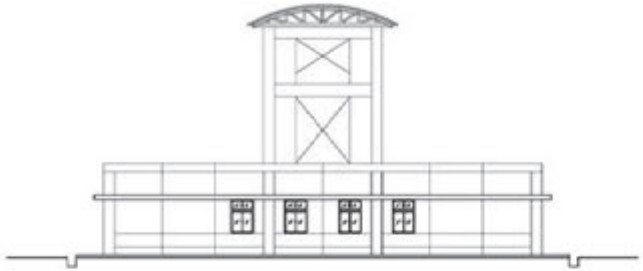
		PROJECT FOR IMPROVING STATE HOSPITALS IN MYANMAR (LASHIO GENERAL HOSPITAL)	DRAWING NO. A — 06
		SAMSC & MORTUARY BUILDING - GROUND FLOOR PLAN	SCALE 1/100 1/200 DATE OCT 2013



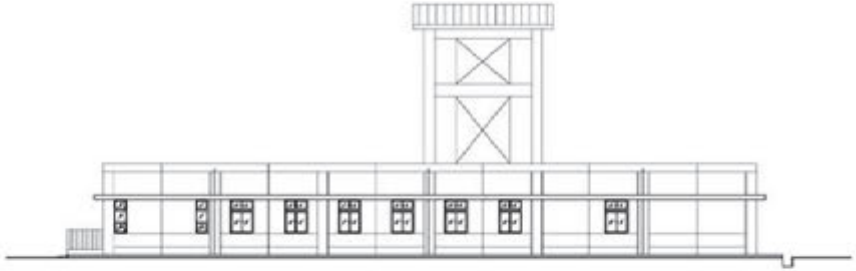
SAMSC Building East Elevation



SAMSC Building North Elevation



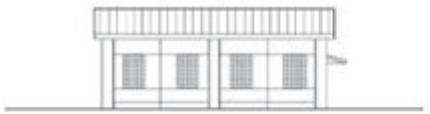
SAMSC Building West Elevation



SAMSC Building South Elevation

Mortuary East Elevation

Mortuary North Elevation



Mortuary West Elevation

Mortuary South Elevation

			PROJECT FOR IMPROVING STATE HOSPITALS IN MYANMAR (LASHIO GENERAL HOSPITAL)	JOB NO. 15074A
			SAMSC & MORTUARY BUILDING - ELEVATION	SCALE NTS A3 / DATE OCT 2015

DRAWING NO. A — 07

2-2B. Loikaw General Hospital

2-2B-1 Design Policy

2-2B-1-1 Basic Policy

(1) Confirmation of Content of Request

1) Facility

The request from Myanmar was for the improvement of the facilities of 3 medical departments, the Ear, Nose and Throat Department, the Physical Medicine Department and the Clinical Pathology Department, but as a result of an inspection of the state of the existing facilities in the field survey, the existing facilities were revealed to be markedly deteriorated due to age, and it was judged that they were in too dangerous condition for medical services to continue. Thus, a survey was conducted into the renovation and improvement of these dangerous facilities as a project.

2) Equipment

Based on the equipment list sent to the JICA Office by the Ministry of Health prior to the start of the synoptic survey, interviews were conducted regarding the equipment request content. Equipment not included on the list but that was requested for addition were included in the final request list based on the following criteria.

- The equipment listed in the Hospital Upgrading Project, Curative Service document and Standard Equipment List for a 200-bed Hospital issued by the Ministry of Health would be upgraded or newly procured.
- Existing equipment would be upgraded.
- Equipment which is highly necessary for functioning as state general hospital but that was not included in the standard list would be upgraded or newly procured.

In the process of confirming the request list, it was discovered that several pieces of physiotherapy equipment were to be procured by the Ministry of Health within the year. Consequently, said equipment was deleted from the final request list for the project. Additionally, since 14 adult beds and 2 pediatric beds had already been delivered to the pediatric ward built using the hospital's budget, the list was finalized after subtracting these beds from the number of adult beds and pediatric beds requested by the Pediatric Department.

(2) Urgency of Renovation and Rebuilding of Facilities, and Selection of Facilities to be Included in the Project

Of the medical facilities, the main building in particular showed marked structural deterioration and rain water leakage. There was also marked aging throughout the buildings housing the Pediatric Department, the Ear, Nose and Throat Department and the Physical

Medicine Department so severe that the situation was dangerous, with a strong possibility that continued use of the buildings as medical departments and wards, in addition to interfering with medical practice, would instill fear in the patients or cause them harm. In addition, other facilities, with the exception of the New Pediatrics Building, the CT Scanner Building, the Mortuary and the Specialist OPD, were all deteriorated to the extent that medical practice was being hindered. It can thus be concluded that in order to improve the medical services of this 200-bed hospital of the Ministry of Health, which is also the core hospital in Kayah State, there is a very urgent need to rebuild the aging medical department facilities.

Under the regulations of the Ministry of Health, a 200-bed general hospital is a hospital where treatment from specialist doctors is available. However, there are no stipulations as to the specialist departments required at each general hospital, and specialist departments are provided according to the illnesses characteristic of the region in which the hospital is located. The sanctioned number of doctors at the Loikaw General Hospital is 102 and for nursing staff, 297, but the hospital operates with 37 doctors and 275 nurses. With the increase in the Ministry of Health budget, the number of doctors being recruited, in particular young doctors, is growing rapidly, but at the present time it is not clear when it is planned to increase the number of medical staff at Loikaw General Hospital. For this reason, it was concluded that the medical departments needed by Loikaw General Hospital are the existing departments that match the local disease structure, and the establishment of new medical departments was excluded from consideration of the fact that it is unclear when or if the number of doctors will be increased.

In concrete terms, the Pediatric Outpatient Department / Ward and Orthopedic Outpatient Department/Ward, which are scheduled to be transferred to the New Pediatrics Building that has been newly built within the hospital, and the Management Section and CT Scanner Building were excluded from this project, and as shown in the table below, the facilities to be included in this project were determined to be those most deteriorated or aging, including General OPD, Specialist OPD, General Medicine, Surgery, Dental, Operating Theaters, OB/GY, Eye, ENT, Radiology, Clinical Pathology and the Blood Bank. In addition, in line with the policy of the Ministry of Health, prompted by the South East Asia Games (SEA Games) held in Nay Pyi Taw in December 2013, to establish an Emergency Department as an important department in each State General Hospital, it was decided to add an Emergency Department. The results of the selection of facilities/departments to be rebuilt are shown below.

Table 2-18 Selection of Buildings or Departments for Reconstruction under the Project

Building	Department	Condition		Selection
Main Building	General OPD	Deterioration, aging	⇨	Rebuild under the Project
	General Medicine Ward			
	Surgery Ward			
	Dental Clinic			
	Orthopedic Outpatient & Ward	Deterioration, aging		Transfer to new Pediatrics Building
	Operation Theater (General, Eye)	Deterioration, aging	⇨	Rebuild under the Project
	Emergency Department	New important Dept.		
	Management Section	Deterioration, aging		Transfer to new Pediatrics Building
Specialist OPD	General Medicine, Surgery, Psychiatric, Oncology etc.	Securing collaboration with related Department	⇨	Rebuild under the Project
Obstetrics and Gynecology	OB/GY Outpatient & Ward	Aging		
	Main Hall	Aging		Transfer to new Pediatrics Building
Pediatric	Pediatric Outpatient & Ward	Aging		Transfer to new Pediatrics Building
Eye	Eye Outpatient & Ward	Deterioration, aging	⇨	Rebuild under the Project
NT, Physical Medicine	ENT Outpatient & Ward, Physical Medicine Outpatient			
Isolation Ward	Isolation Ward	Aging		Construct new ward by Myanmar Side
Radiology	Radiology (X-lay, Ultrasound)	Aging	⇨	Rebuild under the Project
	CT Scanner	Newly constructed		Use the existing building
Clinical Pathology	4 Laboratories	Deterioration, aging	⇨	Rebuild under the Project
Blood Bank	Collection, Testing, Storage			
Mortuary	Corpse Depot	No trouble		Use the existing building
Kitchen	Kitchen, Storage	Out of use		
Medicine Store	Storage	No trouble		
Prisoner Ward	Monitoring Room, Ward	Aging		
Monk Ward	Praying Room, Ward	No trouble		

(3) Project Components

After the functions of the facilities and departments selected for rebuilding under the project had been confirmed, the facility components for each department including the various rooms needed were discussed with the Myanmar side and agreement was reached in the minutes of discussions on the content shown in the table below. With regard to medical equipment, in addition to the equipment to be procured for the facilities covered by the project,

it was decided that equipment for the Pediatrics Department and the Orthopedic Department that were to be transferred to the New Pediatrics Building would be included in the project.

Table 2-19 Facility Component Plan

Department Name	Major Rooms
・OPD	・General outpatient waiting, Consultation room
	・Specialist OPD rooms (General Medicine, Surgery, Psychiatric, Oncology, Dental) Waiting, Consulting room
・Emergency	・Treatment room, Observation room
・General Medicine	・Consultation room, Ward
・Surgery	・Consultation room, Ward
・Operation Theater	・Operation theaters, Recovery, ICU, Autoclave room
・OB/GY	・Consultation room, Labor, Delivery, Recovery, Ward
・Eye	・Consultation room, Ward
・ENT	・Consultation room, Ward
・Physical Medicine	・Rehabilitation room
・Radiology	・X-ray, Ultrasound room, Endoscope room
・Clinical Pathology	・Bacteriology , Biochemistry, Hematology, Pathology
・Blood Bank	・Blood Collection, Laboratory, Storage room

(4) Determination of Number of Beds

The facility components include such medical departments as the General Medicine, Surgery, and OB/GY Departments, which require wards. At present, the bed occupancy rates in these sectors are not high, but the number of beds for the facilities covered by the project was planned at around the present level of 213 beds for the hospital as a whole (156, excluding the number of beds for Pediatrics and Orthopedics, which will be transferred to the New Pediatrics Building). The reasons for this are: ①the hospital has been certified as a 200-bed hospital, ②the hospital is able to operate with the present number of doctors and nursing staff, and ③with the return of peace to Kayah State and the surrounding states and regions, the number of patients is on the rise.

Principal reasons behind the determination of the number of beds:

1) As the hospital is the core hospital for Kayah State and certified by the Ministry of Health as a 200-bed hospital, the certified minimum standard of 200 beds will be secured.
2) The Ministry of Health is making progress in securing more doctors, but it is not clear when the number of doctors at the Loikaw General Hospital will be increased.
3) From 2010 to 2011, the number of outpatients and inpatients fell. This was due, in part, to increased activity by armed insurgents in neighboring Kayin State and the resulting drop in the number of patients from remote areas of Kayah State. Now that peace has

been restored, it is forecast that the number of inpatients will rise and the bed occupancy rate will improve.

4) Since 2012, the number of outpatients has been on the rise. It is expected that this trend will continue and will lead to an increase in the number of inpatients.

5) Bed occupancy rates in the Eye Department and in the ENT Departments are low, but many of the patients come from remote areas of the state or from out of state, and beds to accommodate these patients are considered necessary, within the scope of the certified number of beds.

Table 2-20 Examination of Number of Beds

	Number of beds			Analysis of ward occupancy rates
	Sanctioned	Existing	Plan	
General Medicine Dept.	35	61	58	81% of the sanctioned number. The number of outpatients has increased. The occupancy rates will be increased in future.
Surgery Dept.	35	33	37	85% of the sanctioned number. The rate is stable at around 82%. The number of inpatients will be stable.
OBGY Dept.	35	38	46	56% of the sanctioned number. The number of outpatients has increased rapidly. MOH suggests deliveries in hospitals. The occupancy rate is increasing because of facility improvement.
ICU	-	2	4	No sanctioned number. The minimum number of beds will be necessary to raise of medical standard.
Eye Dept.	20	11	8	6% of the sanctioned number. The number of outpatients is increased rapidly. The number of beds is necessary to utilize for the stay of patients from rural areas in the state.
ENT Dept.	20	3	3	2% of the sanctioned number. The number of outpatients has increased rapidly. The number of beds is necessary to use for the admission of patients from rural areas in the state.
Clinical Pathology Dept.	-	8	3	The number of outpatients has increased rapidly.
Psychiatry Dept.	-	-	-	The number of outpatients has increased rapidly.
Oncology Dept.	-	-	-	The number of outpatients has increased rapidly.
Dental Dept.	-	-	-	The number of outpatients has increased rapidly.
Pediatric Dept.	35	23	55	99% of the sanctioned number. The number of inpatients and outpatients has increased. The occupancy rate will be increased.
Orthopedic Dept.	20	34	60	99% of the sanctioned number. Both inpatients and outpatients have increased. The occupancy rate will be increased.
Planned beds	145	156	159	
Total beds in the hospital	200	213	274	
Remarks	The annual predicted numbers are calculated for January-September, 2013. The occupancy rate is calculated by the number of planned available beds and the total hospitalization dates in each year.			

(5) Calculation of the Number of Operation Theaters

The existing Operation Theater Department has a total of 4 Operation Theaters. Three rooms are ordinary operation theaters, and 1 room is smaller, to be used for cataract operations. For efficient consultation by a limited number of doctors, consultations are performed in the mornings and operations, excluding emergency operations, are rotated in the afternoon. The number of operations including Caesarean sections is 2339, and there is 1 operation per operation theatre per day.

Because the OB/GY Department is separate from the new Main Building East with the OT, 1 operation theater will be provided in the OB/GY Department, where 2 Caesarean sections will be performed in 1 day to prevent pregnant women's condition from worsening. In addition, the number of operations will be increased. Thus, 2 ordinary operation theaters, 1 for minor operations for the Eye Department and ENT Department, and 1 for infectious patients will be provided, where 2 operation per day will be performed.

Table 2-21 Calculation of Numbers of Operation Theaters

	Operations		Current Situation 4 Operation Theaters	New Main Building East: Operation Department 4 Operations Theaters	New Main Building West: OB/GY 1 Operation Theater
①	Appendectomy	case	123	⑩=⑧−⑦ =1,851	
②	Hernia	case	561		
③	Cataract	case	250		
④	Open reduction and internal fracture fixation	case	136		
⑤	Suture/Omental Transplantation	case	117		
⑥	Others	case	664		
⑦	Cesarean section	case	488		488
⑧	Total	case	2,339		
⑨	No. of Operations a day/ room (except Sat., Sun. & holidays: 244days/afternoons)	room	**2.4** (⑧÷244days÷4rooms)	**1.9** (⑩÷244days÷4rooms)	**2.0** (⑦÷244days÷1 room)

(6) Adoption of Pay Wards

At the present time, the Loikaw GH has 28 pay wards, for which the charge is 3,000 Kyat. The New Pediatrics Building completed in November 2013 also has pay wards, and Myanmar's National Hospitals, such as Yangon General Hospital and the New Yangon General Hospital, are provided with pay wards. The income from the pay wards is not huge, but they are a useful way of helping ensure the hospital's financial sustainability, and in this project, pay wards are also planned.

(7) Adoption of Integrated Facilities

The existing main building is an integrated facility that contains the General OPD, General Medicine, Surgery, and Orthopedics Departments, operating theaters and the Management Section, but other departments are all contained in separate buildings, connected by covered passageways. These separate buildings are fine for cooperation that goes on within a single medical department, but are not well suited to medical treatment that requires efficient collaboration between different departments; they lead to too much unnecessary movement by patients and hospital staff, and are also more troublesome to maintain and manage. Hoping to modernize, the Loikaw General Hospital is looking for functional, efficient medical services with cooperation between multiple departments, and the plan is to provide integrated facilities where this can be easily achieved. Furthermore, there is not enough space available to rebuild the different sectors scattered throughout the hospital grounds as separate buildings while continuing medical services in the existing facilities, and taking this into consideration too, integrated facilities were judged to be the most appropriate.

(8) Site Selection

On the basis of the results of the field survey prior to the discussion of the minutes of Field Survey I, the open space in front of the main building was considered to be the main construction site candidate, being a location offering easy linkage to the New Pediatrics Building under construction, minimum demolition / removal of existing buildings, and plenty of space for a construction site. However, in the field survey following the discussion of the minutes, a request was received from the heads of the Kayah State Government (the State Governor, the Minister of Security and Border Affairs, the Minister of Social Affairs, the Secretary of the Regional State Government and others) to the effect that when the construction of the project facilities was complete, they wished the iconic appearance of the front of the main building to remain visible from the main access road to the south of the hospital, and they also wished the vehicle turnaround garden area in front of the main entrance to remain. For these reasons, the construction of the new facilities should be planned on either side of the vehicle turnaround. The reasons for this request were as follows.

1) Built in 1964, the main building is one of the oldest buildings in Kayah State, and the exterior view of the front of the main building is well known to the citizens as the symbol of the hospital.
2) The vehicle turnaround garden area is both functional and pleasant to look at, and helps to raise the patients' spirits.

After this request was received and as a result of reconsidering of the layout of the project facilities, it was confirmed that it would be possible for the buildings to be located on either side of the vehicle turnaround. It was also concluded that if the project facilities were constructed on the initial candidate site, this would mean constructing two large buildings

close to each other, and unless the main building was demolished, it would be difficult to provide the patients with a good environment. For these reasons, it was decided, in accordance with the request of the heads of the Kayah State Government, that the project buildings should be located on either side of the vehicle turnaround.

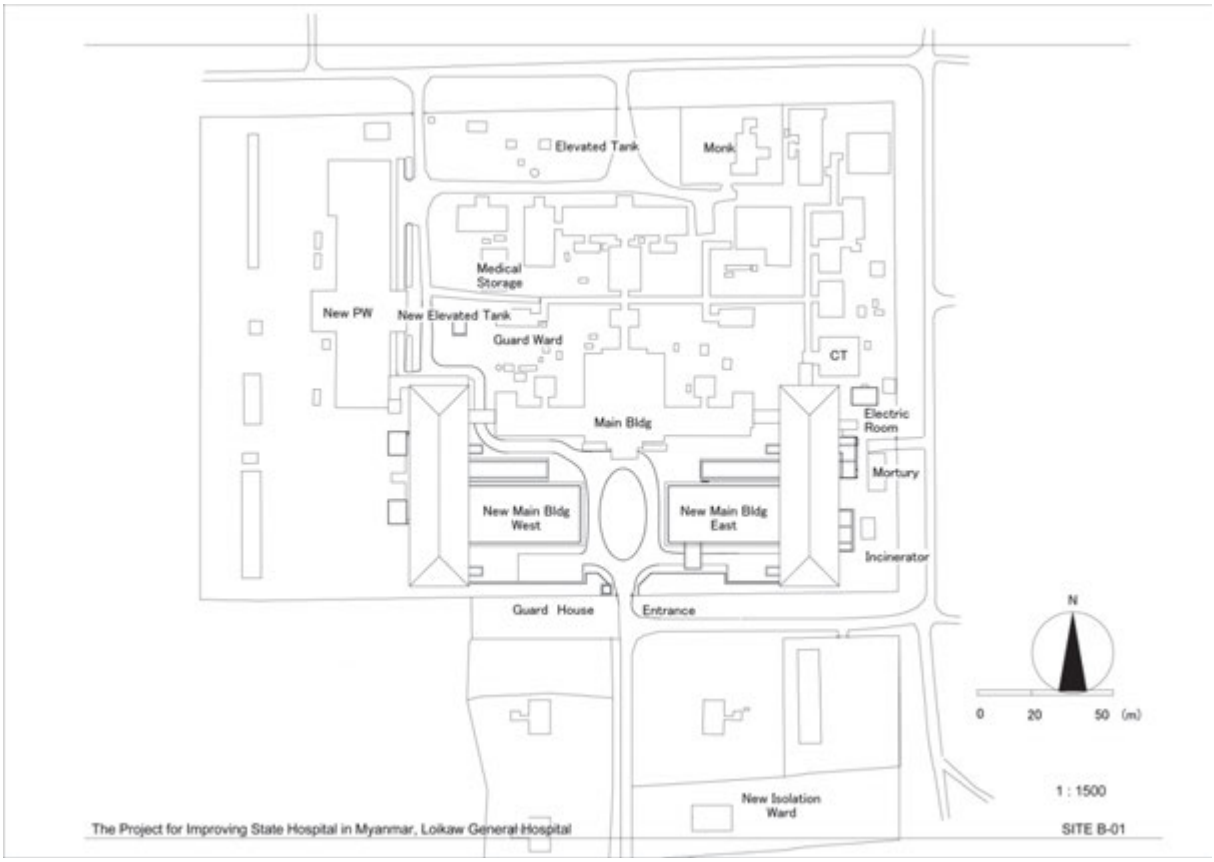


Figure 2-11 Site Plan

2-2B-1-2 Policy on Natural and Environmental Conditions

(1) Attention to Temperature/ Daylight

At 23.3 degrees Celsius, the annual mean temperature in Loikaw is not that high, but during the rainy season from May to October, the monthly mean temperature is generally 28 degrees Celsius or higher. Because it becomes so hot and humid, measures are needed to counter the heat and humidity. However, an attempt will be made to keep the use of air conditioning to a minimum and to achieve a comfortable indoor environment through the incorporation of natural ventilation. To this end, rooms will be laid out so as to effectively channel indoors the southwest wind that blows year-round.

Further, as a measure to cope with the strong sunlight during the day, the policy will be to lessen the effect of the sun's rays by providing outside passageways to block direct sunlight and by raising the thermal insulation capacity of the roof.

(2) Concern for Flooding

Annual rainfall is 1,425mm, which is not a lot when compared to Yangon's 2,700mm, but as concentrated heavy rains can fall in a short period of time, the policy will be to raise the ground floor level of the buildings 20cm above the ground level so that the buildings do not become flooded, and to set out water drainage ditches around the buildings so that rainwater falling in the vicinity of the buildings is swiftly discharged to the drainage channel on the site boundary.

2-2B-1-3 Policy on Social and Economic Conditions

(1) Consideration of Gender

The hospital facilities at Loikaw General Hospital include an OB/GY Department, and almost all of the visitors accompanying patients in each department are female. In addition, many of the 37 doctors and 275 nurses are female. For this reason, multiple women's lavatories will be provided.

2-2B-1-4 Policy on Construction and Procurement Conditions

(1) Construction Plan Approvals and Permits/ Regulations

As with Lashio General Hospital, the acquisition of a building permit requires an examination of the design drawings by the Ministry of Health. Once a building permit has been obtained, the drawings are to be submitted to the Kayah State Development Committee for notification of the content of the design.

1) Planning Regulations

Planning will be based on the following standards and regulations of Loikaw Township.

① A distance of between 3 feet (approx. 0.91m) and 5 feet (approx. 1.52m) is to be maintained between the exterior walls of the buildings and the boundary line of the grounds.
② Buildings of up to 3 stories are possible, but in response to a request from the hospital side, the height of the buildings will be 1-story or 2-story.

2) Fire Regulations

The Loikaw Township Fire Department will review the design drawings. Fire standards indicated by the Fire Department are as follows, and these standards will be taken into consideration in the planning.

① Stairs for evacuation are to be provided.
② A 1kg fire extinguisher is to be placed within walking distance every 15m.
③ Installation of fire alarm system is recommended

(2) Quality or and Difficulty in Procurement of Local Materials and Equipment

With respect to the principle construction materials and equipment, local products and products imported by agents from ASEAN countries and China can easily be procured on the local market. There does not seem to be any particular problem with the quality of these principle construction materials and equipment, and advantage will be taken of them as locally-available materials and equipment.

(3) Labor Situation

Construction site working hours in Myanmar are generally from 9 till 5, but there are no regulations and night shifts are often worked in order to shorten the construction period. The project site is on the grounds of a functioning hospital, and out of consideration of the impact on inpatients etc., the construction period will be determined on the basis of the ordinary working hours of 9 to 5.

Loikaw has few skilled workers of any kind; they tend to be concentrated in the major cities of Myanmar, such as Yangon, Nay Pyi Taw and Mandalay. Therefore, workers will be deployed from these cities.

2-2B-1-5 Policy on Utilization of Local Contractors

In the past, most construction work was carried out by the state-run construction corporation. However, in the past 10 years, there has been growing privatization of the construction industry and there are now more private-sector contractors. Until recently, the construction market in Myanmar was restricted to small-scale development in Yangon, government-commissioned work mainly in Nay Pyi Taw, and Chinese investment development in Mandalay, but at the present time, many large-scale developments backed by foreign investment to Yangon are being planned. In place of the old timber-frame (half-timbered) structures, these recent construction works use a new local method of construction based on reinforced concrete structure. If the construction work is based on this new construction method, there are many local contractors with a sufficient level of skill to be able to work under a Japanese construction contractor.

This new construction method has, in the past few years, been used in the construction of medical facilities ordered by the Ministry of Health, and so in order to make active use of local contractors, priority will be given to the use of this new construction method.

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

(1) Facility

The project facilities will continue to be maintained and managed by a total of three technicians, namely one electrical engineer and two water & sanitation engineers. For this reason, the relatively easy to maintain equipment used in the existing and similar facilities will be adopted. In the selection of equipment incidental to the facilities and requiring routine

maintenance, priority will be given to items for which consumables and maintenance parts are easy to obtain, so that maintenance costs do not become an administrative burden. The elevators will be maintained by means of periodic inspection by the manufacturer branch or local agents professional engineers legally, and in the planning, the cost of this will be included in the cost of maintenance and management.

(2) Equipment

Currently, there is no department for equipment maintenance management at Loikaw General Hospital, with the doctors and nurses of each department performing routine maintenance and simple repairs. If they are not able to do so, repairs are generally outsourced through the Medical Superintendent or Deputy Medical Superintendent to the CMSD under the control of the Department of Health at the Ministry of Health. If repairs are not possible at this level, work is further outsourced to agents of the respective equipment manufacturers. It has been agreed upon with the Ministry of Health that before installation of medical equipment for this project begins, the Ministry of Health will assign new staff to Loikaw General Hospital to be in charge of equipment maintenance management. The maintenance management of medical equipment will be implemented with these staff members playing the central role.

To ensure that the procured devices are used effectively and on a long term basis, devices that need supplies and/or replacement parts, or that must be repaired or require periodic inspections, etc. by the manufacturer's agent will generally be selected from manufacturers with agents in Myanmar or neighboring countries. After procurement, a system for maintenance management will also be secured.

In general, the procured devices will be products made in Japan or Myanmar. However, conditions will be carefully examined regarding advantages in terms of maintenance management and the level of product dissemination in Myanmar, etc., and if it is preferable to procure a device made in a third country, such procurement will be considered after approval is obtained from both Japan and Myanmar.

Furthermore, when devices are delivered, the equipment procurement company will provide instruction on initial operation and maintenance methods to hospital personnel so that the devices can be used correctly and safely. Soft components will also be implemented with the objective of enhancing maintenance management techniques and systems for the devices to promote their effective and long-term use.

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

(1) Facility

In determining the grade of the facilities, reference will be made to the design and specifications of the existing facilities and similar facilities, the construction method described above will be adopted, and priority will be given to ease of use, ease of maintenance

and management, and durability. With respect to the size of the rooms, such as the floor area of wards and operating theaters, reference will be made to the Standard Plan for a General Hospital (the basic construction drawings for the recently-built Laputta General Hospital) provided by the Ministry of Health.

(2) Equipment

Equipment necessary for medical activities in the project components described above will be eligible for inclusion in the project. Equipment which cannot be handled due to the medical device maintenance system of Myanmar and/or the technical skill level of the hospital shall not be included in the project; nor shall equipment be included for which the replacement of parts and/or repair work is difficult due to the absence of manufacturer agents providing maintenance services in Myanmar.

The quantity of devices shall be set appropriately, taking into account the number of current medical staff members, the planned number of rooms, and the number of existing devices that can continue to be used. A set quantity of replacement parts and supplies will be included in the plan as an initial allowance to be used after delivery of the device until the Myanmar side has developed a procurement plan.

In contrast to the nominal power supply voltage of 220V, the measured values were approximately ±5V, which is within the allowable range for the use of medical devices. However, voltage stabilizers will be included to respond to sudden fluctuations for devices with coils such as motors and transformers, and uninterruptible power supply apparatus will be included with devices using electronic parts that may be damaged by blackouts or overloaded when power is restored.

2-2B-1-8 Policy on Construction/ Procurement Methods and Schedule

With regard to the construction period, work will stop completely for approximately ten days in the middle of April for the New Year holidays. In addition, as the project site is in an area where there are rains during the rainy season from May to October, it is expected that this will have an adverse effect on foundation work done during this period, and will slow down outdoor construction work. Therefore, these factors will be taken into consideration in determining the construction period.

2-2B-2 Basic Plan (Facility Plan/ Equipment Plan)

2-2B-2-1 Examination of the Content of the Request

The content of the request was for the improvement of the facilities of three departments (ENT, Physical Medicine and Clinical Pathology) and the provision of medical equipment for all departments, but as a result of discussions, it was concluded that in order to ensure the functions required of the core hospital for Kayah State, 12 departments that were in a deteriorated state would need to be rebuilt. It was also confirmed at the same time that medical equipment would need to be provided to all departments of the hospital.

The 12 departments in need of rebuilding are ①OPD, ②Emergency Department ③ General Medicine Department, ④Surgical Department, ⑤Operating Theaters, ⑥OB/GY Department, ⑦Eye Department, ⑧ENT Department, ⑨Physical Medicine Department, ⑩ Radiology Department, ⑪Clinical Pathology Department, and ⑫Blood Bank. These facilities and their attendant annex facilities such as elevated water tanks are included in the work to be carried out by the Japanese side.

In addition to the medical equipment that will be used in the facilities that are to be rebuilt, medical equipment for use in the Pediatrics Department and the Orthopedic Department that will move into the New Pediatrics Building will also be included in the project.

The facilities and medical equipment to be included in the Loikaw General Hospital under the project planned on the basis of the results of the selection of facilities and equipment explained above are as shown in the following table.

Table 2-22 Contents of the Project

<table>
<tr><th></th><th>Outline</th></tr>
<tr><td>Construction of Facilities in Loikaw General Hospital</td><td>(1) Buildings Facilities at Loikaw General Hospital
<table>
<tr><th>List</th><th>Area (m^2)</th></tr>
<tr><td>New Main Building East
OPD (General Medicine, Surgeon, Eye, Psychiatry, Oncology, Dental), Emergency, Imagery, Lab, Blood Bank, OT, etc.</td><td>4,416.98</td></tr>
<tr><td>New Main Building West
OB/GY, Physical, ENT, General Medicine</td><td>4,349.66</td></tr>
<tr><td>Subtotal</td><td>8,766.64</td></tr>
<tr><td>Attached Buildings
(Roofed Passage, Guard House, Electrical room, Elevated Water Tank)</td><td>469.75</td></tr>
<tr><td>Total</td><td>9,236.39</td></tr>
</table>
(2) Facility
• Electrical Facilities: Power Supply (Transformer/Distribution Equipment),Generator System, Lighting System, Socket Outlet, Communication Facility, Fire Alarm System, Lighting Protection System
• Machinery Facilities: Air Conditioning Facilities
• Plumbing System: Sanitary Fixture, Water Supply System, Drainage System
• Special Facilities: Medical Gas System, EV</td></tr>
<tr><td>Equipment Provision</td><td>(1) Medical equipment procurement for departments in the buildings stated above, the Pediatric Department to be moved to New Pediatric Building, and Orthopedics.
(2) Maintenance instruction for procured equipment for effective and long-term use.</td></tr>
</table>

2-2B-2-2 Facility Plan

(1) Site/ Facility Layout

Access roads to the hospital used by patients are located to the south and north of the hospital. As the areas in which many of the citizens who are likely to be patients live are located to the south of the hospital, the southern access road is the main access road, and the main access road for the project facilities will be the road to the south. The steeply-sloping southern road leads from the urban area up to the main entrance of the hospital, from where there is a view of the front of the main building that is so well-known to the citizens and of the garden area that helps raise patients' spirits. As mentioned earlier, after consideration of the request from the Kayah State Government, it was decided that the facilities to be constructed in this project would be located on either side of the vehicle turnaround in front of the main building, and here it is planned to build the kind of single-story and two-story building the hospital side is accustomed to using.

To the east and rear of the main hospital building is the CT Scanner Building, and to the west and rear is the 2-story New Pediatrics Building. Closest to the main entrance and to the east of the main building, providing ease of access to new patients and emergency patients and facilitating liaison with the CT Scanner Building the New Main Building East will be located, housing the OPD/ER Department, the Diagnostic Imaging Department, the Clinical Pathology Department, the Surgical Department, the Operating Theaters and the Eye Department.

On the west side, the New Main Building West will be located, which will house, in addition to the OB/GY Department and the Physical Medicine Department which need to be able to work in coordination with the Pediatrics Department and the Orthopedic Department in the New Pediatrics Building, the ENT Department and the General Medicine Department.

(2) Floor Plans

1) Approach to Floor Planning

On the ground floor of the New Main Building East, close to the vehicle turnaround and providing easy access for outpatients and emergency patients, the OPD/ER Department will be located. Behind that will be the Surgical Department, many of whose patients require emergency treatment, as well as the Diagnostic Imaging Department and the Clinical Pathology Department, which work in close cooperation with the OPD/ER Department and also manage the CT Scanner Building. In Myanmar, it is the preferred custom for operation theaters to be located not on the ground floor but on the first floor, and as the hospital side requested this, in this project to the operating theaters will be located on the first floor with elevators and slopes provided. The Eye Department, which makes frequent use of the operating theaters for cataract operations etc., will also be located on the first floor.

On the ground floor of the New Main Building West, offering ease of access to outpatients, the OB/GY Department will be located. To the west and rear will be the Physical Medicine

Department, which needs to be able to work in cooperation with the Orthopedic Department, and the ENT Department. On the first floor will be the General Medicine Department, which has many inpatients and requires plenty of space.

Reference will be made to the Standard Plan for the Laputta General Hospital in which the MOH indicates the various rooms required and their area, layout of equipment etc., and the most appropriate draft plan will be prepared after the distinctive features and efficient operation of Loikaw General Hospital have been taken into consideration. In addition, the plan will take into account the following points.

- Each department will have a central corridor that will be a passageway exclusively for medical services. On either side of this central corridor will be arranged consultation rooms, wards, etc.
- The custom is for family members to be in attendance 24 hours a day to nurse the patient. An outside corridor will be provided for these attending family members.
- Following Myanmar practice and to prevent odors from infiltrating the wards, lavatories will be located outside of the wards.
- As the system of nurses being on duty in each department will continue, each department will be provided with a nurse duty room.
- A Nurse Station will be located close to the entrance of each department where the comings and goings of patients can be easily monitored, in a location that gives a good view over the wards.
- The policy will be to not employ a nurse-call system as people are not used to using one and its maintenance will present difficulties. In keeping with the Standard Plan for a General Hospital and the present system, the nursing unit per Nurse Station will be an easy-to-supervise 24 to 36 beds.
- In keeping with the Standard Plan for a General Hospital, a ward will, as a basic rule have 6 beds.
- Each ward will be provided with appropriately-placed wash basins where doctors and nurses can wash their hands.
- In each department, a utility room will be placed appropriately for the disposal of contaminated waste generated from consultations or treatments.
- The project facilities and existing buildings will be linked by roofed passageways to facilitate traffic between them even in wet weather.
- All wards will be planned to face outside, to ensure natural lighting and ventilation.

2) Approach to the Planning of the Various Departments in the Facilities

【New Main Building East】

a. Outpatient Department

- The OPD will be located close to the main entrance and the vehicle turnaround, and will be planned around the general outpatient clinic for the initial consultation of new

outpatients. It will have a Nurse Station, five specialist outpatient consultation rooms, one dental clinic, and waiting rooms.

- New outpatients will undergo a basic consultation in the general outpatient clinic, and depending on the circumstances, will then be examined in one of the specialist outpatient consultation rooms, while outpatients on a second or subsequent visit will go straight to the specialist outpatient clinic for their consultation. To avoid patients feeling discomfort even if they are kept waiting for long periods, the waiting rooms/outside corridors will be roofed to provide ample shade, and open to the outside to allow breezes to pass through.
- Once the project facilities are in place, it is planned for the specialist outpatient clinic to provide consultations by the 7 departments shown in the table below. A total of 6 consulting rooms will be provided; one room will be the dental clinic, and the other 6 departments will share the use of the remaining 5 consultation rooms.

Table 2-23 Schedule of OPD

Present Schedule

■OPD

	Department	Mo	Tu	We	Th	Fr
①	General Medicine	○	○	○	○	○
②	Pediatric	○		○	○	
③	Surgical		○		○	
④	Ob/Gy	○		○		○
⑤	Eye	○		○		○
⑥	ENT	○		○		○
⑦	Orthopedic	○	○		○	
⑧	Psychiatric	○	○	○	○	○
⑨	Oncology	○	○	○	○	○

■Each Building

	Department	Mo	Tu	We	Th	Fr
②	Pediatric		○			○
④	Ob/Gy		○		○	
⑤	Eye		○		○	
⑥	ENT		○		○	
⑩	Dental	○	○	○	○	○

⇒

After this Project

■New Main Building East

	Department	Mo	Tu	We	Th	Fr
①	General Medicine	○	○	○	○	○
③	Surgical		○		○	
⑤	Eye	○		○		○
⑥	ENT	○		○		○
⑧	Psychiatric	○	○	○	○	○
⑨	Oncology	○	○	○	○	○
⑩	Dental	○	○	○	○	○

■New Main Building West

	Department	Mo	Tu	We	Th	Fr
④	Ob/Gy	○	○	○	○	○

■New Pediatric Building（Existing）

	Department	Mo	Tu	We	Th	Fr
②	Pediatric	○	○	○	○	○
⑦	Orthopedic	○	○	○	○	○

Consultation hours are 10:00 - 12:00 (Psychiatric Department and Oncology Department 9:00 – 12:00)

b. Emergency Department

- It is planned to locate the Emergency Department at the closest point to the main entrance to provide ease of access by emergency vehicles. It will contain an emergency treatment room, observation space, etc.
- The Emergency Department handles the examination and treatment of emergency patients and after-hours outpatients. Patients judged after consultation to be in need of an operation will be transported via elevator to an operating theater on the second floor.

c. Imagery Department

- The Imagery Department, comprising an X-ray Room, Ultrasound Examination Room and Endoscope Examination Room, will be located between the OPD/ER Departments and the CT Scan Building.
- To enable their efficient use with a limited number of medical workers, the X-ray Room, Ultrasound Examination Room and Endoscope Examination Room will be located close together, sharing a staff room. In order to protect against radiation exposure, the floor, wall and ceiling slabs of the X-ray Room will be of reinforced concrete, and the operating window will be fitted with leaded glass.

d. Clinical Pathology Department

- Out of consideration of the need to avoid hospital-acquired infection, the Clinical Pathology Department will be located behind the Imagery Department, which will not be easily approached by patients. Two laboratories, a blood collection room, a urine collection toilet and a Blood Bank are planned.
- Loikaw General Hospital carries out histopathological tests, micro-organism tests, blood tests and biochemical tests. For efficient sharing of testing equipment, presently, Laboratory No. 1 will not be divided into separate rooms according to the type of test; three testing departments (histopathology, micro-organic and blood) will share the laboratory. Laboratory No 2, where biochemical tests will be carried out, will be provided with an anteroom to prevent the pathogenic bacteria, etc., that are examined in the safety cabinet from spreading outside.
- After collection and testing, blood donated for transfusion purposes will be stored in the Blood Bank.

e. Surgery Department

- A treatment room, ordinary wards (5 wards with 6 beds each), pay wards (6 single-occupancy rooms), a HDU (High Dependency Unit) and Nurse Station are planned.
- The HDU is for patients requiring more intensive nursing attention, and will be located close to the Nurse Station.

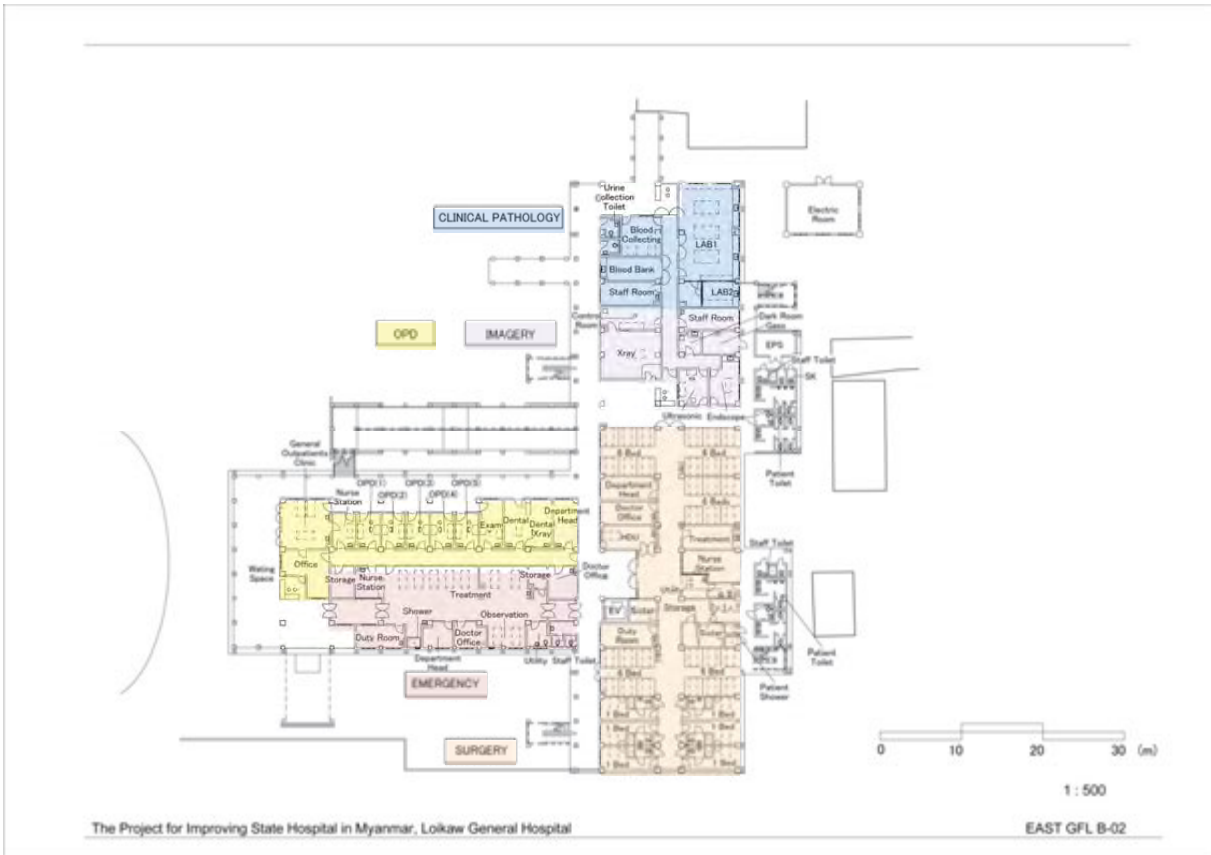


Figure 2-12 New Main Building East Ground Floor Plan

f. Operation Theater Department

- Two ordinary operating theaters, one small operating theater used for endoscopic surgery, etc., and one operating theater for emergency surgery or operations involving infectious diseases (a total of four theaters, the same as in the existing facilities), an ICU (4 beds, with a Nurse Station) a recovery area, Nurse Station, and an Autoclave Room etc., will be provided. The ICU will be situated facing onto the outside corridor so that family members can see the patient through the windows.
- As patients will be brought into the operating theater area through the entrance situated in the central section, the Nurse Station will be positioned at the entrance to the operating theater area. Taking into account the entry of the operating team into the area, the removal of soiled operating equipment and clothing and the bringing in of sterilized equipment and clothing, the areas around the operating theaters will be clearly sectioned into clean and dirty zones in order to maintain cleanliness.

  Clean zone: Surgical hall, operating theater, recovery area, staff room, Nurse Station, ICU

  Dirty zone: Collection corridor for soiled equipment/clothing used in surgery. Stairs via which the soiled materials are taken out.

  Intermediate zone : Changing rooms, Autoclave Room, etc.

g. Eye Department

・A treatment room, ordinary ward (1 ward with 6 beds), pay wards (2 single-occupancy rooms) (8 beds total), and a Nurse Station, etc., are planned. Many patients who come for treatment travel long distances from remote areas, and so as with the existing facilities, the ordinary ward will also serve as accommodation for outpatients.

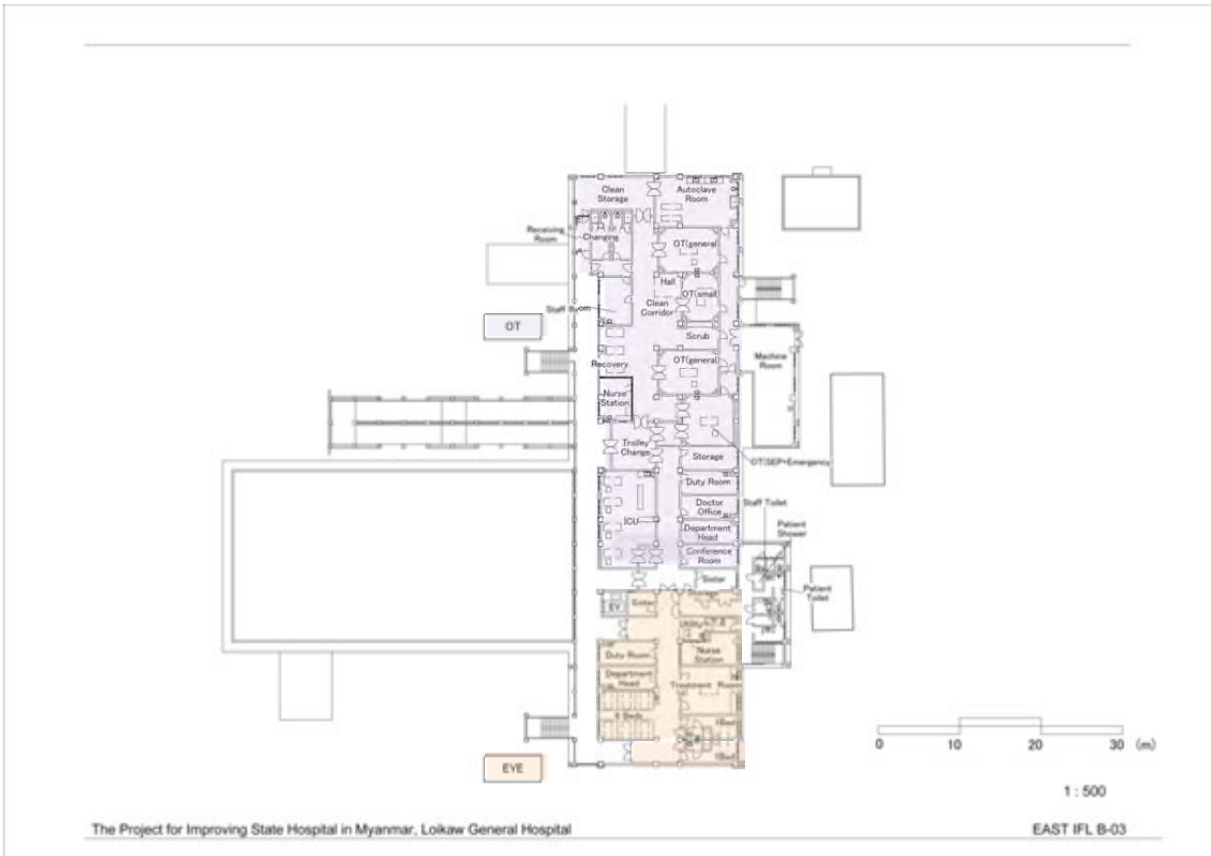


Figure 2-13 New Main Building East First Floor Plan

【New Main Building West】

h. Obstetrics and Gynecology Department

・In order to lessen the burden on nursing and expectant mothers, and to prevent accidents occurring in the hospital, the OB/GY Department will be planned to include an outpatient section, a delivery room, operating theater, and wards.

・The Outpatient Section will be situated close to the main entrance and vehicle turnaround; behind it will be located the delivery room and operating theater of the Delivery/ Surgery Section, and in the quietest, most secluded location will be the wards. In order to prevent hospital-acquired infection and to lessen the burden of childbirth, an operating theater will be provided within the Department separate from the theaters in the East Building.

・The Outpatient Section will be planned with a waiting room, reception, consultation rooms, internal examination room, and a Nurse Station.

・The Delivery/ Surgery Section will be planned with an operating theater where Caesarean sections can be performed, a labor room, a delivery room, a recovery room, a neonate room, a Nurse Station, and an Autoclave Room, etc.
・In the Ward Section it is planned to have ordinary wards (6 wards with 6 beds each) and pay wards (10 single-occupancy rooms), providing a total of 46 beds, with one Nurse Station for the ordinary wards and one for the pay wards.

i. ENT Department/ Physical Medicine Department

・A treatment room for the ENT Department, a rehabilitation room for the Physical Medicine Department, a ward (1 ward with 6 beds: 3 beds for ENT, and 3 beds for Physical Therapy) and a Nurse Station are planned. Many patients who come for treatment travel long distances from remote areas, and so as with the existing facilities, the ordinary ward will also serve as accommodation for outpatients.
・The rehabilitation room will be used mainly by patients from the Orthopedic Department on the ground floor of the New Pediatric Building, and will thus be located on the ground floor to the north, close to the New Pediatric Building. As the two departments are small in scale, they will share the Nurse Station.

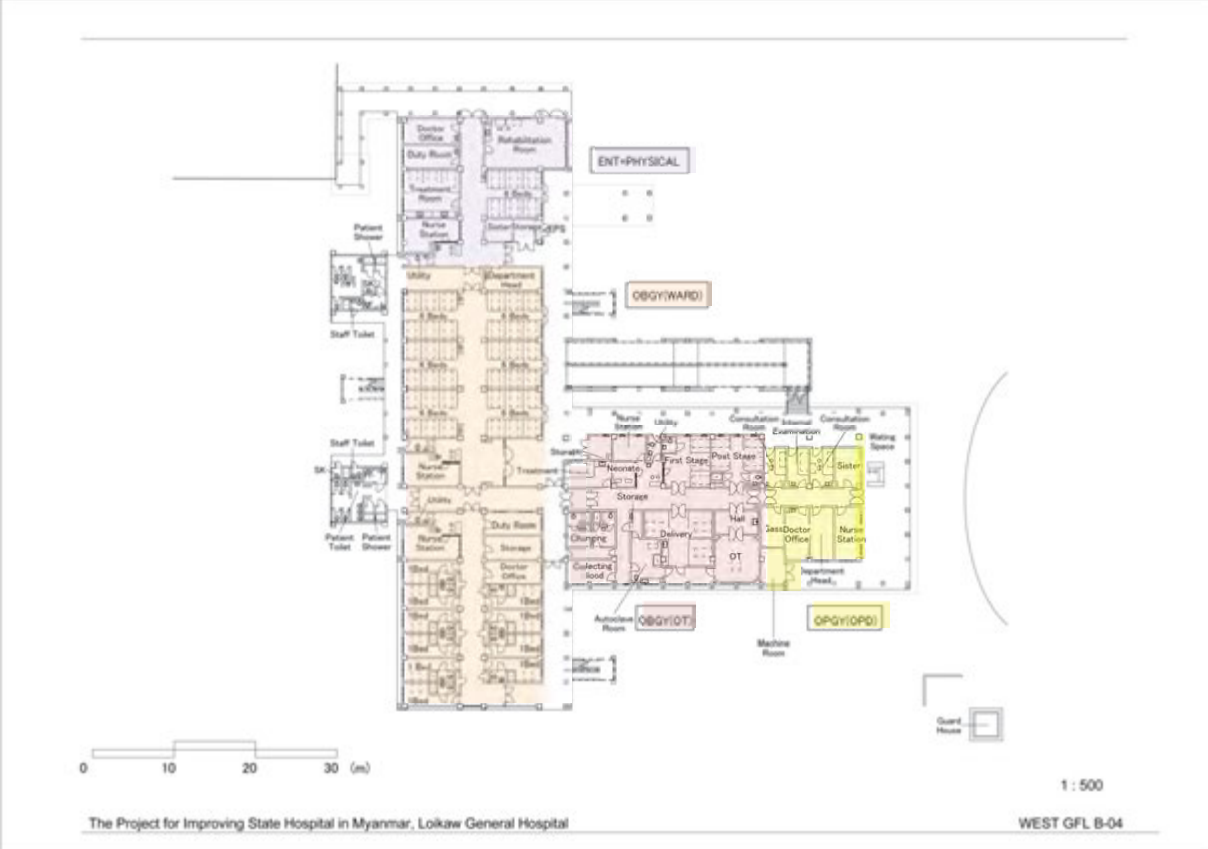


Figure 2-14 New Main Building West Ground Floor Plan

j. General Medicine Department

・A treatment room, ordinary wards (8 wards with 6 beds each), pay wards (10 single-occupancy rooms) (58 beds in total), and Nurse Stations etc., are planned. A total of

three Nurse Stations are planned: two for the ordinary wards, with 24 beds per one nursing unit, and one for the pay wards, with 10 beds per one nursing unit. All Nurse Stations are to be located in a position that affords a good view over the nursing unit.

