

## **2-2-3 Basic Design Drawings**

### **List of Drawings**

#### **< Health Centre Common Drawings >**

1. HC Dispensary Standard Plan / Section
2. HC Dispensary Standard Elevation
3. HC Maternity Standard Plan / Section
4. HC Maternity Standard Elevation

#### **<Rumphi District Drawings >**

5. Rumphi District Hospital Site Plan
6. Rumphi District Hospital Paediatric Ward Plan
7. Rumphi District Hospital Paediatric Ward Elevation / Section
8. Rumphi District Hospital Maternity Ward Plan
9. Rumphi District Hospital Maternity Ward Elevation / Section
10. RHC-3 Katowo LH Site Plan and Existing Facilities Plan
11. RHC-6 Mwazisi HC Site Plan and Existing Facilities Plan

#### **<Mzimba District Drawings >**

12. Mzimba District Hospital Site Plan
13. Mzimba District Hospital Paediatric Ward Plan
14. Mzimba District Hospital Paediatric Ward Elevation / Section
15. MHC-4 Emfeni HC Site Plan and Existing Facilities Plan
16. MHC-6 Endindeni HC Site Plan and Existing Facilities Plan
17. MHC-9 Euthini HC Site Plan and Existing Facilities Plan
18. MHC-12 Kafukule HC Site Plan and Existing Facilities Plan

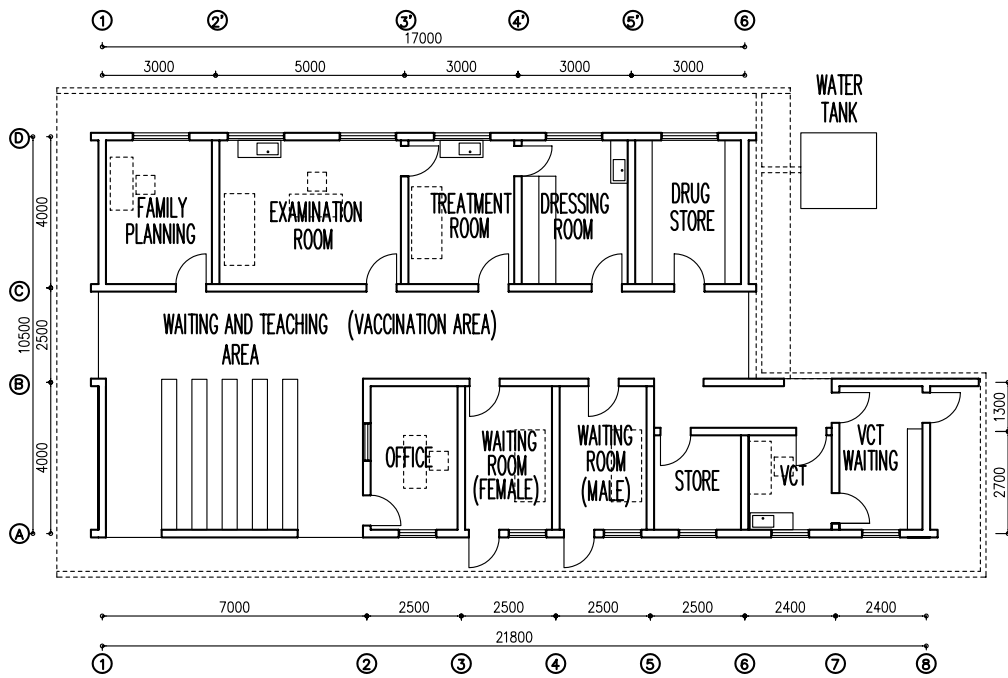
#### **<Kasungu District Drawings >**

19. KHC-1 Chulu HC Site Plan and Existing Facilities Plan
20. KHC-3 Kapelula HC Site Plan and Existing Facilities Plan
21. KHC-8 Simulemba HC Site Plan and Existing Facilities Plan
22. KHC-10 Kholi HC Site Plan and Existing Facilities Plan
23. KHC-11 Chamwabvi DP Site Plan and Existing Facilities Plan

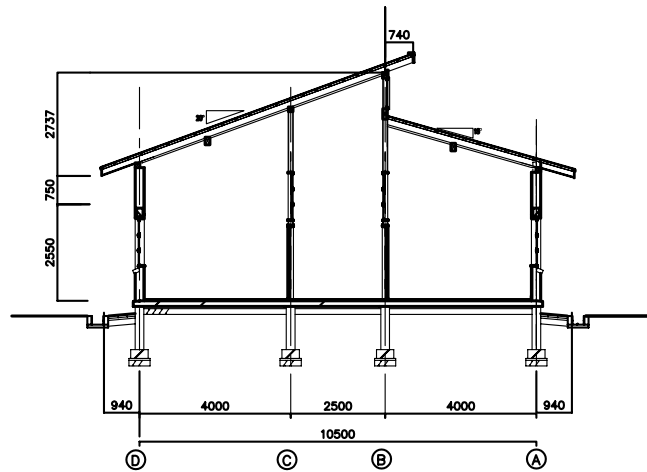
#### **<Lilongwe District Drawings >**

24. LHC-1 Chiwamba HC Site Plan and Existing Facilities Plan
25. LHC-2 Mtemthera HC Site Plan and Existing Facilities Plan
26. LHC-3 Mbangombe HC Site Plan and Existing Facilities Plan

HEALTH CENTRE COMMON DRAWINGS



DISPENSARY STANDARD PLAN

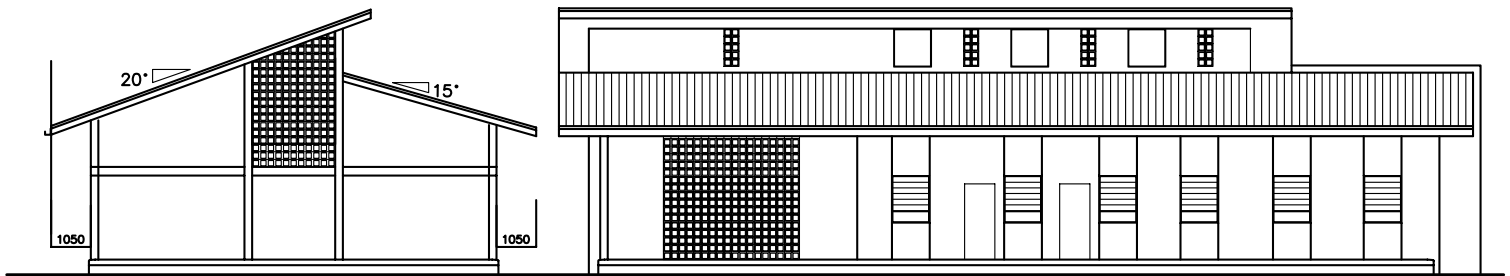


DISPENSARY STANDARD SECTION

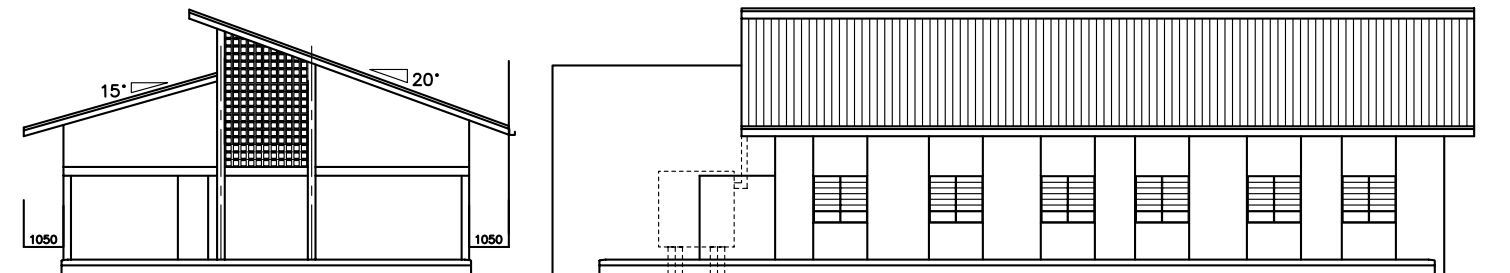


1. HC DISPENSARY STANDARD PLAN / SECTION

THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI



DISPENSARY STANDARD ELEVATION-1

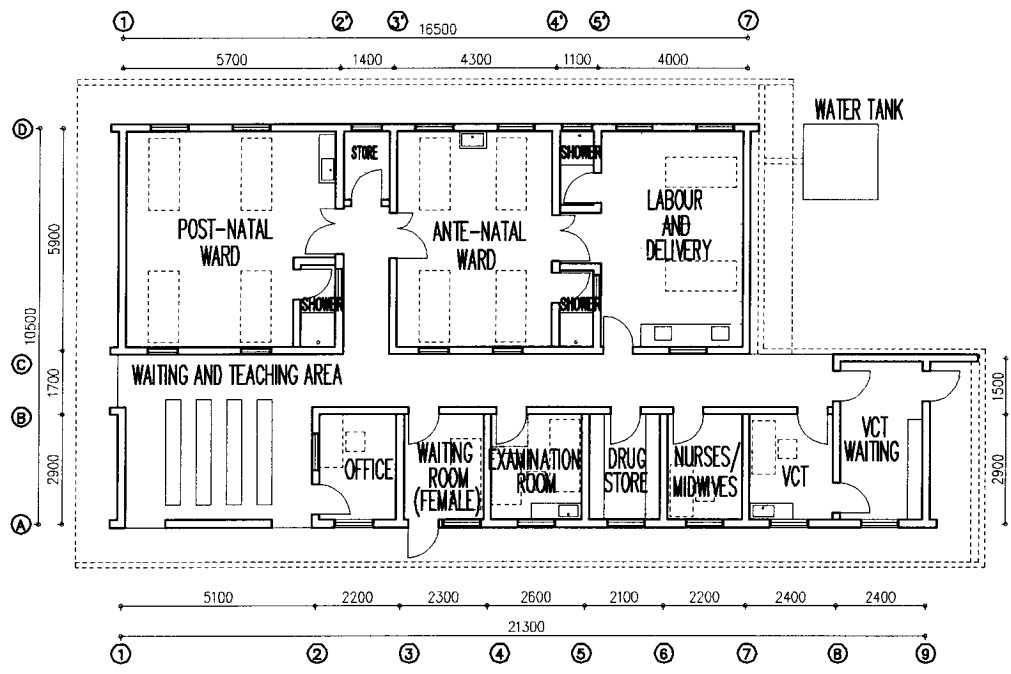


DISPENSARY STANDARD ELEVATION-2

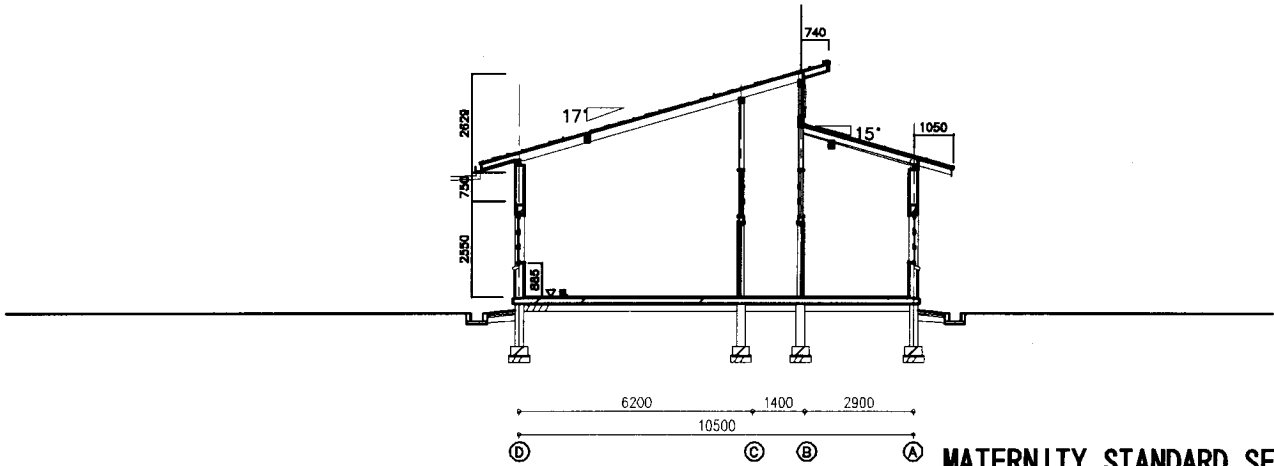
2. HC DISPENSARY STANDARD ELEVATION

THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI

**HEALTH CENTRE COMMON DRAWINGS**



**MATERNITY STANDARD PLAN**

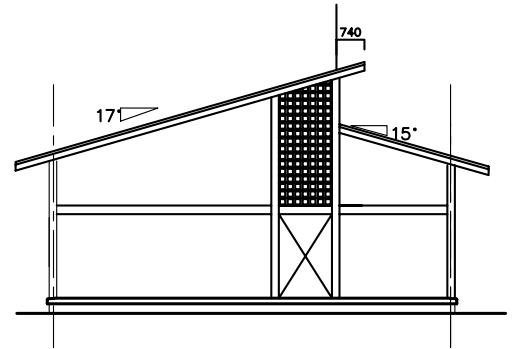
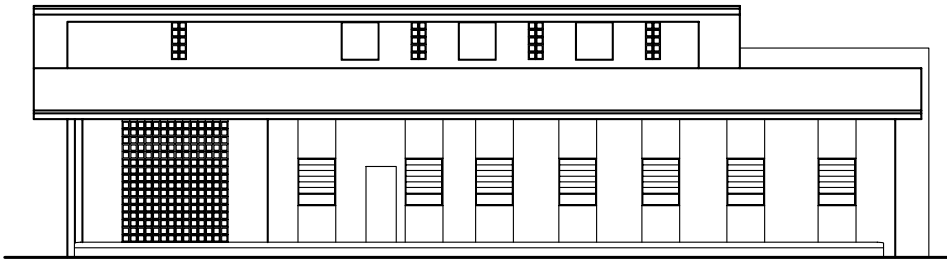


**MATERNITY STANDARD SECTION**

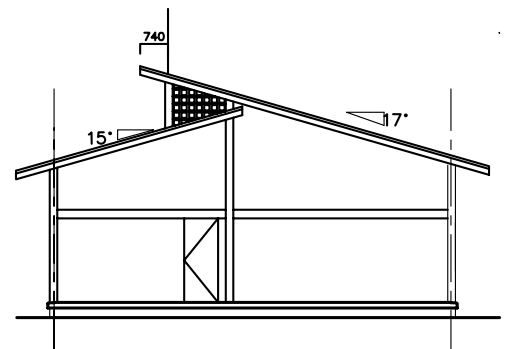
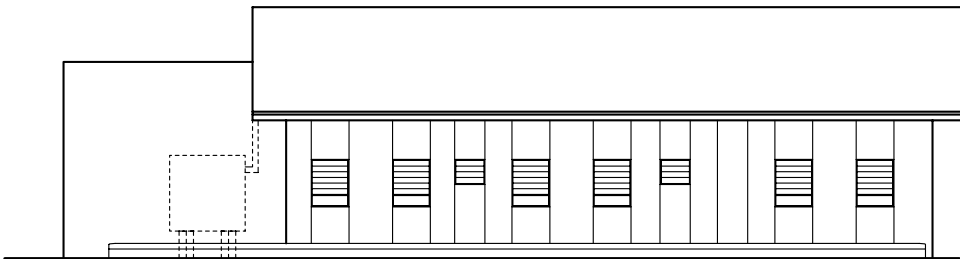


3. HC MATERNITY STANDARD PLAN / SECTION

THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI



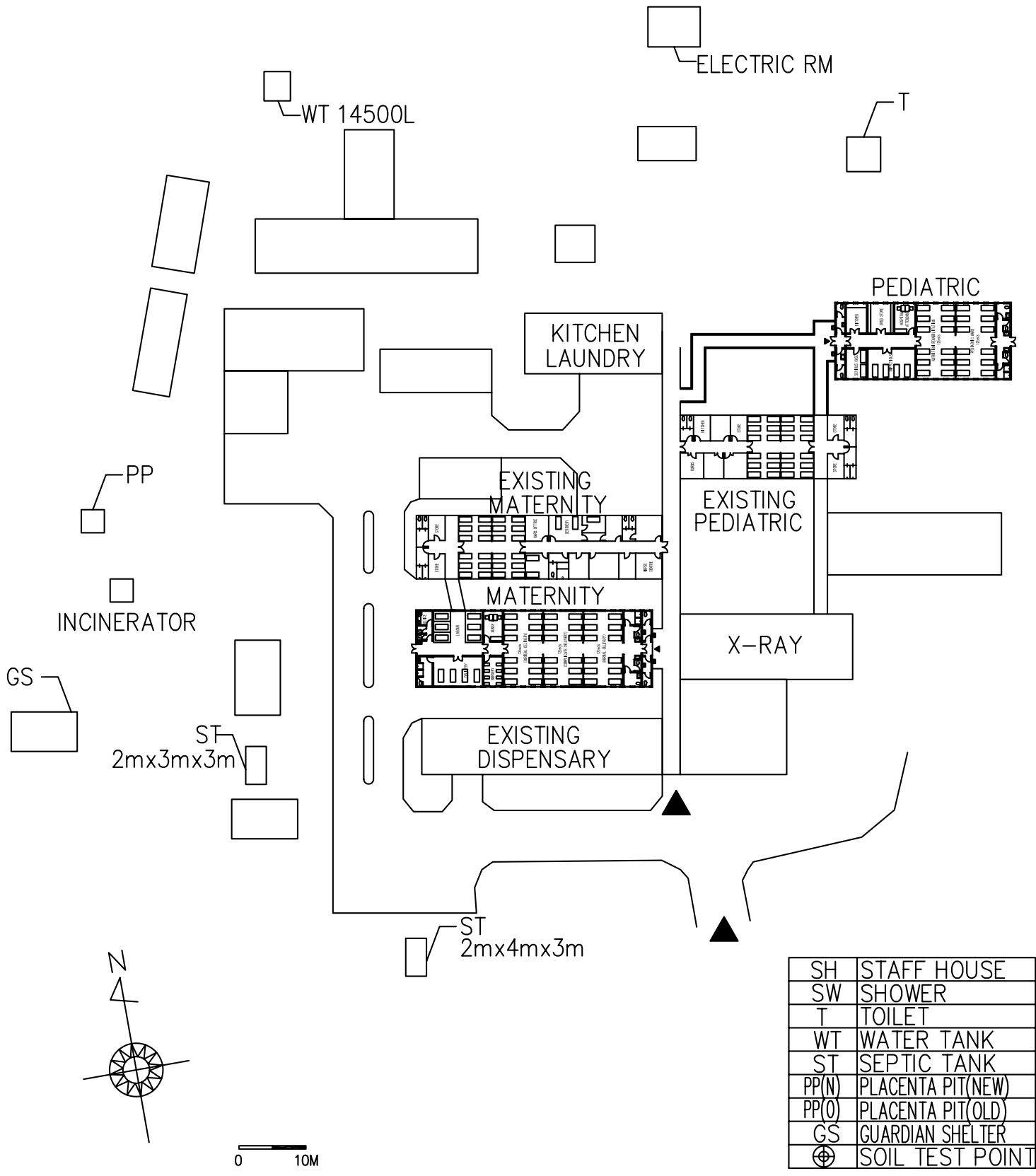
MATERNITY ELEVATION-1



MATERNITY ELEVATION-2

4. HC MATERNITY STANDARD ELEVATION

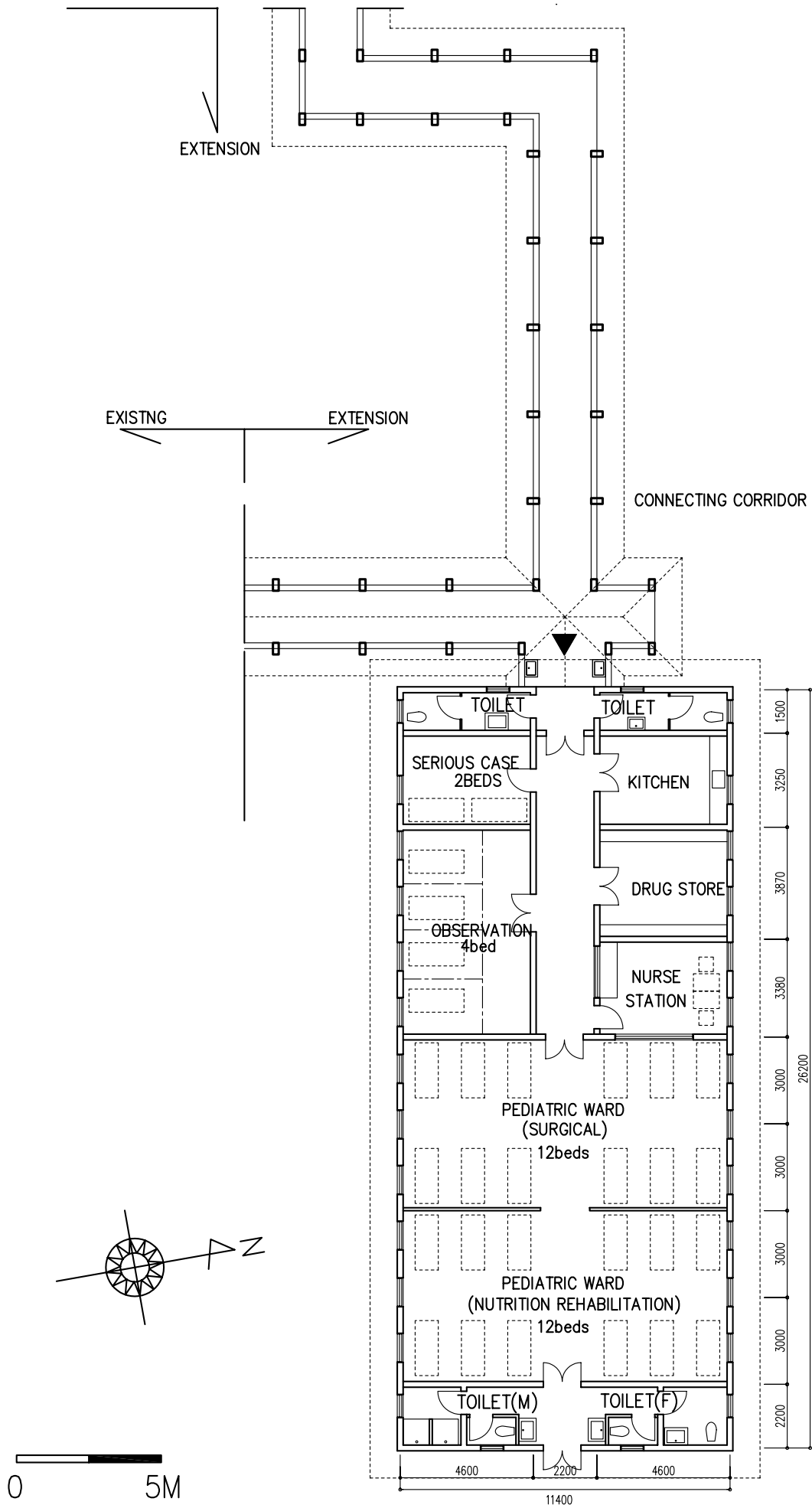
THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI



