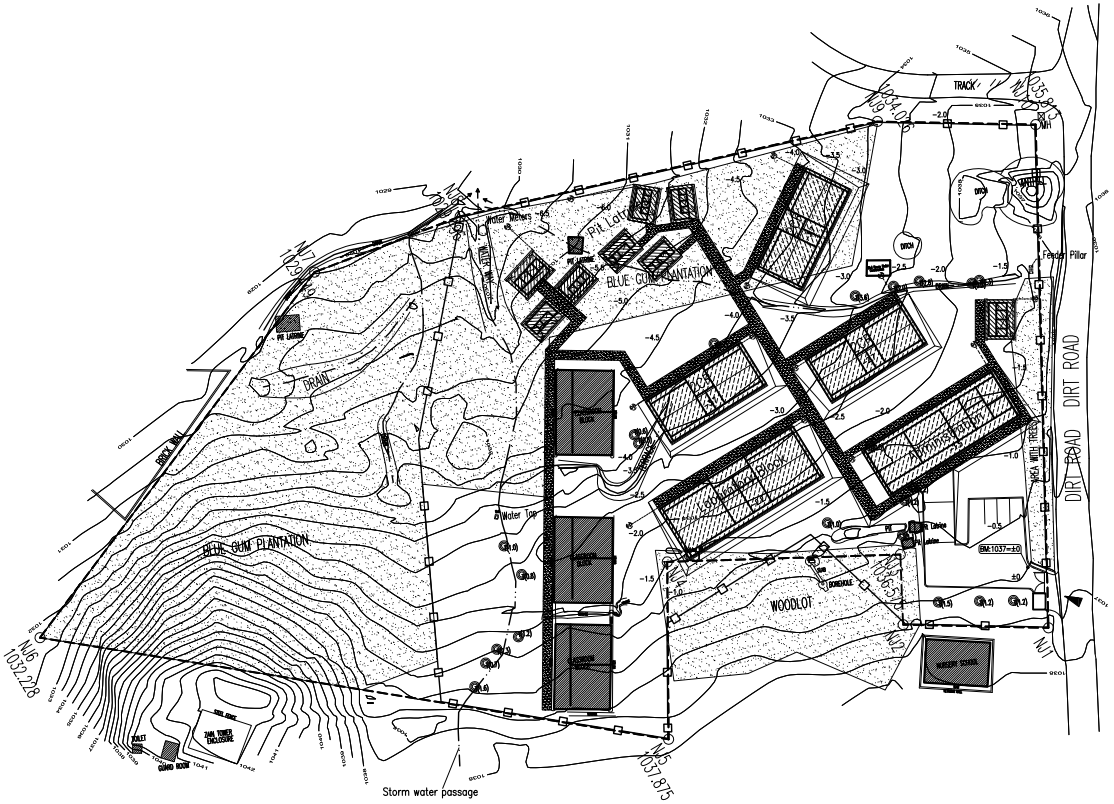


SITE NAME : NANJIRIRI CDSS

EDUCATION DIVISION /DISTRICT	Southern West/Blantyre City
SITE AREA	15,716 sqm. (measuring by CAD)
FEATURE	steep slope
ACCESS	dirt road
EXISTING BLDG.	classroom, administration, toilet
INFRASTRUCTURE	in site : city water near : electricity
NEIGHBORHOOD	residence area

COMPONENT

• CLASSROOM BLOCK	×3
• ADMINISTRATION / LIBRARY BLOCK	×1
• LABORATORY BLOCK	×1
• TOILET BLOCK	×8
• WATCHMAN'S SHELTER	×1

LEGEND

- Boundary line
- Tree
- Area covered by trees
- Boundary fence
- Planned Building
- Existing Building
- Power line
- Interlocking pavement for walking
- Manhole (MH)
- Soakaway
- Storm water passage

N

0 10 25 50m

SITE PLAN A-05

SITE NAME : NANKUMBA CDSS

EDUCATION DIVISION /DISTRICT	Southern West/Blantyre Rural
SITE AREA	49,978 sqm. (measuring by CAD)
FEATURE	steep slope
ACCESS	dirt road
EXISTING BLDG.	classroom, administrarion, toilet
INFRASTRUCTURE	in site : city water near : city water, electricity
NEIGHBORHOOD	residence area, farmland

COMPONENT	
• CLASSROOM BLOCK	×2
• ADMINISTRATION / LIBRARY BLOCK	×1
• LABORATORY BLOCK	×1
• TOILET BLOCK	×5
• WATCHMAN'S SHELTER	×1

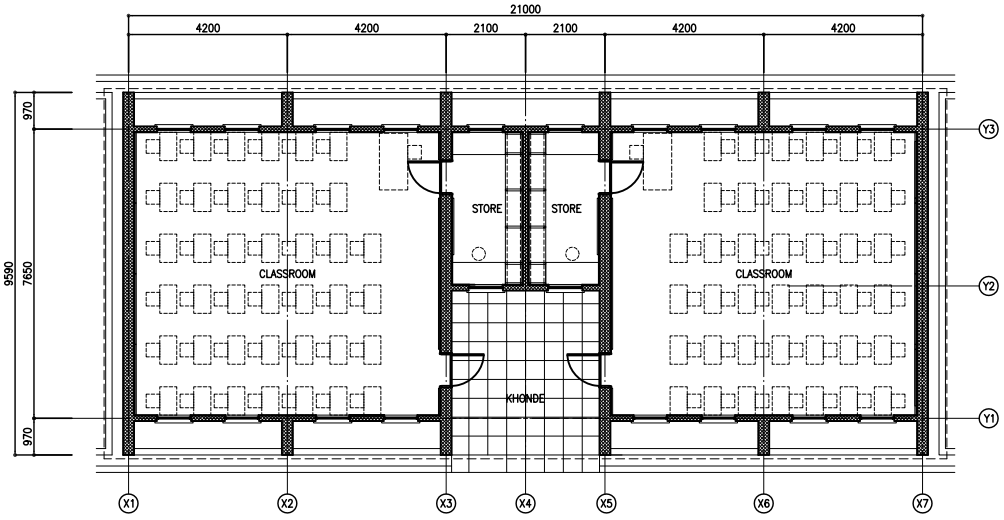
LEGEND

- Boundary line
- Tree
- Area covered by trees
- Boundary fence
- Planned Building
- Existing Building
- Power line
- Interlocking pavement for walking
- Manhole (MH)
- Soakaway
- Storm water passage

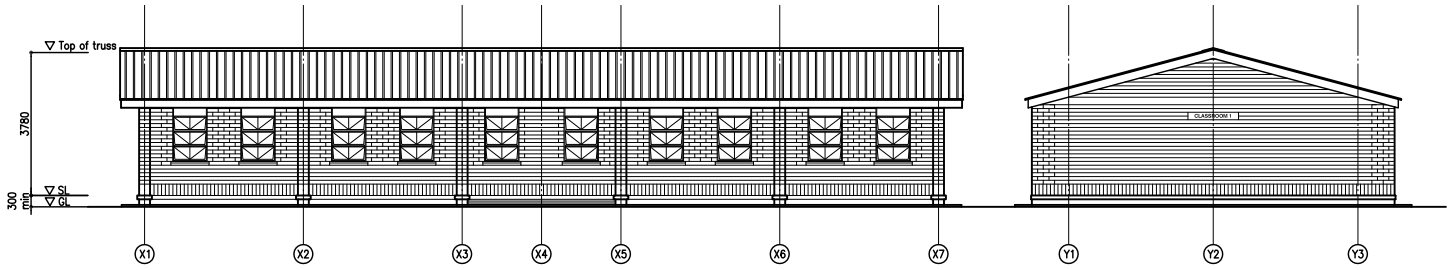
N

0 10 25 50m

SITE PLAN A-06

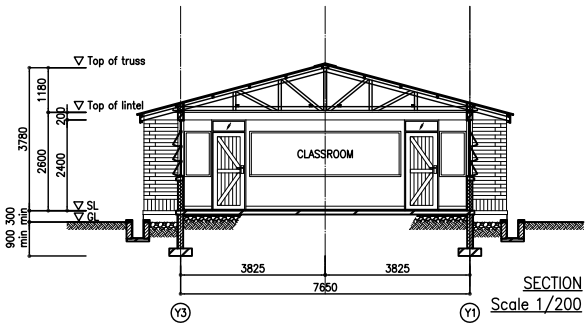


FLOOR PLAN
Scale 1/200

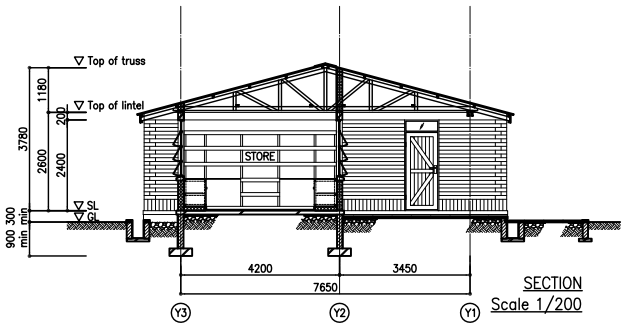


ELEVATION
Scale 1/200

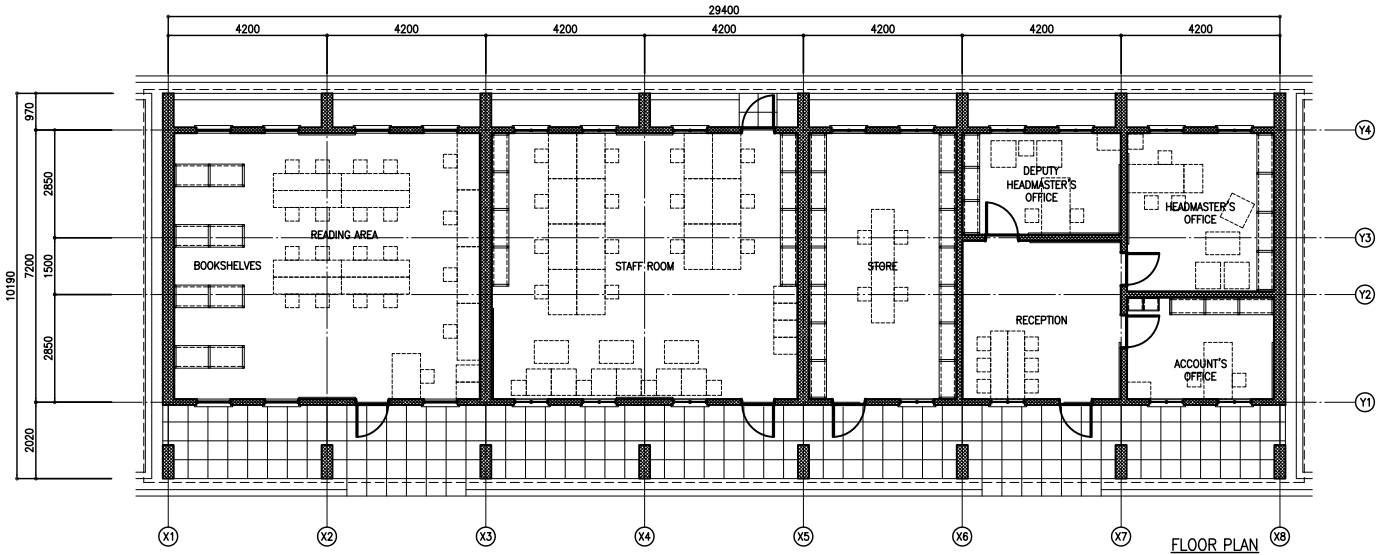
ELEVATION
Scale 1/200



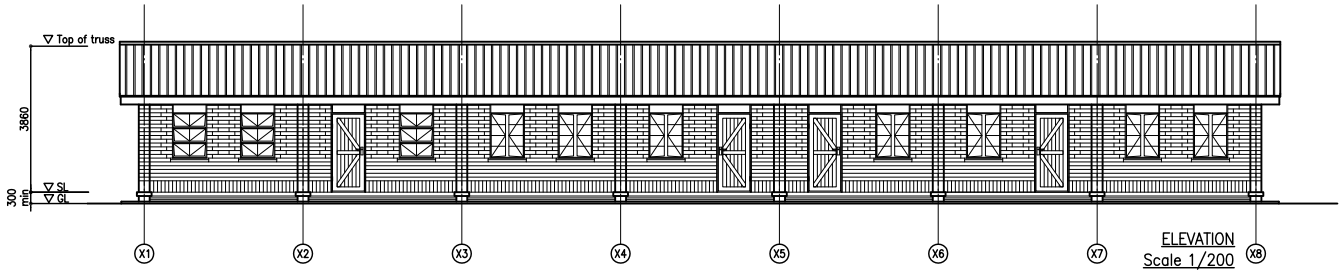
SECTION
Scale 1/200



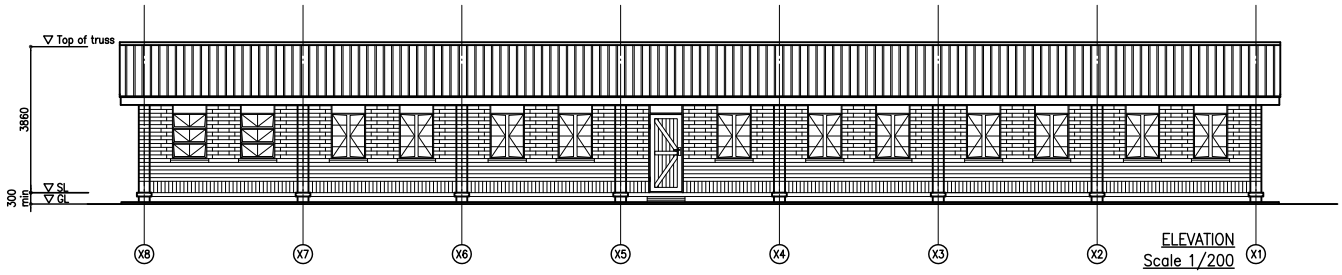
SECTION
Scale 1/200



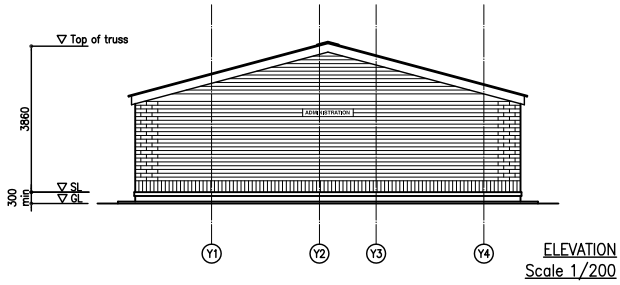
FLOOR PLAN
Scale 1/200



ELEVATION
Scale 1/200



ELEVATION
Scale 1/200



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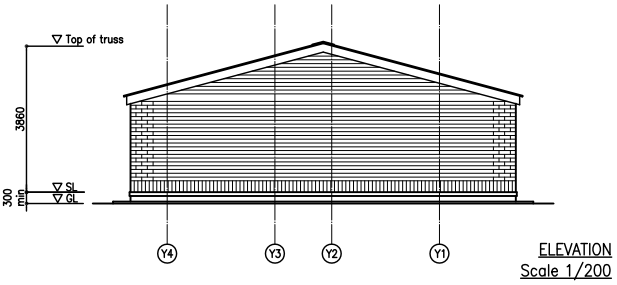
Scale 1/200