Figure 2-15 New Main Building West First Floor Plan

【Floor Size Table】

Table 2-24 Floor Area

Building Name	Department	Room Name	No	Area m^2/room	Total m^2
New Main Building East GFL	OPD	General Outpatient Clinic	1	38.75	38.75
		Specialist Outpatient Consultation Room	1	13.83	13.83
		Treatment Room	1	18.89	18.89
		Dental Clinic	1	29.94	29.94
		Dental X-ray Room	1	7.20	7.20
		Nurses' Station	1	13.83	13.83
		Office	1	28.56	28.56
		Department Head's Office	6	18.68	18.68
		Doctors' Office	1	14.40	14.40
		Waiting Space	1	99.00	99.00
	Emergency	Emergency Treatment Room	1	137.20	137.20
		Nurses' Station	1	12.90	12.90
		Department Head's Office	1	12.50	12.50
		Doctors' Office	1	12.50	12.50
		Duty Room	1	17.40	17.40
	Imagery	X-ray	1	45.00	45.00
		Control Room of X-ray	1	22.50	22.50
		Endoscope Examination Room	1	20.87	20.87
		Ultrasound Examination Room	1	17.35	17.35
		Staff Room	1	22.50	22.50
	Laboratory	Lab 1	1	90.00	90.00
		Lab 2	1	14.84	14.84
		Blood Collecting Room	1	24.87	24.87
		Blood Bank	1	22.13	22.13
		Urine Collection Toilet	2	6.05	12.10
		Staff Room	1	22.50	22.50
	Surgery	Treatment Room	1	21.15	21.15
		Ward (6-bed)	3	42.30	42.30
		Pay Ward (1-bed)	6	21.15	126.90
		HDU	1	21.15	21.15
		Nurses' Station	1	34.50	34.50
		Department Head's Office	1	21.15	21.15
		Doctors' Office	1	21.15	21.15
		Sister's Room	2	9.00	18.00
		Duty Room	1	21.15	21.15
	Others	Corridor, Slope, Toilet ,Storage, etc.			1,410.29
				Subtotal	2,537.33
New Main Building East 1FL	OT	General OT	2	41.20	82.40
		OT（small）	1	27.04	27.04
		OT (Septic & Emergency)	1	42.49	42.49
		Recovery Space	1	27.64	27.64
		ICU	1	83.19	83.19
		Conference Room	1	21.15	21.15
		Nurses' Station	1	21.67	21.67
		Staff Room	1	21.15	21.15
		Department Head's Office	1	21.15	21.15
		Doctors' Office	1	21.15	21.15
		Sister's Room	1	15.30	15.30
		Duty Room	1	21.15	21.15
		Autoclave Room	1	63.34	63.34

		Clean Storage	1	44.01	44.01
		Receiving Room	1	8.21	8.21
		Changing Room	1	40.06	40.06
	Eye	Treatment Room	1	42.30	42.30
		Ward (6-bed)	1	42.30	42.30
		Pay Ward (1-bed)	2	21.15	42.30
		Nurses' Station	1	34.50	34.50
		Department Head's Office	1	21.15	21.15
		Sister's Room	1	10.65	10.65
		Duty Room	1	21.15	21.15
	Others	Corridor, Slope, Toilet ,Storage, etc.			1,104.20
				Subtotal	1,879.65
Floor Area of New Main Building East					4,416.98
Building Area of New Main Building East					2,825.03

Building Name	Department	Room Name	No	Area m^2/room	Total m^2
New Main Building West GFL	OBGY (OPD)	Consultation Room	2	19.35	38.70
		Internal Examination Room	1	19.35	19.35
		Nurses' Station	1	34.03	34.03
		Department Head's Office	1	21.00	21.00
		Doctors' Office	1	17.90	17.90
		Sister's Room	1	9.72	9.72
	(Delivery/ Operation)	First Stage Room	1	37.97	37.97
		Delivery Room	1	52.35	52.35
		Post Stage Room	1	41.36	41.36
		Autoclave Room	1	21.85	21.85
		OT	1	32.91	32.91
		Treatment Room	1	22.48	22.48
		Collecting Blood Room	1	19.45	19.45
		Neonate Room	1	9.29	9.29
		Nurses' Station	1	24.09	24.09
		Changing Room	1	36.41	36.41
	(Wards)	Ward (6-bed)	6	42.30	253.80
		Pay Ward (1-bed)	10	21.15	211.50
		Nurses' Station	1	34.50	34.50
		Doctors' Office	1	21.15	21.15
		Duty Room	1	21.15	21.15
	ENT and Physical	Treatment Room	1	42.30	42.30
		Rehabilitation Room	1	62.14	62.14
		Ward (6-bed)	1	42.30	42.30
		Nurses' Station	1	34.50	34.50
		Department Head's Office	1	21.15	21.15
		Doctors' Office	1	21.15	21.15
		Sister's Room	1	9.00	9.00
		Duty Room	1	21.15	21.15
	Others	Corridor, Slope, Toilet ,Storage, etc.			1,148.38
				Sub Total	2,488.82
New Main Building West 1FL	General Medicine	Treatment Room	2	21.15	42.30
		Ward (6-bed)	8	42.30	338.40
		Pay Ward (1-bed)	10	21.15	211.50
		Nurses' Station	1	34.50	34.5
		Department Head's Office	1	21.15	21.2
		Doctors' Office	1	21.15	21.2
		Sister's Room	2	10.50	21.00

		Duty Room	1	21.50	21.50
	Others	Corridor, Slope, Toilet ,Storage, etc.			1,149.24
				Sub Total	1,860.84
Floor Area of New Main Building West					4,349.66
Building Area of New Main Building West					2,734.22

Others	Area m^2
Floor Area of the Roofed Corridor	213.75
Building Area of the Roofed Corridor	213.75
Floor Area of the Electrical Room	54.00
Building Area of the Electrical Room	54.00
Floor Area of the Guard House	9.00
Building Area of the Guard House	9.00
Floor Area of the Water Tank	175.00
Building Area of the Water Tank	25.00
Floor Area of the Pump Room	18.00
Building Area of the Pump Room	18.00
Total Floor Area	9,236.39
Total Building Area	5,879.00

(3) Cross-Section Plan

- As only a few of the wards are to be provided with air conditioning facilities, the story height will be 4.2m, which is the same as the New Pediatric Building; the ceiling height will be around 3.8m to ensure plenty of natural ventilation. In addition, in buildings with a central corridor, louvers will be installed facing onto the central corridor to promote natural ventilation.
- In order to ensure a pleasant environment without air conditioning facilities, shelter from strong sunlight and radiant heat will be provided by means of a sloped roof and the outer corridor taking the place of overhanging eaves.
- In line with the request from the Kayah State government, in order to preserve the appearance of the main building from the main entrance, those sections that overlap the façade of the main building will be built single-story, and sections standing further back will be 2-story.
- In view of the practices of hospitals in Myanmar and taking hygiene concerns into consideration, in line with the request of the hospital, it is planned to locate the operating theaters on the first floor. Thus, the means of transporting patients on stretchers from the ground floor to the operating theater section will be by elevator and slope.
- There is a difference in elevation of between 2 and 2.5m within the site. In order to prevent flooding by rainwater in places where the ground level is lowest, the ground floor level of the buildings will be raised a minimum of 20cm above the ground surface. Furthermore, to prevent flooding by rainwater from the northern side of the hospital where the ground is higher, drainage ditches will be set out around the buildings. The rainwater will be discharged to the drainage channel on the site boundary.

(4) Structural Planning

1) Ground Condition of the Project Site and Substructure Planning

The results of the geological survey confirm that the area from the topsoil to a depth of 20m is composed of sandy silt and clay silt, and that from the surface layer to a depth of 5m, the bearing capacity is between 8t/m^2 and 20t/m^2. In addition, there is a difference in elevation of between 2 and 2.5m within the site. Taking workability into consideration, a depth of 1m from the surface at the lowest part of the site will be taken as the foundation bed, and a spread footing with a bearing capacity of 8t/m^2 will be planned.

2) Structural Planning of Superstructure

The project facilities will be of a rigid-frame reinforced concrete construction, which has become the usual method of construction in Myanmar in recent years. The exterior and interior walls will not be earthquake-resistant walls, and will be built of concrete blocks that are commonly used locally. The walls, floors, and ceilings of the elevator pits will be of reinforced concrete, taking into consideration soundproofing, waterproofing, and the loads that will be suspended. In order to prevent water seeping into the operating theaters and to maintain a high level of cleanliness, the operating theater section will have reinforced concrete ceiling slabs installed and will be covered with a metal roof.

3) Condition of Structural Calculation

The loads and external force applied in this project are set as follows, taking into account the weather, regulations, and building use in the area.

① Dead Load

Dead loads will be calculated by the weight of finishing materials and structural materials in this project.

② Live Load

Live loads will be in accordance with the building Code of Japan, because Myanmar does not have a standard.

③ Seismic load

Seismic load will be planned using the Seismic Zone map of Myanmar as shown in Figure 1-1. The project site is located in Zone 2, Moderate Zone. The Seismic acceleration is 0.1-0.15 gal.

④ Construction Materials

Concrete: Design reference strength Fc=21N/mm^2

Reinforced bar: Yield strength 345N/ mm^2, 295N/ mm^2

Or, the substantial bar will be adopted, which is generally adopted under the ASTM.

(5) Electrical Facility Plans

1) Power Lead and Power Supply System

The transformer whose capacity is increased will be installed in the electrical room with the substation accompanying step-down and junction.

2) Power Facility

① Main power supply system

The substation in the electric room provides power to distribution switchboards and power control boards in the facilities with underground conduits and wires in the site and cables in the ceilings.

② Emergency power supply system

An emergency power supply system of 200kVA will be installed to maintain certain functions during power failures. It is provided to departments and equipment for the Operation Theater department, Emergency department, Clinical Pathology department, Imagery department, HDU in Surgery department, Operation theatre in OBGY, medical gas system, pumps, Blood Bank, and elevators. The fuel capacity shall be minimized so that the hospital can afford the maintenance cost.

③ AVR (Automatic voltage regulator)

An AVR will be installed to prevent equipment burning accidents.

3) Lighting/ Outlet system

Lighting distribution boards will be installed on each floor, as necessary

① Lighting system

- Ordinary lighting: Lighting will be mainly fluorescent lamps.
- Special lighting: Shadowless lamps will be installed.
- Emergency lighting: Installed with self-contained batteries in rooms and corridors.

② Outlet system

All sockets have a grounding bar. The circuit structure will fit the layout and capacity of the power source for equipment.

4) Telephone System

Conduit pipes and telephone outlets will be installed in main medical staff rooms such as nurse stations for facility maintenance, as is with the existing facilities.

5) TV Community Reception System

TV outlets will be installed in main medical staff rooms such as nurses' rooms for facility maintenance, as is with the existing facilities.

6) Intercom System

An intercom system will be installed in the Imagery Department between the X-ray room and the Operation Theaters, and in Emergency Department between nurse stations and

doctors' rooms.

7) Fire alarm System

A manual-type fire alarm system will be installed.

8) Public Address System

A public address system for emergency communication will be installed in order to allow patients and medical staff to escape smoothly in an emergency. Speakers will be installed adequately in suitable rooms and common spaces. Equipment will be installed in the office.

9) Lightning Protection System

Lightning protection equipment will be installed on the roof for lightning protection.

(6) Mechanical Facility Plan

1) Air Conditioning Facilities

Packaged-type air conditioners will be installed in the Emergency Department, Operation Theater Department, and HDU in the Surgery Department. Individual air conditioners will be installed in pay wards, considering the running cost. Ceiling fans will be installed in rooms without air conditioners.

2) Ventilation System

Ventilation systems will be installed in rooms where necessary like toilets, shower rooms, etc. to prevent foul odors and moisture.

3) Sanitary Fixture System

Toilet stalls, urinals, and sinks will be installed. In the new Pediatric Building, the Western-style toilets staff lavatories, and squat-type in others lavatories for patients.

4) Water Supply System

City water is drawn from the creek on the northern site, and then pumped from the water tank to the elevated tank, which provides water to each building through the gravity method. However, the aging structure and pipes of the elevated tank is unsanitary due to its lack of coverings. An ODA project in Loikaw, the filtration plant, is underway to supply city water to the areas around the site. However, it will be completed after the completion of the project and the city water will be drawn from the northern site. The new elevated tank will be built near the new Main Building West, which will provide water to the buildings.

5) Hot Water Supply System

An electric hot water supply system will be installed in the Emergency Department, Operation Department and the delivery and operation theater sections of the OB/GY Department.

6) Drainage System

Sewage and wastewater will be separated in buildings and integrated at the first outer cesspit. Sewage and wastewater will be purified at the septic tanks in each area, which are commonly used locally. After that, they will be discharged to rain gutters. Also, medical waste water will be collected by a local company.

7) Fire Control Facilities

Fire extinguishers will be installed under the guidance of firehouse in Loikaw

8) Medical Gas Facilities

Medical oxygen will be provided to operation rooms, ICU, HDU, the Emergency Department, the deliver and operation sections of the OB/GY Department via a central piping system. Suction systems are difficult to maintain, therefore, they will be handled individually. The consumption of anesthetic gas is so low that that will be supplied locally.

(7) Construction Material Plans

1) Basic Policy

・Local materials used as much as possible to decrease of the cost and period of construction.

・Material that is suitable for the local climate and conditions, is weather resistant, and easily maintained shall be selected to cut down the maintenance costs.

2) Material

① Structural Material

Reinforced concrete and concrete blocks will be combined, which is commonly used locally.

② Exterior Finishing

Major exterior finishing material is shown below:

Table 2-25 Exterior Finishing

Component	Finishing Materials	Remarks
Roof	The part of 2 stories: Iron roof structure, cemented excelsior board, asphalt waterproofing, Iron folded plate roof The part of 2 stories: Asphalt waterproofing plus protective concrete layer on the concrete slab.	Waterproofing and weather resistance are considered.
Outer Wall	Synthetic resin emulsion-based finishing coating on the mortar	Workability, and availability in the area are considered.
Fixture	Aluminum sash	Weather resistance is considered.

③ Interior Finishing Materials

The major interior finishing materials are shown below.

Table 2-26 Interior Finishing

Room	Finishing Material				Remarks
	Floor	Skirting	Wall	Ceiling	
Consultation room, Treatment room, etc.	Terrazzo tile	Terrazzo tile	porcelain tile	Gypsum board with a rock wool sound absorbing board.	Durability and cleaning are considered.
Wards, Office, Nurses' station, etc.	Terrazzo tile	Terrazzo tile	porcelain tile	Gypsum board with a rock wool sound absorbing board.	Durability and cleaning are considered.
Corridor, Stairs, etc.	Terrazzo tile	Terrazzo tile	EP	Gypsum board with a rock wool sound absorbing board.	Durability and cleaning are considered.
Operation theatre	Terrazzo tile	Terrazzo tile	porcelain tile	EP	Durability and cleaning are considered.
Utility, Toilet, Shower room, etc.	Terrazzo tile	Terrazzo tile	porcelain tile	EP	Durability and cleaning are considered.
Storage, etc.	Terrazzo tile	Terrazzo tile	EP	Gypsum board with a rock wool sound absorbing board.	Durability and cleaning are considered.
Electrical room, Machine room, etc.	Dust-proof coating	mortar	mortar	Gypsum board with a rock wool sound absorbing board.	Durability and cleaning are considered.

2-2B-2-3 Equipment Plan

As with Lashio General Hospital, based on the aforementioned policy, the necessity and relevance of the requested equipment was examined and an overall determination was made following the criteria below. The results of individual equipment studies are shown in Annex 7-3-2, Requested Materials Investigation Chart (Loikaw General Hospital).

① Classification

Table 2-27 Equipment Classification

Classification	Content
Upgrade	Equipment for existing equipment upgrades.
New	Newly procured equipment for target facilities with no record of, or experience with using such.
Addition	Equipment for supplementing quantities of the same type of existing equipment.

② Equipment Selection Criteria

Table 2-28 Equipment Selection Criteria

Investigation Item	Investigation Summary	
① Intended purposes	○	Equipment that is consistent with activities of the target facilities.
	△	Equipment for which simpler alternative equipment exists. Equipment that should be separated in the request content and examined individually or integrated and examined together, or for which quantities must be adjusted.
	×	Equipment that is not consistent with activities of the target facilities.
②Necessity	○	Equipment that has been deemed essential for activities of the target facilities.
	×	Equipment that has a low level of necessity from the viewpoint of activities, which can be handled with current equipment, and equipment that can easily be procured by the recipient country.
③Skill level	○	Equipment that is appropriate for current skill levels.
	×	Equipment that requires a high level of skill for handling, and does not contribute to the improving skill levels in the future.
④Operating system	○	Equipment for which staff members have been allocated for operation or are expected be allocated.
	×	Equipment for which staff members have not been allocated for operation and are not expected to be allocated.
⑤Maintenance management system	○	Equipment for which maintenance management is simple and can currently be handled by staff members, and equipment for which the manufacturer has a maintenance management system, and for which supplies and replacement parts can be easily obtained locally.
	×	Equipment for which maintenance management is difficult and maintenance problems are expected to occur after installation, and equipment for which supplies and replacements parts are difficult to obtain locally.
⑥Operation and maintenance cost	○	Equipment for which operation and maintenance management expenditures are mostly unnecessary, and equipment that will not be a burden on the partner country's budget provisions due to upgrades for current equipment.
	×	New or additional equipment that requires a vast amount of operation and maintenance expenditure, causing problems with budget provisions.
⑦Overall determination	○	Equipment that is judged to be relevant and targeted for inclusion in the project.
	×	Equipment that will not be included in the project.

The investigation results for the major requested equipment in each department are described below. The list of equipment to be installed in each department is as shown in Annex 7-5-2.

- Radiology Department

The hospital is currently in possession of a Shimadzu 500mA general purpose imaging apparatus (procured in 1989) and an Indian-made mobile imaging device (procured in 2005). The main usages for the general purpose imaging apparatus include external injuries, chest areas (primarily for diagnosing tuberculosis), abdominal areas (primarily digestive organ perforations and intestinal blockages), and diseases related to the kidneys, urinary tract, and bladder. There were 1,345 patients for general imaging in 2012.

For this project, the Radiology Department will be placed on the ground floor of the

East Building. Since the Shimadzu general purpose imaging apparatus is severely deteriorated due to age, it is planned for upgrade. A digital machine will be provided in order to reduce radiation exposure for patients, to provide a more precise image, and because of the low environmental impact since developing fluid and fixing solution is not necessary. In December 2013, a new digital X-ray machine was provided by MOH, however, the machine remains unopened in the storage and is planned to be transferred to other hospital. Therefore, one digital X-ray machine will be provided under the project. Additionally, to streamline film developing work, 1 automatic developing machine will be provided for the mobile imaging device that is expected to continue to be used.

- Ultrasound Room

  The hospital currently has a Chison (China) color Doppler ultrasonic diagnostic device (procured in 2011) that uses 4 probes with one each for heart use, abdominal area use, epidermal/muscular uses, and vaginal use. The equipment is still fairly new and operates without problems. There were 1,222 patients in 2012.

  For this project, the Ultrasound Room will be placed on the ground floor of the East Building. Since the high demand for use in diagnosing abnormalities and deformities in fetuses, particularly cleft palates, cannot be handled with the current probes, one color Doppler ultrasonic diagnostic device that can use a probe for the abdominal area and a 3-dimensional probe will be provided for the project.

- Laboratory

  The Laboratory conducts biochemical tests, hematology tests, pathology tests, and bacterial tests. In 2012, there were 4,428 biochemical tests, 5,545 hematology tests, 150 pathology tests, and 12,912 bacterial tests. For this project, the Laboratory will be placed on the ground floor of the East Building. For biochemical testing, the semi-automatic biochemical analysis equipment that is currently out of order will be upgraded. For hematological testing, a clot timer will be provided for the purpose of streamlining the blood coagulation testing that is obligated for all patients undergoing surgery. As biohazard countermeasures for bacterial testing, a safety cabinet will be provided.

- Blood Bank

  The Blood Bank will be placed next to the Laboratory, and will include a Blood Collection Room and a Blood Storage Room. There are approximately 300-350 blood donors per month, and HIV antibody testing (rapid test) is conducted for all patients.

  For this project, the Blood Bank will be placed on the ground floor of the East Building. One freezer for the purpose of freezing and storing donated blood and blood components, as well as 1 centrifugal separation device for separating blood components will be provided.

- Surgery Ward

There are 34 beds in the Surgery Ward, which includes 1 bed for the High Dependency Unit (HDU) and 3 beds for the Post-operation Room. Currently, the hospital beds are a combination of adult and pediatric beds, but after the Pediatric Department Building is complete, they are planned to be separated. The Endoscopy Room is under the control of the Surgery Department. The most common patient conditions include head injuries, gastrointestinal tumors, appendicitis, and hernias.

The endoscope is an upper gastrointestinal endoscope that was donated by Japan in 2005. It is currently operational, but since there are no treatment instruments attached, it can only be used for diagnostic purposes. The endoscopist has had 3 years of training in Malaysia, and is skilled in endoscopic and laparoscopic surgery.

For this project, the Surgery Ward will be placed on the ground floor of the East Building. One upper gastrointestinal endoscope including resection and retention forceps that can be used for treatment will be provided for the project. Three patient monitoring systems will also be provided, with 1 each for the Ward, the HDU, and the Post-operation Room. Three examination lamps will be provided for use in the Ward.

- Emergency Outpatient

The Emergency Outpatient area will be placed near the front entrance and will be under the control of the Medical Superintendent. The primary reason for visits to the hospital are colds, external injuries, conjunctivitis, middle ear infection, bronchitis, and obgyn-related diseases. Ambulances are under the control of the Emergency Outpatient Department, which has one station wagon-type ambulance procured with Ministry of Health budget in 2012. The staff riding in the ambulance are mainly nurses; doctors do not ride. The original purpose of the ambulance was to transport patients to Mandalay General Hospital or Nay Pyi Taw General Hospital, to transport patients within 7 townships that include remote and mountainous areas, and for other outreach activities. However, the ambulance is currently mostly used for purchasing and transporting oxygen tanks and pharmaceuticals, creating a situation in which it cannot be used for its original purpose.

For this project, the Emergency Outpatient area will be placed on the ground floor of the East Building, and equipment will be provided for the General Outpatient Clinic and the 5 Emergency Treatment Rooms (1 of which is a surgical treatment room). In the General Outpatient Clinic, desks and chairs for doctors, patient chairs, examination tables, and x-ray film illuminators, etc. will be provided. In the Emergency Treatment Rooms, oxygen concentrators and electrocardiographs, etc. will be provided. One ambulance will be provided for its original purpose of transporting patients. The purchase and transport of oxygen tanks and pharmaceuticals will be conducted with the existing vehicle. The ambulance to be provided will be a 4-wheel drive vehicle so that transport services can be provided to township hospitals and remote locations.

Necessary equipment (pulse oximeter, blood pressure gauge, stethoscope, splints, and a stretcher, etc.) that can be used by the nurse riding along will also be included.

- Dental

  There is 1 dentist in the Dental Department who conducts treatment using one dentistry unit. In 2012, 100-180 patients per month were treated for conditions including cavities, periodontal disease, gingivitis, and abscesses.

  For this project, the Dental Department will be placed on the ground floor of the East Building next to Emergency Outpatient. One dental unit, including the necessary handpiece, compressor, forceps, and bars will be provided. With the purpose of preventing hospital-acquired infection, a boiling sterilizer and ultraviolet sterilizer will also be provided. One dental x-ray machine will be provided to enhance diagnostic capacity. One portable compressor will be provided for the purpose of conducting dental treatment at township hospitals and remote areas using the ambulance. Also, automatic film developer for dental X-ray will be provided.

- Operation Theater Department

  The Operation Theater Department consists of 4 Operation Theaters (Ophthalmology-use Theater, Operation Theater 1 (equipped with 2 operating tables), Operation Theater 2, Operation Theater 3 (for infectious patients), a 2-bed ICU, and a Sterilization Room. In 2012, a total of 1,851 operations were performed, with most operations for Caesarean sections, cataracts, open reduction (bone alignment surgery) and internal fracture fixation, appendicitis, sutures, and omentoplasty. The ICU is used by patients who have undergone operations over 2 hours, patients needing respiratory care, and patients who have had a large-volume blood transfusions. The Sterilization Room does not function as a central materials sterilization room, and is limited to mainly sterilization for the Operation Department. Each department has its own upright sterilizer and/or boiling sterilizer, etc., and each conducts its own sterilization work.

  For this project, the Operation Department will be placed on the ground floor of the East Building, and is planned to be run in the same way with 4 operation theaters (1 of which is for infectious patients). The current situation of having 2 operating tables in 1 room will be reconsidered and there will be 1 operating table per room. 3 anesthesia machines was planned to be provided, combined with the 1 that is still usable, so that 1 machine will be allocated for each of the 4 rooms. However, 2 new anesthesia machines were already provided under MOH, therefore 1 machine will be provided under this Project. All of the overhead shadowless lamps that are in poor condition will be upgraded, and 1 lamp will be allocated for each of the 4 rooms. Excluding the 1 unit that is still usable, 2 electrical scalpels will be upgraded, and 1 unit will also be allocated for each of the 4 rooms. The operating tables in the ophthalmologic operation theater,

Operation Theater 2, and Operation Theater 3 will each be upgraded. One ventilator that has deteriorated with age in the ICU will be upgraded. For the Sterilization Room, 2 autoclaves will be provided, and a system will be created to allow the sterilization of items from other departments.

- Eye Department

  The Eye Department is located in a separate building and consists of a 12-bed ward and outpatient and minor operation rooms. In the minor operation rooms, treatment using local anesthetic is conducted, while major operations are conducted in the Ophthalmology-use Operation Theater in the Operation Department. The top major surgeries include those for cataracts, glaucoma, and pterygium. In 2011, there were 170 cataract operations and 15 glaucoma operations.

  For this project, the Eye Department will be placed on the ground floor of the East Building. In addition to creating minor operation rooms and treatment rooms, the department will be on the same floor as the Ophthalmology-use Operation Theater, which will improve convenience. The equipment provided will include an instrument set for the highly-demanded cataract surgery, an ophthalmologic electrical scalpel for the implantation of intraocular lenses, a surgical microscope, and examination lamps, etc.

- OB/GY Department

  The OB/GY Departments consists of a 30-bed obstetrics ward, obstetrics and gynecology examination rooms, and 2 delivery rooms (of which 1 is for infectious patients). In 2012 there were 207 normal births, 488 Caesarean sections, and 112 forceps deliveries. Caesarean sections are conducted in the Operation Department.

  For this project, the OB/GY Department will be placed on the ground floor of the West Building and will consist of 3 Delivery Rooms (of which 1 is for infectious patients), 1 Obstetrics and Gynecology Operation Theater, 1 Nursery, 1 Labor Room, 1 Examination Room, 1 Treatment Room, 1 Sterilization Room, and an outpatient area. Caesarian sections will be conducted in the Obstetrics and Gynecology Operation Theater, and normal births, forceps deliveries, and vacuum extractions will be conducted in the Delivery Rooms. The equipment provided for the Obstetrics and Gynecology Operation Theater will include 1 operating table, 1 anesthesia machine, 1 overhead shadowless lamp, 1 electrical scalpel, 1 infant warmer, 1 patient monitoring system, and 1 aspirator, etc. For the Nursery, 2 infant warmers will be provided. For the Delivery Rooms, 3 delivery tables, 1 examination lamp, and 1 vacuum extractor, etc. will be provided. In the Labor room, 1 delivery monitoring system will be provided. In the Examination Rooms, 2 obgyn examination tables that have deteriorated severely due to age will be upgraded and 2 patient lorries and 2 examination lamps will be provided. In the Treatment Room, 2 oxygen concentrators and 1 aspirator will be provided. In the Sterilization Room, 1 upright sterilizer will be provided.

- ENT

The ENT Department is located in a separate building, where examinations and treatment are conducted 1 very small room. In 2012, 995 new patients visited the department. Although there is no minor operation room, minor operations such as myringoplasty (eardrum repair) are performed in the treatment room. Major operations are conducted in the Operation Department. The top 5 major operations are for chronic purulent ear/nasal infections, the removal of foreign bodies, goiter, sinusitis, and tumors. Myringoplasty and tympanotomy procedures are conducted using a surgical microscope. An average of approximately 20 myringoplasty procedures are conducted each month.

For this project, the ENT Department will be placed on the ground floor of the West Building. The primary equipment provided will include 1 ENT endoscope set, which will enhance diagnostic capacity with the use of a monitor. One myringoplasty instrument set and the deteriorated surgical microscope will be upgraded, and 1 oxygen concentrator and 1 examination lamp will be provided.

- Rehabilitation Room

The Rehabilitation Room is located in the same building as the ENT department, and is divided into examination space and rehabilitation space. In 2012, 177 (annual) new patients visited, with the primary reasons as traffic accidents, stroke, high blood pressure, musculoskeletal pain, soft tissue pain, and cervical spondylosis. Approximately 30% of the patients are pediatric patients.

For this project, the Rehabilitation Room is planned for placement on the ground floor of the West Building. The equipment to be provided will include a set of parallel bars for walking practice, 1 tilt table for standing practice, 1 pegboard for dexterity training, and 1 transcutaneous electrical nerve stimulation (TENS) machine for electrotherapy.

- General Medicine Ward

The General Medicine Ward consist of a male ward and a female ward. The male ward is not divided by walls, but the ordinary ward (12 beds) is separated from the tuberculosis patient space (3 beds) and the space for other infectious patients (8 beds) for a total of 23 beds. The female ward is not divided by walls either, but there are wards for the general population (10 beds), tuberculosis (3 beds), other infectious diseases (6 beds), ICU (1 bed), and HDU (7 beds) for a total of 27 beds. Most patients have cases of malaria, cerebrovascular accidents, tuberculosis, acute enteritis, or cirrhosis of the liver. For this project, the General Medicine Ward will be placed on the ground floor of the West Building. For the project, 2 each of the electrocardiographs, nebulizers, oxygen concentrators, and syringe pumps will be provided which are currently owned and unusable (1 each for the male and female wards). One patient monitoring system will be added to the currently owned and usable unit, and 1 each for the male and female wards will be used.

- Pediatrics

The Pediatrics Department consists of examination space, an incubator room, and the ward. In 2013, there were 793 new patients that visited, with the most common reasons as diarrhea, acute respiratory disease, neonatal jaundice, low birth weight/premature infant, neonatal asphyxia, malaria, and tuberculosis.

On the property of the current hospital, a 2-story building is currently under construction. When it is completed, the Pediatrics Department is planned for relocation to the first floor of this building. The first floor will consist of 1 ICU (6 beds for ages 2~12, 1 NICU, 1 Cot Room, 1 Ordinary Pediatric Ward (8 beds/1 room), 1 Mothers' Ward (8 beds), 1 Injection Room, 1 Nursing Room, 1 Treatment Room, and 10 private rooms, etc. Of the 8 beds in the Ordinary Pediatric Ward, 4 will be for patients under 2 years and 4 will be for patients under 12.

The equipment that will be provided includes 2 incubators, 2 infant warmers, 3 phototherapy devices, and 3 bilirubin meters for the NICU, and 1 hematocrit centrifuge, 1 pulse oximeter, and 3 infusions pumps for the ICU. A total of 24 adult beds will be installed with 10 in private rooms and 14 in the ordinary ward. There will be 16 pediatric beds installed in the ordinary ward. There have already been 14 adult beds, 2 pediatric beds, and 6 cots temporarily supplied to the building under construction; these beds will be included as equipment for continued used when setting the quantity for project equipment.

- Orthopedics Department

At present, the Orthopedics Department is mostly in charge of minor operations, while major operations with general anesthesia are performed in the Operation Theater Department. Most of the case handled are injuries to the neck or limbs dues to traffic accidents, external injuries caused by falls, and ulcers and bone tumors related to diabetes, etc.

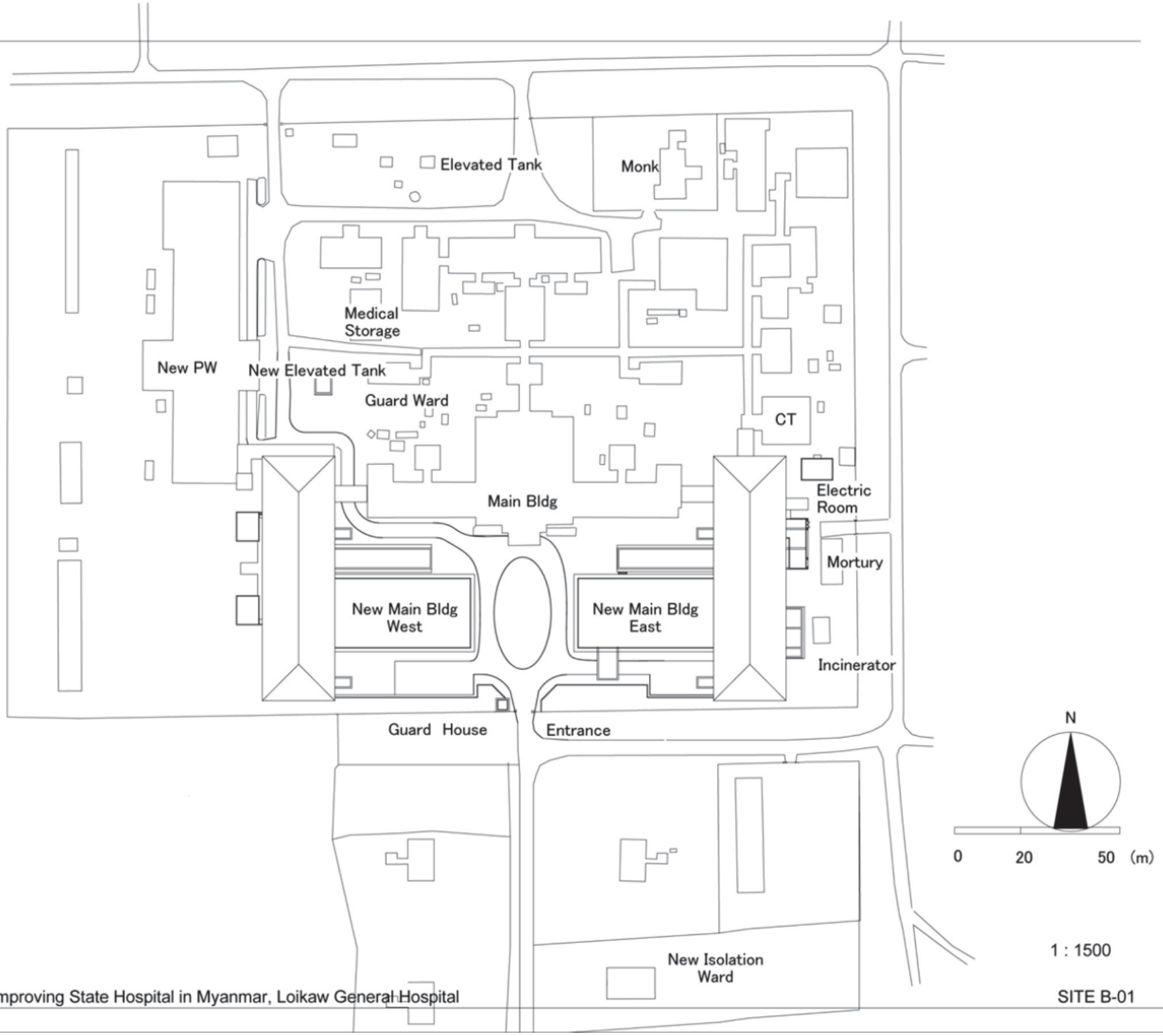
On the property of the current hospital, a 2-story building is currently under construction. When it is completed, the Orthopedics Department is planned for relocation to the south section of the ground floor of this building. The new Orthopedics Department will consist of 1 Minor Operation Room, 2 Pre-operation Rooms, and 1 Post-operation Room, etc. The equipment to be provided will include 1 upright sterilizer, 1 instrument set (orthopedic, large), and 1 instrument set (orthopedic, small).

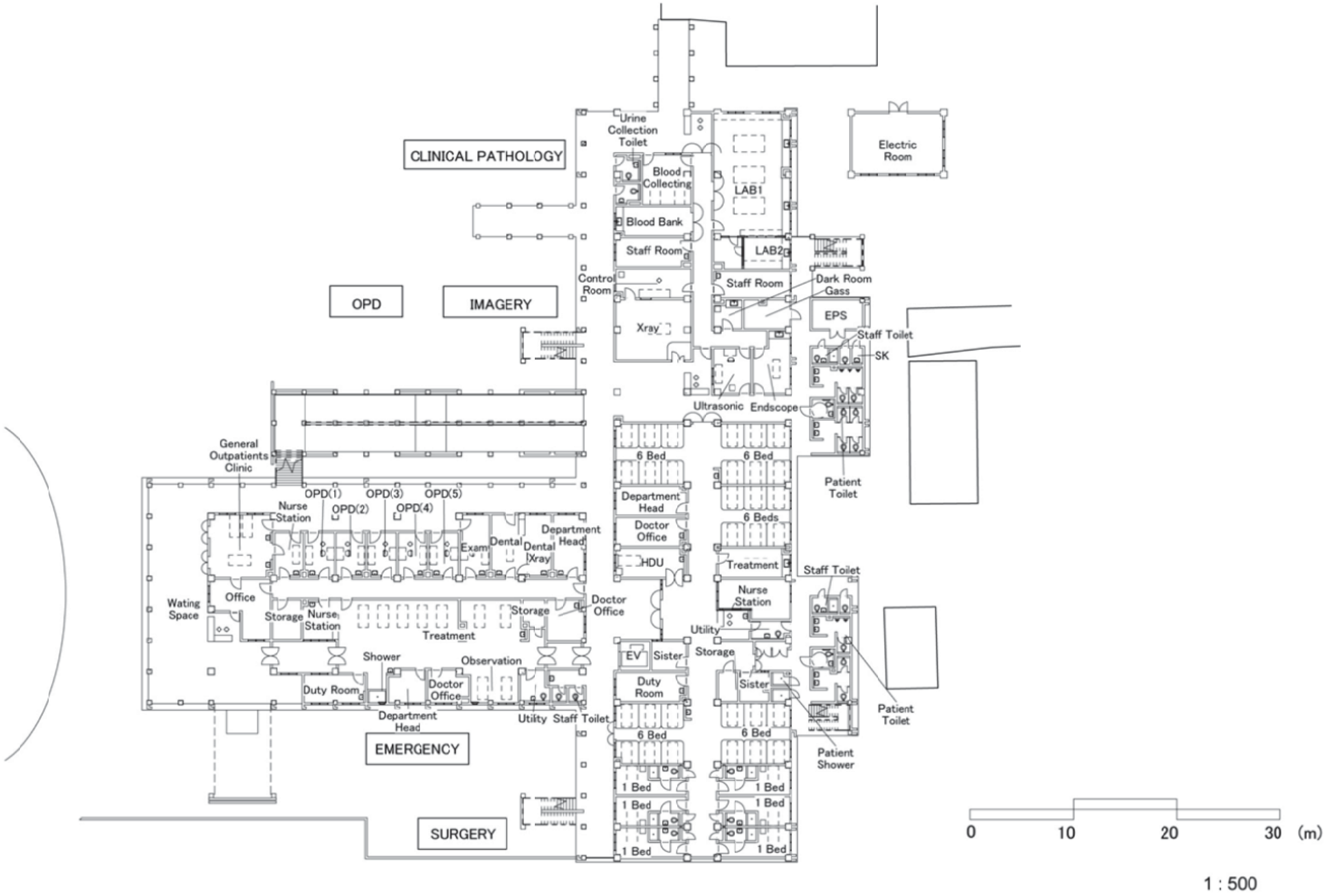
- Medical Records Department

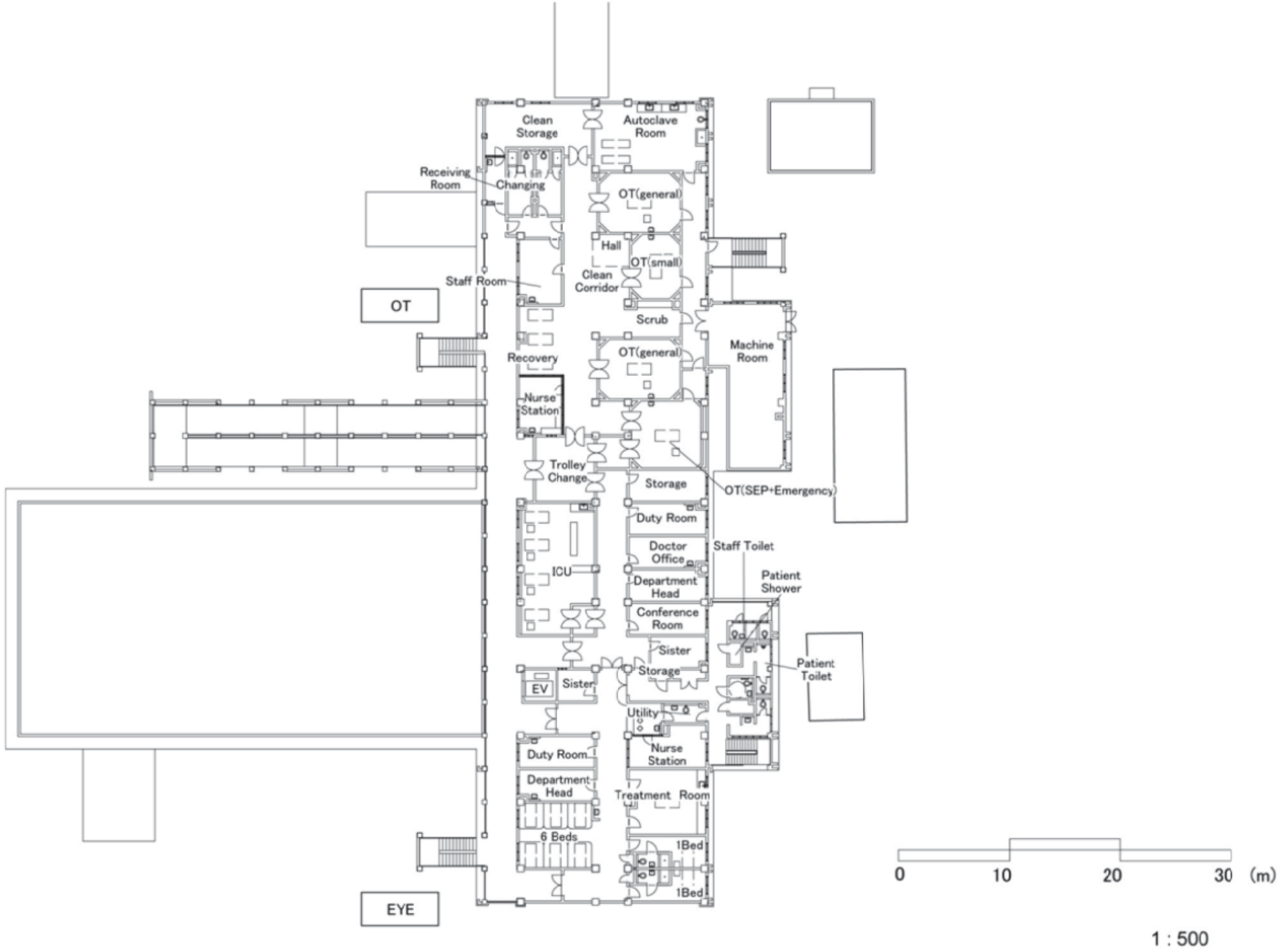
One personal computer will be provided with the purpose of formulating procurement plans for supplies and replacement parts for medical devices, and for creating annual maintenance management budgets. It will be a desktop computer, and as a soft component, guidance will be provided regarding the creation of the aforementioned data. Management will be personally conducted by the Medical Superintendent at first, with management duties shifted to a staff member in charge of maintenance management as a maintenance management system is created.

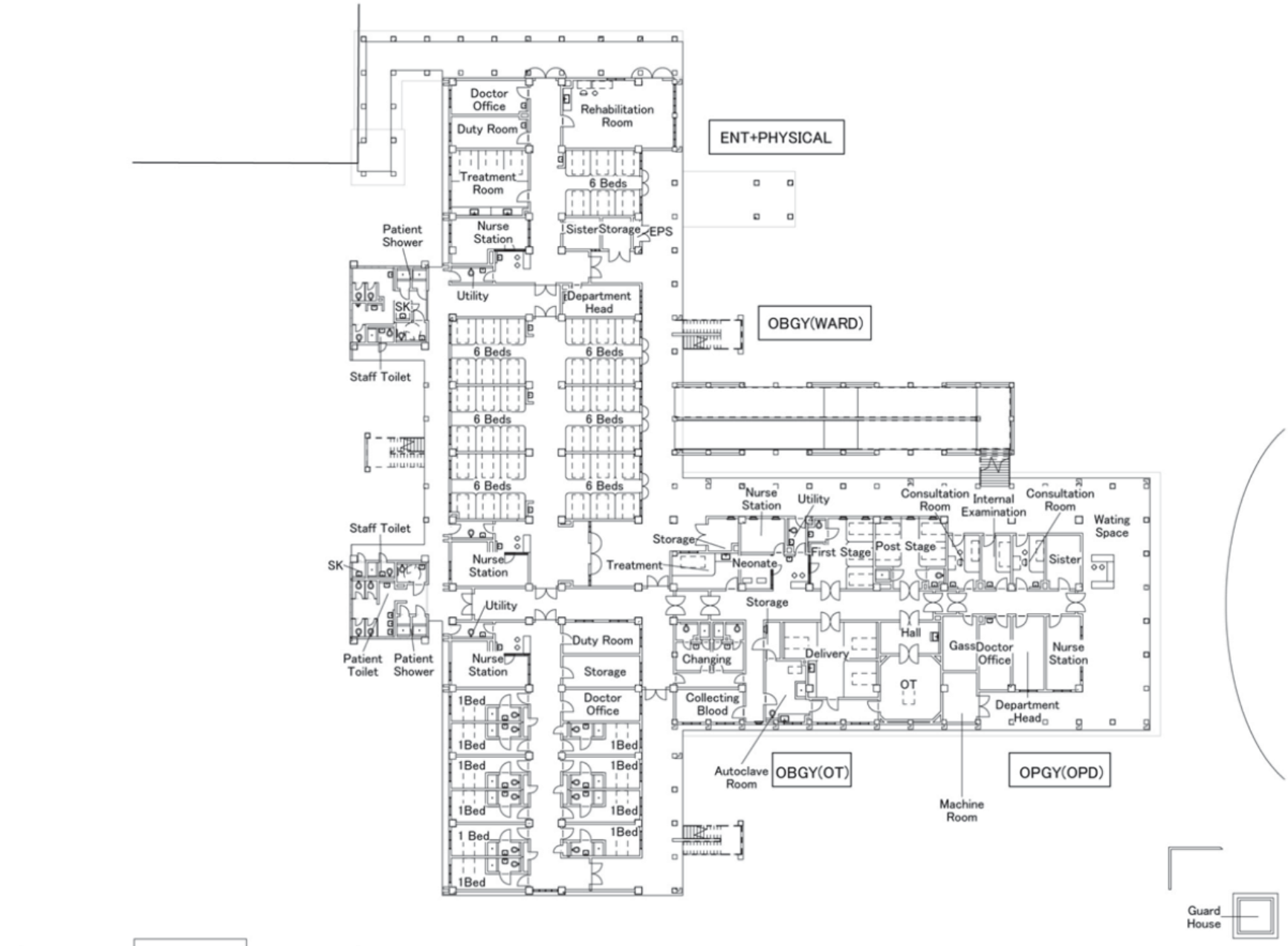
2-2B-3 Outline Design Drawings

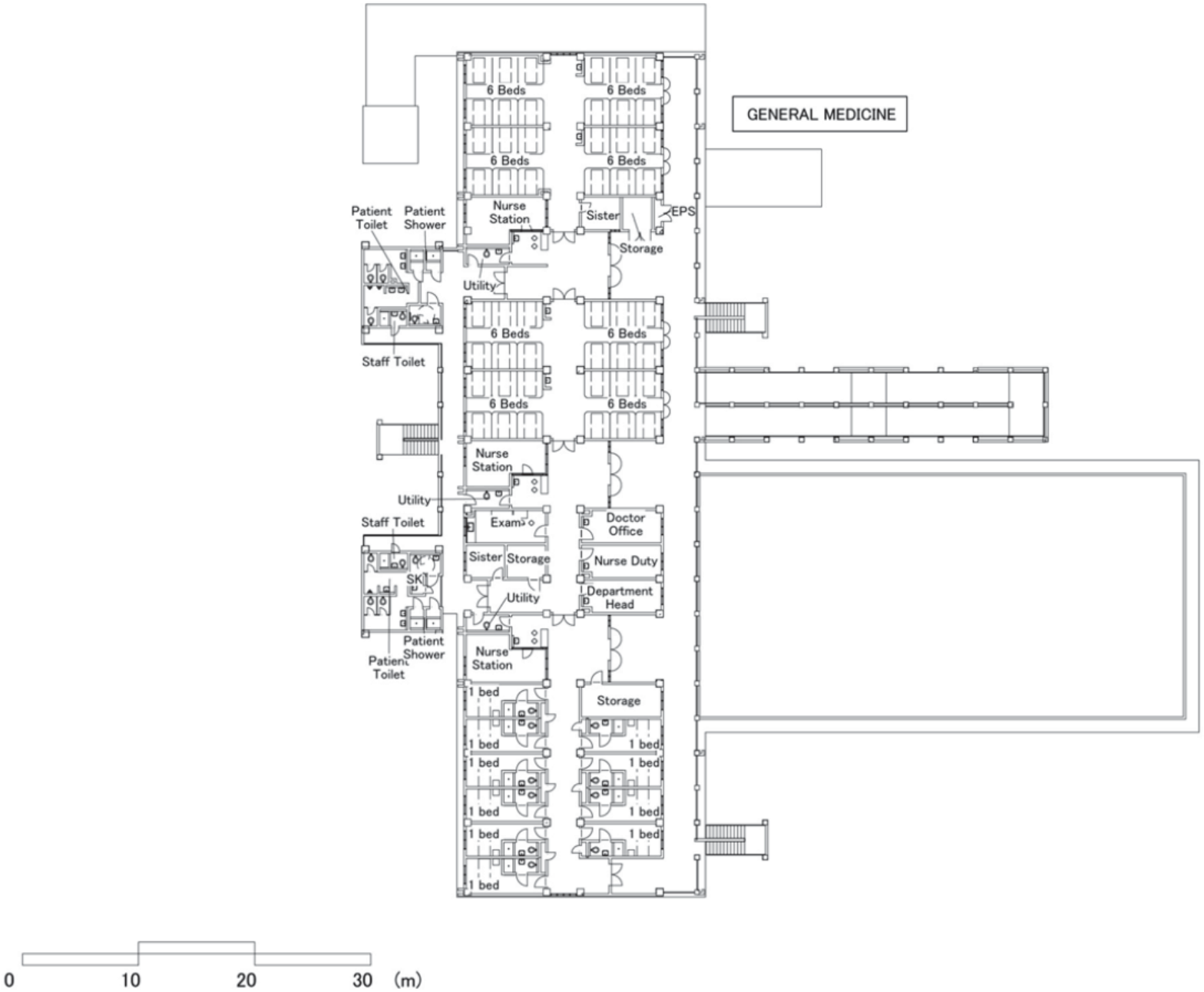
No.	Drawing Name
B-01	Overall Site Plan
B-02	New Building (East) Ground Floor Plan
B-03	New Building (East) First Floor Plan
B-04	New Building (West) Ground Floor Plan
B-05	New Building (West) First Floor Plan
B-06	Elevation 1
B-07	Elevation 2


Elevated Tank
Monk
Medical
Storage
New PW
New Elevated Tank
Guard Ward
CT
Main Bldg
Electric
Room
Mortury
New Main Bldg
West
New Main Bldg
East
Incinerator
Guard House
Entrance
New Isolation
Ward
N
0
20
50
(m)
1 : 1500


CLINICAL PATHOLOGY
Urine Collection Toilet
Blood Collecting
Blood Bank
Staff Room
LAB1
LAB2
Staff Room
Electric Room
Control Room
Xray
Dark Room
Gass
EPS
Staff Toilet
SK
OPD
IMAGERY
Ultrasonic
Endscope
Patient Toilet
General Outpatients Clinic
OPD(1)
OPD(3)
OPD(5)
Nurse Station
OPD(2)
OPD(4)
Exam
Dental
Dental Xray
Department Head
6 Bed
6 Bed
Department Head
Doctor Office
6 Beds
HDU
Treatment
Staff Toilet
Wating Space
Office
Storage
Nurse Station
Treatment
Storage
Doctor Office
Nurse Station
Utility
Storage
Shower
Observation
EV
Sister
Duty Room
Doctor Office
Duty Room
Sister
Department Head
Utility
Staff Toilet
Patient Toilet
6 Bed
6 Bed
Patient Shower
EMERGENCY
1 Bed
1 Bed
1 Bed
1 Bed
1 Bed
1 Bed
SURGERY
0
10
20
30
(m)
1 : 500


Clean Storage
Autoclave Room
Receiving Room
Changing
OT(general)
Hall
OT(small)
Clean Corridor
Staff Room
OT
Scrub
Recovery
OT(general)
Machine Room
Nurse Station
Trolley Change
Storage
OT(SEP+Emergency)
Duty Room
Doctor Office
Staff Toilet
ICU
Department Head
Patient Shower
Conference Room
Sister
Patient Toilet
EV
Sister
Storage
Utility
Duty Room
Nurse Station
Department Head
Treatment Room
6 Beds
1Bed
1Bed
EYE
0
10
20
30
(m)
1 : 500


ENT+PHYSICAL
OBGY(WARD)
OBGY(OT)
OPGY(OPD)
Doctor Office
Duty Room
Rehabilitation Room
Treatment Room
6 Beds
Nurse Station
Sister
Storage
EPS
Patient Shower
Utility
Department Head
SK
Staff Toilet
Nurse Station
Treatment
Storage
Neonate
First Stage
Post Stage
Sister
Consultation Room
Internal Examination
Consultation Room
Wating Space
Hall
Delivery
Gass
Doctor Office
Nurse Station
OT
Changing
Collecting Blood
Department Head
Autoclave Room
Machine Room
Patient Toilet
Patient Shower
Duty Room
Storage
Doctor Office
1Bed
1 Bed
Guard House
0
10
20
30 (m)
1 : 500


GENERAL MEDICINE
6 Beds
Nurse Station
Sister
EPS
Storage
Utility
Patient Toilet
Patient Shower
Staff Toilet
Exam
Doctor Office
Nurse Duty
Department Head
SK
1 bed
0
10
20
30 (m)

1 : 500

East Elevation East Ward

West Elevation East Ward

1 : 500

North Elevation East Ward

South Elevation East Ward

1 : 500

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

The Project consists of the construction work of hospital facilities, and the procurement and installation of medical equipment, which is to be carried out in accordance with Japan's Grant Aid Scheme.

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 Government of Japan (GOJ) and the Government of Myanmar (GOM) to make a pledge for assistance, which is followed by the conclusion of the Grant Agreement (hereinafter referred to as "the G/A") between JICA and the GOM to define the necessary articles to implement the Project, such as payment conditions, responsibility of the GOM, and procurement conditions. After the signing of the G/A, the GOM will conclude a consulting services agreement for the Project with the consultant in Japan who conducted the Survey, and the consultant will start the detailed design and preparation of tender documents for the Project. Upon completion of tender documents, tender procedures will take place for the selection of a construction contractor and an equipment supplier, who are Japanese juridical persons. The respective contractors will execute construction of the facilities, and the procurement and installation of equipment.

