(4) Utility and Building Facility Plan

1) Basic Concept

As for the basic concepts of the Utility and Building Facility Plan, it should first be taken into consideration that the Project facility is a Health Manpower Training Institution. Then, the local electricity, telephone, water supply, and sewerage situations, facility maintenance methods, operation and maintenance costs should be taken into account.

a) In view of the nature of work to be conducted at the Health Manpower Training Institution, the following two points should be considered:

① By taking into account the possible variation of the number of facility users, basic facilities should be planned.

② Safety measures for the environment: It should be kept in mind that environmental impact is minimized by designing environmentally sound facility. As a result, produced sewage and waste should be examined and appropriate measures should be planned.

b) In order to clarify the boundary of the work to be borne by the Indonesian and Japanese sides, the facility plan should be made so that existing facilities in the Project site are not affected. New facilities for the Project should be independent from the existing ones. In addition, functions of existing facilities and new facilities to be built by the Project should be clarified and new facilities should function together with existing facilities from an operational viewpoint.

c) From the viewpoint of easy procurement of spare parts, easy facility maintenance and repair, and easy facility operation and management, equipment and materials for the project should be locally standardized products.

d) Minimum necessary air conditioning systems should be provided in order to maintain suitable room conditions for the laboratories and computer rooms.

e) As low utility costs are very important for facility maintenance and operation, the facility plan should be made by taking into consideration energy saving measures.

<BAPELKES-MND>

1) Power and Transformer Facilities (MND)

The new facility will receive 3 phase 3 wire 20KV 50Hz electricity. The Indonesian side will install power lines from the nearest existing lines to a new PLN room that will be built by the Japanese side. The new PLN room that conforms to the standards of P.T. PLN (including partitions and a cable handing room) will be built at a location that can be reached from above ground within the project site. The Indonesian side will install power meters, power control equipment, and circuit breakers in the PLN room. After the completion of the project, the PLN room will be managed by P.T. PLN (PERSERO). 20KV cables will be installed by the Japanese side from the PLN room to the existing transformer room.

As electricity fees are charged based on two different rates—night peak rates (from 18:00 to 22:00) and off peak rates (from 22:00 to 18:00)—a demand meter and two rate meters should be installed in the PLN room.

A new electrical room will be built next to the PLN room in order to minimize cable installation work and provide easy access. Although the power generation of Indonesia has greatly improved since the new power plant constructions, the power supply is still insufficient. Power supply outages during rainy seasons and voltage variations are frequent.

As there is no factory around the Project area that cause voltage variations and as the power supply is 20KV. It is believed that there will be no significant voltage variations in this. However, by taking into account the nature of the Project facility, a transformer unit equipped with a non-voltage tap changing device should be installed to overcome contingent voltage variations. In addition, computers should be equipped with automatic voltage regulators (AVR) and uninterruptive power supply (UPS) by equipment works.

As existing 220/380V 50Hz power lines will interfere with new auditorium building construction, the Indonesian side shall undertake rerouting work of the power lines prior to commencing building construction work.

The capacity of the transformer unit was planned as follows:

Power demand for lighting fixtures, outlets, and equipment units:

Floor area 3,760m^2 x 80VA／m^2 = 300.8KVA say 310KVA

By assuming the power use rate as being 0.8 and by taking into account the safety factor of 1.25,
310 KVA x 0.8x 1.25≒ 310KVA

The necessary transformer capacity should be more than 310KVA. Thus, a locally obtainable 315KVA standard unit should be installed.

2) Generator and Main Feed Wiring (MND)

During the site study , the study team experienced power outages several times a day. As a result of the discussions with BAPELKES, the team found that power outages frequently occur during the rainy season from November through February. Sometimes, it takes several hours to restore the power supply. To overcome the issue, an emergency generator system should be provided to secure necessary work functions and maintain pump operation and security lights. Ten hours of continuous generator operation should be taken into consideration.

Based on the statistical power use value of 25VA/m^2, the necessary generator capacity should be 25KV/ m^2 x 3,760 m^2 ≒ 100KVA.

By taking into consideration easy maintenance and equipment reliability, the generator unit should be a diesel engine type equipped with durable, easily maintainable, and reliable accessory units.

The main feeder wiring should be 3 phase 220/380V 50Hz 4 wires. The wires should be installed from the main distribution panel to each facility's distribution panel. Wire capacities should be decided upon by taking into account the amount of power demand in each facility, and wire installation should be safe and easy.

As a general principle, wire installation should be a cable rack method in an utility shaft and a piping method or conduit method in other areas.

3) Lighting Fixtures and Outlets (MND)

The existing facility has an inadequate lighting system and is not suitable as an educational environment. As rainfall in Indonesia during rainy season is severe, umbrellas and raincoats are often useless. The indoors become very dark during rain storm. Thus, it would be necessary to provide rooms with a lighting system sufficient for conducting training programs even on rainy days.

Illuminance for each rooms should be decided upon by referencing the Japan Industrial Standards' (JIS) average required illuminance standards and by taking into consideration Indonesian situations.

For energy saving purposes, a training room's illuminating area should be subdivided into small portions by installing many switch circuits in order to control lights in the room in accordance with the type of training to be held. Illuminance standards for the rooms should be as follows:

Room Name	Design Illuminance (lx)
- Classrooms	300
- Library	500
- Trainer rooms	300
- Meeting rooms, Discussion rooms	300
- Printing room	300
- Dormitory rooms	300
- Special training rooms	300
- Corridor	100
- Toilets	100
- Storage	70

As for outdoor lighting, pole mounted mercury lamps should be installed at each building entrance around buildings for security purposes. Automatic on/off and manual switches should be equipped on the poles.

Training rooms should be provided with grounded 16A outlets.

4) Telephone (MND)

The Indonesian side will install five telephone lines (including three public telephone lines) from existing lines to the main distribution frame in the project site. The Japanese side will provide underground conduits for cable installation in the Project site.

As telephone line fees are very expensive in Indonesia, a private automatic branch exchange (PABX) unit should be installed to effectively utilize the limited number of telephone lines.

As BAPELKES has requested the installation of a small number of telephone lines to connect PABX and a greater number for public telephones, two of the five lines will be connected to PABX and the other three lines will be used for public telephones. A PABX will be installed in the warden's room. A rechargeable battery and a battery charger will be provided for use during power outages.

Telephone units to be connected to PABX are as follows:

		Number of Units
First Fl.	Warden room	1
	Kitchen	1 (*)
	Dining room	1 (*)
	Lounge	1 (*)
	Lobby	1 (*)
	Trainers room 1	1 (*)
	Trainers room 2	1 (*)
	Library	1 (*)
	Print room	1 (*)
	Auditorium	1 (*)
Second Fl.	Classroom	1 (*)
	Special training Room	1+1 (*)
Third Fl.	Classroom (M-1)	1 (*)
	Classroom (L-2)	1 (*)
		Total 15 units

The telephone unit in the Warden's room should have an outside call capability. Other units indicated with * are without outside call capability. One telephone line in the special training room should be for dedicated internet use.

As shown above, 14 telephone units and one internet line should be installed.

A total of three public telephones will be installed, in one of each in of the auditorium, the dormitory lobby and the lobby of training building. Conduits for telephone wire installation will be installed from the main distribution frame to each unit connection point by the Japanese side.

5) Public Address System (MND)

As the Project facility will be used for training health personnel, a public address system having speakers, microphones, and an amplifier will be provided for relaying messages to trainees and trainers and for giving lectures and speeches in the auditorium.

Ceiling type speaker units should be installed in classrooms . Speakers in other rooms should be wall mounted types. For emergency use during a power outage , the public address system should be provided with rechargeable batteries and a recharger unit (30 minute recharging).

6) Clock (MND)

A large electrical clock using rechargeable batteries will be installed on the exterior wall of a Project building. A master clock (control panel) for the electrical clock will be installed in the warden's room.

7) Fire Alarm System (MND)

As fire alarm system will be installed. It should be in conformance with the Indonesian Fire Code "Dinas Pemada Kebakaran". However, a call point unit (Manual Pull-down Station) should be provided for immediate fire warnings, so that people can be quickly evacuated and fire fighting action promptly taken.

As alarm panel equipped with a siren, red light and bell should be installed on each floor of each building. A fire alarm monitoring panel should be installed in the warden's room. The monitoring panel must be equipped with rechargeable batteries and a recharger unit to prepare for power outages.

8) Lightning Protection System (MND)

An EF type lighting rod shall be installed on the rooftop of the Project building. Its grounding resistance should be less than 5½. A grounding indication panel having a test connection should be provided.

9) Water Supply System (MND)

As city water pressure is low, water should be stored in a receiving tank then pumped up into an elevated reservoir tank. The water should be distributed by gravity flow to various use locations. This water supply system is simple to maintain because of its low energy use.

Discussions held with BAPELKES revealed that water supply suspensions occur rather frequently. By taking into account this issue, the capacity of the receiving tank should be sufficient to store water for 36 hours' (1.5 days) use. For sanitary reason, the receiving tank should be an above ground type. To allow periodical cleaning, the receiving tank as well as the elevated tank should have two chambers.

Relatively low cost polyvinyl chloride (PVC) pipes that can handle high pressure and are easy to install should be used for water distribution pipes.

a) Water Use Amount:

	Persons x litres/person/day = litres/day
Staff:	44 x 80 = 3,520
Visitors and trainees:	200 x 10 = 2,000
Dormitory boarders:	80 x150 = 12,000
	Total: 17,520
Yard sprinkling:	5,000 litres/day
	Grand Total: 22,520 litres/day , say 23m^3/day

b) Capacity of Water Receiving Tank:

Amount of one day use water: 23m^3/day
To store 70% of one day use water: 23m^3 x 1.5 = 34.5m^3, say 35m^3

The tank should be 3m x 5m x 3m (H) having a FRP partition

Fire fighting water tank: 60m^3 (reinforced concrete made underground tank)

c) Elevated Water Tank

One sixth of one day use water is to be stored:

23m^3 x 1/6 = 3.8m^3, say 4m^3 (2.5m x 1.0m x 2m (H) having a FRP partition)

d) Pump Capacity (assumed to provide 6 hours of supply through the elevated tank):

Average hourly supply: 23m^3 / 6hrs = 3.8m^3/hr
Maximum hourly supply: 3.8m^3 / hr x 2 = 7.6m^3/hr
Instantaneous Max. supply: 3.8m^3 x 3 = 11.4m^3/hr, say 190 litres/min
Pump Capacity: 200 litres/min x 39mH x 5.5KW (Automatic switching operation)

Individual hot water supply system shall be installed in the bathtub of dormitory (5 room only) for very important person.

10) Fire Fighting System (MND)

The Project facility will be provided with a fire fighting system. It should conform to the Indonesian Fire Code "Dinas Pemada Kebakaran". In view of life safety, fire plugs and fire extinguishing units will be installed.

11) Sewerage System (MND)

As no public sewerage system is installed in the Project area, sewage from existing facilities of BAPELKES is treated in septic tanks and directly infiltrated into the ground through infiltration tanks. However, as the groundwater table becomes high during the rainy season, it is considered that sufficient sewer infiltration will not be attained and an unsanitary condition may arise. Thus, it is planned to install a sewage treatment tank by taking into consideration environmental effects on the surrounding area. Treated sewage will be discharged into a drainage line. As it is expected that the Indonesian sewerage standards will be upgraded in the future, the sewage treatment tank shall be an independent type treatment tank can maintain BOD of less than 90ppm.

12) Sanitary Fixtures (MND)

Selection of sanitary fixtures should be conducted by considering Indonesian customs and sanitary situations.

BAPELKES' existing bathrooms have local type toilet bowls. In accordance with the request of BAPELKES, western type and local type toilet bowls will be installed in the Project facility. In addition, each toilet booth will be provided with a spray wash unit. Sanitary fixtures should be locally obtainable types from the viewpoint of easy procurement and maintenance work.

13) Kitchen Facility (MND)

By taking into account sanitary conditions in the kitchen, installation of counters for partitioning, dish washing equipment, sinks, food storage, and staff entrances should be planned. Kitchen size should be sufficient to cook 200 meals three times a day. As main meals will be rice, the kitchen should be equipped with propane gas rice cookers and ranges.