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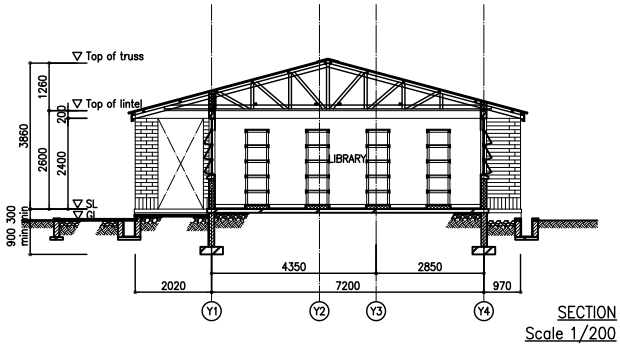
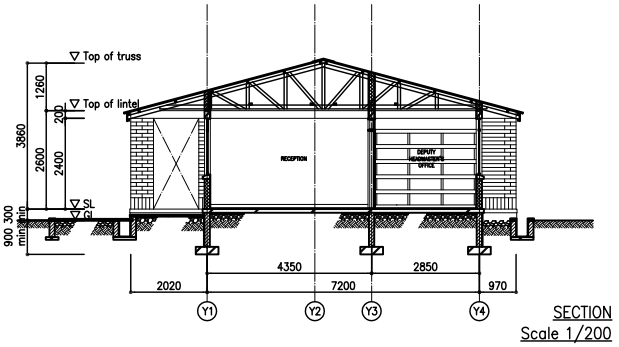
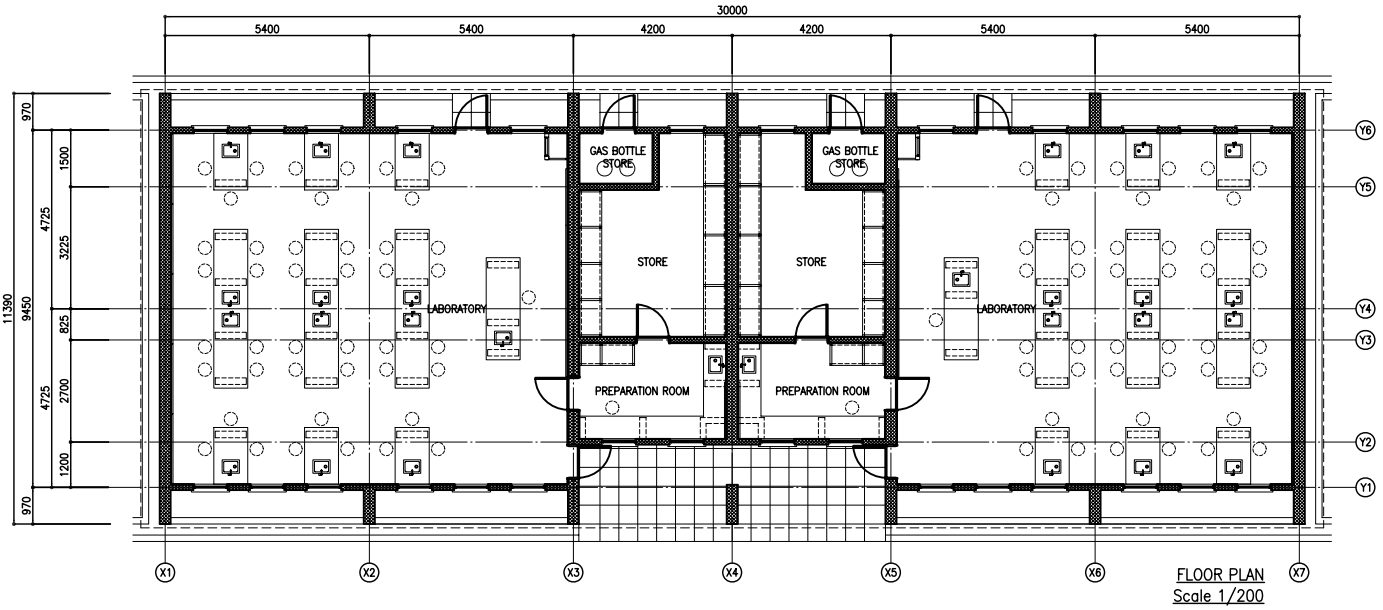
Scale 1/200



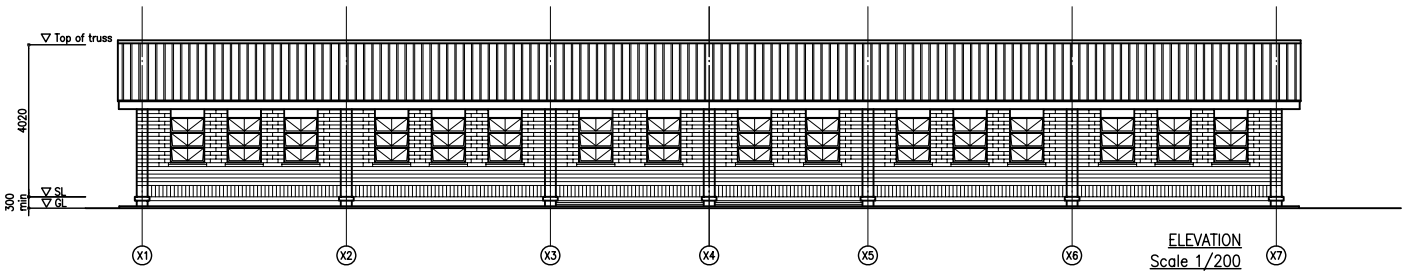
SECTION
Scale 1/200



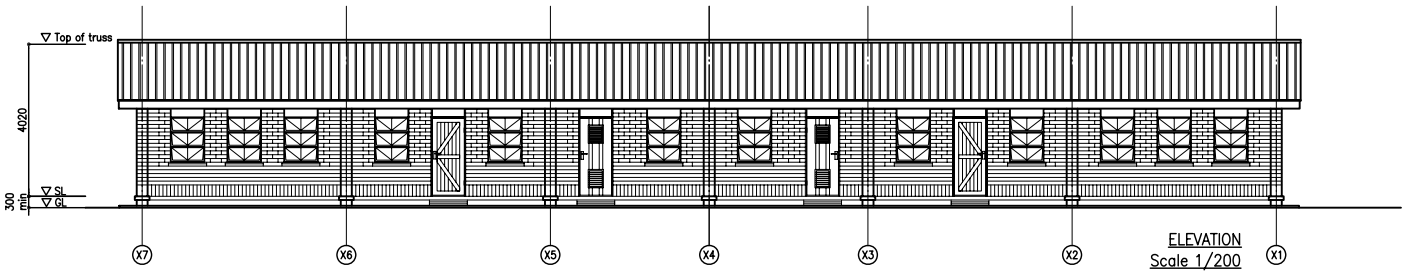
SECTION
Scale 1/200



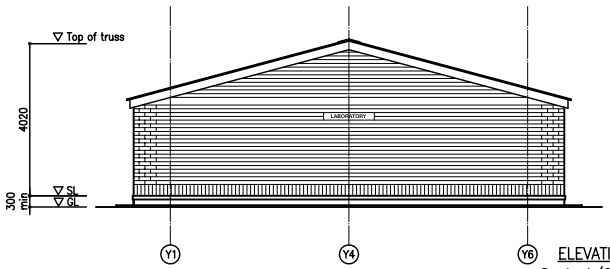
FLOOR PLAN
Scale 1/200



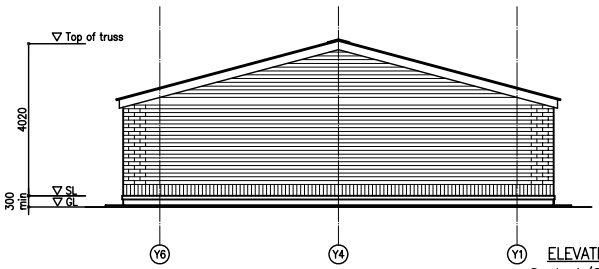
ELEVATION
Scale 1/200



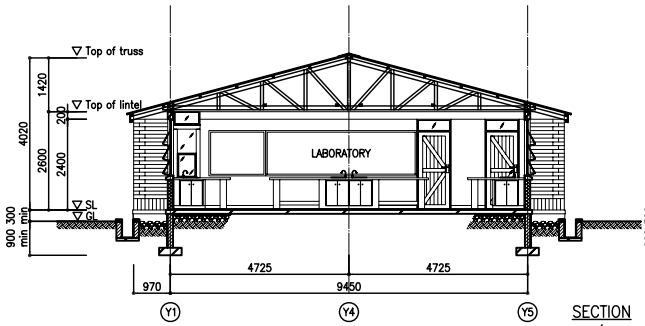
ELEVATION
Scale 1/200



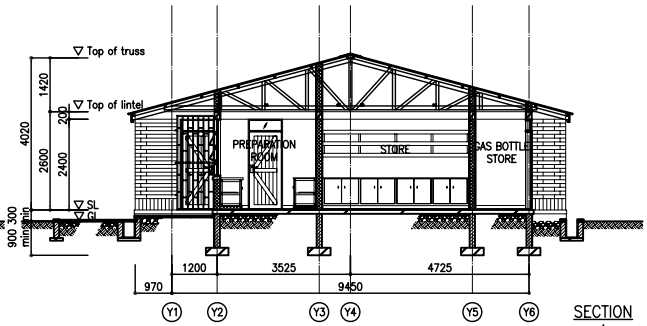
ELEVATION
Scale 1/200



ELEVATION
Scale 1/200

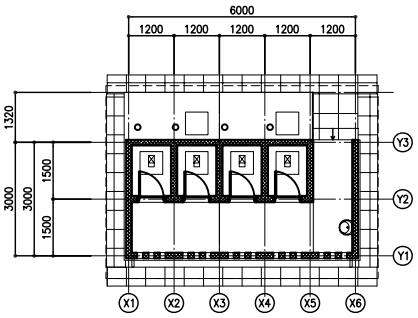


SECTION
Scale 1/200

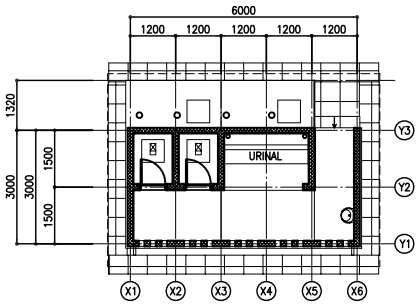


SECTION
Scale 1/200

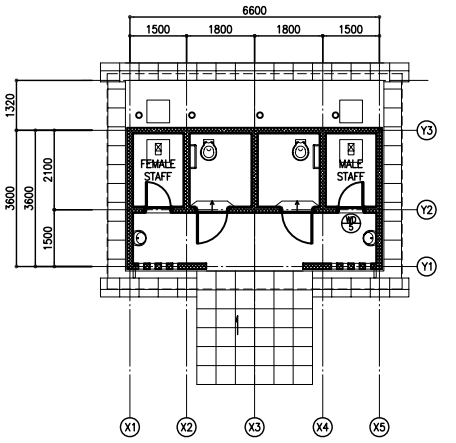
LABORATORY BLOCK A-09



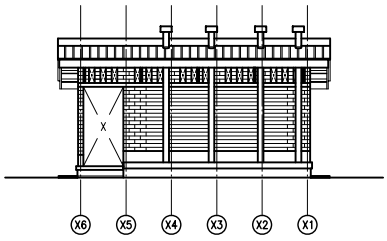
FLOOR PLAN
FEMALE STUDENT TOILET

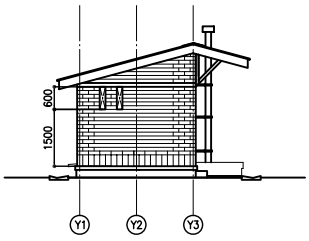


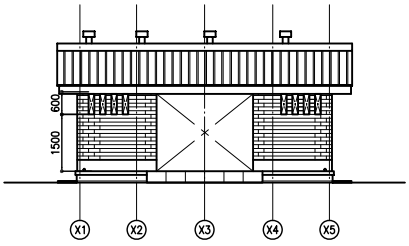
FLOOR PLAN
MALE STUDENT TOILET

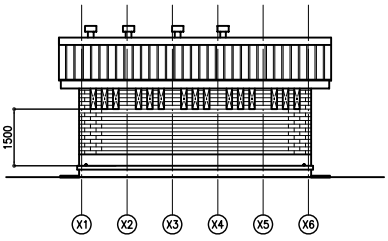


FLOOR PLAN
STAFF TOILET

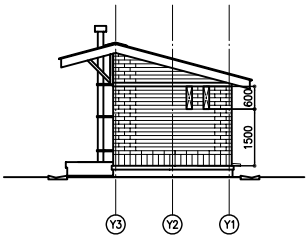




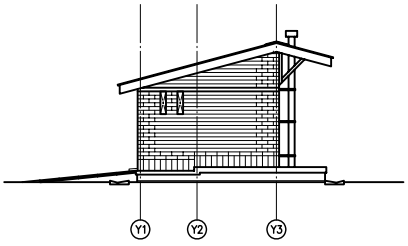




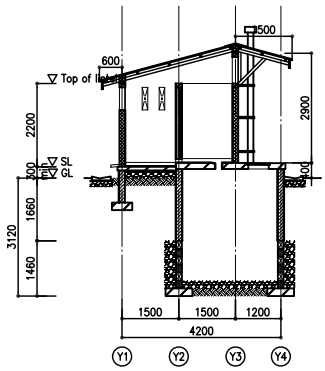
FRONT/REAR ELEVATION
FEMALE STUDENT TOILET



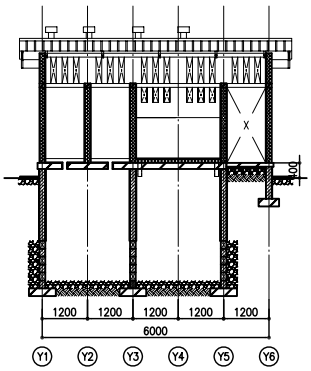
SIDE ELEVATION
MALE/FEMAL STUDENT TOILET



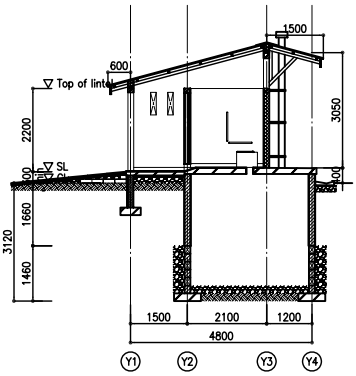
FRONT/SIDE ELEVATION
STAFF TOILET



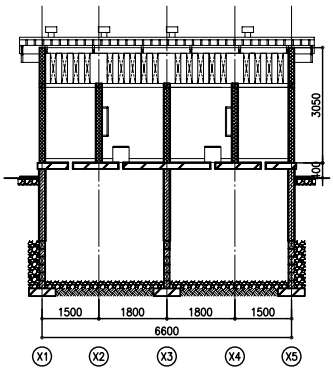
SECTION
FEMALE STUDENT TOILET
Scale 1/200