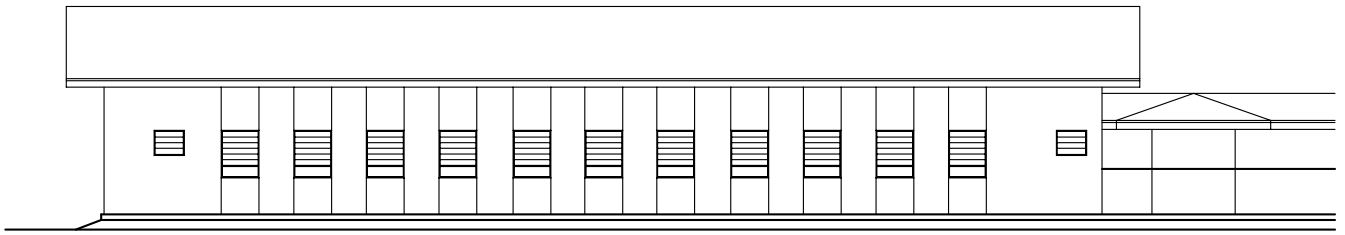
SH	STAFF HOUSE
SW	SHOWER
T	TOILET
WT	WATER TANK
ST	SEPTIC TANK
PP(N)	PLACENTA PIT(NEW)
PP(O)	PLACENTA PIT(OLD)
GS	GUARDIAN SHELTER
⊕	SOIL TEST POINT

5. RUMPHI DISTRICT HOSPITAL SITE PLAN

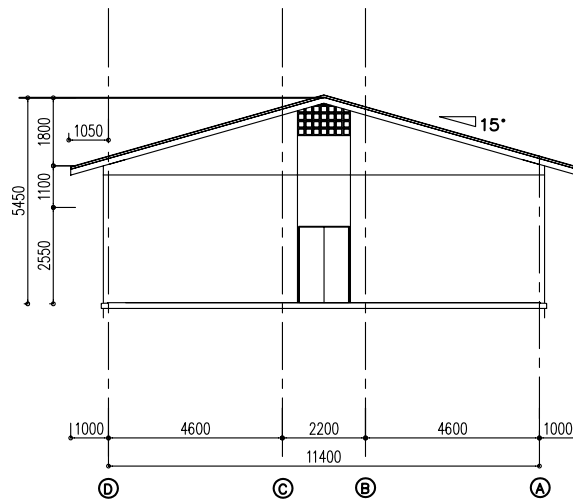
THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI



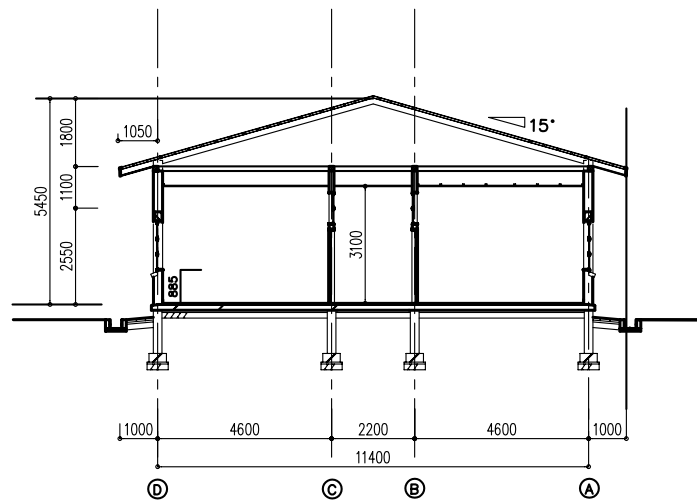
**6. RUMPHI DISTRICT HOSPITAL PEDIATRIC WARD PLAN**  
 THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI



SOUTH, NORTH ELEVATION



EAST ELEVATION

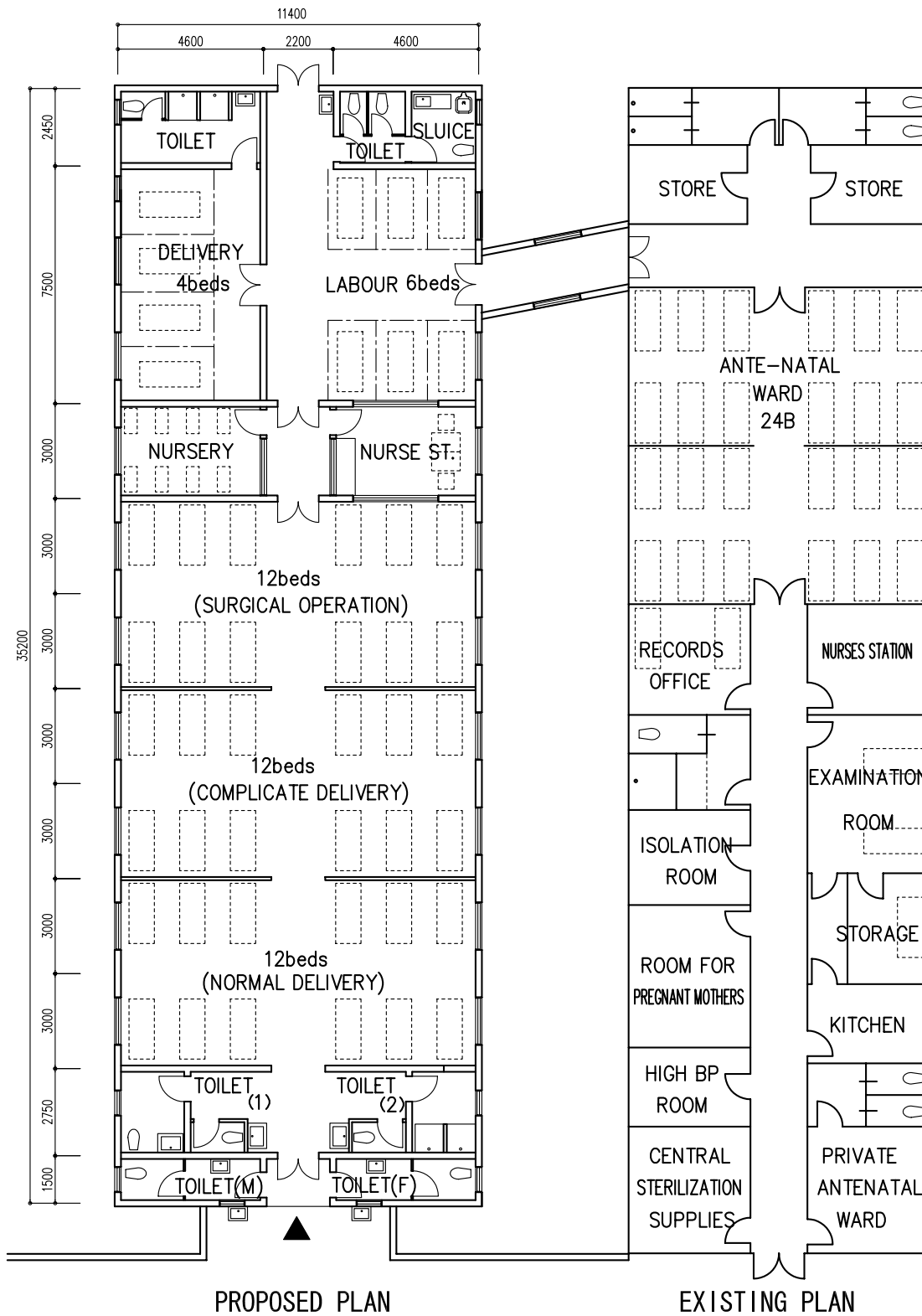
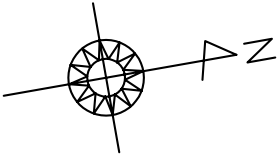


SECTION

7. RUMPHI DISTRICT HOSPITAL PEDIATRIC WARD ELEVATION/SECTION

THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI



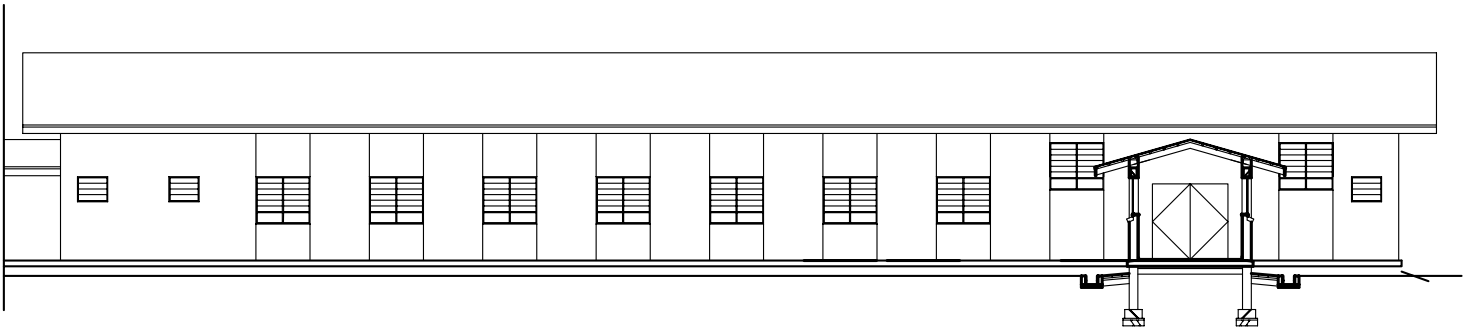


PROPOSED PLAN

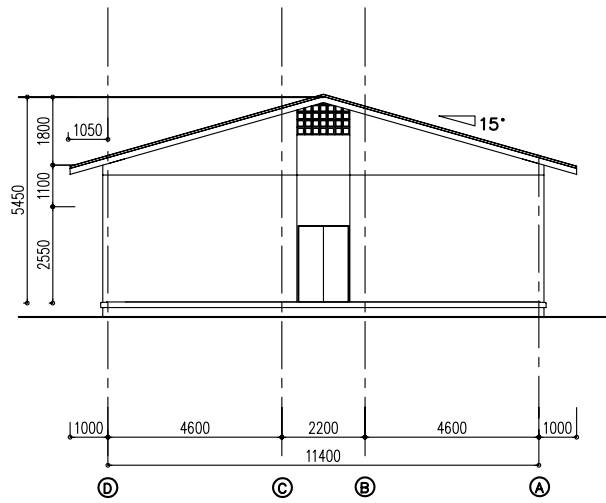
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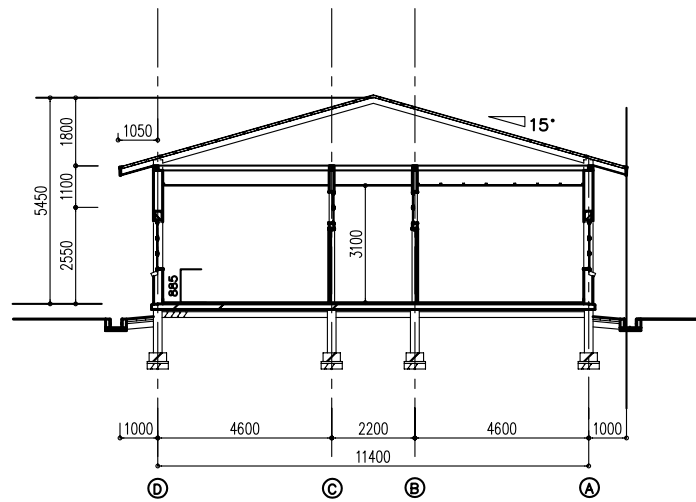
8. RUMPHI DISTRICT HOSPITAL MATANITY WARD PLAN  
 THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI



SOUTH, NORTH ELEVATION



WEST ELEVATION



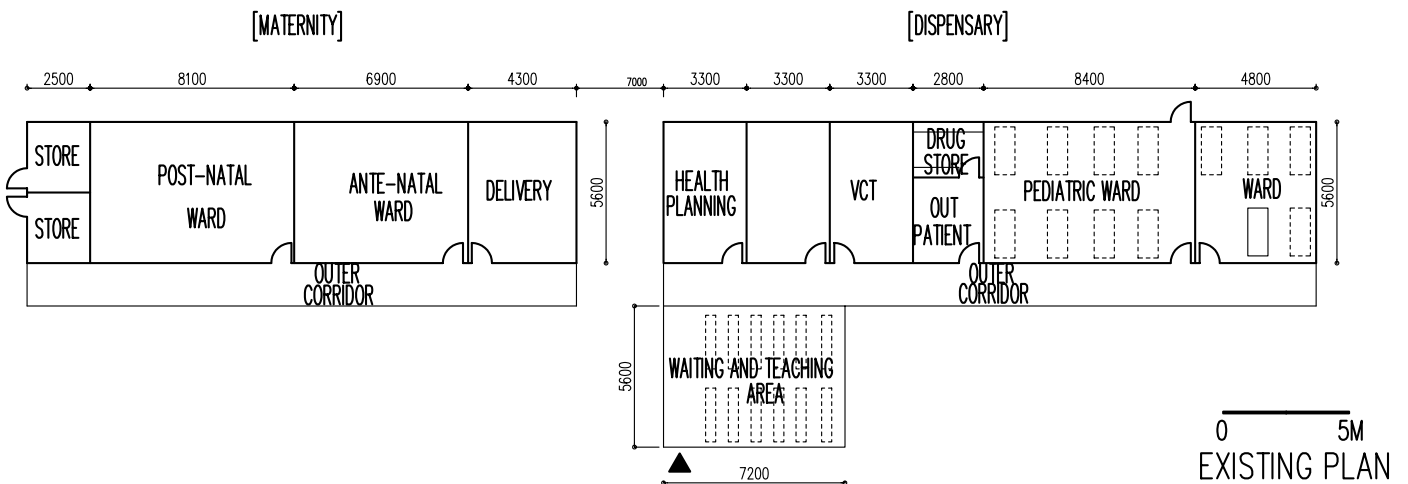
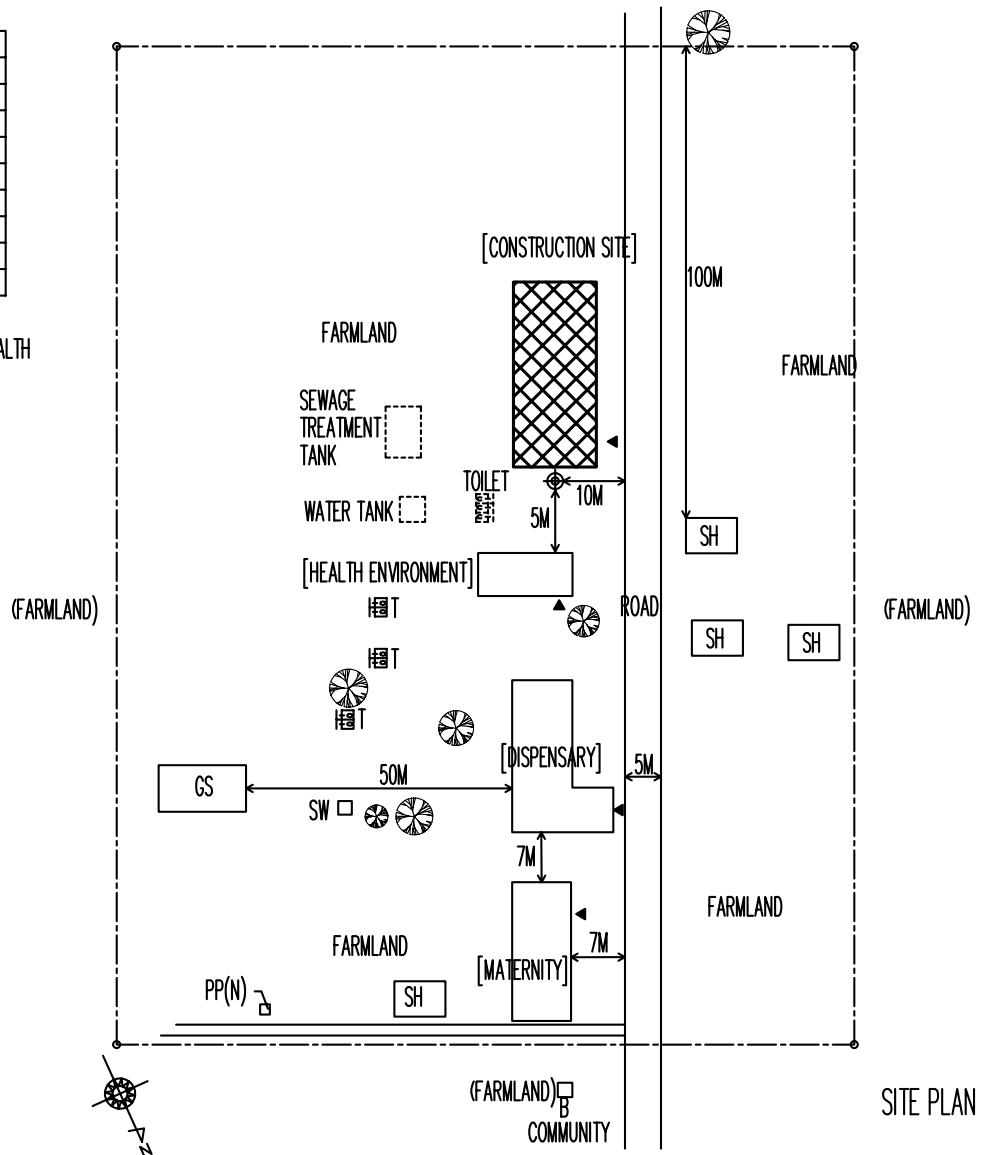
SECTION

9. RUMPHI DISTRICT HOSPITAL MATANITY WARD ELEVATION/SECTION

THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI

SH	STAFF HOUSE
SW	SHOWER
T	TOILET
WT	WATER TANK
ST	SEPTIC TANK
PP(N)	PLACENTA PIT(NEW)
PP(O)	PLACENTA PIT(OLD)
GS	GUARDIAN SHELTER
⊕	SOIL TEST POINT
B	BORE HOLE