Major kitchen equipment should be as follows:

- Gas rice cooker (Equipment Works)
- Gas range (Equipment Works)
- High temperature gas range (Equipment Works)
- Sink
- Dresser and preparation tables
- Dish and pot shelves (Equipment Works)
- Freezer
- Refrigerator (Equipment Works)
- Utensil (Equipment Works)

14) Propane Gas Facility (MND)

The kitchen should be provided with a propane gas system. 50kg gas cylinders that are easy to obtain will be used. A gas cylinder room will be built at location where it will be easy to replace and handle gas cylinders. Hard pipes will be installed from the gas cylinder room to each kitchen equipment.

15) Ventilation and Air Conditioning System (MND)

BAPELKES (CILANDAK, PALU, and KENDARI) and CET's existing training rooms, chief rooms, offices, and meeting rooms are provided with air conditioning systems. Based on the fact and by taking into consideration Indonesian high temperature and high humidity weather and geographic conditions, a minimum necessary air conditioning system should be provided for the Project facility.

The Project will provide electronic laboratory equipment units and computer units. To maintain these equipment units in favorable operational condition throughout the equipment service life, it is considered that the installation of air conditioning systems in the computer rooms and special laboratory rooms is absolutely necessary. Adequate air conditioning capacity should be selected by assuming the unit cooling load of 150kcal/h/m^2.

Project facility rooms that do not have an air conditioning system should be provided with ceiling mounted fan units. The following rooms of the Project building will be provided either with an air conditioning system or ceiling mounted fans:

First Fl.	- Auditorium
	-Trainer room 1,2
	- Library
	- Dormitory*
	- Dining room*
	- Lounge*
	- Lobby*
	- Warden room*
	- Printing room*
Second Fl.	- Dormitory*
	- Special training room
	- Classroom(L-1)
Third Fl.	- Classroom (M-1)*
	- Classroom (L-1)*
	- Dormitory*

The rooms marked with asterisks (*) will have ceiling fans. In the future they will be provided with air conditioning systems by the Indonesian side. Thus, electrical

outlets should be installed in those rooms. Rooms without asterisks (*) will be provided with air conditioning systems.

The air conditioning systems should be ceiling mounted cassette types.

As a general principle, a natural ventilation system should be used. However, the kitchen, electric room, generator room, pump room, and bathrooms have to be provided with a mechanical ventilation system.

16) Incinerator (MND)

Installation of an incinerator should be planned to handle the amount of garbage produced by both the existing facility and the new Project facility. As the investigation result of the site study data, it is assumed that approximately 70kg/day of garbage will be produced by both facilities. Based on the premise that the daily garbage is to be incinerated in a one hour period, installation of one small incinerator unit having a capacity of 20kg/hr will be sufficient.

<BAPELKES-UPD>

1) Power and Transformer Facilities (UPD)

PT. PLN's (PERSERO) 3 phase 3 wire 20KV 50Hz power lines are connected to the BAPELKES site. The high voltage power is stepped down by a pole mounted transformer (from 20KV to 220/380V) and connected to a distribution panel. Power for the Project facility will be taken by the same method from the existing poles and distributed by 3 phase 4 wire 220V/380V to each new facility.

Power demand for lighting fixtures, outlets, and equipment units:

Dormitory: $840m^2$ x $65VA/m^2$ = 54,600VA, say 55KVA
Auditorium: $859m^2$ x $95VA/m^2$ = 81,600VA, say 85KVA
Total: 140KVA

By assuming the power use rate as being 0.6 and by taking into account of a safety factor of 1.25,

140 KVA x 0.6 x 1.25 ≒ 110KVA

Thus, the necessary power supply for the Project facility will be 110KVA.

2) Generator and Main Feed Wiring (UPD)

During the site study period, the study team experienced power outages several times a day. As a result of the hearing surveys with BAPELKES, the team learned that power outages frequently occur during the rainy season from November through May. Sometimes it takes several hours to restore the power supply. To overcome the situation, an emergency generator system should be provided to maintain minimum necessary work functions and secure pump operation and security lights. Ten hours of continuous generator operation should be taken into consideration.

Based on the statistical power use value of $80VA/m^2$, the necessary generator capacity should be approximately 70KVA (80KV m^2 x 861 m^2 = 70KVA.

By taking into consideration easy maintenance and equipment reliability, the generator unit should be a diesel engine type equipped with durable, easily maintainable, and reliable accessory units.

The main feeder wiring should be 3 phase 220/380V 50Hz 4 wires. The wires should be installed from the main distribution panel to each facility's distribution panel. Wire capacities should be decided upon by taking into account the amount of power demand in each facility and wire installation safety as well as easy installation work.

As a general principle, wire installation should be a cable rack method in an utility shaft and piping method or conduit method in other areas.

3) Lighting Fixtures and Outlets (UPD)

The existing facility has an inadequate lighting system is not suitable for an education environment. As rainfall in Indonesia during rainy seasons is severe, umbrellas and raincoats are often useless. The indoors become very dark during rain storms. Thus, it would be necessary to provide rooms with a lighting system sufficient for conducting training programs even on rainy days.

Illuminance for each rooms should be decided upon by referencing the Japan Industrial Standards' (JIS) average required illuminance standards and by taking into consideration Indonesian situations.

For energy saving purposes, a training room's illuminating area should be subdivided into small portions installing many switch circuits in order to control lights in the room in accordance with the type of training to be held. Illuminance standards for the rooms should be as follows:

Room Name	Design Illuminance (lx)
- Dormitory	300
- Special training room	300
- Corridor	100
- Toilets	100
- Storage room	70

As for outdoor lighting, pole mounted mercury lamps should be installed at each building entrance and around the buildings for security purposes. Automatic on/off and manual switches should be equipped on the poles.

Training rooms should be provided with 16A grounded outlets.

4) Telephone (UPD)

The Indonesian side will install four telephone lines (three public telephone lines and one internet line) from existing lines to the main distribution frame in the Project site. The Japanese side will provide underground conduits for cable installation in the Project site.

As BAPELKES has requested the installation of many public telephone lines, three of the four lines are for public telephones.

Telephone units are as follows:

First floor: special training room:	1 + 1 (*)
Total	2

The telephone units with asterisks indicate internet connections.

Two of the three public telephones will be installed in the auditorium, the other in the lobby. Conduits for telephone wire installation will be installed from the main distribution frame to each unit connection point by the Japanese side.

5) Interphone System (UPD)

An interphone system will be installed to communicate between the kitchen, dressing room, classrooms, and pantry as follow:

Interphone type:	Two-way method
Number of units:	5

6) Public Address System (UPD)

As Project facility will be used for training health personnel, a public address system having speakers, microphones and an amplifier will be provided for relaying messages to trainees and trainers and for giving lectures and speeches in the auditorium. Ceiling type speaker units in classrooms should be installed with. Speakers in other rooms should be wall mounted types. For emergency use during power outages, the public address system should be provided with rechargeable batteries and a recharger unit (30 minute recharging).

7) Fire Alarm System (UPD)

A fire alarm system will be installed. It should be in conformance with the Indonesian Fire Code "Dinas Pemada Kebakaran". However, a call point unit (Manual Pull-down Station) should be provided for immediate fire warnings, so that people can be quickly evacuated and fire fighting action promptly taken.

An alarm panel equipped with a siren, red light, and bell should be installed on each floor of each Project building. A fire alarm monitoring panel should be installed in the security room. The monitoring panel must be equipped with rechargeable batteries and a recharger unit to prepare for power outages.

8) Lightning Protection System (UPD)

An EF type lighting rod shall be installed on the rooftop of the Project building. Its grounding resistance should be less than 5½. A grounding indication panel having a test connection should be provided.

9) Water Supply System (UPD)

The existing water receiving tank and pump will be used for the Project facility. Water in the existing receiving tank will be pumped up into a new elevated water tank (to built on the existing elevated water tank supporting structure) by using the existing pump then distributed by gravity flow to various use locations. This water supply method is simple to maintain because of its low energy use.

Relatively low cost polyvinyl chloride (PCV) pipes that can handle high water pressure and easily to installable should be used for water distribution pipes.

a) Water Use Amount

	Persons x litres/person/day = litres/day
Staff:	30 x 80 = 2,400
Visitors and trainees:	300 x 10 = 3,000
Dormitory boarders:	40 x150 = 6,000
	Total: 11,400 litres/day
Yard sprinkling:	1,000 litres/day
	Grand Total: 12,400 litres/day, say 13m^3/day

b) Receiving and Elevated Tanks (UPD)

From available data, the water use amount in the existing facility is assumed to be approximately 5m^3/day. Thus, necessary water for the Project facility will be supplied by adding an approximately 8 m^3 capacity to the new elevated water tank with the existing water receiving tank having the capacity of approximately 10 m^3.

New elevated water tank: 8m^3 (2m x 2m x 3m (H) FRP made tank)
Fire fighting water tank: 60m^3 (reinforced concrete made underground tank)

10) Fire Fighting System (UPD)

The Project facility will be provided with a fire fighting system. It should conform with Indonesian Fire Code "Dinas Pemada Kebakaran". In view of life safety, fire plugs and fire extinguishing units will be installed.

11) Sewerage System (UPD)

As no public sewerage system is installed in the Project area, sewage from existing facilities of BAPELKES is treated in septic tanks and directly infiltrated into the ground through infiltration tanks. However, as the groundwater table becomes high during the rainy season, it is considered that sufficient sewer infiltration will not be attained and an unsanitary condition may arise. Thus, it is planned to install a sewage treatment plant by taking into consideration environmental effects on the surrounding area. Treated sewage will be discharged into a drainage line. As it is expected that the Indonesian sewerage standards will be upgraded in the future, the sewage treatment plant shall be an independent type treatment tank can maintain BOD of less than 90ppm..

12) Sanitary Fixtures (UPD)

Selection of sanitary fixtures should be conducted by considering Indonesian customs and sanitary situations.

BAPELKES' existing bathrooms have local type toilet bowls. In accordance with the request of BAPELKES, western type and local type toilet bowls will be installed in the Project facility. In addition, each toilet booth will be provided with a spray wash unit. Sanitary fixtures should be locally obtainable types from the viewpoint of easy procurement and maintenance work.

13) Ventilation and Air Conditioning System (UPD)

BAPELKES (CILANDAK, PALU, and KENDARI) and CET's existing training rooms, chief rooms, offices, and meeting rooms are provided with air conditioning systems. Based on the fact and by taking into consideration Indonesian high temperature and high humidity weather and geographic conditions, a minimum necessary air conditioning system should be provided for the Project facility.

The Project will provide electronic laboratory equipment units and computer units. To maintain these equipment units in favorable operational condition throughout the equipment service life, it is considered that the installation of air conditioning systems in the computer rooms and special laboratory rooms is absolutely necessary. Adequate air conditioning capacity should be selected by assuming the unit cooling load of 150kcal/h/ m^2.

Project facility rooms that do not have an air conditioning system should be provided with ceiling mounted fan units. The following rooms of the Project building will be provided either with an air conditioning system or ceiling mounted fans:

First Floor	- Auditorium
	- Special Training room
	- Dormitory*
	- Lobby*
Second Floor	- Dormitory*

The rooms marked with asterisks will have ceiling fans. In the future, they will be provided with air conditioning systems by the Indonesian side. Thus, electrical outlets should be installed in those rooms. Rooms without asterisks will be provided with air conditioning systems.

The air conditioning systems should be ceiling mounted cassette types.

As a general principle, a natural ventilation system should be used. However, the kitchen, electric room, generator room, pump room, and bathrooms have to be provided with a mechanical ventilation system.

(5) Building Material Plan

1) Basic Policy

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

a) The local procurement of construction materials shall be considered to reduce construction costs and shorten the construction period.

b) The maintenance and operation costs shall be reduced by considering the adaptation to the local climate, resistance against climate and the selection of materials that are easy to maintain.

c) It is important to note that the selection of material should be taken for satisfying the essential functions of BAPELKES and for the effectiveness of training and must be considered along with the utility and equipment plans.

d) Selection and determination of the building materials shall be based on the studies for the local procurement or application of local construction methods.