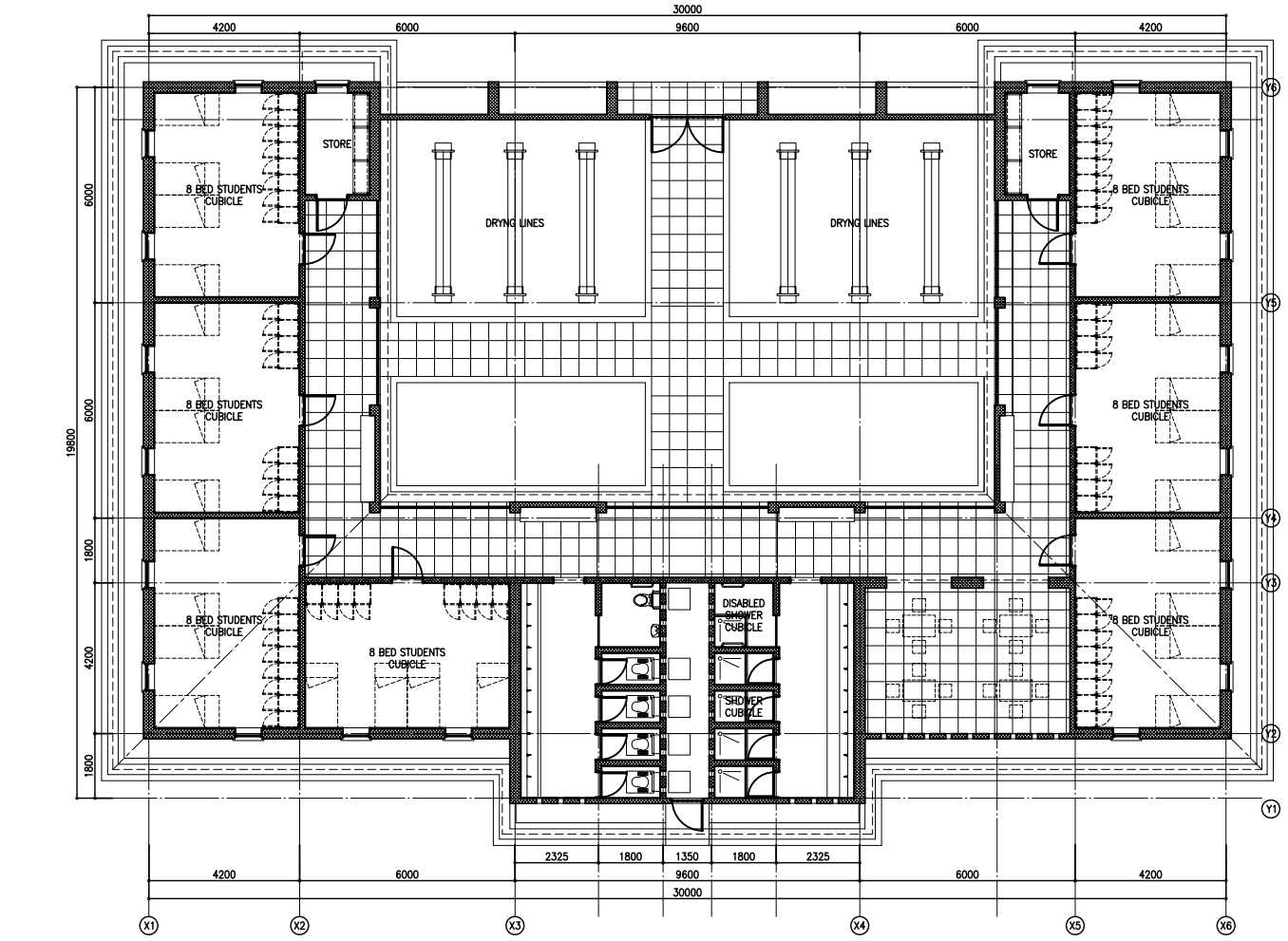
SECTION
MALE STUDENT TOILET
Scale 1/200



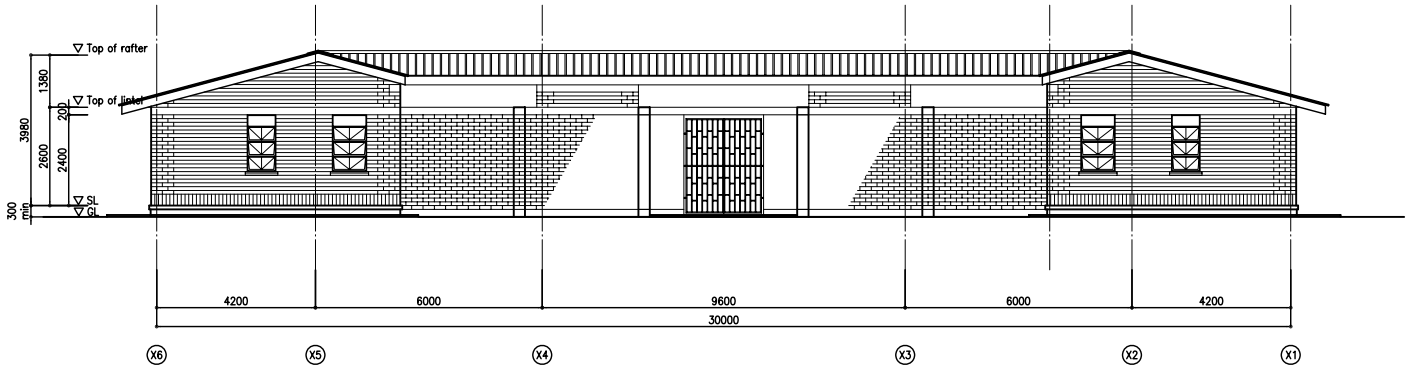
SECTION
STAFF TOILET
Scale 1/200



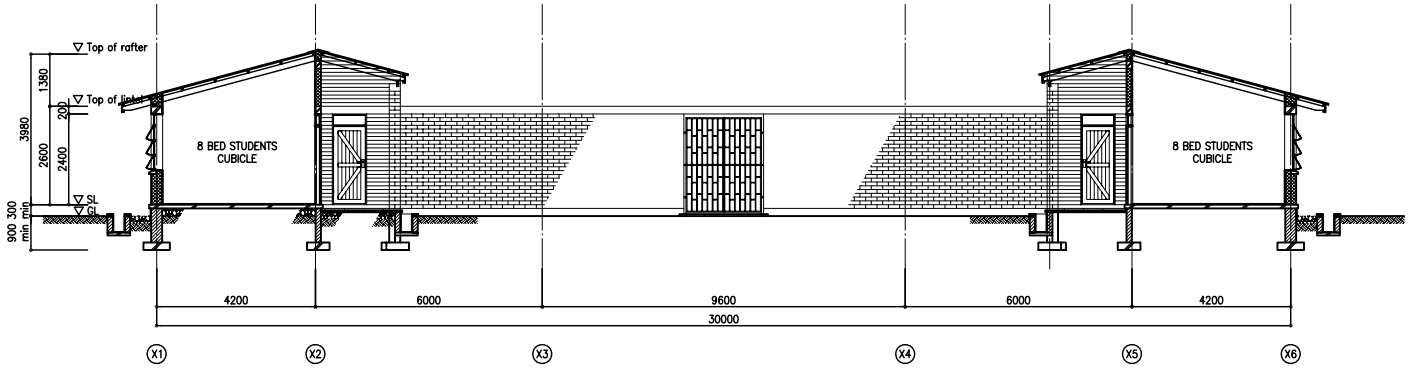
SECTION
STAFF TOILET
Scale 1/200



FLOOR PLAN
Scale 1/200

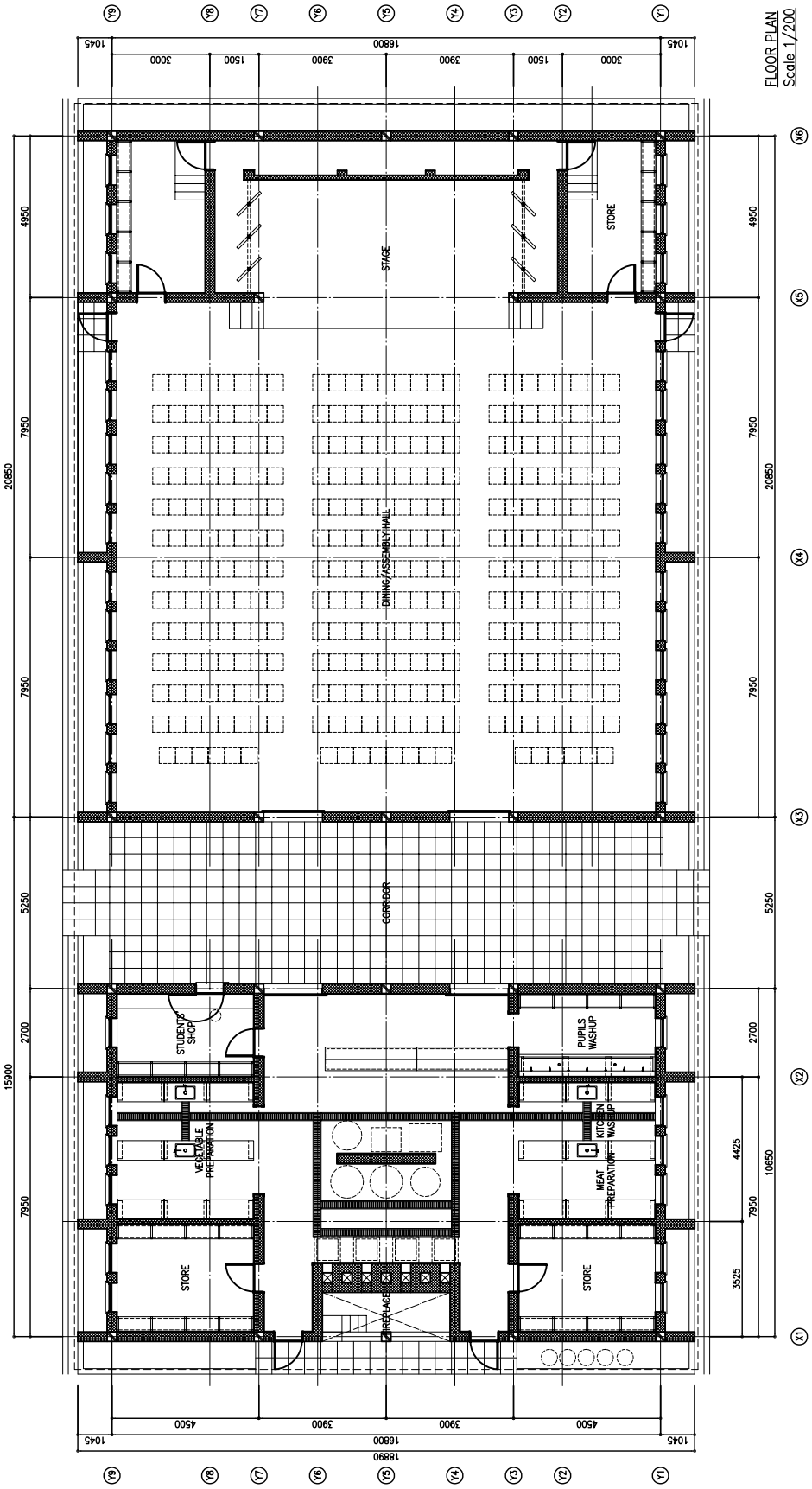


ELEVATION
Scale 1/200

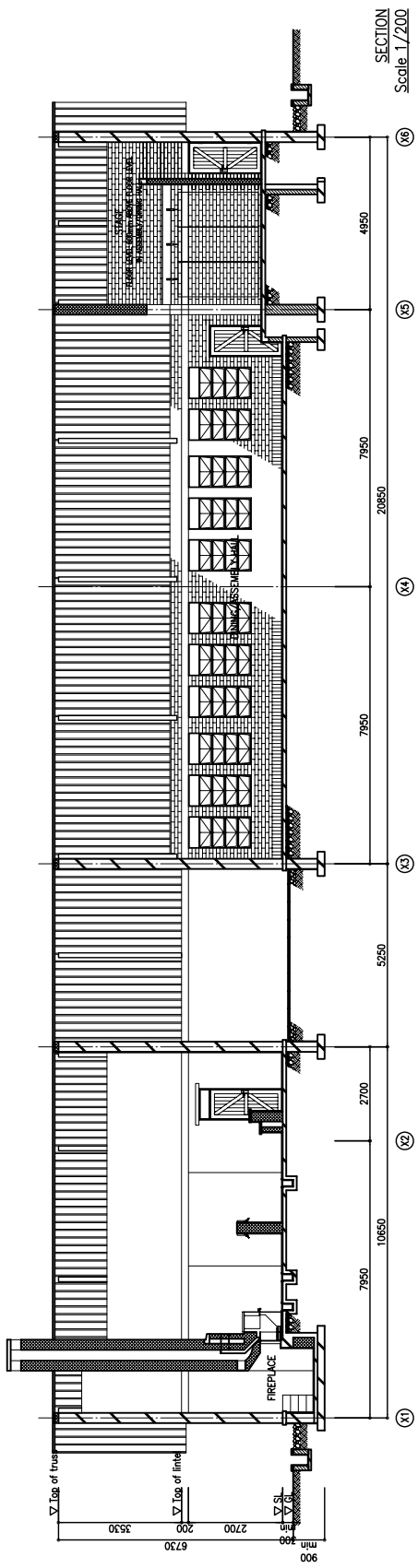


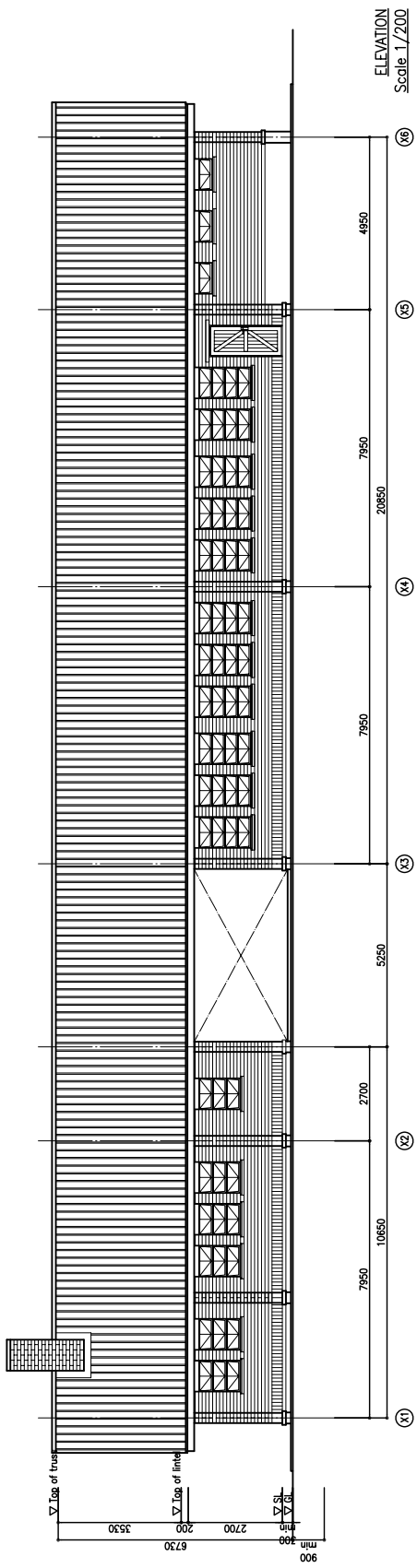
SECTION
Scale 1/200

HOSTEL A-11

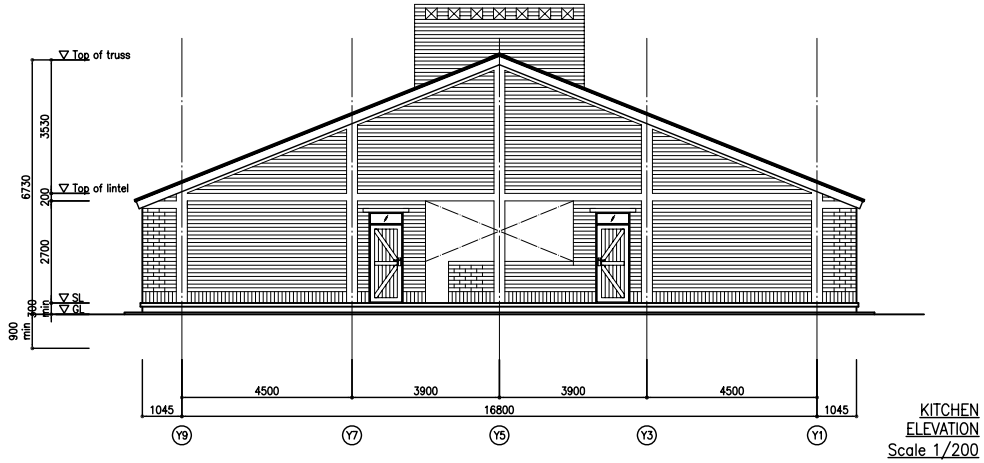


KITCHEN / ASSEMBLY HALL A-12

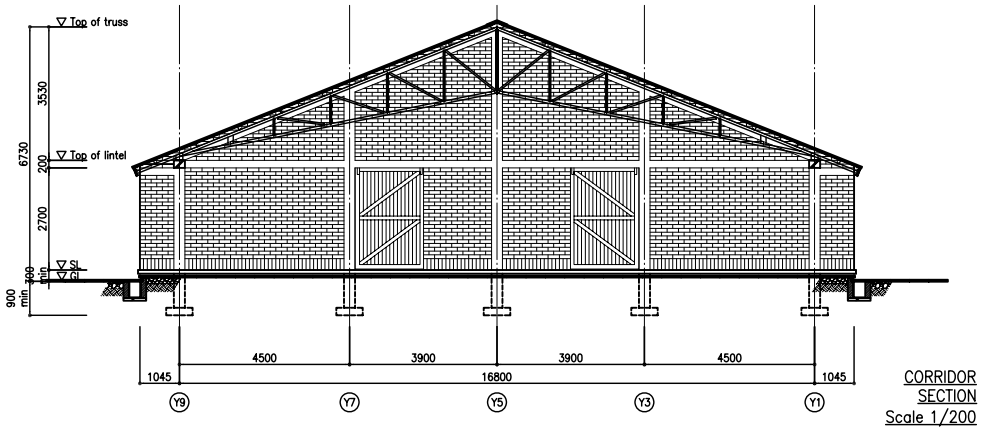




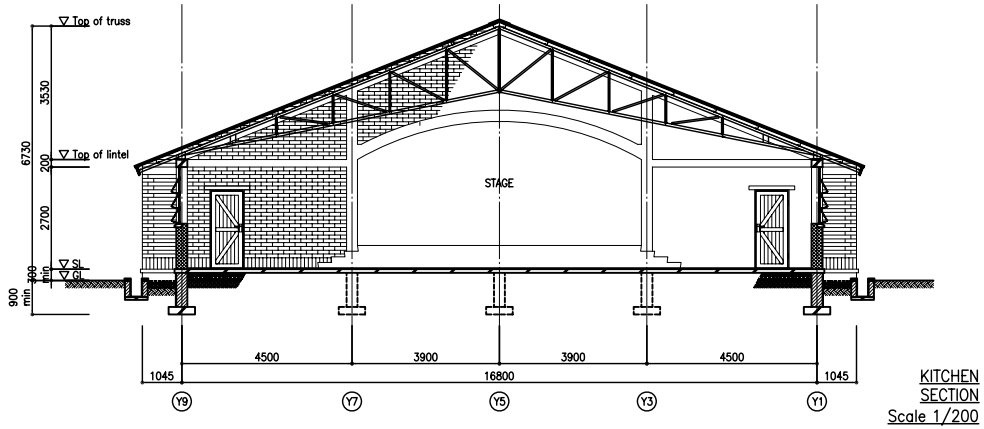
KITCHEN / ASSEMBLY HALL A-13



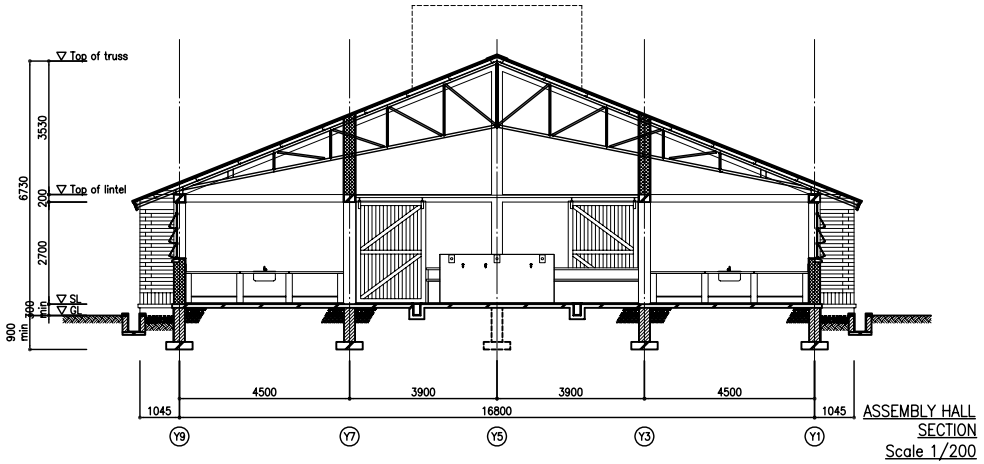
KITCHEN
ELEVATION
Scale 1/200



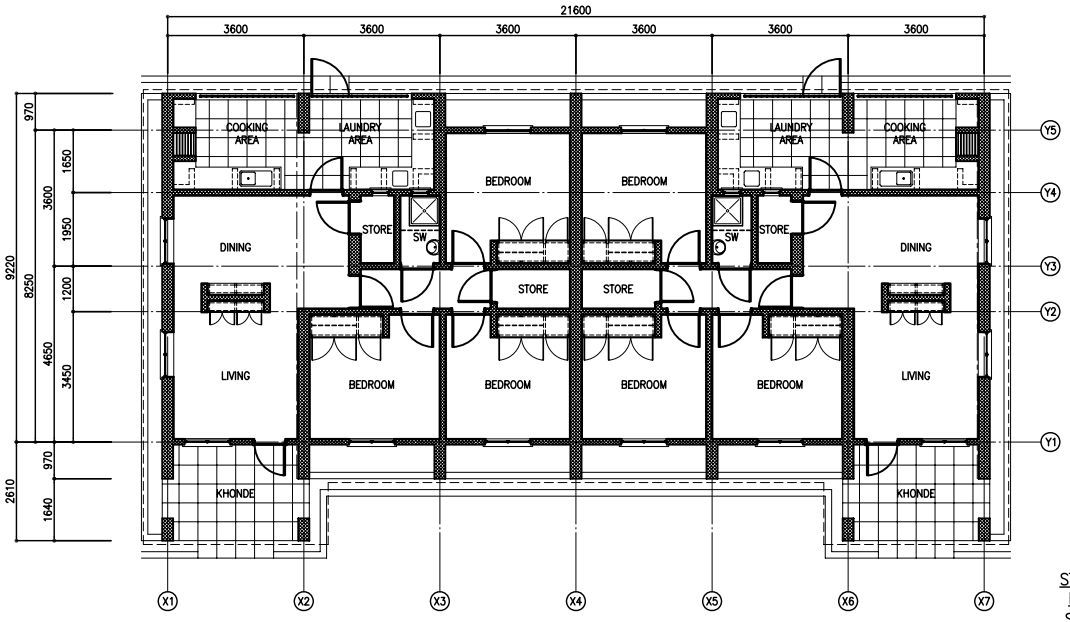
CORRIDOR
SECTION
Scale 1/200



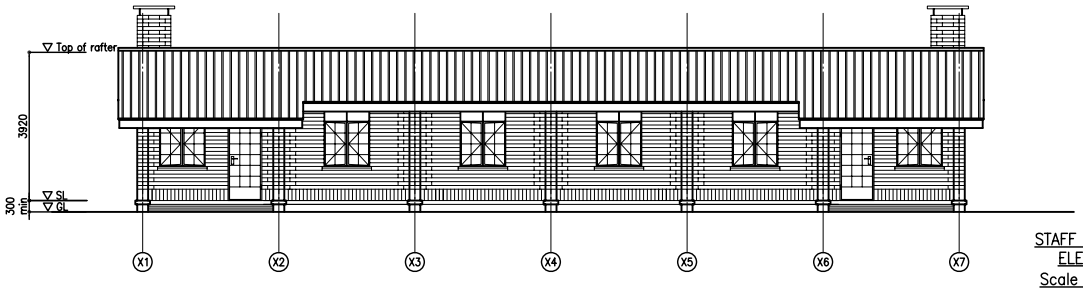
KITCHEN
SECTION
Scale 1/200



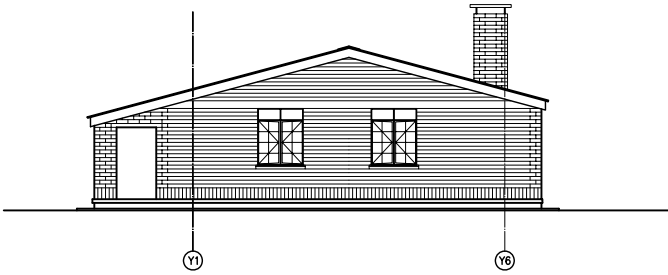
ASSEMBLY HALL
SECTION
Scale 1/200



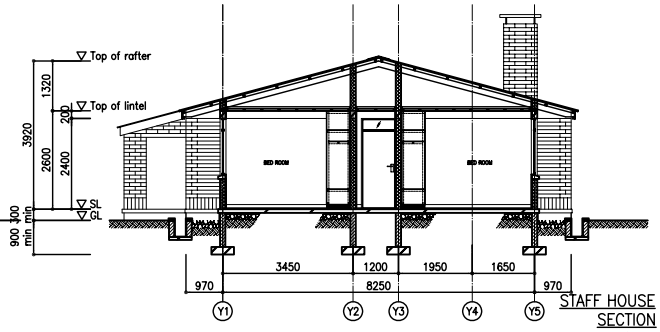
STAFF HOUSE
FLOOR PLAN
Scale 1/200



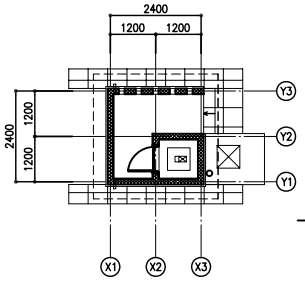
STAFF HOUSE
ELEVATION
Scale 1/200



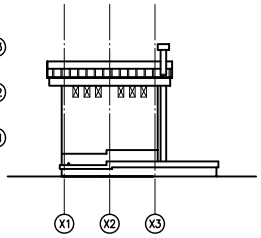
STAFF HOUSE
ELEVATION
Scale 1/200



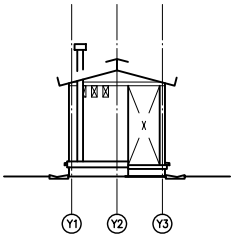
STAFF HOUSE
SECTION
Scale 1/200