□ FUTURE WORK BY MINISTRY OF HEALTH

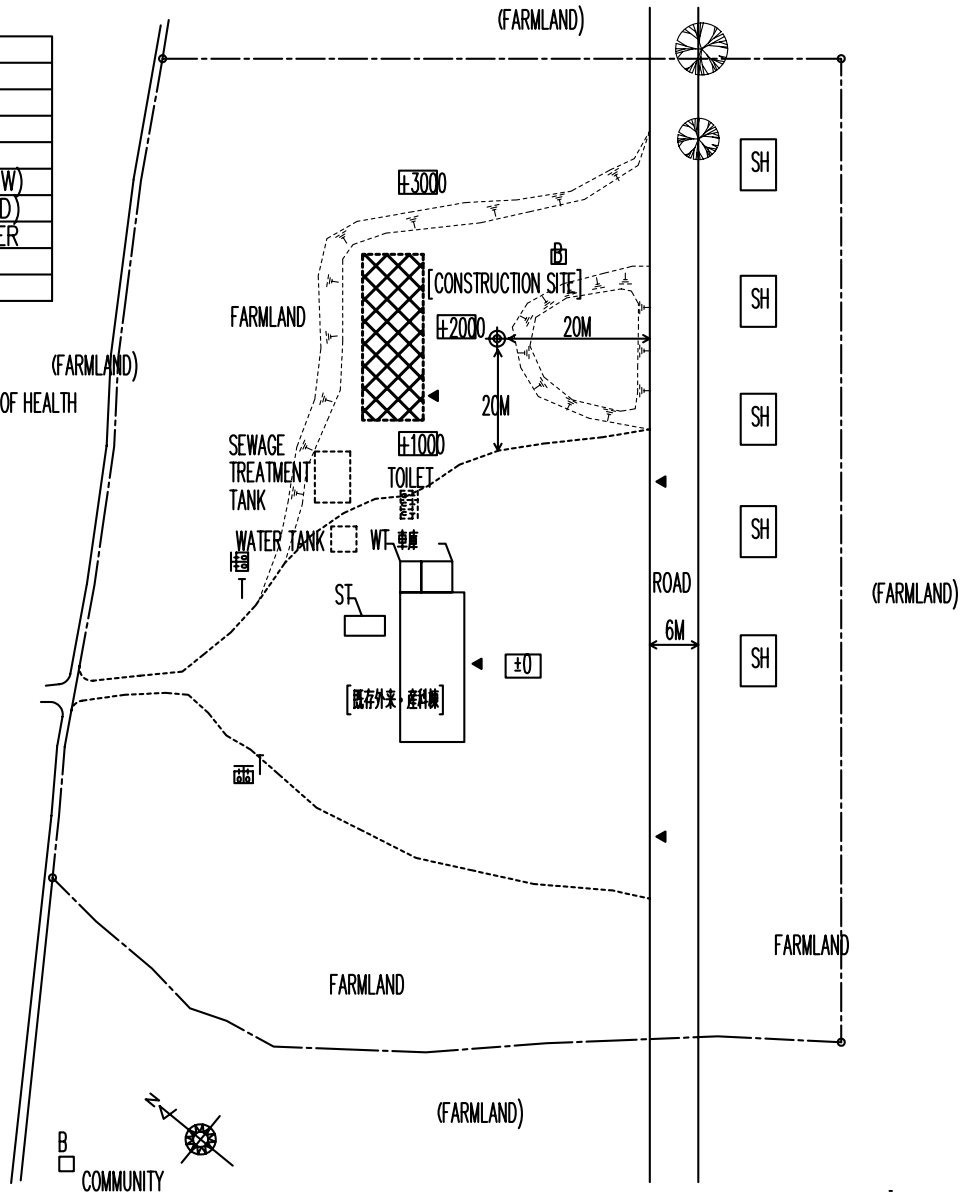


10. RHC-3 KATOWO RH (RUMPHI DS) MATERNITY

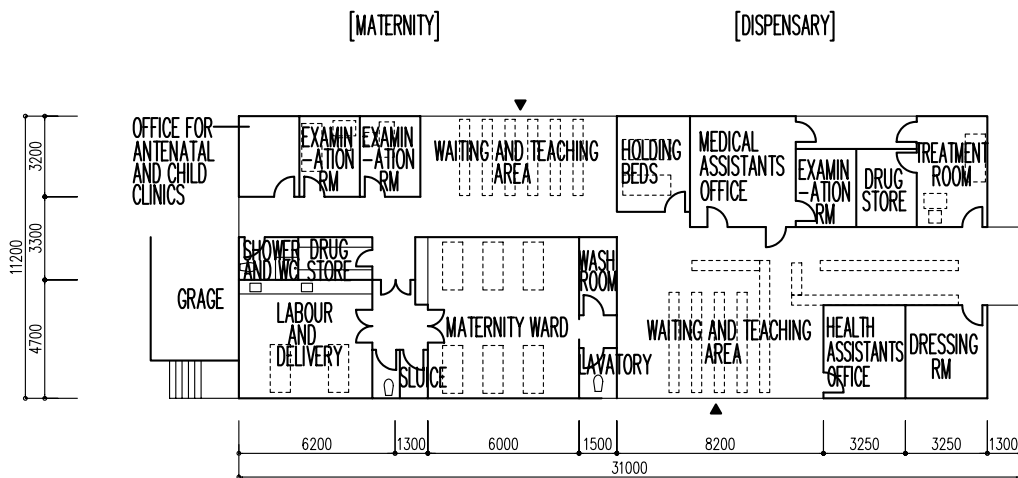
THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI

SH	STAFF HOUSE
SW	SHOWER
T	TOILET
WT	WATER TANK
ST	SEPTIC TANK
PP(N)	PLACENTA PIT(NEW)
PP(O)	PLACENTA PIT(OLD)
GS	GUARDIAN SHELTER
⊕	SOIL TEST POINT
B	BORE HOLE

□ FUTURE WORK BY MINISTRY OF HEALTH



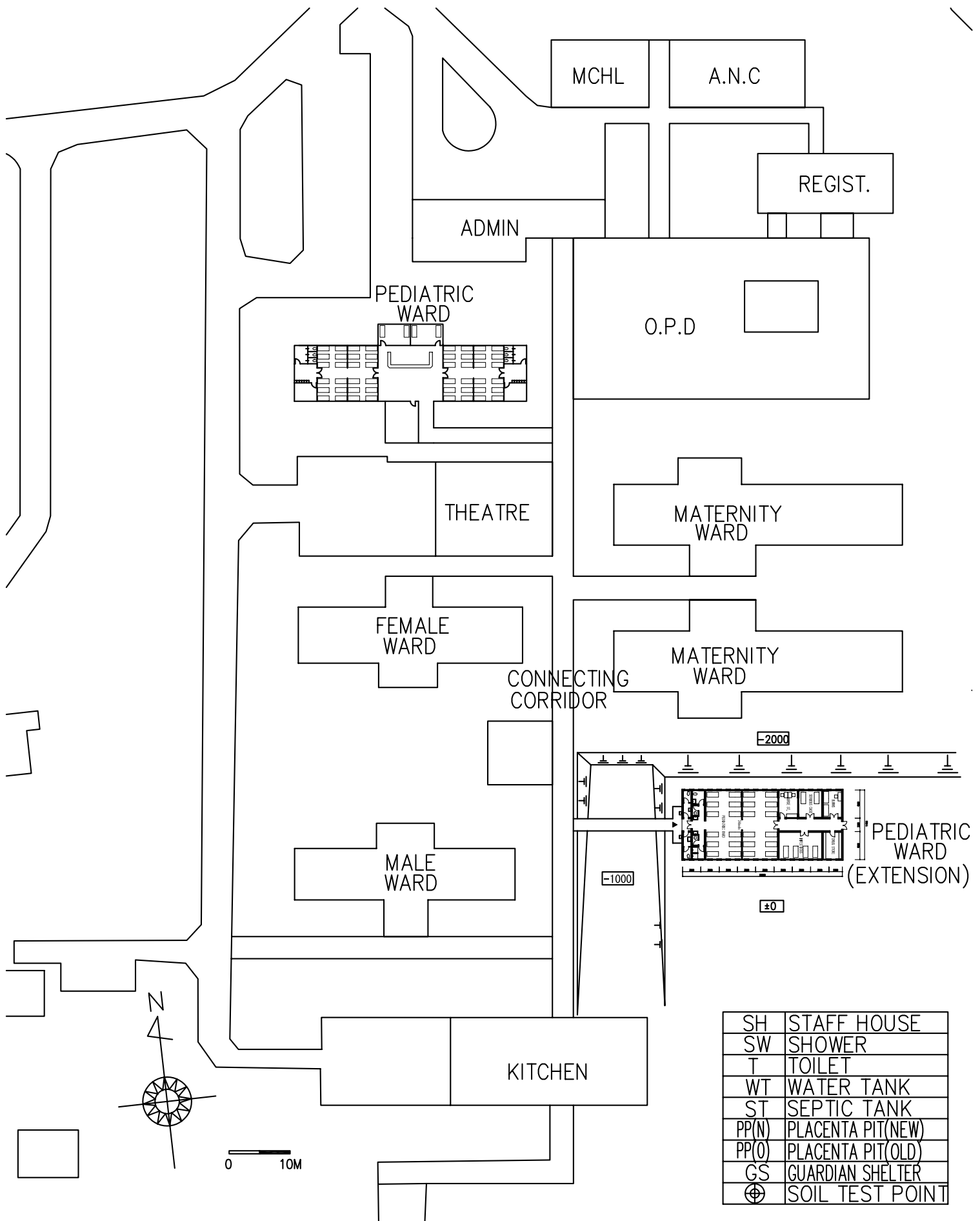
SITE PLAN



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EXISTING PLAN

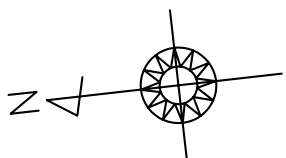
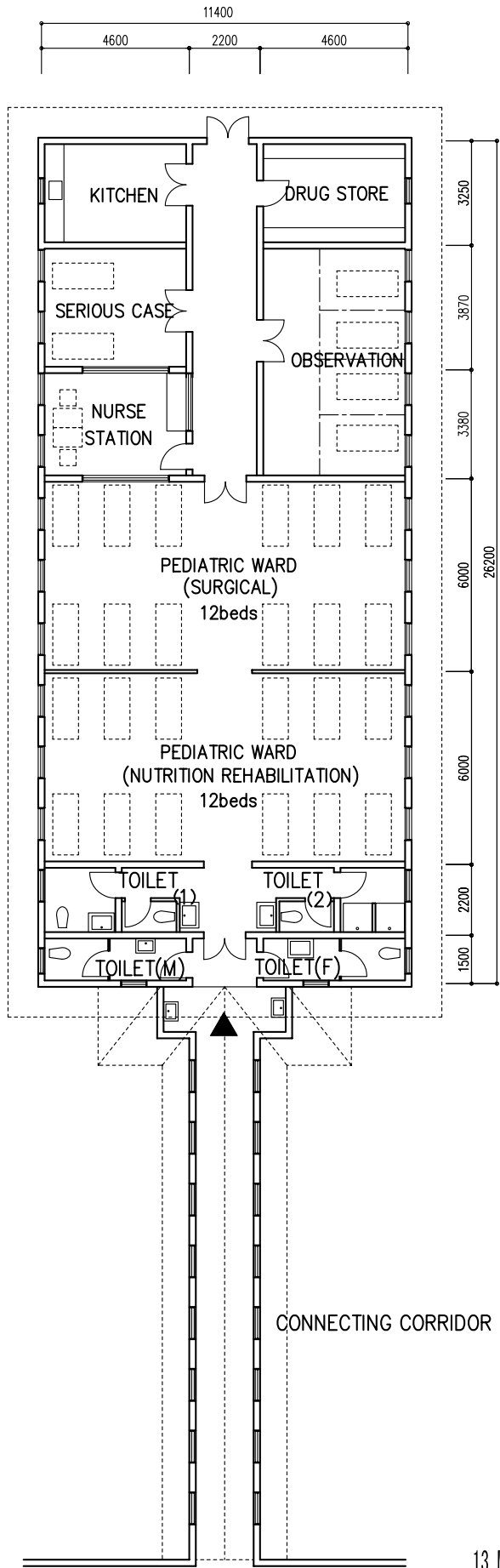
11. RHC-6 MWAZISI HC (RUMPHI DS) MATERNITY

THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI



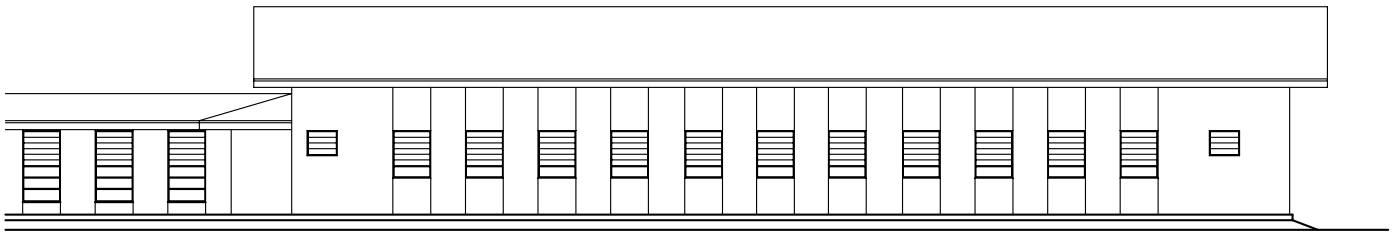
12. MZIMBA DISTRICT HOSPITAL SITE PLAN

THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI

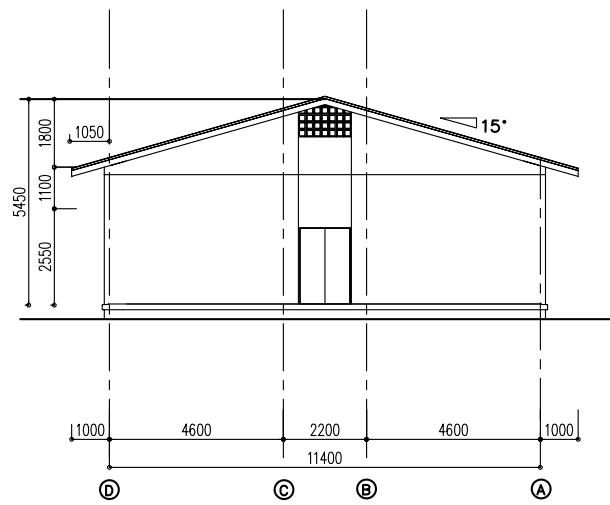


13. MZIMBA DISTRICT HOSPITAL PEDIATRIC WARD PLAN

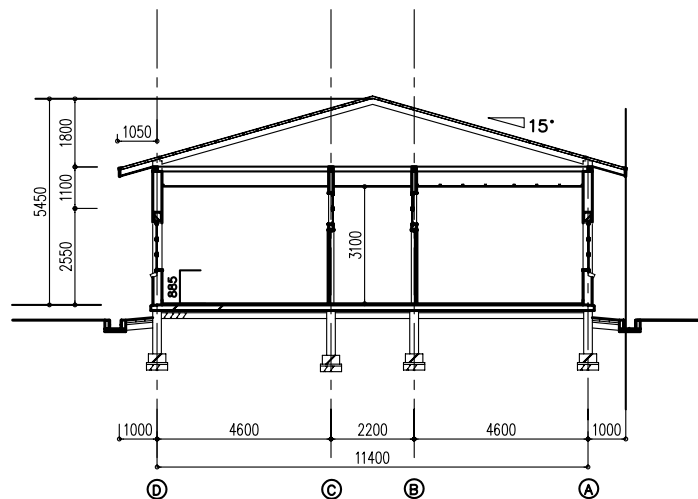
THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI



SOUTH, NORTH ELEVATION



EAST ELEVATION



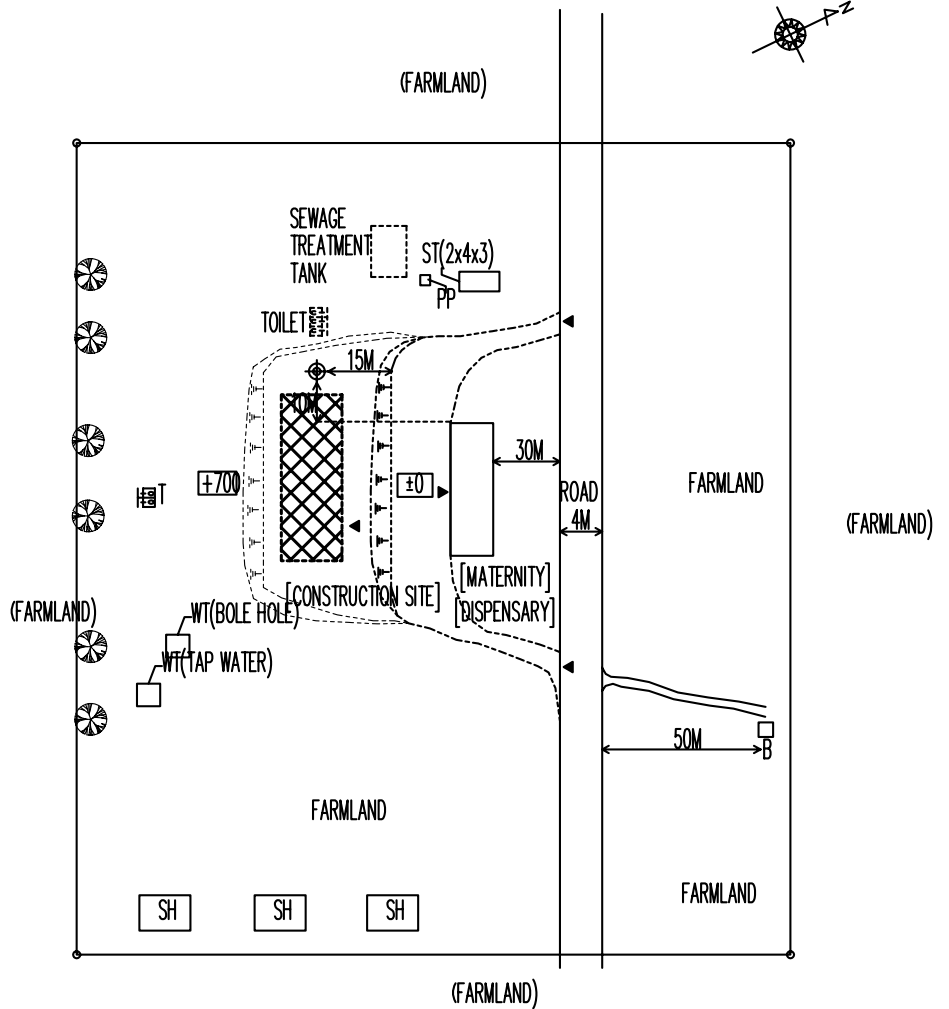
SECTION

14. MZIMBA DISTRICT HOSPITAL PEDIATRIC ELEVATION/SECTION

THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI

SH	STAFF HOUSE
SW	SHOWER
T	TOILET
WT	WATER TANK
ST	SEPTIC TANK
PP(N)	PLACENTA PIT(NEW)
PP(O)	PLACENTA PIT(OLD)
GS	GUARDIAN SHELTER
⊕	SOIL TEST POINT
B	BORE HOLE

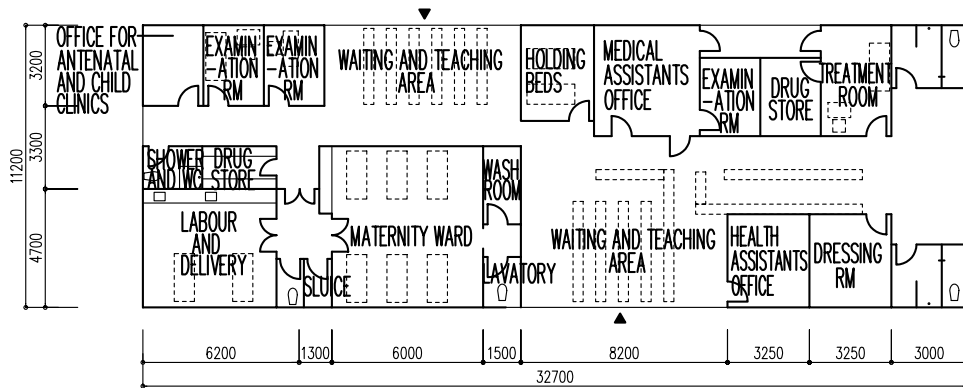
⬜ FUTURE WORK BY MINISTRY OF HEALTH



SITE PLAN

[MATERNITY]