2) Main Finishing Materials

The selection of the main finishing materials used for the building should take into consideration the local construction situation and construction schedule, as well as for reducing in operation and maintenance costs.

a) Structural Materials

In principle, the usual materials shall be reinforced concrete for the main frames with brick walls. It is necessary to consider the quality and supply of aggregate such as cements, gravel, and bricks. However, for the roof structure, it is necessary to consider a steel frame.

b) Exterior Finishing

For weather-proofing, bituminous membranes and sheet metal should be used as finishing materials. Exterior walls will be painted with long-lasting weatherproof paint.

Roofs

The roof of the existing building (MND, UPD) is made of coloured metal sheets approved as Indonesian standard material for Class B public facilities. However, the tile roofing system (clay or cement) will be adopted for the new building to avoid corrosion from sea breezes, sound proofing from heavy rain and heat proofing from strong sunlight. The appearance of the roof tile also matches the surrounding landscape.

Window and Doors

In order to provide fresh air and light, aluminum windows can provide better conditions than wooden windows in Indonesia. Aluminum windows are becoming more popular in recent years in Indonesia because of their advantage both in maintenance costs and durability.

Floors

The floors of most recently constructed BAPELKES' buildings are made of ceramic tile. Because of the excellent wearing characteristics, ceramic tile will be used for this project. However, corridor floors are best finished with non-slip ceramic tile.

c) Interior Finishing

Interior finishing materials will be selected to match room functions and space use.

Floors

Flooring material should be durable and easy to maintain. Ceramic tiles in combination with plastic tile will be used.
Flooring material for the Auditorium will be selected by considering the multiple use of the space.

Walls

Painted on surfaces or mortar setting bed will be used as the finishing material for interior walls. It is desirable that the interior walls should be easy to clean.
Auditorium walls will be selected to provide the best for sound and lighting effects.

Ceilings

Suspended ceilings of painted gipsumboard or mineral ceiling board are installed in each room of the existing buildings. Therefore, the same idea will be applied.

The auditorium ceiling will be also selected to provide the most favorable sound and lighting effect of the space.

3) Main Materials Proposed

The criterion for building materials were studied in 2-3-3(5). Based on the above, main materials proposed are as follows;

Table 2-5(1) Main Materials Proposed for BAPELKES-MND

		Auditorium	Training and administraition rooms	Dormitory	Dining room	Corridor
Exterior Finishing						
Structure		Rainforced concrete and steel structure				Rainforced concrete
Floor height		—	3910	3200	—	3200
Roof		Roof Tile				
Eaves		Epoxy Painting				
Exterior walls		Mortar Trowel Sprayed Epoxy Painting Perforated Block with Exterior Paint				
Windows Doors		Aluminum 〃				
Exterior floors		Mortar bed Ceramic tile (Non-slip)				
Exterior ceilings		Plaster board (V.P.)				
Interior Finishing						
Floors		Mortar bed Ceramic tile Stone Base tile Wood flooring	Mortar bed Ceramic tile Base tile PVC tile	Mortar bed PVC tile	Mortar bed Ceramic tile	—
Walls		Mortar bed Epoxy paint Wood finish	Mortar bed Epoxy paint Free access floor	Mortar bed Epoxy paint	Mortar bed Epoxy paint Wood finish	—
Ceilings		Rockwool board (E.P.)	Plaster board (E.P.)	Plaster board (3F) Epoxy paint (1F,2F)	Rockwool board (E.P.)	—
W.C.	Floors Walls Ceilings	Ceramic tile Ceramic tile Plaster board (V.P.)				—

Table 2-5(2) Main Materials Proposed for BAPELKES-UPD

		Auditorium	Dormitory
Exterior Finishing			
Structure		Rainforced concrete & steel structure	Rainforced concrete & steel structure
Floor height			3,200mm
Roofs		Roof tile	
Eaves		Epoxy Painting	
Exterior walls		Mortar Trowel Sprayed Epoxy Painting Perforated Block with Exterior Paint	
Windows Doors		Aluminum "	
Exterior floors		Mortar Bed Ceramic Tile (Non-slip)	
Exterior ceilings		Plaster Board (V.P.)	
Interior Finishing			
Floor		Mortar bed Ceramic tile, Stone Base tile, Wood flooring	Mortar bed PVCtile Ceramic tile
Wall		Mortar bed, Epoxy paint, Wood finish	Mortar bed, Epoxy paint
Ceiling		Rockwall board and Wood finish	Mortar bed, Epoxy paint
W.C.	Floors	Ceramic tile	Ceramic tile
	Walls	Ceramic tile	Ceramic tile
	Ceilings	Plaster board and V.P.	Plaster board and V.P.

(6) Equipment Plan

1) Basic Policy

The equipment plan was formulated according to the requested equipment list based on the following concept:

a) Priority

The items under priority C, although there is a strong request from the counterpart, is not clear as to purpose of use or necessity. The items under priority A are clear as to purpose of use and necessity as well as handling ability. The items under priority B are clear as to purpose of use and necessity but do not directly affect the training results. The item under priority A will be accepted and the items under priority B and C will be decided upon after a more extensive study for their justification.

b) Curriculum and training method

For the audio visual aid and special training rooms, the relevance between the curriculum and training method will have to be evaluated.

c) Balance with other BAPELKES

The balance of requirements, as compared to other BAPELKES in Sulawesi, will be taken into consideration for deciding upon the equipment and corresponding quantities needed. At the same time, the scale of the facility and training course, such as number of training rooms and training classes should be properly matched.

d) Equipment operation and maintenance system

The staff necessary for equipment use should be secured and efficient maintenance should be available. Regular inspections and repair work should be made at the site.

2) Design policy on quantity

a) As number of trainees per class is not stable the seating capacity for 45 trainees per training class was adapted as the maximum.

b) One item for demonstration was set as the minimum quantity. Items for group training were set at 3 or 6 per training class.

c) The items for individual training were set at 1 set for 2 or 3 trainees.

d) It is worth while examining the number of existing equipment more closely.

3) Purpose of use of equipment

The use purpose of the main items are as follows:

a) Audio visual equipment

① Video cassette recorder and audio cassette recorder

According to CETHP, 40% of the training programs implemented in BAPELKES will be practices or practical training. The remaining programs will be the classroom lectures. About 30% of the lectures will involve group discussions. Group discussions are aimed so that each trainee not only learns from the lectures but to identify questions and solutions for each

medical stage through the discussions. The direction and scope of discussions will be led and directed by the trainer within the contents of the curriculum. In the discussions, one training class will be divided into 3 groups and each group will focus on different standpoints based on different themes. The themes picked up in the discussion are to be selected from news or topics such as traffic accidents or epidemiological disease in rural areas or other items related to the health and medical fields that are broadcast over television or radio. The current theme is to be picked up at that stage.

② Video camera

This item is used mainly for two purposes. One is for the production of training material for group discussions. The other is for training programs aimed at finding out the problems and issues in the medical stage by the joint survey of BAPELKES trainers and medical staff in the hospital or other health centers. In any case, scenes covering the health center, hospital or other activities will be recorded by video camera. By the analysing of the scenes recorded by video camera, the trainees or trainers can formulate questions and provide appropriate solution.

③ Cassette and video reproduction equipment

The items are used for the reproduction of cassette and video tapes for training material.

④ Camera

The item is used for the production of training material for OHP's and slide projectors.

⑤ Slide projector, sound system, overhead projector, whiteboard, television etc.,

These items are used for training in the practice room.

⑥ Flipchart

This item is used for recording group discussions.

⑦ Closed circuit television (CCTV)

As mentioned above, a class is divided into 3 groups for group discussions. In order to maintain and lead group discussions based on curriculum guidelines by way of viewing the discussion on monitor and listening on earphones to enable the participants to make joint discussions without any deviation and disturbance amongst the groups.

b) Office equipment

The items are used for the supporting training.

c) Trainer's room equipment (for MND only)

The necessary items are desks, chairs and cabinets.

d) Training room equipment

The necessary items are desks, chairs and whiteboard.

e) Special training room equipment

The items are used for two purposes. The first is to introduce into BAPELKES a health network connected with the medical library and information of Gadjah Mada University through a specially contracted provider of inter-net. This network was started as a pilot project to connect Gadjah Mada University and medical facilities in Central Java by the cooperation of the Ministry of Health and Gadjah Mada University. At present, two BAPELKES at Ambon and Maluku have already been introduced to this health net-work. The introduction of the health net-work into BAPELKES-UPD and BAPELKES-MND will not only improve the quality of training but will also assist inexperienced doctors in the health centers by providing them with necessary medical information. The second is for the purpose of training medical doctors and paramedics in health centers and hospitals to handle the Management Information System aimed at preparing computerized monthly reports from each health center to DINASKES Tk II through inter-net connections in the future. The writing form of the report is already computerized and can be used for the training of "Record and Report of Medical Information" using a personal computer. There are no computers installed in the health centers at present but trainees can study the report writing method as well as the operation of personal computers. At the same time, through the introduction of inter-net, the BAPELKES can exchange information at a lower cost with CETHP, other BAPELKES, KANWIL, DINASKES Tk I and II.

f) Simulation training equipment

These items are used manly for midwife training and for demonstration. Some items such as stethoscopes, delivery demonstration equipment and midwife kits are used for group practice.

g) Main Auditorium equipment

Desk and chairs.

h) Main Dormitory equipment

Furnitures.

i) Main dining room equipment (for MND only)

Tables and chairs, cooking set and cooking equipment.

j) Vehicles

Practice training, which comprises 40% of the training according to CETHP, is implemented in the hospitals or health centers in the village. Presently the trainees go there by hired small buses. The road going to the village is too narrow for large vehicles. Both BAPELKES requested minibuses for 25 to 35 passengers. The maximum capacity of the minibuses produced in Indonesia is 27 passengers. As such, a training class having a minimum of 35 trainees, two minibuses are requested.

k) Library equipment (for MND only)

Desks and chairs, cabinets, photocopying machine and reading desks.

4) Specification of equipment

Specifications of main items are as follows.

a) Audio visual equipment

① Video cassette recorder
- PAL system, VHS HiFi video deck
- 8mm video deck

② Video camera
- 3CDD camera, 8mm video cassette type

③ Cassette tape reproduction equipment
- 8mm/VHS reproduction
- VHS/VHS reproduction

④ Video tape reproduction equipment
- Cassette tape reproduction

⑤ Camera
- Single lens reflex camera

⑥ Slide projector

⑦ Sound system
- Amplifier, microphone and speakers
- Portable wireless type

⑧ Overhead projector
- Halogen lamp type

⑨ Whiteboard
- Wall type
- Stand type

⑩ Television
- 29 inch, PAL system

⑪ Flipchart
- Aluminum, folded type

⑫ Closed circuit television (CCTV)
- Camera : Black and white, Zoom and turntable type with microphone
- Monitor : Black and white with earphones
- Communication : Interphone system

b) Office equipment

Typewriter, duplicating machine, photocopy, cutting/binding machine, desk and chair, cabinet, rack and whiteboard

c) Trainer's room equipment (for MND only)

Desk and chair, cabinet, rack and whiteboard

d) Training room equipment

Desk and chair, whiteboard and flipchart

e) Special training room
- Personal computer
  Desktop, multi-media type, 150MHz processor, 20MB RAM, 1GB hard disk, with floppy drive and CD Rom drive, Software for Windows 95, word processor, calculation, data processing installed
  Monitor : 14inch color
  Printer : Laser printer, Dot matrix printer, Color jet printer
- Scanner
  Color scanner
- Compute projector

- Torso model(midwife phantom)
- Delivery demonstration equipment
- Weight scale
- Scale for weighing babies
- Stethoscope
- Midwife kit