The Agreement with the consultant and the contracts with the construction contractor and the equipment supplier shall be verified by JICA in order to fulfill accountability to Japanese tax payers.

After the commencement of construction works, a construction supervision organization will be formulated by the Ministry of Health, the consultant, and contractors.

(1) Implementing Organizations

The responsible organization of the GOM for the Project is the Ministry of Health, who will be a signatory of agreements and contracts. The DOH (Department of Health) and the Medical Superintendent of Loikaw General Hospital, who will make use of the facilities/equipment, will be in charge of overall coordination of the Project.

(2) Consultant

After the signing of the E/N and the G/A, the MOH will conclude a consulting services agreement for the detailed design and supervision of the Project with a consultant in Japan and obtain verification from JICA in accordance with Japan's Grand Aid Scheme. The consultant will prepare detailed design documents and tender documents based on the Preparatory Survey Report (hereinafter referred to as "the Report"), and obtain consent from the Ministry of Health.

In implementing tenders and construction work, the consultant is to assist in tendering procedures for the facilities and supervise the construction work based on the tender documents. Also, for the equipment work, the consultant is to assist in tendering procedures

and supervise procurement, installation, and operation training based on the tender documents.

1) Detailed Design

The services are to design facilities in detail and to review equipment plans based on the Report, and prepare tender documents including drawings, specifications, instructions to tenderers, and drafts of contracts for construction work and equipment work.

2) Assistance in Tendering

The services are to assist in tendering by the implementing agency to select a construction contractor and an equipment supplier, conclude the contracts, and to assist in reporting the results to the GOM and JICA.

3) Construction Supervision

The services are to confirm whether or not the construction contractor and the equipment supplier are carrying out their respective works in accordance with the provision of the relevant contracts, and to ensure that the contracted obligations are properly fulfilled. In addition, the consultant is to give the construction contractor and the equipment supplier instructions and advice, and will coordinate their work for smooth implementation of the Project from the standpoint of fairness. Details of supervision services are as follows.

- Examining and confirming implementation plan, shop drawings, specifications of equipment, and the other relevant documents submitted by the contractor and the supplier.
- Examining and confirming quality and performance of construction materials and equipment prior to shipment.
- Examining building equipment and medical equipment for delivery, installation, and instruction for operation.
- Observing and reporting the progress of the construction work and the equipment work.
- Witnessing the handover of facilities and the installed equipment on-site.

In addition to the services mentioned above, the consultant is to report the progress of the Project, procedure of payment, handover of the facilities and equipment etc. to the Ministry of Health and the relevant agencies of the Government of Japan including JICA.

(3) Construction Contractor and Equipment Supplier

The construction contractor and the equipment supplier are to be selected by the open tender intended for Japanese firms. The Ministry of Health will conclude a construction works contract and equipment works contract separately with the lowest bidder, as a general

rule of the Japan's Grand Aid Scheme. The construction contractor and the equipment supplier are to construct facilities, procure and install equipment, and provide operation training for equipment to the Myanmar side in accordance with each contract. The equipment supplier is to submit to the Ministry of Health a contact address list of manufacturers and local agents of the supplied equipment to request spare parts and consumable supplies, and for operation training for a fee after the handover.

(4) Japan International Cooperation Agency (JICA)

JICA provides necessary services for the execution of the Project as the implementing agency of the Government of Japan for Grant Aid in accordance with the Japan's Grant Aid Scheme.

(5) Local Consultant and Local Contractor(s)

A supervisor of the Japanese consultant will hire local consultants as supervision assistants. Local construction contractors are expected to work on the Project as subcontractors of the Japanese construction contractor.

2-2-4-2 Implementation Conditions

(1) Construction Conditions

The overall construction conditions in Myanmar are described as follows.

- Many contractors of Yangon and Mandalay have substantial technical capabilities to work on the Project as subcontractors of the Japanese construction contractor.
- Most of construction materials are imported from ASEAN countries and China, and those materials are also widely available in the local market.
- Reinforced-concrete rigid frame structure with concrete-block walls is becoming popular in urban areas.
  - Necessary skilled workers can be recruited in Myanmar.
- Obtaining building permissions for facilities of the Project will be required, as will inspection on the overall drawings by a committee organized in the Ministry of Health. These permissions are expected to be obtained in about one month.

(2) Points to be Considered for Construction Work

1) Schedule Control

1)-1 Lashio General Hospital

The construction work at Lashio General Hospital has 2 main phases. The Main Building (North), SAMSC, and Mortuary Building will be constructed in Phase 1. The Main Building (South) will be constructed in Phase 2. This is due to insufficient construction space on the property, and because the existing OPD/ER building function will be moved to the new Main

Building (North) by Myanmar after the completion of Phase 1. Phase 2 will resume after removing existing buildings within 4 months after Phase 1. The progress of removal construction by Myanmar shall be monitored by locally employed workers, in order to strictly manage the construction schedule and instruct as necessary.

In Lashio, the rainy season, which is between May and October, will cause a decrease in work efficiency, increase in transportation period of materials, and increase of curing periods. It will also impact the construction schedule for the foundation, frame, roof, and exterior finish. In order to complete the Project on schedule, it is necessary to secure a non-flooding temporary road in the construction area, and a temporary water discharge system for rain water during foundation work and exterior work must also be secured. The Japanese construction contractor is requested to prepare the above temporary works and construction schedule in consideration of the aforementioned constraints, and to have regular meetings with relevant agencies of the Government of Myanmar and the consultants to manage the implementation schedule and complete the Project on schedule.

1)-2 Loikaw General Hospital

The schedule of construction works will be influenced by rain and rain water during the rainy season from May to October. In order to complete the Project on schedule, it is necessary to secure a non-flooding temporary road in the construction area, and a temporary water discharge system for rain water during foundation work and exterior work. The Japanese construction contractor is requested to prepare the above temporary works and construction schedule in consideration of the aforementioned constraints, and to have regular meetings with relevant agencies of the Government of Myanmar and the consultants to manage the implementation schedule and complete the Project on schedule.

2) Safety Control

The construction contractor is requested to enclose both Project sites with temporary fences to minimize disturbing medical care activities of the hospital. Access routes to the hospital and the Project site will be separated clearly, and the construction contractor is requested to allocate security guards at the gate of the Project site to control vehicles and workers coming in and out for the safety of the neighborhood and for traffic. The construction work will be regulated 9 to 5 daily and the Project site will be enclosed with temporary steel panels to minimize the impact of noise and dust on the hospital.

3) Theft Prevention of Construction Materials

Security guards to prevent the theft of construction materials are to work in rotating shifts around the clock for the site upon consultations with the DOH, the Loikaw General Hospital, the consultant, and the contractor.

(3) Points to be Considered on Procurement of Equipment

Equipment that is difficult to interface with construction work will be included. Therefore,

it is necessary to work closely with the construction contractor and equipment supplier for smooth delivery and installation.

2-2-4-3 Scope of Works

The project will be implemented through bilateral cooperation between the GOM and the GOJ. If the Project is implemented under Japan's Grant Aid Scheme, the work borne by each government are as following.

(1) Works Borne by Grant Aid from the Government of Japan

Consulting services, construction of facilities, procurement and installation of equipment, and soft components as described below are borne by the Government of Japan.

1) Consulting Services

- Preparation of detailed design documents and tender documents of the facilities/ equipment.
- Assistance for selection and contracting with a construction contractor and an equipment supplier.
- Supervision of the construction of facilities, and the procurement, installation and initial operation and maintenance training for equipment.

2) Construction of Facilities and Procurement and Installation of Equipment

- Construction of the facilities.
- Procurement, transportation to the Project site and installation of construction materials and equipment.
- Trial operations and adjustment of equipment.
- Explanation and initial training of operation and maintenance of equipment.

3) Soft Components

- Implementation of maintenance instruction for medical equipment.

(2) Works Borne by the Government of Myanmar

Table 2-29 Works Borne by the Government of Myanmar

Related to Construction (Lashio General Hospital)
• To demolish existing buildings (Maternal & Child Health Office, staff dormitory, café). • To demolish the existing building (OPD/ER and Dental). • To relocate and construct the Maternal and Child Health Office, staff dormitory). • To install transformer. • To relocate electrical poles and wires on the Project site. • To pipe city water to the site. • To fell and remove the existing trees and roots on the Project site. • To remove obstacles and prepare land of the Project site. • To relocate the 1 existing X-ray machine, 1 dental unit, and operating table for the Eye Department. • To procure furniture.
Related to Construction (Loikaw General Hospital)
• To secure the Project site. • To demolish the existing buildings (garage, isolation ward, shop and guard house). • To move/ construct a new garage. • To modify the existing pediatrics ward to an isolation ward. • To transfer the existing transformer position. • To relocate electrical poles and wires on the Project site. • To fell and remove the existing trees and roots on the Project site. • To remove obstacles and prepare land of the project site. • To bring electric power lines to the Project site.
Related to Maintenance and Operation
• Procurement and installation of general furniture, equipment and fittings, etc. not borne by Japan's Grant Aid. • Procurement of consumables and spare parts necessary for the proper maintenance and operation of completed facilities and equipment. • Removing existing equipment and newly installing or moving existing equipment to be continuously used. • Appropriate and effective operation of the completed facilities and equipment.
Related to Procedures
• Costs related to Banking Arrangement (B/A), Authorization to Pay (A/P) and Payment Charge. • Obtaining a building permission inspected by the Ministry of Health. • Obtaining relevant permissions, licenses, and other authorizations as may be necessary for the Project. • Prompt unloading, customs clearance, and tax exemption of the imported equipment for the Project. • Exemption of Japanese nationals from custom duties, internal taxes, and fiscal levies. • According Japanese nationals such facilities for their entry into Myanmar and stay. therein • Bearing all expenses other than those borne by Japan's Grant Aid, necessary for the Project.

2-2-4-4 Consultant Supervision

(1) Construction Supervision Policy

In accordance with Japan's Grant Aid Scheme, the consultant is to form a project team to ensure the smooth implementation of the Project from the detailed design to construction supervision based on the Report. The principles for supervision of construction works and equipment works are as follows.

- To keep in close contact with the officials in charge of the Project of both governments to ensure completion of construction of the facilities and procurement/installation of the equipment without delay.
- To give prompt and proper instructions and advice to the construction contractor, the equipment supplier, and other concerned parties.
- To give proper advice on the initial training for operation and maintenance of the facility and the equipment at the time of handover. To confirm the completion of construction work and equipment work in compliance with the contents of the contract, to witness the handover of the facility and the equipment, and to conclude the consulting services by obtaining the Ministry of Health's consent.

(2) Construction Supervision Plan

In view of the many various functions and large floor area of the buildings of the Project, the consultant will dispatch qualified engineer(s) and local engineer(s) to the Project site, while sending the following engineers to the Project site as needed from time to time.

- Chief Consultant: Overall supervision
- Architectural Design: Explanation of design intent, check of shop drawings and material specifications.
- Structural Design: Check bearing capacity of soil and structural materials.
- Mechanical Design: Explanation of design intent, midterm and final inspection of plumbing and air conditioning work.
- Electrical Design: Explanation of design intent, midterm and final inspection of electrical work.
- Equipment Planning: Instruction of equipment installation, coordination with construction works, witness of numerical examination, initial operation and maintenance training, and check of operation and maintenance manuals, etc.
- Soft Component Planning: Implementation of maintenance instruction of medical equipment.

(3) Construction Supervision by the Construction Contractor

In order to complete construction of the facilities within the scheduled period in conformance with the contract documents, the construction contractor must have the capability to execute the construction work with proper techniques and management. Moreover, the construction contractor must dispatch resident supervisors to the Project site in order to complete the Project at the required level of quality.

(4) Equipment Installation Work

For conducting the work mentioned above, a procurement supervision technician and inspection engineer shall supervise. A technician in charge shall be placed in Japan, and will

contact local workers and provide support.

2-2-4-5 Quality Control Plan

There is no concrete batcher plant in Loikaw. However, since the building scale is large and the required concrete volume is huge, many drum-type mixers for concrete mixing will be placed at the Project site, and concrete will be cast by hand. The average low temperature is over 20 degrees Celsius between May and October in both Lashio and Loikaw, and the average temperature is expected to be over 25 degrees Celsius. Therefore, concrete is assumed to be hot weather concreting, and requires appropriate control of temperature and quality.

The excess rain water will be collected at excavated ground in the rainy season. Therefore, the foundation work must be done while pumping rain water, which must be managed by the construction execution plan to maintain the quality of the construction work.

The quality control plan for the main types of construction work is as follows.

Table 2-30 Quality Control Plan

Work Type	Control Parameter	Control Value	Test Method	Quality Standards	Frequency of Measurement	Analysis of Results
Earth work	Bearing capacity of ground	Ra=78kN/m^2 or more (8 ton//m^2)	Plate bearing test	BS	Multi- locations	Test report
	Slope angle	Within planned range	Gauge, visual	JIS	As needed	Photos, documents
	Bedding accuracy	Within +0～-5cm	Level, visual		〃	〃
	Supporting layer height	Within +0～ -3cm	〃		〃	〃
	Thickness of replaced soil	+5cm～0	〃		〃	〃
Reinforcement bars	Reinforcement cover thickness	Places not in contact with soil: 30m/m	Visual, measurement	Specifications	As needed	Photos, documents
		Places in contact with soil:	〃	〃	〃	〃
		Footing 60m/m	〃	〃	〃	〃
		Other 40m/m	〃	〃	〃	〃
	Processing accuracy	Stirrup, hoop ±5m/m	〃	〃	〃	〃
		Others ±10m/m	〃	〃	〃	〃
	Tensile test	Standard strength or more	On-site sampling or sampling at shipping	BS	1 test on 3 test pieces per 200t of steel bars with given diameter	Test report
Concrete work (mixing at site)	Compressive strength	Designed strength 21N/mm^2 or more	Attend at test site (any time)	BS, ASTM	3 or more test pieces per 50m^3	Test report
	Slump value	15cm±2.5cm	Attend at work site	〃	〃	Photos, documents
	Chloride content	0.3kg/m^3 or less	Test pieces, attend at work site	〃	〃	〃
	Air content	4.5% ±1.5%	Attend at work site	〃	〃	〃

Work Type	Control Parameter	Control Value	Test Method	Quality Standards	Frequency of Measurement	Analysis of Results
	Concrete temperature Performance accuracy	35 deg. or less 10mm per 1m or less	Attend at work site Measuring	〃 JIS	〃 After form removal	〃 〃
Masonry (concrete block)	Compressive strength	According to each plant management value	Attend at compression test site after selection of adopted factory	Myanmar Standard, BS	Once before first shipment from factory	Test report
Plastering, Painting, Roof waterproofing, Fixtures	Materials, storage methods, work methods, mixing, coating thickness, curing, work accuracy	According to particular specifications	Same as left	Same as left	As needed	Photos, documents
Water supply & drainage	Water supply pipes Drainage pipes	Leaking 〃	Water pressure test (1.75MPa for 60 min.) Water filling test	BS 〃	On completion of pipe laying, for each system	Test result report
Electrical work	Cables	Within planned range	Insulation test Conductivity test	BS		

All the medical equipment shall be ready-made, and selected from those that have been installed in medical facilities before. Also, as a general rule regarding standards for the manufacturing of equipment, equipment shall be selected from those that meet various standards such as JIS, BS, UL, or DIN, etc.

2-2-4-6 Procurement Plan

(1) Construction Materials

1) Procurement Policy

Most of the construction materials can be procured locally. This is favorable for maintenance after completion of the Project.

2) Procurement Plan

- Structural Frame Work
  Materials such as reinforcing bars, concrete material and formwork, and concrete blocks for walls, etc. will be procured locally.
- Interior and Exterior Finishing Work
  Materials for the interior and the exterior finishing will be procured in local markets, including imported products, such as aluminum sashes, tiles, ribbed metal roofing, paint, and glass, etc.

- Air-Conditioning and Plumbing Work
  Air-conditioners, exhaust fans, ceiling fans, pumps, tanks and sanitary ware, etc. will be procured in local markets, including imported products.
- Electrical Work
  Lighting fixtures, power panels, cables/wires and conduit/pipes, etc. will be procured in local markets, including imported products.
- Elevator
  Elevators made in China will be procured by the manufacturer's branch or local agents in Myanmar. This is favorable for maintenance after completion of the Project.

Table 2-31 Procurement Plans of Principle Construction Materials

Item	Procurement Plan			Remarks
	Local	Japan	Third Country	
Temporary Work				
Scaffolding	○			Single pipe scaffold is popular.
Temporary Fence	○			Steel sheet and barbed wire are popular.
Temporary Office	○			Timber-made is popular.
Material				
Portland Cement	○			Products made in ASEAN and Myanmar etc. can be procured locally.
Aggregate	○			Can be procured locally.
Deformed Bar	○			Products made in ASEAN can be procured locally.
Veneer Form	○			Products made in ASEAN can be procured locally.
Concrete Block	○			Can be procured locally.
Waterproofing Material	○			Products made in ASEAN can be procured locally.
Light Gauged Steel	○			Products made in ASEAN can be procured locally.
Color Metal Roofing	○			Products made in ASEAN can be procured locally.
Aluminum Door/Window	○			Products made in ASEAN can be procured locally.
Wooden Door	○			Can be procured locally.
Glass	○			Products made in ASEAN and China, etc. can be procured locally.
Tile	○			Products made in Thailand and China, etc. can be procured locally.
Stone	○			Products made in China and Myanmar can be procured locally.
Acoustic Board	○			Products made in ASEAN can be procured locally.
Cement Board	○			Products made in ASEAN can be procured locally.
Paint	○			Products made in ASEAN can be procured locally.
Mechanical/Electrical Works				
Air-conditioner	○			Products made in ASEAN can be procured locally.

Item	Procurement Plan			Remarks
	Local	Japan	Third Country	
Exhaust Fan	○			Products made in ASEAN and China, etc. can be procured locally.
Water Reservoir Tank	○			Can be procured locally.
Pump	○			Products made in ASEAN can be procured locally.
Pipe and Fittings	○			Products made in ASEAN can be procured locally.
Sanitary Ware	○			Products made in ASEAN and Myanmar can be procured locally.
Distribution Panel	○			Products made in ASEAN can be procured locally.
Conduit Pipe, wire	○			Products made in ASEAN can be procured locally.
Lighting Fixtures	○			Products made in ASEAN can be procured locally.
Lightning Arrester	○			Products made in ASEAN can be procured locally.
Elevator				
Elevator	○			Products made in China can be procured locally.

(2) Equipment

1) Equipment Procurement Plan

Procured devices will generally be products made in Japan or Myanmar. For equipment that requires supplies or reagents, etc., devices that have versatility and can be procured in Myanmar will be selected. The fixed amount of replacement parts and reagents to be included in the project specifications is expected to be roughly 6 months' worth, not including items restricted by expiration dates. For replacement parts, the manufacturer's recommended replacement schedule, etc. will be used as a reference.

The warranty for devices will be 1 year. Since the date of equipment handover will be uncertain due to shifting dates within the installation period, the warranty period will be from 1 year after the completion of installation work by the procurement contractor.

2) Third-country Procurement

As was mentioned previously, the procured devices will generally be products made in Japan or Myanmar. However, depending on conditions such as advantages in terms of maintenance management and general product dissemination in Myanmar, if it is preferable to procure devices made in a third country, procurement and the conditions below will be considered after approval is obtained from both Japan and Myanmar. In regard to other devices, a procurement plan will be formulated upon considering the certainty of the delivery date and procurement price advantages.

- A branch office or agent, etc. is located in Myanmar for an advantage in maintenance management.

- The rate of incidence for malfunctions is low, and the product has a low cost of maintenance.
- A Japanese or Myanmar-made product does not exist, or the specifications are not consistent.
- Maintenance and inspections are simple, and the product is from a manufacturing company with a maintenance management system.
- It is a device widely used in Myanmar.
- It is a device that can be procured/delivered before the E/N and G/A deadlines.

For this cooperation project, equipment that is expected to be procurable from a third country is listed below.

Table 2-32 Equipment that can be Procured from a Third Country (Lashio)

Plan No.	Equipment name
LS-001	Adult bed
LS-005	Anesthesia machine (with ventilator)
LS-007	Autoclave (large)
LS-012	Balance step
LS-013	Bedside cabinet
LS-019	Overhead surgical lamp (2)
LS-021	Pediatric bed
LS-024	CPAP ventilator
LS-031	Electrical scalpel
LS-032	Gynecology-use electrical scalpel
LS-034	Endoscope (upper gastrointestinal tract)
LS-040	Adjustable bed (Gatch bed)
LS-064	Microscope
LS-067	Nebulizer
LS-069	Surgical microscope for ENT Department
LS-114	Ventilator (adult)
LS-115	Ventilator (child)

Table 2-33 Equipment that can be Procured from a Third Country (Loikaw)

Plan No.	Equipment name
LK-001	Adult bed
LK-004	Anesthesia machine (with ventilator)
LK-008	Bedside cabinet
LK-011	Blood donation monitor
LK-013	Overhead shadowless lamp (2)
LK-015	Pediatric bed
LK-023	Electrical scalpel
LK-024	Endoscope set (upper/lower gastrointestinal tract)
LK-025	Endoscope set (ENT)
LK-030	Adjustable bed (Gatch bed)
LK-043	Nebulizer
LK-044	Surgical microscope for ENT Department
LK-045	Surgical microscope for Eye Department
LK-056	Plasma extraction machine
LK-074	Syringe pump
LK-079	Blood tube sealer
LK-083	Ventilator

(3) Transportation Plan

If medical equipment is transported from Japan, it will be sent on a ship in a shipping container, which will be unloaded at the Port of Yangon, Myanmar's primary trading port. The shipping period from a Japanese port to the Port of Yangon requires approximately 30 days. After clearing customs at the Port of Yangon, land transport by truck is expected, with the normal route to Lashio going through Mandalay. The distance from Yangon to Lashio is approximately 900 km, which requires about 3-4 days for transport. Road conditions are good, and transport with a 40-foot shipping container is assumed. The distance from Yangon to Loikaw is approximately 800 km, and the route passes through Thazi and Kalaw. The number of days required for transport is about 3-4 days. Since road conditions midway are bad, transport with a 32-foot truck is expected. The truck must stay under the weight limit designated by the Ministry of Transport, which is set at 25 metric tons for a 40-foot shipping container truck.

For the procurement of equipment and materials from Japan, it is necessary to anticipate about 1.5 months from the time the ship departs to the time it arrives in Myanmar, including customs clearance. Furthermore, if the shipment is stored temporarily at Yangon CSMD, it is necessary to notify them beforehand to send it straight to the target hospital, since items may be stored there for a long period of time otherwise.

2-2-4-7 Operation and Maintenance Training Plan

On-site training will be conducted by technical staff members from the manufacturer's agents in order to maintain and operate the medical equipment appropriately after it is delivered. The aim is for the hospitals to maintain the equipment by their own means in the future by providing contact lists of manufacturer's agents and the operational manuals.

- For operation (specifications of equipment, procedures of operation, function-check, etc.)
- For repair and maintenance (daily checkup, cleaning, adjustment and trouble shooting, etc.)

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

So that the medical equipment to be procured can to be used effectively for a long period of time, a maintenance management system will be created, guidance will be provided for basic maintenance management for medical equipment, and advice will be given to the user on the proper use of the equipment.

2-2-4-9 Implementation Schedule

When the Project is implemented with Japanese Grant Aid, the implementation schedule until the commencement of construction works is as follows.

- The E/N is signed between the Government of Myanmar and the Government of Japan, and the G/A is signed between the government of Myanmar and JICA.

- JICA recommends a Japanese consultant to the Government of Myanmar.
- The agreement of consulting services for the Project is concluded between the Ministry of Health and the consultant.
- Construction work is commenced after the detailed design, tendering in Japan, and the conclusion of the contract for construction work and the equipment supplier is verified by JICA.

(1) Detailed Design Phase

The consultant prepares the detailed design document and the tender documents based on the Report, which consists of detailed design drawings, specifications, calculations, and tender documents, etc. The consultant has discussions and meetings with the Ministry of Health at the beginning and the end of the detailed design phase, and completes the detailed design after submission of the final deliverables.

(2) Tender Assistant / Supervision Phase

After the detailed design phase, the prequalification (P/Q) of the tender for construction work will be announced in Japan by the Ministry of Health in cooperation with the consultant. According to the results of the evaluation of the P/Q, the Ministry of Health will invite the qualified Japanese construction contractors to tender. The equipment suppliers will be tendered separately from the construction tender, and the Ministry of Health will invite Japanese equipment suppliers who declare their intent to participate. Then the Ministry of Health, in cooperation with the consultant, will conduct the tenders of construction and equipment works in Japan in the presence of persons involved, and the tenderers who bid the lowest prices and are evaluated as having an appropriate offer will conclude contracts with the Ministry of Health as the winning tenderers.

(3) Construction / Equipment Procurement

(3)-1 Lashio General Hospital

The contracts for the construction contractor and the equipment supplier will be verified by JICA, and the construction work and the equipment work will be commenced. It will take a total of approximately 14 months of work for the construction, equipment procurement, and installment in Phase 1, which consists of the construction of the Main Building (North), SAMSC, and Mortuary. The Myanmar side will proceed with moving and removing the existing OPD/ER building within 4 months after Phase 1. Phase 2 will take approximately 13 months of work on the Main Building (South). The total construction period is 31 months. Therefore, smooth procurement of construction materials and equipment, the prompt execution of relevant procedures by the Myanmar side, and the implementation of the scope of works to be borne by the Myanmar side is necessary.

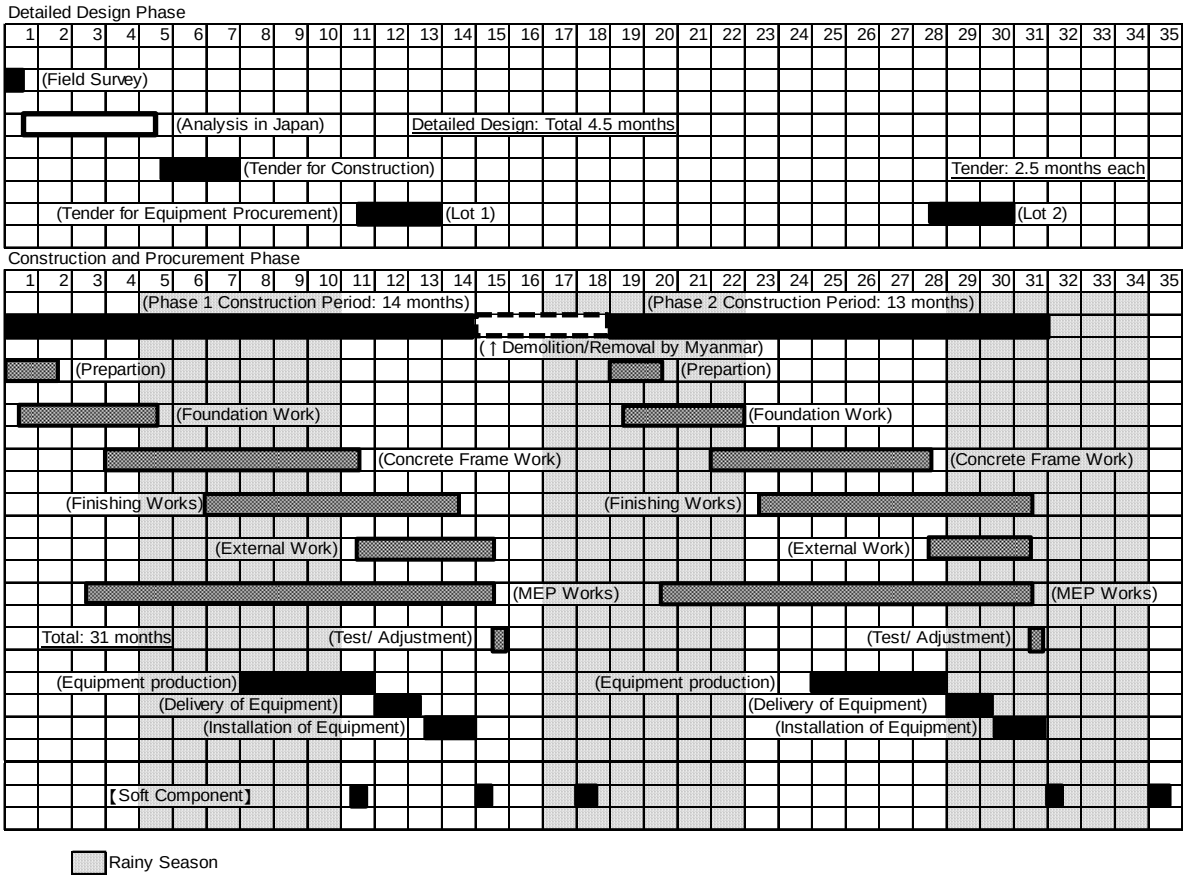


Figure 2-16 Implementation Schedule (Lashio General Hospital)

(3)-2 Loikaw General Hospital

The contracts for the construction contractor and the equipment supplier will be verified by JICA and the construction work and the equipment work will be commenced. If the construction contractor prepares a rain water discharge system in the rainy season from May to October, it will take a total of approximately 15 months of construction work, judging by the scale of the Project, the local climatic conditions, and the local construction conditions. To achieve this, the smooth procurement of construction materials and equipment, the prompt execution of relevant procedures by the Myanmar side, and the implementation of the scope of works to be borne by the Myanmar side is necessary.

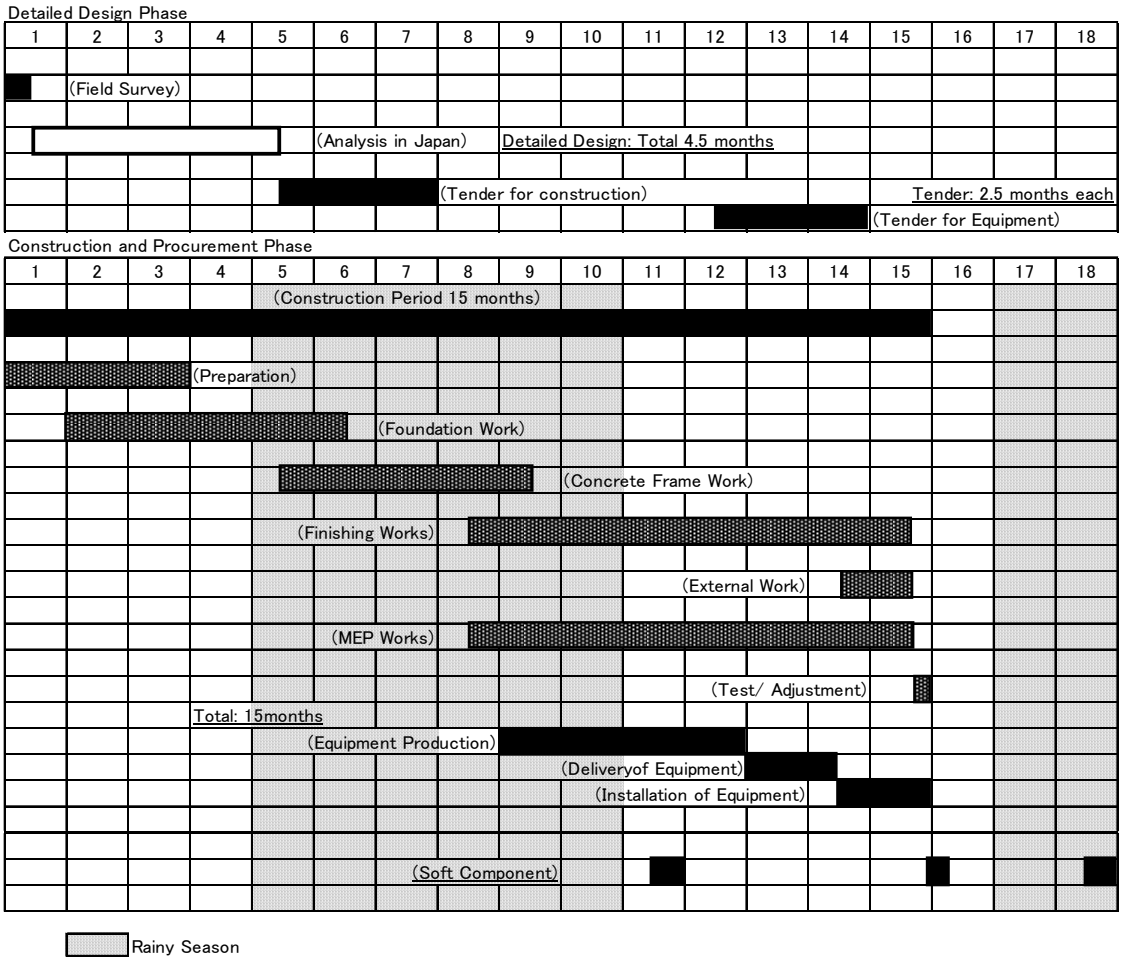


Figure 2-17 Implementation Schedule (Loikaw General Hospital)

2-3 Obligations of Recipient Country

The list of obligations of the government of Myanmar based on Japanese Grant Aid for this project are listed below.

(1) Related to Construction

(1)-1 Lashio General Hospital

- To demolish the existing building (Maternal and Child Health Office, staff dormitory, café).
- To demolish the existing building (OPD/ER and Dental).
- To relocate and construct Maternal and Child Health Office, staff dormitory.
- To install transformers.
- To relocate electrical poles and wires on the Project site.
- To pipe in city water.
- To fell and remove the existing trees and roots on the Project site.
- To remove obstacles and prepare land of the Project site.
- To relocate 1 existing x-ray machine, 1 dental unit, and the operation table for the Eye Department.
- To procure furniture.

(1)-2 Loikaw General Hospital

- To secure the Project site.
- To demolish the existing buildings (garage, isolation ward, shop and guard house).
- To construct a new garage.
- To modify the existing pediatrics ward to the isolation ward.
- To transfer an existing transformer position.
- To relocate electrical poles and wires on the Project site.
- To fell and remove the existing trees and roots on the Project site.
- To remove obstacles and prepare land of the Project site.
- To bring an electrical power line to the Project site.
- To procure furniture.

(2) Related to Operation and Maintenance

- To procure and install general furniture, equipment and fittings, etc. not within the scope of Japanese Grant Aid.
- To procure consumables and spare parts necessary for the proper maintenance and operation of the completed facilities and equipment.
- To operate the facilities and equipment appropriately and effectively.

(3) Related to Procedures

- To bear commissions, namely advising commissions of A/P and payment commissions to the Japanese Bank for the banking services based on B/A.
- To obtain a building permission inspected by the Ministry of Health.
- To obtain relevant permissions, licenses, and other authorizations as may be necessary for the implementation of the Project.
- To ensure prompt unloading, customs clearance, and tax exemption of equipment imported from Japan and/or third countries based on the verified contracts,
- To exempt Japanese nationals engaged in the implementation of the Project from custom duties, internal taxes, and other fiscal levies which may be imposed in Myanmar.
- To accord Japanese nationals engaged in the implementation of the Project such facilities as may be necessary for their entry into Myanmar and stay therein,
- To bear all the expenses, other than those covered by Japanese Grant Aid, necessary for the implementation of the Project.

2-4 Project Operation Plan

2-4-1 Operation and Maintenance System

2-4-1A Lashio General Hospital

(1) Operation System

The implementing agency and authority in charge of this project is the Ministry of Health, but Lashio General Hospital will be in charge of operation and maintenance after the handover. The number of staff at Lashio General Hospital is shown below. The staffing rate is 61%, which has already met the goal of 60% set by the Ministry of Health. Also, it is possible to maintain the existing organizational structure since there are no new departments in this project, and the current departments are maintained.

Table 2-34 Number of Staff at Lashio General Hospital

Position	Available Numbers	Actual Numbers
Medical Superintendent	1	1
Deputy Medical Superintendent	1	-
Doctors	104	68
Other Gazetted Officers	7	4
Nurses	288	147
Nurse Aid	8	6
Paramedic	76	76
Clerical Staff	23	13
Menials (Workers)	78	46
Electrical Engineering Staff	3	2
Mechanical Engineering Staff	3	-
Total	592	363

(2) Maintenance Structure

1) Facility

Under the management of Medical Superintendent, 2 electrical engineering staff members and 1 hospital staff are in charge of daily maintenance of the facility; this shall be carried out in the same manner in the future. Repair work, except for minor repairs, is outsourced through the Medical Superintendent. Daily maintenance work in the new facility can be conducted by the staff /workers shown above. Periodic or annual maintenance work can be outsourced as was done before. For elevator maintenance, a local engineer shall perform periodic inspections.

2) Equipment

Currently, there is no department for equipment maintenance management at Lashio General Hospital, with the doctors and nurses of each department performing routine

maintenance and simple repairs. If they are not able to do so, repairs are generally outsourced through the Medical Superintendent or Deputy Medical Superintendent to the CMSD under the control of the Department of Health at the Ministry of Health. If repairs are not possible at this level, work is further outsourced to agents of the respective equipment manufacturers. It has been agreed upon with the Ministry of Health that before installation of medical equipment for this project begins, the Ministry of Health will assign new staff to Lashio General Hospital to be in charge of equipment maintenance management. The maintenance management of medical equipment will be implemented with these staff members playing the central role.

2-4-1B Loikaw General Hospital

(1) Operation System

Medical staff at Loikaw General Hospital presently consists of 37 doctors, 275 nurses, and 36 technicians, against the sanctioned number of 102 doctors, 297 nurses, and 58 technicians. However, with the increase in the Ministry of Health budget after 2012-13, the number of young doctors being recruited is rising rapidly nationwide. The planned facilities and equipment under the project are the rebuilt existing facilities, which are confirmed with the hospital to be operated and managed by the existing medical staff members. Furthermore, in line with the policy of the Ministry of Health, prompted by the South East Asia Games in Nay Pyi Taw in December 2013, an emergency department with specialist doctor(s) will be established in each State hospital.

(2) Maintenance Structure

1) Facility

At present, Loikaw General Hospital has one electrical engineer and two water & sanitary engineers as maintenance staff for the facility. They maintain the facility daily and place requests for repair work for the facilities with external contractors, if necessary. Loikaw General Hospital has no maintenance staff for medical equipment, and places requests for the repair of equipment with the CMSD or local agents.

After completion of the Project, the existing facility maintenance staff will execute daily inspections and repair procedures as part of their duties. Since the existing staff has limited maintenance knowledge, the mechanical/electrical equipment for the new facilities proposed for the project will be based on equipment or systems presently available in Myanmar.

For the maintenance of elevators, an annual inspection by a professional engineer is required by law. Therefore, periodical maintenance by a professional engineer from the manufacturer's branch office or a local agent is proposed

2) Equipment

Similar to Lashio General Hospital, there is currently no department for equipment maintenance management at Loikaw General Hospital, with the doctors and nurses of each

department performing routine maintenance and simple repairs. If they are not able to do so, repairs are generally outsourced through the Medical Superintendent or Deputy Medical Superintendent to the CMSD under the control of the Department of Health at the Ministry of Health. If repairs are not possible at this level, work is further outsourced to agents of the respective equipment manufacturers. It has been agreed upon with the Ministry of Health that before installation of medical equipment for this project begins, the Ministry of Health will assign new staff to Loikaw General Hospital to be in charge of equipment maintenance management. The maintenance management of medical equipment will be implemented with these staff members playing the central role.

2-4-2 Maintenance Plan

(1) Facilities

Daily cleaning and repair of deterioration, breakdowns, and aging are important for the maintenance of facilities at both Lashio and Loikaw General Hospitals.

Repair is mainly for interior and exterior finishes, which protect the structure of the facilities. In the case of Japan, refurbishment is expected to be conducted every 10 years to retain the facilities' function.

Items for periodical inspection and repair work which affect the life span of the facilities will be shown in the Maintenance Manuals submitted by the construction contractor at the handover of the new facilities, which explains methods of inspection and regular cleaning. In general, the outline of the periodical inspection of the facilities is as follows.

Table 2-35 Outline of Periodical Inspection (Facilities)

	Contents of Inspection	Number of Inspections
Exterior	• Repair/ repaint of exterior walls	Repaint once/5 years, repair once/3 years
	• Inspection and repair of roofs	Inspection once/3 years, repair once/10 years
	• Inspection and repair of sealing of exterior fittings	Once/year
	• Regular inspection and cleaning of gutters and manholes	Once/year
Interior	• Renewal of the interior	As needed
	• Repair / repaint of partition walls	As needed
	• Renewal of ceiling materials	As needed
	• Adjustment of doors and windows	Once/year
	• Exchange of fixtures of fittings	As needed

(2) Facility Equipment

Facility equipment needs preventive maintenance on the daily basis before repairing breakdowns and replacing parts. The lifespan of facility equipment can be extended by normal operation and daily inspection/fueling/cleaning/repair, etc. These daily inspections can prevent incidents and the expansion of accidents.

The generator and pumps, etc. require periodical maintenance, and it is necessary to have annual periodical inspections by outside private companies. The lifespans of the principle facility equipment are as follows.

Table 2-36 Lifespan of Equipment

	Equipment	Lifespan
Electrical	• Distribution Panel • LED Lamp • Generator	20 – 30 years 20,000 – 40,000 hours 30 years
Plumbing	• Pump, Pipe, Valve • Tank • Sanitary Ware	15 years 20 years 25 – 30 years
Air-conditioning	• Air-conditioner • Exhaust Fan	10 years 20 years

(3) Equipment

It will be highly important to check and clean the equipment regularly in order to maintain the equipment appropriately after daily use. In addition, the equipment should be used only for the intended purpose of the equipment based on the operation manual. Therefore, the initial operation and management training should be given to the staff prior to the handover of the educational equipment.

2-5 Project Cost Estimation

2-5A Lashio General Hospital

2-5A-1 Initial Cost Estimation

The initial project cost to be borne by Myanmar side for the implementation of the Project for Improving Lashio General Hospital is 232 Million Kyat (approximately 23.65 Million Yen), based on the estimation criteria shown below

(1) Estimated Cost to be Borne by Myanmar Side: 231.86 Million Kyat (Approx. 23.65 Million Yen)

Table 2-37 Estimated Cost to be Borne by Myanmar Side

Item to be borne by Myanmar side	Estimated Cost	
	(Kyat)	(Yen)
(1) Construction Related		
1) To demolish existing buildings (Maternal & Child Health Office, staff dormitory, café)	7,253,000	739,806
2) To demolish the existing buildings (OPD/ER and Dental)	19,112,000	1,949,424
3) To relocate and construct Maternal and Child Health Office, staff dormitory	131,449,000	13,407,798
4) To install transformers	9,630,000	982,260
5) To relocate electrical poles and wires on the Project site	9,630,000	982,260
6) To pipe in city water	57,000	5,814
7) To fell and remove the existing trees and roots on the Project site	4,540,000	463,080
8) To remove obstacles and prepare land of the Project site	1,884,000	192,168
9) To relocate 1 existing x-ray machine	398,000	40,596
10) To relocate existing 1 dental unit	398,000	40,596
11) To relocate operating tables for the Eye Department	99,500	10,149
12) To procure furniture (curtain, shelves, waiting benches, etc.)	30,121,000	3,072,342
(2) Procedure Related		
1) Bank Charge Fee (Written-Authorization Issue Fee, Payment Charges)	17,289,000	1,763,478
Total	231,860,500	23,649,771

(2) Condition of Expenditure Projection

- Cost Estimation Time: December, 2013
- Exchange Rate: 1US$=99.99Yen
  1EURO=135.92Yen
  1Myanmar Kyat (MMK) ＝0.102 Yen
- Construction and Procurement Period: Detail Planning and Construction and MEP work period is listed in the Implementation Schedule.
- Other: Cost Estimation shall be carried out based on the system of Grant Aid by the Government of Japan.

2-5A-2 Operation and Maintenance Cost

Personnel expenses and maintenance costs after completion of the facility and equipment installation is shown below.

Table 2-38 Calculation of Personnel Expenses & Maintenance Costs

Item	2012/13	After Completion of the Project (2017/18)
	Actual Expenses (Kyat)	Estimated Cost (Kyat)
(1) Personnel Expenses	284,223,000	322,148,000
(2) Maintenance Expense	92,021,000	41,651,000
1) Office Supply	1,600,000	1,808,000
2) Electricity	12,800,000	17,357,000
3) Fuel/Oil Cost	2,500,000	4,120,000
4) Facility Maintenance Cost	75,121,000	13,446,000
CT-Scan Building Construction Cost	50,000,000	0
Existing Building Exterior Wall Paint Cost	20,000,000	0
Other	5,121,000	15,280,000
5) Medical Gas	0	3,187,000
6) Elevator Maintenance Cost	0	1,733,000
(3) Medical Equipment Consumables and Spare Parts Cost	9,227,000	32,689,000
Total	385,471,000	396,488,000

【Calculation Background / Reason】

(1)Personnel Expenses

68 doctors, 147 nurses, and 76 technicians, etc. will operate and maintain the hospital, but one mechanical management technician will be added. Personnel expenses shall be calculated with this additional member included and also considering the increase of personnel expenses between 2012/13 and 2017/18. The predicted rate of inflation during this period is 26.05%[3]; however, the effect on personnel expenses is not great, and approximately half, or 13.0%, will be accounted for.

(284,223,000 MMK+(72,000 MMK x 12)) x 1.13 ≒ 322,148,000 MMK/year

(2)Maintenance Expenses

1)Office Supply Bill

Calculated taking into account the labor cost increase between 2012/13 and 2017/18. The predicted rate of inflation during this period is 26.05%; however, the effect on personnel expenses is not great, and approximately half, or 13.0%, will be accounted for.

1,600,000x1.13≒1,808,000 MMK/year

2) Electricity Bill

Electrical and mechanical equipment will be approximately 20% more than in the existing

[3] *World Economic Outlook Database (IMF, October 2013), multiplied the inflation of consumer prices from 2013 to the end of 2016.*

facility. Plus, the inflation rate of 13.0% will be considered.

12,800,000 x 1.2 x 1.13 ≒17,357,000 MMK/year

3) Fuel Cost

Fuel costs will be increased due to a newly installed emergency power generator in the new building, and one additional ambulance. Plus, the inflation rate of 13.0% will be considered.

- Emergency Power Generator

A diesel generator will be newly installed and its operation cost will be added. (Assumption: 30 minutes per day for 5 days a week)

14 liter × 0.5 hours × 5 days × 12 months × 823MMK/liter ≒346,000 MMK/year

- Ambulance

Estimated 800,000MMK for annual fuel cost per one ambulance.

(2,500,000＋346,000＋800,000) x 1.13 ≒4,120,000 MMK/year

4) Maintenance Expense for Building

① Maintenance Cost for Existing Buildings

75,121,000MMK is allocated for facility management for the 2012/13 fiscal year. 50,000,000MMK for the construction of the CT scan building, and 20,000,000MMK for repainting of the exterior of the existing buildings are a special budget allocated within. The remaining amount of 5,121,000MMK is allocated for regular maintenance costs. The maintenance costs for existing facilities shall be reflected with an inflation rate 13.0%.

5,121,000MMK x 1.13 ≒5,787,000MMK

② Maintenance Cost for New Buildings (Average of 10 years after Completion)

- Construction Repair Cost

Average annual repair costs for 10 years after completion are estimated to be approximately 0.1% of the total direct cost, although it may vary substantially depending on the year.

4,980,000 MMK

- Mechanical Repair Cost

Mechanical repair cost is low for about 5 years after completion, but the replacement of parts and equipment will increase after 5 years. The average annual repair cost for 10 years is estimated to be approximately 0.2 % of the direct mechanical cost.

2,679,000 MMK

(5,787,000 + 4,980,000 + 2,679,000) = 13,446,000 MMK/year

5) Medical Gas

NGO has been donating medical gas to the Lashio General Hospital and no expenditures have been arisen. However, as there is no guarantee of continuous donation, the expenditure is added to the maintenance cost. As for Loikaw General Hospital, 1,500 thousand Kyat per year is estimated against 8,895 inpatients, the assumed annual number of inpatients after the completion of the Project. Based on this assumption, medical gas expenditure of Lashio General Hospital is estimated as 2,820 thousand Kyat, 88% bigger than that of Loikaw, as the number of assumed inpatients in Lashio is 16,724, 88% bigger than Loikaw. The cost for medical gas shall be also reflected with an inflation rate 13.0%.

2,820, 000 x 1.13 ≒ 3,187,000 MMK/year

6) Maintenance Cost for Elevators

Costs for monthly maintenance recommended by local distributors and the manufacturer are calculated below:

150US$ x 12 months x 963MMK/US$ ≒1,733,000 MMK/year

(3) Equipment Consumables Cost

The grand total cost of equipment consumables expected for the medical equipment in this project is 33,752,000 Kyat. The total cost for new and additional equipment is 25,097,000, the cost for upgraded equipment is 7,592,000 Kyat, and the cost for existing equipment is 1,807,000 Kyat. The total cost is 34,496,000 Kyat.

Table 2-39 Estimated Cost for Equipment Consumables

Expense Item	2012-13 Fiscal Year (MMK)	After Completion of the Project (MMK)	
Cost of Equipment Consumables	9,227,000	Updated Equipment	7,592,000
		New and Additional Equipment	25,097,000
Total	9,227,000		32,689,000

(4) Expected Budgetary Balance after Completion of the Project

Facility maintenance costs for 2012/13 fiscal are 75,121,000 Kyat, as shown in Table 5-3; however, recurring facility maintenance costs recorded specifically for this year, excluding that of CT-Scan building construction and the exterior wall painting, is 5,121,000 Kyat. Also, the cost of equipment consumables is 9,227,000 Kyat, and the total cost of recurring facility maintenance and equipment management is 14,348,000 Kyat.

Facility maintenance expenses including elevator maintenance cost for the 2017/18 fiscal year, the completion year of this project, is estimated to be 15,179,000 Kyat. Equipment consumables costs are estimated to be 32,689,000 Kyat. Therefore, the total cost of facility and equipment maintenance is estimated to be 47,868,000 Kyat.

On the other hand, Ministry of Health expenditures have been increasing annually by 20-30% since 2009/10. Budget allocation for Lashio General Hospital is also increasing annually by 30-35% accordingly. Hypothetically speaking, with the increased rate of expenditure by the Ministry of Health for 2008/09 being approximately 5.5%, and the budget allocation increase rate being lowered accordingly, the budget distribution amount of 449,000,000 Kyat in 2012/13 is estimated to be 767,000,000 in 2017/18.

As mentioned above, the percentage of facility and equipment maintenance costs within the distribution amount by the Ministry of Health (excluding the CT Scan Building and exterior wall paint cost) is 3.8 % in 2012/13 and is expected to be 6.2 %, increased by 2.4 %. This increase is acceptable.

2-5B Loikaw General Hospital

2-5B-1 Initial Cost Estimation

The initial project cost to be borne by Myanmar side for the implementation of the Project for Improving Loikaw General Hospital is 124 Million Kyat (approximately 12.69 million Yen), based on the estimation criteria shown below.

(1) Estimated Cost to be Borne by Myanmar Side : 124 Million Kyat: (Approx. 12.67 Million Yen)

Table 2-40 Estimated Cost to be Borne by Myanmar Side

Items to be borne by the Myanmar side	Estimated Cost	
	(Kyat)	(Yen)
(1) Related to Construction		
1) Demolition of the existing buildings (garage, isolation ward, shop and guard house)	2,328,000	237,456
2) Construction a garage newly	25,278,000	2,578,356
3) Construction of the new isolation ward	2,022,000	206,244
4) Transfer of an existing transformer position	4,815,000	491,130
5) Relocation of electrical poles and wires in Project site	3,886,000	394,332
6) Felling and removal of the existing trees and its roots in Project site	1,685,000	171,870
7) Removal of obstacles and land preparation of the Project site	4,113,000	419,526
8) Procurement and installation of general furniture, equipment and fittings, etc. not within the scope of Grant (curtain, shelf, bench for waiting area etc.)	59,224,000	6,040,848
(2) Related to Procedures		
1) Commissions (A/P, B/A and Payment)	20,885,000	2,130,270
Total	124,216,000	12,670,032

(3) Condition of Expenditure Projection

- Cost Estimation Time: December 2013
- Exchange Rate: 1US$=99.99Yen
  1Myanmar Kyat (MMK) ＝0.102Yen
- Construction and Procurement Period: Detail Planning and Construction and MEP work period is listed as in Implementation Schedule.
- Others: Cost Estimation shall be carried out based on the system of the Grant Aid by the Government of Japan.

2-5B-2 Operation and Maintenance Cost

The following is the operation and maintenance cost estimated for newly constructed facilities of the Loikaw General Hospital.

Table 2-41 Operation and Maintenance Cost

Item	2012/2013	After completion of the Project (2016/17)
	Actual Expenses(Kyat)	Estimated Cost (Kyat)
(1) Personnel expenses	214,422,736	256,385,000
(2) Operation and maintenance expenses	29,968,000	47,307,000
1) Office Supply	600,000	659,000
2) Electricity	9,750,000	18,532,000
3) Fuel/Oil Cost	800,000	2,136,000
4) Facility Maintenance Cost	5,326,000	15,728,000
5) Medical Gas	0	1,593,000
6) Elevator Maintenance Cost	0	1,733,000
7) Medical Equipment Consumables and Spare Parts Cost	3,393,000	6,926,000
Total	244,390,736	283,692,000

** Facility Maintenance Cost in 2012/ 13 is painting, facility repairmen cost, etc. which is approximately once every 3 years. Therefore, the estimated cost is based on its 1 year cost. 46,275,000/ 3 yrs=15,425,000*

【Calculation Background/ Reason】

(1)Personnel Expenses

At present, 37 doctors, 275 nurses 36 technicians and others are allocated, after the completion of the Project, and an equipment maintenance engineer will be allocated as additional staff.

Personal expense in 2016/17 is calculated by existing staff plus an additional engineer, plus inflation rate from 2012/13 to 2016/17. The predicted rate of inflation during this period is 19.57%[4]; however, the effect on personnel expenses is not great, and approximately half, or 9.8%, will be accounted for.

(214,422,736 Kyat + (72,000 Kyat x12)) x 1.098 ≒ 236,385,000 Kyat/year

(2)Operation and Maintenance Expense

1) Stationery

Stationery expense is calculated by the existing cost plus inflation rate from2012/13 to 2016/17.

600,000 Kyat x 1.098 ≒ 659,000 Kyat/year

2) Electricity

Electricity charge is calculated by increasing facility size and 20% of electrical and mechanical equipment from the existing one and plus inflation rate.