[DISPENSARY]



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EXISTING PLAN

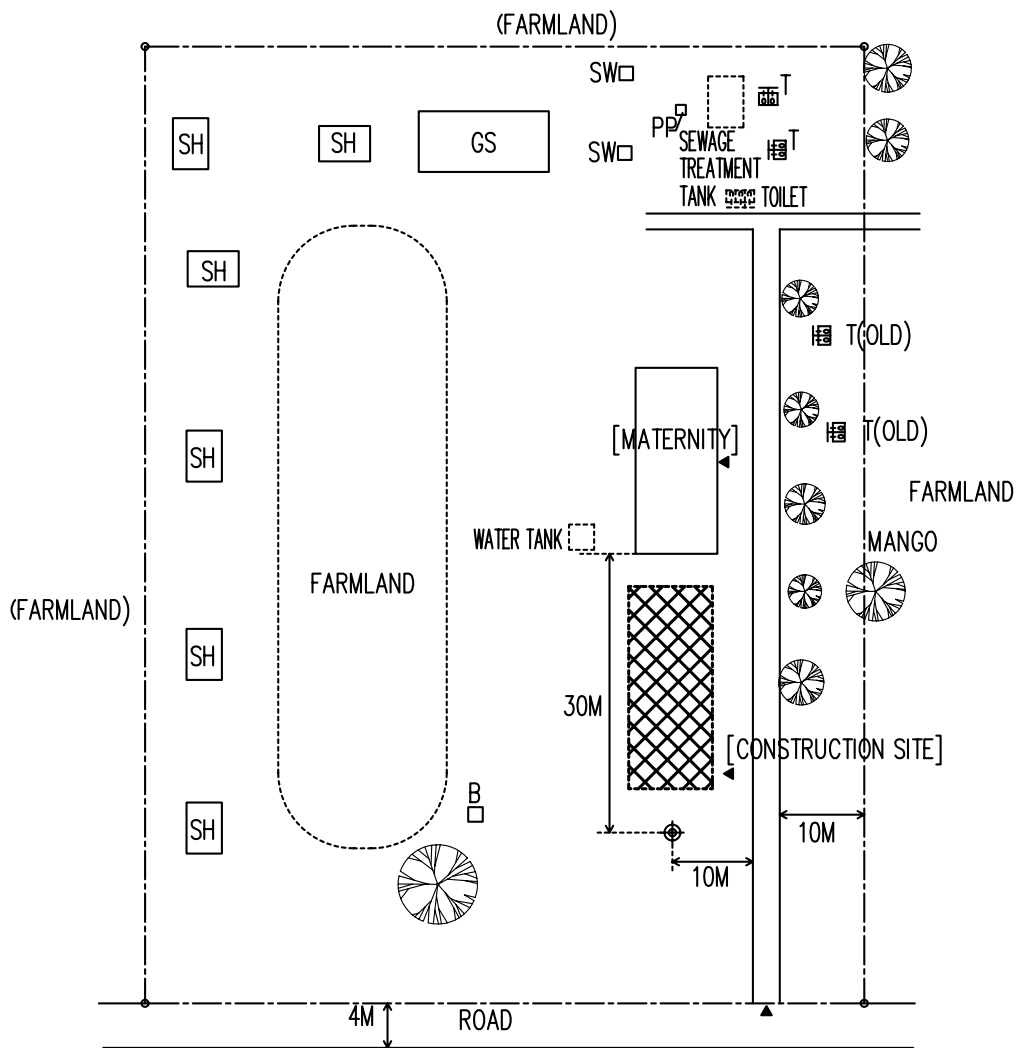
15. MHC-4 EMFENI HC (MZIMBA DS) MATERNITY

THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI

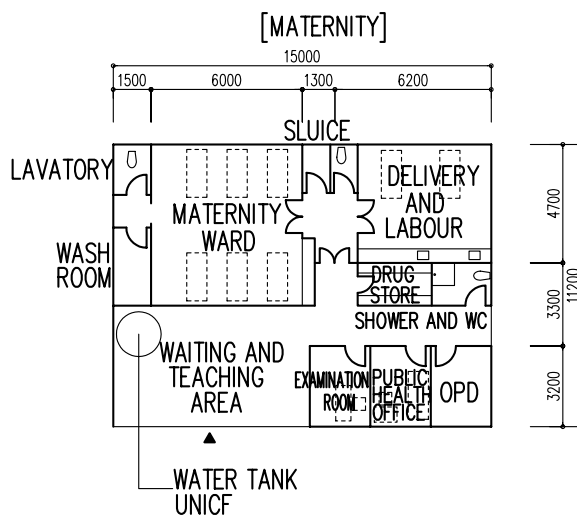


SH	STAFF HOUSE
SW	SHOWER
T	TOILET
WT	WATER TANK
ST	SEPTIC TANK
PP(N)	PLACENTA PIT(NEW)
PP(O)	PLACENTA PIT(OLD)
GS	GUARDIAN SHELTER
⊕	SOIL TEST POINT
B	BORE HOLE

⬜ FUTURE WORK BY MINISTRY OF HEALTH



SITE PLAN



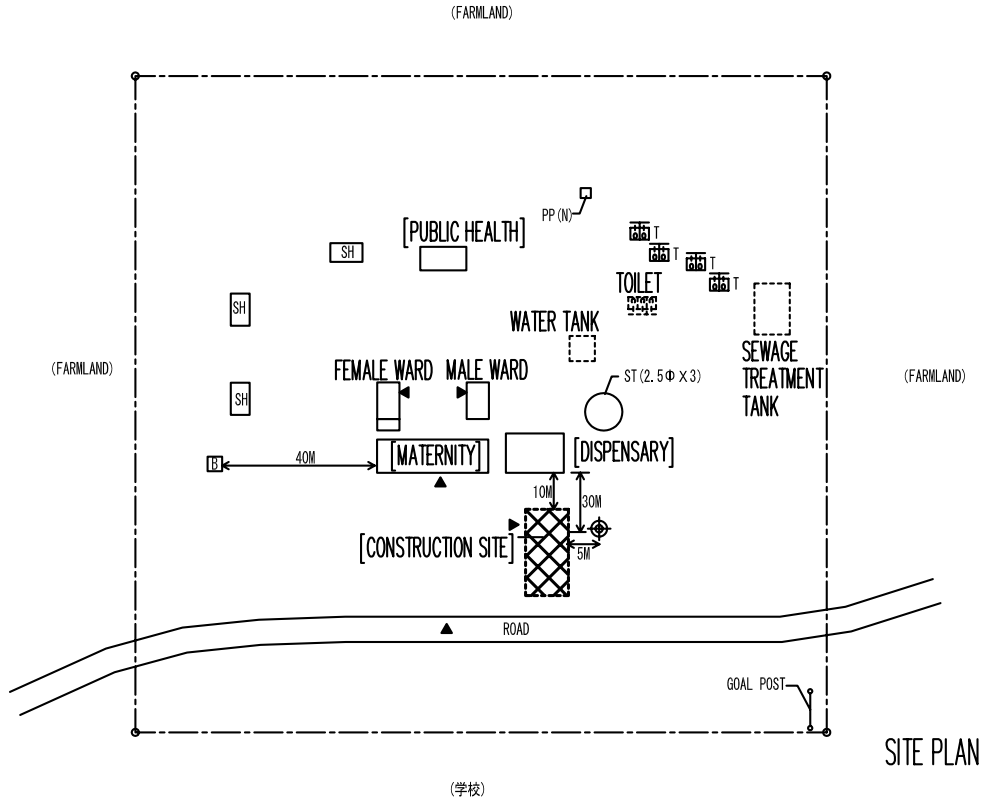
EXISTING PLAN

16. MHC-6 ENDINDENI HC (MZIMBA DS) DISPENSARY

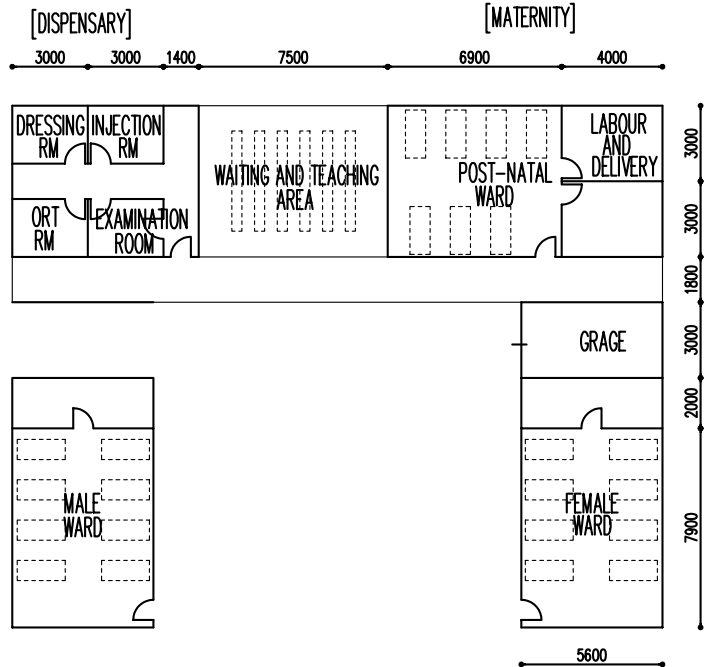
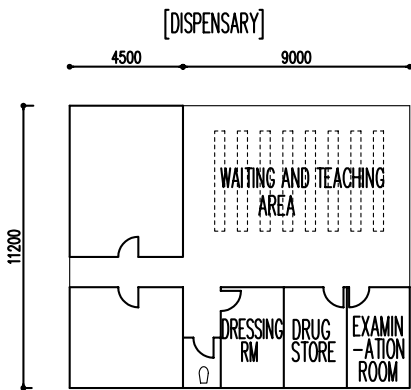
THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI

SH	STAFF HOUSE
SW	SHOWER
T	TOILET
WT	WATER TANK
ST	SEPTIC TANK
PP(N)	PLACENTA PIT(NEW)
PP(O)	PLACENTA PIT(OLD)
GS	GUARDIAN SHELTER
⊕	SOIL TEST POINT
B	BORE HOLE

□ FUTURE WORK BY MINISTRY OF HEALTH



SITE PLAN



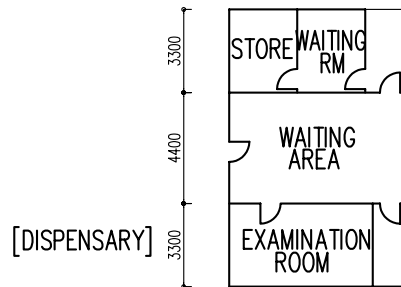
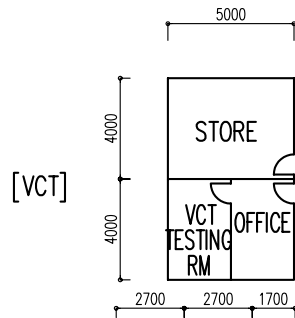
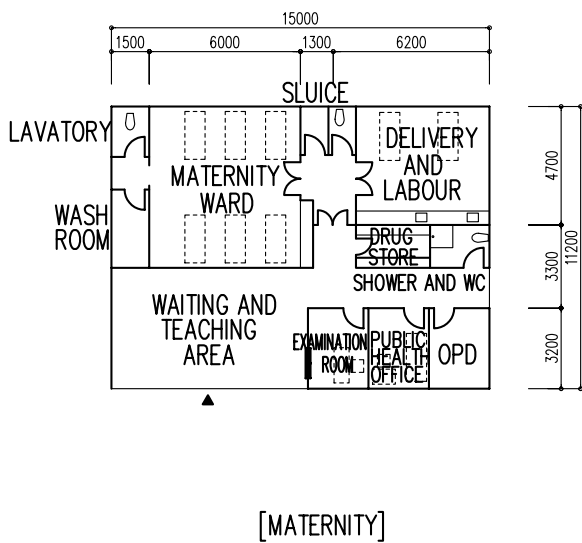
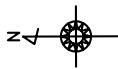
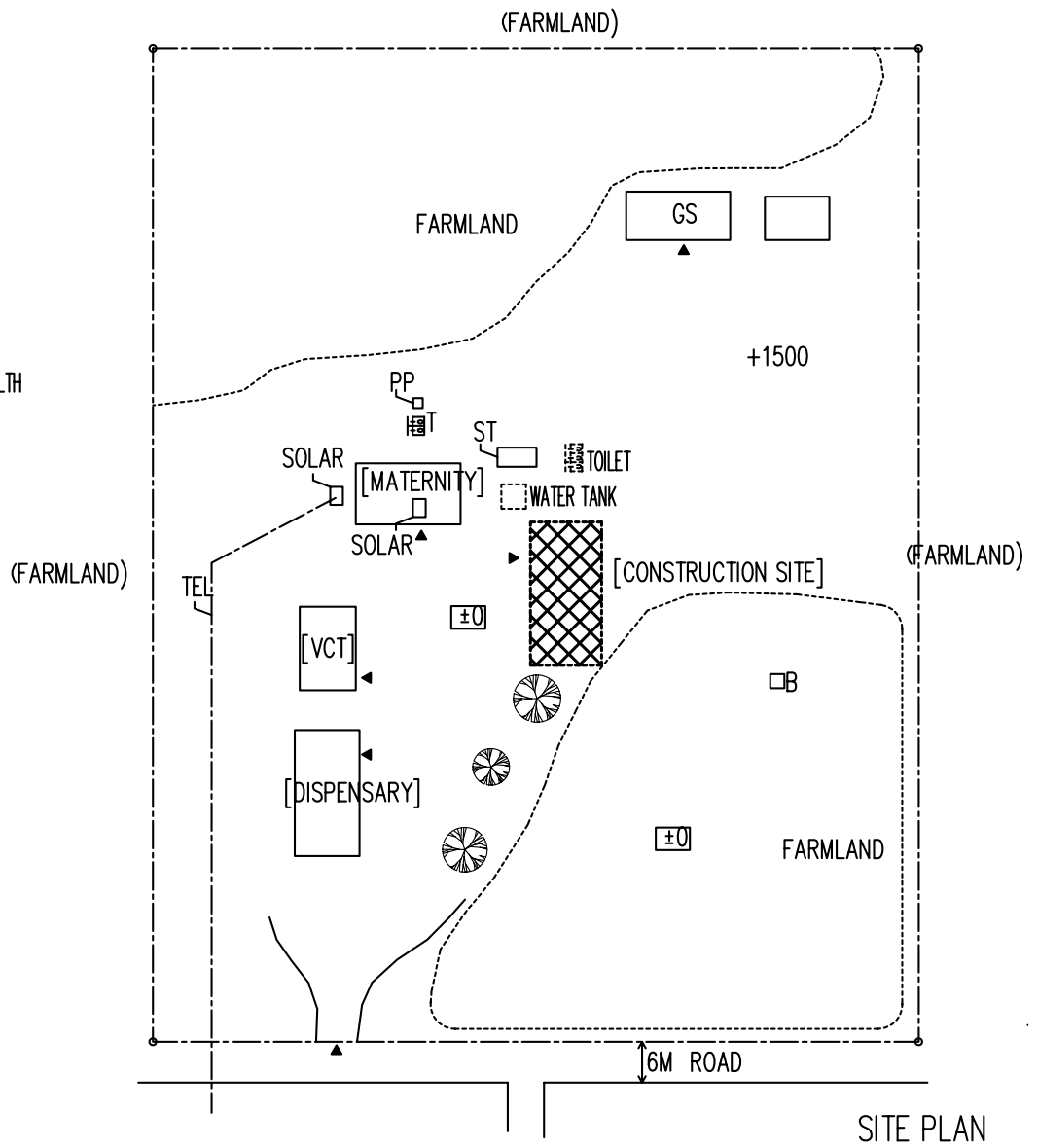
EXISTING PLAN

17. MHC-9 EUTHINI RH (MZIMBA DS) MATERNITY

THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI

SH	STAFF HOUSE
SW	SHOWER
T	TOILET
WT	WATER TANK
ST	SEPTIC TANK
PP(N)	PLACENTA PIT(NEW)
PP(O)	PLACENTA PIT(OLD)
GS	GUARDIAN SHELTER
⊕	SOIL TEST POINT
B	BORE HOLE

⋮ FUTURE WORK BY MINISTRY OF HEALTH

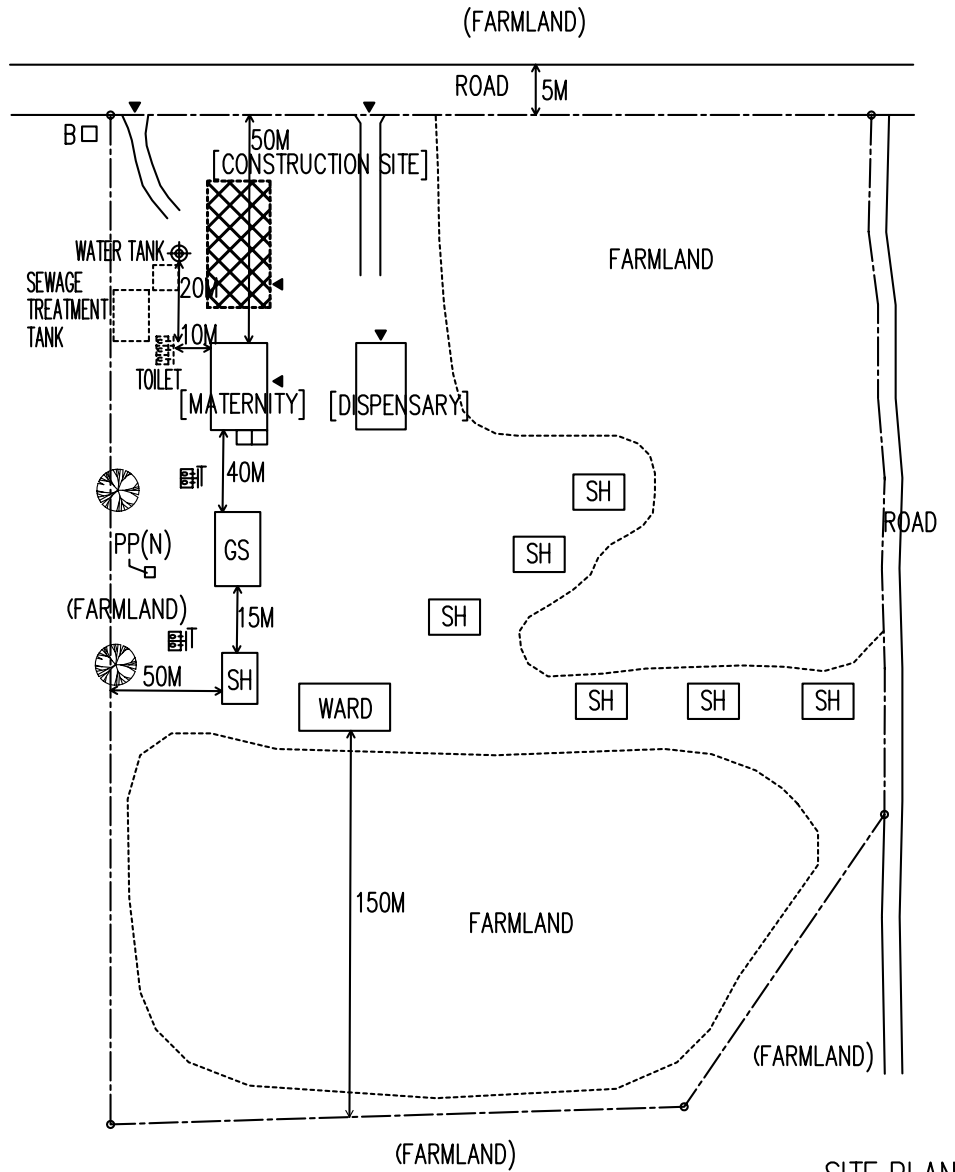


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EXISTING PLAN

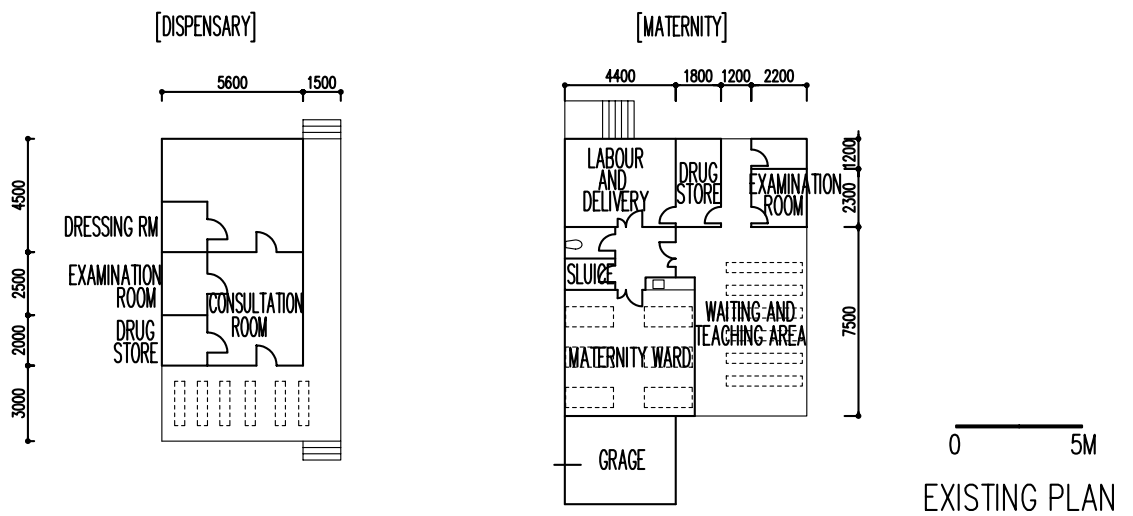
18. MHC-12 KAFUKULE HC (MZIMBA DS) DISPENSARY  
THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI

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T	TOILET
WT	WATER TANK
ST	SEPTIC TANK
PP(N)	PLACENTA PIT(NEW)
PP(O)	PLACENTA PIT(OLD)
GS	GUARDIAN SHELTER
⊕	SOIL TEST POINT
B	BORE HOLE

⋮ FUTURE WORK BY MINISTRY OF HEALTH



SITE PLAN



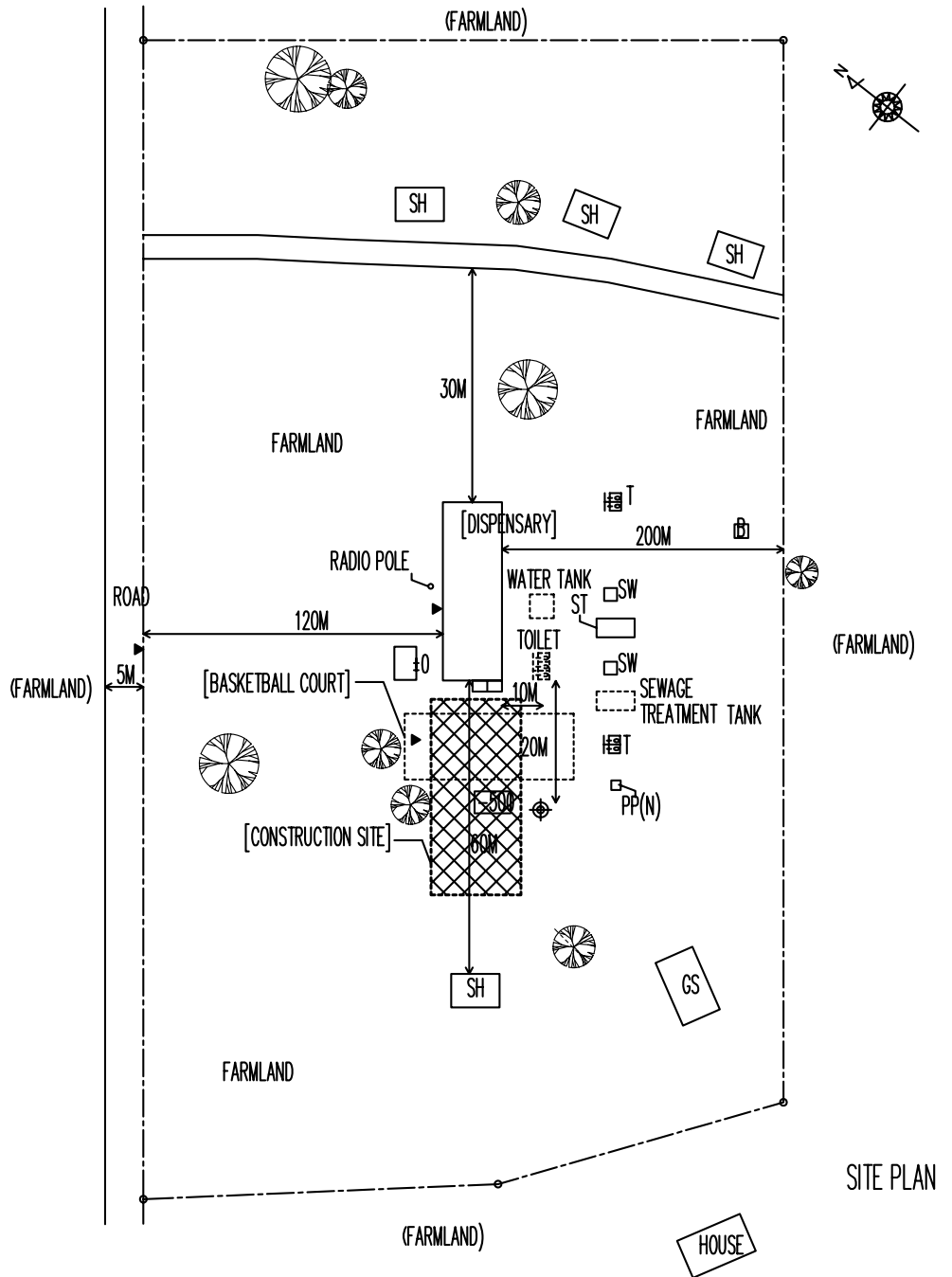
EXISTING PLAN

19. KHC-1 CHULU HC (KASUNGU DS) DISPENSARY

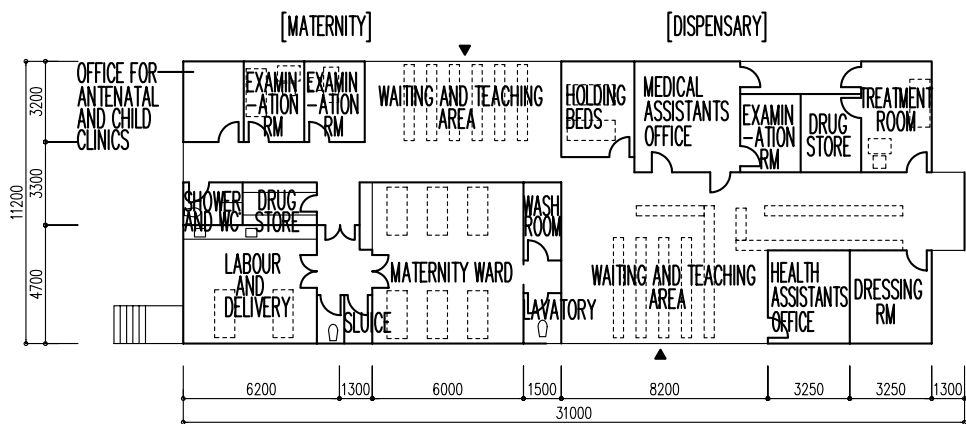
THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI

SH	STAFF HOUSE
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T	TOILET
WT	WATER TANK
ST	SEPTIC TANK
PP(N)	PLACENTA PIT(NEW)
PP(O)	PLACENTA PIT(OLD)
GS	GUARDIAN SHELTER
⊕	SOIL TEST POINT
B	BORE HOLE

⊖ FUTURE WORK BY MINISTRY OF HEALTH



SITE PLAN



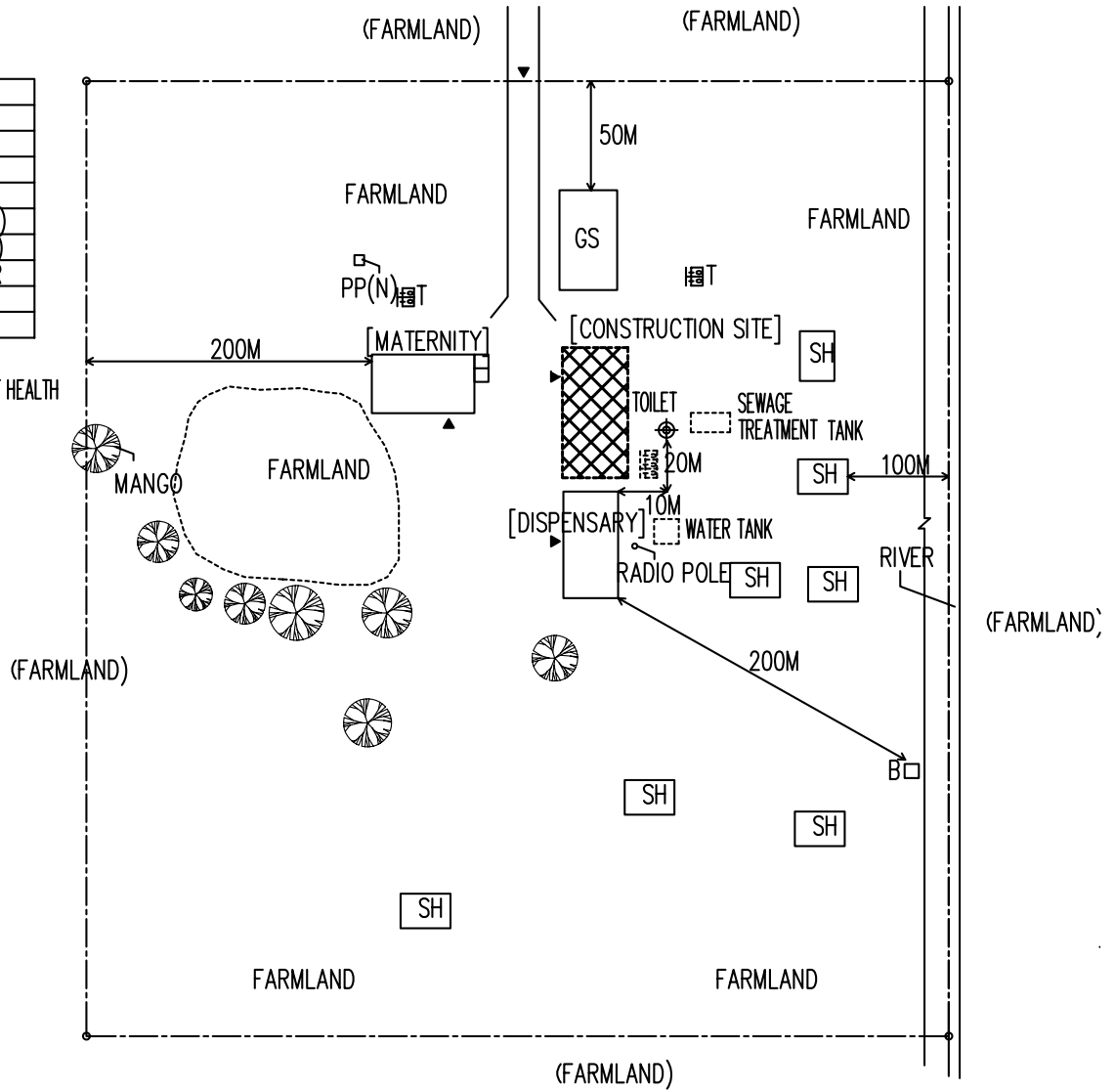
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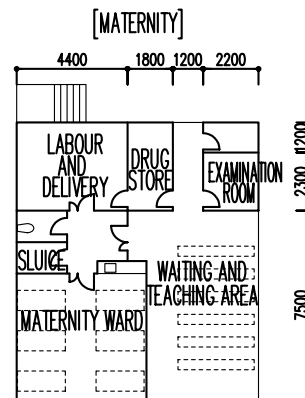
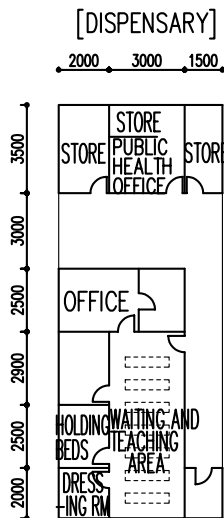
20. KHC-3 KAPELULA HC (KASUNGU DS) MATERNITY  
THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI

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SW	SHOWER
T	TOILET
WT	WATER TANK
ST	SEPTIC TANK
PP(N)	PLACENTA PIT(NEW)
PP(O)	PLACENTA PIT(OLD)
GS	GUARDIAN SHELTER
⊕	SOIL TEST POINT
B	BORE HOLE

⊖ FUTURE WORK BY MINISTRY OF HEALTH



SITE PLAN



0 5M

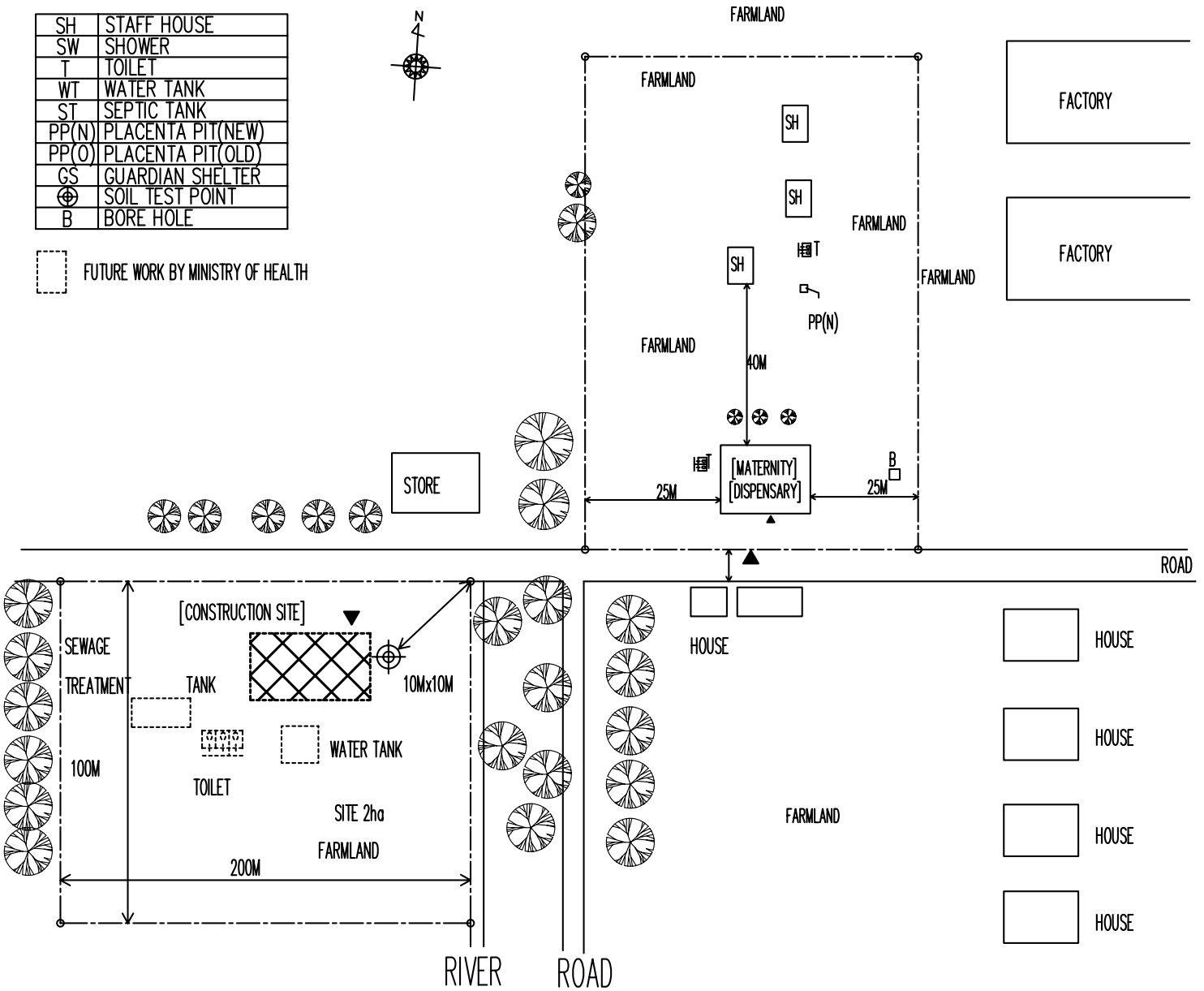
EXISTING PLAN

21. KHC-8 SIMULEMBA HC (KASUNGU DS) DISPENSARY

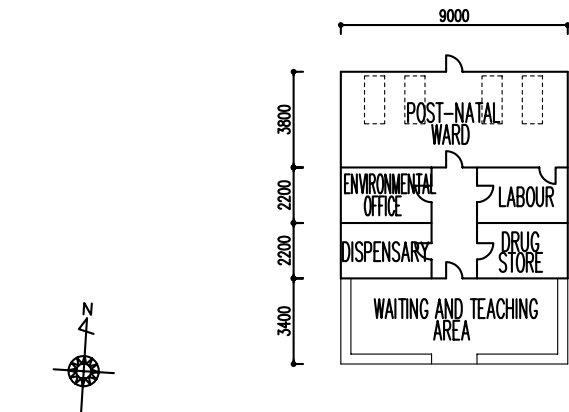
THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI

SH	STAFF HOUSE
SW	SHOWER
T	TOILET
WT	WATER TANK
ST	SEPTIC TANK
PP(N)	PLACENTA PIT(NEW)
PP(O)	PLACENTA PIT(OLD)
GS	GUARDIAN SHELTER
⊕	SOIL TEST POINT
B	BORE HOLE

⊠ FUTURE WORK BY MINISTRY OF HEALTH



SITE PLAN



EXISTING PLAN

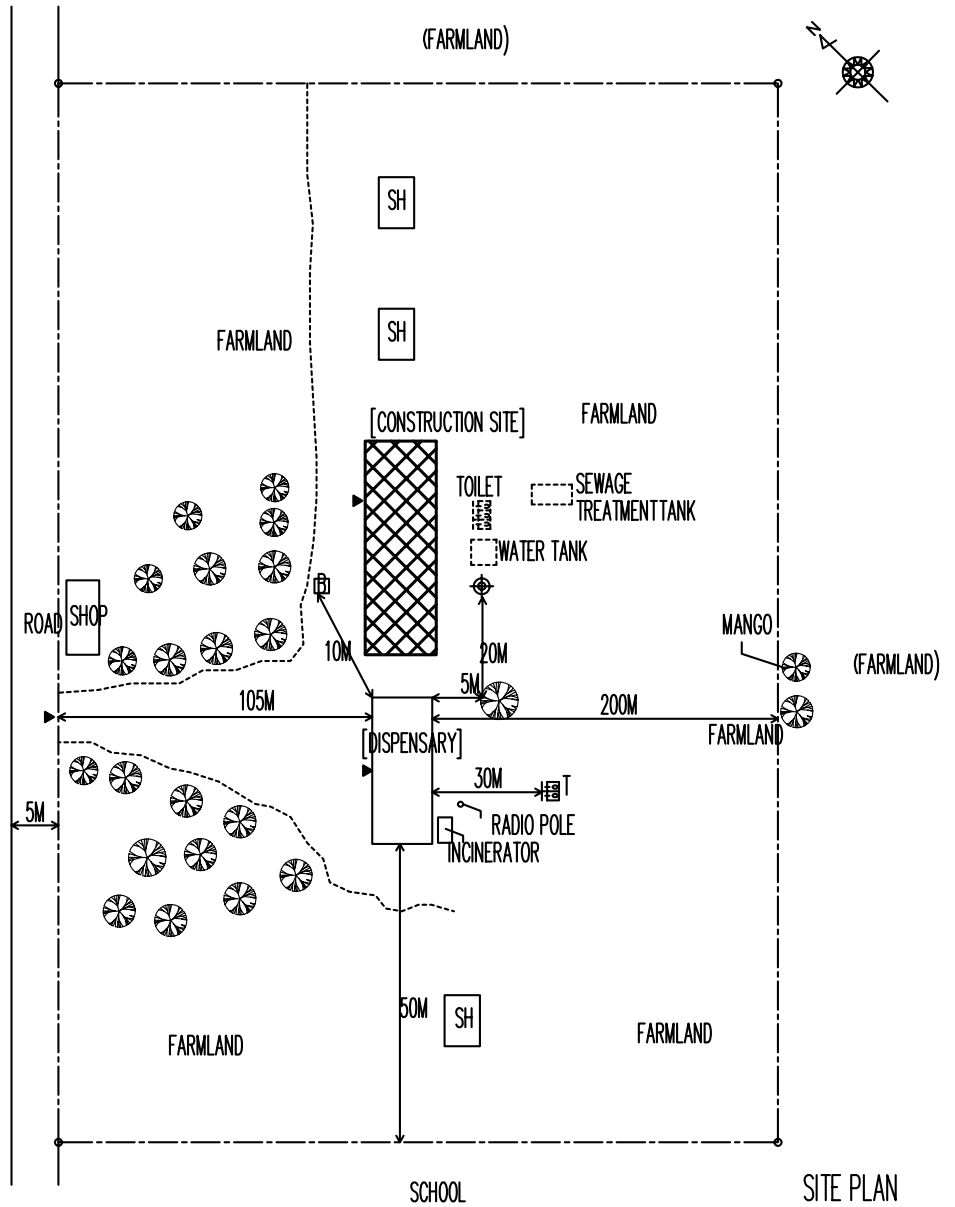
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22. KHC-10 KHOLA HC (KASUNGU DS) DISPENSARY