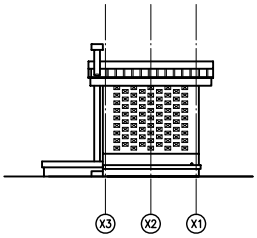
STAFF HOUSE WC
FLOOR PLAN
Scale 1/200



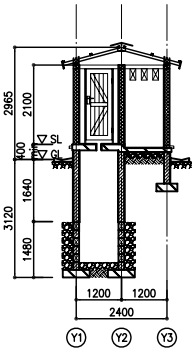
STAFF HOUSE
ELEVATION
Scale 1/200



STAFF HOUSE
ELEVATION
Scale 1/200



STAFF HOUSE
ELEVATION
Scale 1/200



STAFF HOUSE
SECTION
Scale 1/200

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

(1) Basic Matters for the Implementation of the Project

The implementation of the Project is subject to a cabinet resolution of the Government of Japan (GoJ) after being examined by relevant organizations in Japan based on this report. Once authorized, the two governments will conclude an Exchange of Note (E/N) concerning the implementation of the Project and JICA and the Government of Malawi (GoM) will sign a Grant Agreement (G/A). Based on the G/A and the Agreed Minutes on Procedural Details (A/M), an attached document of the E/N stipulating the details of the procedure for implementing the Project, the GoM will consign the work to a Japanese Procurement agent by means of an Agent Agreement (A/A). The Agent carries out the Project on behalf of the GoM to ensure a smooth implementation; it will oversee the project fund, contracts with the construction supervising consultant, contractors and equipment suppliers, and the progress of the Project.