9,750,000 Kyat per year x 8800 /6100 x 1.2 x 1.098 ≒ 18,532,000 Kyat/year

[4] *World Economic Outlook Database (IMF, October 2013), multiplied the inflation of consumer prices from 2013 to the end of 2015.*

3) Fuel/ Oil

- Generator

One generator will be planned, and operation cost is calculated by consumer of oil. Operating generator for 5 days in a month, 30 minutes per day and plus inflation rate.

14 liter/hour x 0.5 hours x 5 days x 12 months x 823 Kyat ≒ 345,660 Kyat/year

345,660 Kyat/year x 1.098 ≒ 380,000 Kyat/year ……(a)

- Ambulance

Fuel cost of two ambulances is calculated by consumer of fuel. Fuel cost of the existing ambulance plus new ambulance and plus inflation rate.

800,000 Kyat/year x 2cars x 1.098 ≒ 1,756,000 Kyat/year ……(b)

(a) + (b) = 2,136,000 Kyat/year

4) Maintenance Cost

- Facilities repairing cost

Although the facilities repairing cost varies year by year, the average for 10 years after completion of the Project is assumed approximately 0.1 percent of the direct construction cost.

Approx. 9,128,000 Kyat/year ……(c)

- Building equipment repairing cost

The building equipment repairing cost will be small for the first five years after the completion of the Project. However, after the five years, replacement of spare parts or equipment itself will be necessary. The average cost of building equipment repair for first 10 years is assumed approximately 0.2 percent of the direct equipment cost.

Approx. 6,600,000 Kyat/year …… (d)

(c) + (d) = 15,728,000 Kyat/year

5) Medical Gas

Medical gas cost with 1,000,000 Kyat is allocated in Year 2013/14. Medical gas cost is calculated by the existing cost plus 50% increasing, plus inflation rate from 2013/14 to 2016/17, or 12.3%[5]. The half of the rate shall be adopted as well.

1,000,000 Kyat x 1.5 x 1.062 ≒ 1,603,000 Kyat

[5] *World Economic Outlook Database (IMF, October 2013), multiplied the inflation of consumer prices from 2014 to the end of 2015.*

6) Elevator Maintenance Cost

Monthly maintenance by professional engineer of manufacture's branch and local agents is planned which is recommended manufacture's branch and local agents.

150 US$ x 12 months x 963 Kyat = 1,733,000 Kyat

7) Equipment Consumables and Spare Parts Cost

Cost of consumables that is expected in medical equipment in this project is approximately 4,120,000Kyat (New/ Addition), 2,800,000 Kyat (Upgrade) and 6,920,000Kyat (Total).

Table 2-42 Estimated Cost for Equipment Consumables

Item	2012-13 Fiscal Year (MMK)	After Completion of the Project (MMK)	
Cost of equipment consumables	3,392,000	New/ Additional Equipment	4,125,000
		Upgraded Equipment	2,801,000
		Total	6,926,000

(3)Expected Budgetary Balance after Completion of the Project

Increasing personal expense for the existing staff and additional staff newly will be allocated by the Ministry of Health continuously. Accordingly, increment of budget allocation from the Ministry of Health is important to be secured operation and maintenance cost for the Loikaw General Hospital.

Operation and maintenance cost in 2012/13 including equipment consumables and spare parts was 29,968,000 Kyat, and after completion of the Project in 2016/17 the cost is estimated 47,307,000 Kyat.

Expenditure of the Loikaw General Hospital is increasing annually more than 6% from the preceding fiscal year since 2008/09, and expenditure of the hospital is expected to expand 6% annually to 2016/17, therefore, expenditure in 2016/17 is expected with 634,062,000 Kyat. On the other hand, operation and maintenance cost in 2012/13 is approximately 6.3% of the total expenditure of the year, and expecting operation and maintenance cost in 2016/17 is approximately 7.5% of the total expenditure of the year. This 7.5% is increasing of 1.2% of the total expenditure of the year, however increasing ratio is not much, therefore operation and maintenance cost of the Loikaw General Hospital is expected to be secured.

Chapter 3 Project Evaluation

Chapter 3 Project Evaluation

3-1 Preconditions

This project involves the removal of part of the existing facility on the premises of Lashio General Hospital and Loikaw General Hospital, and the reconstruction of the buildings which are aging and have become dangerous to continue health care activities. The project also necessarily involves the procurement of required medical equipment to replace the aging and inadequate existings. The premises of both hospitals are owned by the Ministry of Health and the acquisition of a building site is not a prerequisite. However, a prerequisite of implementing this project is that the Myanmar side performs the following necessary procedures as stated in "Chapter 2-3 Obligations of recipient country" without delay so that no hindrances to the project arise: tax-exemption measures, provision of access to imported materials and equipment, land usage authorization, banking arrangements/issuance of authorization to pay, and the removal of obstructions from the planned construction site, land maintenance work, infrastructural improvement, and relocation of existing equipment and furniture.

3-2 Necessary Inputs by Recipient Country

In order for this project to be achieved overall, the Myanmar side is required to implement the following items or carry out preparations appropriately:

- Implement the abovementioned items that are the counterpart nation's responsibility in "Chapter 2-3 Obligations of recipient country."
- Secure the necessary personnel and budget for the equipment to be used and procured or maintained in the facilities that will be constructed.

3-3 Important Assumptions

This project will construct facilities and procure medical equipment required at Lashio General Hospital and Loikaw General Hospital. It is hoped that these facilities and equipment will be utilized effectively by the hospital staff, and that the medical referral system will be strengthened and the medical services improved. In order to achieve the goal, under this project, soft components for medical equipment maintenance are planned. It is hoped that the equipment maintenance staff, as a counterpart of the soft component, will be nominated and continuously employed even after the soft components are completed, and the counterpart will be able to continually provide adequate maintenance. Also, it is hoped that adequate equipment maintenance will be spread to other staff in the hospital through the training by the counterpart, and the maintenance skill will be inherited even after the counterpart resigns in the future.

3-4 Project Evaluation

In light of the following points, this project has recognized relevance as a focus project through Japan's Grant Aid.

3-4-1 Relevance

(1) Focus of the project's benefits

The target area of the project is Shan State (North) in which the project site of Lashio General Hospital is located, and Kayah State in which Loikaw General Hospital is located. The catchment area of Lashio General Hospital is the whole Shan State (North) having a population of 1,800,000 (2011), and that of Loikaw General Hospital is including the whole Kayah State and the southern part of Shan State, which counts its catchment population up to 350,000. Those residents will be the direct beneficiary of the project. Both States are mainly occupied by minor races and most of them are poor segments.

The project will enhance the medical care services in the targeted states and contribute to the improvement of the health conditions of the inhabitants. Therefore, this project is deemed to be highly necessary and relevant.

(2) From a Human Security standpoint

Human Security is defined as a vision that focuses on each individual person and that protects the public from wide-ranging, serious threats to their survival, lifestyle and dignity. It is also deemed to be a vision that promotes the independence of sustainable individuals and the creation of a society through strengthening safeguards and abilities in order to achieve the rich potential of each individual. Through the implementation of this project, Lashio General Hospital and Loikaw General Hospital will have its facilities, equipment and system upgraded from which it delivers medical services as a core hospital in the region. As such, the project can be said to be consistent with the standpoint of human security and linked to improving public life.

(3) Contribution to achieving Myanmar's targets for its mid- to long-term development plan

This project contributes to ensure quality health care for citizens nationwide, which is one of the goal set forth in Myanmar’s long-term health development plan “Myanmar Health Vision 2030”. The government of Myanmar raises the improvement of curative services as a priority measure to achieve the above goal. Therefore, this project, which will strengthen the medical care services of regional core hospitals such as Lashio and Loikaw General Hospitals through the construction of hospital buildings and procurement of medical equipment, is exactly in line with the above policy of Myanmar.

(4) Consistency with Japan's Assistance Policy

The country assistance strategy for Myanmar stipulated in the Japan’s ODA data book by country (2012) established by the Ministry of Foreign Affairs of Japan posits following three sectors as a priority area of the assistance: (1) assistance to the improvement of people’s living (including local development, agricultural development, and assistance to minor races and poor segments through health care, disaster prevention, agriculture, etc. at the midpoint, (2) assistance to the human resources improvement and system development (including assistance to promote democratization), (3) assistance to the development of infrastructure and systems for continuous economic growth. This

project will assist improving health conditions of local inhabitants including minor races, which corresponds to (1) above, and therefore this project is sufficiently consistent with Japan's Assistance Strategy.

3-4-2 Effectiveness

Below are the expected target levels of implementing this project.

3-4-2A Lashio General Hospital

(1) Quantitative Effects

Table 3-1 Outcome Indicators for Quantitative Effects (Lashio General Hospital)

Indicators	Unit	Current Value (2012)	Target Value (2020) 【3 years after project completion】
No. of Total Outpatients (including revisits)	persons	31,719	36,600
No. of Inpatients	persons	13,745	16,700
No. of Operations with General Anesthesia	cases	310	360
Bed Occupancy Rate	%	101	80
No. of Referral to Upper Level Institutions by an ambulance	cases	28	60
No. of Referral from Lower Level Healthcare Facilities	cases	184	360

(2) Qualitative Effects

1) Improving the medical services at Lashio General Hospital will allow the acceptance of patients with adequate diagnosis and treatment and prompt response to severely ill patients that the hospital would not previously have been able to handle, and will contribute to optimizing the referral system as a regional core hospital.
2) Outpatients are now diagnosed and treated at each ward, therefore, the wards are crowded due to the intersection of inpatients and outpatients. Through the improvement of specialist outpatient department under this project, outpatients will be treated at specialist outpatient department and the congestion at the ward will be mitigated. Additionally, medical record management becomes easy by dividing inpatients and outpatients.
3) Existing imagery department is not protected enough against x-rays, and installing an x-ray room adequately protected will improve safety.
4) Motivation of medical staff will increase through the renewal of facilities and equipment.
5) Possibility of the recruitment of highly specialized medical practitioners will increase.

3-4-2B Loikaw General Hospital

(1) Quantitative Effects

Table 3-2 Outcome Indicators for Quantitative Effects (Loikaw General Hospital)

Indicators	Unit	Current Value (2010 to 2012*)	Target Value (2019) 【3 years after project completion】
No. of Total Outpatients (including revisits)	persons	20,706(2012)	22,777
No. of Inpatients	persons	8,086(2010)	8,895
No. of Deliveries	cases	1,053(2011)	1,158
No. of Operations with General Anesthesia	cases	566(2010)	623
No. of Referral from Lower Level Healthcare Facilities	cases	744(2012)	1,000

* Note: the maximum value is adopted as a maximum capacity of the existing hospital because the values have large variance for the past three years (2010 to 2012).

(2) Qualitative Effects

1) Putting the existing scattered medical departments together in one new building will allow provision of efficient and quality medical service.
2) Improving the medical services at Loikaw General Hospital will allow the acceptance of patients with adequate diagnosis and treatment and prompt response to severely ill patients that the hospital would not previously have been able to handle, and will contribute to optimizing the referral system as a regional core hospital.
3) Existing imagery department is not protected enough against x-rays, and installing an x-ray room adequately protected will improve safety.
4) Inpatients will be satisfactory at the point of privacy protection through shifting the ward room from existing large room type to small room (six people) type and private room.
5) Motivation of medical staff will increase through the renewal of facilities and equipment.
6) Possibility of the recruitment of highly specialized medical practitioners will increase.

Appendices

1. Member List of the Study 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

1-1 Outline Design Study — From 1, October to 2 November, 2013 (32 days)

	Position	Name	Period (2013)	Organization
1	Team Leader	Mr. Yojiro ISHII	1 Oct.～ 10 Oct.	Senior Advisor, Department of Human Resources for International Cooperation, JICA
2	Technical Advisor 1	Dr. Kenichi KOBAYASHI	1 Oct.～ 10 Oct.	Chief Senior Researcher, Department of Environmental Health, National Institute of Public Health
3	Technical Advisor 2	Dr. Naoko ISHIKAWA	1 Oct.～ 5 Oct.	Doctor, Bureau of International Medical Cooperation, National Center for Global Health and Medicine
4	Program Coordinator	Ms. Maki OZAWA	1 Oct.～ 10 Oct.	Deputy Director, Grant Aid Project Management Division 2, Financing Cooperation Implementation Department, JICA
5	Chief Consultant/ Architectural Planning	Mr. Hozumi OGAWA	1 Oct.～ 2 Nov.	Azusa Sekkei Co., Ltd.
6	Deputy Chief Consultant/ Architectural Design 1	Mr. Yasuhiro MATSUMOTO	1 Oct.～ 2 Nov.	Azusa Sekkei Co., Ltd.
7	Architectural Design 2/ Site Investigation	Mr. Eizo NAGASAWA	1 Oct.～ 2 Nov.	Yamashita Sekkei Inc.
8	Electrical & Mechanical Planning 1	Mr. Keiichi TSUKUDA	7 Oct.～ 21 Oct.	Azusa Sekkei Co., Ltd.
9	Electrical & Mechanical Planning 2	Mr. Eiichi TERAOKA	13 Oct.～ 2 Nov.	Yamashita Sekkei Inc.
10	Construction Planning/ Cost Estimation	Mr. Shigeru YASUMATSU	13 Oct.～ 2 Nov.	Yamashita Sekkei Inc.
11	Equipment Planning 1	Mr. Hironori NAKAJIMA	1 Oct.～ 2 Nov.	International Total Engineering Corporation (ITEC)
12	Equipment Planning 2	Mr. Yukihisa TAKAHASHI	1 Oct.～ 21 Oct.	International Total Engineering Corporation (ITEC)
13	Equipment Procurement Planning/ Cost Estimation	Mr. Akifumi FUKUTA	5 Oct.～ 25 Oct.	International Total Engineering Corporation (ITEC)
14	Health Planning	Ms. Keiko KOBAYASHI	1 Oct.～ 21 Oct.	Azusa Sekkei Co., Ltd.
15	Architectural Design 3	Mr. Satoshi INOUE	16 Oct.～ 27 Oct.	Azusa Sekkei Co., Ltd.

1-2 Explanation of the Draft Project Plan — From 14 to 28 December, 2013 (15 days)

	Position	Name	Period (2013)	Organization
1	Team Leader	Mr. Yojiro ISHII	22 Dec.～ 28 Dec.	Senior Advisor, Department of Human Resources for International Cooperation, JICA
2	Program Coordinator	Ms. Rie KOMAHASHI	18 Dec.～ 28 Dec.	Assistant Director, Planning and Coordination Division, Health Division 3, Health Group 2

	Position	Name	Period (2013)	Organization
				Human Development Department, JICA
3	Chief Consultant/ Architectural Planning	Mr. Hozumi OGAWA	14 Dec.～ 27 Dec.	Azusa Sekkei Co., Ltd.
4	Deputy Chief Consultant/ Architectural Design 1	Mr. Yasuhiro MATSUMOTO	14 Dec.～ 27 Dec.	Azusa Sekkei Co., Ltd.
5	Architectural Design 2/ Site Investigation	Mr. Eizo NAGASAWA	14 Dec.～ 27 Dec.	Yamashita Sekkei Inc.
6	Equipment Planning 1	Mr. Hironori NAKAJIMA	14 Dec.～ 2 Dec.	International Total Engineering Corporation (ITEC)

1-3 Explanation of the Draft Report

From 20 to 26, April, 2014 (7 days)

	Position	Name	Period (2014)	Organization
1	Team Leader	Mr. Yojiro ISHII	22 Apr.～ 26 Apr.	Senior Advisor, Department of Human Resources for International Cooperation, JICA
2	Chief Consultant/ Architectural Planning	Mr. Hozumi OGAWA	20 Apr.～ 26 Apr.	Azusa Sekkei Co., Ltd.
3	Deputy Chief Consultant/ Architectural Design 1	Mr. Yasuhiro MATSUMOTO	20 Apr.～ 26 Apr.	Azusa Sekkei Co., Ltd.
4	Architectural Design 2/ Site Investigation	Mr. Eizo NAGASAWA	20 Apr.～ 26 Apr.	Yamashita Sekkei Inc.
5	Equipment Planning 1	Mr. Hironori NAKAJIMA	20 Apr.～ 26 Apr.	International Total Engineering Corporation (ITEC)
6	Equipment Procurement Planning/ Cost Estimation	Mr. Akifumi FUKUTA	20 Apr.～ 26 Apr.	International Total Engineering Corporation (ITEC)

2. Study Schedule

2-1 Outline Design Study From 1, October to 2 November, 2013 (32 days)

No.	Date	Time	Activity
01	1 Oct. (Tue.)	10:30	Lv. NRT by NH-913 (Mr. Ishii, Dr. Ishikawa, Dr. Kobayashi, Ms. Ozawa, Mr. Ogawa & Mr. Matsumoto)
		14:50	Ar. RGN
		16:30	Courtesy Call to Embassy of Japan Ms. Ishihara, submit & explanation of the Inception Report& Questionnaire and confirmation of request items and schedule
		17:30	Courtesy Call to JICA Myanmar Office Ms. Nakatani, submit & explanation of the Inception Report& Questionnaire and confirmation of request items and schedule
		11:00	Lv. NRT by TG-641 (Mr. Nagasawa, Mr. Nakajima, Mr. Takahashi & Ms. Kobayashi)
		15:30	Ar. BKK
		17:50	Lv. BKK by TG-305
		18:45	Ar. RGN
02	2 Oct. (Wed.)	07:45	Lv. RGN by UB-619 (Mr. Ishii, Ms. Ozawa, Mr. Ogawa & Mr. Matsumoto)
		08:45	Ar. NPT
		10:00	Courtesy Call to MOH, Dr.Than Win DDG, Dr. Di Part MS of Lashio General Hospital & Dr. Nilar Soe MS of Loikaw General Hospital, submit & explanation of the Inception Report& Questionnaire and confirmation of request items and schedule
		12:30	Lv. NPT by car (Mr. Ishii & Mr. Ogawa)
		18:30	Ar. LKW
		12:30	Lv. NPT by car (Ms. Ozawa & Mr. Matsumoto)
		16:30	Ar. MDL
		10:30	Lv RGN by YH-505 (Dr. Kobayashi, Mr. Nagasawa & Mr. Nakajima)
		11:40	Ar. HEH
		14:00	Lv. HEH by car
		19:00	Ar. LKW
		11:00	Lv. RGN by YJ-751 (Dr. Ishikawa, Mr. Takahashi & Ms. Kobayashi)
		13:55	Ar. LSH
		15:00	Courtesy Call to Shan (North) State Health Department
		16:00	Courtesy Call to Lashio General Hospital.
03	3 Oct. (Thu.)	09:00 All day	Courtesy Call to Loikaw General Hospital including meeting and observation (Mr. Ishii, Dr. Kobayashi, Mr. Ogawa, Mr. Nagasawa & Mr. Nakajima)
		09:00 All day	Meeting and observation at Lashio General Hospital (Dr. Ishikawa, Mr. Takahashi & Ms. Kobayashi)
		05:30	Lv. MDL by car (Ms. Ozawa & Mr. Matsumoto)
		12:00	Ar. LSH
		14:00	Continuing meeting and observation with Lashio General Hospital
04	4 Oct. (Fri)	04:00	Lv. LKW to TYO via MDL (Dr. Kobayashi)
		09:00 All day	Continuing meeting and observation with Loikaw General Hospital (Mr. Ishii, Mr. Ogawa, Mr. Nagasawa & Mr. Nakajima)
		09:00 All day	Continuing meeting and observation with Lashio General Hospital (Dr. Ishikawa, Ms. Ozawa, Mr. Matsumoto, Mr. Takahashi & Ms. Kobayashi)
05	5 Oct. (Sat.)	09:00	Continuing observation with Loikaw General Hospital (Mr. Ishii, Mr. Ogawa, Mr. Nagasawa, & Mr. Nakajima)
		14:00	Filing documents
		09:00	Continuing meeting and observation with Lashio General Hospital (Dr. Ishikawa, Ms. Ozawa, Mr. Matsumoto, Mr. Takahashi & Ms. Kobayashi)
		14:00	Filing documents
		11:00	Lv. NRT by TG-641 (Mr. Fukuta)
		15:30	Ar. BKK
		17:50	Lv. BKK by TG-305
		18:45	Ar. RGN
06	6 Oct. (Sun)	09:00	Explanation of the result of investigation report and supplementary questions to the MS at Loikaw General Hospital (Mr. Ishii, Mr. Ogawa, Mr. Nagasawa & Mr. Nakajima)
		12:30	Lv. LKW by car
		18:30	Ar. NPT

No.	Date	Time	Activity
		09:00	Explanation of the result of investigation report and supplementary questions to the MS at Lashio General Hospital (Dr. Ishikawa, Ms. Ozawa, Mr. Matsumoto, Mr. Takahashi & Ms. Kobayashi)
		13:00	Lv. LSH by car (Dr. Ishikawa, Ms. Ozawa, Mr. Matsumoto & Ms. Kobayashi)
		17:00	Ar. MDL
		09:00 All day	Equipment investigation at Lashio General Hospital (Mr. Takahashi)
		11:00	Lv. RGN by YJ-751(Mr. Fukuta)
		13:55	Ar. LSH
		15:00	Courtesy Call to Lashio General Hospital
07	7 Oct. (Mon.)	09:00	Internal Meeting (Mr. Ishii, Mr. Ogawa, Mr. Nagasawa & Mr. Nakajima)
		08:00	Lv. MDL by car (Dr. Ishikawa, Ms. Ozawa, Mr. Matsumoto & Ms. Kobayashi
		12:00	Ar. NPT
		14:00	Internal Meeting about the Minutes and the investigation report (Mr. Ishii, Dr. Ishikawa, Ms. Ozawa, Mr. Ogawa, Mr. Matsumoto, Mr. Nakajima, Mr. Nagasawa, & Ms. Kobayashi)
		09:00 All day	Equipment investigation at Lashio General Hospital (Mr. Takahashi & Mr. Fukuta)
		11:00	Lv. NRT by TG-641 (Mr. Tsukuda)
		15:30	Ar. BKK
		17:50	Lv. BKK by TG-305
		18:45	Ar. RGN
08	8 Oct. (Tue.)	09:00	Internal Meeting about the Minutes and the investigation report (Mr. Ishii, Dr. Ishikawa, Ms. Ozawa, Mr. Ogawa, Mr. Matsumoto, Mr. Nakajima, Mr. Nagasawa, & Ms. Kobayashi)
		12:00	
		14:00	Report to Mr. Inada, Senior Representative, JICA, about Minutes Report to Dr. Than Win, DDG, MOH about the Minutes and confirmed it. But he will sign it, after he will confirm it to the Minister.
		09:00 All day	Equipment investigation at Lashio General Hospital (Mr. Takahashi & Mr. Fukuta)
		09:00 All day	Electrical & Mechanical material investigation at RGN (Mr. Tsukuda)
09	9 Oct. (Thu.)	07:00	Lv. NPT by car (Mr. Nagasawa, Mr. Nakajima & Mr. Kobayashi)
		18:00	Ar. LKW
		08:50	Lv. NPT YJ-902 (Mr. Ishii, Dr. Ishikawa & Ms. Ozawa)
		10:10	Ar. RGN
		12:15	Lv. NPT by UB-622 (Mr. Ogawa & Mr. Matsumoto)
		13:00	Ar. RGN
		15:00	Report the investigation report to Ms. Arima, Second Secretary, EOJ and Ms. Nakatani, Project Formulation Advisor, JICA (Mr. Ishii, Dr. Ishikawa, Ms. Ozawa, Mr. Ogawa & Mr. Matsumoto)
		21:45	Lv. RGN by NH-914 (Mr. Ishii, Dr. Ishikawa & Ms. Ozawa)
		09:00 All day	Equipment investigation at Lashio General Hospital (Mr. Takahashi & Mr. Fukuta)
		11:00	Lv. RGN by YJ-751 (Mr. Tsukuda)
		13:55	Ar. LSH
		15:00	Courtesy Call to Lashio General Hospital
10	10 Oct. (Wed.)	06:50	Ar. NRT (Mr. Ishii, Dr. Ishikawa & Ms. Ozawa)
		09:00	Meeting with the boring company and contract (Mr. Ogawa & Mr. Matsumoto)
		10:00	Meeting with the surveying company and contract
		16:30	Report and submit the meeting books for the boring & the surveying to Ms. Nakatani, Project Formulation Advisor, JICA
		09:00 All day	Continuing observation of Lashio General Hospital (Mr. Tsukuda, Mr. Takahashi & Mr. Fukuta)
		09:00 All day	Continuing observation of Loikaw General Hospital (Mr. Nagasawa, Mr. Nakajima & Ms. Kobayashi)

No.	Date	Time	Activity
11	11 Oct. (Fri.)	12:00	Lv. RGN by YH-729 (Mr. Ogawa & Mr. Matsumoto)
		14:55	Ar. LSH
		16:00	Continuing observation of Lashio General Hospital
		09:00 All day	Continuing observation of Lashio General Hospital (Mr. Tsukuda, Mr. Takahashi & Mr. Fukuta)
		09:00 All day	Continuing observation of Loikaw General Hospital (Mr. Nagasawa, Mr. Nakajima & Ms. Kobayashi)
12	12 Oct. (Sat.)	09:00	Continuing observation of Lashio General Hospital (Mr. Ogawa, Mr. Matsumoto, Mr.
		14:00	Tsukuda, Mr. Takahashi & Mr. Fukuta)
			Internal meeting and filing documents
		09:00	Continuing observation of Loikaw General Hospital (Mr. Nagasawa, Mr. Nakajima & Ms. Kobayashi)
		14:30	Internal meeting and filing documents
13	13 Oct. (Sun.)	09:00	Continuing observation of Lashio General Hospital (Mr. Ogawa, Mr. Matsumoto, Mr. Tsukuda, Mr. Takahashi & Mr. Fukuta)
		14:00	Internal meeting and filing documents
		09:00	Continuing observation of Loikaw General Hospital (Mr. Nagasawa, Mr. Nakajima & Ms. Kobayashi)
		14:30	Internal meeting and filing documents
		11:00	Lv. NRT by TG-641 (Mr. Teraoka & Mr. Yasumatsu)
		15:30	Ar. BKK
		17:50	Lv. BKK by TG-305
		18:45	Ar. RGN
14	14 Oct. (Mon.)	09:00 All day	Continuing observation of Lashio General Hospital (Mr. Ogawa, Mr. Matsumoto, Mr. Tsukuda, Mr. Takahashi & Mr. Fukuta)
		09:00 All day	Continuing observation of Loikaw General Hospital (Mr. Nagasawa, Mr. Nakajima & Ms. Kobayashi)
		10:30	Lv. RGN by YH-505 (Mr. Teraoka & Mr. Yasumatsu)
		11:40	Ar. HEH
		14:00	Lv. HEH by car
		19:00	Ar. LKW
15	15 Oct. (Tue.)	09:00 All day	Continuing observation of Lashio General Hospital (Mr. Ogawa, Mr. Matsumoto, Mr. Tsukuda, Mr. Takahashi & Mr. Fukuta)
			Start of surveying
		09:00 All day	Continuing observation of Loikaw General Hospital (Mr. Nagasawa, Mr. Teraoka, Mr.Yasumatsu, Mr. Nakajima & Ms. Kobayashi)
16	16 Oct. (Thu.) Date of Islam	09:00	Continuing observation of Lashio General Hospital (Mr. Ogawa, Mr. Matsumoto, Mr. Tsukuda, Mr. Takahashi & Mr. Fukuta)
		14:00	Filing documents at Hotel
		09:00	Continuing observation of Loikaw General Hospital (Mr. Nagasawa, Mr. Teraoka, Mr.Yasumatsu & Mr. Nakajima)
		14:00	Filing documents at Hotel
		09:00	Lv. LKW by car (Ms. Kobayashi)
		15:00	Ar. HEH
		15:55	Lv. HEH by YJ-791
		18:45	Ar. RGN
		16:00	Lv. NRT by TG-641 (Mr. Inoue) Time schedule changed because of Typhoon
		20:30	Ar. BKK
17	17 Oct. (Wed.)	09:00 All day	Continuing observation of Lashio General Hospital (Mr. Ogawa, Mr. Matsumoto, Mr. Tsukuda, Mr. Takahashi & Mr. Fukuta)
		09:00 All day	Continuing observation of Loikaw General Hospital (Mr. Nagasawa, Mr. Teraoka, Mr.Yasumatsu & Mr. Nakajima)
		09:00 All day	Visiting of aid agencies at RGN (Ms. Kobayashi)
		08:00	Lv. BKK by TG-303 (Mr. Inoue)
		08:45	Ar. RGN

No.	Date	Time	Activity
		11:00	Lv. RGN by YH-729
		13:55	Ar. LSH
		16:00	Observation of Lashio General Hospital
18	18 Oct. (Fri.)	09:00	Continuing observation of Loikaw General Hospital (Mr. Nagasawa, Mr. Teraoka, Mr.Yasumatsu & Mr. Nakajima)
		13:45	Courtesy call to Kayah State Government Office, Loikaw & Kayah State Development Committee Office, Loikaw
		09:00	Continuing observation of Lashio General Hospital (Mr. Ogawa, Mr. Matsumoto, Mr. Tsukuda, Mr. Takahashi, Mr. Fukuta & Mr. Inoue)
		14:00	Internal meeting
		16:50	Lv. LSH by YJ-752 (Mr. Ogawa)
		17:35	Ar. MDL
		16:50	Lv. LSH by YJ-752 (Mr. Tsukuda, Mr. Takahashi & Mr. Fukuta)
		19:10	Ar. RGN
		09:00 All day	Visiting of aid agencies at RGN (Ms. Kobayashi)
19	19 Oct. (Sat.)	09:00 All day	Continuing observation of Loikaw General Hospital (Mr. Nagasawa, Mr. Teraoka, Mr.Yasumatsu & Mr. Nakajima)
		08:00	Lv. MDL by car (Mr. Ogawa)
		18:00	Ar. LKW
		09:00 All day	Continuing observation of Lashio General Hospital (Mr. Matsumoto & Mr. Inoue)
		09:00 All day	Meeting with local suppliers at RGN (Mr. Takahashi & Mr. Fukuta)
		09:00 All day	Visiting of aid agencies at RGN (Ms. Kobayashi)
20	20 Oct. (Sun.)	All day	Internal meeting and filing documents at Loikaw General Hospital (Mr. Ogawa, Mr. Nagasawa, Mr. Teraoka, Mr. Yasumatsu & Mr. Nakajima)
		All day	Internal meeting and filing documents at Lashio General Hospital (Mr. Matsumoto & Mr. Inoue)
		All day	Filing documents (Mr. Takahashi, Mr. Fukuta & Ms. Kobayashi)
		19:40	Lv. RGN by TG-306 (Mr. Tukuda, Mr. Takahashi & Ms. Kobayashi)
		21:35	Ar. BKK
		23:55	Lv. BKK by TG-642
21	21 Oct. (Mon.)	07:35	Ar. NRT (Mr. Tukuda, Mr. Takahashi & Ms. Kobayashi)
		09:00 All day	Continuing observation of Loikaw General Hospital (Mr. Ogawa, Mr. Nagasawa, Mr. Teraoka, Mr. Yasumatsu & Mr. Nakajima)
		09:00 All day	Continuing observation of Lashio General Hospital (Mr. Matsumoto & Mr. Inoue)
		09:00 All day	Meeting with local supplier at RGN (Mr. Fukuta)
22	22 Oct. (Tue.)	09:00 All day	Continuing observation of Loikaw General Hospital (Mr. Ogawa, Mr. Nagasawa, Mr. Teraoka, Mr. Yasumatsu & Mr. Nakajima)
		09:00 All day	Continuing observation of Lashio General Hospital ((Mr. Matsumoto & Mr. Inoue)
		09:00 All day	Meeting with local supplier (Mr. Fukuta)
23	23 Oct. (Wed.)	09:00 All day	Continuing observation of Loikaw General Hospital (Mr. Ogawa, Mr. Nagasawa, Mr. Teraoka & Mr. Nakajima)
		09:00	Lv. LKW by car (Mr. Yasumatsu)
		16:00	Ar. NPT
		09:00 All day	Continuing observation of Lashio General Hospital (Mr. Matsumoto & Mr. Inoue)
		09:00 All day	Meeting with local supplier at RGN (Mr. Fukuta)

No.	Date	Time	Activity
24	24 Oct. (Thu.)	09:00	Continuing observation of Loikaw General Hospital (Mr. Ogawa, Mr. Nagasawa, Mr.
		All day	Teraoka & Mr. Nakajima)
		09:00	Continuing observation of Lashio General Hospital (Mr. Matsumoto & Mr. Inoue)
		16:50	Lv. LSH by YJ-752
		19:10	Ar. RGN
		09:00	Investigation of Tax exemption and custom clearance at NPT (Mr. Yasumatsu)
		All day	
		09:00	Meeting with local supplier at RGN (Mr. Fukuta)
		19:40	Lv. RGN by TG-306
		21:35	Ar. BKK
		23:55	Lv. BKK by TG-642
25	25 Oct. (Fr.)	07:35	Ar. NRT (Mr. Fukuta)
		07:45	Lv. RGN by UB-619 (Mr. Matsumoto)
		08:45	Ar. NPT
		09:30	Lv LKW by car (Mr. Ogawa, Mr. Nagasawa, Mr. Teraoka & Mr. Nakajima)
		17:30	Ar. NPT
		09:00	Investigation of maintenance system and budget at MOH, NPT (Mr. Yasumatsu)
		All day	
		09:00	Investigation of building circumstances at RGN (Mr. Inoue)
		All day	
26	26 Oct. (Sat.)	09:00	Internal Meeting for Technical Note and Report at NPT (Mr. Ogawa, Mr. Matsymoto,
		All day	Mr. Nagasawa, Mr. Teraoka, Mr. Yasumatsu & Mr. Nakajima)
		09:00	Investigation of building circumstances at RGN (Mr. Inoue)
		19:40	Lv. RGN by TG-306
		21:35	Ar. BKK
		23:55	Lv. BKK by TG-642
27	27 Oct. (Sun.)	07:35	Ar. NRT (Mr. Inoue)
		10:00	Internal meeting for Technical Note and Report at NPT (Mr. Ogawa, Mr. Matsumoto,
		All day	Mr. Nagasawa, Mr. Teraoka, Mr. Yasumatsu & Mr. Nakajima)
28	28 Oct. (Mon.)	11:00	Received signed Minutes
			Explanation of Technical Notes to Dr.Than Win, DDG, MOH (Mr. Ogawa, Mr.
			Matsumoto, Mr. Nagasawa, Mr. Teraoka, Mr. Yasumatsu & Mr. Nakajima)
29	29 Oct. (Tue.)	09:00	Submit signed Technical Notes to Dr.Than Win, DDG, MOH (Mr. Ogawa, Mr.
			Matsumoto, Mr. Nagasawa, Mr. Teraoka, Mr. Yasumatsu & Mr. Nakajima)
30	30 Oct. (Wed.)	10:00	Lv. NPT by car (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa, Mr. Teraoka, Mr.
		15:40	Yasumatsu & Mr. Nakajima)
		17:00	Ar. RGN
			Report to JICA (Mr. Ogawa, Mr. Matsumoto & Mr. Nakajima)
31	31 Oct. (Thu.)	09:30	Observation of New Yangon Hospital (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa, Mr.
			Teraoka, Mr. Yasumatsu & Mr. Nakajima)
		11:00	Observation of Yangon Hospital
		13:00	Supplementary survey and filing documents
32	1 Nov. (Fri.)	21:45	Lv, RGN by NH-914 (Mr. Ogawa & Mr. Matsumoto)
		19:40	Lv. RGN by TG-306 (Mr. Nagasawa, Mr. Teraoka, Mr. Yasumatsu & Mr. Nakajima)
		21:35	Ar. BKK
		23:55	Lv. BKK by TG-642
33	2 Nov. (Sat.)	06:50	Ar. NRT (Mr. Ogawa & Mr. Matsumoto)
		07:35	Ar. NRT (Mr. Nagasawa, Mr. Teraoka, Mr. Yasumatsu & Mr. Nakajima)

2-2 Explanation of the Draft Project Plan

From 14 to 28 December, 2013 (15 days)

No.	Date	Time	Activity
01	14 Dec. (Sat.)	11:00	Lv. NRT by TG-641 (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa, Mr. Nakajima)
		16:00	Ar. BKK
		17:55	Lv. BKK by TG-305
		18:45	Ar. RGN
02	15 Dec. (Sun)	11:00	Lv. RGN by W9-203 (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa, Mr. Nakajima)
		12:10	Ar. HEH
		12:40	Lv. HEH by car
		17:35	Ar. LKW
03	16 Dec. (Mon.)	09:00	Courtesy Call to Loikaw General Hospital including explanation of the Project (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa and Mr. Nakajima) Observation of New Pediatric Ward (Mr. Ogawa, Mr. Matsumoto, and Mr. Nakajima) Meeting with Electrical Corporation (Nagasawa)
		14:00	Courtesy Call to Kayah State Health Department including explanation of the Project (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa and Mr. Nakajima)
04	17 Dec. (Tue.)	09:00	Meeting with Loikaw General Hospital for building and equipment (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa and Mr. Nakajima)
		14:30	Courtesy Call to Kayah State Government Office, Loikaw including explanation of the Project (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa and Mr. Nakajima)
		15:45	Meeting with Loikaw General Hospital for demolish facilities, trees and etc. at the site
05	18 Dec. (Wed.)	09:00	From LKW to HEH by car (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa and Mr. Nakajima)
		14:00	Ar. HEH
		16:25	Lv. HEH by YH-731
		17:00	MDL
		11:45	Lv. NRT by NH-913 (Ms. Komahashi)
		17;15	Ar. RGN
06	19 Dec. (Thu.)	08:10	Lv. MDL by Y5-233 (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa and Mr. Nakajima)
		09:30	Ar. RGN
		10:00	Lv. RGN by YH-233 (Ms. Komahashi, Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa and Mr. Nakajima)
		12:00	Ar. LSH
		12:30	Courtesy Call to Shan (North) State Health Department including explanation of the Project
		14:30	Courtesy Call to Lashio General Hospital including explanation of the Project and observation of hospital
07	20 Dec. (Fri.)	09:00 All day	Meeting with Lashio General Hospital for building and equipment (Ms. Komahashi, Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa and Mr. Nakajima
08	21 Dec. (Sat.)	16:45	Lv. LSH by YH-732 (Ms. Komahashi)
		19:15	Ar. RGN
		10:00	Lv. LSH to MDL by car (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa and Mr. Nakajima)
		17:00	Ar. MDL
09	22 Dec. (Sun.)	10:30	Lv. NRT by NH-913 (Mr. Ishii)
		15;15	Ar. RGN
		All day	Filing documents (Ms. Komahashi)
		All day	Internal meeting and filing documents (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa and Mr. Nakajima)
10	23 Dec. (Mon.)	16:30	Lv. RGN by FMI (Mr. Ishii and Ms. Komahashi)
		17:30	Ar. NPT
		10:00	Lv. MDL to NPT by car (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa and Mr. Nakajima)
		14:30	Ar. NPT
		19:00	Internal meeting (Mr. Ishii, Ms. Komahashi, Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa and Mr. Nakajima)
11	24 Dec. (Tue)	11:00	Internal meeting at JICA Office at the Thingaha (Mr. Ishii, Ms. Komahashi, Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa and Mr. Nakajima)
		13:00	Courtesy Call to Dr. Min Than Nyunt, DG, Ministry of Health, explanation of the Project

No.	Date	Time	Activity
			and signing of the Technical Note
12	25 Dec. (Wed.) Holiday	All day	Internal meeting and filing documents (Mr. Ishii and Ms. Komahashi)
		10:00	Lv. NPT to RGN by car (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa and Mr. Nakajima)
			Ar. RGN
13	26 Dec. (Tue)	10:00	Signing of the Minutes with Dr. Min Than Nyunt, DG, MOH (Mr. Ishii and Ms. Komahashi)
		18:25	Lv. NPT by YJ-792
		19:45	Ar. RGN
		09:00	Meeting with environmental survey companies (Mr. Ogawa and Mr. Matsumoto)
		10:30	Supplementary Survey (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa and Mr. Nakajima)
		19:40	Lv. RGN by TG-306
		21:35	Ar. BKK
		23:55	Lv. BKK by TG-642
14	27 Dec. (Fri.)	10:00	Report to JICA and Embassy of Japan (Mr. Ishii and Ms. Komahashi)
		21:45	Lv. RGN by NH-914
		07:35	Ar. NRT (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa and Mr. Nakajima)
15	28 Dec. (Sat.)	06:50	Ar. NRT (Mr. Ishii and Ms. Komahashi)

1-3 Explanation of the Draft Report

From 20 to 26, April, 2014 (7 days)

No.	Date	Time	Activity
01	20 Apr. (Sun.)	10:35	Lv. HND by TG-683 (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa, Mr. Nakajima and Mr. Fukuta)
		15:05	Ar. BKK
		17:50	Lv. BKK by TG-305
		18:45	Ar. RGN
02	21 Apr. (Mon.) Holiday	08:00	Lv. RGN by K7-266 (Mr. Ogawa, Mr. Nagasawa and Mr. Nakajima)
		09:15	Ar. HEH
		09:30	Lv. HEH by car
		14:00	Ar. LKW
		15:00	Courtesy Call to Loikaw General Hospital including explanation of the Project (Mr. Ogawa, Mr. Nagasawa and Mr. Nakajima)
		10:00	Lv. RGN by YJ-751 (Mr. Matsumoto and Mr. Fukuta)
		12:00	Ar. LSH
		14:00	Meeting with Lashio General Hospital including explanation of the Project (Mr. Matsumoto and Mr. Fukuta)
03	22 Apr. (Tue.)	11:45	Lv. NRT by NH-913 (Mr. Ishii)
		17:15	Ar. RGN
		09:00	Courtesy Call to Loikaw General Hospital including explanation of the Draft Report (Mr. Ogawa, Mr. Nagasawa and Mr. Nakajima)
		10:00	Meeting with Electricity Supply Enterprise (ESE)
		11:00	Meeting with Fire Station
		13:00	Courtesy Call to Kayah State Health Department including explanation of the Project
		14:30	Supplementary Survey at Loikaw General Hospital
		09:00	Meeting with Lashio General Hospital including explanation of the Draft Report (Mr. Matsumoto and Mr. Fukuta)
		14:00	Supplementary Survey at Lashio General Hospital
04	23 Apr. (Wed.)	11:30	Lv. RGN by FMI-B1 (Mr. Ishii)
		12:30	Ar. NPT
		09:00	Lv. LKW by car (Mr. Ogawa, Mr. Nagasawa and Mr. Nakajima)
		15:00	Ar. NPT
		06:00	LV. LSH by car (Mr. Matsumoto and Mr. Fukuta)
		17:30	Ar. NPT

No.	Date	Time	Activity
		19:00	Internal meeting of site survey report (Mr. Ishii, Mr. Ogawa, Mr. Matsumoto Mr. Nagasawa, Mr. Nakajima and Mr. Fukuta)
05	24 Apr. (Thu.)	09:00	Internal meeting of draft Minutes of Meeting (Mr. Ishii, Mr. Ogawa, Mr. Matsumoto Mr. Nagasawa, Mr. Nakajima and Mr. Fukuta)
		14:00	Courtesy Call to Dr. Min Than Nyunt, DG, Ministry of Health, explanation of the Draft Report (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa, Mr. Nakajima and Mr. Fukuta)
		16:00	Signing of the Minutes of Meeting
06	25 Apr. (Fri.)	08:50	Lv. NPT by FMI-A2 (Mr. Ishii, Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa, Mr. Nakajima and Mr. Fukuta)
		09:50	Ar. RGN
		11:30	Report to JICA
		14:30	Report to Embassy of Japan
		21:45	Lv. RGN by NH-914 (Mr. Ishii)
		19:45	Lv. RGN by TG-306 (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa, Mr. Nakajima and Mr. Fukuta)
		21:40	Ar. BKK
		22:45	Lv. BKK by TG-682
07	26 Apr. (Sat.)	06:45	Ar. NRT (Mr. Ishii)
		06:55	Ar. HND (Mr. Ogawa, Mr. Matsumoto, Mr. Nagasawa, Mr. Nakajima and Mr. Fukuta)

3. List of Parties Concerned in the Recipient Country

Organization	Position	Name
Ministry of Health	Director General Department of Health (DOH)	Dr. Min Than Nyunt
	Deputy Director General, DOH	Dr. Than Win
	Director (MC), DOH	Dr. Khin Win Thet
	Deputy Director (MC), DOH	Dr. Moe Khaing
	Assistant Director (MC), DOH	Dr. Win Min Thiri
	Deputy Director (Admin), DOH	Dr. Daw San Myint
Central Medical Store Depot (CMSD)	Assistant Director Engineering Department	Ms. Hnin Hnin Lwin
	Administration Officer Engineering Department	Mr. U Zaw Min Htike
	Assistant Engineer (Electrical) Engineering Department	Mr. U Than Hlaing
	Assistant Engineer (Electrical) Engineering Department	Mr. U Kyaw Zaw Oo
	Assistant Director Medical Store Department	Dr. Khin Thi Treaye
Lashio General Hospital	Medical Superintendent(MS)	Dr. Di Part
	Assistant Deputy MS	Dr. Zin Zin Than Wai
	Senior Consultant, Physician Medical Ward	Dr. Daw Aye Aye Mu
	Senior Consultant. Radiology Department	Dr. Than Than Soe
	Junior Consultant, Surgical Ward	Dr. U Myint Thaung
	Senior Pediatrician, Pediatric Ward	Dr. Daw Myint Myint Thein
	Assistant Surgeon Paediatric Ward	Dr. Ei Mon Soe
	Senior Consultant Obstetrics/Gynecology Department	Dr. Daw Khein Ohnmar Kyaw
	Senior Consultant, Forensic Surgeon Forensic Department	Dr. L Win Oo
	Senior Consultant Anesthetist, Operation Theater	Ms. Khin Win Nwe
	Specialist Assistant Surgeon, Orthopedic Department	Dr. Saw Thaw Thece Hroo
	Dentist, Dental Department	Dr. Tun Tun Win
	Doctor, ENT Department	Dr. Min Aung Soe
	Biochemical Technician, Laboratory	Ms. Daw Lwin Thidau Pyae
	Physiotherapist, Physical Medicine & Rehabilitation Unit	Ms. Aye Aye Aung
	Pharmacist, Pharmacy Department	Ms. A Thi Win Shwe
	Sister, Operation Theater	Ms. Ng Khin Win Myint
	Sister, Operation Theater	Ms. Myint Myint Than
	Sister, Surgical Ward	Ms. L Khawn Din
	Sister, ICU	Ms. D' Ye Ye Lwin
	Sister, Orthopedic Ward	Ms. Aiang Khiai Thaung
	Sister,	Ms. Daw Nang Aye Phyu

Organization	Position	Name
	Medical Ward	
	Sister, Medical Ward (for maintenance of Equipment)	Ms. Daw Nang Mo Hon
	Sister, Obstetrics/Gynecology Department	Ms. Naw Gaily
	Sister, Pediatric Ward	Ms. Daw Naw Than Than Aye
	Sister, For Neonate (maintaining the machine)	Ms. Daw L Kaung Lene
	Sister, Eye Department	Ms. Khn Ag Lun
	Head Clerk, Office Supervisor	Mr. Ye Mya
	Steward	Mr. Kyaw Kyaw Tun
	Assistant Supervision	Mr. Tun Tun Oo
Shan (North) State Health Department	Associate State Health Director	Dr. Zaw Min Htun
	State AIDS/STD Officer	Dr. Myint Kyaw
Hospital Ayu Suka (Private)	Director	Dr. Soe Lin
Sub State Development Committee	Commissioner	Mr. Tin Maung Kyaw
Township Development Committee	Commissioner	Mr. Kyaw Moe Khaing
Sub State Public Works Department	Architectural Engineer	Mr. Aung Aung
City Glory Co., Ltd., Lashio	Electrical Engineer	Mr. Win Kyi
Fire Department, Lashio	Officer	Mr. Ko Ko Oo
Loikaw General Hospital	Medical Superintendent	Dr. Nilar Soe
	Assistant Medical Superintendent (until December, 2013)	Dr. Naw Say Paw Wah
	Assistant Medical Superintendent (from April, 2014)	Dr. Khit A Ke Kyam
	Administration Officer	Mr. Aung San Tun
	Senior Consultant, Surgical Department	Dr. Sein Soe Wynn
	Senior Consultant, Obstetrics Gynecologist, OB GY Department	Dr. Thanda Kyaw
	Senior Consultant, Pediatrician, Pediatric Department	Dr. Kyi Tha Myo Wynn
	Senior Orthopedic Surgeon, Orthopedic Department	Dr. Zaw Min Lwin
	Senior Assistant Surgeon, Aesthetician, Operation Theatre	Dr. Khin Mar Yee
	Consultant Radiology	Dr. Aung San Win
	Junior Consultant, Ophthalmologist, Eye Department	Dr. Hnin Pwint Phyu
	Junior Consultant, Pathologist, Pathology Department	Dr. Myat Myat Hnin
	Junior Consultant, Dental Surgeon, Dental Department	Dr. Saw Muler Htoo
	Junior Consultant, OG Department	Dr. Win Win Htut
	Junior Consultant, PM & R Department	Dr. Thet Thet Aung
	Specialist Assistant Surgeon, ENT Department	Dr. Mu Mu Myint
	Chief Physiotherapist, Physiotherapy Department	Ms. Su Su Lwin
	Sister, Medical Department	Ms. Thwe Htoo
	Skilled Electrical Worker	Mr. Pay Yalu
	Skilled Electrical Worker	Mr. Rafa Aye La

Organization	Position	Name
Kayah State Government Office, Loikaw	Minister of Security & Border Affair	Colonel Zay Myo Tin
	Minister of Social Affair	Mr. Koe Reh
	Secretary of Regional State Government	Mr. Maung Maung Htay
Kayah State Health Deprtment	Director	Dr. Tun Aung Kyi
Kayah State Development Committee Office, Loikaw	Deputy Director	Mr. Kyaw Thu
	Assistant Engineer	Mr. Saw Nay Klee
Myanmar Post & Telecommunication, Loikaw	State Manager (MPT)	Mr. Thet Maw
Fire Station, Loikaw	Officer	Mr. Han Soe
AYAR MYAT PYAY (Contractor of Pediatric Ward at Loikaw State General Hospital)	Managing Director	Mr. U Kyi Soe
MYA YAR PIN CO., LTD.	Managing Director	Mr. Thaung Sein
MANDALAY TECHNOLOGY	Executive Director	Mr. Thura
	Executive Director	Ms. Su Su Wai
Yee Shin Co., Ltd. (Local Agent for Medical Equipment)	Director,	Dr. Kyi Shin
	Senior Manager	Mr. Htin Kyaw
Concordia Co., Ltd. (Local Agent for Medical Equipment)	Managing Director	Dr. Than Win
	Medical Manager, Product Specialist	Dr. San Yu Kyaw
Myanmar Yutani Co., Ltd. (Local Agent for Medical Equipment)	Managing Director	Mr. Yoshinori KOMARU
Amtt Co., Ltd. (Local Agent for Medical Equipment)	Managing Director	Mr. Aung Myo Tun
	Assistant General Manager	Ms. Maw Maw Thein
	Shimadzu (Asia Pacific) Pte Ltd	Mr. Haruyoshi AOKI
	Shimadzu Corporation	Mr. Hiroshi SAWADA
Okkar Thiri Co., Ltd. (Local Agent for Medical Equipment)	Chairman	Dr. San San Yi
	C.E.O	Mr. Christophe Felix
	Manager, Service Department	Mr. Arne Langenkamp
HTET Dental Clinic (Local Agent for Medical Equipment)	Dentist	Dr. Nay Myo Hlaing
	Dentist	Dr. Sandar Nyunt
T.T.A.S. Co., Ltd. (Toyota Tsusho Aye and Son) (Local Agent for Medical Equipment)	General Manager, Vehcle Sales & Marketing Dept.,	Mr. Myo Myint Thein
	Toyota Tsusho Corporation	Mr. Motoyasu ICHIKAWA
Mectronic General Electrical Products (Local Agent for Medical Equipment)	Marketing Manager	Mr. Wunna Thein
E.F.R.GLink (Local Agent for Medical Equipment)	Director	Mr. Than Aung
	General Manager	Mr. Kyaw Thu Maw
	Manager	Ms. Yi Mon Thu
Doko Hospital Bed and Furniture (Local Agent for Medical Equipment)	Managing Director	Mr. Zeya Ko Ko
	Managing Director	Mr. Thant Zin
Lion Myanmar International Co., Ltd. (Local Agent for Medical Equipment)	Director	Mr. Raymond Thein
	Sales & Service Manager	Mr. Phone Myint
	Sales Supervisor	Mr. Kyaw Zayar Tun
MEDITECH (SIEMENS) (Local Agent for Medical Equipment)	General Manager	Mr. Sithu Aung
Australian Medical & Diagnostics (Local Agent for Medical Equipment)	Director	Dr. Bo Kyu
	General Manager	Mr. Fenton Holland
	Product Manager,	Ms. Su Yin HTWE
Embassy of Japan	Second Secretary	Ms. Sumie ARIMA
	Coordinator	Ms. Ayaka ISIHARA
JICA Myanmar Office	Chief Representative	Mr. Masahiko TANAKA
	Senior Representative	Mr. Kyosuke INADA
	Project Formulation Advisor	Ms. Kaori NAKATANI
	Program Assistant	Ms. K Thwe Aung
	Chief Advisor/Project for Strengthening Capacity of Training Teams for Basic Health Staff	DR. Shigeki HANAFUSA

Organization	Position	Name
	Project Coordinator/Project for Strengthening Capacity of Training Teams for Basic Health Staff	Mr. Shigeo KATO
	Chief Advisor/Expert for HIV/AIDS Control	DR. Ikuma NOZAKI

4. Minutes of Discussions

4-1 Outline Design Study

MINUTES OF DISCUSSIONS ON THE PREPARATORY SURVEY OF THE PROJECT FOR IMPROVING STATE HOSPITALS IN MYANMAR IN 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 Improving State Hospitals In Myanmar (hereinafter referred to as "the Project") and entrusted the survey to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Myanmar the Preparatory Survey Team (hereinafter referred to as "the Team"), which is headed by Mr. Yojiro Ishii, Senior Advisor, Department of Human Resources for International Cooperation, JICA, and is scheduled to stay in the country from October 1 to November 1, 2013.