  Basin kidney, syringe, syringe case with rack, needle(hypodermic), forceps(tissue), sphygmomanometer, surgeon's gloves, blood lancet, fetal stethoscope, HB talquist book, tongue depressor, kocker's haemostatic forceps, umbilical cord scissors, episiotomy scissors, operating scissors, mayo hegar needle holder, surgical suture(needle), surgical suture(needle), forcep depressing straight, thermometer(clinical), thermometer neonatal, catheter urethal, mucus suction, bag(imitation leather for kits), instrument tray with cover, nelaton catheter(urethal), soap box, spritus lamp, stick detector, apron sheet, bowl, surgical hand brush, catgut(surgical plain), measuring tape, glyserine enema syringe, weighing scale for adults, flashlight and plastic sheet
- Perinatal kit

  Wing needle, pediatric solution administration, feeding tube/stomach tube, povidon odine solution, mucus sunction, sterile gauze, thread for tying umbilical cord
- Resuscitator

  Resuscitator bag, oxygen reservoir and tube assembly, face mask L.S., plastic airway, endotracheal tube, hand aspirator with tube, laryngoscope with handle L.S., case
- Infant incubator
- Sterilizer
- Male figure
- Female figure
- Torso model and head model
- Heart model
- Baby doll
- Emergency Set

  Identification Material, Silicone Resuscitator, Hand Bulb Aspirator, Opening of Airway Instruments, etc., Emergency Scissors, Dressing Forceps, Bandage and Sanitary Materials, Vinyl Case with Fastener, Emagin Case

f) Auditorium equipment
- Desk and chair

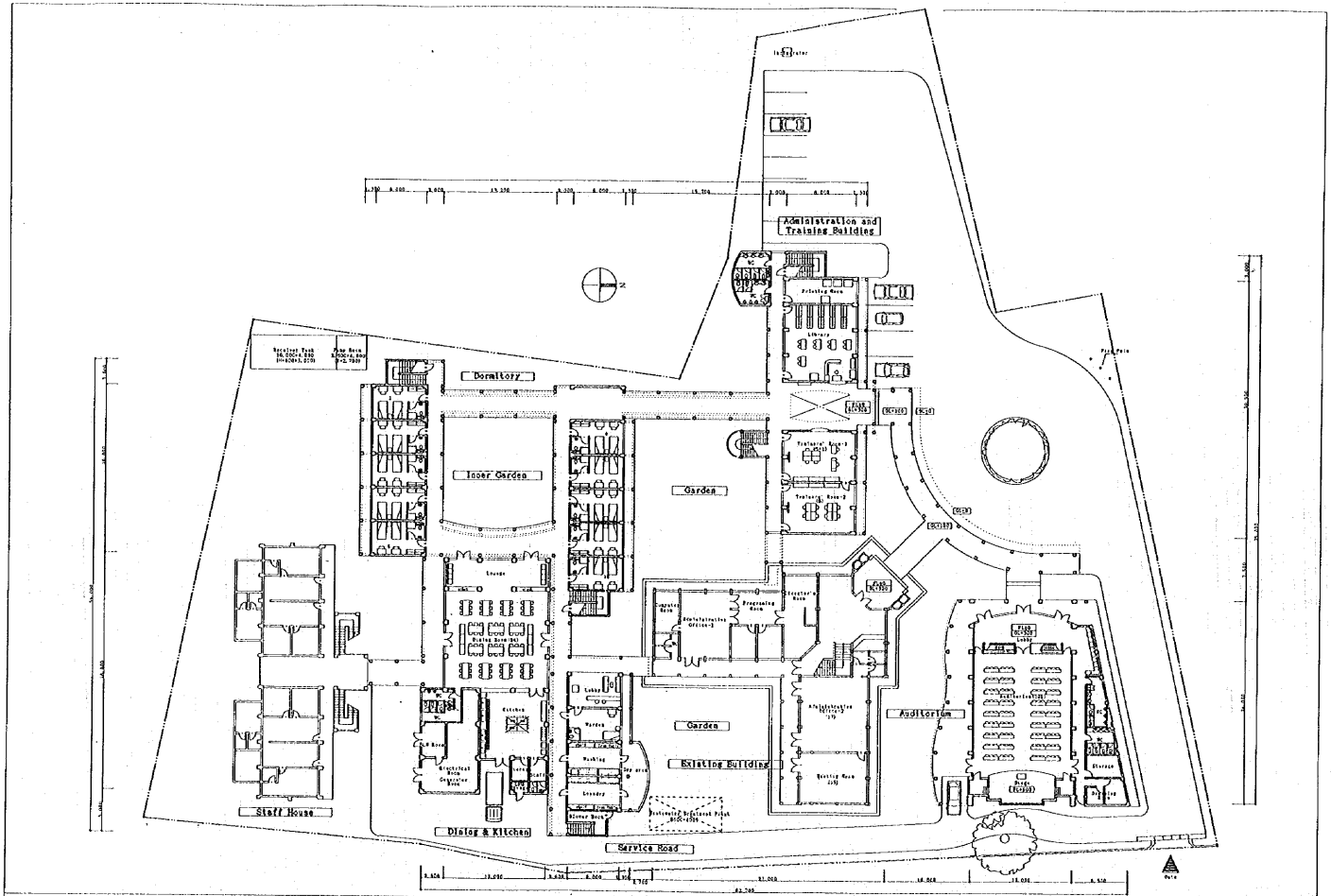
g) Dormitory equipment
- Bed, locker, desk and chair, table lamp

- Television and washing machine

h) Dining room equipment (for MND only)
   - Refrigerator
   - Gas and kerosene ranges
   - Rice cooker
   - Cooking set

i) Vehicles
   - Minibus
     for 25 to 35 persons
   - Minibus
     for 7 to 8 persons

j) Library equipment (for MND only)
   - Desk and chair, rack and cabinet
   - Photocopying machine