(2) Inter-governmental Consultative Committee

After the E/N and the G/A are signed, the two governments will establish a consultative committee as a forum for discussion and coordination, in order to ensure an appropriate and effective management of the Project. The committee will consist primarily of members from the Ministry of Education, Science and Technology (MoEST) of Malawi and the JICA Office in Malawi. As necessary, working groups, to be presided by personnel on the Malawi side, will be established as sub-organizations of the committee. A representative from the Procurement Management Agent will also take part in the committee as an advisor.

(3) Implementation Organization of Malawi

The MoEST of Malawi is the responsible body on the Malawi side for implementing the Project. The Department of Education Planning, a sub-organization of the ministry, will manage the Project as the actual implementing agency, taking charge of overall coordination, necessary budgeting, and so forth. The department will be responsible for carrying out land preparation, access to power and water, and other works to be borne by the Malawi side by managing Education Division Offices, Education District Offices, and other relevant parties involved and acquiring necessary permits and approvals. Incidentally, the Malawian Ministry of Foreign Affairs and International Cooperation will be the signer of the E/N between the two countries.

(4) Procurement Agent

The Procurement Agent will sign an A/A with the Malawian implementing agency, i.e., the MoEST. Based on this agreement, the Agent will select and contract with a Japanese consulting firm (Supervising Consultant), which will supervise all the works involved in the Project in accordance with the agreement, and local contractors and equipment suppliers. It will set up a structure, as described below, in Malawi to perform its tasks. The Agent's office should be built in the capital city, Lilongwe, for easy communication and coordination with the MoEST.

- The office will be the window of the Procurement Agent and will lead the Project through an overall control of the Project, holding of related bids, and fund management in terms of contract money payment.
- The office will report to relevant organizations, as necessary, with respect to the evaluation of bids and the progress of works.
- If and when any change must be made to the scope of the Project, in the light of the reality of spending, the office will seek discussion between and approval of the two governments and sort out, coordinate, and take necessary steps for making such changes.
- The office will review the Consultant's supervision plan and provide instructions and advice as necessary.
- The office will accept and evaluate the reports of the Consultant on interim, completion and defect inspections.

(5) Supervising Consultant

The Supervising Consultant will carry out the following tasks according to the service contract to be signed with the Procurement Agent.

- The Consultant will assist the Procurement Agent in bidding procedures.
- The Consultant will visit the construction sites with frequencies and details stipulated in the service contract, in order to check and assure the quality, schedule, and safety of the works, and will report to the Procurement Agent on a regular basis.
- When a contractor claims a payment, the Consultant will verify the progress and the quality of the work performed and report the results to the Procurement Agent.
- The Consultant will perform construction and defect inspections and report the results to the Procurement Agent.

(6) Contractors and Equipment Suppliers

The contractors and equipment suppliers will undertake the construction of facilities and the procurement of equipment, respectively, within contract term, in accordance with the contracts to be signed with the Procurement Agent.

(7) Structure for Implementing the Project

The following diagram represents the structure for implementing the Project.

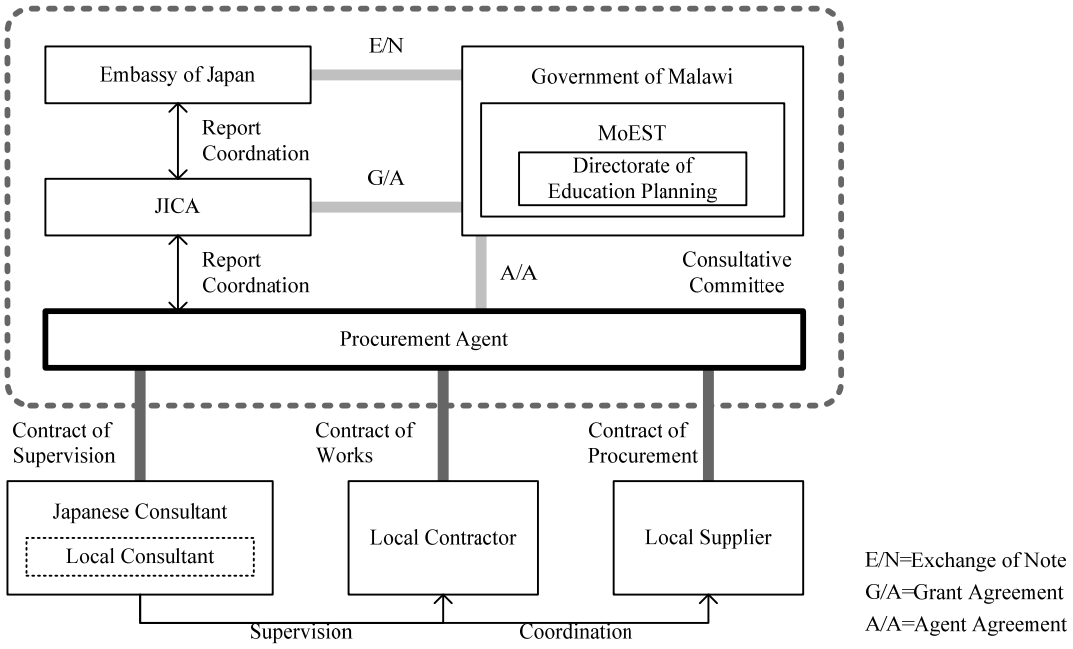


Figure 2-4 Conceptual Diagram of the Structure for Implementing the Project

2-2-4-2 Implementation Conditions

(1) Labor

General labor force can be procured at all sites included in the Project. The number of skilled workers, however, is limited, and it is difficult to secure skilled workers in rural areas. Large-sized contractors, most potential contractors for the Project, have projects in all parts of the country and constantly employ and dispatch a significant number of skilled workers.

(2) Transport

There is no major problem in terms of access at all the sites included in the Project. Large vehicles can be used for transporting equipment and materials. Direct access to many of the sites, however, is provided by unpaved roads that branch from trunk roads. Therefore, attention must be paid to transportation in the rainy season.

(3) Contractors

In Malawi, contractors, consultants and suppliers are registered to the National Construction Industry Council (NCIC). The council is responsible for administering the registration scheme and promoting the industry. Being a legally-incorporated organization, the NCIC's membership comprises representatives from private companies that make up the Association of Construction Companies, Association of Architects, and Association of Engineers. The Malawian contractors are classified into the following nine categories, according to the maximum contract amount allowed. Basically, the size of company (capital amount, number of qualified engineers, equipment owned) and construction experience are the two criteria for registration qualification,

but there are no definite rules for these criteria. Therefore, it poses a concern that any two contractors in the same class may have widely-differing financial powers and construction abilities.

Assuming that one site constitutes one bid lot in the Project, those contractors with an allowed contract amount of 500 million Kw or more are most likely the targets of the bids to be performed in the Project. There are 27 such companies in Malawi.

Table 2-17 NCIC-registered Contractors by Class (as of December 3, 2009)

Category of Limited Contract Amount	Number of Registered Construction Companies
No limit	26
500 million Kw.	1
200 million Kw.	1
100 million Kw.	34
75 million Kw.	42
50 million Kw.	—
30 million Kw.	59
10 million Kw.	46
5 million Kw.	68

*There were some companies that had not renewed their NCIC registration at the time of the study; the actual number of contractors may eventually be higher than indicated above.

(4) Tax Exemption

All goods and services to be procured in the Project will be subject to tax benefits by virtue of the Malawian Tax Law. Exemption systems and procedures vary with subjects. The following explains the contents and points to be noted with regard to different tax benefits for different subjects.

- VAT return by ST-11 application: Value Added Tax (VAT) associated with services will be returned in form of check by the Revenue Authority about a month after an ST-11 application is submitted. Applications are accepted typically every three months. This system is applicable to contracts with the Consultant, subcontracts with local consultants and contracts with attorneys and advisors.

- Immunity from VAT by ST-14 application: Any VAT resulting from procuring construction materials may be exempted by means of ST-14 application. An application should be made by the representative of the Project registered to the Revenue Authority, based on the details of the bill of quantities (BOQ) of the construction contract. The authority will assess the application and in turn issue a tax exclusion permit accordingly.

- Immunity from customs duty by Form-12 application: Application for tax exemption on equipment and materials to be imported in the Project.

- Based on the discussion with the Malawi Revenue Authority, Blantyre (MRA Blantyre), it was confirmed that the Project is entitled to these tax benefits according to the wording included in Annex 8 Major Undertakings to be Taken by Each Government of the Minutes of Field Survey I.

(5) Contract and Dispute Settlement

Malawian governing laws set forth the following steps for settling any dispute over a construction project: (i) resolution through direct dialog between the two parties, (ii) mediation by the arbitration organization specified in the contract, and (iii) ruling of court. According to interviews with law firms in the country, there are very few cases that are brought into court. Past disputes include an administrative protest against cancellation by the client and a refusal of the client to make the final payment claiming that the work quality does not satisfy the required level. Additionally, there is no specialized arbitration organization in Malawi; the arbitration machinery in a construction contract is typically assumed by the Association of Architects or an engineer.

2-2-4-3 Scope of Works

(1) Composition of Bid Lots

Bid lots are to be determined based on the following basic policies, with consideration given to priority among sites and facilities and planning which absorbs uncertainty in project costs.

Facility Construction

In view of the scope of the works involved in the Project and work and economical efficiencies, the facility construction part will be divided into lots, each being equivalent to a site, in principle. The exception is Nanjiriri and Nankumba, which are collectively regarded as one lot, in consideration of the locations and the scales of the works at the two sites. In turn, construction costs can be minimized by using the same temporary materials for both. In addition to that, the facility components at a single site will be prioritized: the top priority is given to those essential for school management, such as the administration block, classrooms, laboratory, toilet block, hostels, kitchen and hall, guard house and exterior works; and the second priority group includes the staff house. In this way, construction lots are organized to adapt to fluctuations of the project cost.

- Top priority group: Administration block, classrooms, laboratory, toilet block, hostels, kitchen/hall, guard house and exterior works (the facility components essential for school management are to be contracted per site: 5 lots in total.

- Second priority group: Staff house (To be contracted in accordance with the priority among the sites, in order to absorb fluctuations of the project cost

in the end): 4 lots in total.

Equipment Procurement

The equipment to be procured in the Project is largely divided into school furniture and laboratory materials, depending on procurement sources. In view of the past records of procurements carried out by other donors, local procurement agencies are capable of purchasing the school furniture or laboratory materials in a lump for all six sites. By incorporating all the project sites into one lot, the Project can benefit from lower-priced bids as suppliers can take advantage of the scale.

Table 2-18 Composition of Bid Lots (Number of Buildings)

Lot No.	Site name	First Priority							Second Priority
		Adm. / Library Block	Classroom Block	Laboratory Block	Toilet Block	Hostel	Kitchen / Assembly Hall	Guard House	Staff House & Toilet
1	Chikhwaza	1 bldg.	2 bldg.	1 bldg.	5 bldg.	2 bldg.	1 bldg.	1 bldg.	
2	Dziwe	1 bldg.	2 bldg.	1 bldg.	5 bldg.	2 bldg.	1 bldg.	1 bldg.	
3	Mseche	1 bldg.	2 bldg.	1 bldg.	5 bldg.	2 bldg.	1 bldg.	1 bldg.	
4	Namalomba	1 bldg.	2 bldg.	1 bldg.	5 bldg.	2 bldg.	1 bldg.	1 bldg.	
5	Nanjiriri	1 bldg.	3 bldg.	1 bldg.	8 bldg.			1 bldg.	
	Nankumba	1 bldg.	2 bldg.	1 bldg.	5 bldg.			1 bldg.	
6	Educational furniture for the 6 CDSSs above								
7	Laboratory equipment for the 6 CDSSs above								
8	Chikhwaza								4 bldg.
9	Dziwe								4 bldg.
10	Mseche								4 bldg.
11	Namalomba								4 bldg.

※Indicated numbers of toilet block comprises student's blocks (male and female) and Teacher's blocks.

(2) Bid Plan

The bids to be performed in the Project shall take the form of international competitive bidding in accordance with JICA's Guidelines of Japan's Grant Aid for Community Empowerment, with due consideration given to the Malawian procurement guidelines for public works and general procedures and conditions taken by the MoEST and other donors. Reference bid documents will be provided to the MoEST by JICA, checked by the MoEST, and passed to the Procurement Agent. The Agent will review these documents, make necessary modifications, and prepare final bid documents with the approval of the MoEST.

Bids Held by the MoEST

The MoEST itself is not responsible for administering bids in conjunction with construction projects of educational facilities. With the aid of the WB and the AfDB, the primary donors of educational facility development in Malawi, each donor forms an implementation agency (Education Development Management Unit (EDMU) or Education Infrastructure Management Unit (EIMU) per project and the agency carries out necessary bids. In the bids conducted in association with educational facility construction projects by other donors, no prequalification has been performed; contractors registered to the NCIC were allowed to participate in those bids with an estimated bid price being appropriate for their respective contract amount limits. In bids

rendered by the AfDB, it is typical to hold a multiple-lot bid, or a simultaneous bid for multiple construction projects. This method is designed to stimulate the willingness of top-level contractors to participate in the bids, with a view to an expansion of contract size by winning several projects in a lump, while maintaining the competitiveness of single-lot bids. Eventually, higher levels of competitiveness as well as work quality can be expected. Also, no prequalification procedure takes place in a construction project bid by the MoEST; the qualification is given by designating NCIC classes. Bid participants need also have a track record worth the same level as or higher than the pertinent bid every year for the past five years and have experience in similar construction projects. The number of engineers who have experience in similar projects, the financial status and so forth also limit the eligibility of bid participants. In addition, no specific criteria are set for evaluating the tolerance of bidders to take part in the bid based on the total amount of work currently in the hands.

In the Project, attention must be paid to the criterion-setting in order to assure competitiveness as well as construction capability. It is also important to give consideration to what format the bids should be in. One possible means is a simultaneous multiple-lot bid to attract NCIC-top-class contractors for the sake of securing necessary levels of construction management and quality.

Contractors

A smooth implementation of the Project will be achieved by performing prequalification and focusing on contractors with sufficient construction prowess and sound financial strength. In particular, many construction delays observed in Malawi are caused by the time lag from a payment claim to the receipt of payment affecting the construction schedule. Thus, it is essential to carefully evaluate the financial capacity of contractors, even of NCIC's unlimited class.