The Team held discussions with the officials concerned of the Government of Myanmar and conducted a field survey at the study area.

As a result of discussions and field survey, both parties confirmed the main items described in the attached sheets. The Team will proceed to further works and prepare the Draft Plan and the Preparatory Survey Report.

Nay Pyi Taw, 28 October 2013

for 稲田奈緒

Mr. Yojiro Ishii
Team Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan

Dr. Than Win
Deputy Director General
Department of Health
Ministry of Health
Republic of the Union of Myanmar

ATTACHMENT

1. Objective of the Project

The objective of the Project is to strengthen the function of Lashio General Hospital and Loikaw General Hospital as the top referral hospitals in the states by improving their infrastructure and equipment.

2. Project sites

The sites of the Project are at Lashio General Hospital in Shan State and Loikaw General Hospital in Kayah State.

3. Responsible and Implementing Agency

The responsible and implementing agency is the Ministry of Health, the Government of Myanmar.

4. Contents of the project requested by the Government of Myanmar

4-1 The main requested facilities are described in Annex-1

4-2 The selection criteria for requesting medical equipment is described in Annex-2.

4-3 The request for facilities and equipment could be modified and agreed by Technical Notes to be signed on 30th October, 2013.

4-4 JICA will assess the appropriateness of the request and will recommend to the Government of Japan for approval.

5. Japan's Grant Aid Scheme

5-1 Myanmar side understood the Japan's Grant Aid Scheme explained by the Team, as described in Annex-3.

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

6. Schedule of the Survey

6-1 Consultant members of the Team will proceed with further studies in Myanmar until 1 November 2013.

6-2 JICA will prepare the Draft Project Plan based on the field survey and the analysis in Japan and dispatch a mission team in order to explain the contents of the Draft Project Plan to the Myanmar side in late December 2013.

6-3 JICA will prepare the Draft Preparatory Survey Report, and after the consent of the Government of Japan JICA will dispatch a mission team in order to explain the contents of the report to the Myanmar side in April 2014.

6-4 In case that the contents of the report are accepted in principle by the Myanmar side, JICA will complete the report and send it to the Myanmar side in May 2014.

7. Other relevant issues

7-1 Location of construction sites of the new facilities

Both sides agreed on the possible construction sites of the facilities as per Annex-5. The construction sites will be finalized based on the further survey and discussion with authorities concerned in Myanmar by the end of October 2013.

7-2 Staff allocation in charge of maintenance of medical equipment

The Team found that there is no technical staff in charge of maintenance for medical equipment in both Lashio General Hospital and Loikaw General Hospital. The Myanmar side committed allocation of the technical staff at least one before the installation of the medical equipment of the Project.

7-3 Budget allocation and maintenance contract

The Myanmar side agreed to secure enough budget for the operation and maintenance of the facilities and medical equipment provided by the Project. Also, the Myanmar side committed to include the medical equipment procured by the Grant Aid in the annual maintenance contract between the Ministry of Health and local agents.

7-4 Coordination on the procurement plan of the medical equipment

The Myanmar side shall avoid the duplication among the equipment to be procured by the Project, the MOH and other donors.

7-5 Necessity of Soft Component (Training)

Both sides confirmed the necessity of soft component (training) on basic skill for maintenance of the equipment. The Team will further continue discussion with the Myanmar side during the Team and make the detailed plan for the soft component by late December 2013.

END

Annex-1 List of main facilities requested
Annex-2 The selection criteria for requesting medical equipment
Annex-3 Japan's Grant Aid
Annex-4 Major Undertakings to be taken by Each Government
Annex-5 Maps of the candidate construction site for the facilities

Annex-1 List of main facilities requested

Lashio General Hospital

- Specialist OPD (incl. Oncology & Dermatology)
- Emergency Room (ER)
- Dental Clinic
- Laboratory
- Blood Bank
- Physiotherapy
- Pharmacy
- Integrated Healthcare (IHC) (HIV care)
- Oncology Ward
- Operation Theater for Surgery, Ortho & ER
- ICU
- Radiology
- ENT
- Ophthalmology
- Medical Storage
- Laundry
- Substance Abuse Treatment and Mental Health Service Center (SAMSC)

Loikaw General Hospital

-ENT
-Laboratory
-Physiotherapy
-Blood Bank
-Ophthalmology
-Isolation Ward
-Kitchen
-Main Hall
-Obstetrics and Gynecology
-OPD
-Operation Theater
-Specialist OPD
-Medical Storage
-Pharmacy
-Emergency Room

Annex-2 The selection criteria for requesting equipment

- Equipment listed in the 'Standard Equipment List for 200 Bedded Hospital' and the List of Equipment in 'Hospital Upgrading Programme, Curative Service'
- Replacement of other damaged or deteriorated equipment
- New equipment for the new units/departments or services to be established (with the condition of appointment of the new medical staff being in charge of the units/departments prior to the installation of the equipment).

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 singed 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) "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.

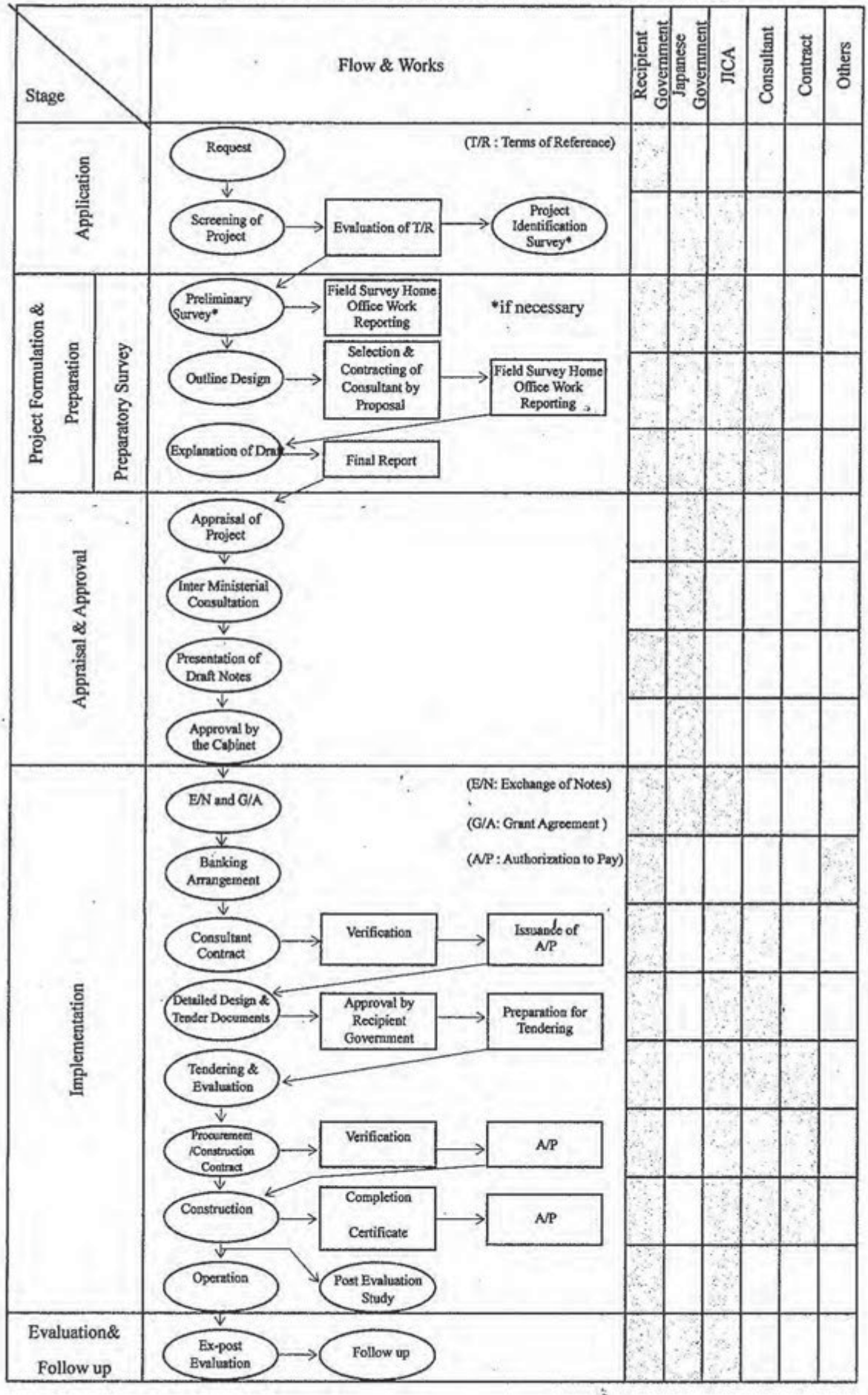
(9) Authorization to Pay (A/P)

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.

FLOW CHART OF JAPAN's GRANT AID PROCEDURES

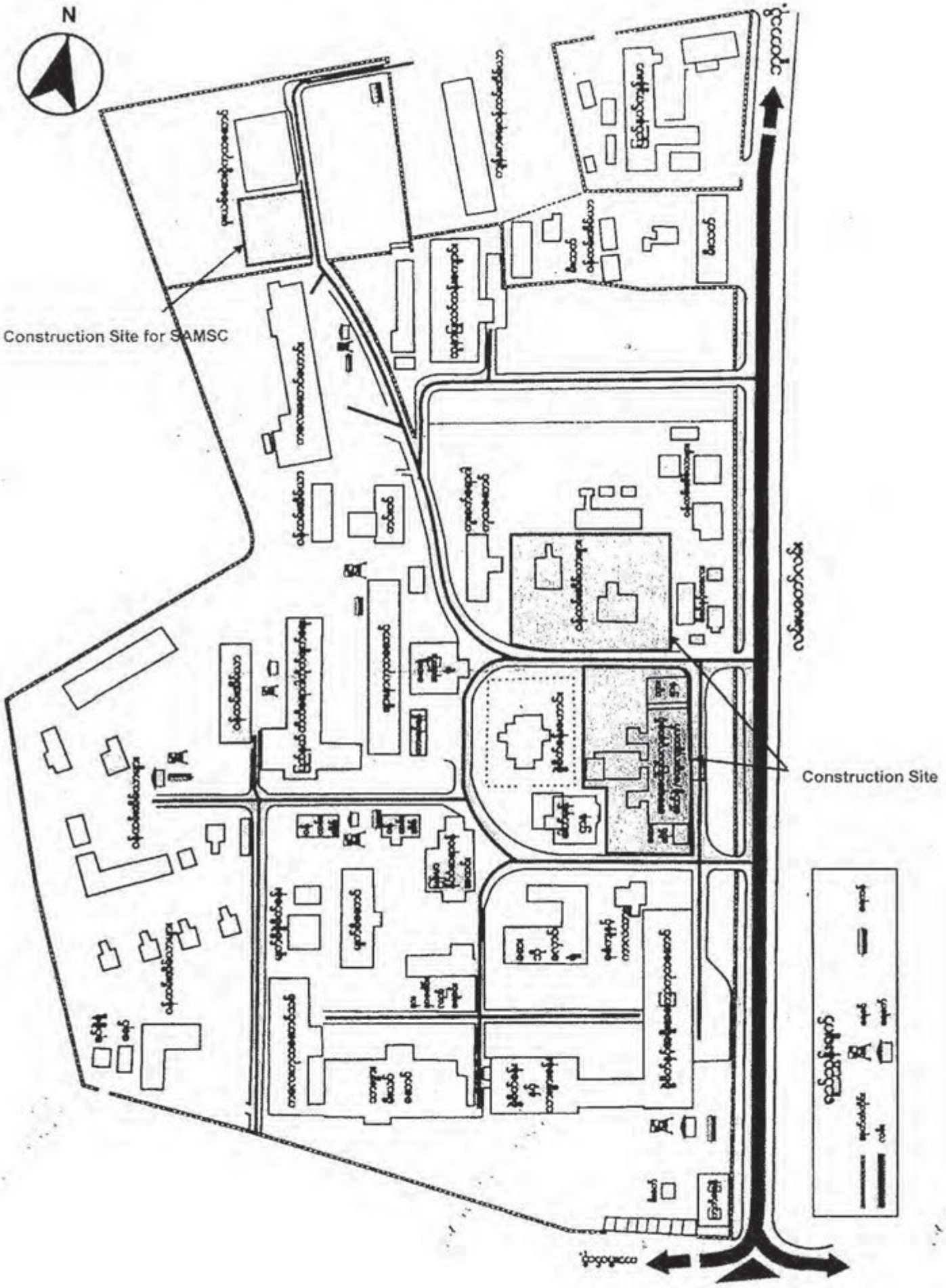


Annex4 Major Undertaking to be taken by Each Government

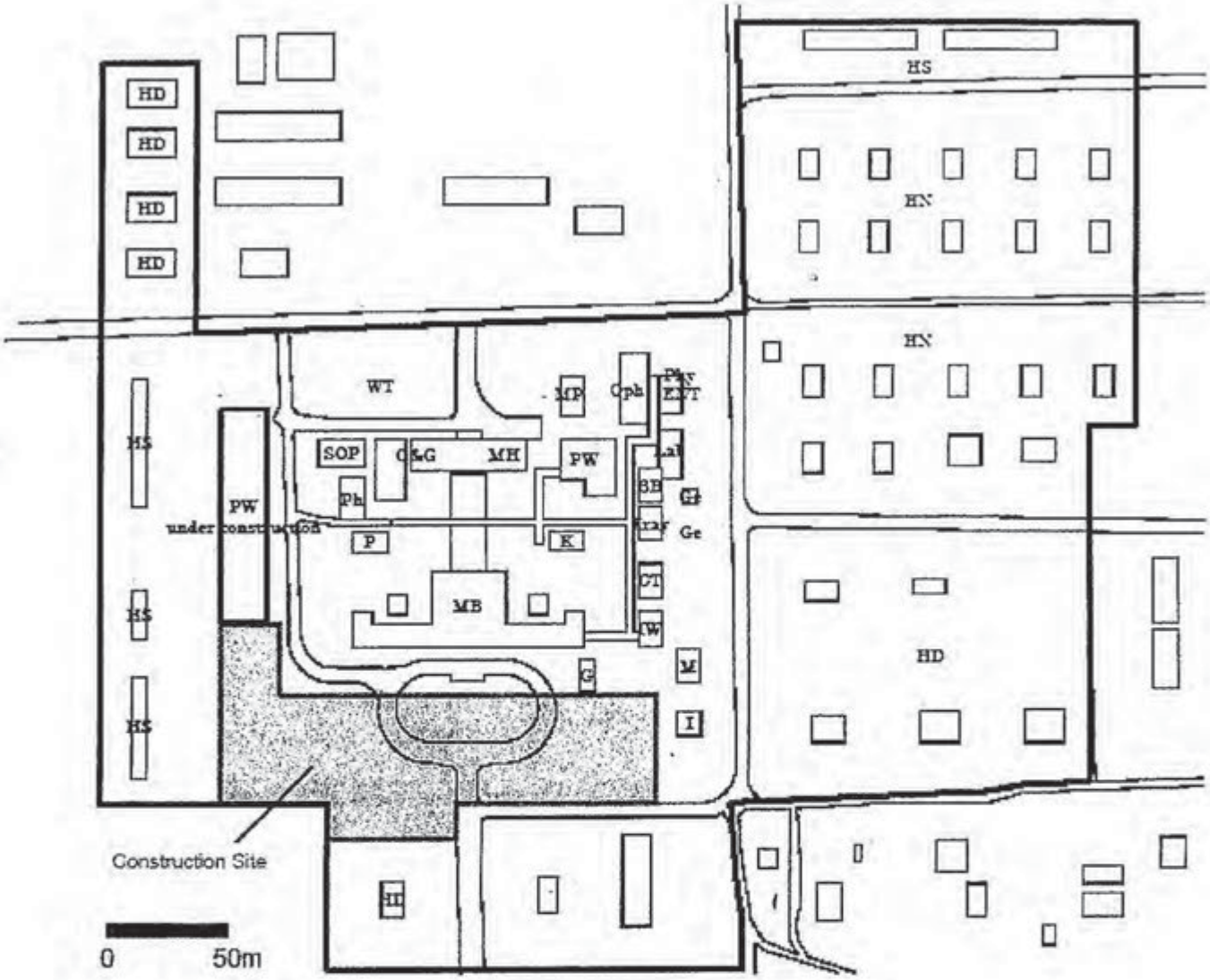
№	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To secure land		●
2	To clear, level and reclaim the site when needed		●
3	To construct gates and fences in and around the site		●
4	To construct the parking lot	(●)	(●)
5	To construct roads		
	1) Within the site	(●)	(●)
	2) Outside the site		●
6	To construct the buildings	●	
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		
	a. The distributing line to the site		●
	b. The drop wiring and internal wiring within the site	●	
	c. The Main circuit breaker and transformer	●	
	2) Water Supply		
	a. The city water distribution main to the site		●
	b. The supply system within the site (receiving and elevated tanks)	●	
	3) Drainage		
	a. The city drainage main (for storm, sewer and others) to the site		●
	b. The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the site	●	
	4) Gas Supply (if any)		
	a. The city gas main to the site		●
	b. The gas supply system within the site	●	
	5) Telephone System		
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building		●
	b. The MDF and the extension after the frame/panel	●	
	6) Furniture and Equipment		
	a. General furniture		●
	b. Project equipment	●	
8	To bear the following commissions to the Japanese bank for banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
9	To ensure unloading and customs clearance at port of disembarkation in recipient country		
	1) Marine (Air) transportation of the products from Japan to the recipient country	●	
	2) Tax exemption and customs clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	(●)	(●)
10	To accord Japanese nationals, whose services may be required in connection with the supply of the products and the services under the verified contact, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.		●
11	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts.		●
12	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant		●
13	To bear all the expenses, other than those to be borne by the Grant, necessary for construction of the facilities as well as for the transportation and installation of the equipment		●

(B/A: Banking Arrangement, A/P: Authorization to pay)

Annex-5 Maps of the candidate construction site for the facilities (Lashio)



Annex-5 Maps of the candidate construction site for the facilities (Loikaw)



LEGEND

BB	:Blood Bank	M	:Mortuary
ENT	:EarsNose&Throat	MH	:Main Hall
G	:Garage for Ambulance	MP	:Monk Patients
Ge	:Generator	Oph	:Ophthalmology
I	:Incineration Area	O&G	:Obstetrics and Gynecology
IW	:Isolation Ward	P	:Prisoner Ward
K	:Kitchen	Ph	:Pharmacy
Lab	:Laboratory	Phy	:Physiotherapy
HD	:Housing for Doctors	PW	:Paediatric Ward
HN	:Housing for Nurse	SOP	:Special OPD
HS	:Housing for Staff	WT	:Water Tank

4-2 Explanation of the Draft Project Plan

MINUTES OF DISCUSSIONS ON THE PREPARATORY SURVEY ON THE PROJECT FOR IMPROVING STATE HOSPITALS IN THE REPUBLIC OF THE UNION OF MYANMAR

(EXPLANATION OF THE DRAFT PROJECT PLAN)

In October 2013, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Survey Team on the Project for Improving State Hospitals (hereinafter referred to as "the Project") to the Republic of Union of Myanmar (hereinafter referred to as "Myanmar "), and through discussions, surveys, and analysis of the results in Japan, JICA prepared the Draft Project Plan (hereinafter referred to as "the Draft Plan ").

In order to explain and to consult the Government of Myanmar on the components of the Draft Plan, JICA sent to Myanmar the Preparatory Survey Team (hereinafter referred to as "the Team"), which is headed by Mr. Yojiro Ishii, Senior Technical Advisor, Human Development Department, JICA, and is scheduled to stay in the country from 14 December to 26 December 2013.

As a result of discussions, the both parties confirmed the main items described on the attached sheets. The Team will proceed to further works and prepare the Draft Preparatory Survey Report.

Nay Pyi Taw, 26 December 2013

Mr. Yojiro Ishii
Team Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan

Dr. Min Than Nyunt
Director General
Department of Health
Ministry of Health
Republic of the Union of Myanmar

ATTACHMENT

1. Components of the Draft Plan

The Myanmar side agreed and accepted in principle the components of the Draft Plan explained by the Team. The details of the Draft Plan are agreed by Technical Notes separately.

2. Measures to be taken by the Myanmar side

2-1 The draft cost estimated by the Team for the works to be done by the Myanmar side is as shown in Annex-1. In case the Project will be implemented, the Myanmar side agreed to estimate the cost by their own, secure and allocate enough budget for the smooth implementation of the Project.

2-2 The Team requested the Myanmar side to apply "annual maintenance contracts" for the advanced equipment procured by the Project. The Myanmar side agreed to allocate the government budget to the CMSD for the targeted hospitals for annual maintenance contracts with the local agents from MFY2016/17 in order to secure long-term reliable performance of the advanced equipment such as X-ray machine and Ultrasound machine.

3. 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 Lashio General Hospital will be "the Project for Improving Lashio General Hospital in Shan State" and for Loikaw General Hospital will be "the Project for Improving Loikaw General Hospital in Kayah State". 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.

4. Schedule of the Survey

4-1 JICA will prepare the Draft Preparatory Survey Report and dispatch a mission team in order to explain the contents of the report to the Myanmar side in April 2014.

4-2 In case that the contents of the report are accepted in principle by the Myanmar side, JICA will complete the report and send it to the Myanmar side in May 2014.

END

Annex-1 Estimated cost for the works to be done by the Myanmar side

Annex-1 Estimated cost for the works to be done by the Myanmar side

Lashio General Hospital

	ITEMS	DESCRIPTION	COST (Thousand Kyat)				
			TOTAL	BUDGET			
				2014	2015	2016	2017
①	DEMOLITION OF EXISTING BUILDINGS	MOTHER & CHILD HEALTH OFFICE, STAFF HOUSINGS, TEA SHOPS	7,253	7,253			
②	DEMOLITION OF EXISTING BUILDINGS	OPD ER BUILDING, DENTAL CLINIC, PHARMACY	19,112			19,112	
③	CONSTRUCTION OF EXISTING BUILDING FUNCTIONS TO BE RELOCATED	MOTHER & CHILD HEALTH OFFICE, STAFF HOUSING	131,449	131,449			
④	INSTALLATION OF TRANSFORMER	FOR NEW BUILDINGS	9,630		9,630		
⑤	RELOCATION OF ELECTRICAL POLES & WIRES	RELOCATE ELECTRICAL POLES & WIRES CONNECTING TO MARKET	9,630	9,630			
⑥	INSTALLATION OF WATER SUPPLY INLET FROM CITY TAP WATER	FOR NEW BUILDINGS	57		57		
⑦	REMOVAL OF EXISTING TREES & BUSHES	AT NEW BUILDING SITES	4,540	2,270		2,270	
⑧	LAND PREPARATION	INCLUDING REMOVAL OF OBSTACLES UNDERGROUND	1,884	1,165		719	
⑨	RELOCATION OF EXISTING X-RAY MACHINE	FROM EXISTING IMAGERY DEPT. TO NEW BUILDING	398				398
⑩	INSTALLATION OF FURNITURE	OFFICE DESKS & CHAIRS, CURTAINS, SHELVES, STAFF BEDS, BENCH, etc.	30,121			20,564	9,557
⑪	COMMISSIONS	FOR BANK ARRANGEMENT (B/A), AUTHORIZATION TO PAY (A/P), etc.	17,289	2,611	7,722	3,839	3,117
	TOTAL		231,363	154,378	17,409	46,504	13,072

Loikaw General Hospital

	ITEMS	DESCRIPTION	COST (Thousand Kyat)			
			TOTAL	BUDGET		
				2014	2015	2016
①	DEMOLITION OF EXISTING BUILDINGS	ISORATION WARD,GARAGE,SHOP	2,328	2,328		
②	CONSTRUCTION OF EXISTING BUILDING FUNCTIONS TO BE RELOCATED	GARAGE	25,278	25,278		
③	MODIFICATION OF THE OLD PEDIATRIC WARD	FOR THE ISOLATION WARD	2,022	2,022		
④	TRANSEFER OF TRANSFORMER	FOR THE EXSITING BUILDINGS	4,815	4,815		
⑤	RELOCATION OF ELECTRICAL POLES & WIRES		3,866	3,866		
⑥	REMOVAL OF EXISTING TREES & BUSHES		1,685	1,685		
⑦	LAND PREPARATION		4,113	4,113		
⑧	INSTALLATION OF FURNITURE		59,224			59,224
⑨	COMMISSIONS		20,885	9,078	11,783	24
	TOTAL		124,216	53,185	11,783	59,248

4-3 Explanation of the Draft Report

MINUTES OF DISCUSSIONS ON THE PREPARATORY SURVEY ON THE PROJECT FOR IMPROVING LASHIO GENERAL HOSPITAL IN SHAN STATE AND THE PROJECT FOR IMPROVING LOIKAW GENERAL HOSPITAL IN KAYAH STATE IN THE REPUBLIC OF THE UNION OF MYANMAR

(EXPLANATION OF THE PREPARATORY SURVEY REPORT)

In October 2013, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Survey Team on the Project for Improving State Hospitals (hereinafter referred to as "the Project") to the Republic of the Union of Myanmar (hereinafter referred to as "Myanmar "), and through discussions, surveys, and analysis of the results in Japan, JICA prepared the draft of preparatory survey report (hereinafter referred to as "the draft report ").

In order to explain and to consult on the contents of the draft report with the Ministry of Health, Myanmar, JICA sent to Myanmar the Draft Report Explanation Team (hereinafter referred to as "the Team"), headed by Mr. Yojiro Ishii, Senior Technical Advisor, Human Development Department, from 20 April to 25 April 2014.

As a result of discussions, the both parties confirmed the main items described on the attached sheets.

Nay Pyi Taw, 24 April 2014

Mr. Yojiro Ishii
Team Leader
Preparatory Survey Team
Japan International Cooperation Agency
Japan

Dr. Min Than Nyunt
Director General
Department of Health
Ministry of Health
Republic of the Union of Myanmar

ATTACHMENT

1. Components of the draft report

The Myanmar side agreed and accepted in principle the contents of the draft report and the outline of the Project explained by the Team (Annex-1).

2. Japan's Grant Aid scheme

The Myanmar side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Myanmar as explained by the Team and described in Annex-3 and Annex-4 of the Minutes of Discussions signed by both parties on October 28, 2013.

3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed items and send it to the Government of Myanmar by the end of May 2014.

4. Confidentiality of the Project Design

The both sides confirmed that all information related to the Project including cost estimation of the Project described in Annex-2, detailed specifications of the facilities, the equipment and other technical information shall not be released to any outside party before the signing of all the Contract(s) for the Project. The Myanmar side understood that the Project Cost Estimation is not final and is subject to change.

5. Measures to be taken by the Myanmar side

5-1 In case the Project will be implemented, the Myanmar side agreed to take necessary measures listed in Annex-3 and in a timely manner described in Annex-5 for the smooth implementation of the Project.

5-2 The Myanmar side promised to avoid duplicated supply of medical equipment that are already included in the Project component.

In this connection, the Myanmar side agreed to try to relocate the digital X-ray machine which was delivered to Loikaw General Hospital in December 2013 by the Ministry of Health to other hospital in order to avoid duplication with the X-ray machine (digital), Equipment No. LK-085, to be procured under this Project.

Also, the Myanmar side agreed to relocate the ambulance which was distributed to Lashio General Hospital in April 2014 by the Ministry of Health to other hospital in order to avoid duplication with the ambulance, Equipment No. LS-004, to be procured under this Project.

5-3 To assure effectiveness and sustainability of the Project, the Myanmar side agreed to allocate necessary budget for operation and maintenance shown in Annex-4.

5-4 The Myanmar side agreed to allocate the budget to the CMSD for the targeted hospitals for annual maintenance contracts with the local agents from MFY2016/17 in order to secure long-term reliable performance of the advanced equipment such as X-ray machine and Ultrasound machine.

5-5 To secure the temporary space necessary for the site office and materials storages inside and/or outside of the hospital premises during construction, the Myanmar side agreed to obtain permissions and take other necessary measures to secure the site.

5-6 Based on the recognition of the necessity and importance of biomedical engineers, the Myanmar side agreed to allocate those professionals, including at least one biomedical engineers, or staff with equivalent qualification, to the two targeted hospitals before the commencement of soft component program.

5-7 The Myanmar side agreed to timely issue the travel permit to visit the project sites whenever Consultants or the Contractors/ Suppliers request for its issuance during the implementation stage such as detailed design, tendering and construction/ procurement.

END

Annex-1 The contents of the Project
Annex-2 Estimated costs to be borne by the Japanese side
Annex-3 Estimated costs and works to be taken by the Myanmar side
Annex-4 Estimated costs for staff allocation and operation and maintenance
Annex-5 Tentative Project schedule

Annex-1 The Contents of the Project

(1) Lashio General Hospital

<table>
<tr><th></th><th>Outline</th></tr>
<tr><td>Construction of Facilities in Lashio General Hospital</td><td>(1) Building Facilities at Lashio General Hospital
<table>
<tr><th>List</th><th>Area (m^2)</th></tr>
<tr><td>Main Building (North) - 2 stories
Outpatient (General, Surgery, Orthopedic, General Medicine, Pediatrics, Dermatology), Dental, Eye, ENT, Oncology, HIV/ AIDS Counseling (IHC), Laboratory, Blood Bank, Physiotherapy, Pharmacy, etc.</td><td>2,530.50m^2</td></tr>
<tr><td>Main Building (South) - 2 stories
Emergency, Surgery, ICU, Operation Theater, Radiology, etc.</td><td>2,133.25m^2</td></tr>
<tr><td>SAMSC – 1 story</td><td>810.00m^2</td></tr>
<tr><td>Mortuary – 1 story</td><td>90.00m^2</td></tr>
<tr><td>Total</td><td>5,563.75m^2</td></tr>
</table>
(2) Facility
• Electrical Facilities: Power Supply (Transformer, Distribution Equipment), Generator System, Lighting System, Socket Outlet, Communication Facility, Fire Alarm System, Lightning Protection System
• Machinery Facilities: Air Conditioning Facilities
• Plumbing System: Sanitary Fixture, Water Supply System, Drainage System, Fire Protection System
• Special Facilities: Medical Gas System, EV</td></tr>
<tr><td>Equipment Procurement</td><td>(1) Necessary medical equipment procurement for buildings above and existing facilities.
(2) Management guidance (Soft component) for procured equipment for effective and long-term use.</td></tr>
</table>

Equipment List (Lashio General Hospital)

Lot	No.	Requested Equipment	Q'ty
1	LS-001	Adult bed	257
1	LS-002	Ambu bag set	1
1	LS-006	Audiometer	1
1	LS-009	Autoclave, vertical	4
1	LS-010	Auto-pippette set	1
1	LS-011	Autopsy table	1
1	LS-012	Balance stepper	1
1	LS-013	Bedside locker	49
1	LS-014	Bilirubin meter	1
1	LS-015	Blind screen with wheel	8
1	LS-016	Blood storage refrigerator	1
1	LS-017	Boiling sterilizer	3
1	LS-018	Cardiotocograph machine	1
1	LS-020	Centrifuge	1
1	LS-021	Child bed	18
1	LS-022	Coagulation analyzer	1
1	LS-023	Consultation table	1
1	LS-024	CPAP Ventilator	3
1	LS-025	Defibrillator	1
1	LS-026	Dental chair unit	1
1	LS-027	Doctor's desk & chair	18
1	LS-028	Donor couch	6
1	LS-029	ECG	6
1	LS-030	Electrical stimulator	1
1	LS-032	Electrosurgical unit, O & G	1
1	LS-033	ELISA System	1
1	LS-035	Examination table	14
1	LS-037	Fetal heart detector, doppler	1
1	LS-039	Film viewer, desk top	2
1	LS-040	Gatch bed	4
1	LS-041	Goniometer set	1
1	LS-042	Haematocrit centrifuge	2
1	LS-043	Head light, fiber optic	1
1	LS-044	Hemodialysis machine	2
1	LS-045	Hot air sterilizer	1
1	LS-046	Hot pack unit	1
1	LS-047	Infant incubator	1
1	LS-048	Infant warmer	3
1	LS-049	Infant warmer, NICU	1
1	LS-050	Infusion pump	4
1	LS-052	Instrument set, basic ophthalmology	1
1	LS-053	Instrument set, cataract surgery	1
1	LS-054	Instrument set, dental	1
1	LS-055	Instrument set, ear micro surgery	1
1	LS-056	Instrument set, ENT operation	1
1	LS-057	Instrument set, glaucoma	1
1	LS-059	Labo center table	2
1	LS-060	Laryngoscope & Endotracheal tubes set	1
1	LS-061	Laryngoscopes for adult/child, Biopsy	1
1	LS-062	Laryngoscopes for adult/child, Negus	1
1	LS-063	Light cure machine	1
1	LS-064	Microscope, binocular	2

Equipment List (Lashio General Hospital)

Lot	No.	Requested Equipment	Qty
1	LS-065	Mortuary refrigerator	1
1	LS-066	Mouth gag set	1
1	LS-067	Nebulizer	12
1	LS-068	Oesophagial speculum, Negus type	1
1	LS-069	Operating microscope, ENT	1
1	LS-070	Operation light, wall mount	1
1	LS-071	Operation microscope, ophthalmology	1
1	LS-072	Operation table	1
1	LS-073	Otoscope set	1
1	LS-074	Oxygen concentrator	7
1	LS-075	Oxygen concentrator, double	4
1	LS-076	Oxygen inhaler set with cylinder	15
1	LS-078	Parallel bar	1
1	LS-079	Patient chair	17
1	LS-080	Patient monitor	2
1	LS-081	Patient trolley	4
1	LS-083	Patient trolley, body concealment	1
1	LS-084	PC	1
1	LS-085	Peg board	1
1	LS-086	Phototherapy unit	1
1	LS-087	Physio ball	2
1	LS-088	Platelet agitator with incubator	1
1	LS-089	Pulse oxymeter	2
1	LS-091	Pulse oxymeter, neonate and child	1
1	LS-092	Radiant heater	1
1	LS-093	RO production unit	1
1	LS-094	Safety cabinet	1
1	LS-095	Short wave diathermy apparatus	1
1	LS-096	Shoulder wheel	1
1	LS-097	Sink set	1
1	LS-098	Spectrophotometer	1
1	LS-101	Spot light	6
1	LS-103	Spot light, autopsy	1
1	LS-105	Suction machine	7
1	LS-106	Suction machine, autopsy	1
1	LS-107	Suction machine, foot type	4
1	LS-108	Tilt table	1
1	LS-109	Tonometer, Schiotz	1
1	LS-110	Traction unit	1
1	LS-111	Transcutaneous electrical nerve stimulator	1
1	LS-112	Treatment table	1
1	LS-113	Tympanometer	1
1	LS-114	Ventilator, adult	2
1	LS-117	Water bath	1
1	LS-118	Wheel chair	2
1	LS-119	Wheel chair for children	1
1	LS-120	X-ray film viewer, mobile type	1
1	LS-122	X-ray machine, dental	1
1	LS-125	Film developer, dental	1
2	LS-002	Ambu bag set	1
2	LS-003	Ambu bag set, for ambulance	1
2	LS-004	Ambulance	1

Equipment List (Lashio General Hospital)

Lot	No.	Requested Equipment	Qty
2	LS-005	Anaesthesia machine	4
2	LS-007	Autoclave, large	2
2	LS-008	Autoclave, table top	1
2	LS-017	Boiling sterilizer	2
2	LS-019	Ceiling lamps	4
2	LS-025	Defibrillator	1
2	LS-031	Electrosurgical unit	4
2	LS-034	Endoscope unit, upper GI, fibre	1
2	LS-035	Examination table	2
2	LS-036	Extractor	1
2	LS-038	Film developer	1
2	LS-040	Gatch bed	4
2	LS-050	Infusion pump	5
2	LS-051	Instrument set for ambulance	1
2	LS-058	Iron pressing machine	1
2	LS-072	Operation table	4
2	LS-074	Oxygen concentrator	6
2	LS-077	Oxygen inhaler set, for ambulance	1
2	LS-080	Patient monitor	7
2	LS-081	Patient trolley	11
2	LS-082	Patient trolley for ambulance	1
2	LS-089	Pulse oxymeter	1
2	LS-090	Pulse oxymeter, for ambulance	1
2	LS-099	Sphygmomanometer and Stethoscope, for ambulance	1
2	LS-100	Splints set for ambulance	1
2	LS-102	Spot light, wall mount	2
2	LS-104	Stretcher for ambulance	1
2	LS-105	Suction machine	7
2	LS-112	Treatment table	2
2	LS-114	Ventilator, adult	1
2	LS-115	Ventilator, pediatric	1
2	LS-116	Washing machine	1
2	LS-121	X-ray film viewer, wall mount type	1
2	LS-123	X-ray machine, digital	1
2	LS-124	X-ray film viewer, wall embedded type	4

49

(2) Loikaw General Hospital

<table>
<tr><th></th><th>Outline</th></tr>
<tr><td>Construction of Facilities in Loikaw General Hospital</td><td>(1) Buildings Facilities at Loikaw General Hospital
<table>
<tr><th>List</th><th>Area (m^2)</th></tr>
<tr><td>New Main Building East</td><td rowspan="2">4,416.98 m^2</td></tr>
<tr><td>Outpatient (General Medicine, Surgery, Eye, Psychiatry, Oncology, Dental), Emergency, Imagery, Lab, Blood Bank, OT, etc.</td></tr>
<tr><td>New Main Building West</td><td rowspan="2">4,349.66 m^2</td></tr>
<tr><td>Obstetrics and Gynecology, Physical, ENT, General Medicine</td></tr>
<tr><td>Subtotal</td><td>8,766.64 m^2</td></tr>
<tr><td>Attached Buildings
(Roofed Passage, Guard House, Electrical room, Elevated Water Tank)</td><td>469.75 m^2</td></tr>
<tr><td>Total</td><td>9,236.39 m^2</td></tr>
</table>
(2) Facility
• Electrical Facilities: Power Supply (Transformer/Distribution Equipment),Generator System, Lighting System, Socket Outlet, Communication Facility, Fire Alarm System, Lightning Protection System
• Machinery Facilities: Air Conditioning Facilities
• Plumbing System: Sanitary Fixture, Water Supply System, Drainage System, Fire Protection System
• Special Facilities: Medical Gas System, EV</td></tr>
<tr><td>Equipment Procurement</td><td>(1) Medical equipment procurement for departments in the buildings stated above, and for Orthopedics, and the Pediatric Department to be moved to New Pediatric Building.
(2) Management guidance (Soft component) for procured equipment for effective and long-term use.</td></tr>
</table>

Equipment List (Loikaw General Hospital)

No.	Descriptions	Q'ty
LK-01	Adult bed	39
LK-02	Ambu bag set for ambulance	1
LK-03	Ambulance, 4WD	1
LK-04	Anaesthesia machine with ventilator	2
LK-05	Apex locator	1
LK-06	Autoclave, large	2
LK-07	Autoclave, vertical	2
LK-08	Bedside locker	25
LK-09	Bilirubin meter for serum bilirubin	1
LK-10	Bipolar electrocautery unit, ophthalmology	1
LK-11	Blood collection monitor	1
LK-12	Cardiotocograph machine	1
LK-13	Ceiling lamps	5
LK-14	Centrifuge	2
LK-15	Child bed	16
LK-16	Coagulation analyzer	1
LK-17	CPAP ventilator	2
LK-18	Deep freezer	1
LK-19	Dental chair unit	1
LK-20	Doctor's chair	8
LK-21	Doctor's desk	5
LK-22	ECG	3
LK-23	Electrosurgical unit	3
LK-24	Endoscope unit, upper GI, colonoscope	1
LK-25	ENT Endoscope set	1
LK-26	Examination table	10
LK-27	Examination table, OB&GY	2
LK-28	Film developer	1
LK-29	Film viewer	1
LK-30	Gatch bed	3
LK-31	Haematocrit centrifuge	2
LK-32	Heating block	1
LK-33	Infant Incubator	2
LK-34	Infant warmer	6
LK-35	Infusion pump	3
LK-36	Instrument set for ambulance	1
LK-37	Instrument set, cataract surgery	2
LK-38	Instrument set, dental	1
LK-39	Instrument set, general orthopedic	1
LK-40	Instrument set, myringoplasty	1
LK-41	Instrument set, orthopedic	1
LK-42	Labor bed	3
LK-43	Nebulizer	2
LK-44	Operation microscope for ENT	1
LK-45	Operation microscope for ophthalmology	1
LK-46	Operation table	5
LK-47	Ophthalmoscope with retinoscope	1
LK-48	Oxygen concentrator	6
LK-49	Parallel bar	1
LK-50	Patient chair	5
LK-51	Patient monitor	5
LK-52	Patient trolley	2
LK-53	PC	1

Equipment List (Loikaw General Hospital)

LK-54	Peg board	1
LK-55	Phototherapy unit	3
LK-56	Plasma expresser	1
LK-57	Platelet agitator with incubator	1
LK-58	Portable air compressor, dental	1
LK-59	Pulse oxymeter	1
LK-60	Pulse oxymeter for ambulance	1
LK-61	Safety cabinet	1
LK-62	Screen	3
LK-63	Semi auto chemical analyzer	1
LK-64	Sphygmomanometer	3
LK-65	Sphygmomanometer for ambulance	1
LK-66	Splints set for ambulance	1
LK-67	Spot light	8
LK-68	Steam sterilizer, dental	1
LK-69	Stethoscope for ambulance	1
LK-70	Stretcher	6
LK-71	Stretcher for ambulance	1
LK-72	Suction machine	4
LK-73	Suction machine, low pressure	3
LK-74	Syringe pump	2
LK-75	Test tube shaker	1
LK-76	Tilt table	1
LK-77	Transcutaneous electrical nerve stimulator	1
LK-78	Treatment table	3
LK-79	Tube sealer for blood bag	1
LK-80	Ultrasound machine	1
LK-81	Vacuum extractor	2
LK-82	VDRL shaker	1
LK-83	Ventilator for CCU	1
LK-84	X-ray machine, dental	1
LK-85	X-ray machine, digital	1
LK-86	Film developer, dental	1

Annex-2 Estimated costs to be borne by the Japanese side

This page is closed due to the confidentiality.

Annex-3 Estimated costs and works to be taken by the Myanmar side

(1) Lashio General Hospital

Items to be borne by the Myanmar side	Estimated Cost	
	(Kyat)	(Yen)
(1) Related to Construction		
1) Demolition of the existing buildings (Maternal & Child Health Office, staff dormitory, café)	7,253,000	739,806
2) Demolition of the existing buildings (Outpatient, Emergency/ Laboratory and Dental)	19,112,000	1,949,424
3) Relocation and construction of Maternal and Child Health Office, staff dormitory	131,449,000	13,407,798
4) Installation of transformer	9,630,000	982,260
5) Relocation of the electrical poles and wires in Project site	9,630,000	982,260
6) Installation of intake pipe of the city water	57,000	5,814
7) Felling and removal of the existing trees and its roots in Project site	4,540,000	463,080
8) Removal of obstacles and land preparation of the Project site	1,884,000	192,168
9) Relocation of 1 existing x-ray machine	398,000	40,596
10) Relocation of 1 existing dental unit	398,000	40,596
11) Relocation of the operating table for Eye Department	99,500	10,149
12) Relocation of the existing ceiling-mounted surgery lighting	199,000	20,298
13) Procurement of furniture (curtain, shelves, waiting benches, etc.)	30,121,000	3,072,342
(2) Related to Procedures		
14) Commissions (A/P, B/A and Payment)	17,289,000	1,763,478
Total	232,059,500	23,670,069

** Implementation schedule of each items is as shown in Annex-5 Tentative Project Schedule.*

(2) Loikaw General Hospital

Items to be borne by the Myanmar side	Estimated Cost	
	(Kyat)	(Yen)
(1) Related to Construction		
1) Demolition of the existing buildings (garage, isolation ward, shop and guard house)	2,328,000	237,456
2) Construction of new garage	25,278,000	2,578,356
3) Modification of the existing pediatrics ward to isolation ward	2,022,000	206,244
4) Relocation of the existing transformer position	4,815,000	491,130
5) Relocation of electrical poles and wires in Project site	3,886,000	394,332
6) Felling and removal of the existing trees and its roots in Project site	1,685,000	171,870
7) Removal of obstacles and land preparation of the Project site	4,113,000	419,526
8) Leading electric power line to the operation ceiling light	199,000	20,298
9) Procurement of furniture (curtain, shelves, waiting benches, etc.)	59,224,000	6,040,848
(2) Related to Procedures		
10) Commissions (A/P, B/A and Payment)	20,885,000	2,130,270
Total	124,415,000	12,690,330

** Implementation schedule of each items is as shown in Annex-5 Tentative Project Schedule.*

Annex-4 Estimated costs for staff allocation and operation and maintenance

(1) Lashio General Hospital

Items	2012/13	After Completion of the Project (2017/18)
	Actual Expense (Kyat)	Estimated Cost (Kyat)
(1) Personnel Expenses	284,223,000	322,148,000
(2) Operation and Maintenance Expense	101,248,000	74,340,000
1) Office Supply	1,600,000	1,808,000
2) Electricity	12,800,000	17,357,000
3) Fuel/Oil Cost	2,500,000	4,120,000
4) Facility Maintenance Cost	75,121,000	13,446,000
CT-Scan Building Construction Fee	50,000,000	0
Existing Building Exterior Wall Paint Cost	20,000,000	0
Others	5,121,000	15,280,000
5) Medical Gas	0	3,187,000
6) Elevator Maintenance Cost	0	1,733,000
7) Medical Equipment Consumables and Spare Parts Cost	9,227,000	32,689,000
Total	385,471,000	396,488,000

Breakdown of the Medical Equipment Consumables and Spare Parts Cost in Lashio General Hospital

No.	Descriptions	Qty	Unit Price (MMK)	Total Price (MMK)	Major Requirements
LS-05	Anaesthesia machine	4	186,274	745,096	CO2 absorber tablets, Patient circuit set, Mask set
LS-07	Autoclave, large	2	200,980	401,960	Recording paper, Salt, Ink ribbon, Filter
LS-010	Auto-pippette set	1	340,362	340,362	Tip set
LS-014	Bilirubin meter	1	106,294	106,294	Capillary heparinized tube, Capillary plain tube, Bilirubin control
LS-018	Cardiotocograph machine	1	105,882	105,882	Gel, Recording paper
LS-022	Coagulation analyzer	1	386,843	386,843	Solution fot Prothrombin time, Solution for Actived partial thromboplastin time, Solution for Fibrinogene, Recording paper
LS-024	CPAP ventilator	3	68,921	206,763	Tube, Mask
LS-025	Defibrillator	2	178,539	357,078	ECG electrode, Gel, Recording paper
LS-026	Dental chair unit	1	14,117	14,117	Halogen lamp
LS-029	ECG	6	52,941	317,646	ECG cream, Recording paper
LS-033	ELISA System	1	4,704,901	4,704,901	Reagents
LS-034	Endoscope unit, upper GI, fibre	1	941,078	941,078	Bulb for light source
LS-037	Fetal heart detector, doppler	1	150,588	150,588	Gel
LS-042	Haematocrit centrifuge	2	71,529	143,058	Capillary tube
LS-043	Head light, fiber optic	1	35,686	35,686	Halogen lamp, Battery
LS-044	Hemodialysis machine	2	6,650,000	13,300,000	Dialyzers, Patient line
LS-047	Infant Incubator	1	87,843	87,843	Air micro filter
LS-048	Infant warmer	3	131,764	395,292	Air micro filter
LS-049	Infant warmer, NICU	1	199,215	199,215	Air micro filter, Pad for skin temparature probe
LS-050	Infusion pump	9	156,862	1,411,758	Infusion tube set, I.V. Catheter
LS-060	Laryngoscope & Endotracheal tubes set	1	39,215	39,215	Light bulb, tube
LS-061	Laryngoscopes for adult/child, Biopsy	1	39,215	39,215	Light bulb, tube
LS-062	Laryngoscopes for adult/child, Negus	1	39,215	39,215	Light bulb, tube
LS-067	Nebulizer	12	105,098	1,261,176	Bacteria filter, Diaphragm/medication cup, Aerosol tube, Mask, Mouthpiece
LS-069	Operating microscope, ENT	1	21,450	21,450	Bulb
LS-073	Otoscope set	1	32,156	32,156	Halogen bulb
LS-074	Oxygen concentrator	13	7,058	91,754	Nose canuula, Extension tube
LS-075	Oxygen concentrator, double	4	7,058	28,232	Nose canuula, Extension tube
LS-080	Patient monitor	9	19,166	172,494	ECG electrode, Recording paper
LS-086	Phototherapy unit	1	44,117	44,117	Eye mask
LS-091	Pulse oxymeter, neonate and child	1	313,725	313,725	Finger probe
LS-093	RO production unit	1	3,098,333	3,098,333	Air filter, UV lamp, Activated carbon, Softner resin, Pre-filter, Check-filter
LS-094	Safety cabinet	1	392,156	392,156	HEPA filter, Fluorescent lamp, UV lamp
LS-098	Spectrophotometer	1	282,323	282,323	Deuterium and tungsten halogen lamp, Recording paper
LS-0114	Ventilater, adult	3	449,411	1,348,233	Patient circuit tube, Endotracheal tube set, Bacteria filter
LS-0115	Ventilater, pediatric	1	449,411	449,411	Patient circuit tube, Endotracheal tube set, Bacteria filter
LS-0120	X-ray film viewer, mobile type	1	100,392	100,392	Fluorescent lamp
LS-0121	X-ray film viewer, wall mount type	1	100,392	100,392	Fluorescent lamp
LS-0122	X-ray machine, dental	1	191,686	191,686	Fluorescent lamp, Film
LS-0123	X-ray machine, digital	1	191,686	191,686	Fluorescent lamp, Film
LS-0124	X-ray film viewer, wall embedded type	1	100,392	100,392	Fluorescent lamp
			Grand Total	32,689,213	

(2) Loikaw General Hospital

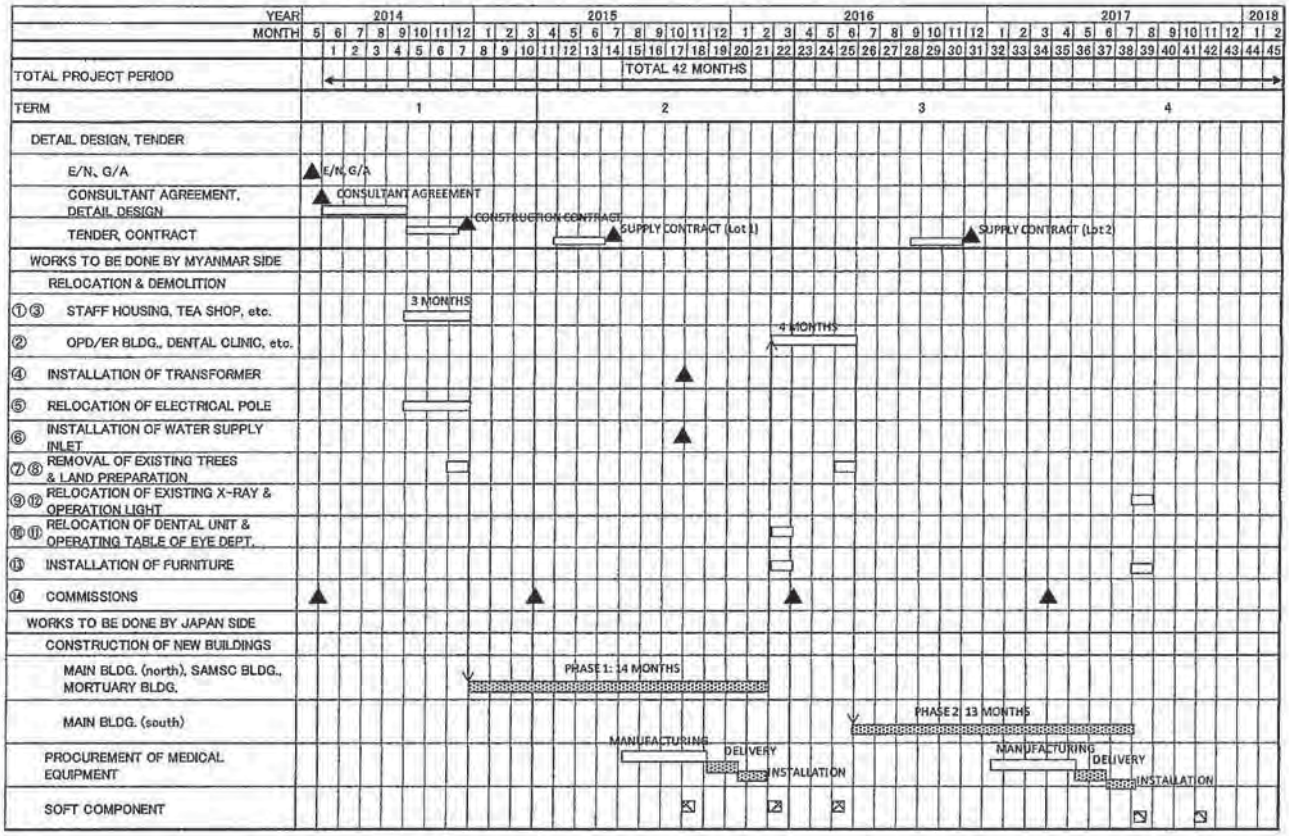
Items	2012/2013 Actual Expense (Kyat)	After completion of the Project (2016/17) Estimated Cost (Kyat)
(1) Personnel expenses	214,422,736	236,385,000
(2) Operation and Maintenance Expense	29,968,000	47,307,000
1) Office Supply	600,000	659,000
2) Electricity	9,750,000	18,532,000
3) Fuel/Oil Cost	800,000	2,136,000
4) Facility Maintenance Cost	5,326,000	15,728,000
5) Medical Gas	0	1,593,000
6) Elevator Maintenance Cost	0	1,733,000
7) Medical Equipment Consumables and Spare Parts Cost	3,393,000	6,926,000
Total	244,390,736	283,692,000

Breakdown of the Medical Equipment Consumables and Spare Parts Cost in Lashio General Hospital

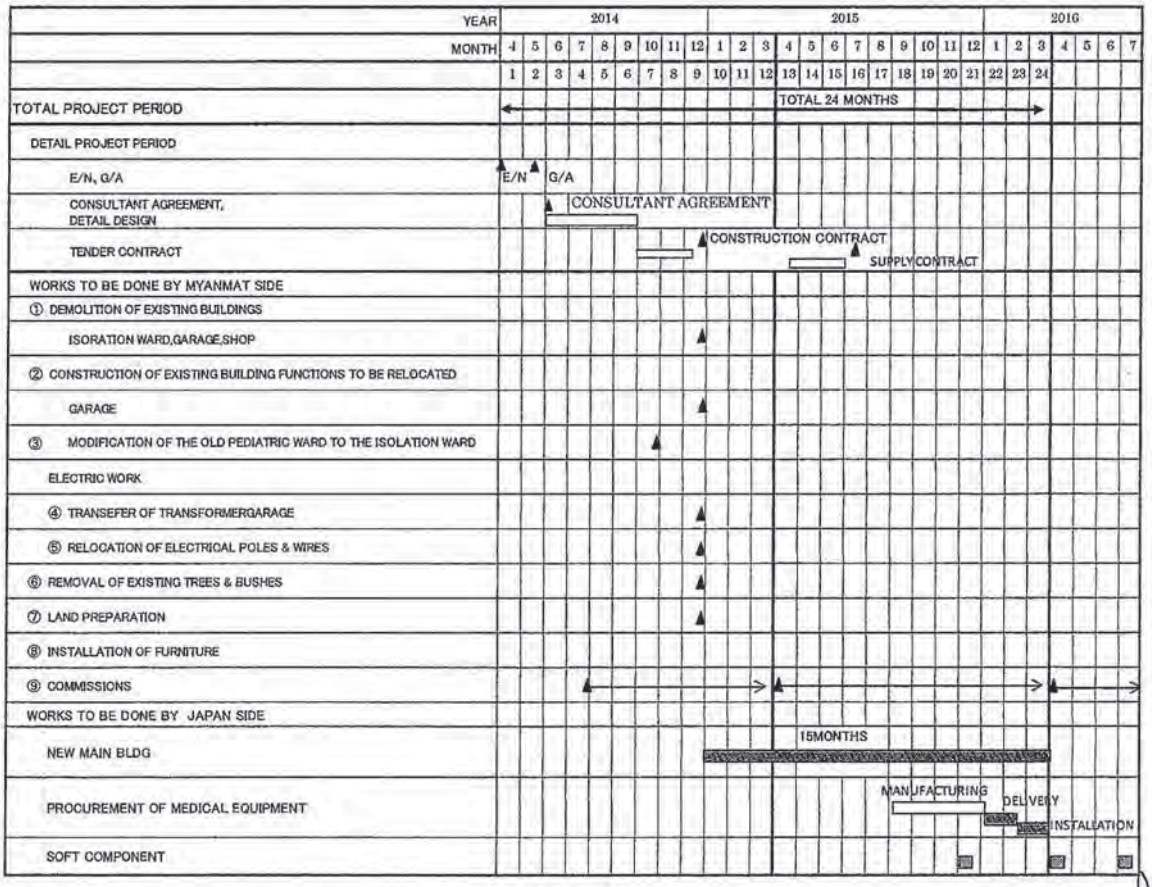
No.	Descriptions	Q'ty	Unit Price (MMK)	Total Price (MMK)	Major Requirements
LK-04	Anaesthesia machine with ventilater	4	150,000	600,000	CO2 absorber tablets, Patient circuit set, Mask set
LK-06	Autoclave, large	2	200,980	401,960	Recording paper, Salt, Ink ribbon, Filter
LK-09	Bilirubin meter for serum bilirubin	1	106,294	106,294	Capillary heparinized tube, Capillary plain tube, Bilirubin control
LK-012	Cardiotocograph machine	1	105,882	105,882	Gel, Recording paper
LK-016	Coagulation analyzer	1	350,000	350,000	Solution fot Prothrombin time, Solution for Actived partial thromboplastin time, Solution for Fibrinogene, Recording paper
LK-017	CPAP ventilator	2	68,921	137,842	Tube, Mask
LK-019	Dental chair unit	1	14,117	14,117	Halogen lamp
LK-022	ECG	3	52,941	158,823	ECG cream, Recording paper
LK-031	Haematocrit centrifuge	2	71,529	143,058	Capillary tube
LK-033	Infant incubator	2	87,843	175,686	Air micro filter
LK-034	Infant warmer	6	120,000	720,000	Air micro filter
LK-035	Infusion pump	3	156,862	470,586	Infusion tube set, I.V. Catheter
LK-043	Nebulizer	2	105,098	210,196	Bacteria filter, Diaphragm/medication cup, Aerosol tube, Mask, Mouthpiece
LK-044	Operating microscope for ENT	1	21,450	21,450	Bulb
LK-047	Ophthalmoscope with retinoscope	1	40,784	40,784	Halogen bulb
LK-048	Oxygen concentrator	6	7,058	42,348	Nose canuula, Extension tube
LK-051	Patient monitor	5	19,166	95,830	ECG electrode, Recording paper
LK-055	Phototherapy unit	3	44,117	132,351	Eye mask
LK-061	Safety cabinet	1	392,156	392,156	HEPA filter, Fluorescent lamp, UV lamp
LK-063	Semi auto chemical analyzer	1	1,722,500	1,722,500	Reagents set, Recording paper
LK-080	Ultrasound machine	1	37,647	37,647	Gel, Recording paper
LK-082	VDRL shaker	1	14,117	14,117	Head rubber
LK-083	Ventilater for CCU	1	449,411	449,411	Patient circuit tube, Endotracheal tube set, Bacteria filter
LK-084	X-ray machine, dental	1	191,686	191,686	Fluorescent lamp, Film
LK-085	X-ray machine, digital	1	191,686	191,686	Fluorescent lamp, Film
			Grand Total	6,926,410	

Annex-5 Tentative Project schedule

(1) Lashio General Hospital



(2) Loikaw General Hospital



5. Soft Component (Technical Assistance) Plan

5-1 Lashio General Hospital

Soft Component Plan for Lashio General Hospital

1. Background

Medical equipment of public hospitals in Myanmar, except for Yangon General Hospital, is under the control of the Central Medical Store Depot (CMSD), and maintained by the Technical Department of CMSD. Maintenance work of medical equipment, however, are actually done by each hospital. In line with the policy of the Ministry of Health (MOH) stressing fostering Bio Medical Engineer (BME) specialized in medical equipment, MOH conducted a BME training course in October and December 2012 in Nay Pyi Daw. CMSD dispatched 3 staffs to the course. As those courses were short-term intensive ones, it is still necessary to strengthen continuously the technical capacity of the BMEs.