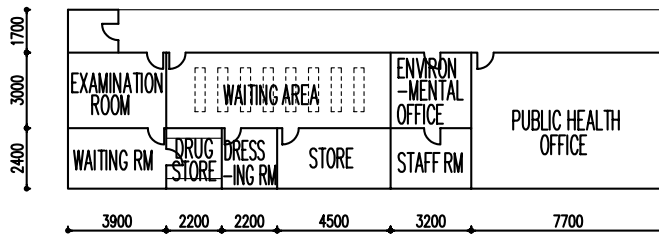
THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI

SH	STAFF HOUSE
SW	SHOWER
T	TOILET
WT	WATER TANK
ST	SEPTIC TANK
PP(N)	PLACENTA PIT(NEW)
PP(O)	PLACENTA PIT(OLD)
GS	GUARDIAN SHELTER
⊕	SOIL TEST POINT
B	BORE HOLE

□ FUTURE WORK BY MINISTRY OF HEALTH



[DISPENSARY]



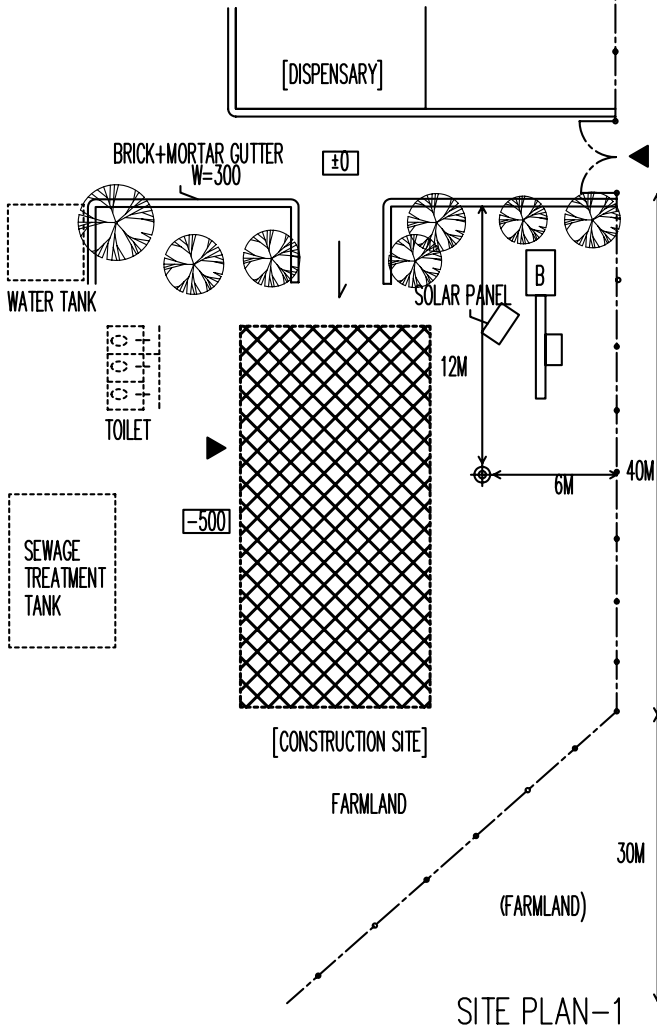
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EXISTING PLAN

23. KHC-11 CHAMWABVI HC (KASUNGU DS) MATERNITY  
THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI

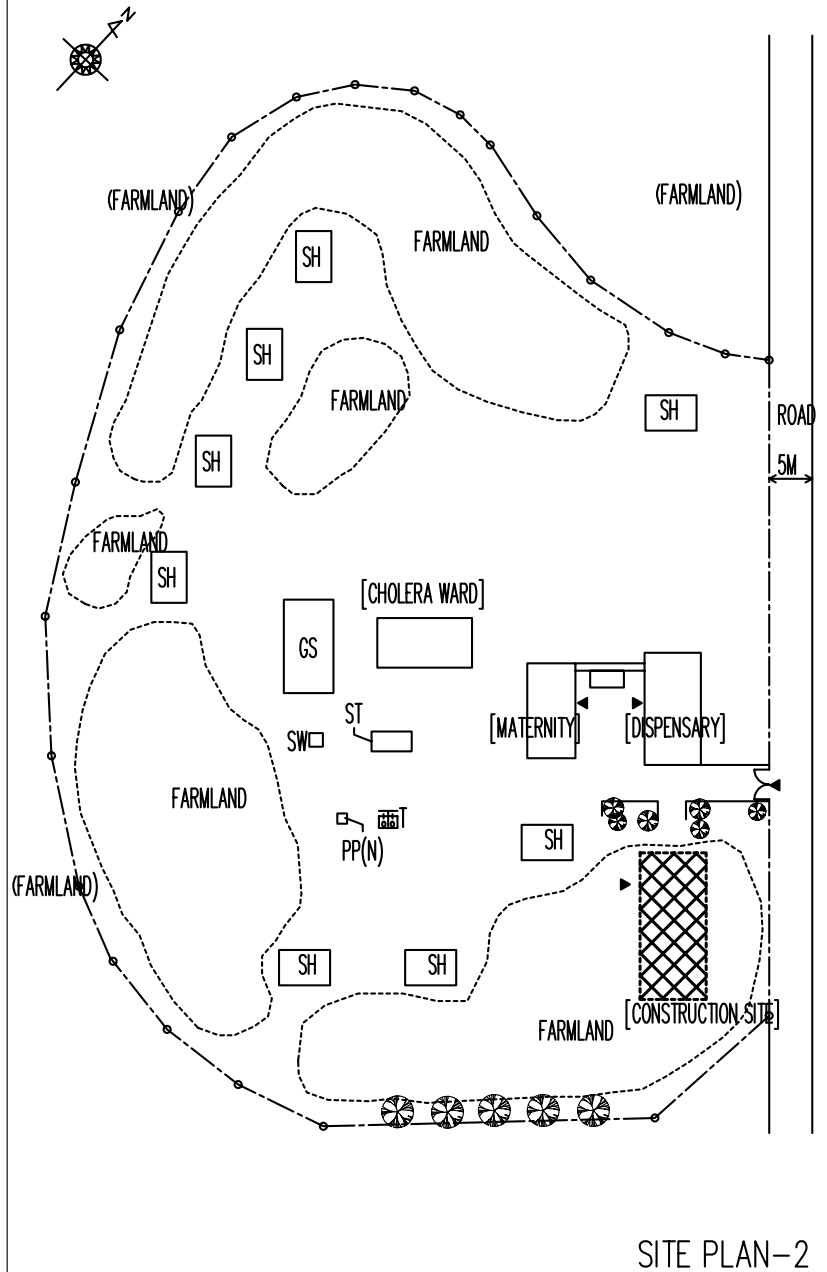


SH	STAFF HOUSE
SW	SHOWER
T	TOILET
WT	WATER TANK
ST	SEPTIC TANK
PP(N)	PLACENTA PIT(NEW)
PP(O)	PLACENTA PIT(OLD)
GS	GUARDIAN SHELTER
⊕	SOIL TEST POINT
B	BORE HOLE

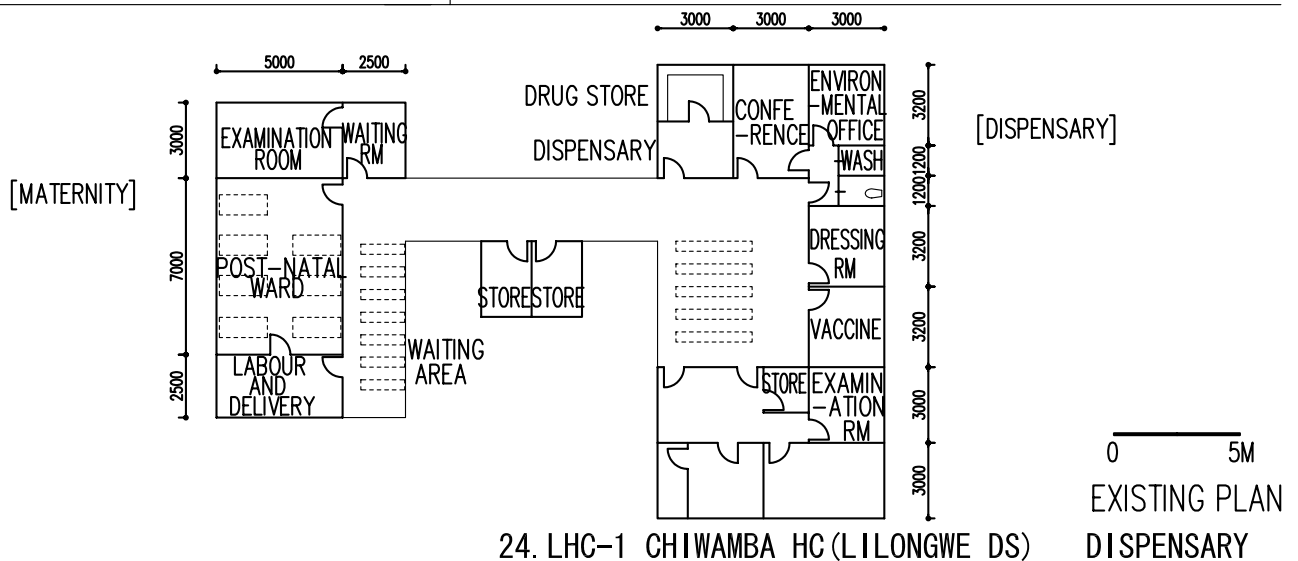
□ FUTURE WORK BY MINISTRY OF HEALTH



SITE PLAN-1



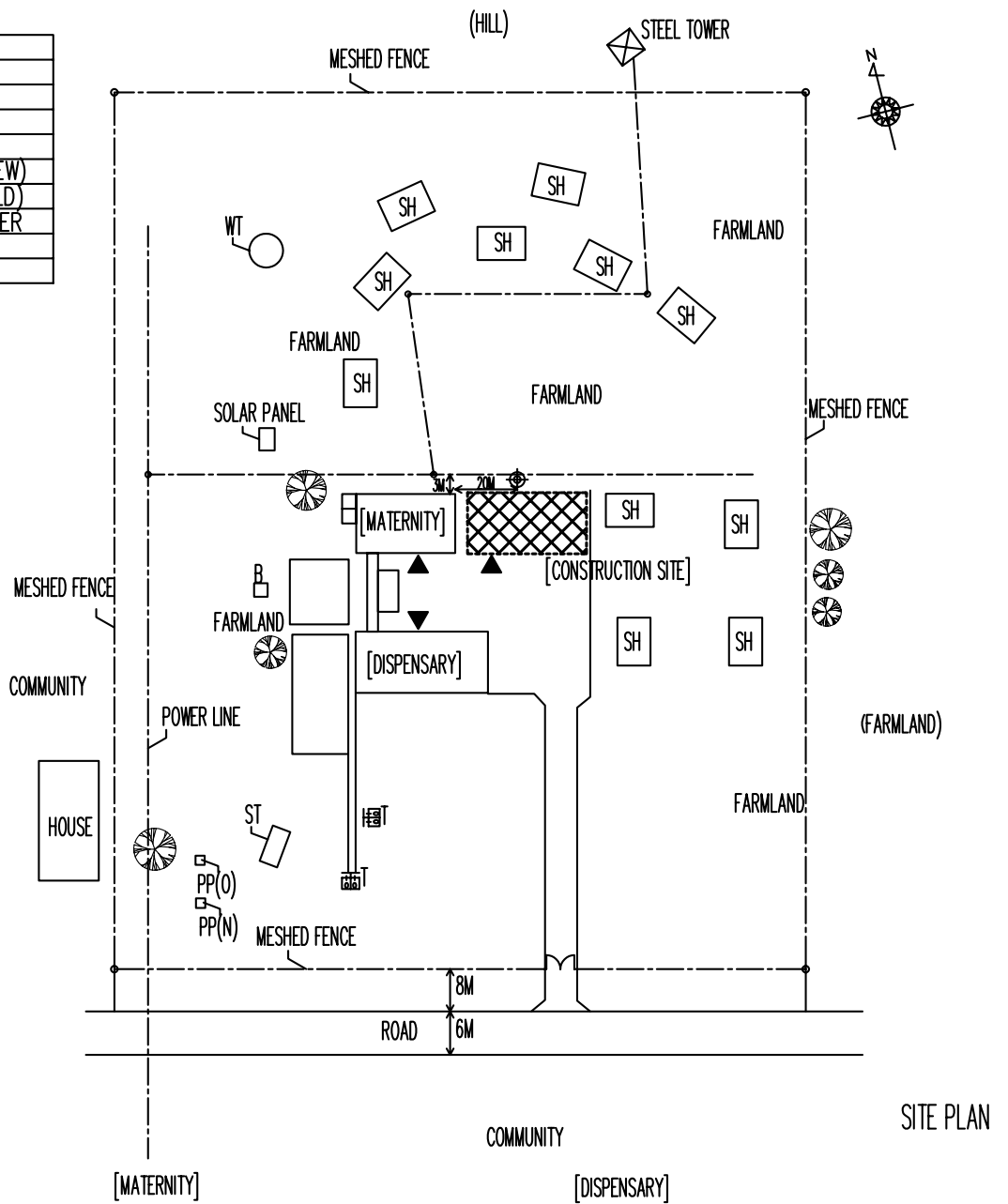
SITE PLAN-2



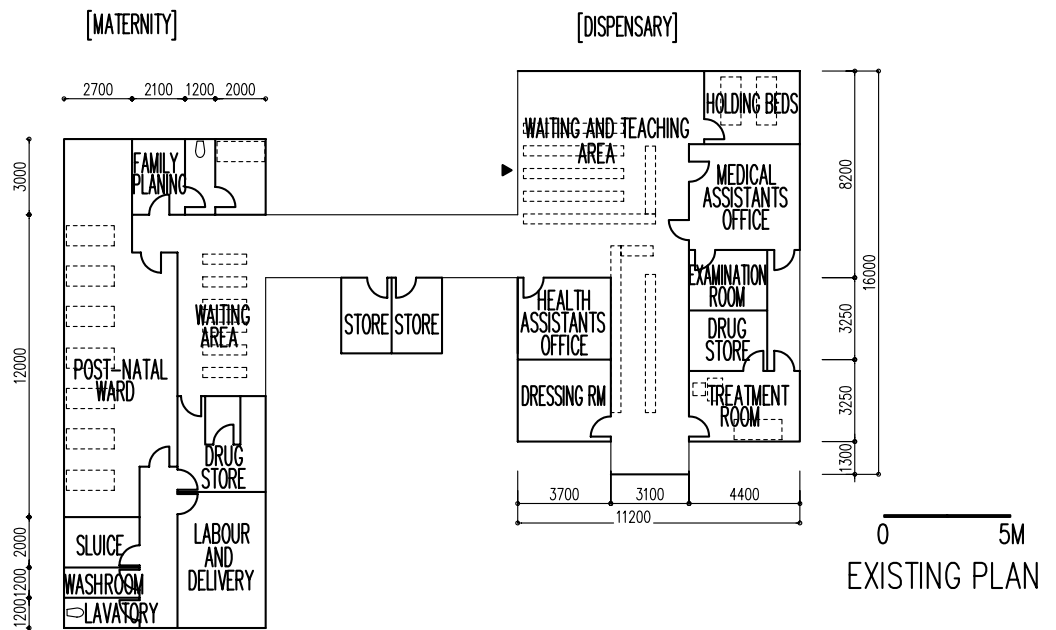
24. LHC-1 CHIWAMBA HC (LILONGWE DS)

DISPENSARY

SH	STAFF HOUSE
SW	SHOWER
T	TOILET
WT	WATER TANK
ST	SEPTIC TANK
PP(N)	PLACENTA PIT(NEW)
PP(O)	PLACENTA PIT(OLD)
GS	GUARDIAN SHELTER
⊕	SOIL TEST POINT
B	BORE HOLE



SITE PLAN

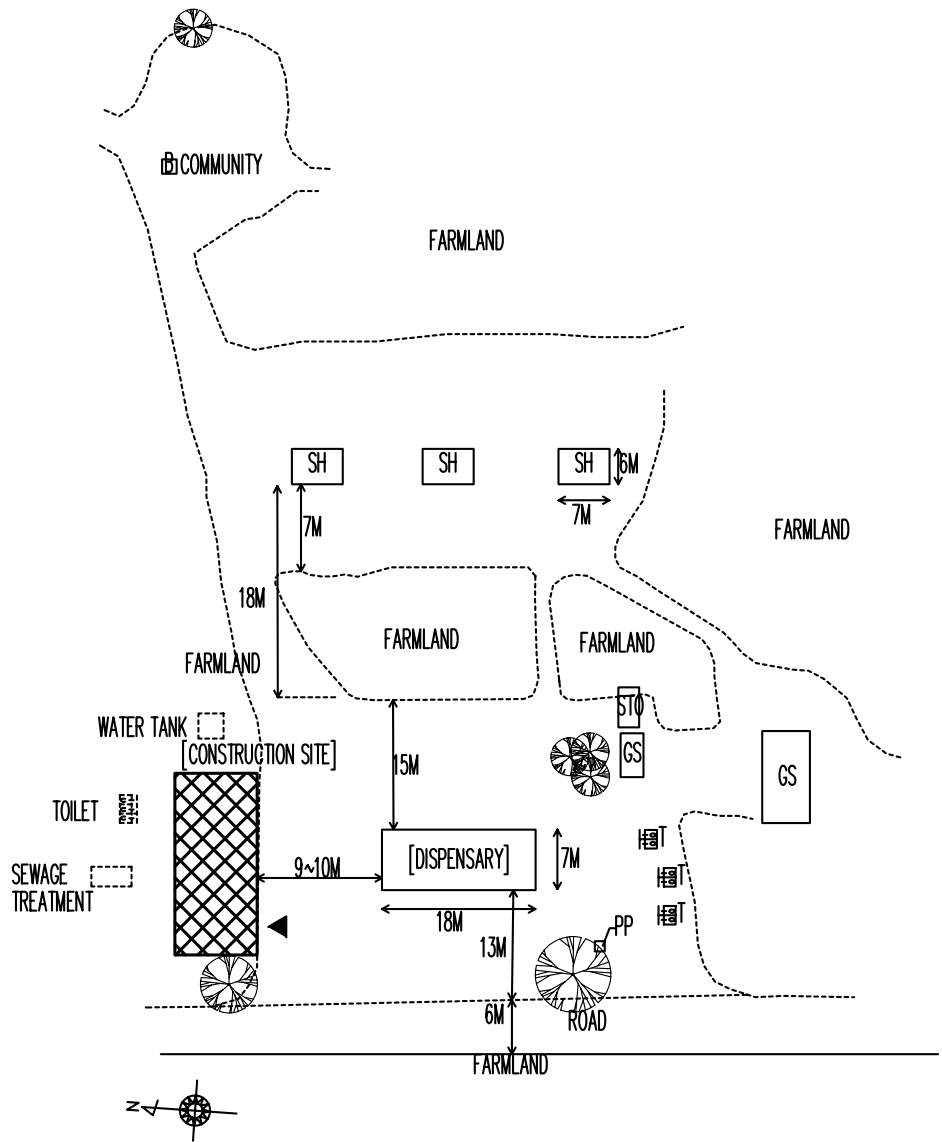


EXISTING PLAN

25. LHC-2 MTENTHERA HC (LILONGWE DS) MATERNITY  
 THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI

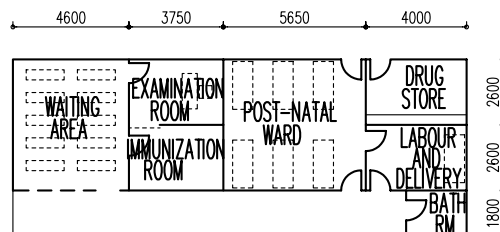
SH	STAFF HOUSE
SW	SHOWER
T	TOILET
WT	WATER TANK
ST	SEPTIC TANK
PP(N)	PLACENTA PIT(NEW)
PP(O)	PLACENTA PIT(OLD)
GS	GUARDIAN SHELTER
⊕	SOIL TEST POINT
B	BORE HOLE

⋯ FUTURE WORK BY MINISTRY OF HEALTH



SITE PLAN

[MATERNITY]



0 5M  
EXISTING PLAN

26. LHC-3 MBANGOMBE 1 HC (LILONGWE DS) DISPENSARY  
THE PROJECT FOR IMPROVEMENT OF RURAL HEALTH CARE FACILITIES IN THE REPUBLIC OF MALAWI

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

### **2-2-4-1 Implementation Policy (Construction and Procurement)**

The Project consists of (i) the construction of the planned facilities and (ii) the procurement and installation of equipment for district hospital and health centres, and it will be implemented in accordance with the framework of the grant aid scheme of the Government of Japan after signing of the Exchange of Notes (E/N) by the Government of the Republic of Malawi (hereinafter referred to as “Malawi”) following an approval by the Cabinet of the Government of Japan. After the signing of the E/N, the Government of Malawi will conclude a consultant services contract with a Japanese consultant to proceed with the detailed design works of the facilities and equipment. After completion of the detailed design drawings and tender documents, a Japanese contractor and a Japanese equipment supplier, both of which are selected by tenders, will conduct the construction work and the equipment procurement/installation respectively.