The prequalification criteria shall include the following elements: NCIC registration class; the amount of contracts awarded for the past five years (with annual amounts being worth the same amount as or higher than the pertinent contract in the Project); record of similar projects in the past five years; qualifications and backgrounds of technical personnel; necessary equipment owned; financial conditions; and current assets associated with the pertinent contract. Furthermore, the tolerance for taking part in the pertinent bid shall also be a mandatory condition, in order to ensure the construction capability and quality.

Equipment Suppliers (for School furniture, Laboratory Materials and Apparatus)

For the procurement of school equipment and materials at the sites, procurement agencies will be selected through general competitive bids with limited participation eligibility. In consistency with the selection system in the country, bids to be conducted in the Project will be general competitive bids with limited participation eligibility. Since it is planned to procure all the equipment for all the sites in a lump, the capacity of furniture-making, technical level, and procurement capability of local suppliers must be examined in depth to guarantee a successful implementation of the Project. To this end, the financial strength and experience in procurement with similar contents and scale must specifically be noted as participation eligibility conditions.

2-2-4-4 Consultant Supervision

The Consultant in charge of supervising the implementation of the Project will sign a contract with the Procurement Agent and will carry out the tasks under the instructions of the Agent. The tasks to be performed by the Consultant at different stages of the Project are described below.

Bidding Phase

- Assistance in the preparation of bid documents:
  The Consultant will review the reference bid documents, including the detailed design proposed in the outline design study, and assist the counterpart in preparing bid documents.

- Assistance in conducting bids:
  The Consultant will assist the Procurement Agent in the technical aspect of the bidding procedures.

Supervision Phase

- Preparation of documents on supervision standards:
  The Consultant will create a checklist, which summarizes the points of supervision, and standard forms for inspection and test reports and periodical reports, for standardizing all the supervision work at different sites.

- Supervision:
  The Consultant will dispatch an engineer to each project site; the engineer will perform necessary inspections for assuring quality of the works, abiding by the implementation schedule, and maintaining safety. The leader of the Supervising Consultant will visit all the project sites on a regular basis, so as to manage the overall progress of the Project and provide instructions to the resident engineers thereby assuring the work quality.

- Assessment of the work performed:
  Upon the reception of a payment claim from a contractor, the Consultant will verify the quality of the work performed, based on the instruction by the Procurement Agent, and will report the results to the Agent.

- Completion inspection:
  The Consultant will perform the completion inspection at the end of the construction works and report on the results to the Procurement Agent.

- Defect inspection:
  The Consultant will perform a defect inspection when the defect liability period expires and report the results to the Procurement Agent.

The supervision structure of the Consultant will be as follows:

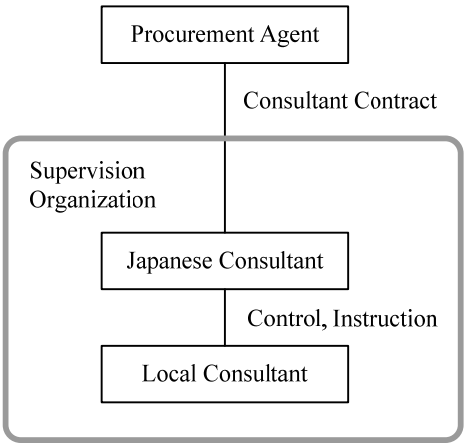


Figure 2-5 Conceptual Diagram of the Supervision Structure

2-2-4-5 Quality Control Plan

On the assumption that all the facilities to be built in the Project will be constructed by local contractors in compliance with the standard designs and methods in Malawi, quality control will be performed in accordance with the following policies, focusing on the building frames that have significant impact on strength, durability, and other basic characteristics of the facilities. Incidentally, the testing methods, materials specifications, and other relevant standards generally applied in Malawi will also be adopted in the Project.

Table 2-19 Parameters for Quality Control

Items	Method
Ground condition on sites	・Conditions of foundation beds shall be confirmed by a visual inspection and compared with a test results. ・In case of lower evaluation, a soil loading test shall be conducted to confirm the design load capacity.
Building layout	・Layout of buildings shall be confirmed in the presence of the Consultants and the Contractors after setting out a bench mark using a measurement device.
Re-bar, steel beam	・A mill sheet shall be submitted for confirmation of material quality by delivery site and type and a tensile test shall be carried out for each steel beam diameter in an authorized laboratory.
Inspection of re-bar works	・Re-bar works shall be inspected in the presence of the Consultants and the Contractors to confirm the accuracy, quantity, position, joint and anchor length of the re-bar, and installation status of a spacer.
Cement	・A test result report shall be obtained by the manufacturer to confirm the material quality. ・Storing environment for cement and the number of cement bags for piling up shall be controlled for avoiding any damage from moisture which may harden the material.
Aggregate	・A test shall be carried out to confirm the mass/particle of aggregate and water absorption ratio for each site by an authorized laboratory. ・Maximum particle diameter, silt contained amount and water content, etc. shall be confirmed by an visual inspection at every delivery on sites.
Concrete	・A water quality test of mixing water for concrete shall be carried out at each site by an authorized laboratory. ・Mixing by volume shall be adopted as a standard mixing method and the 28 days compression strength shall be confirmed through trial mixing. ・Water-cement ratio shall be designated by a slump test and the ratio shall be less than the specified maximum value in specification. ・A compressed strength test shall be conducted to confirm that the average 28- day strength of three specimens is higher than the design standard strength.
SSB	・A compression test shall be carried out to confirm the necessary strength in an authorized laboratory. ・A maximum height of piled blocks shall be 1.2 meters and the pile shall be stored by a protecting

	sheet.
Concrete block	・A compression test shall be carried out to confirm the necessary strength in an authorized laboratory. ・A maximum height of piled blocks shall be 1.2 meters and the pile shall be stored by a protecting sheet.

The Supervising Consultant will create a check sheet, compiling the above major control parameters, for an across-the-board use of the same format at all the sites. The resident supervisors of the Consultant and engineers of the contractors will jointly verify the quality at each phase, and keep the records via filing.

2-2-4-6 Procurement Plan

Construction materials produced in Malawi are limited to aggregate, cement and concrete secondary products, SSB (to be fabricated at site), and timber. The other materials are imported mainly from South Africa. These imported materials commonly used in the Malawian construction methods are constantly available in the market. The Project will use construction materials and equipment that conform to the specifications and standards in Malawi, and most of the materials can easily be procured in the country as they are multi-purpose materials commonly used in the construction of standard schools in the country. Since the project sites are located either near capital Lilongwe or in the Southern Region, where Blantyre, a mercantile city, is situated, very few problems are foreseen in terms of possible hindrance to procurement because of the regionality. It is important, however, to pay attention to the timing of ordering fittings and fixture, as the number of the makers is limited and a delay in the procurement may affect the construction schedule.

The table below demarcates sources of procurement of construction materials.

Table 2-20 Sources of Procurement of Materials

Construction Materials	Country of Procurement		Remarks
	Malawi	Third Country	
Building materials			
Cement	○		Domestic product in Malawi
Sand (fine aggregate)	○		River sand near the site
Crushed stone (aggregate)	○		Procured from a crusher plant near the site
Reinforcement steel bar	○		Marketed material made in South Africa in accordance with the SABS standard
SSB	○		Produced on each site
Wooden trusses	○		Produced on each site
Roofing (iron sheet)	○		Marketed material made in South Africa in accordance with the SABS standard
Wooden timber	○		Domestic material from Northern Province
Plywood forms	○		Domestic product in Malawi
Concrete blocks	○		Produced on each site
Wooden/steel fittings	○		Produced at a domestic factory with technical/production capabilities
Hardware	○		Marketed material made in Europe and South Africa
Glass	○		Ditto
Coating	○		Marketed mixing material,made by South African products
Mechanical materials			
Pipes and fixing parts	○		Marketed imported material in Malawi

Sanitary ware	○		Marketed product made in Europe and South Africa
Equipment (pumps etc.)	○		Marketed imported material which is easy to be maintained
Electrical cables	○		Marketed product in Malawi
Lighting fixtures	○		Marketed local product for maintenance such as part replacement
Distribution panels	○		Produced and procured by a reliable receiving/transforming equipment manufacturer in Maputo
Others			
Solar panel generation system	○		Marketed product made in Europe
Kitchen equipment	○		Possible to procure products made in South Africa

2-2-4-7 Implementation Schedule

If the Project is implemented under Japan's grant aid scheme, the implementation schedule after the signing of the E/N and the G/A between the two governments and the conclusion of the A/A, Construction Supervising Consultant agreement, and other necessary contracts is planned as follows.

The construction will commence first at a site which requires the longest construction term due to the difficulty in procuring materials and equipment, in consideration of work efficiency and cost reduction. The bids will be carried out as four multiple-lot bids, as shown below, depending on the timing of placing orders.

- Bid 1: Construction of the school facilities categorized in the top-priority group, which are indispensable for managing secondary schools, at the six sites.
- Bid 2: Procurement of equipment and materials (school furniture) for the secondary schools at the six sites.
- Bid 3: Procurement of equipment and materials (laboratory materials) for the secondary schools at the six sites.
- Bid 4: Construction of the staff house categorized in the second-priority group at four sites, each site constituting one lot so as to allow adjusting the number of lots to be included in the bid depending on the remainder of the project fund as a result of the above three bids

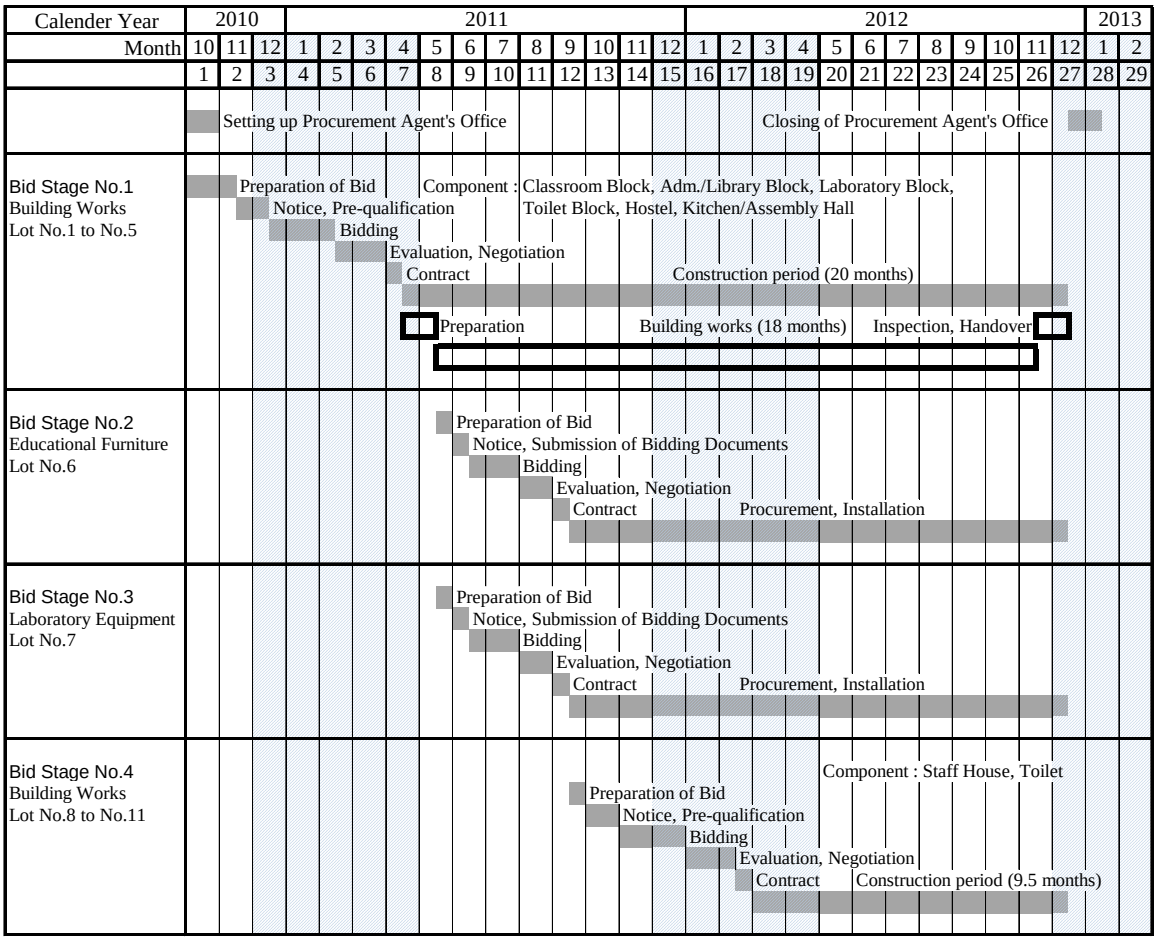
The table below outlines the order and lot composition of the bids.

Table 2-21 Order of Bids and Composition of Lots

Bid Order	Lot No.	Project Site	Building Works		Furniture and Equipment to be Procured
			Floor Area of Top Priority	Floor Area of Second Priority	
1	1	Chikhwaza	2,318.02m2		
	2	Dziwe	2,318.02m2		
	3	Mseche	2,318.02m2		
	4	Namalomba	2,318.02m2		
	5	Nanjiriri	1,215.97m2		
		Nankumba	991.78m2		
	Total Floor Area		11,479.83m2		
2	6				Educational furniture for 6 CDSSs
3	7				Laboratory equipment for 6 CDSSs
4	8	Chikhwaza		883.88m2	
	9	Dziwe		883.88m2	
	10	Mseche		883.88m2	
	11	Namalomba		883.88m2	
	Total Floor Area			3,535.52m2	

According to the past records of construction of secondary school facilities and hearings from local consultants and contractors, the construction schedule for the site with the largest construction scale will require a total of 20 months, taking into account the preparatory phase before the commencement of construction and the time necessary for the completion inspection and handover. The procurement of school furniture at six sites minimally requires a period of eight months, including the preparation and confirmation of fabrication drawings, ordering, fabrication and acceptance inspection. With attention paid to the balance with the timing of ordering Bid 4, which is designed to absorb the uncertainty in the project spending, a 15-month period will be set aside. The construction term for the staff house in Bid 4 will be set as 9.5 months per site. Following the policies and orders of the lots described above, each bid will be held with a certain interval for fund management, preparation and coordination. The total implementation period of the Project will be, considering some time for the Procurement Agent to prepare on the spot before and after the project implementation, roughly 27.5 months. The following table depicts the outline of the implementation schedule.

Table 2-22 Implementation Schedule



In Malawi, the rainy season starts in December and lasts until April. The construction is planned to start in April, at the end of the rainy season, in order to avoid as much impact as possible of the rainy season on the civil engineering and the concrete foundation work. It is difficult to completely eliminate the impact of the wet period, because several buildings will have to be constructed in a row with each starting one after another; hence, due attention is needed in this regard. The above-proposed construction terms take the rainy season into consideration. In addition, the construction at Nanjiriri CDSS will require two extra months for the commencement, as it is located in the urban area and requires a construction permit from the City of Blantyre.