In Lashio general hospital, where there is no maintenance department in it, maintenance work of medical equipment are being done by users, such as doctors or nurses. In case it is technically difficult for them to deal with the case, they first ask CMSD for support, and in case it is still difficult for CMSD, they ask local agents of manufacturers for repair or trouble shooting. After collecting the request from each department, the medical superintendent or deputy medical superintendent contact to CMSD or those agents on behalf of the hospital. Ledgers used for keeping record of maintenance work, document forms used inside the hospital or for sending request outside, etc. are not well organized and not kept appropriately. Under these circumstances, it is necessary and significant to provide training of medical equipment maintenance for end-users in the hospital and newly assigned technical staff, in order to utilize the medical equipment to be procured under this Project for long period.

2. Objectives

Under the responsibility of medical superintendent, maintenance system of medical equipment shall be organized. Document formats used between the hospital and CMSD/local agents, shall be standardize and properly used. Annual budgetary planning of spare parts or consumables shall be made possible. Medical equipment maintenance shall be regarded as one of the important aspects of hospital administration. The medical equipment maintenance department shall be able to provide technical training to the end-users in the hospital about appropriate daily maintenance method.

3. Goals

- Under the responsibility of the person in charge of equipment maintenance, organizational structure, scope of work, assigned responsibility shall be made clear.
- Daily maintenance work shall be conducted appropriately, using the standardized document formats
- Annual budgetary planning of spare parts and consumables shall be made possible, using the standardized ledgers.

4. Confirmation Methods of Achieved Goals

- Person in charge of medical equipment maintenance and its organization with clearly assigned scope of work and responsibilities.
- Use of standardized document formats for daily maintenance work
- Annual budget plan for spare parts and consumables, prepared by using the standardized document formats

5. Activities

Activities of the soft component will be implemented under the following three sessions.

Lot	Session	Time Schedule	Objectives
1 Main building (north), SAMSC, Mortuary	Session 1	Starts around 2 months before the commencement of installation of medical equipment for the Lot 1, and complete by the commencement of installation.	Before the installation of medical equipment, the Consultant will assist to prepare common equipment register book, provide daily maintenance sheet and standardized format, and simulate the operation of these sheets and formats. Target equipment shall include existing equipment as well as the equipment under the Project.
	Session 2	Starts right after the completion of the installation of medical equipment for the Lot 1.	Maintenance of equipment will be implemented using the daily maintenance sheet and standardized format provided in session 1. Instructions on trouble shooting will be provided during the maintenance service.
	Session 3	Starts around 3 months after the completion of the installation of medical equipment for the Lot 1.	Review of maintenance methods using daily maintenance sheet and standardized format. Instruction of trouble shooting will be provided during the maintenance service. Instructions on how to make procurement plans of spare parts and consumables using equipment register book.
2 Main building (south)	Session 4	Starts right after the completion of the installation of medical equipment for the Lot 2.	Maintenance of equipment will be implemented using the daily maintenance sheet and standardized format provided in session 1. Instructions on trouble shooting will be provided during the maintenance service.
	Session 5	Starts around 3 months after the completion of the installation of medical equipment for the Lot 2.	Review of maintenance methods using daily maintenance sheet and standardized format. Instruction of trouble shooting will be provided during the maintenance service. Instructions on how to make procurement plans of spare parts and consumables using equipment register book.

Focal group for the soft component are Medical Superintendent and Deputy Medical Superintendent, doctors, nurses and newly assigned technical staff in charge of maintenance. CMSD staff who participated in the soft component under the Project for Improvement of Medical Equipment in

Hospitals in Yangon and Mandalay, will be requested to participate as an observer for the soft component under this Project.

The scope of service of soft component and instruction of equipment operation provided by the Supplier are shown as below.

Scope of Service

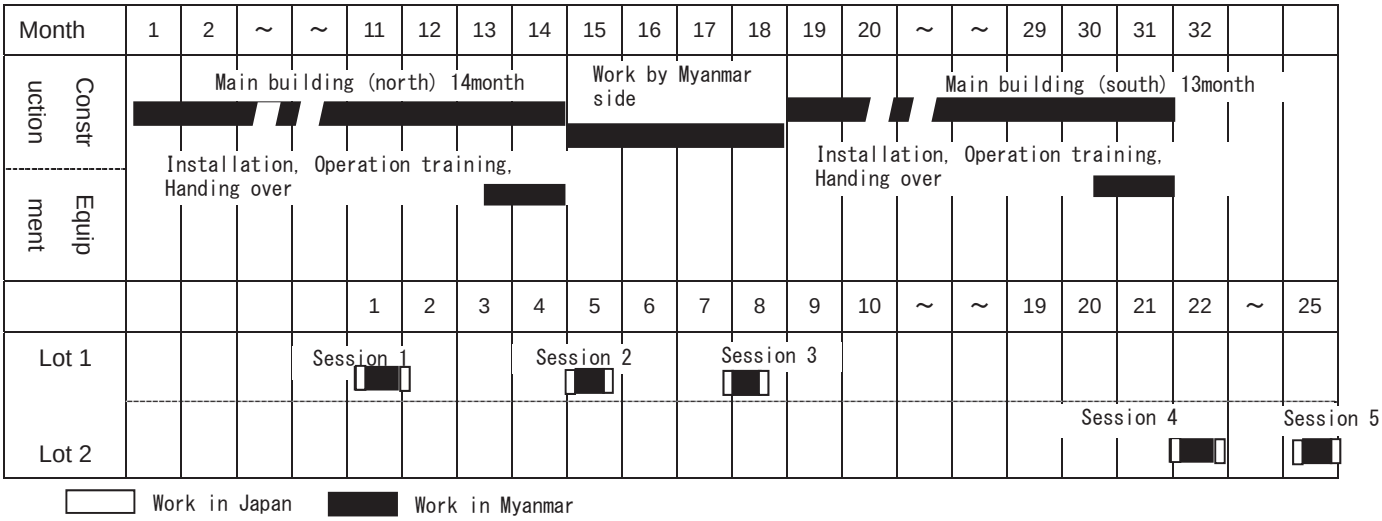
Focal group	Contents	Soft Component	Supplier
Doctors, nurse, staff in charge of maintenance	Explanation of the operation of equipment at installation	—	○
	Maintenance methods	○	—

6. Implementation Schedule

It is premised that working hours shall be 8 hours per day, 5 days per week, following the employment system in Myanmar.

As shown in the time table below, the soft component shall be divided into 2 lots, according to the equipment installation schedule for the main building (north) and main building (south). Lot 1 shall consist of 3 sessions (Session 1~3) whereas Lot 2 of 2 sessions (Session 4 and 5). Session 1 will start around 2 month before the commencement of installation for the Lot 1 equipment, and will take around 0.8 months, as shown in the figure below. Session 2 and 4 will start right after the completion of installation for each lot, and will take around 0.5 months. Session 3 and 5 will start around 3 months after the completion of installation for each lot, and will take around 0.6 months. It will take around 25 months from the commencement of the Session 1 to the completion of the Session 5.

Work Implementation Schedule of Soft Component



7. Outputs
    a. Completion report of soft component
    b. Equipment register book
    c. Daily maintenance sheet
    d. Standardized formats

8. Obligations of the Myanmar side

As a prerequisite of this soft component, MOH is requested to assign to the hospital a technical staff in charge of medical equipment maintenance, who participated in the BME training course conducted in October 2012, or with equivalent technical background, for one of the focal persons of the soft component. MOH is also requested to arrange a technical staff of CMSD who will participate the soft component under the Project for Improvement of Medical Equipment in Hospitals in Yangon and Mandalay, as an observer of this soft component.

MOH is strongly encouraged to hire and train BME and dispatch them to major hospitals, so that achievements of the soft component under this Project shall remain effectiveness for longer time. Outputs of the soft component, such as Equipment register book, Daily maintenance sheets, etc. should be updated whenever necessary and the information of medical equipment should also be updated timely.

5-2 Loikaw General Hospital

Soft Component Plan for Loikaw General Hospital

9. Background

Medical equipment of public hospitals in Myanmar, except for Yangon General Hospital, is under the control of the Central Medical Store Depot (CMSD), and maintained by the Technical Department of CMSD. Maintenance work of medical equipment, however, are actually done by each hospital. In line with the policy of the Ministry of Health (MOH) stressing fostering Bio Medical Engineer (BME) specialized in medical equipment, MOH conducted a BME training course in October and December 2012 in Nay Pyi Daw. CMSD dispatched 3 staffs to the course. As those courses were short-term intensive ones, it is still necessary to strengthen continuously the technical capacity of the BMEs.

In Loikaw general hospital, where there is no maintenance department in it, maintenance work of medical equipment are being done by users, such as doctors or nurses. In case it is technically difficult for them to deal with the case, they first ask CMSD for support, and in case it is still difficult for CMSD, they ask local agents of manufacturers for repair or trouble shooting. After collecting the request from each department, the medical superintendent or deputy medical superintendent contact to CMSD or those agents on behalf of the hospital. Ledgers used for keeping record of maintenance work, document forms used inside the hospital or for sending request outside, etc. are not well organized and not kept appropriately. Under these circumstances, it is necessary and significant to provide training of medical equipment maintenance for end-users in the hospital and newly assigned technical staff, in order to utilize the medical equipment to be procured under this Project for long period.

10. Objectives

Under the responsibility of medical superintendent, maintenance system of medical equipment shall be organized. Document formats used between the hospital and CMSD/local agents, shall be standardize and properly used. Annual budgetary planning of spare parts or consumables shall be made possible. Medical equipment maintenance shall be regarded as one of the important aspects of hospital administration. The medical equipment maintenance department shall be able to provide technical training to the end-users in the hospital about appropriate daily maintenance method.

11. Goals

- Under the responsibility of the person in charge of equipment maintenance, organizational structure, scope of work, assigned responsibility shall be made clear.
- Daily maintenance work shall be conducted appropriately, using the standardized document formats
- Annual budgetary planning of spare parts and consumables shall be made possible, using the standardized ledgers.

12. Confirmation Methods of Achieved Goals

- Person in charge of medical equipment maintenance and its organization with clearly assigned scope of work and responsibilities.
- Use of standardized document formats for daily maintenance work
- Annual budget plan for spare parts and consumables, prepared by using the standardized document formats

13. Activities

Activities of the soft component will be implemented under the following three sessions.

Session	Time Schedule	Objectives
Session 1	Starts around 2 months before the commencement of installation of medical equipment, and complete by the commencement of installation.	Before the installation of medical equipment, the Consultant will assist to prepare common equipment register book, provide daily maintenance sheet and standardized format, and simulate the operation of these sheets and formats. Target equipment shall include existing equipment as well as the equipment under the Project.
Session 2	Starts right after the completion of the installation of medical equipment.	Maintenance of equipment will be implemented using the daily maintenance sheet and standardized format provided in session 1. Instructions on trouble shooting will be provided during the maintenance service.
Session 3	Starts around 3 months after the completion of the installation of medical equipment.	Review of maintenance methods using daily maintenance sheet and standardized format. Instruction of trouble shooting will be provided during the maintenance service. Instructions on how to make procurement plans of spare parts and consumables using equipment register book.

Focal group for the soft component are Medical Superintendent and Deputy Medical Superintendent, doctors, nurses and newly assigned technical staff in charge of maintenance. CMSD staff who participated in the soft component under the Project for Improvement of Medical Equipment in Hospitals in Yangon and Mandalay, will be requested to participate as an observer for the soft component under this Project.

The scope of service of soft component and instruction of equipment operation provided by the Supplier are shown as below.

Scope of Service

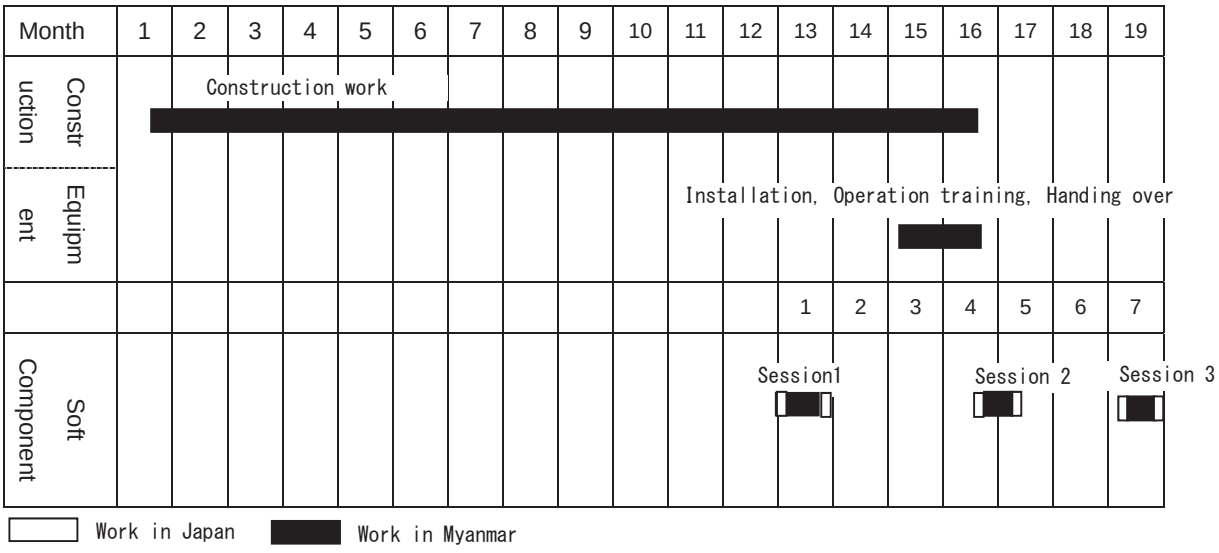
Focal group	Contents	Soft Component	Supplier
Doctors, nurse, staff in charge of maintenance	Explanation of the operation of equipment at installation	—	○
	Maintenance methods	○	—

14. Implementation Schedule

It is premised that working hours shall be 8 hours per day, 5 days per week, following the employment system in Myanmar.

Session 1 will start around 2 month before the commencement of installation and will take around 0.8 months, as shown in the figure below. Session 2 will start right after the completion of installation, and will take around 0.5 months. Session 3 will start around 3 months after the completion of installation and will take around 0.6 months. It will take around 7 months from the commencement of the Session 1 to the completion of the Session 3.

Work Implementation Schedule of Soft Component



15. Outputs

e. Completion report of soft component
f. Equipment register book
g. Daily maintenance sheet
h. Standardized formats

16. Obligations of the Myanmar side

As a prerequisite of this soft component, MOH is requested to assign to the hospital a technical staff in charge of medical equipment maintenance, who participated in the BME training course conducted in October 2012, or with equivalent technical background, for one of the focal persons of the

soft component. MOH is also requested to arrange a technical staff of CMSD who will participate the soft component under the Project for Improvement of Medical Equipment in Hospitals in Yangon and Mandalay, as an observer of this soft component.

MOH is strongly encouraged to hire and train BME and dispatch them to major hospitals, so that achievements of the soft component under this Project shall remain effectiveness for longer time. Outputs of the soft component, such as Equipment register book, Daily maintenance sheets, etc. should be updated whenever necessary and the information of medical equipment should also be updated timely.

6. Other Relevant Data

Project Title : The Project for Improving General Hospitals in the Republic of the Union pf Myanmar

No.	Title	Issuing Institution	Issued Year
1	MYANMAR HEALTH STATISTICS 2010	Ministry of Health	2010
2	Annual Public Health Statistics Report 2009	Ministry of Health	2011
3	Annual Hospital Statistics Report 2009	Ministry of Health	2011
4	NATIONAL HEALTH PLAN (2011-2016)	Ministry of Health	2010
5	THE MYANMAR EMERGENCY MEDICINE DEVELOPMENT PROGRAM	International Federation of Emergency Medicine	2013
6	The States & Regions of Myanmar	D.P.S. Map	---
7	MYANMAR Country Map	Periplus Editions	---
8			
9			
10			
11			
12			

7. References

7-1 Lashio General Hospital

7-1-1 Topographic Map of the Site

7-1-2 Boring Data of the Site

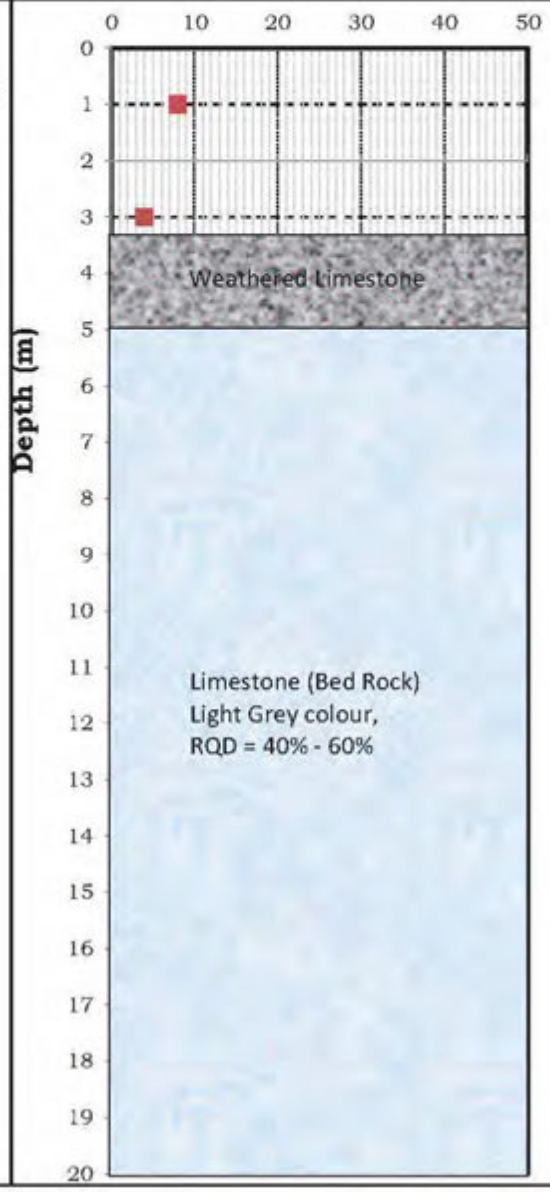
(1) Bore Hole Point BH-1

PROJECT: Improving State Hospital in Myanmar
LOCATION: Lashio Township, Shan State
BUILDING TYPE: State Hospital Building Extension
TEST MEHTOD: Standard Penetration Test.
TOTAL DEPTH: 20 m
GROUND WATER LEVEL: Nil

BORE HOLE NO. BH.1
STARTED DATE: 18.10.2013
COMPLETED DATE: 19.10.2013
LOGGED BY: U Ye Kyaw Thu
CHECKED BY: U Htat Myat Kyaw

DEPTH (M)	Graphic Log	Description of Strata	Density (g/m³)	Moisture(%)	SPT "N" Value	Bearing Capacity T/m²
0–3		Clayey SILT, Firm, Reddish Brown colour,	1.81	38.20	8	10.87
				UD		
3			1.81	38.20	4	6.16
4–5		Weathered Limestone with rock fragment				
5–20		Limestone (Bed Rock) Light Grey colour				

S.P.T. Number of Blows Curve. N Value



Mya Yar Pin Co.,Ltd.

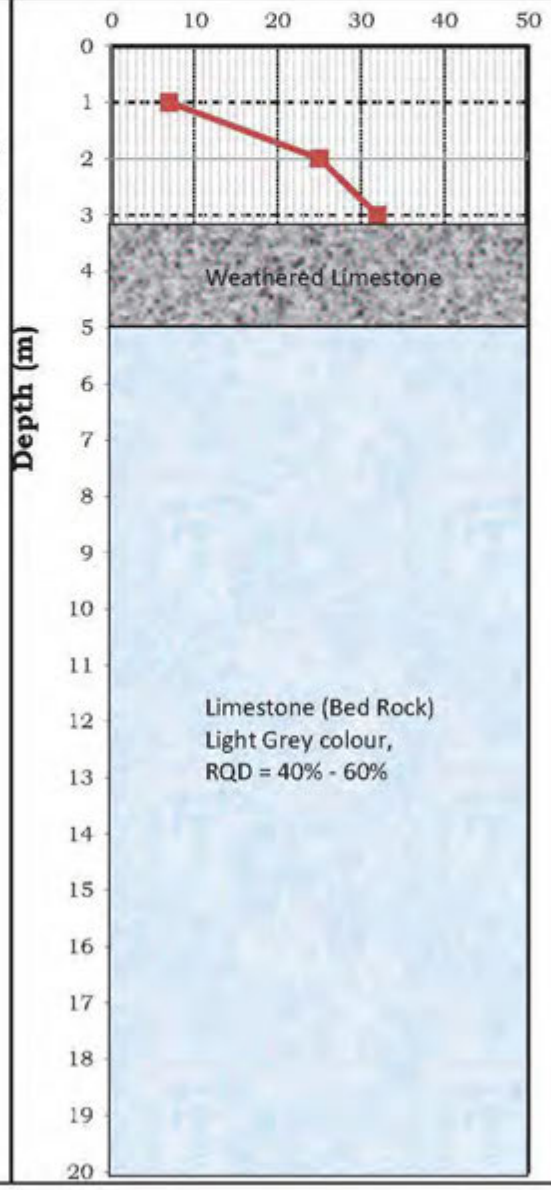
(2) Bore Hole Point BH-2

PROJECT: Improving State Hospital in Myanmar
LOCATION: Lashio Township, Shan State
BUILDING TYPE: State Hospital Building Extension
TEST MEHTOD: Standard Penetration Test.
TOTAL DEPTH: 20 m
GROUND WATER LEVEL: Nil

BORE HOLE NO. BH.2
STARTED DATE: 20.10.2013
COMPLETED DATE: 21.10.2013
LOGGED BY: U Ye Kyaw Thu
CHECKED BY: U Htat Myat Kyaw

DEPTH (M)	Graphic Log	Description of Strata	Density (g/m³)	Moisture(%)	SPT "N" Value	Bearing Capacity T/m²
0–3		Sandy SILT, Firm to Very Stiff, Reddish Brown colour,	1.88	24.33	7	9.51
			1.88	24.33	25	38.49
			1.88	24.33	32	49.27
4–5		Weathered Limestone with rock fragment				
6–20		Limestone (Bed Rock) Light Grey				

S.P.T. Number of Blows Curve.
N Value



Mya Yar Pin Co.,Ltd.

(3) Bore Hole Point BH-3

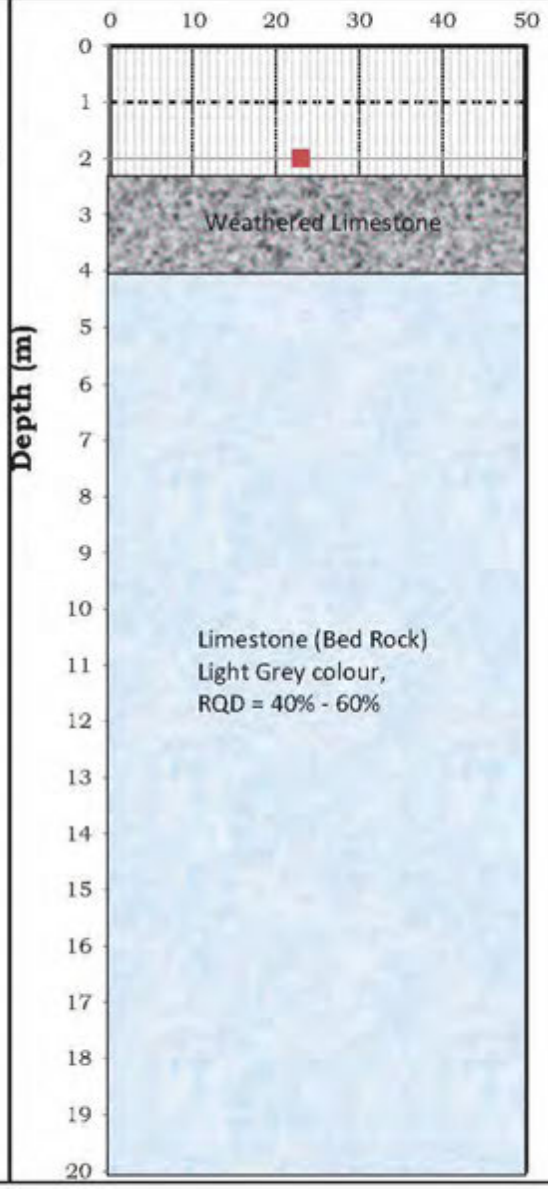
PROJECT: Improving State Hospital in Myanmar
LOCATION: Lashio Township, Shan State
BUILDING TYPE: State Hospital Building Extension
TEST MEHTOD: Standard Penetration Test.
TOTAL DEPTH: 20 m
GROUND WATER LEVEL: Nil

BORE HOLE NO. BH.3
STARTED DATE: 21.10.2013
COMPLETED DATE: 22.10.2013
LOGGED BY: U Ye Kyaw Thu
CHECKED BY: U Htat Myat Kyaw

DEPTH (M)	Graphic Log	Description of Strata	Density (g/m³)	Moisture(%)	SPT "N" Value	Bearing Capacity T/m²
0 – 2		Sandy SILT, Very Stiff, Reddish Brown colour,	1.9	12.48	23	35.41
3 – 4		Weathered Limestone with rock fragment				
5 – 20		Limestone (Bed Rock) Light Grey				

UD

S.P.T. Number of Blows Curve.
N Value



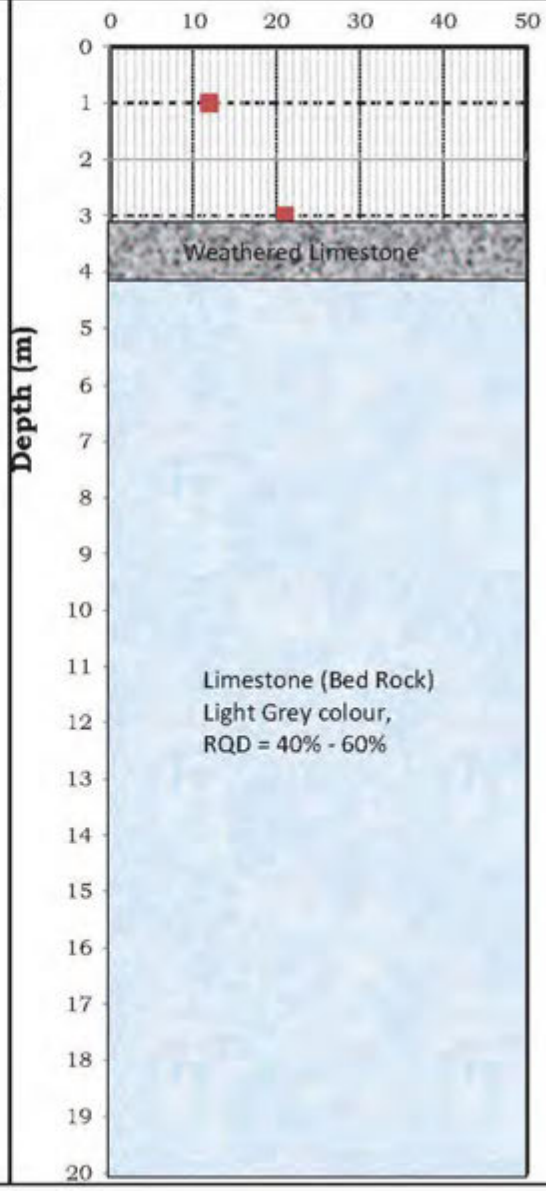
Mya Yar Pin Co.,Ltd.

(4) Bore Hole Point BH-4

PROJECT: Improving State Hospital in Myanmar
LOCATION: Lashio Township, Shan State
BUILDING TYPE: State Hospital Building Extension
TEST MEHTOD: Standard Penetration Test.
TOTAL DEPTH: 20 m
GROUND WATER LEVEL: Nil

BORE HOLE NO. BH.4
STARTED DATE: 22.10.2013
COMPLETED DATE: 23.10.2013
LOGGED BY: U Ye Kyaw Thu
CHECKED BY: U Htat Myat Kyaw

DEPTH (M)	Graphic Log	Description of Strata	Density (g/m^3)	Moisture(%)	SPT "N" Value	Bearing Capacity T/m^2
0–3		Clayey SILT, Stiff to Very Stiff, Reddish Brown colour,	1.80	13.31	12	16.30
				UD		
3–4		Weathered Limestone with rock fragment	1.80	13.31	21	32.33
4–20		Limestone (Bed Rock) Light Grey				



Mya Yar Pin Co.,Ltd.

7-1-3 Water Quality Survey Result

(1) Well Water

The Republic of The Union of Myanmar
Ministry of Health
Department of Health
National Health Laboratory
No.(35),Hmaw Kon Daik Street,Dagon Township,Yangon.
Ph : 371957 Fax : 371925

LABORATORY REPORT

WATER CHEMICAL ANALYSIS REPORT

Name : Lashio Hospital
Lab. Code No. : 1213
Date of Receipt : 15-Oct-2013
Date of Report : 28-Oct-2013
Reg: No : 29
Reg: Vol. No : 13
Address : A-2
Source of Water : Well water

Test	Result	Unit	Maximum Permissible Limit
Calcium	40.00	mg/l	200
Magnesium	61.60	mg/l	150

Remark
Within maximum permissible limit

Technician

Dr.Swe Setk
Head of Clinical Pathology
National health Laboratory
Yangon

ISO TECH
LABORATORY
Laboratory Technical Consultant: U Saw Christopher Maung
B.Sc Engg: (Civil), Dip S.E (Delft) Lecturer of YIT (Retd), Consultant (Y.C.D.C), LWSE 001.
Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)

ISO 9001:2008 Cert. No.688283

W1013 112

WATER QUALITY TEST RESULTS FORM

Client	လားရိုးဆေးရုံ
Nature of Water	A - 2 Well Water
Location	လားရိုး
Date and Time of collection	4.10.2013
Date and Time of arrival at Laboratory	8.10.2013
Date and Time of commencing examination	9.10.2013
Date and Time of completing	11.10.2013

Results of Water Analysis

			WHO Drinking Water Guideline (Geneva - 1993)
Phosphate		mg/l	
pH	8.1		6.5 - 8.5
Colour (True)	Nil	TCU	15 TCU
Turbidity	10	NTU	5 NTU
Conductivity		micro S/cm	
Total Hardness	242	mg/l as $CaCO_3$	500 mg/l as $CaCO_3$
Total Alkalinity		mg/l as $CaCO_3$	
Phenolphthalein Alkalinity		mg/l as $CaCO_3$	
Calcium Hardness		mg/l as $CaCO_3$	
Iron	0.38	mg/l	0.3 mg/l
Magnesium Hardness		mg/l as $CaCO_3$	
Manganese	Nil	mg/l	0.05 mg/l
Carbonate ($CaCO_3$)		mg/l as $CaCO_3$	
Chloride (as CL)	28	mg/l	250 mg/l
Sodium chloride (as NaCL)		mg/l	
Bicarbonate (HCO_3)		mg/l as $CaCO_3$	
Sulphate (as SO_4)	50	mg/l	200 mg/l
Total Solids		mg/l	1500 mg/l
Suspended Solids		mg/l	
Dissolved Solids	361	mg/l	1000 mg/l
Phenolphthalein Acidity		mg/l	
Methyl Orange Acidity		mg/l	
Salinity		ppt	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by
Signature: Hein
Name: Zaw Hein Oo
B.Sc (Chemistry)
Chemist
ISO TECH Laboratory

Approved by
Signature:
Name: Win Myint
B.E (Civil) 1980, M.MES
Technical Officer
ISO TECH Laboratory

(a division of WEG Co.,Ltd.)
No.18, Lanthit Road, Nanthargone Quarter, Insein Township, Yangon, Myanmar.
Ph: 01-640955, 09-73225175, 09-73242162, Fax: 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com

ISO TECH LABORATORY
Laboratory Technical Consultant: U Saw Christopher Maung
B.Sc Engg: (Civil), Dip S.E (Delft) Lecturer of YIT (Retd), Consultant (Y.C.D.C), LWSE 001.
Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)

ISO 9001:2008 Cert. No.688283

WTL-RE-001
Issue Date - 01-12-2012
Effective Date - 01-12-2012
Issue No - 1.0/Page 2 of 2

W1013 112

WATER QUALITY TEST RESULTS FORM

Client လားရှိုးဆေးရုံ

Nature of Water A - 2 Well Water

Location လားရှိုး

Date and Time of collection 4.10.2013

Date and Time of arrival at Laboratory 8.10.2013

Date and Time of commencing examination 9.10.2013

Date and Time of completing 11.10.2013

Results of Water Analysis

WHO Drinking Water Guideline (Geneva - 1993)

Temperature (°C)		°C	
Fluoride (F)	Nil	mg/l	1.5 mg/l
Lead (as Pb)	Nil	mg/l	0.01 mg/l
Arsenic (As)	Nil	mg/l	0.01 mg/l
Nitrate ($N.NO_3$)	0.10	mg/l	50 mg/l
Chlorine (Residual)		mg/l	
Ammonia (NH_3)		mg/l	
Ammonium (NH4)		mg/l	
Dissolved Oxygen (DO)		mg/l	
Chemical Oxygen Demand (COD)		mg/l	
Biochemical Oxygen Demand (BOD) (5 days at 20 °C)		mg/l	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature:

Name: Zaw Hein Oo
B.Sc (Chemistry)
Chemist
ISO TECH Laboratory

Approved by

Signature:

Name: Win Myint
B.E (Civil) 1980, M.MES
Technical Officer
ISO TECH Laboratory

The Republic of The Union of Myanmar
Ministry of Health
Department of Health
National Health Laboratory
No.(35),Hmaw Kon Daik Street,Dagon Township,Yangon
Ph : 371957 Fax : 371925

LABORATORY REPORT

WATER CHEMICAL ANALYSIS REPORT

Name : Lashio Hospital
Lab. Code No. : 1212
Date of Receipt : 15-Oct-2013
Date of Report : 28-Oct-2013
Reg: No : 28
Reg: Vol. No : 13
Address : B-1
Source of Water : Well water

Test	Result	Unit	Maximum Permissible Limit
Calcium	60.00	mg/l	200
Magnesium	63.00	mg/l	150

Remark
Within maximum permissible limit

Technician

Dr.Swe Setk
Head of Clinical Pathology
National health Laboratory
Yangon

ISO TECH LABORATORY
Laboratory Technical Consultant: U Saw Christopher Maung
B.Sc Engg: (Civil), Dip S.E (Delft) Lecturer of YIT (Retd), Consultant (Y.C.D.C), LWSE 001.
Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)

ISO 9001:2008 Cert. No.688283

WTL-RE-001
Issue Date - 01-12-2012
Effective Date - 01-12-2012
Issue No - 1.0/Page 1 of 2

W1013 113

WATER QUALITY TEST RESULTS FORM

Client လားရှိုးဆေးရုံ
Nature of Water B - 1 Well Water
Location လားရှိုး
Date and Time of collection 4.10.2013
Date and Time of arrival at Laboratory 8.10.2013
Date and Time of commencing examination 9.10.2013
Date and Time of completing 11.10.2013

Results of Water Analysis

			WHO Drinking Water Guideline (Geneva - 1993)
Phosphate		mg/l	
pH	8.1		6.5 - 8.5
Colour (True)	Nil	TCU	15 TCU
Turbidity	4	NTU	5 NTU
Conductivity		micro S/cm	
Total Hardness	318	mg/l as $CaCO_3$	500 mg/l as $CaCO_3$
Total Alkalinity		mg/l as $CaCO_3$	
Phenolphthalein Alkalinity		mg/l as $CaCO_3$	
Calcium Hardness		mg/l as $CaCO_3$	
Iron	0.27	mg/l	0.3 mg/l
Magnesium Hardness		mg/l as $CaCO_3$	
Manganese	Nil	mg/l	0.05 mg/l
Carbonate ($CaCO_3$)		mg/l as $CaCO_3$	
Chloride (as CL)	34	mg/l	250 mg/l
Sodium chloride (as NaCL)		mg/l	
Bicarbonate (HCO_3)		mg/l as $CaCO_3$	
Sulphate (as SO_4)	55	mg/l	200 mg/l
Total Solids		mg/l	1500 mg/l
Suspended Solids		mg/l	
Dissolved Solids	383	mg/l	1000 mg/l
Phenolphthalein Acidity		mg/l	
Methyl Orange Acidity		mg/l	
Salinity		ppt	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by
Signature:
Name: Zaw Hein Oo
B.Sc (Chemistry)
Chemist
ISO TECH Laboratory

Approved by
Signature:
Name: Win Myint
B.E (Civil) 1980, M.MES
Technical Officer
ISO TECH Laboratory

(a division of WEG Co.,Ltd.)
No.18, Lanthit Road, Nanthargone Quarter, Insein Township, Yangon, Myanmar.
Ph: 01-640955, 09-73225175, 09-73242162, Fax: 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com

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LABORATORY
Laboratory Technical Consultant: U Saw Christopher Maung
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Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)

ISO 9001:2008 Cert. No.688283

W1013 113

WATER QUALITY TEST RESULTS FORM

Client: လားရှိုးဆေးရုံ

Nature of Water: B - 1 Well Water

Location: လားရှိုး

Date and Time of collection: 4.10.2013

Date and Time of arrival at Laboratory: 8.10.2013

Date and Time of commencing examination: 9.10.2013

Date and Time of completing: 11.10.2013

Results of Water Analysis

			WHO Drinking Water Guideline (Geneva - 1993)
Temperature (°C)		°C	
Fluoride (F)	Nil	mg/l	1.5 mg/l
Lead (as Pb)	Nil	mg/l	0.01 mg/l
Arsenic (As)	Nil	mg/l	0.01 mg/l
Nitrate ($N.NO_3$)	0.03	mg/l	50 mg/l
Chlorine (Residual)		mg/l	
Ammonia (NH_3)		mg/l	
Ammonium (NH4)		mg/l	
Dissolved Oxygen (DO)		mg/l	
Chemical Oxygen Demand (COD)		mg/l	
Biochemical Oxygen Demand (BOD) (5 days at 20 °C)		mg/l	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature: Hein

Name: Zaw Hein Oo
B.Sc (Chemistry)
Chemist
ISO TECH Laboratory

Approved by

Signature:

Name: Win Myint
B.E (Civil) 1980, M.MES
Technical Officer
ISO TECH Laboratory

(2) Tap Water

The Republic of The Union of Myanmar
Ministry of Health
Department of Health
National Health Laboratory
No.(35),Hmaw Kon Daik Street,Dagon Township,Yangon.
Ph : 371957 Fax : 371925

LABORATORY REPORT

WATER CHEMICAL ANALYSIS REPORT

Name	: Lashio Hospital	Lab. Code No.	: 1214
Date of Receipt	: 15-Oct-2013	Date of Report	: 28-Oct-2013
Reg: No	: 30	Reg: Vol. No	: 13
Address	: A-1		
Source of Water	: City water		

Test	Result	Unit	Maximum Permissible Limit
Calcium	32.00	mg/l	200
Magnesium	50.40	mg/l	150

Remark
Within maximum permissible limit

Technician

Dr.Swe Setk
Head of Clinical Pathology
National health Laboratory
Yangon

ISO TECH LABORATORY
Laboratory Technical Consultant: U Saw Christopher Maung
B.Sc Engg: (Civil), Dip S.E (Delft) Lecturer of YIT (Retd), Consultant (Y.C.D.C), LWSE 001.
Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)

ISO 9001:2008 Cert. No.686283

W1013 111

WATER QUALITY TEST RESULTS FORM

Client	လားရိုးဆေးရုံ
Nature of Water	A - 1 City Water
Location	လားရိုး
Date and Time of collection	4.10.2013
Date and Time of arrival at Laboratory	8.10.2013
Date and Time of commencing examination	9.10.2013
Date and Time of completing	11.10.2013

Results of Water Analysis — **WHO Drinking Water Guideline (Geneva - 1993)**

Phosphate		mg/l	
pH	8.6		6.5 - 8.5
Colour (True)	Nil	TCU	15 TCU
Turbidity	14	NTU	5 NTU
Conductivity		micro S/cm	
Total Hardness	212	mg/l as $CaCO_3$	500 mg/l as $CaCO_3$
Total Alkalinity		mg/l as $CaCO_3$	
Phenolphthalein Alkalinity		mg/l as $CaCO_3$	
Calcium Hardness		mg/l as $CaCO_3$	
Iron	0.45	mg/l	0.3 mg/l
Magnesium Hardness		mg/l as $CaCO_3$	
Manganese	Nil	mg/l	0.05 mg/l
Carbonate ($CaCO_3$)		mg/l as $CaCO_3$	
Chloride (as CL)	5	mg/l	250 mg/l
Sodium chloride (as NaCL)		mg/l	
Bicarbonate (HCO_3)		mg/l as $CaCO_3$	
Sulphate (as SO_4)	42	mg/l	200 mg/l
Total Solids		mg/l	1500 mg/l
Suspended Solids		mg/l	
Dissolved Solids	205	mg/l	1000 mg/l
Phenolphthalein Acidity		mg/l	
Methyl Orange Acidity		mg/l	
Salinity		ppt	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by
Signature: Hein
Name: Zaw Hein Oo
B.Sc (Chemistry)
Chemist
ISO TECH Laboratory

Approved by
Signature:
Name: Win Myint
B.E (Civil) 1980, M.MES
Technical Officer
ISO TECH Laboratory

ISO TECH LABORATORY
Laboratory Technical Consultant: U Saw Christopher Maung
B.Sc Engg: (Civil), Dip S.E (Delft) Lecturer of YIT (Retd), Consultant (Y.C.D.C), LWSE 001.
Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)

ISO 9001:2008 Cert. No.688283

W1013 111

WATER QUALITY TEST RESULTS FORM

Client: လားရှိုးဆေးရုံ
Nature of Water: A - 1 City Water
Location: လားရှိုး
Date and Time of collection: 4.10.2013
Date and Time of arrival at Laboratory: 8.10.2013
Date and Time of commencing examination: 9.10.2013
Date and Time of completing: 11.10.2013

Results of Water Analysis

			WHO Drinking Water Guideline (Geneva - 1993)
Temperature (°C)		°C	
Fluoride (F)	Nil	mg/l	1.5 mg/l
Lead (as Pb)	Nil	mg/l	0.01 mg/l
Arsenic (As)	Nil	mg/l	0.01 mg/l
Nitrate ($N.NO_3$)	0.20	mg/l	50 mg/l
Chlorine (Residual)		mg/l	
Ammonia (NH_3)		mg/l	
Ammonium (NH4)		mg/l	
Dissolved Oxygen (DO)		mg/l	
Chemical Oxygen Demand (COD)		mg/l	
Biochemical Oxygen Demand (BOD) (5 days at 20 °C)		mg/l	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature: Hein

Name: Zaw Hein Oo
B.Sc (Chemistry)
Chemist
ISO TECH Laboratory

Approved by

Signature:

Name: Win Myint
B.E (Civil) 1980, M.MES
Technical Officer
ISO TECH Laboratory

7-2 Loikaw General Hospital

7-2-1 Topographic Map of the Site

7-2-2 Boring Data of the Site

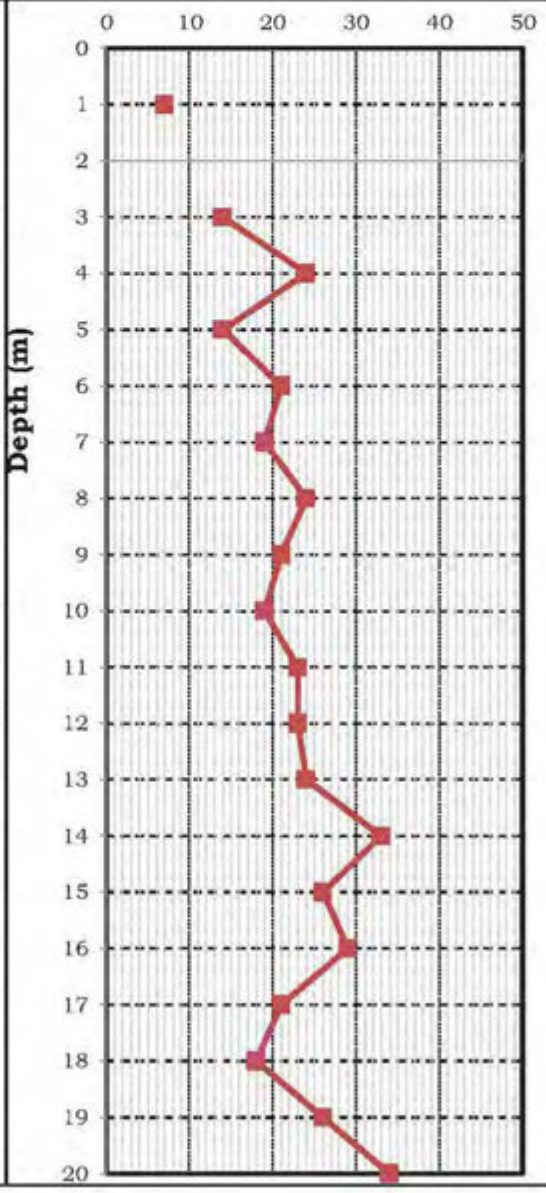
(1) Bore Hole Point BH-1

PROJECT: Improving State Hospital in Myanmar
LOCATION: Loikaw Township, Kayar State
BUILDING TYPE: State Hospital Building Extension
TEST MEHTOD: Standard Penetration Test.
TOTAL DEPTH: 20 m
GROUND WATER LEVEL: Nil

BORE HOLE NO. BH.1
STARTED DATE: 16.10.2013
COMPLETED DATE: 17.10.2013
LOGGED BY: U Ye Kyaw Thu
CHECKED BY: U Htat Myat Kyaw

DEPTH (M)	Graphic Log	Description of Strata	Density (g/m³)	Moisture(%)	SPT "N" Value	Bearing Capacity T/m²
0		Sandy SILT, Firm, Reddish colour,				
1			1.83	21.77	7	9.51
2		Clayey SILT, Stiff to Very Stiff, Reddish		UD		
3			1.87	24.6	14	21.55
4			1.82	29.32	24	34.48
5		Silty SAND, Reddish to Yellowish colour, Medium Dense	1.90	20.87	14	18.29
6		Clayey SILT, Stiff to Very Stiff, Yellowish to Light Grey	1.86	28.17	21	23.13
7			1.86	28.17	19	18.09
8		Sandy SILT, Very Stiff, Yellowish colour	1.88	21.51	24	20.12
9		Clayey SILT, Very Stiff, Yellowish to Light Grey colour	1.85	30.33	21	15.73
10			1.86	36.54	19	12.86
11			1.86	36.54	23	14.20
12			1.87	26.38	23	13.06
13			1.87	27.42	24	12.61
14		Sandy SILT, Very Stiff, Yellowish to Light Grey colour	1.92	28.25	33	16.13
15			1.92	28.25	26	11.88
16		Silty SAND, Medium Dense, Yellowish to Light Grey	1.96	25.29	29	12.44
17			1.96	25.29	21	8.49
18		Clayey SILT, Very Stiff, Yellowish to Light Grey colour	1.90	30.27	18	6.88
19			1.90	30.27	26	9.43
20			1.90	30.27	34	11.73

S.P.T. Number of Blows Curve.
N Value



Mya Yar Pin Co.,Ltd.