Each contract with the consultant, the contractor and the equipment supplier will be verified by the Government of Japan to be eligible for the grant.

A construction supervision organization will be established by a project implementation agency on the Malawian side, the consultant, the contractor and the equipment supplier under the control of the project-related government organizations individually in Japan and in Malawi.

#### **(1) Project Implementation Agency**

The responsible agency of the conclusion of E/N on Malawian side is Ministry of Finance (MOF). The implementation agency of the Project on the Malawian side will be the Planning and Policy Department of Ministry of Health (MOH). It is anticipated that the MOH will be a party for the project-related contracts for Consultant and Construction Contractor. The District Hospital will be responsible as an agent for the general coordination of the work as required for implementation of the Project. Planning and Policy Department of MOH is the responsible agent for the Malawian side work as Project site cleanness, cut down of trees in the Project sites, top soil cut at sites for health centres if the site use for farming land and construction of fences to the boundary line.

#### **(2) Consultant**

After signing the E/N, the project implementation agency will conclude a consultant services agreement for the detailed design and supervision with the Japanese Consultant in accordance with a set procedure of Japan’s grant aid scheme and this contract must be verified by the Government of Japan. After verification of the contract, the Consultant will produce detailed

design drawings and tender documents in accordance with the present Basic Design Study Report and in consultation with the Planning and Policy Department of MOH and will obtain approval by the Government of Malawi.

At the tender and during construction stage, the Consultant will conduct assistance for tender and supervisory service during construction stage based on the detailed design drawings and tender documents. The Consultant will also conduct supervisory service for procurement and installation of the equipment from equipment tender stage to installation, test running and handing over of the equipment.

1) Detailed Design

The detailed design means the decision-making on details of the facility plans and review of equipment plans based on the present Basic Design Study Report and the preparation of tender documents consisting of relevant design drawings, specifications, general tender conditions and draft contracts for construction work and equipment procurement/installation respectively. It also includes estimation of the construction cost and equipment procurement/installation cost.

2) Assistance for Tender

“Assistance for Tender” means that the Consultant witnesses the selection of a contractor and an equipment supplier by the project implementation agency by means of tender and provides assistance for administrative procedures required for the concluding of contracts, reporting to the Government of Japan and other necessary works to proceed with the Project.

3) Supervision

“Supervision” means that the Consultant checks the compliance of the work by the contractor and the equipment supplier with the relevant contracts in order to confirm proper execution of the contracts. It also includes provision of advice and guidance for the project-related bodies and coordination between such bodies in a fair manner to facilitate the implementation of the Project. Expected major services of the Consultant in this regard are listed below.

- ① Review and approval of the construction plan, shop drawings, equipment specifications and other documents submitted by the contractor and the equipment supplier
- ② Pre-shipment inspection and approval of the quality and performance of the construction materials and equipment to be delivered to the site

- ③ Confirmation of delivery, installation and explanation of operation methods of building services equipment and other equipment
- ④ Assessment of and reporting on the construction progress
- ⑤ Witnessing of hand-over of the completed facilities and installed equipment.

In addition to the above services, the Consultant will report on the progress of the Project, payment procedure and hand-over on completion, etc. to the project-related government organizations in Japan.

### **(3) Contractor and Equipment Supplier**

Contractor and Equipment Supplier for the Project will be selected from among Japanese companies with certain qualifications through an open tender. In principle, the tenderer who offers the lowest tender price will be designated as a successful tenderer and will conclude a construction (or equipment supply and installation) contract with the project implementation agency on the Malawian side. Contractor and Equipment Supplier who are awarded with respective contract will conduct the construction of the facilities and the procurement, delivery and installation of the equipment in accordance with the respective contract. They will also provide technical training on the operation and maintenance of the relevant building materials, service systems and equipment. After hand-over of those materials, systems and equipment, the contractors will provide support together with the equipment manufacturers and local agents so that the Client, Planning and Policy Department of MOH and district hospitals and health centres, can receive a supply of spare parts and consumables for major equipment and technical training at cost.

### **(4) Preparation of Construction Plan**

The project implementation agency on the Malawian side and the Consultant will discuss on construction plans during the detailed design stage. The demarcation of the scope of works by the Japan side and the Malawian side needs to be clarified, and the time schedule and the method to conduct the work assigned to each side must be discussed and confirmed by both sides so that the works can be smoothly conducted in accordance with the implementation schedule specified in the Basic Design Study Report. Prior to the commencement of the construction work, the Malawian side needs to cut down trees at Rumphu District Hospital and top soil cut of the health centre Project sites if the Project sites use for farming land, construction of fences along with boundary line for health centre, and to obtain legal design approval from relevant authorities.

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

### **(1) Construction situation and local condition**

The construction situation in Malawi is generally as follows.

- ① Medium scale or larger construction works are undertaken by foreign affiliated corporations based in the capital Lilongwe or Blantyre. Not many local construction companies are general contractors, and many building companies do not even specialize in any one area. Such operators construct houses and shops and only take on small-scale orders. Some craftsmen belong to these construction companies, but many are temporary workers only employed for specific processes. There are specialist occupations such as carpenters, plasterers, reinforcing bar placers and stonemasons, however, there are no other established specialties such as interior decorators or waterproofing specialists. Moreover, since general labourers are only employed on a temporary basis, they have little expert knowledge.
- ② Most of construction materials are able to procure in Malawi, but most of those material are imported from Zimbabwe, South Africa and neighbouring countries. Cement, sand, gravels, bricks and blocks as main materials for construction are able to procure in Malawi as local products. Rebar, hardware, wood, window and door frames, furniture are supplied in the market but those materials are imported materials, and it is necessary to compare the prices in local price including transportation cost. Concerning keeping construction materials at site in safe condition, it is necessary to employ watchman in the night because there are no boundary fence along with the boundary line.
- ③ Concerning domestic transport conditions, the M-1 highway that runs through the country is paved and there is no problem regarding the transportation of materials and equipment along this. This road sometimes becomes impassable due to torrential rain in the rainy season, however, it normally recovers in a few days. Imported materials from South Africa can be transported throughout the year. However, national highways other than the M-1 are unpaved the further they move away from the towns and cities; in particular, materials will need to be transported on unpaved roads in the health centre construction areas.
- ④ Recent inflation in transportation costs, construction material costs and labour costs has been conspicuous in line with recent increases in the price of oil. Moreover, most construction materials are imported from South Africa and contracts are usually conducted in American dollars. Value added tax is 17.5% but this is exempted for government aid projects.

## **(2) Building Code**

Application for building permission for the Project facilities is not required for those facilities located in rural areas. As for the facilities to be constructed in towns and cities, it is necessary to make the application upon completion of the implementation design. Applications are made with the building section of city assemblies, however, since only design firms registered with the National Construction Industry Council (NCIC) are able to make applications, it will be necessary for the Japanese building firm in the Project to also register.

## **(3) Influence to the Construction**

- When the work efficiency in each works is averaged out, it is estimated that around three to four times longer than that taken by Japanese craftsmen is required.
- It will be difficult for heavy vehicles to pass some roads during the rainy season, it will be necessary to plan the transportation of materials onto sites before the start of the rainy season.
- Concerning heavy materials such as aggregate, concrete blocks and bricks, since transportation costs increase according to distance, it will be necessary to carefully consider the procurement and manufacturing areas and select materials that are produced in local areas as much as possible.
- Regarding the storage of construction materials, not many district hospitals or health centres have perimeter fencing. Accordingly, it will be necessary to display care when storing materials on construction sites. Since such materials can be sold almost anywhere, not only will it be necessary to build warehouses and keep them locked, but also it will be necessary to assign guardsmen around the clock.

## **(4) Important Points to Consider in Execution**

Consideration shall be exercised regarding the following points when constructing the Project facilities.

### 1) Schedule management

- Construction conferences attended by officials of the Ministry of Health Planning and Policy Department, district hospital officials, construction companies and consultants shall be held every month in order to conduct close discussions and hear reports and thereby promote understanding and cooperation with the goals of construction and thoroughly enforce the necessary steps.
- It is necessary to properly understand the local rainy season and dry season. Particularly, since the finishing works towards the end of the Project will be conducted in the rainy season, it is necessary to complete roof works before the rains set in and be able to



execute finishing works even if it does rain. Moreover, it is necessary to plan site drainage and take steps to ensure that the works do not fall behind schedule.

- Compile a works schedule that enables the works on each site to be implemented efficiently and without delay while sustaining a uniform standard of execution. When implementing works, conduct demonstrations for each job type in order to encourage understanding of execution guidelines, procedures and objectives and promote transfer of technology.

## 2) Safety management

Since construction works will be executed at district hospitals and health centres that have existing facilities, patients will be moving around close to the work sites. Accordingly, execution plans that give full attention to safety shall be examined and works shall be implemented after first holding close discussions with officials of each hospital and health centre.

## 3) Subcontractors

The local subcontractors shall be selected from construction companies based in Lilongwe upon fully examining past performance, technical prowess, capital, and experience with aid projects, etc.

## 4) Procurement of local materials and labour

When using local materials, conduct full investigation of quality and supply capacity and plan so the principle of competition can be utilized and stable supply can be achieved by securing multiple supply routes.

Secure labour from as close to the construction sites as possible and promote capacity improvement through conducting technical guidance and training.

## 5) Works supervising engineers

In order to complete facilities that conform to design documents within works periods, it will be necessary for the works contractor to smoothly conduct joint work with the local subcontractors and have the capacity to conduct appropriate technical guidance and schedule management. In order to conduct appropriate guidance and conduct sufficient coordination with related agencies with a view to securing quality in works, controlling schedules and managing safety measures, etc. on 16 dispersed construction sites, the scope of works shall be divided into three blocks with one Japanese engineer assigned to each

block as a permanent supervisor and two locally employed engineers assigned as supervisor assistants. Moreover, in order to realize high quality facilities upon first understanding the character of the Project facilities, it will be necessary to permanently assign works execution supervising engineers that are well versed in local conditions.

In consideration of the contents and scale of the Project facilities, the types and numbers of the necessary permanently assigned Japanese supervising engineers will be as follows:

- 1 site manager : General site management
- 2 building engineers : Building guidance, schedule control, quality control, guidance on work drawings preparation
- 1 office staff : Office and labour management, import procedures
- 1 (spot) equipment and electric engineer:  
Schedule control, quality control, equipment installation and commissioning, technical guidance

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

The Project will be implemented by cooperation by Japan and Malawi. In the case that the Project is implemented by a grant aid scheme provided by the Government of Japan, it is appropriate to demarcate the following scope of work for each side.

#### **(1) Work to be undertaken by the Government of Japan**

The Government of Japan will be responsible for the following works related to the consultant services for the Project, the construction of facilities and the procurement/installation of equipment.

##### 1) Consultant Services

- ① Preparation of detailed design documents and general conditions of tender for the planned facilities and equipment of the Project
- ② Cooperation for selection of a Contractor and an Equipment Supplier (procurement and installation) for the Project, including cooperation for works related to establishment of contracts.
- ③ Supervision of the facility construction work and the delivery/installation/training of operation/training of maintenance of equipment

2) Construction of Facilities and Procurement/Installation of Equipment

- ① Construction of the planned facilities for grant aid
- ② Procurement and transportation/delivery of construction materials and equipment for the planned facilities for grant aid.
- ③ Training for installation and test operation/adjustment of the planned equipment for grant aid
- ④ Explanation and guidance on operation and maintenance methods for the planned equipment for grant aid

**(2) Work to be undertaken by the Government of Malawi**

At its own expense, the Government of Malawi will undertake following works, which are not included in the scope of the Japanese grant aid, and works related to tax exemption measures and others as described below.

- 1) Cutting of trees located in building positions on sites, levelling of construction areas and, if sites are fields, removal of 50 cm of topsoil.

By the start of the construction works, cut trees and level ground on the construction site of Rumphi District Hospital.

If health centre construction sites are fields, remove 50 cm of topsoil. The target sites are as follows.

RHC-3 Katowo Rural Hospital	RHC-6 Mwazisi HC	MHC-4 Emfeni HC
KHC-8 Simulemba HC	KHC-10 Khola HC	
LHC-1 Chiwamba HC	LHC-3 Mbangombe 1 HC	

- 2) Obtaining Legal Design Approval

If it is necessary to have building permit approval from the authority, application work for this permit shall be done by Malawian side and the consultant prepare necessary technical documents.

- 3) Procurement

Procurement of general furniture, window curtain and fixture excluded from the scope of the Japanese grant aid, including relocation of the existing general furniture and fixtures.

4) Tax Exemption

Exemption of Japanese nationals (persons and companies) from domestic taxes, including VAT, and financial levies imposed in Malawi for the procurement of goods and the provision of services based on the verified contracts for the Project

5) Customs Clearance, etc.

Provision of all conveniences for (i) the speedy customs clearance, (ii) exemption of import tax on equipment and materials imported from Japan and/or the third countries for the purpose of the Project based on the verified contracts, and (iii) the inland transportation of such equipment and materials

6) Visas, etc.

Provision of all conveniences necessary for the entry to and stay in Malawi of Japanese nationals who enter and stay in Malawi to conduct their assigned work for the implementation of the Project.

7) Issue of Permits, etc.

Issue of various permits and authorisations which are required for the implementation of the Project

8) Payment

Payment of all necessary expenses that are not covered by the Japanese grant aid

9) Operation and Maintenance

Appropriate and effective utilization and maintenance of the building and equipment.

10) Medical equipment for Paediatric Ward and Maternity Ward procurement by the Malawi side

The Malawi side will procure and install medical equipment for the new maternity ward and paediatrics ward in the targeted district hospitals based upon the proposed equipment layout plan after construction of the facilities, which is scheduled to complete in February, 2008. The equipment list of the district hospital, which is proposed according to the standard equipment list of the MOH, is shown as the following table. The scope of work of the Japanese side in this project is procurement of the items, which are remarked with \* among this equipment list. The equipment layout plan of the district hospitals is attached to the

appendix at the end of this report. As for the targeted health centres for construction of maternity or OPD blocks, it is necessary to transfer some items of existing equipment to the new building and to renovate the existing building, so that the building can function properly as a maternity block or an OPD block.

**Table 2-41 Equipment List for New Maternity Ward and Paediatrics Ward**

**1. Rumph District Hospital**

**1) Maternity Ward**

Departments	Equipment name	Qty
1 Delivery room	① Delivery lights	2
	② O <sub>2</sub> cylinders	2
	③ Heaters	1
	④ Sterilizers	1
	⑤ Vacuum extractors	4
	⑥ Baby scale	1
	⑦ Suction units	2
	⑧ Baby cots	4
	⑨ Drug shelves	2
	⑩ Instruments cabinet	2
	⑪ Delivery tables	4
	⑫ Drip stands	4
	⑬ Doctor's chairs	4
	⑭ Instruments carts	2
	⑮ Office cabinets	2
2 Labour room	① Fetal heart detectors	2
	② Drip stands	6
	③ Labour beds	6
3 Nursery	① Incubators	2
	② O <sub>2</sub> concentrators	1
	③ O <sub>2</sub> cylinders	1
	④ Phototherapy units	1
	⑤ Heaters	1
	⑥ baby scales	1
	⑦ Baby cots	6
	⑧ Screens	1
	⑨ Stools	2
4 Nurse station	① Autoclaves	1
	② Stool, metallic	1
	③ Office chairs	1
	④ Cupboard, metallic	1
	⑤ Desks, metallic	1
	⑥ Shelves, metallic	1
5 Post-natal ward 1 (Surgical deliveries) (12 beds)	① * Beds	12
	② * Bed side lockers	12
	③ Drip stands	6
	④ Screen	4
	⑤ Treatment carts	1
	⑥ Instruments carts	1
	⑦ Suction units	1
6 Post-natal ward 2 (Complicated deliveries) (12 beds)	① * Beds	12
	② * Bedside lockers	12
	③ Drip stands	6
	④ Screens	4
	⑤ Treatment carts	1
	⑥ Instruments carts	1
	⑦ Suction units	1
7 Post-natal ward 3 (Normal deliveries) (12 beds)	① * Beds	12
	② * Bedside lockers	12
	③ Drip stands	6
	④ Screens	4
	⑤ Treatment carts	1
	⑥ Instruments carts	1
	⑦ Suction units	1

**2) Paediatrics Ward**

Departments	Equipment name	Qty
1 Serious case room	① Beds	2
	② Bed side lockers	2
	③ Drip stands	1
	④ Screens	1
	⑤ Treatment carts	1
	⑥ Instruments carts	1
	⑦ Suction units	1
	⑧ Nebulizers	1
	⑨ O <sub>2</sub> cylinders	1
2 Isolation room	① Beds	4
	② Bed side lockers	4
	③ Drip stands	2
	④ Screens	2
	⑤ Treatment carts	1
	⑥ Instruments carts	1
	⑦ Suction units	1
	⑧ Nebulizers	1
3 Kitchen	① Lacks	2
	② Tables	1
	③ Shelves, metallic	2
	④ Cookers	2
4 Medicine store	① Lacks	8
5 Nurse station	① Autoclaves	1
	② Stools, metallic	1
	③ Office chairs	1
	④ Cupboard, metallic	1
	⑤ Desks, metallic	1
	⑥ Shelves, metallic	1
6 Malnutrition room (12 beds)	① * Beds	12
	② * Bedside lockers	12
	③ Drip stands	6
	④ Screens	4
	⑤ Treatment carts	1
	⑥ Instruments carts	1
	⑦ Suction units	1
	⑧ Nebulizers	1
7 Paediatrics ward (12 beds)	① * Beds	12
	② * Bedside lockers	12
	③ Drip stands	6
	④ Screens	4
	⑤ Treatment carts	1
	⑥ Instruments carts	1
	⑦ Suction units	1
	⑧ Nebulizers	1

## 2. Mzimba District Hospital, Paediatrics Ward

Departments	Equipment name	Qtty
1 Kitchen	① Lacks	2
	② Tables	1
	③ Shelves, metallic	2
	④ Cookers	2
2 Serious patient room	① Beds	4
	② Bed side lockers	4
	③ Drip stands	2
	④ Screens	2
	⑤ Treatment carts	1
	⑥ Instrument carts	1
	⑦ Suction units	1
	⑧ Nebulizers	1
	⑨ O <sub>2</sub> cylinders	1
3 Nurse station	① Autoclaves	1
	② Stools, metallic	1
	③ Stool, office	1
	④ Shelves, metallic	1
	⑤ Desks, metallic	1
	⑥ Shelves, metallic	1
4 Medicine store	① Lacks	8
5 Isolation room	① Beds	4
	② Bed side lockers	4
	③ Drip stands	2
	④ Screens	2

Departments	Equipment name	Qtty
	⑤ Treatment carts	1
	⑥ Instruments carts	1
	⑦ Suction units	1
	⑧ Nebulizers	1
6 Malnutrition room (12 beds)	① Beds	12
	② Bed side lockers	12
	③ Drip stands	6
	④ Screens	4
	⑤ Treatment carts	1
	⑥ Instruments carts	1
	⑦ Suction units	1
	⑧ Nebulizers	1
7 Paediatrics ward (12 beds)	① * Beds	12
	② * bed side lockers	12
	③ Drip stands	6
	④ Screens	4
	⑤ Treatment carts	1
	⑥ Instruments carts	1
	⑦ Suction units	1
	⑧ Nebulizers	1

Refer to Appendix Equipment layout plan

- (1) Rumphi district hospital maternity ward,
- (2) Rumphi district hospital paediatrics ward, and
- (3) Mzimba district hospital

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

#### (1) Construction Supervision Policy

In accordance with the Japan's grant aid scheme, the Consultant will establish a project team, which will be consistently involved in the detailed design and construction supervision stages to ensure the smooth progress of the work, taking the purport of the basic design into consideration. The policy for the construction supervision for the Project is as per described below.