2-3 Obligations of Recipient Country

The Malawi side shall be responsible for the following tasks in relation to the implementation of the Project.

- Secure land necessary for the construction of facilities and remove all existing structures and trees that impede the construction.
- Put in place any exterior facilities that are not included in the scope of Japan's assistance, such as playgrounds, planting, gates, and fences, as necessary.
- Draw in electricity into the project sites and connect to the transformer to be installed by the

Japan side, and install meters at individual facilities in need of power and connect between the transformer and the meters by wiring.

- Draw in city water into the project sites and install water supply meters and stop cocks at individual facilities in need of water.
- Procure any general furniture, teaching materials, equipment, appliances, fixtures and fittings that are not provided by the Japan side.
- Pay the Japanese bank necessary charges associated with making payments, based on the signed bank arrangement (B/A).
- Ensure smooth proceedings of customs clearance and other procedures necessary for domestic transport of all the products to be procured based on contracts in the Project.
- Exempt the products to be procured or the labor and services by project members and employees to be rendered based on the contracts in the Project from any tariffs, value-added tax, and all the other Malawian taxes and duties and financial levies.
- Provide the Japanese staff or personnel from third countries who come to Malawi and render services in accordance with the contracts in the Project with necessary accommodations and convenience in entering and staying in the country.
- Secure budgets and personnel necessary for appropriate operation and maintenance of the facilities provided by Japan's grant aid project. (See Chapter 4 for more details.)
- Bear all the costs necessary for implementing the Project but not included in the scope of Japan's assistance.
- Acquire any social and environmental consideration-related permits and construction licenses necessary for implementing the Project.

Of the above, more specific works to be borne by the recipient country as to each site are tabulated below. The acquisition of construction permits and the removal of existing structures, trees and other obstacles at the sites, in particular, should be completed prior to the commencement of construction.

Table 2-23 Works to be Carried Out by the Recipient Country by Site

	Necessary matters prior to commencement		Necessary matters after construction commencement		
	Building Permit	Cutting of Trees, Site Clearance	Connection of ESCOM	Connection of City Water	Landscaping
1. Chikhwaza CDSS	－	○	○	－	○
2. Dziwe CDSS	－	○	○	－	○
3. Mseche CDSS	－	○	－	－	○
4. Namalomba CDSS	－	○	－	－	○
5. Nanjiriri CDSS	○	○	○	○	○
6. Nankumba CDSS	－	○	○	○	○

Note) Indication of ○: Necessary items to be done by Malawian Government at target school

2-4 Project Operation Plan

2-4-1 Operation Plan

Six Education Division Offices, branch organizations of the MoEST, are in charge of the operation and management of secondary-level education, including the CDSSs included in the Project. Each office undertakes the assignment of teachers, selection and distribution of students, and allocation of the Other Recurrent Transactions (ORT) excluding personnel cost, in its jurisdiction. The management of a school itself is left to the school staff, led by the headmaster, and is executed autonomously to a certain extent. For every school, a School Management Committee (SMC), consisting of the headmaster, key figures in the community, representatives of parents, teachers, school staff, and so forth, and a Parent-Teacher Association (PTA) are organized to discuss and make decisions on basic matters concerning school management and to solve problems related to the development and maintenance of school facilities, in collaboration with the school.

The completed facilities will accommodate twice as many classrooms as today and be equipped with other facilities necessary for secondary-level education, such as laboratory and library. Therefore, the schools included in the Project will most likely be positioned as cluster-leader schools. By hosting workshops and forums with other parties in the cluster, each project school will be exposed to more opportunities for interaction with others; thus, the school management organization should shift from a simple one consisting exclusively of teachers to a more full-fledged one with teachers and administrative staff who support the teachers. Furthermore, the four schools located in rural areas require matrons and cooking staff for the girls' hostels and halls with kitchens.

The following table details the breakdown of planned numbers of staff, as estimated based on interviews with school managers and opinions expressed by the MoEST on the operation and maintenance organization after the completion of the Project. Taking all the findings into consideration, the number of teachers and school staff needed to be newly hired is 104—52 teachers and 52 administrative workers—in total for the six schools. Salary for public servants, which is directly paid by the government, is applicable to a total of 112, including 12 school ground keepers and guards who are currently hired by the schools themselves.

In order to assure the number of teachers expected in this operation plan, it is imperative that the Malawian government's efforts to foster qualified teachers for secondary education, building on the National Education Sector Plan (NESP) 2008-17, which sets out incentives to elevate the grades of secondary education teachers and stimulate the motivation of potential teachers by 2017, will bear fruit: 220 admitted students under normal entry program every year, 220 teachers upgraded from under-qualified teachers every year, and 400 science teachers upgraded from under-qualified teachers every three years.

Table 2-24 Planned Numbers of Personnel

School Name (Projected Enrollment)	Employment	Teaching Staff		Supporting Staff								
		Teacher	(Qualified)	Bursar	Matron	Asst. Lab-technician	Asst. Librarian	Cook	Service Staff	Gardener	Guard	Total
1. Chikhwaza	Existing	10	5	0	0	0	0	0	0	1	1	2
(320 students)	Planned	16	8	1	1	1	1	3	1	1	3	12
	New	6	3	1	1	1	1	3	1	0	2	10
2. Dziwe	Existing	7	4	0	0	0	0	0	0	0	1	1
(320 students)	Planned	16	8	1	1	1	1	3	1	1	3	12
	New	9	4	1	1	1	1	3	1	1	2	11
3. Mseche	Existing	6	2	0	0	0	0	0	0	0	1	1
(320 students)	Planned	16	8	1	1	1	1	3	1	1	3	12
	New	10	6	1	1	1	1	3	1	1	2	11
4. Namalomba	Existing	9	4	0	0	0	0	0	0	0	1	1
(320 students)	Planned	16	8	1	1	1	1	3	1	1	3	12
	New	7	4	1	1	1	1	3	1	1	2	11
5. Nanjiriri	Existing	26	13	0	0	0	0	0	0	1	3	4
(480 students)	Planned	43	20	1	0	1	1	0	1	1	3	8
(OS：480 students)	New	17	7	1	0	1	1	0	1	0	0	4
6. Nankumba	Existing	13	3	0	0	0	0	0	0	0	3	3
(320 students)	Planned	16	8	1	0	1	1	0	1	1	3	8
	New	3	5	1	0	1	1	0	1	1	0	5
		52	29	6	4	6	6	12	6	4	8	52
Total of New Employment		**52 teachers** (qualified 29		**52 supporting staff**								

OS : Open School

- The planned number of students is set as triple streams plus an open school on the same scale in Nanjiriri and double streams for the other five schools. One class will consist of 40 students, with the equal numbers of boys and girls.

- There is no standard for the number of teachers to be assigned today. Based on the judgment of the MoEST that eight teachers at the minimum are typically assigned when single stream, the project schools with double streams will be provided with 16 teachers. In case of Nanjiriri, it is deemed that 20 teachers are enough for triple streams. Assuming that the open school will accommodate 480 students, a total of 43 teachers, including one headmaster and two submasters, will be assigned.

- Desirably, additional qualified teachers will be employed when the Project is completed. Particularly, it is mandatory to have science teachers in physical science and biology, who have acquired a diploma in a natural science subject. Filling at least 50 percent of the planned number of teachers with qualified teachers, which is double the current percentage, is aimed in the Project (EMIS 2008: 26.7% on average at CDSSs and 79.4% on average at CSSs.)

- The administrative staff currently employed at the project schools are almost only guards and janitors who are in charge of cleaning and schoolyard keeping. As a result, a number of issues are pointed out: a lack of expertise in school management, substantial amount of workload, and insufficient number of necessary personnel. Currently, a limited number of teachers share all duties ranging from accounting and management of textbooks to the

maintenance and repair of desks, chairs and other classroom facilities. An increased number of administrative staff is vital in expanding the size of the schools.

2-4-2 Maintenance Plan

Teachers and students take part in daily maintenance of the school facilities, under the leadership of the headmaster. At the schools planned with girls' hostels, matrons will provide life guidance. The PTA and the SMC, the latter involving parties concerned in the community, will also provide assistance in the improvement and maintenance of school facilities, as necessary. The maintenance of the facilities provided by the Project will not require any special skills. Still, daily cleaning, routine inspection, and adequate repair of worn, damaged, and superannuated facilities are necessary for maintaining the facilities in good condition over a long term.

- Periodical cleaning: Students will clean the classrooms every day under the supervision of teachers. The administrative rooms and common space will basically be cleaned by janitors, cleaners, and schoolyard keepers, and also exhaustively cleaned by teachers and students on a regular basis as after-school activities.

- Routine repair: By encouraging periodical inspections and cleaning and hence carrying out daily maintenance, no repair or fixing will be needed for several years after the completion of the construction. Beyond that, regular repair activities, such as repainting of painted areas (once in ten years or so) and inspection and adjustment of fittings (every year or so), will be necessary.

- Maintenance of equipment: A structure for daily maintenance should be established so as to perform simple repair and mending work and replacement of parts in addition to daily inspections. Septic and infiltration tanks will be cleaned every two years.

- Maintenance of the exterior and planting: Many of the project sites are situated on inclined land. It is essential to put adequate protection against geological erosion due to rainwater. In addition to routine cleaning around the buildings, it is important to inspect and clean the side ditches and pits approximately twice a year and also to properly maintain the planting on the sloped surface in order to secure the soil stability.

The government's ordinary budget for the maintenance of public school facilities (CDSSs, CSSs and OSs) is distributed according to the government-level school type regulations. In addition to the appropriation, each school collects school fees set forth by the government, namely 1,500 Kw/year for tuition fees, 250 Kw/year for text revolving funds (TRF) and 4,500 Kw/year for boarding fees, and donations and funds that can be determined voluntarily by each school, such as General Purpose Fund (GPF) worth 500 Kw or lower per semester, School Development Fund (SDF), and PTA funds. All the schools included in the Project are now classified as CDSSs not approved. Therefore, the budget allocated by the Education Division Office contributes to a mere 7 to 17 percent of the total revenue of the schools. The rest comes from the money collected from the parents of students. The Project aims to promote the schools

to a higher school type so that more governmental ordinary budget shown in the following table will be allocated, making the tuition fees and other contributions of the parents available for maintenance cost.

Table 2-25 Criteria for Allocating Government Budget to Ordinary Expenses by School Type

Type of School	Evaluation Items for ORT Funds	ORT Funding Level
1. CSS	Formula (basic school capacity, curriculum enhancement and auxiliary of support factors)	Based on evaluation for school application and formula
2. CDSS approved / cost center	ditto	ditto
3. CDSS not approved / cost center	In case of junior secondary, F1+F2 In case of all years, F1+F2+F3+F4	300,000Kw./annum 500,000Kw./annum
4. CDSS not cost center	Allocated from Education Division	10,000Kw./month
5. Grant-aided	In case of Single Stream In case of Double Streams In case of Triple Streams	42,500Kw./month 82,500Kw./month 122.500Kw./month

2-5 Project Cost Estimation

2-5-1 Initial Cost Estimation

(1) Costs to be borne by the Japan side (omitted)

(2) Costs to be borne by the Malawi side 18,764,000 Kw Approx. 13 million yen

The costs to be borne by the Malawi side will be calculated when the detailed design is completed. The following estimation is a reference cost amount calculated at the time of the outline design.

Items	Estimated Cost
Connection of city water	618,000 Kw (Approx. 0.4 million yen)
Connection of power supply (ESCOM)	3,640,000 Kw (Approx. 2.4 million yen)
Site clearing	10,532,000 Kw (Approx. 7.1 million yen)
Exterior work: cut slope	1,465,000 Kw (Approx. 1.0 million yen)
Exterior work: planting in court yards	544,000 Kw (Approx. 0.4 million yen)
Application for building permit	117,000 Kw (Approx. 0.1 million yen)
Banking commission concerning B/A or payment	1,848,000 Kw (Approx. 1.2 million yen)
Total	18,764.000 Kw (Approx. 12.6 million yen)

In addition to the above, the Malawi side needs to earmark an estimated 23 million Kw for the VAT arising out of the Project. (VAT on procuring services in Malawi for the Project)

(3) Assumptions

- Time of estimation: December 2009
- Exchange rates: US$ 1 = JPY 93.97, US$ 1 = Kw 139.46, Kw 1 = JPY 0.67
- Construction period: As given in the implementation schedule.
- Miscellaneous: The Project is to be implemented in accordance with Japan's grant aid scheme.

2-5-2 Operation and Maintenance Cost

Estimated hereunder is the costs necessary for operating and maintaining the facilities provided by the Project.

(1) Operation Cost

1) Personnel Cost

As a result of the implementation of the Project, some personnel are as shown in "Chapter 2-4-1. Operation Plan" of this report, needs to be newly hired at the six schools included in the Project. The following table provides the personnel cost needed by each school, based on the wage category for each job stipulated by the MoEST in 2009. The grand total of personnel cost at the six schools is estimated at 32,108,122Kw, equivalent to 0.27% of the MoEST's budget for personnel cost for fiscal year 2008/9 (11,779,767,480 Kw). This increase in personnel cost is deemed as to pose no concern in terms of budget, based on the year-on-year growth of the budget estimate for personnel cost for fiscal year 2009/10, which is approximately 21.1%.

Table 2-26 Estimated Personnel Cost for Newly-hired Teachers Needed (Unit: Kw)

School Name	Increased Employment	Teacher	Supporting Staff								Total
			Bursar	Matron	Asst. Lab-technician	Asst. Librarian	Cook	Service Staff	Gardener	Watchman	
	Salay Scale/annum	402,252	439,092	338,844	149,640	149,640	149,640	120,324	120,324	120,324	
1. Chikhwaza	Increased employment	6	1	1	1	1	3	1	1	3	18
	personnel cost	2,413,512	439,092	338,844	149,640	149,640	448,920	120,324	120,324	360,972	4,541,268
2. Dziwe	Increased employment	9	1	1	1	1	3	1	1	3	21
	personnel cost	3,620,268	439,092	338,844	149,640	149,640	448,920	120,324	120,324	360,972	5,748,024
3. Mseche	Increased employment	10	1	1	1	1	3	1	1	3	22
	personnel cost	4,022,520	439,092	338,844	149,640	149,640	448,920	120,324	120,324	360,972	6,150,276
4. Namalomba	New employment	7	1	1	1	1	3	1	1	3	19
	personnel cost	2,815,764	439,092	338,844	149,640	149,640	448,920	120,324	120,324	360,972	4,943,520
5. Nanjiriri	Increased employment	17	1	0	1	1	0	1	1	3	25
	personnel cost	6,838,284	439,092	0	149,640	149,640	0	120,324	120,324	360,972	8,178,276
6. Nankumba	Increased employment	3	1	0	1	1	0	1	1	3	11
	personnel cost	1,206,756	439,092	0	149,640	149,640	0	120,324	120,324	360,972	2,546,748
Total Increased Employment/ Total of personnel cost		52	6	4	6	6	12	6	6	18	116
		20,917,104	2,634,552	1,355,376	897,840	897,840	1,795,680	721,944	721,944	2,165,832	32,108,112

The figures in the above table are calculated by referring to annual wages as in the regulation governing wages of public servants, dated July 2009, as shown below, and estimating employment grades depending on respective job types.