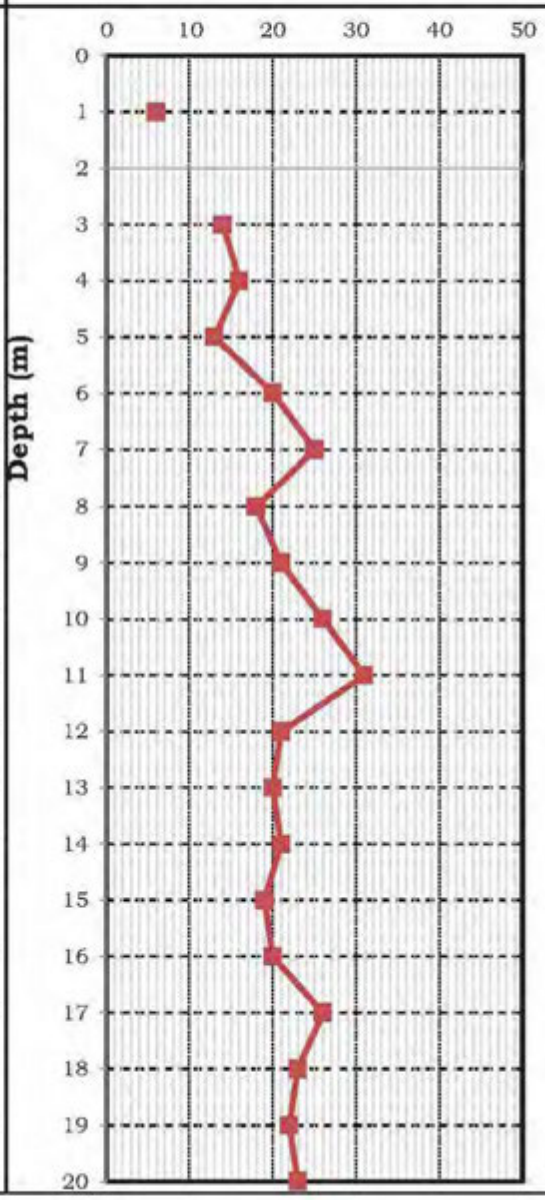
(2) Bore Hole Point BH-2

PROJECT: Improving State Hospital in Myanmar
LOCATION: Loikaw Township, Kayar State
BUILDING TYPE: State Hospital Building Extension
TEST MEHTOD: Standard Penetration Test.
TOTAL DEPTH: 20 m
GROUND WATER LEVEL: Nil

BORE HOLE NO. BH.2
STARTED DATE: 17.10.2013
COMPLETED DATE: 18.10.2013
LOGGED BY: U Ye Kyaw Thu
CHECKED BY: U Htat Myat Kyaw

DEPTH (M)	Graphic Log	Description of Strata	Density (g/m³)	Moisture(%)	SPT "N" Value	Bearing Capacity T/m²
0		Clayey SILT with Gravel, Firm, Yellowish colour,				
1			1.83	23.88	6	8.15
2		Clayey SILT, Stiff to Very Stiff, Yellowish to Light Grey colour		UD		
3			1.80	25.79	14	21.55
4			1.80	25.79	16	22.99
5			1.81	24.05	13	16.98
6			1.81	24.05	20	22.03
7			1.84	27.37	25	23.80
8		Clayey SILT with Gravel, Very Stiff, Yellowish to Light Grey colour,	1.82	20.26	18	15.09
9			1.85	21.32	21	15.73
10			1.87	24.23	26	17.60
11		Clayey SILT, Very Stiff, Yellowish to Light Grey colour	1.85	22.72	31	19.14
12			1.85	22.72	21	11.92
13			1.84	28.86	20	10.51
14			1.84	28.86	21	10.26
15			1.86	23.25	19	8.68
16			1.86	23.25	20	8.58
17			1.88	32.19	26	10.52
18			1.87	19.34	23	8.80
19			1.87	19.34	22	7.98
20			1.87	19.34	23	7.93

S.P.T. Number of Blows Curve.
N Value



Mya Yar Pin Co.,Ltd.

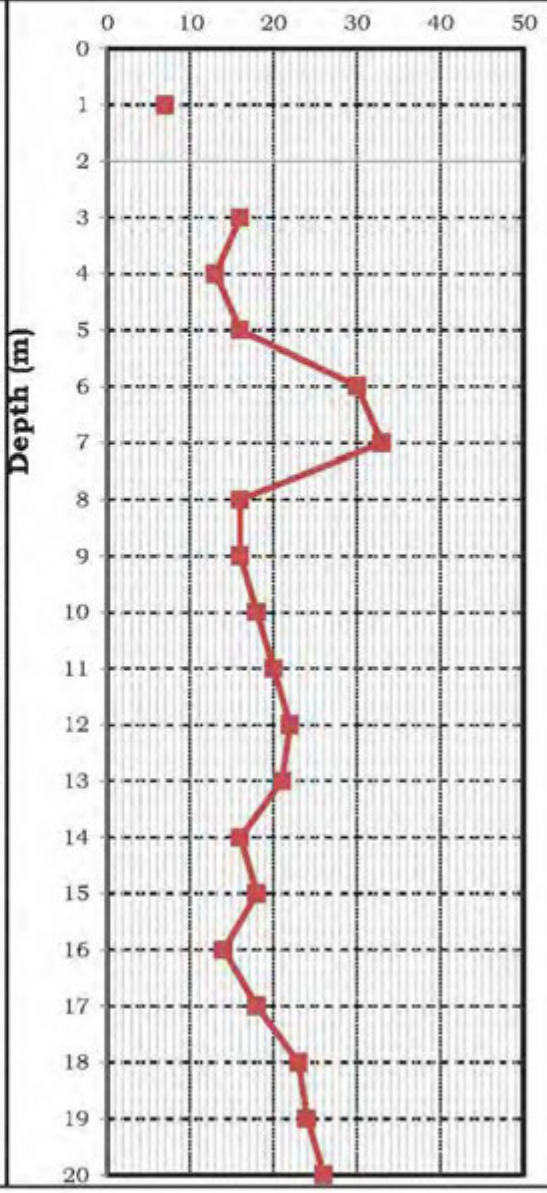
(3) Bore Hole Point BH-3

PROJECT: Improving State Hospital in Myanmar
LOCATION: Loikaw Township, Kayar State
BUILDING TYPE: State Hospital Building Extension
TEST MEHTOD: Standard Penetration Test.
TOTAL DEPTH: 20 m
GROUND WATER LEVEL: Nil

BORE HOLE NO. BH.3
STARTED DATE: 18.10.2013
COMPLETED DATE: 19.10.2013
LOGGED BY: U Ye Kyaw Thu
CHECKED BY: U Htat Myat Kyaw

DEPTH (M)	Graphic Log	Description of Strata	Density (g/m³)	Moisture(%)	SPT "N" Value	Bearing Capacity T/m²
0–1		Sandy SILT, Firm, Reddish colour	1.83	26.6	7	9.51
2				UD		
3		Clayey SILT, Stiff to Very Stiff, Light Grey to Reddish colour	1.82	25.75	16	24.63
4			1.82	25.75	13	18.68
5			1.83	29.69	16	20.90
6			1.86	24.86	30	33.04
7			1.86	24.86	33	31.42
8		Sandy SILT, Very Stiff, Light Grey to Yellowish colour	1.85	20.47	16	13.42
9			1.85	20.47	16	11.99
10		Clayey SILT, Very Stiff, Light Grey to Yellowish colour	1.84	21.15	18	12.19
11			1.86	20.22	20	12.35
12		Sandy SILT, Very Stiff, Light Grey to Yellowish colour	1.86	20.22	22	12.49
13			1.85	27.46	21	11.03
14		Clayey SILT, Very Stiff, Light Grey to Yellowish colour	1.85	27.46	16	7.82
15			1.87	19.39	18	8.23
16			1.84	30.71	14	6.01
17			1.84	30.71	18	7.28
18			1.88	24.42	23	8.80
19			1.88	24.42	24	8.71
20			1.88	24.42	26	8.97

S.P.T. Number of Blows Curve.
N Value



Mya Yar Pin Co.,Ltd.

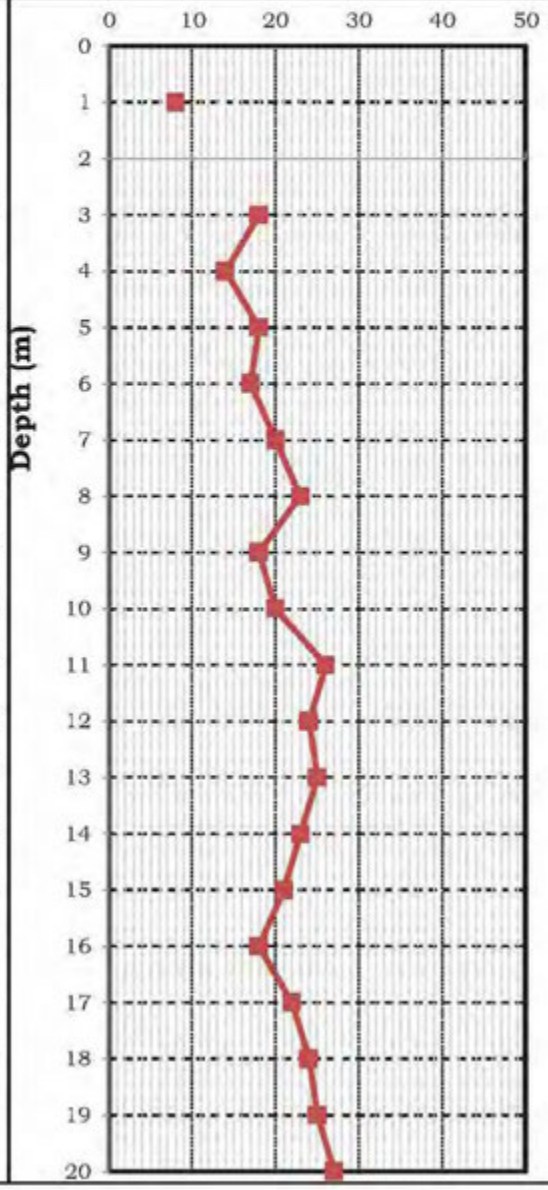
(4) Bore Hole Point BH-4

PROJECT: Improving State Hospital in Myanmar
LOCATION: Loikaw Township, Kayar State
BUILDING TYPE: State Hospital Building Extension
TEST MEHTOD: Standard Penetration Test.
TOTAL DEPTH: 20 m
GROUND WATER LEVEL: Nil

BORE HOLE NO. BH.4
STARTED DATE: 19.10.2013
COMPLETED DATE: 20.10.2013
LOGGED BY: U Ye Kyaw Thu
CHECKED BY: U Htat Myat Kyaw

DEPTH (M)	Graphic Log	Description of Strata	Density (g/m³)	Moisture(%)	SPT "N" Value	Bearing Capacity T/m²
0–1		Sandy SILT, Stiff to Very Stiff, Light Grey to Reddish colour	1.84	19.83	8	10.87
2				UD		
3			1.84	19.83	18	27.71
4		Clayey SILT, Stiff to Very Stiff, Light Grey to Reddish colour	1.81	27.51	14	20.11
5			1.81	27.51	18	23.52
6			1.82	24.43	17	18.72
7			1.84	32.05	20	19.04
8		Sandy SILT,Very Stiff, Light Grey to Yellowish colour	1.90	24.86	23	19.29
9			1.87	24.68	18	13.48
10			1.85	26.77	20	13.54
11		Clayey SILT,Very Stiff, Light Grey to Yellowish colour	1.85	26.77	26	16.06
12			1.85	26.77	24	13.62
13			1.85	26.77	25	13.13
14			1.85	26.77	23	11.24
15		Sandy SILT, Very Stiff, Light Grey to Yellowish colour	1.87	21.59	21	9.60
16			1.87	21.59	18	7.72
17		Clayey SILT,Very Stiff, Light Grey to Yellowish colour	1.86	22.66	22	8.90
18			1.86	22.66	24	9.18
19			1.86	22.66	25	9.07
20			1.86	22.66	27	9.31

S.P.T. Number of Blows Curve.
N Value



Mya Yar Pin Co.,Ltd.

7-2-3 Water Quality Survey Result

(1) Well Water

The Republic of The Union of Myanmar
Ministry of Health
Department of Health
National Health Laboratory
No.(35),Hmaw Kon Daik Street,Dagon Township,Yangon.
Ph : 371957 Fax : 371925

LABORATORY REPORT

WATER CHEMICAL ANALYSIS REPORT

Name : Loikaw Hospital
Lab. Code No. : 1215
Date of Receipt : 15-Oct-2013
Date of Report : 28-Oct-2013
Reg: No : 31
Reg: Vol. No : 13
Address :
Source of Water : Tube well

Test	Result	Unit	Maximum Permissible Limit
Calcium	16.00	mg/l	200
Magnesium	33.60	mg/l	150

Remark
Within maximum permissible limit

Technician

Dr.Swe Setk
Head of Clinical Pathology
National health Laboratory
Yangon

ISO TECH LABORATORY
Laboratory Technical Consultant: U Saw Christopher Maung
B.Sc Engg: (Civil), Dip S.E (Delft) Lecturer of YIT (Retd), Consultant (Y.C.D.C), LWSE 001.
Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)

ISO 9001:2008 Cert. No.688283

WTL-RE-001
Issue Date - 01-12-2012
Effective Date - 01-12-2012
Issue No - 1.0/Page 1 of 2

W1013 095

WATER QUALITY TEST RESULTS FORM

Client လှိုင်ကော်ဆေးရုံ

Nature of Water

Location လှိုင်ကော်မြို့

Date and Time of collection

Date and Time of arrival at Laboratory 5.10.2013

Date and Time of commencing examination 7.10.2013

Date and Time of completing 8.10.2013

Results of Water Analysis | **WHO Drinking Water Guideline (Geneva - 1993)**

Phosphate		mg/l	
pH	7.8		6.5 - 8.5
Colour (True)	10	TCU	15 TCU
Turbidity	52	NTU	5 NTU
Conductivity		micro S/cm	
Total Hardness	152	mg/l as $CaCO_3$	500 mg/l as $CaCO_3$
Total Alkalinity		mg/l as $CaCO_3$	
Phenolphthalein Alkalinity		mg/l as $CaCO_3$	
Calcium Hardness		mg/l as $CaCO_3$	
Iron	0.74	mg/l	0.3 mg/l
Magnesium Hardness		mg/l as $CaCO_3$	
Manganese	0.01	mg/l	0.05 mg/l
Carbonate ($CaCO_3$)		mg/l as $CaCO_3$	
Chloride (as CL)	4	mg/l	250 mg/l
Sodium chloride (as NaCL)		mg/l	
Bicarbonate (HCO_3)		mg/l as $CaCO_3$	
Sulphate (as SO_4)	18	mg/l	200 mg/l
Total Solids		mg/l	1500 mg/l
Suspended Solids		mg/l	
Dissolved Solids	139	mg/l	1000 mg/l
Phenolphthalein Acidity		mg/l	
Methyl Orange Acidity		mg/l	
Salinity		ppt	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by
Signature: Hein
Name: ~~Zaw Hein Oo~~
B.Sc (Chemistry)
Chemist
ISO TECH Laboratory

Approved by
Signature:
Name: ~~Win Myint~~
B.E (Civil) 1980, M.MES
Technical Officer
ISO TECH Laboratory

(a division of WEG Co.,Ltd.)
No.18, Lanthit Road, Nanthargone Quarter, Insein Township, Yangon, Myanmar.
Ph: 01-640955, 09-73225175, 09-73242162, Fax: 01-644506, E-mail: isotechlaboratory@gmail.com, Website: weg-myanmar.com

ISO TECH LABORATORY
Laboratory Technical Consultant: U Saw Christopher Maung
B.Sc Engg: (Civil), Dip S.E (Delft) Lecturer of YIT (Retd), Consultant (Y.C.D.C), LWSE 001.
Former Member (UNICEF, Water quality monitoring & Surveillance Myanmar)

ISO 9001:2008 Cert. No.688283

W1013 095

WATER QUALITY TEST RESULTS FORM

Client လွိုင်ကော်ဆေးရုံ

Nature of Water

Location လွိုင်ကော်မြို့

Date and Time of collection

Date and Time of arrival at Laboratory 5.10.2013

Date and Time of commencing examination 7.10.2013

Date and Time of completing 8.10.2013

Results of Water Analysis — **WHO Drinking Water Guideline (Geneva - 1993)**

Temperature (°C)		°C	
Fluoride (F)	Nil	mg/l	1.5 mg/l
Lead (as Pb)	Nil	mg/l	0.01 mg/l
Arsenic (As)	Nil	mg/l	0.01 mg/l
Nitrate ($N.NO_3$)	0.02	mg/l	50 mg/l
Chlorine (Residual)		mg/l	
Ammonia (NH_3)		mg/l	
Ammonium (NH4)		mg/l	
Dissolved Oxygen (DO)		mg/l	
Chemical Oxygen Demand (COD)		mg/l	
Biochemical Oxygen Demand (BOD) (5 days at 20 °C)		mg/l	

Remark: This certificate is issued only for the receipt of the test sample.

Tested by

Signature: Hein

Name: Zaw Hein Oo
B.Sc (Chemistry)
Chemist
ISO TECH Laboratory

Approved by

Signature:

Name: Win Myint
B.E (Civil) 1980, M.MES
Technical Officer
ISO TECH Laboratory

7-3 Requested Materials Investigation Chart

7-3-1 Lashio General Hospital

Examination List of the Requested Equipment (Lashio General Hospital)

T/N No.	Department	Request Equipment	Req. Q'ty	Purpose	Necessity	Tech. Level	Operation	Maintainance	Cost	Judgment	Project No.	Planned Name of Equipment	Notes	Planned Q'ty	Classification
1	Operation Theatre	Operation Table	3	◎	○	○	○	○	○	△	LS-072	Operation table	3 units of the deteriotated existing equipment to be replaced and 1 unit to be placed in the newly founded Operation Theatre	4	Rep /New
2	Operation Theatre	Ceiling lamps	2	○	○	○	○	○	○	△	LS-019	Ceiling lamps	2 units to be placed in the newly founded Operation Theatre for replacement of 2 units of the existing equipment	4	Rep /New
3	Operation Theatre	Patient monitor	3	○	○	○	○	○	○	△	LS-080	Patient monitor	3 units of the deteriotated existing equipment to be replaced and 2 units with specification of being capable of monitoring the standard measurement items to be placed in the newly founded Operation Theatre	5	Rep /New
4	Operation Theatre	Electrosurgical unit	3	○	○	○	○	○	○	△	LS-031	Electrosurgical unit	3 units of the deteriotated existing equipment to be replaced and 1 unit to be placed in the newly founded Operation Theatre	4	Rep /New
5	Operation Theatre	Suction machine	3	○	○	○	○	○	○	△	LS-105	Suction machine	For general equipment of general operation, 1 unit to be placed in the existing Operation Theatre and the other 4 units to be placed in the newly founded Operation Theatre	5	Rep /New
6	Operation Theatre	Infusion pump	2	○	○	○	○	○	○	△	LS-050	Infusion pump	2 units of the deteriotated existing equipment to be replaced and 3 units to be placed in the newly founded Operation Theatre	5	Rep /New
7	Operation Theatre	Boiling Sterilizer, Electric type	2	○	○	○	○	○	○	○	LS-017	Boiling sterilizer	For sterilization by boiling water of the instruments for minor operation of the surgery	2	Rep
8	Operation Theatre	Endoscope (Upper GI) (Fiber)	1	○	○	○	○	○	○	○	LS-034	Endoscope unit, upper GI, fibre	The existing equipment to be replaced for examination/cure of upper part digestive organ pipe such as the gullet, stomach, and duodenum	1	Rep
9	Operation Theatre	Ambu resuscitator	1	○	○	○	○	○	○	○	LS-002	Ambu bag set	1 unit (manual and portable type) to be replaced for resuscitation of the adults	1	Rep
10	Operation Theatre	Anaesthesia machine	2	○	○	○	○	○	○	△	LS-005	Anaesthesia machine	2 units of the deteriotated existing equipment to be replaced and 2 units which have 2 vaporizers to be placed in the newly founded Operation Theatre	4	Rep /New
11	Operation Theatre	Oxygen Concentrator	3	○	○	○	○	○	○	△	LS-074	Oxygen concentrator	3 units of the deteriotated existing equipment to be replaced and 2 units to be placed in the newly founded Operation Theatre	5	Rep /New
12	Operation Theatre	High pressure Steam sterilizer	2	○	○	○	○	○	○	○	LS-007	Autoclave, large	6 units of the deteriotated existing equipment (small type) to be replaced and 2 units (large type) to be placed in the newly founded sterilization room	2	Rep
	Operation Theatre	Electrosurgical unit		○	○	○	○	○	○	○	LS-032	Electrosurgical unit, O & G	The deteriotated existing equipment to be replaced for cutting and cure of the cervical cancer	1	Rep
	Operation Theatre			○	○	○	○	○	○	○	LS-081	Patient trolley	5 units to be placed at trolley space in the newly Operation Theatre	5	New
13	ICU	ICU Bed	2	○	○	○	○	○	○	△	LS-040	Gatch bed	4 units to be placed in the newly founded ICU	4	New
14	ICU	Oxygen Concentrator	1	○	○	○	○	○	○	○	LS-074	Oxygen concentrator	For replacement of 1 unit of the deteriotated existing equipment	1	Rep
15	ICU	Defibrillator, with Cart	1	○	○	○	○	○	○	○	LS-025	Defibrillator	For replacement of 1 unit of the deteriotated existing equipment	1	Rep
16	ICU	Ventilator for ICU	1	○	○	○	○	○	○	○	LS-114	Ventilator, adult	1 unit of the deteriotated existing equipment to be replaced in the newly founded ICU	1	Rep
17	ICU	Air Compressor	1	○	○	○	○	○	○	○	LS-115	Ventilator, pediatric	1 unit of the deteriotated existing equipment for pediatrics to be replaced in the newly founded ICU	1	Rep
18	ICU	Patient monitor	2	○	○	○	○	○	○	○	LS-080	Patient monitor	For replacement of 2 units of the deteriotated existing equipment, to be placed in the newly founded ICU	2	Rep

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19	ICU	Suction machine	2	○	○	○	○	○	○	○	LS-105	Suction machine	To be placed for general equipment in ICU	2	New
20	ICU	Pulse Oximeter	1	○	○	○	○	○	○	○	LS-089	Pulse oxymeter	To be placed for measurement of oxygen saturation density of the ICU patients	1	New
21	ICU	Autoclave, Table top type	1	○	○	○	○	○	○	○	LS-008	Autoclave, table top	For sterilization in the sterilization room of the instruments used in the ICU	1	New
22	Radiology Department	General purpose X-Ray machine, 500mA	1	○	○	○	○	○	○	○	LS-123	X-ray machine, digital	To be used for general X-ray photography of the arms and legs, bones, and the internal organs	1	Rep
23	Radiology Department	Ultrasound apparatus, General purpose	1	○	×	○	○	○	○	×			To be excluded as this item can be purchased by Myanmar parties		
	Radiology Department			○	○	○	○	○	○	○	LS-038	Film developer	To be used for general X-ray photography of the arms and legs, bones, and the internal organs	1	New
	Radiology Department			○	○	○	○	○	○	○	LS-121	X-ray film viewer, wall mount type	1 unit with specification of wall-mounted type to be placed for interpretation of radiograms in the newly founded Radiology Department	1	New
	Radiology Department			○	○	○	○	○	○	○	LS-124	X-ray film viewer, wall embedded type	To be used for general X-ray photography of the arms and legs, bones, and the internal organs	4	New
24	Oncology	Infusion pump	2	○	○	○	○	○	○	○	LS-050	Infusion pump	2 units to be placed in the newly founded Oncology Department	2	New
	Oncology			○	○	○	○	○	○	○	LS-001	Adult bed	5 units to be placed for inpatients of newly founded Oncology Ward	5	New
	Oncology			○	○	○	○	○	○	○	LS-013	Bedside locker	5 units to be placed for the beds of the inpatients	5	New
	Oncology			○	○	○	○	○	○	○	LS-027	Doctor's desk & chair	1 pair to be placed for consultation by the doctor	1	New
	Oncology			○	○	○	○	○	○	○	LS-035	Examination table	1 unit to be placed for the outpatients of Oncology section	1	New
25	OPD & Emergency	Patient trolley	2	○	○	○	○	○	○	○	LS-081	Patient trolley	2 units of the deteriotated existing equipment to be replaced in the newly founded OPD	2	Rep
26	OPD & Emergency	Oxygen Concentrator	2	○	○	○	○	○	○	○	LS-074	Oxygen concentrator	2 units of the deteriotated existing equipment to be replaced in the newly founded OPD	2	Rep
27	OPD & Emergency	Nebulizer, Ultrasonic	1	○	○	○	○	○	○	○	LS-067	Nebulizer	For treatment of the asthmatic patients	1	New
28	OPD & Emergency	Suction machine	3	○	○	○	○	○	○	○	LS-105	Suction machine	3 units to be replaced in the newly founded OPD for outpatients' and general equipment	3	Rep
29	OPD & Emergency	Defibrillator	1	○	○	○	○	○	○	○	LS-025	Defibrillator	For replacement of 1 unit of the deteriotated existing equipment	1	Rep
30	OPD & Emergency	Laryngoscope & Endotracheal tubes set	1	○	○	○	○	○	○	○	LS-060	Laryngoscope & Endotracheal tubes set	To be placed in the newly founded outpatient department as general equipment for the outpatients	1	Rep
	OPD			○	○	○	○	○	○	○	LS-027	Doctor's desk & chair	For consultation by the doctor	9	New
	OPD			○	○	○	○	○	○	○	LS-035	Examination table	For examination of the outpatients	9	New
	OPD			○	○	○	○	○	○	○	LS-039	Film viewer, desk top	2 units to be placed for interpretation of radiograms, desk top type	2	New
	OPD			○	○	○	○	○	○	○	LS-079	Patient chair	For the outpatients	9	New
	OPD			○	○	○	○	○	○	○	LS-112	Treatment table	For the treatment room of the outpatients	1	New
31	O & G	Spot light	4	○	○	○	○	○	○	○	LS-101	Spot light	For replacement of 4 units of the deteriotated existing equipment	4	Rep
32	O & G	Patient tolley	3	○	×	○	○	○	○	×	LS-081	Patient trolley	To be excluded as this item can be purchased by Myanmar parties		Rep

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33	O & G	Autoclave, Vertical type	1	○	○	○	○	○	○	○	LS-009	Autoclave, vertical	For sterilization of the used instruments in the Obstetrics & Gynecology	1	Rep
34	O & G	Boiling Sterilizer, Electric type	2	○	○	○	○	○	○	○	LS-017	Boiling sterilizer	For sterilization by boiling water of the instruments for the surgery	2	Rep
35	O & G	Oxygen Concentrator	2	○	○	○	○	○	○	○	LS-074	Oxygen concentrator	For replacement of 2 units of the deteriotated existing equipment	2	Rep
36	O & G	ECG	2	○	○	○	○	○	○	○	LS-029	ECG	For replacement of 2 units of the existing equipment	2	Rep
37	O & G	Infant warmer	5	○	○	○	○	○	○	△	LS-048	Infant warmer	3 units to be replaced as 2 units can be purchased by Myanmar parties	3	Rep
38	O & G	Suction machine, Foot type	2	○	○	○	○	○	○	○	LS-107	Suction machine, foot type	2 units of the existing equipment to be replaced to cope with the power failure	2	Rep
39	O & G	Fetal Heat Detector,Doppler	1	○	○	○	○	○	○	○	LS-037	Fetal heart detector, doppler	For replacement of the deteriotated existing equipment	1	Rep
40	O & G	Blind Screen with wheel,	2	○	○	○	○	○	○	○	LS-015	Blind screen with wheel	To be shared among the Obstetrics & Gynecology	2	Rep
41	O & G	Oxygen Inhaler set with Cylinder	5	○	○	○	○	○	○	○	LS-076	Oxygen Inhaler set with cylinder	2 units of the deteriotated existing equipment to be replaced and 3units to be added	5	Rep /New
42	O & G	Patient bed	50	○	○	○	○	○	○	○	LS-001	Adult bed	For replacement of all of the deteriotated existing equipment	50	Rep
	O & G			○	○	○	○	○	○	○	LS-018	Cardiotocograph machine	For monitoring the imformation about contraction of the womb etc, subject to mainly high-risk and great age pregnant women	1	Rep
43	Lab Department	Microscope binocular	1	○	○	○	○	○	○	○	LS-064	Microscope, binocular	For replacement of the deteriotated existing equipment	1	Rep
44	Lab Department	Spectrophotometer	1	○	○	○	○	○	○	○	LS-098	Spectrophotometer	For replacement of the deteriotated existing equipment for laboratory examination	1	Rep
45	Lab Department	Microhematocrit centrifuger for PCV (packed cell volume)	1	○	○	○	○	○	○	○	LS-042	Haematocrit centrifuge	The equipment for separation of blood cell in the blood	1	Rep
46	Lab Department	Autoclave, Vertical type	1	○	○	○	○	○	○	○	LS-009	Autoclave, vertical	To be placed as Project No. LS-009 for sterilization of the culture glasswear	1	New
47	Lab Department	Water bath, 20L	1	○	○	○	○	○	○	○	LS-117	Water bath	For replacement of the deteriotated existing equipment	1	Rep
48	Lab Department	Haematology analyzer	1	○	×	○	○	○	○	×			To be excluded as this item can be purchased by Myanmar parties		
49	Lab Department	ELISA System	1	○	○	○	○	○	○	○	LS-033	ELISA System	For the antibody and antigen examination	1	New
50	Lab Department	Coagulation Analyzer	1	○	○	○	○	○	○	○	LS-022	Coagulation analyzer	For replacement of the deteriotated equipment for hematology	1	Rep
51	Lab Department	Safty Cabinet	1	○	○	○	○	○	○	○	LS-094	Safety cabinet	To be used in the Microbiology Section of Lab Department	1	New
52	Lab Department	Laboratory table	10	○	○	○	○	○	○	△	LS-059	Labo center table	2 units to be placed in the newly founded laboratory examination department	2	New
53	Blood Bank	Platelet Shaker	1	○	○	○	○	○	○	○	LS-088	Platelet agitator with incubator	The deteriotated equipment for hematorogy to be replaced, for laboratory(hematorogy)	1	Rep
54	Blood Bank	Microscope binocular	1	○	○	○	○	○	○	○	LS-064	Microscope, binocular	For replacement of the deteriotated existing equipment	1	Rep
55	Blood Bank	Adjustable Auo-pippette (100 - 1,000µ)	1	○	○	○	○	○	○	○	LS-010	Auto-pippette set	For small sample dispensation	1	New
56	Blood Bank	Adjustable Auo-pippette (20 - 200µ)	1	○	△	○	○	○	○	△			To be placed as Project No. LS-010		
57	Blood Bank	Adjustable Auo-pippette (5 - 50µ)	1	○	△	○	○	○	○	△			To be placed as Project No. LS-010		

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58	Blood Bank	Hot Air Sterilizer (Oven)	1	○	○	○	○	○	○	○	LS-045	Hot air sterilizer	To be used for the equipment which can't be sterilized by the high pressure steam sterilization, for laboratory(microbiology)	1	Rep
59	Blood Bank	Centrifuge	1	○	○	○	○	○	○	○	LS-020	Centrifuge	For the general test tube of small volume of centrifuging the whole blood	1	Rep
60	Blood Bank	Blood storage refrigerator	1	○	○	○	○	○	○	○	LS-016	Blood storage refrigerator	For preservation of the blood bag, large model	1	Rep
	Blood Bank			○	○	○	○	○	○	○	LS-028	Donor couch	6 units of the deteriotated existing equipment to be replaced in the newly founded blood collection room as general equipment for blood collection	6	New
61	Paediatric	Wheel chair for Chidren	1	○	○	○	○	○	○	○	LS-119	Wheel chair for children	For replacement of the deteriotated existing equipment	1	Rep
62	Paediatric	Oxygen Concentrator	3	○	○	○	○	○	○	○	LS-074	Oxygen concentrator	For replacement of the deteriotated existing equipment	3	Rep
63	Paediatric	Phototherapy unit	1	○	○	○	○	○	○	○	LS-086	Phototherapy unit	For replacement of the deteriotated existing equipment, LED type	1	Rep
64	Paediatric	Infant Warmer with Skin temp.probe for NICU	1	○	○	○	○	○	○	○	LS-049	Infant warmer, NICU	For replacement of the deteriotated existing equipment, NICU type	1	Rep
65	Paediatric	Suction machine	1	○	○	○	○	○	○	○	LS-105	Suction machine	For replacement of the existing equipment	1	Rep
66	Paediatric	Suction machine, Foot type	2	○	○	○	○	○	○	○	LS-107	Suction machine, foot type	2 units of the existing equipment to be replaced to cope with the power failure	2	Rep
67	Paediatric	Bilirubin meter	1	○	○	○	○	○	○	○	LS-014	Bilirubin meter	For replacement of the existing equipment, capillary type	1	Rep
68	Paediatric	Infant Incubator	1	○	○	○	○	○	○	○	LS-047	Infant incubator	For replacement of the existing equipment, servo type	1	Rep
69	Paediatric	Nebulizer, Ultrasonic	1	○	○	○	○	○	○	○	LS-067	Nebulizer	For treatment of the paediatric and asthmatic patients, ultrasonic type	1	Rep
70	Paediatric	Spot light	1	○	○	○	○	○	○	○	LS-101	Spot light	For replacement of the deteriotated existing equipment, as Project No. LS-101	1	Rep
71	Paediatric	Ambu bag with Mask for Neonate	1	○	○	○	○	○	○	○	LS-002	Ambu bag set	For replacement of resuscitation of the neonates	1	Rep
72	Paediatric	Pulse oxymeter with neonate probe & child probe	1	○	○	○	○	○	○	○	LS-091	Pulse oxymeter, neonate and child	To be used for measurement of neonatal blood oxygenation level	1	Rep
73	Paediatric	Microhematocrit centrifuger for PCV (packed cell volume)	1	○	○	○	○	○	○	○	LS-042	Haematocrit centrifuge	For hematocrit separation	1	Rep
74	Paediatric	Oxygen Inhaler set with Cylinder	10	○	○	○	○	○	○	○	LS-076	Oxygen Inhaler set with cylinder	For replacement of 10 units of the deteriotated existing equipment	10	Rep
75	Paediatric	Patient bed	25	○	○	○	○	○	○	△	LS-001	Adult bed	For replacement of the deteriotated existing equipment	34	Rep
	Paediatric			○	○	○	○	○	○	○	LS-021	Child bed	For the paediatrics	18	New
	Paediatric			○	○	○	○	○	○	○	LS-024	CPAP Ventilator	For life saving of the neonatals with spontaneous dyspnea	3	New
76	Medical ward	Fowler's bed	2	○	○	○	○	○	○	○	LS-040	Gatch bed	For replacement of the deteriotated existing equipment	2	Rep
77	Medical ward	Bedside locker	14	○	○	○	○	○	○	○	LS-013	Bedside locker	For replacement of the deteriotated existing equipment	14	Rep
78	Medical ward	Oxygen Concentrator	2	○	○	○	○	○	○	○	LS-075	Oxygen concentrator, double	For replacement of 2 units of the deteriotated existing equipment	2	Rep
79	Medical ward	ECG	2	○	○	○	○	○	○	○	LS-029	ECG	2 units of the deteriotated existing equipment to be replaced in each ward for men and women	2	Rep
80	Medical ward	Suction machine	2	○	○	○	○	○	○	○	LS-105	Suction machine	1 unit of the deteriotated existing equipment to be replaced in each ward for men and women	2	Rep

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81	Medical ward	Nebulizer, Ultrasonic	10	○	○	○	○	○	○	○	LS-067	Nebulizer	5 units for men and the other 5 units for women to be placed for treatment of the asthmatic patients	10	New
82	Medical ward	Patient monitor	2	○	○	○	○	○	○	○	LS-080	Patient monitor	For replacement of the deteriotated existing equipment	2	Rep
83	Medical ward	Infusion pump	2	○	○	○	○	○	○	○	LS-050	Infusion pump	The deteriotated existing equipment to be replaced in each ward for men and women	2	Rep
84	Medical ward	Blind Screen with wheel,	2	○	○	○	○	○	○	○	LS-015	Blind screen with wheel	To be placed as Project No. LS-015 and shared in the Obstetrics & Gynecology	2	Rep
85	Medical ward	Pulse Oximeter	1	○	○	○	○	○	○	○	LS-089	Pulse oxymeter	For replacement of the deteriotated existing equipment, as Project No. LS-089	1	Rep
86	Medical ward	Patient bed	40	○	○	○	○	○	○	△	LS-001	Adult bed	45 units to be placed for inpatients of the Medical Ward	45	Rep
87	Surgical Ward	Oxygen Concentrator	1	○	○	○	○	○	○	○	LS-075	Oxygen concentrator, double	For replacement of 2 units of the deteriotated existing equipment	1	Rep
88	Surgical Ward	ECG	2	○	○	○	○	○	○	○	LS-029	ECG	2 units to be shared in the Surgical Ward	2	Rep
89	Surgical Ward	Suction machine	1	○	○	○	○	○	○	○	LS-105	Suction machine	For replacement of the deteriotated existing equipment	1	Rep
90	Surgical Ward	Autoclave, Vertical type	1	○	○	○	○	○	○	○	LS-009	Autoclave, vertical	To be placed as Project No. LS-009	1	New
91	Surgical Ward	Spot light	1	○	○	○	○	○	○	○	LS-101	Spot light	To be placed as Project No. LS-101	1	New
92	Surgical Ward	Stretcher with trolley	1	○	×	○	○	○	○	×	LS-081	Patient trolley	To be excluded as this item can be purchased by Myanmar parties		
93	Surgical Ward	Pulse Oximeter	1	○	○	○	○	○	○	○	LS-089	Pulse oxymeter	To be placed as Project No. LS-089	1	New
94	Surgical Ward	Blind Screen with wheel,	2	○	○	○	○	○	○	○	LS-015	Blind screen with wheel	To be placed as Project No. LS-015	2	New
95	Surgical Ward	Patient bed	40	○	○	○	○	○	○	○	LS-001	Adult bed	40 units to be placed for inpatients of the Surgical Ward	40	Rep
96	Ortho ward	Oxygen Concentrator Single & Double Outlet type	1	○	○	○	○	○	○	○	LS-075	Oxygen concentrator, double	For replacement of the deteriotated existing equipment	1	Rep
97	Ortho ward	Autoclave,Vertical Floor stand type	1	○	○	○	○	○	○	○	LS-009	Autoclave, vertical	To be placed as Project No. LS-009	1	New
98	Ortho ward	Patient bed	25	○	○	○	○	○	○	○	LS-001	Adult bed	25 units to be placed for inpatients of the Ortho Ward	25	Rep
99	Isolation Ward	Patient bed, with mattress	20	○	○	○	○	○	○	○	LS-001	Adult bed	20 units to be placed for inpatients (both of men and women included) in the Isolation Ward	20	New
100	Isolation Ward	Medicine trolley	2	○	×	○	○	○	○	×			To be excluded as this item can be purchased by Myanmar parties		
101	Isolation Ward	Stretcher	2	○	○	○	○	○	○	○	LS-081	Patient trolley	For replacement of 2 units of the deteriotated existing equipment	2	Rep
102	Isolation Ward	Bedside locker	20	○	○	○	○	○	○	○	LS-013	Bedside locker	For replacement of 20 units of the deteriotated existing equipment	20	Rep
103	Isolation Ward	Wheel chair	2	○	○	○	○	○	○	○	LS-118	Wheel chair	For replacement of 2 units of the deteriotated existing equipment	2	Rep
	Isolation Ward		2	○	○	○	○	○	○	○	LS-114	Ventilator, adult	1 unit to be placed in each of the Isolation Ward for men and women	2	New
104	ENT Ward	Operating microscope for ENT	1	○	○	○	○	○	○	○	LS-069	Operating microscope, ENT	For replacement of the deteriotated existing equipment	1	Rep
105	ENT Ward	Pure Tone Audiometer, Air+Bone Conduction	1	○	○	○	○	○	○	○	LS-006	Audiometer	For replacement of the deteriotated existing equipment, standard type	1	Rep

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106	ENT Ward	Instrument set for Ear Micro Surgery	1	○	○	○	○	○	○	○	LS-055	Instrument set, ear micro surgery	For replacement of the deteriotated existing equipment	1	Rep
107	ENT Ward	Otoscope with Head & Handle ,Rechargeable	1	○	○	○	○	○	○	○	LS-073	Otoscope set	For replacement of the deteriotated existing equipment	1	Rep
108	ENT Ward	Headlight with lightsource	1	○	○	○	○	○	○	○	LS-043	Head light, fiber optic	For replacement of the deteriotated existing equipment	1	Rep
109	ENT Ward	Fibre Optic Head Light (ENT) operating., 15-27mm focus ring & 50cm distance	1	○	○	○	○	○	○	△			To be included in the Project No. LS-043		Rep
110	ENT Ward	Instument set for ENT operation	1	○	○	○	○	○	○	○	LS-056	Instrument set, ENT operation	For replacement of the deteriotated existing equipment, standard set	1	Rep
111	ENT Ward	Tympanometer, Automatic tracing (Tymp)	1	○	○	○	○	○	○	○	LS-113	Tympanometer	For replacement of the deteriotated existing equipment	1	Rep
112	ENT Ward	Mouth Gag for tonsillectomy with tongue plate size 3, 4, 5, Boyles-Davis mouth gag	1	○	○	○	○	○	○	○	LS-066	Mouth gag set	For replacement of the deteriotated existing equipment, For cutting the tonsils	1	Rep
113	ENT Ward	Laryngoscopes for adult/child, Negus type	1	○	○	○	○	○	○	○	LS-062	Laryngoscopes for adult/child, Negus	For both adults and children	1	Rep
114	ENT Ward	Oesophagial Speculum, Negus type	1	○	○	○	○	○	○	○	LS-068	Oesophagial speculum, Negus type	For replacement of the deteriotated existing equipment	1	Rep
115	ENT Ward	Laryngoscopes for adult/child, Biopsy	1	○	○	○	○	○	○	○	LS-061	Laryngoscopes for adult/child, Biopsy	For both adults and children	1	Rep
116	ENT Ward	Patient bed	5	○	○	○	○	○	○	○	LS-001	Adult bed	5 units to be placed for inpatinents in the newly founded ENT Ward	5	Rep
	ENT Ward			○	○	○	○	○	○	○	LS-013	Bedside locker	5 units to be placed for the beds of the inpatients	5	New
	ENT Ward			○	○	○	○	○	○	○	LS-027	Doctor's desk & chair	For examination and consultation by the doctor	1	New
	ENT Ward			○	○	○	○	○	○	○	LS-070	Operation light, wall mount	For the newly founded minor Operation Theatre, wall-mounted type	1	New
	ENT Ward			○	○	○	○	○	○	○	LS-072	Operation table	For the newly founded operation room of the ENT Ward	1	New
	ENT Ward			○	○	○	○	○	○	○	LS-079	Patient chair	For examination of the outpatients	1	New
117	EYE Ward	Glaucoma (basic) Operating Instrument (Eye)	1	○	○	○	○	○	○	○	LS-057	Instrument set, glaucoma	For replacement of the deteriotated existing equipment	1	Rep
118	EYE Ward	Cataract surgical instrument set	1	○	○	○	○	○	○	○	LS-053	Instrument set, cataract surgery	For replacement of the deteriotated existing equipment	1	Rep
119	EYE Ward	Surgical Instrument set	1	○	○	○	○	○	○	○	LS-052	Instrument set, basic ophthalmology	For replacement of the deteriotated existing equipment, standard set	1	Rep
120	EYE Ward	Operation Table	1	○	×	○	○	○	○	×			To be excluded as existing equipment is relatively new and its function is nothing problem		
121	EYE Ward	Boiling Sterilizer, Electric type	1	○	○	○	○	○	○	○	LS-017	Boiling sterilizer	For replacement of the deteriotated existing equipment	1	Rep
122	EYE Ward	Schiotz Tonometer	1	○	○	○	○	○	○	○	LS-109	Tonometer, Schiotz	For replacement of the deteriotated existing equipment	1	Rep
123	EYE Ward	Operation microscope for ophthalmology	1	○	○	○	○	○	○	○	LS-071	Operation microscope, ophthalmology	For replacement of the deteriotated existing equipment, standard composition	1	Rep
124	EYE Ward	Patient bed	5	○	○	○	○	○	○	○	LS-001	Adult bed	5 units to be placed for inpatinents in the newly founded EYE Ward	5	Rep
	EYE Ward			○	○	○	○	○	○	○	LS-013	Bedside locker	5 units to be placed for the beds of the inpatients	5	New
	EYE Ward			○	○	○	○	○	○	○	LS-027	Doctor's desk & chair	For examination and consultation by the doctor	1	New

T/N No.	Department	Request Equipment	Req. Q'ty	Purpose	Necessity	Tech. Level	Operation	Maintainance	Cost	Judgement	Project No.	Planned Name of Equipment	Notes	Planned Q'ty	Classification
	EYE Ward			○	○	○	○	○	○	○	LS-079	Patient chair	For examination of the outpatients	1	New
125	Dental Unit	Dental chair unit	1	○	○	○	○	○	○	○	LS-026	Dental chair unit	For replacement of the deteriotated existing equipment	1	Rep
126	Dental Unit	Air Compressor, for Dental Unit	1	○	△	○	○	○	○	△			To be included in the Project No. LS-026		
127	Dental Unit	X-ray unit, dental	1	○	○	○	○	○	○	○	LS-122	X-ray machine, dental	For replacement of the deteriotated existing equipment	1	Rep
128	Dental Unit	Instrument set	1	○	○	○	○	○	○	○	LS-054	Instrument set, dental	For replacement of the deteriotated existing equipment	1	Rep
129	Dental Unit	Light cure machine	1	○	○	○	○	○	○	○	LS-063	Light cure machine	For replacement of the deteriotated existing equipment	1	Rep
	Dental Unit			○	○	○	○	○	○	○	LS-125	Film developer, dental	For development of dental care radiography	1	New
130	Physical Medicine & Rehabilitation	Balance Stepper	1	○	○	○	○	○	○	○	LS-012	Balance stepper	For replacement of the deteriotated existing equipment	1	Rep
131	Physical Medicine & Rehabilitation	Goniometer	1	○	○	○	○	○	○	○	LS-041	Goniometer set	The equipment for measurement of the angle of joint movable part to be capable of measurement of joint angle such as the shoulder, elbow, knee	1	New
132	Physical Medicine & Rehabilitation	Tilt table	1	○	○	○	○	○	○	○	LS-108	Tilt table	For rehabilitation of the standing and sitting position as the training of the standing up	1	New
	Physical Medicine & Rehabilitation			○	○	○	○	○	○	○	LS-027	Doctor's desk & chair	For examination and consultation by the doctor	1	New
	Physical Medicine & Rehabilitation			○	○	○	○	○	○	○	LS-078	Parallel bar	For exercise therapy of walking training	1	New
	Physical Medicine & Rehabilitation			○	○	○	○	○	○	○	LS-079	Patient chair	For consultation of the outpatients of the orthopedics	1	New
	Physical Medicine & Rehabilitation			○	○	○	○	○	○	○	LS-085	Peg board	To be placed for training of dexterity such as hand finger motion and perception for motor system disease	1	New
	Physical Medicine & Rehabilitation			○	○	○	○	○	○	○	LS-087	Physio ball	For balance training of physiotherapy	2	New
	Physical Medicine & Rehabilitation			○	○	○	○	○	○	○	LS-096	Shoulder wheel	For strengthening of the muscular strength of the shoulder joint	1	New
	Physical Medicine & Rehabilitation			○	○	○	○	○	○	○	LS-110	Traction unit	The equipment for relief of the symptoms from the spinalas as the spinal traction therapy	1	New
133	Physiolotherapy	Radiant Heater,Infrared	1	○	○	○	○	○	○	○	LS-092	Radiant heater	For heating the affected part of the joints and muscle by the radiant heat to use Radiant Heater	1	New
134	Physiolotherapy	Electrical Stimulator	1	○	○	○	○	○	○	○	LS-030	Electrical stimulator	Equipment to stimulate the nerves and muscle by electrical stimulation for cure to be placed	1	New
135	Physiolotherapy	Transcutaneous Electrical Nerve Stimulator (TENS)	1	○	○	○	○	○	○	○	LS-111	Transcutaneous electrical nerve stimulator	Equipment for relief of the pain to stimulate the nerves percutaneously to be placed	1	New
136	Physiolotherapy	Short Wave Diathermy apparatus (SWD)	1	○	○	○	○	○	○	○	LS-095	Short wave diathermy apparatus	For cure of the affected part's pain and the expansion of the peripheral vessel	1	New
	Physiolotherapy			○	○	○	○	○	○	○	LS-046	Hot pack unit	For relief of the affected part's pain and the treatment before rehabilitation by thermotherapy of the wet process	1	New
137	SAMSC	Patient Bed	20	○	○	○	○	○	○	△	LS-001	Adult bed	28 units to be placed for inpatients in the newly founded SAMSC	28	New
	SAMSC			○	○	○	○	○	○	○	LS-027	Doctor's desk & chair	For examination and consultation by the doctor	1	New
	SAMSC			○	○	○	○	○	○	○	LS-079	Patient chair	For examination of the outpatients	1	New
139	Mortuary	Autopsy Table	1	○	○	○	○	○	○	○	LS-011	Autopsy table	1 unit of the deteriotated existing concrete product to be replaced in the newly founded dissection room	1	New

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140	Mortuary	Spot light, with Battery	1	○	○	○	○	○	○	○	LS-103	Spot light, autopsy	1 unit to be placed for autopsy and necropsy	1	New
141	Mortuary	Mortuary Refrigerator,4 bodies	1	○	○	○	○	○	○	○	LS-065	Mortuary refrigerator	1 unit to be placed for preservation of the dead body	1	New
142	Mortuary	Body Concealment Tranport trolley	1	○	○	○	○	○	○	○	LS-083	Patient trolley, body concealment	1 unit to be placed for the delivery of the dead body	1	New
143	Mortuary	Sink Set	1	○	○	○	○	○	○	○	LS-097	Sink set	1 unit to be placed for autopsy of the dead body and washing befor necropsy	1	New
144	Mortuary	Suction machine for Body fluids	1	○	○	○	○	○	○	○	LS-106	Suction machine, autopsy	To be placed as the equipment for suction of the body fluids of fhe dead body	1	New
145	Mortuary	X-ray film viewer	1	○	○	○	○	○	○	○	LS-120	X-ray film viewer, mobile type	1 unit to be placed for autospy	1	New
146	Laundry	Washing Machine	1	○	○	○	○	○	○	○	LS-116	Washing machine	1 unit to be placed for the cleaning of the uniforms of the medical stuffs	1	New
147	Laundry	Extractor	1	○	○	○	○	○	○	○	LS-036	Extractor	1 unit to be placed for dehydration of uniforms	1	New
148	Laundry	Iron pressing machine	1	○	○	○	○	○	○	○	LS-058	Iron pressing machine	1 unit to be placed for drying and pressing of the uniforms	1	New
149	Emergency Medical Service	Ambulance	1	○	○	○	○	○	○	○	LS-004	Ambulance	For emergency medical transport	1	New
150	Emergency Medical Service	Defibrillator, with ECG Monitor	1	○	○	×	○	○	○	×	LS-025	Defibrillator	To be deleted as the nurses on the ambulance can not treat		
151	Emergency Medical Service	Pulse Oximeter	1	○	○	○	○	○	○	○	LS-090	Pulse oxymeter, for ambulance	For Ambulance	1	New
152	Emergency Medical Service	Ambu Bag	1	○	○	○	○	○	○	○	LS-003	Ambu bag set, for ambulance	For Ambulance	1	New
153	Emergency Medical Service	Oxygen Inhaler set with Cylinder 50 Cuft Small with trolley	1	○	○	○	○	○	○	○	LS-077	Oxygen inhaler set, for ambulance	For Ambulance	1	New
154	Emergency Medical Service	Nasal pump	1	○	○	○	○	○	○	△	LS-051	Instrument set for ambulance	For Ambulance	1	New
155	Emergency Medical Service	Nasal Probe	1	○	○	○	○	○	○	△	LS-051	Instrument set for ambulance	For Ambulance	1	New
156	Emergency Medical Service	Nasal Mask	1	○	○	○	○	○	○	△	LS-051	Instrument set for ambulance	For Ambulance	1	New
157	Emergency Medical Service	Sphygmomanometer and Stethoscope	1	○	○	○	○	○	○	○	LS-099	Sphygmomanometer and Stethoscope, for ambulance	For Ambulance	1	New
158	Emergency Medical Service	Splints (Different sizes)	1	○	○	○	○	○	○	○	LS-100	Splints set for ambulance	For Ambulance	1	New
159	Emergency Medical Service	Patient Trolley, adjustable, with drip stand)	1	○	○	○	○	○	○	○	LS-082	Patient trolley for ambulance	For Ambulance	1	New
160	Emergency Medical Service	Stretcher (Telescopic or Simple)	1	○	○	○	○	○	○	○	LS-104	Stretcher for ambulance	For Ambulance	1	New
161	Common	PC	1	○	○	○	○	○	○	○	LS-084	PC	For management of medical equipment and contact with the head office of the Ministry of Health	1	New
	ER			○	○	○	○	○	○	○	LS-035	Examination table	2 units to be placed in the newly founded ER recovery room	2	New
	ER			○	○	○	○	○	○	○	LS-081	Patient trolley	6 units to be placed in the waiting room for newly fouded ER consultation room	6	New
	ER			○	○	○	○	○	○	○	LS-102	Spot light, wall mount	2 units with specification of wall-mounted type to be placed in the newly founded ER treatment room	2	New
	ER			○	○	○	○	○	○	○	LS-112	Treatment table	2 units to be placed in the newly founded ER treatment room	2	New

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	Hemodialysis Unit	Adult bed	2	○	○	○	○	○	○	○	LS-040	Gatch bed	2 units to be placed as there are still 3 units concerning 5 units of their needs	2	Add
	Hemodialysis Unit	Hemodialysis machine	2	○	○	○	○	○	○	○	LS-044	Hemodialysis machine	2 units to be placed as there are still 3 units concerning 5 units of their needs	2	Add
	Hemodialysis Unit		1	○	○	○	○	○	○	○	LS-093	RO production unit	To be placed as artificial dialyzer	1	New
	IHC(HIV Care)			○	○	○	○	○	○	○	LS-015	Blind screen with wheel	To be placed as Project No. LS-015	2	New
	IHC(HIV Care)			○	○	○	○	○	○	○	LS-023	Consultation table	For examination	1	New
	IHC(HIV Care)			○	○	○	○	○	○	○	LS-027	Doctor's desk & chair	For examination and consultation by the doctor	4	New
	IHC(HIV Care)			○	○	○	○	○	○	○	LS-035	Examination table	4 units (1unit/each booth) to be placed in the newly founded IHC room	4	New
	IHC(HIV Care)			○	○	○	○	○	○	○	LS-079	Patient chair	For examination and care of the outpatients	4	New

Rep : Replacement of existing equipment
Add : Added equipment

Examination List of the Requested Equipment (Loikow General Hospital)