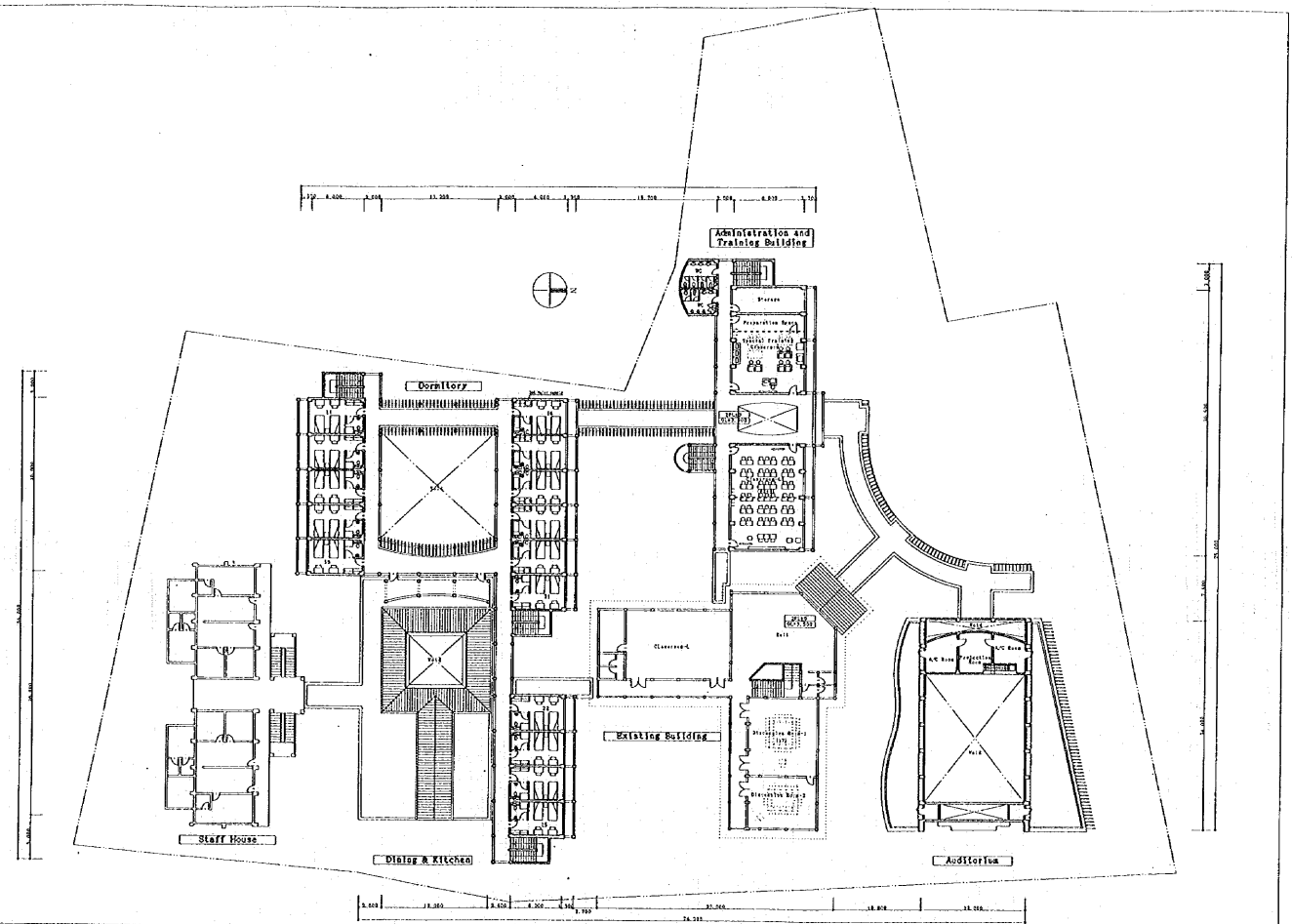


THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESI

1ST FLOOR PLAN

MND-01

PACIFIC CONSULTANTS INTERNATIONAL

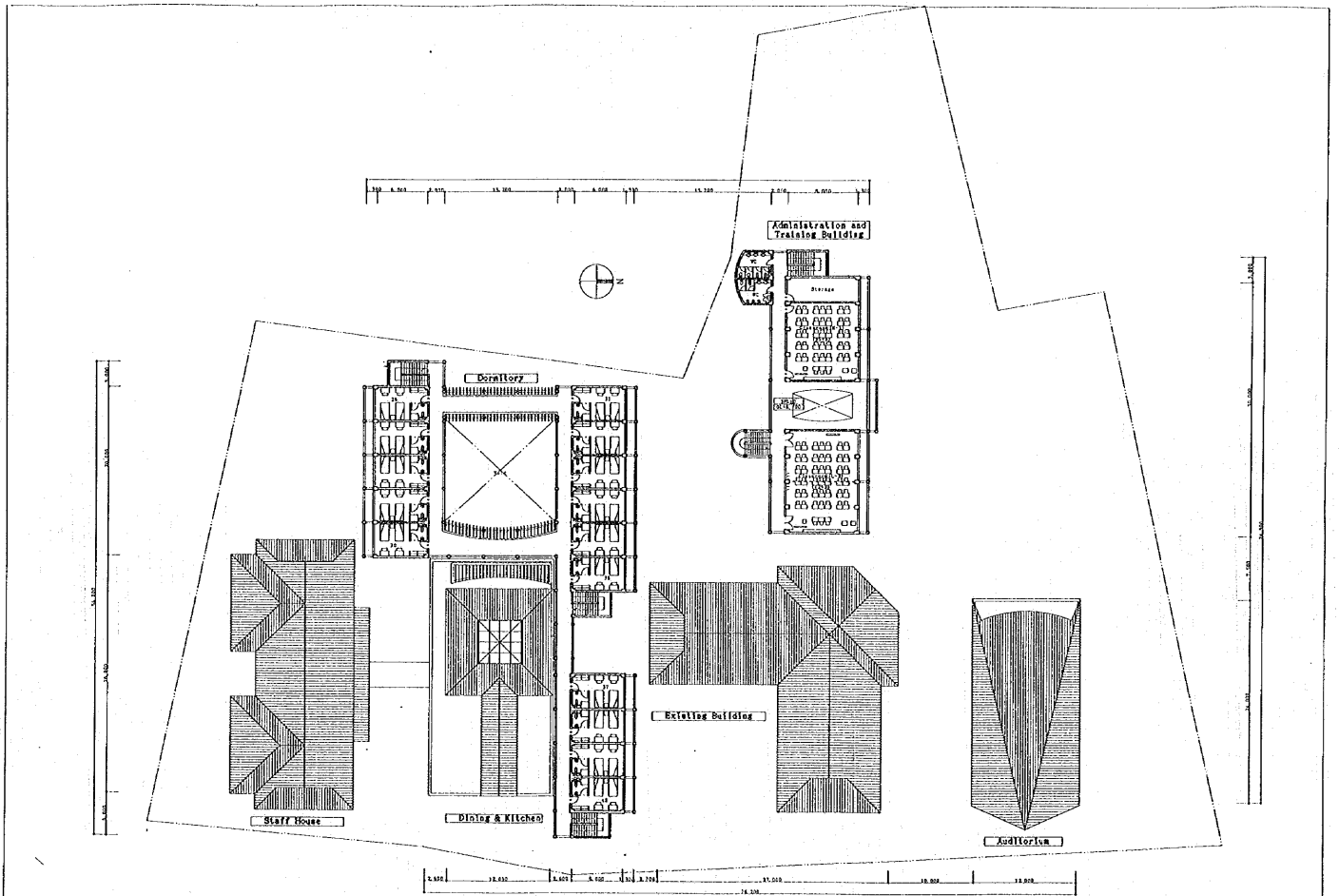


THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESI

2ND FLOOR PLAN

DWG NO. MND-02

PACIFIC CONSULTANTS INTERNATIONAL

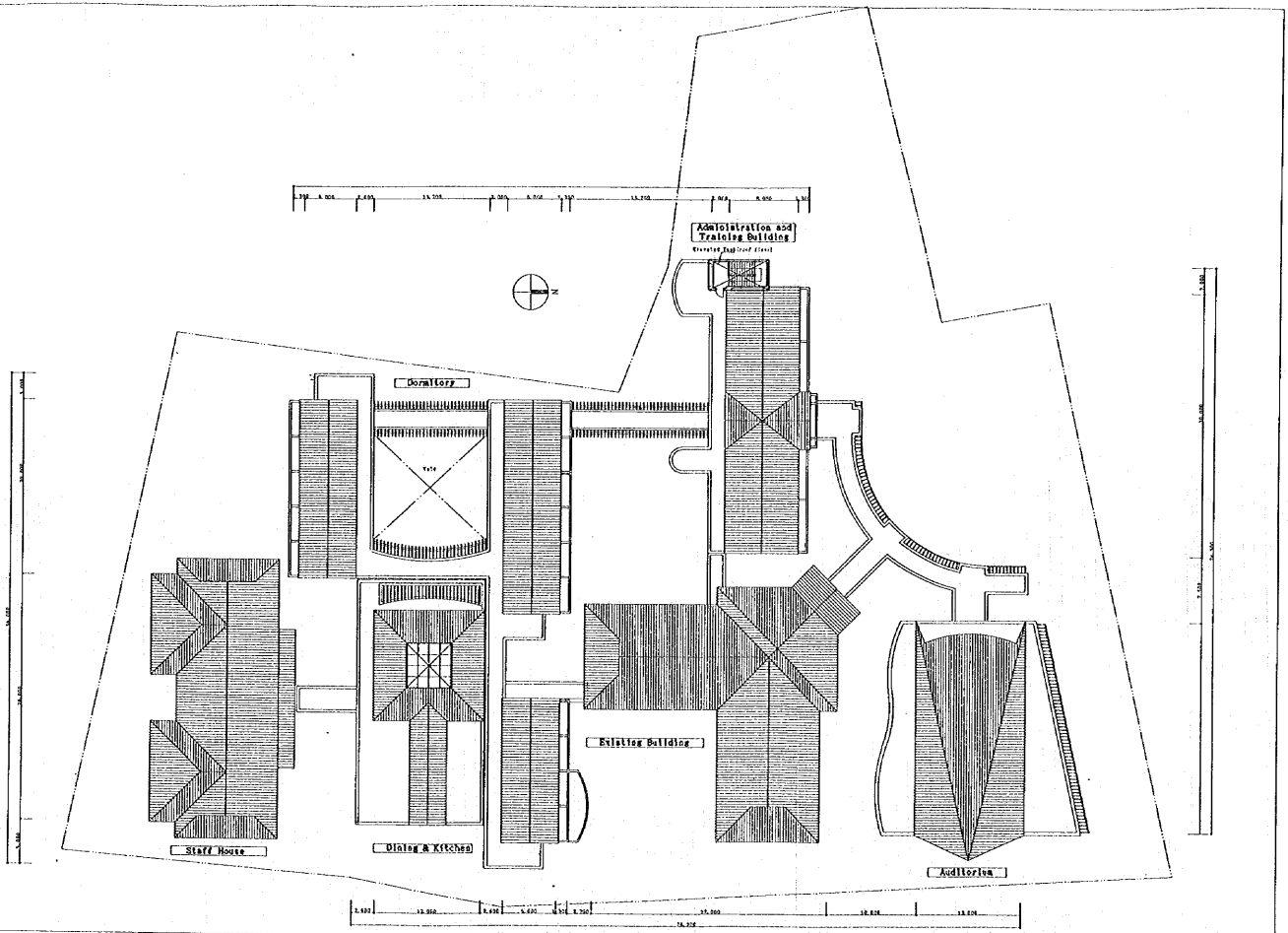


THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESI

3RD FLOOR PLAN

MND-03

PACIFIC CONSULTANTS INTERNATIONAL

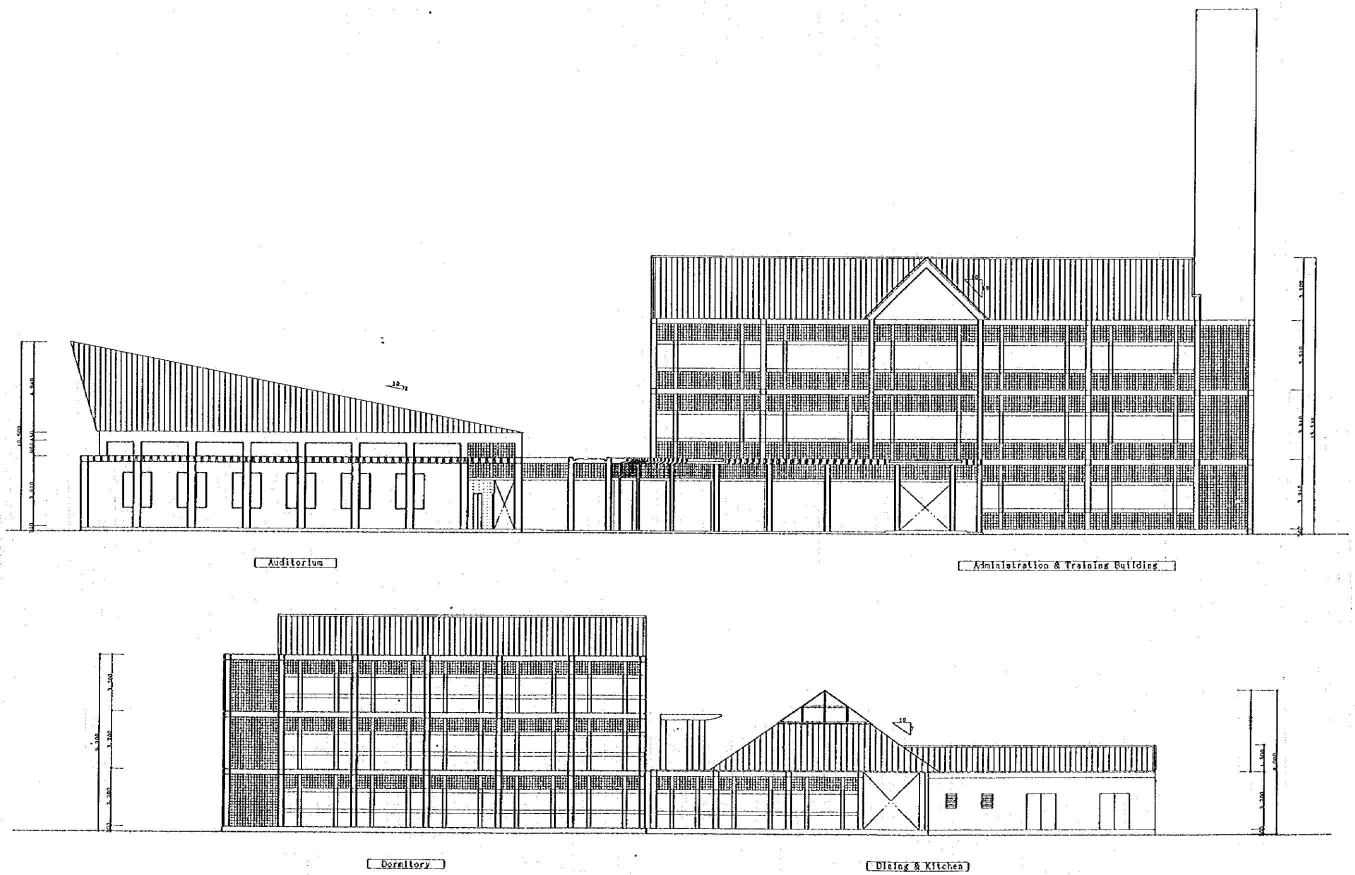


THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESI

RF FLOOR PLAN

WND-04

PACIFIC CONSULTANTS INTERNATIONAL



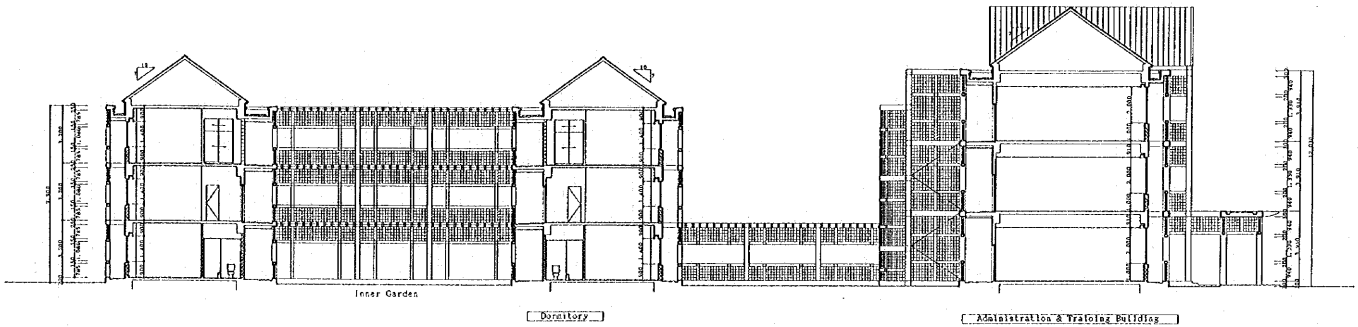
THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESIE

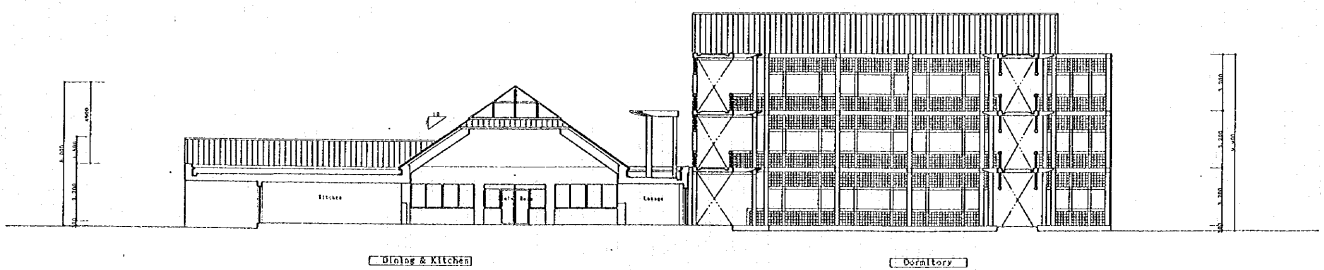
ELEVATION

MND-05

/PCI

PACIFIC CONSULTANTS INTERNATIONAL



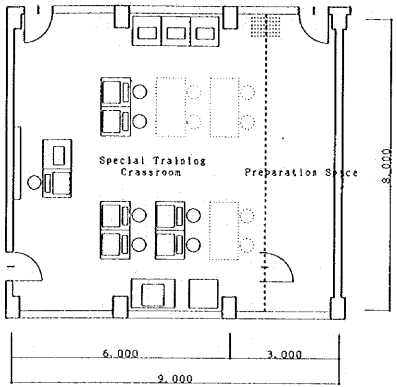


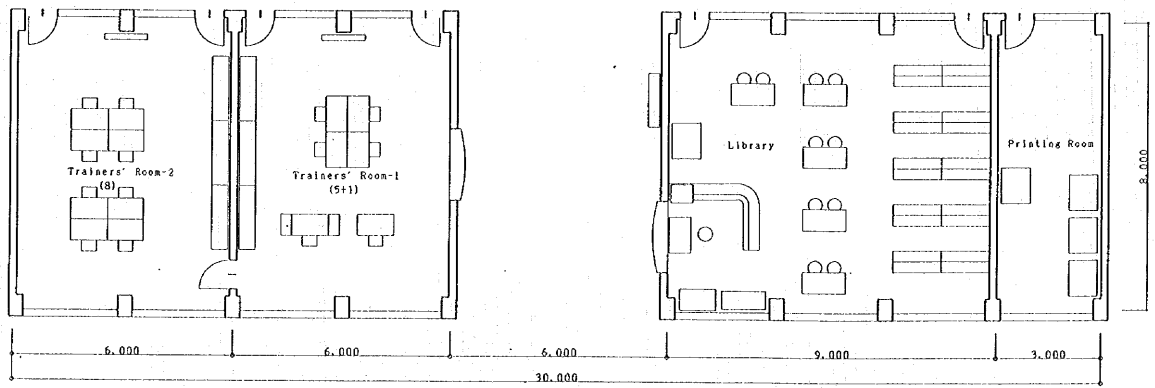
THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESI

SECTION

MND-06

PACIFIC CONSULTANTS INTERNATIONAL



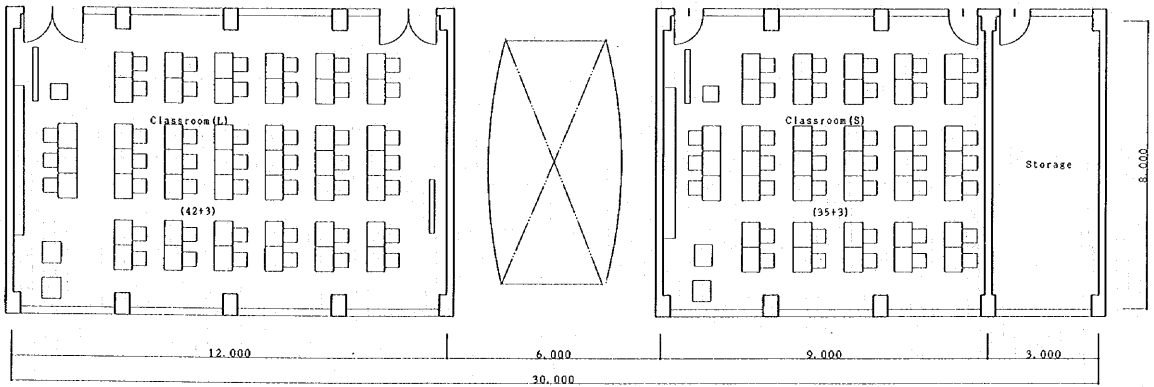


THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESI

DETAILED PLAN
(TRAINING BUILDING)

MND-07

PACIFIC CONSULTANTS INTERNATIONAL



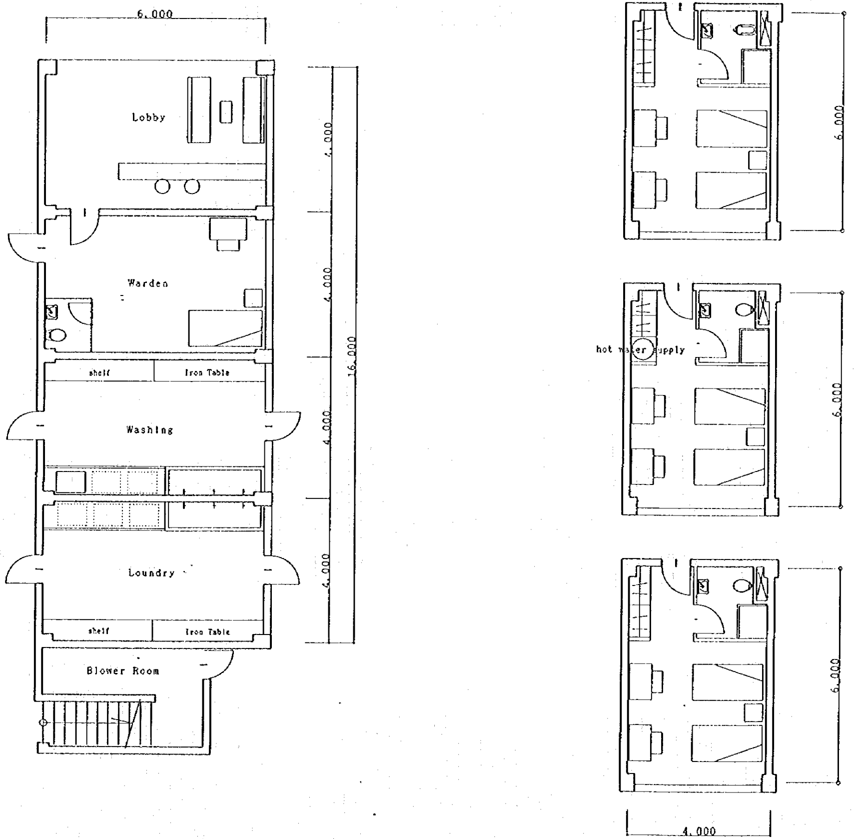
THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESIE

DETAILED PLAN
(TRAINING BUILDING)

MNO-08

/PCI

PACIFIC CONSULTANTS INTERNATIONAL



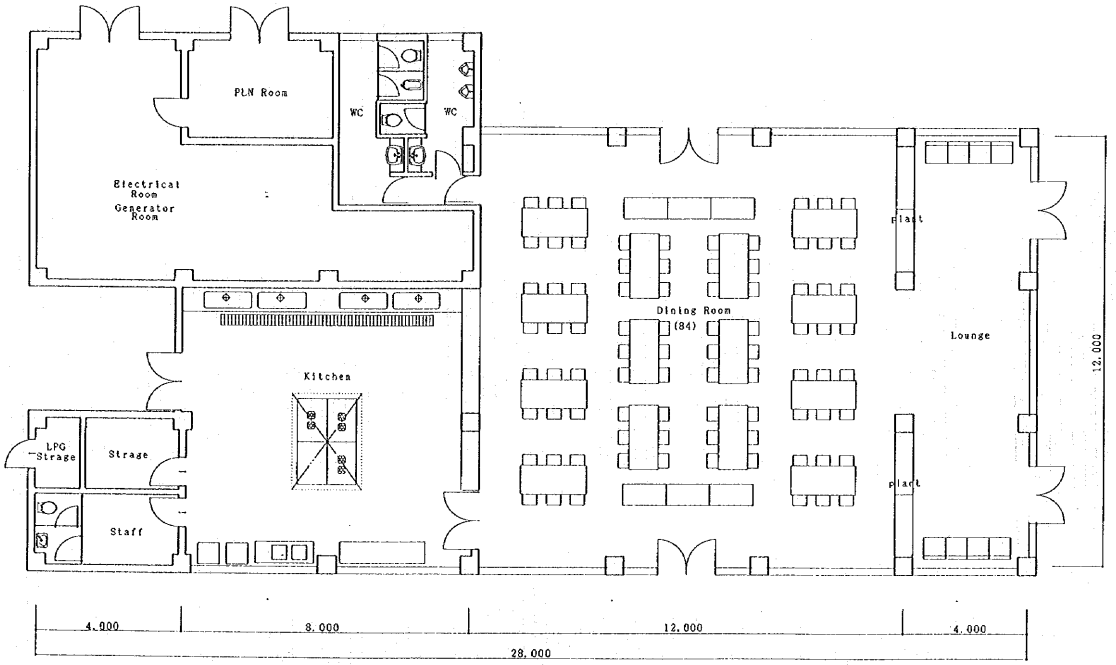
THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESI

DETAILED PLAN (DORMITORY)

MND-09

/PCI

PACIFIC CONSULTANTS INTERNATIONAL

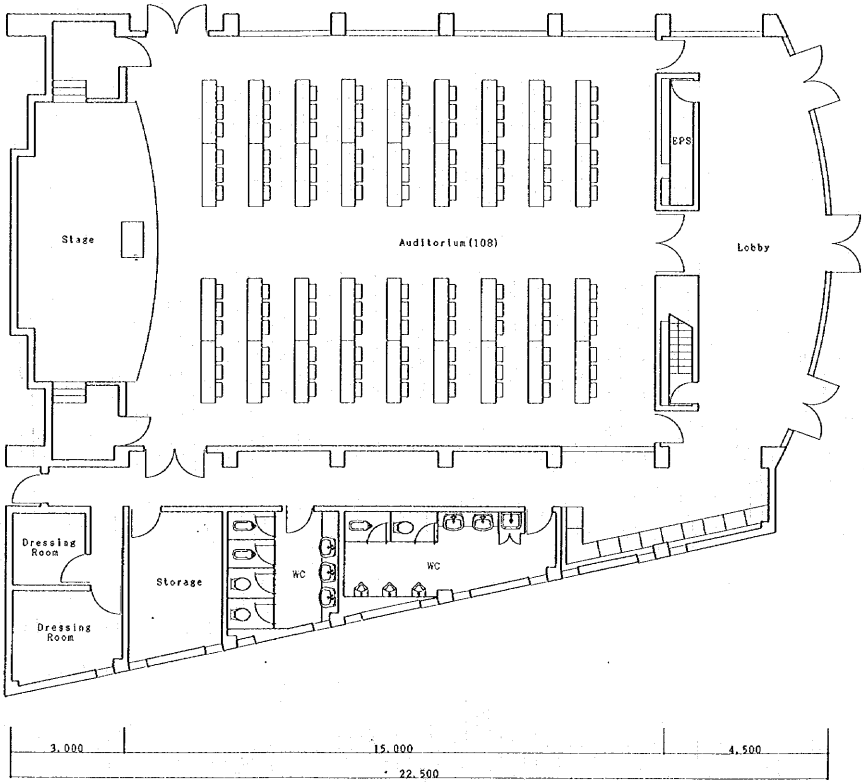


THE PROJECT FOR HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT AT NORTH SULAWESI AND SOUTH SULAWESI

DETAILED PLAN (DORMITORY)

MNO-10

PACIFIC CONSULTANTS INTERNATIONAL

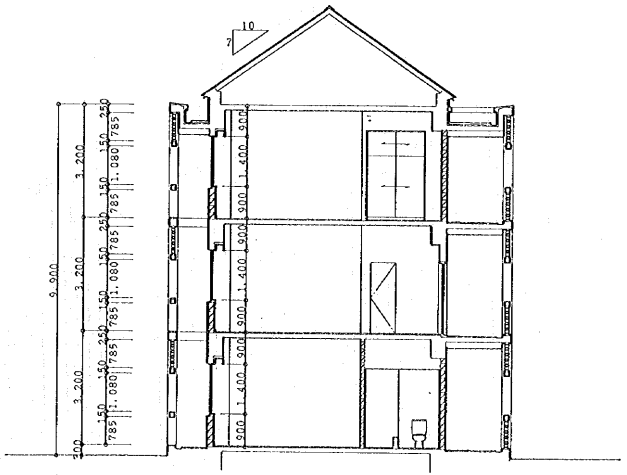


THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESI

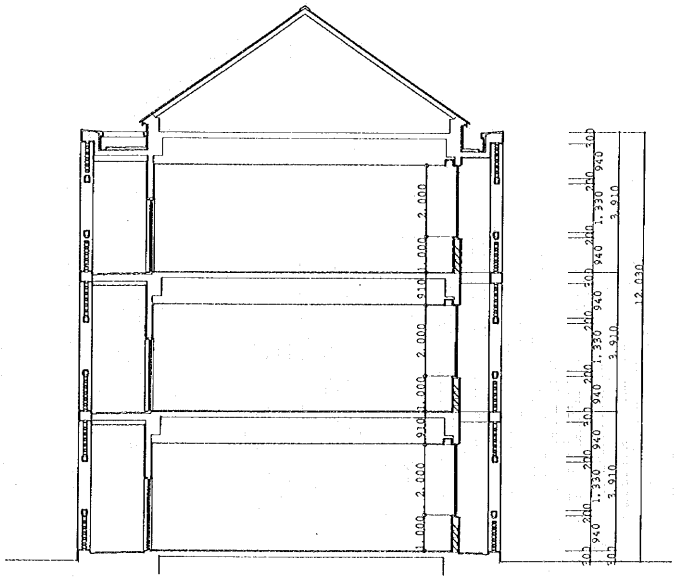
DETAILED PLAN(AUDITORIUM)