- ① To aim at completing the construction of the facilities and the procurement and installation of the equipment without delay through close liaison with the personnel responsible for the Project in the two countries

- ② To provide prompt and appropriate guidance and advice to the Contractor, Equipment Supplier and people related to them from an impartial standpoint
- ③ To complete the work, (i) to provide appropriate guidance and advice on the facilities and installation of equipment, and on the operation and management of the facilities as well as the installed equipment after the hand over, (ii) to witness the hand over of the facilities and equipment following confirmation of the completion of both the construction work and the equipment installation work meeting the contract conditions, (iii) to obtain acceptance of the handed-over facilities and equipment from the Malawi side

## **(2) Supervision Plan**

As the Project has many work items, one on-site full-time construction supervisor in charge of building work will be appointed, and following engineers will be dispatched and assigned in line with the progress of the construction.

- Project manager : general coordination and guidance on schedule and quality control
- Architect : confirmation of design intentions, shop drawings and material specifications
- Structural engineer : confirmation of soil bearing strength
- Mechanical engineer : interim and commissioning inspection of plumbing and air-conditioning system, etc.
- Electrical engineer : interim and commissioning inspection of conduit/wiring and power receiving equipment, etc.
- Equipment supervisor : guidance on equipment installation, coordination with building services work, witnessing quantity inspection and confirmation of appropriate explanation of equipment operation/maintenance , etc.

## **(3) Consultant Supervision Setup**

The consultant shall assign permanent site supervisors to ensure execution of the above-mentioned work. Moreover, it shall dispatch specialist engineers to sites in order to conduct the necessary discussions, inspections, guidance and coordination according to the progress of works. Meanwhile, in Japan too, responsible engineers shall be assigned to conduct technical examinations and maintain communications with the construction sites. Moreover, these staffs shall keep officials in the Japanese government informed of the state of progress of the Project and necessary items concerning payment procedures as well as completion and handing over, etc.



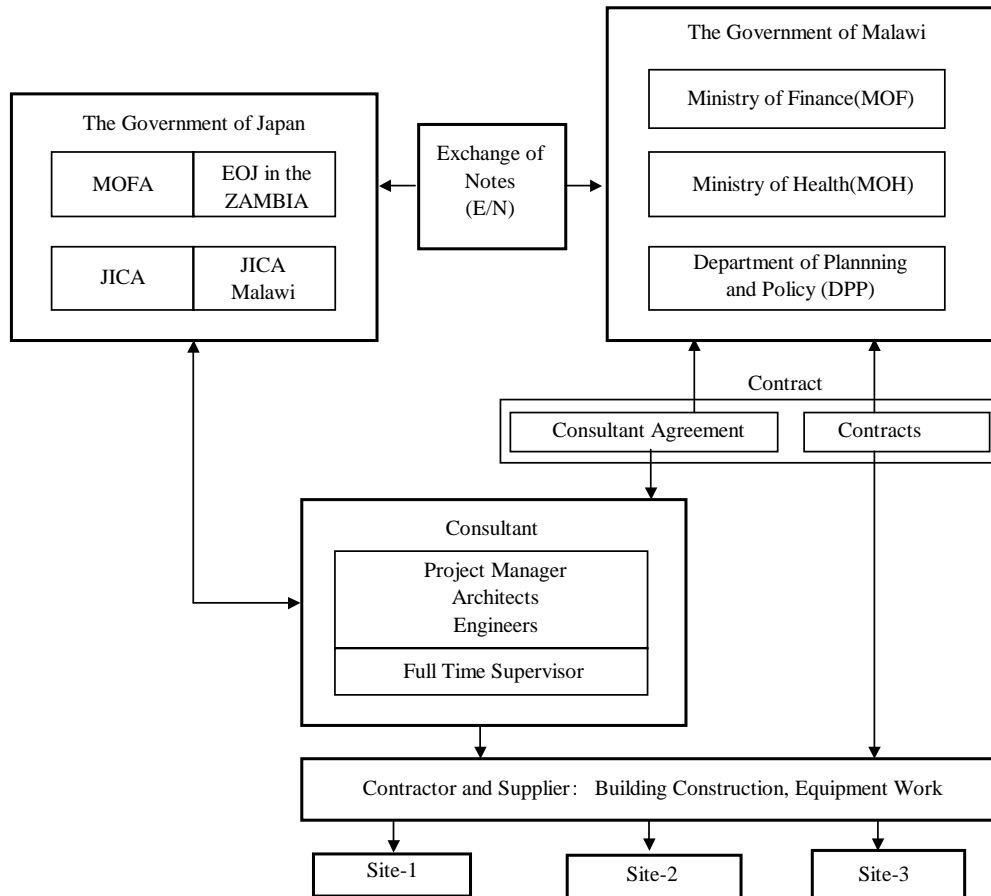


Figure 2-14 Project Execution Organization Chart

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

##### (1) Quality Control of Concrete

Weather conditions differ according to latitude and altitude, however, taking the case of Lilongwe District and areas to the north, the annual mean temperature ranges between 8~32°C, the minimum temperature in June and July is 8°C, and the maximum temperature between October and December is more than 30°C. Mean humidity is between 60~90%. Since the Project works are scheduled to commence in May, it is possible that the foundation works and pillar and beam concrete placement works for some of the health centres will be conducted in 30°C temperatures, so control of the concrete placing time will be an important factor at such times. Concrete shall be mixed on site along with concrete quality control activities such as aggregate salt content inspections and mixing, etc. Also, control will be implemented regarding the concrete placing time.

## (2) Necessary Measure to the Rainfall

Annual mean rainfall over the past six years has been 635 mm in Rumphu, 902 mm in Mzimba, 800 mm in Kasungu and 842 mm in Lilongwe, and rainfall is concentrated into the rainy season that lasts for six months from October to April.

It will be necessary to arrange the works schedule so that roof works are finished between October and April. If roof works on all the sites are completed in time, it will be possible to conduct the indoor work without any problem and therefore advance the finishing works to schedule. In order to eliminate impact on the carrying-in of materials, it will be necessary to prepare plans for rainwater drainage around buildings to ensure that rainwater is removed from sites promptly.

The quality control plans for each work area are as follows.

**Table 2-42 Quality Control Plan**

Work	Work Type	Control Items	Method
Structural Work	Footing work	Bearing Ground	Check of Bearing Ground
	Concrete work	Fresh Concrete	Test Mixture, Water check, Aggregate check Slump & Air check, Temperature & salinity check
		Concrete Strength	Compression Strength Test
	Reinforcing work	Reinforcement Bar	Tensile Test, Mill sheet check
Bar Arrangement		Bar arrangement inspection(size, position)	
Finishing Work	Roof Work	Workmanship, Leakage	Water spray or filling test
	Plaster Work	Workmanship	Visual Inspection
	Door & Windows work	Products	Factory inspection sheet check
		Installation accuracy	Visual inspection, dimension check
	Paint work	Workmanship	Visual inspection
Interior work	Product, Workmanship	Visual inspection	
Electrical Work	Conduit work	Bending, support check	Visual inspection, size check
	Wiring and Cable work	Sheath damage	Performance sheet check, cleaning before laying
		Loose connection check	Marking check after bolt fixing
Lighting fix. work	Resistance, performance	Test Report check, Lux test, Visual test	
Mechanical Work	Water Piping work	Supporting pitch, leakage	Visual check, Leakage & pressure test
	Drainage work	Slope, Supporting pitch, leakage	Performance check, leakage & Flow rate test
	Sanitary work	Performance, Installation, leakage	Visual inspection, Flow test
	Pantry Equipment	Performance, Installation	Visual inspection, Flow test, Performance test
	Exhaust equipment	Performance, Installation	Visual inspection, Flow test, Performance test

## 2-2-4-6 Procurement Plan

### (1) Building Materials

The basic concept for selecting construction materials shall be that procurement of items for maintenance and repair is easy after handing-over of facilities. All major construction materials can be procured in local market but imported from South Africa. Having said that, in cases where it is deemed necessary judging from quality, cost and supply capacity, etc., consideration shall also be given to procurement through supplier. When selecting suppliers, careful consideration shall be given to capacity of supply, quality and durability, and as a rule multiple supply sources shall be secured in order to achieve supply stability.

The procurement plan for major equipment and materials is shown below.

**Table 2-43 Material Procurement List**

Works	Materials	Procurement Country			Notes
		Malawi	Japan	3 <sup>rd</sup> country	
Frame work	Cement	○			Import of South African Building Standard products
	Steel bar			○	
	Aggregate	○			
	Concrete	○			
	Form (ordinary form)	○			
Finish work	Concrete Block	○			
	Ceramic Tile	○			
	Wood	○			
	Roofing Material	○			
	Plaseter	○			
	Wooden Fittings	○			
	Steel Fittings	○			
	Ironmongery	○			
	Glasses	○			
Paint	○				
Mechanical work	Pipes/Sockets	○			
	Sanitary ware	○			
	Water tank	○			
	Valves	○			
	Horse reel	○			
	Drainage Fixtures	○			
Electrical work	Telephone, Cables	○			
	Lightning fixture	○			
	Switch / Dist. Board		○		
	Cable/Wire,Conduit	○			

### 1) Local Procurement

Selection of building materials shall be based on the local procurement material to be able to easy maintenance after turnover the project, and it is necessary to confirm the quality and quantity of products in the market. Most of all building materials are possible to procure in the market, and those materials, which does not need to have import procedure, consider to be local products.

### 2) Imported Materials

Rebars as structural material need to have stabilised quality and enough production, and scheduled to import from South Africa. It is necessary to have coordination in advance between contractor and MOH to have smooth import procedure by tax exemption.

### 3) Distribution of Materials

Materials, which are imported from South Africa transport by the road and deliver them to Lilongwe where the contractor have material store first and deliver to another two storage in Kasungu and Mzuzu. Materials imported from Japan and other counties are shipped to Durban in South Africa and deliver them by road to Lilongwe.

## **(2) Medical Equipment**

### 1) Procurement plan

The medical equipment to procure by this plan will be manufactured in Japan or Malawi, but considering the cost effect of this plan in purpose concerning a part of equipment, the procurement from third countries will be considered. The medical furniture such as hospital beds and examination couches are planned to procure from South Africa, where is located to the neighbourhood of Malawi. They are generally used in Malawi. Considering the products price and transportation cost etc, South African products will be procured at lower costs than Japanese ones. South African products used in medical facilities in Malawi are qualified as eligible ones on the basic design study. The procurement plan for major medical equipment is shown below.

**Table 2-44 Origin of medical equipment to procure**

Materials	Procurement Country			Notes
	Malawi	Japan	3 <sup>rd</sup> country	
Bedside lockers			○	South African products
Hospital beds, adult (for maternity ward of district hospitals)		○		
Hospital beds, adult			○	South African products
Weighing scales, adult		○		
Diagnostic equipment sets		○		
Sphygmomanometers		○		
Examination couch			○	South African products
Instrument sets, minor surgery		○		
Instrument sets, suturing		○		
Delivery beds			○	South African products
Suction units, manual		○		
Resuscitators, manual		○		
Instrument sets, delivery and suturing		○		
Weighing scale, baby		○		
Solar system	○	○		Concrete from Malawi
Examination lights			○	South African products
Drip stands		○		

## 2) Transportation plan

Equipment procured from Japan is packed for export and is sent to Beira port, Mozambique with container by sea, and to Lilongwe, Malawi by track. The material and equipment is divided by site at Lilongwe, is transported to each site via headquarter of districts, Kasungu, Mzimba, and Rumphi, where project sites are located. The equipment for the sites of Lilongwe is transported from Lilongwe.

It takes 2 days to transport equipment and material from Beira port to Lilongwe, 2 hours from Lilongwe to Kasungu, 4 hours from Lilongwe to Mzimba, and 6 hours from Lilongwe to Rumphi. The road is well paved and its condition is good. It takes another 1 to 2 hours from each district headquarter to each health centre by unpaved road and around 1 hour from Lilongwe central to each health centre in Lilongwe.

For the third countries procurement, it is assumed that South African made products are offered and they are transported by track from South Africa to Lilongwe via Maputo, Mozambique and sent to each site as the Japanese products.

### 3) Installation of Equipment

The solar system is the item that needs installation and adjustment. The contents of the installation work includes concrete casting to make concrete base to erect a steel-made pall, which a solar panel is fixed with, carrying in, opening bale, confirming numbers, assembling and installation, wiring, test-running and so on. These works are carried out by a Japanese supplier and the cost is borne by the Japanese side.

**Table 2-45 Installation Work and Technical staffs**

Equipment Name	Type of Work	Technical staffs	No. of Person
Solar system for night delivery	Foundation Construction/ Electrical wiring work	2 Local Technician Team	4 persons / Group
	Open crate, installation, electric wiring, trial operation	2 Local Technician Team	5 persons / Group

### 4) Guarantee and of Equipment and Supply of Spare Parts

As a principle, considered are to procure no spare parts, which is necessary for repair works caused by initial failure since the supplier provides quality assurance for one year after supply of the equipment. The spare parts needed for maintenance of the equipment are bulbs and battery cells for diagnostic sets bulbs and chargeable batteries. Such spare parts are available at any markets in the whole country and it is very easy to obtain them even after the guarantee period is over. It is confirmed that the purchase expense of the spare parts is within a range that the Malawi government can bear during the field survey.

**2-2-4-7 User Training and maintenance Instruction Plan**

The solar system is only the item of the equipment which needs initial user-training for operation and daily maintenance. It is planned that specialist engineers are dispatched from manufacturers to instruct the said user-training. It is assumed that an engineer can complete work for 1.5 sites a day at most, considering distance to move between project sites and that the engineer undertakes to perform the user-training after installation and adjustment of the item by itself. The targeting facilities are 52 health centres and are dispersed in 4 districts. It would take more than 40 days assuming that one team would perform according to trial calculation. Since concrete casting and curing period are needed to build up the concrete base prior to erection of the steel-made pall, it is assumed that installation period would extend up to 2 months. It is considered appropriate that 2 installation teams would perform the user-training, taking into consideration the period is limited, and extension of the period makes the procurement management cost higher.

**Table 2-46 Initial User Training and an Engineer in Charge**

Equipment name	Contents of instruction	Engineers in charge	Number of Engineers
Solar system for light for night delivery	Initial user-training for operation and daily maintenance	2 Engineers dispatched from a manufacturer Note: the construction period is assumed to be 18 days/team, including equipment adjustment and installation as above mentioned.	One Technical Engineer / Team

**2-2-4-8 Soft Component**

The Project facilities and equipment plans do not contain any instruments or equipment that will require guidance or training on use and operation following handing over. Accordingly, no support shall be planned regarding the soft component in the Project.

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

In the case of the Project's implementation with the grant aid scheme provided by the Government of Japan, the following processes will be followed up to the commencement of the construction work.

- a) Signing of the Exchange Notes (E/N) between the Government of Japan and the Government of Malawi
- b) Recommendation of a Japanese consultant by JICA
- c) Signing of the consultant services agreement by the Ministry of Health and the recommended Japanese consultant on the detailed design and supervisory of the planned facilities and equipment.
- d) Preparation of the detailed design documents and tender documents, tender in Japan and signing contract for the construction and the equipment with (a) Japanese companies, leading to the commencement of the construction work.

After the signing of the E/N, the Ministry of Health will become an implementation agency on the Malawian side.

##### **(1) Detailed Design**

The detailed design documents and tender documents will be prepared based on the basic design. These documents will consist of the detailed design drawings, specifications, calculation sheets, budget statement and terms of tender, etc. The Consultant will conduct detailed consultations with the project-related organizations of the Government of Malawi at the beginning and at end of the detailed design. The detailed design work by the Consultant will be completed when the final products submitted to the Government of Malawi are approved.

##### **(2) Tender and Contract**

Following the completion of the detailed design, a call for pre-qualification for the tender will be announced in Japan. Based on the evaluation result of the pre-qualification submission, the Ministry of Education, as the project implementation agency, will invite construction companies and equipment suppliers who have expressed of interest to participate in the tender. The tender will then be held and will be witnessed by the related parties. The tenderer(s) with the lowest tender price will be declared the successful tenderer provided that the contents of tender are judged to be appropriate. The successful tenderer will conclude a construction contract or an equipment supply contract with the Ministry of Health.



### (3) Construction Work and Equipment Procurement

Following the signing of the contract and verification by the Government of Japan, the Contractor and the Equipment Supplier will commence their respective work. Judging from the scale of the planned facilities and the conditions of local construction workers, it is judged that the Project will take some 10 months to complete including equipment procurement and installation. The completion of the Project in this period assumes that procurement of the equipment and materials is made smoothly, that the clearance of the various procedures and reviews is made promptly by related organizations in Malawi and that implementation of the work to be undertaken by the Malawian side is carried out smoothly.

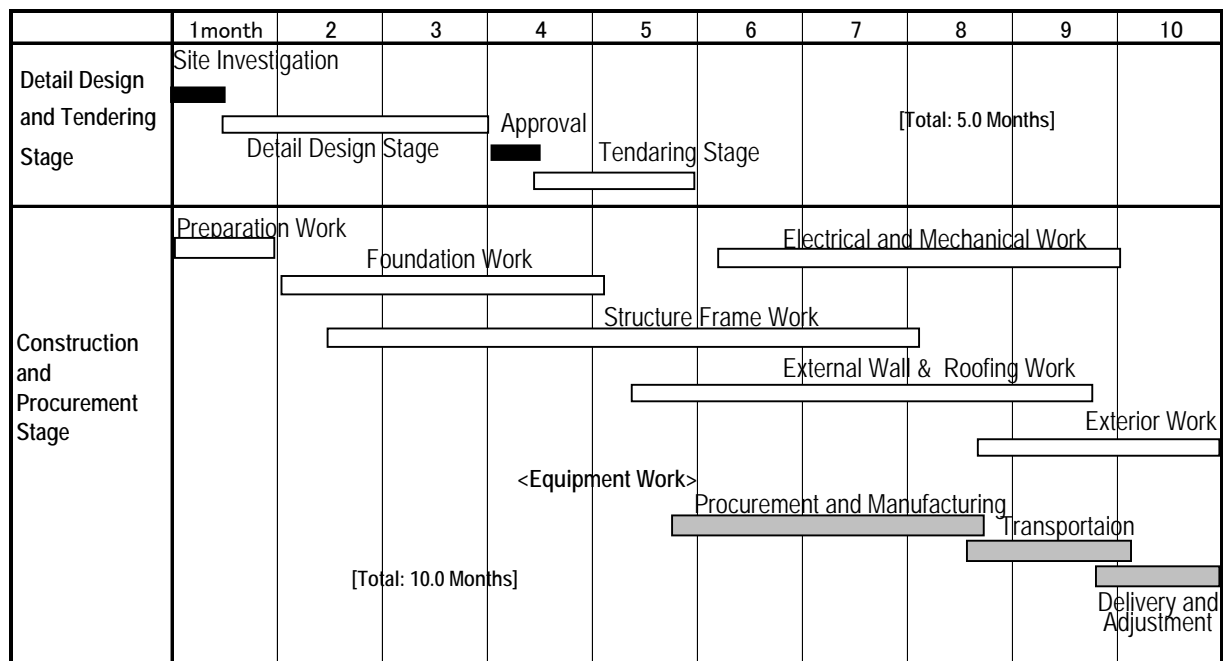


Figure 2-15 Implementation Schedule