T/N No.	P'ty	Department	Request Equipment	Req. Q'ty	Purpose	Necessity	Tech. Level	Operation	Maintainance	Cost	Judgement	Project No.	Planned Name of Equipment	Notes	Planned Q'ty	Classification
1	A	Child Ward	Adult bed	38	○	○	○	○	○	○	△	LK-001	Adult bed	For mothers and 2 to 12 years old children	24	New
2	C	Child Ward	Bedside locker	56	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
3	A	Child Ward	Bilirubin meter for serum bilirubin	1	○	○	○	○	○	○	○	LK-009	Bilirubin meter for serum bilirubin	To be used for definite diagnosis of neonatal jaundice	1	Add
4	A	Child Ward	Child bed	18	○	○	○	○	○	○	△	LK-015	Child bed	For under 2 years old children, with bed side rail	16	New
		Child Ward			○	○	○	○	○	○	○	LK-017	CPAP ventilator	For life saving of the neonatals with spontaneous dyspnea	2	New
5	A	Child Ward	Incubator	2	○	○	○	○	○	○	○	LK-033	Infant Incubator	To be used for the temperature and oxygen management of the neonatals and premature babies	2	Add
6	A	Child Ward	Infant warmer	2	○	○	○	○	○	○	○	LK-034	Infant warmer	To be used for the temperature management of the neonatals and premature babies	2	Add
7	A	Child Ward	Infusion pump	3	○	○	○	○	○	○	○	LK-035	Infusion pump	To be used for the infusion observation	3	New
8	B	Child Ward	Low pressure suction machine for Neonate resuscitation	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
9	A	Child Ward	Microhematocrit centrifuger for PCV (packed cell volume)	1	○	○	○	○	○	○	○	LK-031	Haematocrit centrifuge	To be used for measuring the Haematocrit	1	Rep
10	C	Child Ward	Oxygen concentrator	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
11	A	Child Ward	Phototherapy unit	3	○	○	○	○	○	○	○	LK-055	Phototherapy unit	For the care of neonatal jaundice	3	Add
12	A	Child Ward	Pulse oxymeter with neonate probe & child probe	1	○	○	○	○	○	○	○	LK-059	Pulse oxymeter	To be used for measurement of child's blood oxygenation level in the Child Ward	1	New
13	A	Dental Unit	Apex locator	1	○	○	○	○	○	○	○	LK-005	Apex locator	To be used for measurement whether the nerves removed by the dental treatment are still remained	1	New
14	A	Dental Unit	Dental chair unit	1	○	○	○	○	○	○	○	LK-019	Dental chair unit	Chair, drill, compressor, and scaler for dental care included	1	Rep
15	C	Dental Unit	Film developer, dental	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
16	A	Dental Unit	Instrument set	1	○	○	○	○	○	○	○	LK-038	Instrument set, dental	Basic instrument set for dental	1	Rep
17	A	Dental Unit	Portable air compressor	1	○	○	○	○	○	○	○	LK-058	Portable air compressor, dental	To be used in visiting patients in their home and the medical care for remote location	1	New
18	A	Dental Unit	Steam sterilizer	1	○	○	○	○	○	○	○	LK-068	Steam sterilizer, dental	To be used for high pressure steam sterilization of dental equipment	1	Rep
19	B	Dental Unit	U.V box	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
20	A	Dental Unit	Ultrasonic scalor	1	○	x	○	○	○	○	△			To be placed as the part of dental chair unit		
21	B	Dental Unit	X-ray unit, dental	1	○	○	○	○	○	○	○	LK-084	X-ray machine, dental	For the spot radiography of dental care	1	New
22	B	Dental Unit	X-ray unit, panorama	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		

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		Dental Unit			○	○	○	○	○	○	○	LK-086	Film developer, dental	For development of dental care radiography	1	New
23	B	Emergency/OPD	Adult bed	3	△	x	○	○	○	○	x			For examination table		
		Emergency/OPD		1	○	○	○	○	○	○	○	LK-002	Ambu bag set for ambulance	For Ambulance	1	New
24	A	Emergency/OPD	Ambulance	1	○	○	○	○	○	○	○	LK-003	Ambulance, 4WD	4WD for using in the remote location and mountain area	1	New
		Emergency/OPD	Doctor's chair		○	○	○	○	○	○	○	LK-020	Doctor's chair	To be used in the Emergency/OPD	8	Add
		Emergency/OPD	Doctor's desk		○	○	○	○	○	○	○	LK-021	Doctor's desk	To be used in the Emergency/OPD	5	Add
25	A	Emergency/OPD	ECG	1	○	○	○	○	○	○	○	LK-022	ECG	For the Emergency/OPD and Medical Ward	1	New
		Emergency/OPD	Examination table		○	○	○	○	○	○	○	LK-026	Examination table	To be used in the Emergency/OPD	10	Add
		Emergency/OPD	Film viewer		○	○	○	○	○	○	○	LK-029	Film viewer	To be used for extemally wounded patients in the Emergency/OPD	1	Add
26	B	Emergency/OPD	Infusion stand	3	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
		Emergency/OPD		1	○	○	○	○	○	○	○	LK-036	Instrument set for ambulance	For Ambulance	1	New
27	A	Emergency/OPD	Oxygen concentrator	1	○	○	○	○	○	○	○	LK-048	Oxygen concentrator	For oxygen supply of weakened patients	1	Add
		Emergency/OPD	Patient chair		○	○	○	○	○	○	○	LK-050	Patient chair	To be used in the Emergency/OPD	5	Add
		Emergency/OPD		1	○	○	○	○	○	○	○	LK-060	Pulse oxymeter for ambulance	For Ambulance	1	New
		Emergency/OPD	Screen		○	○	○	○	○	○	○	LK-062	Screen	To be used in the Emergency/OPD	3	New
28	A	Emergency/OPD	Sphygmomanometer	3	○	○	○	○	○	○	○	LK-064	Sphygmomanometer	With specification of no mercurial type, based on Minamata Convention on Mercury	3	Add
		Emergency/OPD		1	○	○	○	○	○	○	○	LK-065	Sphygmomanometer for ambulance	For Ambulance	1	New
		Emergency/OPD		1	○	○	○	○	○	○	○	LK-066	Splints set for ambulance	For Ambulance	1	New
		Emergency/OPD		1	○	○	○	○	○	○	○	LK-069	Stethoscope for ambulance	For Ambulance	1	New
		Emergency/OPD	Stretcher		○	○	○	○	○	○	○	LK-070	Stretcher	To be used for the Emergency/OPD	6	Add
		Emergency/OPD		1	○	○	○	○	○	○	○	LK-071	Stretcher for ambulance	For Ambulance	1	New
		Emergency/OPD	Treatment table		○	○	○	○	○	○	○	LK-078	Treatment table	To be used in the Emergency/OPD	3	Add
29	B	Emergency/OPD	Suction machine	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
30	C	ENT Ward	Adult bed	10	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		

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31	B	ENT Ward	Bedside locker	10	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
32	A	ENT Ward	Endoscope with light source （0,30,70）	1	○	○	○	○	○	○	○	LK-025	ENT Endoscope set	To be used for endoscopy and treatment in the ENT Ward	1	New
		ENT Ward			○	○	○	○	○	○	○	LK-040	Instrument set, myringoplasty	Basic instrument set for myringoplasty	1	New
33	A	ENT Ward	Operating microscope for ENT	1	○	○	○	○	○	○	○	LK-044	Operating microscope for ENT	To be used for microsurgery in the ENT Ward	1	Rep
34	A	ENT Ward	Oxygen concentrator	1	○	○	○	○	○	○	○	LK-048	Oxygen concentrator	For oxygen supply of weakened patients	1	New
35	A	ENT Ward	Spot light	1	○	○	○	○	○	○	○	LK-067	Spot light	With specification of LED light bulb	1	Rep
36	B	Eye Ward	B scan ultrasound for posterior segment examination	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
37	A	Eye Ward	Bipolar electrocautery unit	1	○	○	○	○	○	○	○	LK-010	Bipolar electrocautery unit, ophthalmology	To be used for bulbotomy in the ophthalmic operation	1	New
38	A	Eye Ward	Cataract surgical instrument set	2	○	○	○	○	○	○	○	LK-037	Instrument set, cataract surgery	2 units to be placed because of the trend of cataract increseing	2	Rep
39	A	Eye Ward	Operation microscope for ophthalmology	1	○	○	○	○	○	○	○	LK-045	Operation microscope for ophthalmology	To be used for microsurgery in the Eye Ward	1	Rep
40	A	Eye Ward	Operation table	1	○	○	○	○	○	○	○	LK-046	Operation table	To be used for positioning of the surgical patient, manual type	1	Rep
41	A	Eye Ward	Ophthalmoscope with retinoscope	1	○	○	○	○	○	○	○	LK-047	Ophthalmoscope with retinoscope	To be used for consultation of the fundus of the eye	1	New
42	A	Eye Ward	Spot light	1	○	○	○	○	○	○	○	LK-067	Spot light	With specification of LED light bulb	1	Rep
43	A	Lab Department	Blood collection monitor	1	○	○	○	○	○	○	○	LK-011	Blood collection monitor	To be used for monitoring the volume and time of blood collection	1	New
44	B	Lab Department	Blood storage refrigerator	2	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
45	A	Lab Department	Certrifuge	2	○	○	○	○	○	○	○	LK-014	Centrifuge	To be used for centrifuging the blood and chemical reagents	2	Rep
46	A	Lab Department	Coagulaton analyzer	1	○	○	○	○	○	○	○	LK-016	Coagulation analyzer	For measurement of the patientens' blood coagulation before surgery	1	New
47	A	Lab Department	Deep freezer	1	○	○	○	○	○	○	○	LK-018	Deep freezer	For preservation of the collected blood	1	Add
48	A	Lab Department	Haematocript centrifuge	1	○	○	○	○	○	○	○	LK-031	Haematocrit centrifuge	To be used for measurement of the Haematocrit	1	Rep
49	C	Lab Department	Haemoglobinometer	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
50	B	Lab Department	Hb Electrophoresis	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
51	A	Lab Department	Heating block (37°C)	1	○	○	○	○	○	○	○	LK-032	Heating block	To be used for measurement of cold districts agglutinin in the blood	1	Rep
52	B	Lab Department	Microscope binocolour	2	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
53	C	Lab Department	PC	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		

T/N No.	P'ty	Department	Request Equipment	Req. Q'ty	Purpose	Necessity	Tech. Level	Operation	Maintainance	Cost	Judgement	Project No.	Planned Name of Equipment	Notes	Planned Q'ty	Classification
54	A	Lab Department	Plasma expresser	1	○	○	○	○	○	○	○	LK-056	Plasma expresser	To be used for separating the whole blood into the red corpuscles and platelets	1	New
55	A	Lab Department	Platelet agitator with incubator	1	○	○	○	○	○	○	○	LK-057	Platelet agitator with incubator	To be used for preservation of the platelets with shaking from 20 ℃ to 24 ℃	1	New
56	A	Lab Department	Semiauto chemical analyzer	1	○	○	○	○	○	○	○	LK-063	Semi auto chemical analyzer	To be used for measurement of hematological items, liver function, and lipids in the blood	1	New
57	A	Lab Department	Test tube shaker	1	○	○	○	○	○	○	○	LK-075	Test tube shaker	To be used for shaking the chemical reagents or blood	1	New
58	A	Lab Department	Tube sealer for blood bag	1	○	○	○	○	○	○	○	LK-079	Tube sealer for blood bag	For welding of blood bag tube	1	New
59	A	Lab Department	Safety cabinet	1	○	○	○	○	○	○	○	LK-061	Safety cabinet	With specification of biosafety level 2	1	New
60	A	Lab Department	VDRL shaker	1	○	○	○	○	○	○	○	LK-082	VDRL shaker	To be used for shaving the test tube and flask	1	Rep
61	B	Lab Department	Laboratory table	10	○	x	○	○	○	○	x			To be excluded from Equipment List as construction part is in charge of this item		
62	A	Medical Ward	Adult bed	15	○	○	○	○	○	○	○	LK-001	Adult bed	15 units to be placed, except for existing units to be used continuously	15	Rep
63	A	Medical Ward	Bedside locker	25	○	○	○	○	○	○	○	LK-008	Bedside locker	25 units to be placed, except for existing units to be used continuously	25	Rep
64	A	Medical Ward	ECG	2	○	○	○	○	○	○	○	LK-022	ECG	For the Emergency/OPD and Medical Ward	2	Rep
65	B	Medical Ward	Fowler's bed	2	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
66	A	Medical Ward	Nebulizer	2	○	○	○	○	○	○	○	LK-043	Nebulizer	For relief of symptoms by the medicine and suck of the steam	2	Add
67	A	Medical Ward	Oxygen concentrator	2	○	○	○	○	○	○	○	LK-048	Oxygen concentrator	For oxygen supply of weakened patients	2	Add
68	B	Medical Ward	Patient monitor	1	○	○	○	○	○	○	○	LK-051	Patient monitor	For observation of the patient's biological information continuously	1	Add
69	A	Medical Ward	Syringe pump	2	○	○	○	○	○	○	○	LK-074	Syringe pump	For the Medical Ward	2	Add
70	A	O & G	Autoclave	1	○	○	○	○	○	○	○	LK-007	Autoclave, vertical	To be placed in the Obstetrics & Gynecology and used for high pressure steam sterilization of the instruments	1	Rep
71	A	O & G	Cardiotocograph machine	1	○	○	○	○	○	○	○	LK-012	Cardiotocograph machine	For monitoring the imformation about contraction of the womb etc subject to mainly high-risk and great age pregnant women	1	New
72	C	O & G	D & C Set	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
73	C	O & G	Delivery Set	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
74	B	O & G	Examination table	2	○	○	○	○	○	○	○	LK-027	Examination table, OB&GY	To be used for consultation of the pregnant women and patients in the O & G department	2	Rep
75	A	O & G	Infant warmer	2	○	○	○	○	○	○	○	LK-034	Infant warmer	To be used for the temperature management of the neonatals and premature babies	2	Rep
76	B	O & G	Infusion pump	2	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
77	A	O & G	Labor bed	2	○	○	○	○	○	○	△	LK-042	Labor bed	To be placed for increased 3 delivery rooms	3	Add

T/N No.	P'ty	Department	Request Equipment	Req. Q'ty	Purpose	Necessity	Tech. Level	Operation	Maintainance	Cost	Judgement	Project No.	Planned Name of Equipment	Notes	Planned Q'ty	Classification
78	A	O & G	Oxygen concentrator	2	○	○	○	○	○	○	○	LK-048	Oxygen concentrator	For oxygen supply of weakened patients	2	Add
79	B	O & G	Patient monitor	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
80	A	O & G	Patient trolley	2	○	○	○	○	○	○	○	LK-052	Patient trolley	To be used for the patient delivery in the hospital	2	Add
81	A	O & G	Spot light	3	○	○	○	○	○	○	○	LK-067	Spot light	With specification of LED light bulb	3	Add
82	A	O & G	Suction machine	1	○	○	○	○	○	○	○	LK-072	Suction machine	For the suction of the patient's blood and body fluids	1	Add
83	A	O & G	Vacuum extractor	2	○	○	○	○	○	○	○	LK-081	Vacuum extractor	To be used for vacuum extraction and suction curettage	2	New
84	A	O & G (C-section)	Anaesthesia machine with ventilater	1	○	○	○	○	○	○	○	LK-004	Anaesthesia machine with ventilator	For the Obstetrics & Gynecology operating room	1	Rep
85	A	O & G (C-section)	Operation table	1	○	○	○	○	○	○	○	LK-046	Operation table	To be used for positioning of the surgical patient, manual type	1	Rep
86	A	O & G (C-section)	Ceiling lamps	1	○	○	○	○	○	○	○	LK-013	Ceiling lamps	For the Obstetrics & Gynecology operating room	1	New
87	A	O & G (C-section)	Electrosurgical unit	1	○	○	○	○	○	○	○	LK-023	Electrosurgical unit	For the Obstetrics & Gynecology operating room	1	Add
88	A	O & G (C-section)	Suction machine	1	○	○	○	○	○	○	○	LK-072	Suction machine	For the suction of the patient's blood and body fluids	1	Add
89	C	O & G (C-section)	Oxygen concentrator	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
90	A	O & G (C-section)	Low pressure suction	1	○	○	○	○	○	○	○	LK-073	Suction machine, low pressure	For the suction of the neonatal patient's blood and body fluids	1	New
91	B	O & G (C-section)	Patient monitor	1	○	○	○	○	○	○	○	LK-051	Patient monitor	For observation of the patient's biological information continuously	1	Add
92	A	O & G (C-section)	Infant warmer	1	○	○	○	○	○	○	○	LK-034	Infant warmer	To be used for the temperature management of the neonatals and premature babies	1	New
93	C	O & G	Patient bed	35	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
94	A	Operation Theatre	Anaesthesia machine with ventilater	3	○	○	○	○	○	○	○	LK-004	Anaesthesia machine with ventilator	1 unit to be placed, for installation of 1unit per room for 4 rooms, as 1 unit is usable continuously and 2 units were purchased by Myanmar parties	1	Add
95	A	Operation Theatre	Autoclave, large	2	○	○	○	○	○	○	○	LK-006	Autoclave, large	To be used for high pressure steam sterilization of the medical instruments in the operation theatre	2	New
96	B	Operation Theatre	Autoclave, small	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
97	A	Operation Theatre	Ceiling lamps	2	○	○	○	○	○	○	○	LK-013	Ceiling lamps	4 units which are impossible to use continuously to be replaced	4	Add
98	A	Operation Theatre	Electrosurgical unit	2	○	○	○	○	○	○	○	LK-023	Electrosurgical unit		2	Add
99	A	Operation Theatre	Infant warmer	1	○	○	○	○	○	○	○	LK-034	Infant warmer	For the neonatals born in the Infectious disease operation theatre	1	New
100	A	Operation Theatre	Low pressure suction	2	○	○	○	○	○	○	○	LK-073	Suction machine, low pressure	For the suction of the neonatal patient's blood and body fluids	2	New
101	A	Operation Theatre	Operation table	3	○	○	○	○	○	○	○	LK-046	Operation table	3 units which are impossible to use continuously to be replaced	3	Rep

T/N No.	P'ty	Department	Request Equipment	Req. Q'ty	Purpose	Necessity	Tech. Level	Operation	Maintainance	Cost	Judgement	Project No.	Planned Name of Equipment	Notes	Planned Q'ty	Classification
102	B	Operation Theatre	Oxygen concentrator	2	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
103	C	Operation Theatre	Patient monitor	2	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
104	A	Operation Theatre	Suction machine	2	○	○	○	○	○	○	○	LK-072	Suction machine	For the suction of the patient's blood and body fluids	2	Rep
105	C	Operation Theatre	Syringe pump	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
106	A	Operation Theatre	Ventilater for CCU	1	○	○	○	○	○	○	○	LK-083	Ventilator for CCU	Most deteriorated 1 unit to be disposed and replaced in the ICU	1	Rep
107	A	Ortho Ward	Orthopaedic general instrument set	1	○	○	○	○	○	○	○	LK-039	Instrument set, general orthopedic	Basic instrument set for orthopedic	1	Rep
108	A	Ortho Ward	Orthopaedic instrument set	1	○	○	○	○	○	○	○	LK-041	Instrument set, orthopedic	Standard instrument set for orthopedic	1	Rep
109	B	Ortho Ward	Oxygen concentrator	3	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
110	A	Ortho Ward	Steam sterilizer for instrument	1	○	○	○	○	○	○	○	LK-007	Autoclave, vertical	To be placed in the Ortho Ward and used for high pressure steam sterilization of the instruments	1	New
111	C	Ortho Ward	Patient bed	20	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
112	A	PM & R Department	Hand exerciser (for occupational therapy)	1	○	○	○	○	○	○	○	LK-054	Peg board	For training of fingers	1	New
113	A	PM & R Department	Parallel bar	1	○	○	○	○	○	○	○	LK-049	Parallel bar	For rihabilitation of the patients with walking difficulty	1	New
114	B	PM & R Department	Physio ball	2	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
115	C	PM & R Department	Shoulder wheel	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
116	A	PM & R Department	TENS (transcutaneous electrical Nerve Stiumlator)	1	○	○	○	○	○	○	○	LK-077	Transcutaneous electrical nerve stimulator	For electrotherapy to turn on electricity with low frequency into the painful affected part	1	New
117	A	PM & R Department	Tilt table	1	○	○	○	○	○	○	○	LK-076	Tilt table	To be used for training of patients with dysstasia	1	New
118	C	PM & R Department	Adult bed	10	○	×	○	○	○	○	x			To be excluded as the beds will not be placed		
119	C	PM & R Department	Bedside locker	10	○	×	○	○	○	○	x			To be excluded as the beds will not be placed		
		Radiology Department			○	○	○	○	○	○	○	LK-028	Film developer	To be placed as mobile version of exiting item	1	New
120	A	Radiology Department	3-D Ultrasound with multi probes	1	○	○	○	○	○	○	○	LK-080	Ultrasound machine	With specification of transvaginal 3D probe	1	Rep
121	A	Radiology Department	Digital x-ray machine with accessories	1	○	○	○	○	○	○	○	LK-085	X-ray machine, digital	With specification of digital without using developing solution and fixing solution	1	Rep
122	C	Surgical Ward	Adult bed	34	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
123	A	Surgical Ward	Endoscope (Upper GI+Colonoscope) (with Monitor)	1	○	○	○	○	○	○	○	LK-024	Endoscope unit, upper GI, colonoscope	For therapeutic instruments of the upper part digestive organ pipe and colon , light source is to be shared	1	Rep
124	A	Surgical Ward	Fowler's bed	4	○	△	○	○	○	○	○	LK-030	Gatch bed	Though there were requests that 3 units were for recovery room and 1 unit was for ICU, there are only 3 units to be placed as ICU is another service	3	New

T/N No.	P'ty	Department	Request Equipment	Req. Q'ty	Purpose	Necessity	Tech. Level	Operation	Maintainance	Cost	Judgement	Project No.	Planned Name of Equipment	Notes	Planned Q'ty	Classification
125	B	Surgical Ward	Infusion pump	3	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
126	A	Surgical Ward	Patient monitor	3	○	○	○	○	○	○	○	LK-051	Patient monitor	For observation of the patient's biological information continuously	3	New
127	A	Surgical Ward	Spot light	3	○	○	○	○	○	○	○	LK-067	Spot light	With specification of LED light bulb	3	Add
128	B	Common	PC	1	○	○	○	○	○	○	○	LK-053	PC	For management of medical equipment	1	Rep
129	C	Mortury	Mortury refrigerator	3	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
130	C	Mortury	Mortury table	3	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		
131	C	Mortury	Mortury instrument set	1	○	x	○	○	○	○	x			To be excluded as the priority of this item is low		

7-4 Equipment List

7-4-1 Lashio General Hospital

Equipment List (Lashio General Hospital)

No.	Requested Equipment	Q'ty
LS-001	Adult bed	257
LS-002	Ambu bag set	2
LS-003	Ambu bag set, for ambulance	1
LS-004	Ambulance	1
LS-005	Anaesthesia machine	4
LS-006	Audiometer	1
LS-007	Autoclave, large	2
LS-008	Autoclave, table top	1
LS-009	Autoclave, vertical	4
LS-010	Auto-pippette set	1
LS-011	Autopsy table	1
LS-012	Balance stepper	1
LS-013	Bedside locker	49
LS-014	Bilirubin meter	1
LS-015	Blind screen with wheel	8
LS-016	Blood storage refrigerator	1
LS-017	Boiling sterilizer	5
LS-018	Cardiotocograph machine	1
LS-019	Ceiling lamps	4
LS-020	Centrifuge	1
LS-021	Child bed	18
LS-022	Coagulation analyzer	1
LS-023	Consultation table	1
LS-024	CPAP Ventilator	3
LS-025	Defibrillator	2
LS-026	Dental chair unit	1
LS-027	Doctor's desk & chair	18
LS-028	Donor couch	6
LS-029	ECG	6
LS-030	Electrical stimulator	1
LS-031	Electrosurgical unit	4
LS-032	Electrosurgical unit, O & G	1
LS-033	ELISA System	1
LS-034	Endoscope unit, upper GI, fibre	1
LS-035	Examination table	16
LS-036	Extractor	1
LS-037	Fetal heart detector, doppler	1
LS-038	Film developer	1
LS-039	Film viewer, desk top	2
LS-040	Gatch bed	8
LS-041	Goniometer set	1
LS-042	Haematocrit centrifuge	2
LS-043	Head light, fiber optic	1
LS-044	Hemodialysis machine	2
LS-045	Hot air sterilizer	1
LS-046	Hot pack unit	1
LS-047	Infant incubator	1
LS-048	Infant warmer	3
LS-049	Infant warmer, NICU	1
LS-050	Infusion pump	9

Equipment List (Lashio General Hospital)

No.	Requested Equipment	Q'ty
LS-051	Instrument set for ambulance	1
LS-052	Instrument set, basic ophthalmology	1
LS-053	Instrument set, cataract surgery	1
LS-054	Instrument set, dental	1
LS-055	Instrument set, ear micro surgery	1
LS-056	Instrument set, ENT operation	1
LS-057	Instrument set, glaucoma	1
LS-058	Iron pressing machine	1
LS-059	Labo center table	2
LS-060	Laryngoscope & Endotracheal tubes set	1
LS-061	Laryngoscopes for adult/child, Biopsy	1
LS-062	Laryngoscopes for adult/child, Negus	1
LS-063	Light cure machine	1
LS-064	Microscope, binocular	2
LS-065	Mortuary refrigerator	1
LS-066	Mouth gag set	1
LS-067	Nebulizer	12
LS-068	Oesophagial speculum, Negus type	1
LS-069	Operating microscope, ENT	1
LS-070	Operation light, wall mount	1
LS-071	Operation microscope, ophthalmology	1
LS-072	Operation table	5
LS-073	Otoscope set	1
LS-074	Oxygen concentrator	13
LS-075	Oxygen concentrator, double	4
LS-076	Oxygen Inhaler set with cylinder	15
LS-077	Oxygen inhaler set, for ambulance	1
LS-078	Parallel bar	1
LS-079	Patient chair	17
LS-080	Patient monitor	9
LS-081	Patient trolley	15
LS-082	Patient trolley for ambulance	1
LS-083	Patient trolley, body concealment	1
LS-084	PC	1
LS-085	Peg board	1
LS-086	Phototherapy unit	1
LS-087	Physio ball	2
LS-088	Platelet agitator with incubator	1
LS-089	Pulse oxymeter	3
LS-090	Pulse oxymeter, for ambulance	1
LS-091	Pulse oxymeter, neonate and child	1
LS-092	Radiant heater	1
LS-093	RO production unit	1
LS-094	Safety cabinet	1
LS-095	Short wave diathermy apparatus	1
LS-096	Shoulder wheel	1
LS-097	Sink set	1
LS-098	Spectrophotometer	1
LS-099	Sphygmomanometer and Stethoscope, for ambulance	1
LS-100	Splints set for ambulance	1

Equipment List (Lashio General Hospital)

No.	Requested Equipment	Q'ty
LS-101	Spot light	6
LS-102	Spot light, wall mount	2
LS-103	Spot light, autopsy	1
LS-104	Stretcher for ambulance	1
LS-105	Suction machine	14
LS-106	Suction machine, autopsy	1
LS-107	Suction machine, foot type	4
LS-108	Tilt table	1
LS-109	Tonometer, Schiotz	1
LS-110	Traction unit	1
LS-111	Transcutaneous electrical nerve stimulator	1
LS-112	Treatment table	3
LS-113	Tympanometer	1
LS-114	Ventilator, adult	3
LS-115	Ventilator, pediatric	1
LS-116	Washing machine	1
LS-117	Water bath	1
LS-118	Wheel chair	2
LS-119	Wheel chair for children	1
LS-120	X-ray film viewer, mobile type	1
LS-121	X-ray film viewer, wall mount type	1
LS-122	X-ray machine, dental	1
LS-123	X-ray machine, digital	1
LS-124	X-ray film viewer, wall embedded type	4
LS-125	Film developer, dental	1

Equipment List (Loikaw General Hospital)

No.	Descriptions	Q'ty
LK-01	Adult bed	39
LK-02	Ambu bag set for ambulance	1
LK-03	Ambulance, 4WD	1
LK-04	Anaesthesia machine with ventilator	2
LK-05	Apex locator	1
LK-06	Autoclave, large	2
LK-07	Autoclave, vertical	2
LK-08	Bedside locker	25
LK-09	Bilirubin meter for serum bilirubin	1
LK-10	Bipolar electrocautery unit, ophthalmology	1
LK-11	Blood collection monitor	1
LK-12	Cardiotocograph machine	1
LK-13	Ceiling lamps	5
LK-14	Centrifuge	2
LK-15	Child bed	16
LK-16	Coagulation analyzer	1
LK-17	CPAP ventilator	2
LK-18	Deep freezer	1
LK-19	Dental chair unit	1
LK-20	Doctor's chair	8
LK-21	Doctor's desk	5
LK-22	ECG	3
LK-23	Electrosurgical unit	3
LK-24	Endoscope unit, upper GI, colonoscope	1
LK-25	ENT Endoscope set	1
LK-26	Examination table	10
LK-27	Examination table, OB&GY	2
LK-28	Film developer	1
LK-29	Film viewer	1
LK-30	Gatch bed	3
LK-31	Haematocrit centrifuge	2
LK-32	Heating block	1
LK-33	Infant Incubator	2
LK-34	Infant warmer	6
LK-35	Infusion pump	3
LK-36	Instrument set for ambulance	1
LK-37	Instrument set, cataract surgery	2
LK-38	Instrument set, dental	1
LK-39	Instrument set, general orthopedic	1
LK-40	Instrument set, myringoplasty	1
LK-41	Instrument set, orthopedic	1
LK-42	Labor bed	3
LK-43	Nebulizer	2
LK-44	Operation microscope for ENT	1
LK-45	Operation microscope for ophthalmology	1

Equipment List (Loikaw General Hospital)

LK-46	Operation table	5
LK-47	Ophthalmoscope with retinoscope	1
LK-48	Oxygen concentrator	6
LK-49	Parallel bar	1
LK-50	Patient chair	5
LK-51	Patient monitor	5
LK-52	Patient trolley	2
LK-53	PC	1
LK-54	Peg board	1
LK-55	Phototherapy unit	3
LK-56	Plasma expresser	1
LK-57	Platelet agitator with incubator	1
LK-58	Portable air compressor, dental	1
LK-59	Pulse oxymeter	1
LK-60	Pulse oxymeter for ambulance	1
LK-61	Safety cabinet	1
LK-62	Screen	3
LK-63	Semi auto chemical analyzer	1
LK-64	Sphygmomanometer	3
LK-65	Sphygmomanometer for ambulance	1
LK-66	Splints set for ambulance	1
LK-67	Spot light	8
LK-68	Steam sterilizer, dental	1
LK-69	Stethoscope for ambulance	1
LK-70	Stretcher	6
LK-71	Stretcher for ambulance	1
LK-72	Suction machine	4
LK-73	Suction machine, low pressure	3
LK-74	Syringe pump	2
LK-75	Test tube shaker	1
LK-76	Tilt table	1
LK-77	Transcutaneous electrical nerve stimulator	1
LK-78	Treatment table	3
LK-79	Tube sealer for blood bag	1
LK-80	Ultrasound machine	1
LK-81	Vacuum extractor	2
LK-82	VDRL shaker	1
LK-83	Ventilator for CCU	1
LK-84	X-ray machine, dental	1
LK-85	X-ray machine, digital	1
LK-86	Film developer, dental	1

Equipment Delivery List

			Lot 1 (Existing buildings)														Lot 1 (Main buildings (North), SAMSC Building, and Mortuary Building)																			Lot 2 (Main Building (South))													
No.	Requested Equipment	Q'ty	Pediatcir	Common	Medical ward	OG ope	OG sterilization	Delivery	Labour	OG ward	OG treatment	OG examination	Ortho Ward	Isolation ward	Surgical ward	Dialysis	Dental	Dental X-ray	OPD triage	OPD 1~6	ENT	Ophthalmology	IHC	Labo (Microbio)	Labo(Haemato)	Labo (Patho)	Labo(Clinical chen	Labo (Serology)	Blood bank	Blood collection	Mortury	Rehabilitation	Oncology	SAMSC	Emergency	ICU	Trolley bay	Operation 1	Operation 2	Operation 3	Operation (Septic)	Recovery	Sterilization	X-ray	Ultrasound	Laundry	Ambulance
LS-001	Adult bed	257	34		45					50			25	20	40						5	5										5	28													
LS-002	Ambu bag set	2	1																																	1									
LS-003	Ambu bag set, for ambulance	1																																											1
LS-004	Ambulance	1																																										1
LS-005	Anaesthesia machine	4																																		1	1	1	1						
LS-006	Audiometer	1																			1																								
LS-007	Autoclave, large	2																																							2				
LS-008	Autoclave, table top	1																																							1				
LS-009	Autoclave, vertical	4					1						1		1									1																					
LS-010	Auto-pippette set	1																											1																
LS-011	Autopsy table	1																												1															
LS-012	Balance stepper	1																													1														
LS-013	Bedside locker	49			14									20							5	5										5													
LS-014	Bilirubin meter	1	1																																										
LS-015	Blind screen with wheel	8			2						1	1			2								2																					
LS-016	Blood storage refrigerator	1																											1																
LS-017	Boiling sterilizer	5									1	1										1														1				1					
LS-018	Cardiotocograph machine	1							1																																				
LS-019	Ceiling lamps	4																																			1	1	1	1						
LS-020	Centrifuge	1																											1																
LS-021	Child bed	18	18																																									
LS-022	Coagulation analyzer	1																							1																				
LS-023	Consultation table	1																					1																					
LS-024	CPAP Ventilator	3	3																																									
LS-025	Defibrillator	2																		1																1									
LS-026	Dental chair unit	1															1																												
LS-027	Doctor's desk & chair	18																	4	5	1	1	4									1	1	1											
LS-028	Donor couch	6																												6															
LS-029	ECG	6			2						1	1			2																														
LS-030	Electrical stimulator	1																														1													

Equipment Delivery List

			Lot 1 (Existing buildings)														Lot 1 (Main buildings (North), SAMSC Building, and Mortuary Building)																	Lot 2 (Main Building (South))												
No.	Requested Equipment	Q'ty	Pediatcir	Common	Medical ward	OG ope	OG sterilization	Delivery	Labour	OG ward	OG treatment	OG examination	Ortho Ward	Isolation ward	Surgical ward	Dialysis	Dental	Dental X-ray	OPD triage	OPD 1~6	ENT	Ophthalmology	IHC	Labo (Microbio)	Labo(Haemato)	Labo (Patho)	Labo(Clinical chen	Labo (Serology)	Blood bank	Blood collection	Mortury	Rehabilitation	Oncology	SAMSC	Emergency	ICU	Trolley bay	Operation 1	Operation 2	Operation 3	Operation (Septic)	Recovery	Sterilization	X-ray	Ultrasound	Laundry	Ambulance
LS-031	Electrosurgical unit	4																																			1	1	1	1						
LS-032	Electrosurgical unit, O & G	1				1																																								
LS-033	ELISA System	1																									1																		
LS-034	Endoscope unit, upper GI, fibre	1																																			1									
LS-035	Examination table	16																	4	5			4									1		2											
LS-036	Extractor	1																																										1	
LS-037	Fetal heart detector, doppler	1							1																																				
LS-038	Film developer	1																																									1			
LS-039	Film viewer, desk top	2																		2																										
LS-040	Gatch bed	8			2											2																				4										
LS-041	Goniometer set	1																														1														
LS-042	Haematocrit centrifuge	2	1																						1																					
LS-043	Head light, fiber optic	1																			1																									
LS-044	Hemodialysis machine	2														2																														
LS-045	Hot air sterilizer	1																						1																					
LS-046	Hot pack unit	1																														1														
LS-047	Infant incubator	1	1																																										
LS-048	Infant warmer	3									3																																		
LS-049	Infant warmer, NICU	1	1																																										
LS-050	Infusion pump	9			2																											2				1	1	1	1	1					
LS-051	Instrument set for ambulance	1																																											1
LS-052	Instrument set, basic ophthalmology	1																				1																							
LS-053	Instrument set, cataract surgery	1																				1																							
LS-054	Instrument set, dental	1															1																												
LS-055	Instrument set, ear micro surgery	1																			1																									
LS-056	Instrument set, ENT operation	1																			1																									
LS-057	Instrument set, glaucoma	1																				1																								
LS-058	Iron pressing machine	1																																										1	
LS-059	Labo center table	2																							1		1																		
LS-060	Laryngoscope & Endotracheal tubes set	1																	1																										

Equipment Delivery List

No.	Requested Equipment	Q'ty	Lot 1 (Existing buildings)														Lot 1 (Main buildings (North), SAMSC Building, and Mortuary Building)																		Lot 2 (Main Building (South))												
			Pediatcir	Common	Medical ward	OG ope	OG sterilization	Delivery	Labour	OG ward	OG treatment	OG examination	Ortho Ward	Isolation ward	Surgical ward	Dialysis	Dental	Dental X-ray	OPD triage	OPD 1~6	ENT	Ophthalmology	IHC	Labo (Microbio)	Labo(Haemato)	Labo (Patho)	Labo(Clinical chen	Labo (Serology)	Blood bank	Blood collection	Mortury	Rehabilitation	Oncology	SAMSC	Emergency	ICU	Trolley bay	Operation 1	Operation 2	Operation 3	Operation (Septic)	Recovery	Sterilization	X-ray	Ultrasound	Laundry	Ambulance
LS-061	Laryngoscopes for adult/child, Biopsy	1																			1																									
LS-062	Laryngoscopes for adult/child, Negus	1																			1																									
LS-063	Light cure machine	1															1																													
LS-064	Microscope, binocular	2																						1					1																	
LS-065	Mortuary refrigerator	1																												1																
LS-066	Mouth gag set	1																			1																									
LS-067	Nebulizer	12	1		10															1																										
LS-068	Oesophagial speculum, Negus type	1																			1																									
LS-069	Operating microscope, ENT	1																			1																									
LS-070	Operation light, wall mount	1																			1																									
LS-071	Operation microscope, ophthalmology	1																				1																									
LS-072	Operation table	5																			1																									
LS-073	Otoscope set	1																			1																									
LS-074	Oxygen concentrator	13	3			1					1									2																1			1	1	1	1	1				
LS-075	Oxygen concentrator, double	4			2								1		1																														
LS-076	Oxygen Inhaler set with cylinder	15	10			2				2	1																																		
LS-077	Oxygen inhaler set, for ambulance	1																																												1
LS-078	Parallel bar	1																													1														
LS-079	Patient chair	17											1						4	5	1	1	4										1													
LS-080	Patient monitor	9			2																														2		1	1	1	1	1				
LS-081	Patient trolley	15												2						2														6							5					
LS-082	Patient trolley for ambulance	1																																											1
LS-083	Patient trolley, body concealment	1																												1														
LS-084	PC	1		1																																								
LS-085	Peg board	1																													1														
LS-086	Phototherapy unit	1	1																																										
LS-087	Physio ball	2																													2														
LS-088	Platelet agitator with incubator	1																							1																				
LS-089	Pulse oxymeter	3			1										1																					1									
LS-090	Pulse oxymeter, for ambulance	1																																											1

Equipment Delivery List

No.	Requested Equipment	Q'ty	Lot 1 (Existing buildings)														Lot 1 (Main buildings (North), SAMSC Building, and Mortuary Building)																	Lot 2 (Main Building (South))												
			Pediatcir	Common	Medical ward	OG ope	OG sterilization	Delivery	Labour	OG ward	OG treatment	OG examination	Ortho Ward	Isolation ward	Surgical ward	Dialysis	Dental	Dental X-ray	OPD triage	OPD 1~6	ENT	Ophthalmology	IHC	Labo (Microbio)	Labo(Haemato)	Labo (Patho)	Labo(Clinical chei	Labo (Serology)	Blood bank	Blood collection	Mortury	Rehabilitation	Oncology	SAMSC	Emergency	ICU	Trolley bay	Operation 1	Operation 2	Operation 3	Operation (Septic)	Recovery	Sterilization	X-ray	Ultrasound	Laundry	Ambulance
LS-091	Pulse oxymeter, neonate and child	1	1																																										
LS-092	Radiant heater	1																													1														
LS-093	RO production unit	1														1																														
LS-094	Safety cabinet	1																						1																						
LS-095	Short wave diathermy apparatus	1																													1														
LS-096	Shoulder wheel	1																													1														
LS-097	Sink set	1																												1														
LS-098	Spectrophotometer	1																									1																	
LS-099	Sphygmomanometer and Stethoscope, for ambulance	1																																											1
LS-100	Splints set for ambulance	1																																											1
LS-101	Spot light	6	1			1				1	1	1			1																														
LS-102	Spot light, wall mount	2																																2												
LS-103	Spot light, autopsy	1																												1															
LS-104	Stretcher for ambulance	1																																											1
LS-105	Suction machine	14	1		2										1					3															2		1	1	1	1	1					
LS-106	Suction machine, autopsy	1																												1															
LS-107	Suction machine, foot type	4	2								1	1																																		
LS-108	Tilt table	1																													1														
LS-109	Tonometer, Schiotz	1																				1																								
LS-110	Traction unit	1																													1														
LS-111	Transcutaneous electrical nerve stimulator	1																													1														
LS-112	Treatment table	3																		1															2											
LS-113	Tympanometer	1																			1																										
LS-114	Ventilator, adult	3												2																						1										
LS-115	Ventilator, pediatric	1																																		1										
LS-116	Washing machine	1																																										1	
LS-117	Water bath	1																									1																		
LS-118	Wheel chair	2												2																																
LS-119	Wheel chair for children	1	1																																										
LS-120	X-ray film viewer, mobile type	1																												1															

Equipment Delivery List

			Lot 1 (Existing buildings)														Lot 1 (Main buildings (North), SAMSC Building, and Mortuary Building)																			Lot 2 (Main Building (South))												
No.	Requested Equipment	Q'ty	Pediatcir	Common	Medical ward	OG ope	OG sterilization	Delivery	Labour	OG ward	OG treatment	OG examination	Ortho Ward	Isolation ward	Surgical ward	Dialysis	Dental	Dental X-ray	OPD triage	OPD 1~6	ENT	Ophthalmology	IHC	Labo (Microbio)	Labo(Haemato)	Labo (Patho)	Labo(Clinical chen	Labo (Serology)	Blood bank	Blood collection	Mortury	Rehabilitation	Oncology	SAMSC	Emergency	ICU	Trolley bay	Operation 1	Operation 2	Operation 3	Operation (Septic)	Recovery	Sterilization	X-ray	Ultrasound	Laundry	Ambulance
LS-121	X-ray film viewer, wall mount type	1																																									1			
LS-122	X-ray machine, dental	1																1																												
LS-123	X-ray machine, digital	1																																									1			
LS-124	X-ray film viewer, wall embedded type	4																																			1	1	1	1						
LS-125	Film developer, dental	1																1																												

Equipment Delivery List

No.	Requested Equipment	Q'ty	Lot 1 (Existing buildings)														Lot 1 (Main buildings (North), SAMSC Building, and Mortuary Building)																				Lot 2 (Main Building (South))													
			Pediatcir	Common	Medical ward	OG ope	OG sterilization	Delivery	Labour	OG ward	OG treatment	OG examination	Ortho Ward	Isolation ward	Surgical ward	Dialysis	Dental	Dental X-ray	OPD triage	OPD 1~6	ENT	Ophthalmology	IHC	Labo (Microbio)	Labo(Haemato)	Labo (Patho)	Labo(Clinical chen	Labo (Serology)	Blood bank	Blood collection	Mortury	Rehabilitation	Oncology	SAMSC	Emergency	ICU	Trolley bay	Operation 1	Operation 2	Operation 3	Operation (Septic)	Recovery	Sterilization	X-ray	Ultrasound	Laundry	Ambulance
LS-001	Adult bed	257	34		45					50			25	20	40						5	5										5	28													
LS-002	Ambu bag set	2	1																																	1									
LS-003	Ambu bag set, for ambulance	1																																											1
LS-004	Ambulance	1																																										1
LS-005	Anaesthesia machine	4																																		1	1	1	1						
LS-006	Audiometer	1																			1																								
LS-007	Autoclave, large	2																																							2				
LS-008	Autoclave, table top	1																																							1				
LS-009	Autoclave, vertical	4					1						1		1									1																					
LS-010	Auto-pippette set	1																											1																
LS-011	Autopsy table	1																												1														
LS-012	Balance stepper	1																													1													
LS-013	Bedside locker	49			14									20							5	5										5												
LS-014	Bilirubin meter	1	1																																										
LS-015	Blind screen with wheel	8			2						1	1			2								2																					
LS-016	Blood storage refrigerator	1																											1																
LS-017	Boiling sterilizer	5									1	1										1														1				1				
LS-018	Cardiotocograph machine	1							1																																				
LS-019	Ceiling lamps	4																																			1	1	1	1						
LS-020	Centrifuge	1																											1																
LS-021	Child bed	18	18																																									
LS-022	Coagulation analyzer	1																							1																				
LS-023	Consultation table	1																					1																					
LS-024	CPAP Ventilator	3	3																																									
LS-025	Defibrillator	2																		1																1									
LS-026	Dental chair unit	1															1																												
LS-027	Doctor's desk & chair	18																	4	5	1	1	4									1	1	1											
LS-028	Donor couch	6																											6																
LS-029	ECG	6			2						1	1			2																														
LS-030	Electrical stimulator	1																													1													

Equipment Delivery List

			Lot 1 (Existing buildings)														Lot 1 (Main buildings (North), SAMSC Building, and Mortuary Building)																	Lot 2 (Main Building (South))												
No.	Requested Equipment	Q'ty	Pediatcir	Common	Medical ward	OG ope	OG sterilization	Delivery	Labour	OG ward	OG treatment	OG examination	Ortho Ward	Isolation ward	Surgical ward	Dialysis	Dental	Dental X-ray	OPD triage	OPD 1~6	ENT	Ophthalmology	IHC	Labo (Microbio)	Labo(Haemato)	Labo (Patho)	Labo(Clinical chen	Labo (Serology)	Blood bank	Blood collection	Mortury	Rehabilitation	Oncology	SAMSC	Emergency	ICU	Trolley bay	Operation 1	Operation 2	Operation 3	Operation (Septic)	Recovery	Sterilization	X-ray	Ultrasound	Laundry	Ambulance
LS-031	Electrosurgical unit	4																																			1	1	1	1						
LS-032	Electrosurgical unit, O & G	1				1																																								
LS-033	ELISA System	1																								1																				
LS-034	Endoscope unit, upper GI, fibre	1																																			1									
LS-035	Examination table	16																	4	5			4									1		2											
LS-036	Extractor	1																																											1	
LS-037	Fetal heart detector, doppler	1							1																																				
LS-038	Film developer	1																																									1			
LS-039	Film viewer, desk top	2																		2																										
LS-040	Gatch bed	8			2											2																				4										
LS-041	Goniometer set	1																														1														
LS-042	Haematocrit centrifuge	2	1																						1																					
LS-043	Head light, fiber optic	1																			1																									
LS-044	Hemodialysis machine	2														2																														
LS-045	Hot air sterilizer	1																						1																					
LS-046	Hot pack unit	1																														1														
LS-047	Infant incubator	1	1																																										
LS-048	Infant warmer	3									3																																		
LS-049	Infant warmer, NICU	1	1																																										
LS-050	Infusion pump	9			2																											2				1	1	1	1	1					
LS-051	Instrument set for ambulance	1																																											1
LS-052	Instrument set, basic ophthalmology	1																				1																							
LS-053	Instrument set, cataract surgery	1																				1																							
LS-054	Instrument set, dental	1															1																												
LS-055	Instrument set, ear micro surgery	1																			1																									
LS-056	Instrument set, ENT operation	1																			1																									
LS-057	Instrument set, glaucoma	1																				1																								
LS-058	Iron pressing machine	1																																										1	
LS-059	Labo center table	2																							1		1																		
LS-060	Laryngoscope & Endotracheal tubes set	1																	1																										

Equipment Delivery List

No.	Requested Equipment	Q'ty	Lot 1 (Existing buildings)														Lot 1 (Main buildings (North), SAMSC Building, and Mortuary Building)																		Lot 2 (Main Building (South))													
			Pediatcir	Common	Medical ward	OG ope	OG sterilization	Delivery	Labour	OG ward	OG treatment	OG examination	Ortho Ward	Isolation ward	Surgical ward	Dialysis	Dental	Dental X-ray	OPD triage	OPD 1~6	ENT	Ophthalmology	IHC	Labo (Microbio)	Labo(Haemato)	Labo (Patho)	Labo(Clinical chen	Labo (Serology)	Blood bank	Blood collection	Mortury	Rehabilitation	Oncology	SAMSC	Emergency	ICU	Trolley bay	Operation 1	Operation 2	Operation 3	Operation (Septic)	Recovery	Sterilization	X-ray	Ultrasound	Laundry	Ambulance
LS-061	Laryngoscopes for adult/child, Biopsy	1																			1																									
LS-062	Laryngoscopes for adult/child, Negus	1																			1																									
LS-063	Light cure machine	1															1																													
LS-064	Microscope, binocular	2																						1					1																	
LS-065	Mortuary refrigerator	1																													1															
LS-066	Mouth gag set	1																			1																									
LS-067	Nebulizer	12	1		10															1																										
LS-068	Oesophagial speculum, Negus type	1																			1																									
LS-069	Operating microscope, ENT	1																			1																									
LS-070	Operation light, wall mount	1																			1																									
LS-071	Operation microscope, ophthalmology	1																				1																									
LS-072	Operation table	5																			1																									
LS-073	Otoscope set	1																			1																									
LS-074	Oxygen concentrator	13	3			1					1									2																1			1	1	1	1					
LS-075	Oxygen concentrator, double	4			2								1		1																															
LS-076	Oxygen Inhaler set with cylinder	15	10			2				2	1																																			
LS-077	Oxygen inhaler set, for ambulance	1																																													1
LS-078	Parallel bar	1																													1															
LS-079	Patient chair	17											1						4	5	1	1	4										1													
LS-080	Patient monitor	9			2																														2		1	1	1	1	1					
LS-081	Patient trolley	15												2						2														6							5					
LS-082	Patient trolley for ambulance	1																																												1
LS-083	Patient trolley, body concealment	1																													1															
LS-084	PC	1		1																																										
LS-085	Peg board	1																													1															
LS-086	Phototherapy unit	1	1																																											
LS-087	Physio ball	2																													2															
LS-088	Platelet agitator with incubator	1																							1																					
LS-089	Pulse oxymeter	3			1										1																				1											
LS-090	Pulse oxymeter, for ambulance	1																																													1

Equipment Delivery List

			Lot 1 (Existing buildings)														Lot 1 (Main buildings (North), SAMSC Building, and Mortuary Building)																		Lot 2 (Main Building (South))													
			Pediatcir	Common	Medical ward	OG ope	OG sterilization	Delivery	Labour	OG ward	OG treatment	OG examination	Ortho Ward	Isolation ward	Surgical ward	Dialysis	Dental	Dental X-ray	OPD triage	OPD 1~6	ENT	Ophthalmology	IHC	Labo (Microbio)	Labo(Haematol)	Labo (Patho)	Labo(Clinical chem	Labo (Serology)	Blood bank	Blood collection	Mortury	Rehabilitation	Oncology	SAMSC	Emergency	ICU	Trolley bay	Operation 1	Operation 2	Operation 3	Operation (Septic)	Recovery	Sterilization	X-ray	Ultrasound	Laundry	Ambulance
No.	Requested Equipment	Q'ty																																													
LS-091	Pulse oxymeter, neonate and child	1	1																																											
LS-092	Radiant heater	1																													1															
LS-093	RO production unit	1														1																															
LS-094	Safety cabinet	1																						1																						
LS-095	Short wave diathermy apparatus	1																													1															
LS-096	Shoulder wheel	1																													1															
LS-097	Sink set	1																												1															
LS-098	Spectrophotometer	1																									1																		
LS-099	Sphygmomanometer and Stethoscope, for ambulance	1																																											1
LS-100	Splints set for ambulance	1																																											1
LS-101	Spot light	6	1			1				1	1	1			1																														
LS-102	Spot light, wall mount	2																																2												
LS-103	Spot light, autopsy	1																												1															
LS-104	Stretcher for ambulance	1																																											1
LS-105	Suction machine	14	1		2										1					3															2		1	1	1	1	1					
LS-106	Suction machine, autopsy	1																												1															
LS-107	Suction machine, foot type	4	2								1	1																																	
LS-108	Tilt table	1																													1															
LS-109	Tonometer, Schiotz	1																				1																								
LS-110	Traction unit	1																													1															
LS-111	Transcutaneous electrical nerve stimulator	1																													1															
LS-112	Treatment table	3																		1															2											
LS-113	Tympanometer	1																			1																										
LS-114	Ventilator, adult	3												2																						1										
LS-115	Ventilator, pediatric	1																																		1										
LS-116	Washing machine	1																																										1	
LS-117	Water bath	1																									1																		
LS-118	Wheel chair	2												2																																
LS-119	Wheel chair for children	1	1																																										
LS-120	X-ray film viewer, mobile type	1																												1															

Equipment Delivery List

			Lot 1 (Existing buildings)														Lot 1 (Main buildings (North), SAMSC Building, and Mortuary Building)																	Lot 2 (Main Building (South))												
			Pediatcir	Common	Medical ward	OG ope	OG sterilization	Delivery	Labour	OG ward	OG treatment	OG examination	Ortho Ward	Isolation ward	Surgical ward	Dialysis	Dental	Dental X-ray	OPD triage	OPD 1~6	ENT	Ophthalmology	IHC	Labo (Microbio)	Labo(Haemato)	Labo (Patho)	Labo(Clinical chen	Labo (Serology)	Blood bank	Blood collection	Mortury	Rehabilitation	Oncology	SAMSC	Emergency	ICU	Trolley bay	Operation 1	Operation 2	Operation 3	Operation (Septic)	Recovery	Sterilization	X-ray	Ultrasound	Laundry	Ambulance
No.	Requested Equipment	Q'ty																																											
LS-121	X-ray film viewer, wall mount type	1																																									1			
LS-122	X-ray machine, dental	1																1																												
LS-123	X-ray machine, digital	1																																									1			
LS-124	X-ray film viewer, wall embedded type	4																																			1	1	1	1						
LS-125	Film developer, dental	1																1																												