MND-11

PACIFIC CONSULTANTS INTERNATIONAL



Dormitory



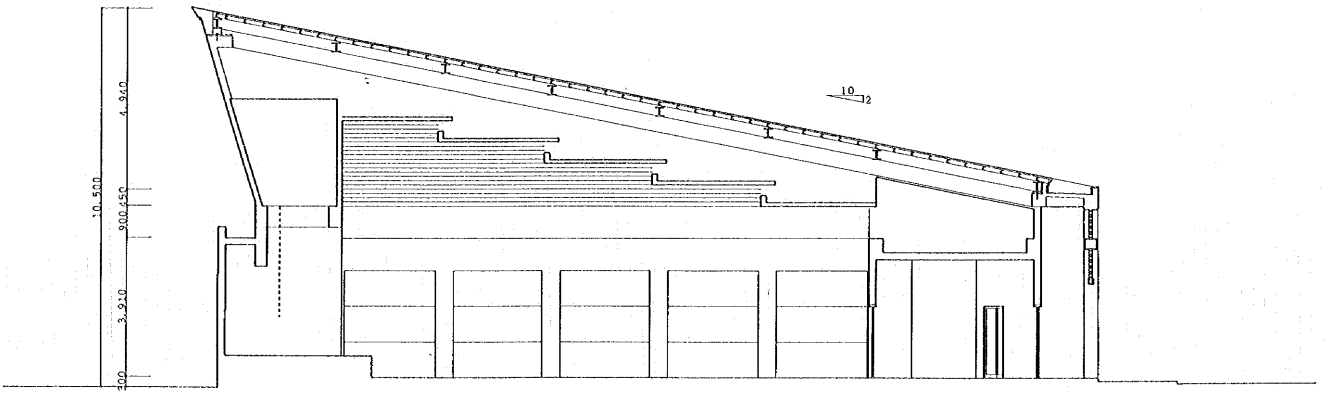
Administration and Trining Building

THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESI

DETAILED SECTION

MND-12

PACIFIC CONSULTANTS INTERNATIONAL



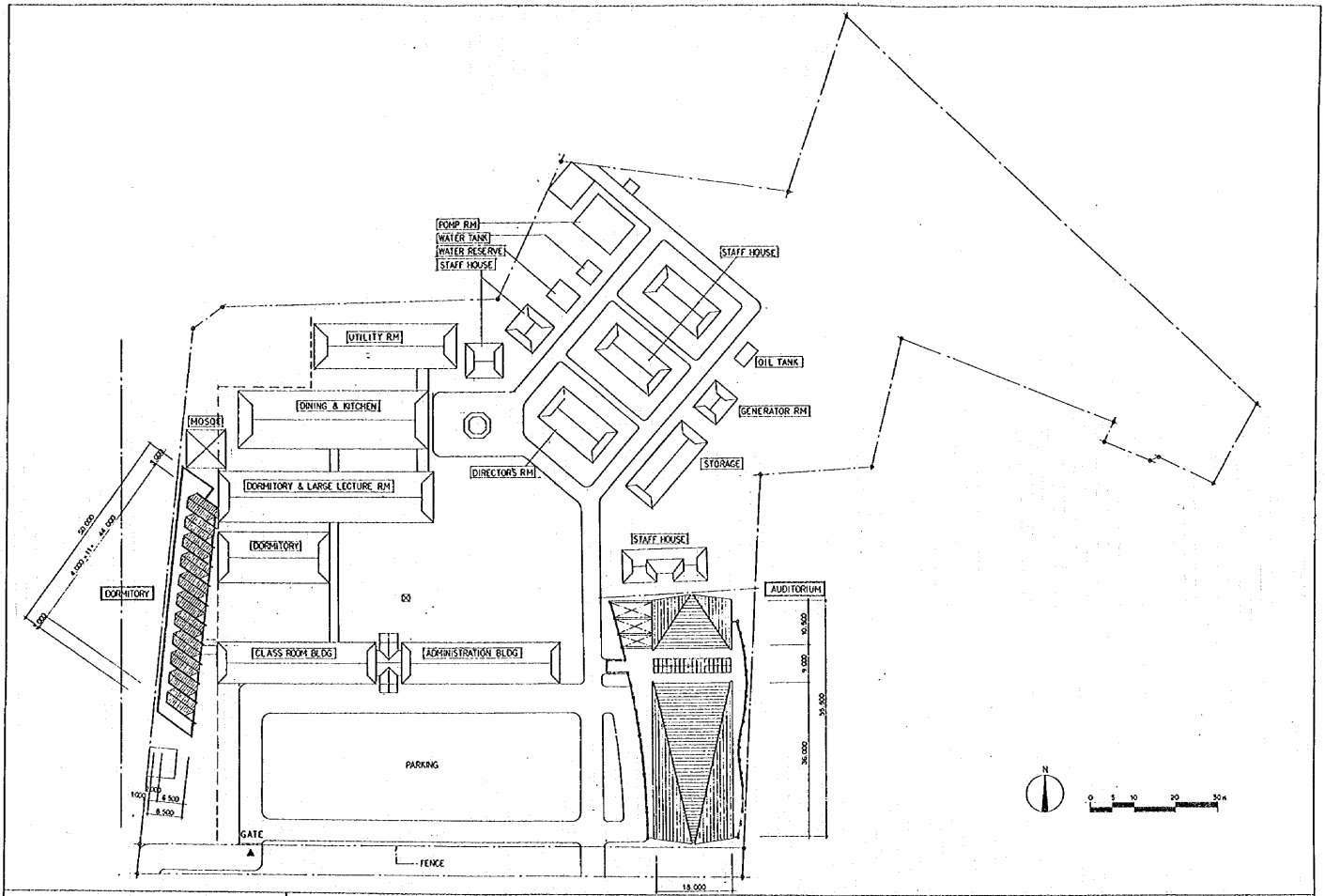
Auditorium

THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESI

DETAILED SECTION

MND-13

PACIFIC CONSULTANTS INTERNATIONAL



THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESI

PROJECT TITLE	SITE PLAN
DWG. NO.	UPD-01

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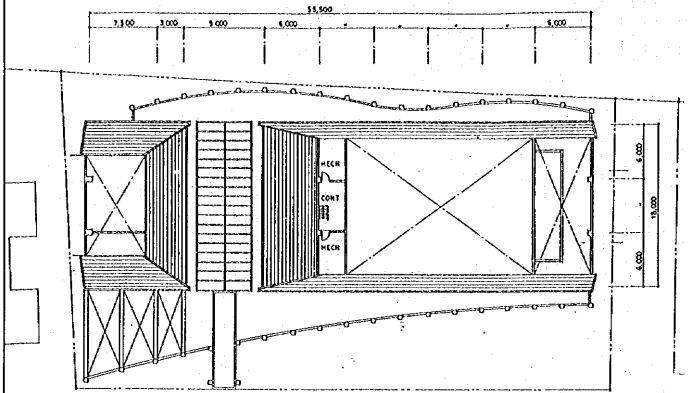
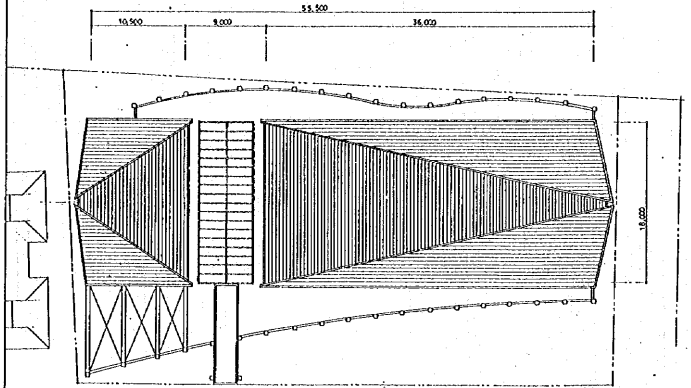
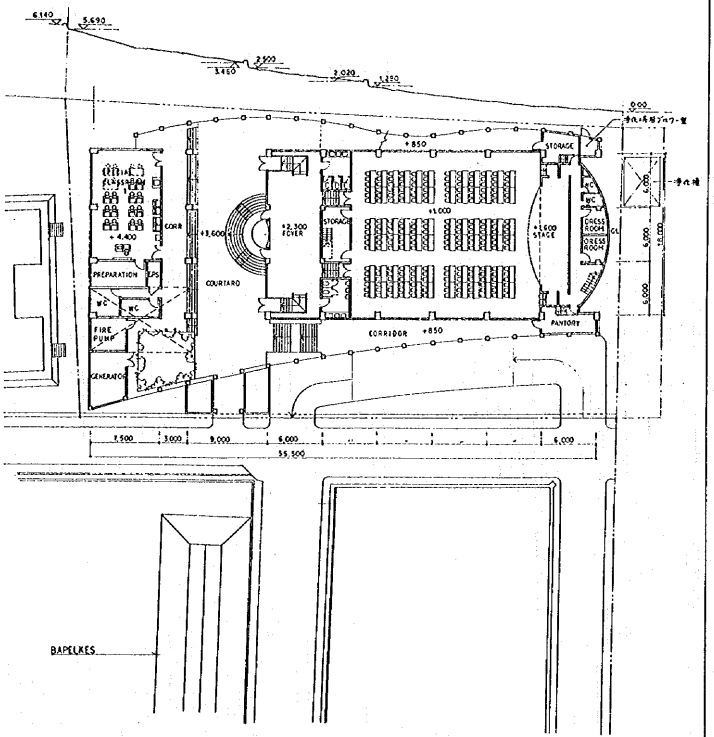