Table 2-27 Estimated Annual Income of Teachers and School Staff

Occupation	Annual Salary: Kw	Remarks (Civil servant wage scale)
Teacher	402,252	As level of Grade J1
Bursar/ Senior Supervisor	439,092	As level of Grade J3
Matron	338,844	As level of Grade K5
Asst. lab-technician, Asst. librarian, Cook	149,640	As level of Grade M1
Guard, Gardener, Service staff	120,324	As level of Grade R1

Source: Schedule of Established Offices/With Effect from 1st July 2009: MoEST

2) Facility Operation Cost

The costs necessary for operating the facilities are estimated as shown in Tables 2-28 and 2-29.

- Water supply: Water supply charges are calculated as to two sites, where the usage of city water is planned (Nanjiriri and Nankumba), out of the six schools included in the Project. The other four sites (Chikhwaza, Dziwe, Mseche and Namalomba) will use wells, so no water charges will be incurred.
- Fuel: The use of electric power is assumed for the fuel for cooking at boarding schools. LPG gas for the laboratories will be regarded similarly to consumables and reagents to be provided by the government. Therefore, it is not included in the estimation here.
- Communications: Telephony and other communications means will be covered by the recipient country. Therefore, it is not included in the estimation here.
- Electricity: The development of power supply facilities is planned for the four sites, where the connection to municipal power is planned (Chikhwaza, Dziwe, Nanjiriri and Nankumba), out of the six schools included in the Project. Bare minimum power tariffs necessary for operating the facilities are calculated by assuming a normal use at a school facility.
- Assumptions: The schools are open on 5.5 days per week, including the morning of Saturday, for 40 weeks (or 280 days) in the year; the number of operating days is set as 220 days per year. For those facilities associated with hostels, i.e., girls' hostels and halls with kitchens, the number is assumed as 280 days.
- Staff house: Any power consumed by teachers will be paid by themselves. Therefore, it is not included in the estimation here.

Table 2-28 Estimated Water Consumption

☐Conditions for calculation of water consumption

Consumption: School Staff 8ℓ/person day, Student 5ℓ/person day, Hosteller 80ℓ/person day, Staff's resident family 80ℓ/person day
Max. consumption per day＝consumption/day × population, Average consumption per day＝Max. consumption per day ×0.7
Usage period: School staff and Student: 220 days/year, Hosteller: 280 days/year, Resident family: 365 days/year

☐Calculation result of annual water consumption

	School staff: 220 days		Student: 220 days		Hosteller: 280days		Resident family: 365 days		Average consumption/day	Annual Consumption (water charge)
	Population	Consumption /day	Population	Consumption /day	Population	Consumption/day	Population	Consumption/day		
1.Chikhwaza	28	224	320	1,600	112	8,960	40	3,200	9.8t	2,854.7t
2.Dziwe	28	224	320	1,600	112	8,960	40	3,200	9.8t	2,854.7t
3.Mseche	28	224	320	1,600	112	8,960	40	3,200	9.8t	2,854.7t
4.Namalomba	28	224	320	1,600	112	8,960	40	3,200	9.8t	2,854.7t
5.Nanjiriri	51	408	960	4,800	0	0	0	0	3.7t	802.0t
6.Nankumba	24	192	320	1,600	0	0	0	0	1.3t	276.0t

☐Calculation of water charge

School Name	Formulation of city water charge	Annual City Water Charge
1.Chikhwaza	Deep well supply/electricity consumption (354.6 kwh)	Allocate to ESCOM Charge
2.Dziwe	Deep well supply/electricity consumption (354.6 kwh)	Allocate to ESCOM Charge
3.Mseche	Deep well supply/solar panel	
4.Namalomba	Deep well supply/solar panel	
5.Nanjiriri Annual City Water Consumption: 802 tons (average 89.2 tons/month)	0-5 tons: 501 Kw ×12 months (basic charge)	
	5-10 tons: 103 Kw×5t×9 month operation	
	10-40 tons:123 Kw×30t×9 month operation	
	More than 40 tons: 136Kw×49.2t×9 month operation	104,078Kw
6.Nankumba Annual City Water Consumption: 276 tons (average 31.0 tons/month)	0-5 tons: 50 1Kw×12 months (basic charge)	
	5-10 tons: 103 Kw×5t×9 month operation	
	10-40 tons: 123 Kw×21t×9 month operation	
	More than 40 tons: 136Kw×0t×9 month operation	33,894Kw

Table 2-29 Estimated Power Consumption

Estimated electricity consumption by block	Electricity consumption: kWh/day	Electricity consumption: kWh/year	Estimate Condition
2 classroom blocks ×2 blocks	6.04	1,328.80	・Number of operation days per year: 220 days (Hostel: 280 days) Staff House/Guard House: 365days ・Average demand factor: Outlet circuit-0.1 Lighting fixture/others-0.85 ・Assumed service hours of electricity: Classrooms -2.0h/day Lighting for administration/housing-6.0h/day
2 classroom blocks ×3 blocks	9.06	1,993.20	
Administration/Library block	11.32	2,490.40	
Laboratory block	5.02	1,104.40	
Guard house	0.83	302.95	
Hostel×2 blocks	24.54	6,871.20	
Hall	3.10	868.00	
Kitchen	28.71	8,038.80	
Staff House (1unit)	6.3	2,299.50	
Deep well pump			・Consumption of Pumps: 0.75KW 100ℓ/minute
Scholing Period (weekday)	1.23	270.60	Water consumption: 9.79 ton/day (220 days)
Schooling Period (weekend)	1.06	84.80	8.50 tons/day (Hostel and House: 80 days)
Closing Period	0.28	23.8	2.24 tons/day (only house: 85 days)

Estimated annual electricity charge by site	Electricity consumption: kWh/year [A]	Annual electricity charge (Kw) [A]x4.09Kw./kWh
1.Chikhwaza CDSS (using deep well) 2 classroom blocks×2 blocks, Administration/Library block, Laboratory block,Guard House, Hostel×2 blocks, Hall, Kitchen + Deep Well Pump's consumption	21,383.75	87,459.537

2.Dziwe CDSS (using deep well) 2 classroom blocks×2 blocks, Administration/Library block, Laboratory block,Guard House, Hostel×2 blocks, Hall, Kitchen + Deep Well Pump's consumption	21,383.75	87,459.537
3.Mseche CDSS (using solar panel)		
4.Namalomba CDSS (using solar panel)		
5.Nanjiriri CDSS 2 classroom blocks×3 blocks, Administration/Library block, Laboratory block, Guard House	5,890.95	24,093.985
6.Nankumba CDSS 2 classroom blocks×2 blocks, Administration/Library block, Laboratory block, Guard House	5,226.55	21,376.589
6 schools in total	53,885.000	220,389.640

(2) Maintenance Cost

The table below estimates the cost necessary for maintaining the facilities, furniture, laboratory materials and apparatus provided by the Project. These maintenance costs are to be allotted to ordinary maintenance work, such as local repair of external walls and paints on inner and outer steel and wooden parts, partial repair of roofs, replacement of damaged metal fittings and valves for lighting fixtures, partial replacement of components of sanitary facilities, and replacement of parts of damaged furniture or laboratory apparatus. Expenses for large-scale, long-term repair work will be catered to independently by the MoEST's investment budget.

Table 2-30 Annual Maintenance Cost by Site (Unit: Kw)

School Name	Annual Maintenance Cost				
	Buildings		Buildings		Buildings
1.Chikhwaza	160,000	140,000	125,000	9,000	434,000
2.Dziwe	160,000	140,000	125,000	9,000	434,000
3.Mseche	185,000	165,000	125,000	9,000	484,000
4.Namalomba	190,000	170,000	125,000	9,000	494,000
5.Nanjiriri	45,000	40,000	20,000	9,000	114,000
6.Nankumba	40,000	35,000	15,000	9,000	99,000

*Ordinary maintenance costs are estimated as follows, based on the contents and specifications of the facilities planned in the Project, by referring to building maintenance cost data in Japan.
Building maintenance cost: Building construction cost × 0.2%/2
Facility maintenance cost: Facility construction cost × 1.0%/2
Furniture maintenance cost: Furniture installation cost × 1.5%/2
Laboratory materials and apparatus maintenance cost: Laboratory materials cost × 0.2%/2

(3) Grand Total of Maintenance Cost

The above estimations are summed in the following table as annual maintenance costs necessitated as a result of the implementing the Project, excluding personnel cost that will be covered by the government.

Table 2-31 Estimated Annual Costs for Operation and Maintenance (Unit: Kw)

School Name	City Water Charge	Electricity Charge	Maintenance Cost	Total
1.Chikhwaza	(Deep Well)	87,459	434,000	521,459
2.Dziwe	(Deep Well)	87,459	434,000	521,459
3.Mseche	(Deep Well)	(Solar Panel)	484,000	484,000
4.Namalomba	(Deep Well)	(Solar Panel)	494,000	494,000

5.Nanjiriri	104,078	24,094	114,000	242,172
6.Nankumba	33,894	21,377	99,000	154,271

Table 2-32 below shows the ratio of the estimated annual maintenance cost to the estimated annual ordinary budget at the project schools in two cases (CDSS not approved and CDSS cost center).

Table 2-32

Ratio of Estimated Maintenance Cost to Estimated Ordinary Budget (Unit: thousand Kw)

School Name	Estimated School Fee from Parents							Estimated Annual Revenue (2 cases)		Annual Reserve for Operation and Maintenance (O&M)				Raito of Estimated Annual Reserve	
	Items	Tuition	TRF	Bording Fee	GRF	SDF	Total School Fee from Parents	Revenue 【A】 add.ORT CDSS/NC	Revenue 【B】 add.ORT CDSS/CC	City Water Charge	Electricity Charge	Bldgs./ Facilities/ Furniture/Equi.	【M】 Annual Reserve for O&M	【M】 ／ 【A】	【M】 ／ 【B】
	1,000 Kw/Stud	1.50	0.25	4.50	1.50	1.50	9.25	120	500						
1. Chikhwaza	Students	320	320	112	320	320									
	Fee	480	80	504	480	480	2,024	2,144	2524	0	87.46	434	521	**24.3%**	**20.7%**
2. Dziwe	Students	320	320	112	320	320									
	Fee	480	80	504	480	480	2,024	2,144	2,524	0	87.46	434	521	**24.3%**	**20.7%**
3. Mseche	Students	320	320	112	320	320									
	Fee	480	80	504	480	480	2,024	2,144	2,524	0	0.00	484	484	**22.6%**	**19.2%**
4. Namalomba	Students	320	320	112	320	320									
	Fee	480	80	504	480	480	2,024	2,144	2,524	0	0.00	494	494	**23.0%**	**19.6%**
5. Nanjiriri	Students	480	480	0	480	480									
	Fee	720	120	0	720	720	2,280	2,400	2,780	104.08	24.09	114	242	**10.1%**	**8.7%**
6. Nankumba	Students	320	320	0	320	320									
	Fee	480	80	0	480	480	1,520	1,640	2,020	33.89	21.38	99	154	**9.4%**	**7.6%**

Note) CDSS/NC: Categorized as CDSSs/not cost centers shall have the Governmental ORT(Other Recurrent Cost) in the annual amount of 120,000 Kw. through education
Note) CDSS/CC: Categorized as CDSSs not approved / cost center shall have the Government ORT in the annual amount of 500,000 Kw. if form 1 to 4.
(Sorce: Malawi Education Country Status Riport (CRS 2008/09) page 133.

The four schools with girls' hostels, to be constructed in rural area, have higher ratios than those at the other two schools. In case of Budget 【A】, which assumes the school type as CDSS not approved (with the government's annual allocation of 120,000 Kw/year), as they are today, it ranges from 22.6 to 24.3%, while, in case of Budget 【B】, which assumes approved/cost centers, it decreases to between 19.2 and 20.7%. The ratios at the schools included in the Project, as ascertained in this study, are from 18 to 28.1%, an average of the four being 22.3%. Thus, it is deemed possible to secure the estimated annual maintenance cost even in case of Budget 【A】.

If the schools are transformed into cost centers after the completion of the Project, the ratios will go down. Therefore, the MoEST is strongly called on to consider the upgrading of the school types of the schools included in the Project. Incidentally, the ratio of payment of tuition and other necessary fees by parents stands at approximately 70 percent on average among the six schools, the least being 26.9% (Dziwe). It is called for to attain the parents' understanding of and cooperation in cost bearing by beneficiaries, in order to improve the payment ratio.

2-6 Other Relevant Issues

Attention needs to be paid to the following issues as for the work which Malawi is responsible for and its schedule that will have direct impact on smooth implementation of the Project as well (See Table 2-22).

(1) Acquisition of building permit

Application for building permit is submitted only for the Nanjiriri CDSS that is the only project site located within the city assembly zone. Because it usually takes two months to obtain approval, the application procedures need to be begun in an early stage of the Project. (The applicant of the building permit is the Ministry of Education, Science and Technology and the application is submitted to the City Council for Building Permission of Blantyre.)

(2) Site development

The Malawi side needs to cut trees and remove roots and reclamation that may hinder the construction work of all the six project sites. The work needs to be completed before the start of the construction work. If the completion gets behind the schedule, it will cause a serious problem on the cost in terms of the contract with the construction companies. Malawi's executing body is required to ensure the completion without delay for the smooth operation of the Project.

(3) Connection of electricity and city water

The Malawi side is also responsible for drawing in electricity into four sites and city water into two sites. The work needs to be performed at an appropriate time in the latter half of the Project schedule in accordance with the progress of electricity and water supply work on each site. The executing body needs to make arrangements for the connection and allocate the budget for it for the smooth operation of the Project.

(4) Blanket Disbursement Authorization (BDA)

The Ministry of Education, Science and Technology needs to have the Ministry of Finance to allocate the budget to establish a bank arrangement to enable the National Bank of Malawi to pay the fees for advice on Blanket Disbursement Authorization to the Japanese bank and handling fees of the payment before the project implementation. It is important to note that delay of the budget allocation will delay payments to construction companies and that it will directly affect the progress of the work.