2nd FLOOR PLAN



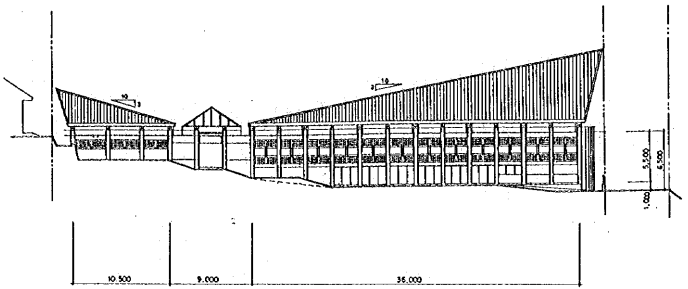
ROOF FLOOR PLAN



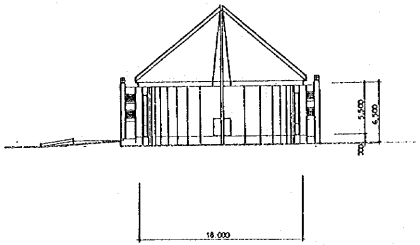
1st FLOOR PLAN

THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESI

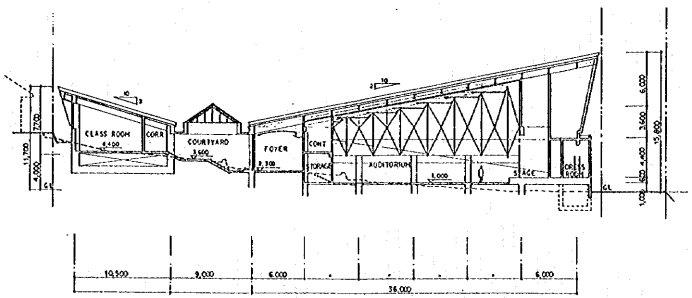
				AUDITORIUM FLOOR PLAN	UPD-02
				PACIFIC CONSULTANTS INTERNATIONAL	



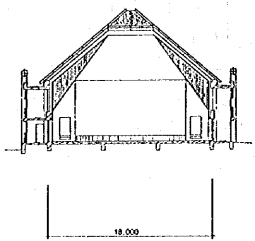
ELEVATION-1



ELEVATION-2

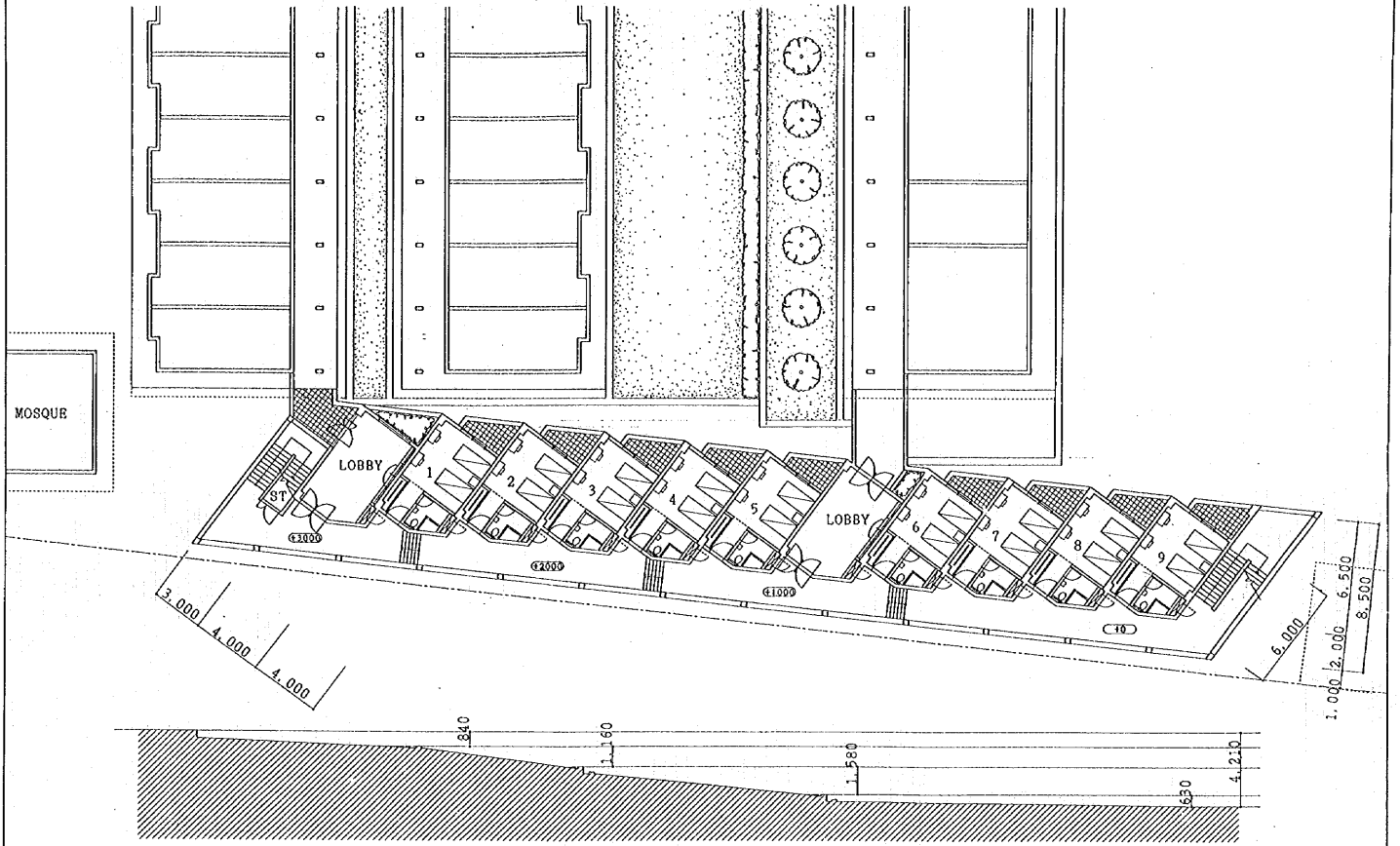


SECTION-1



SECTION-2

THE PROJECT FOR HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT AT NORTH SULAWESI AND SOUTH SULAWESI		AUDITORIUM ELEVATION/SECTION	UPD-03
	SEP. 1997	PCI	PACIFIC CONSULTANTS INTERNATIONAL

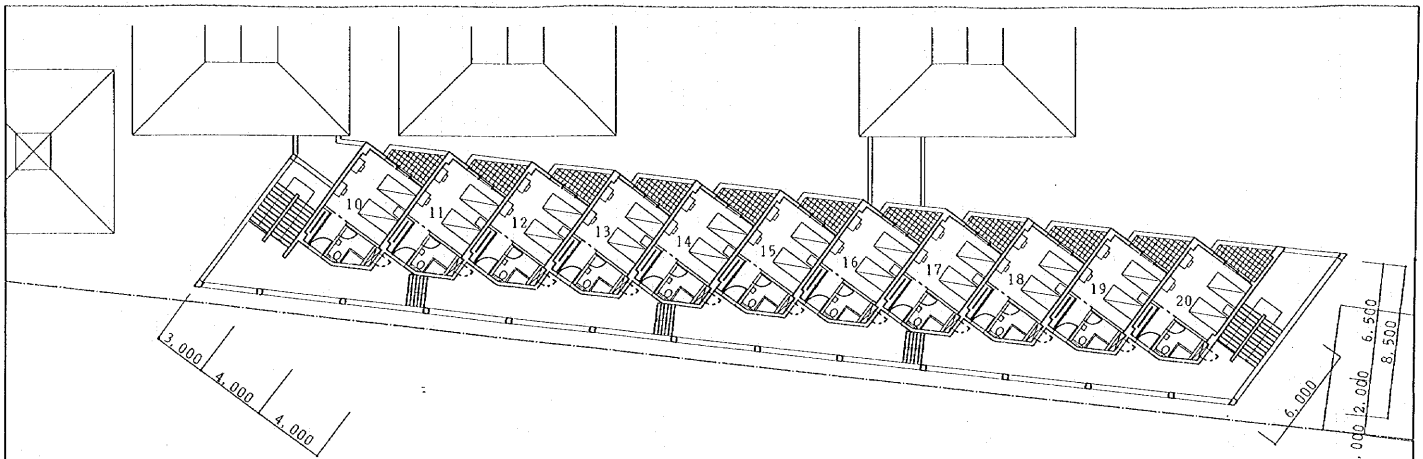


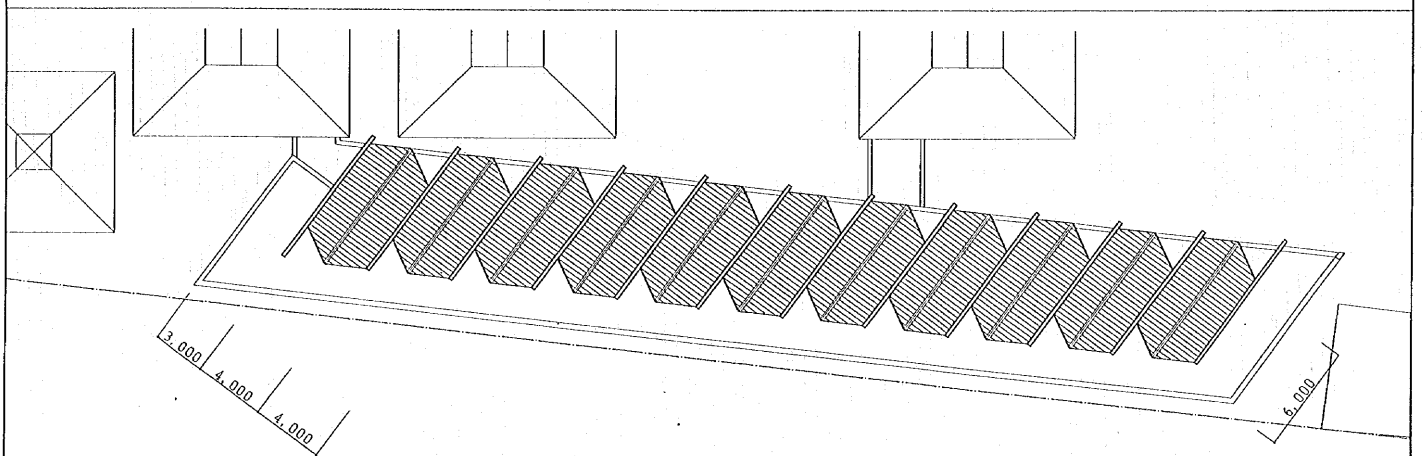
THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESI

DORMITORY
1ST FLOOR PLAN

UPD-04

PACIFIC CONSULTANTS INTERNATIONAL



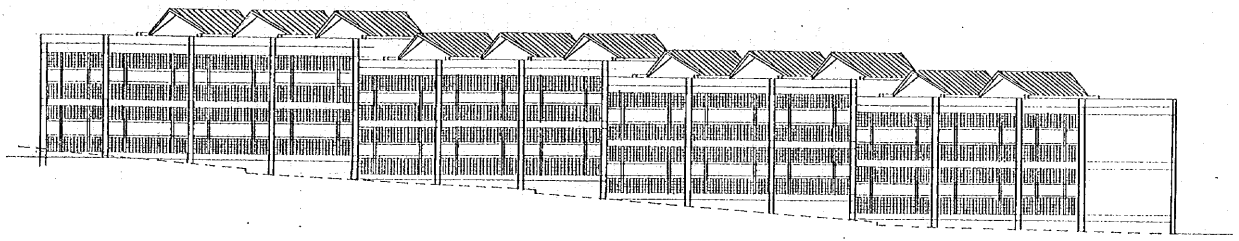


THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESI

DORMITORY
2ND/ROOF PLAN

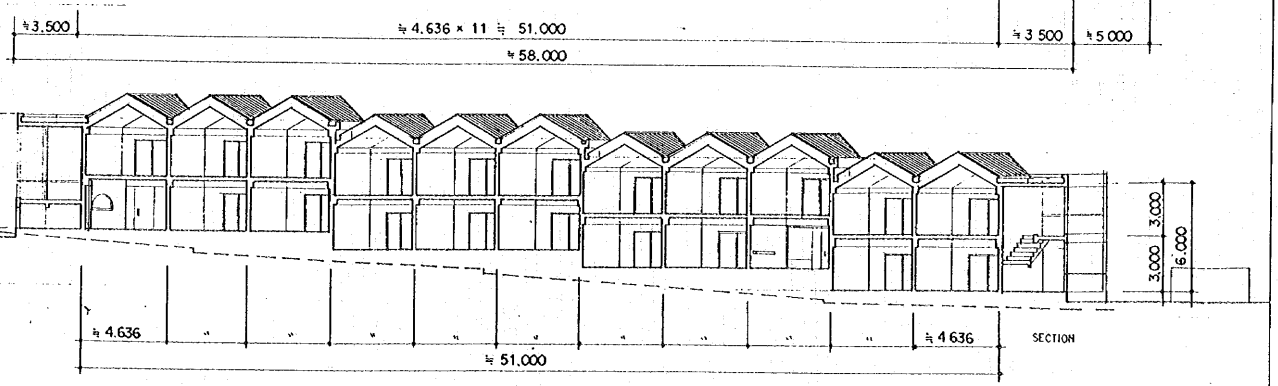
UPD-05

PACIFIC CONSULTANTS INTERNATIONAL



EAST ELEVATION

WEST ELEVATION



3.500 | 4.636 × 11 = 51.000 | 3 500 | 5 000

58.000

4.636 | 4.636

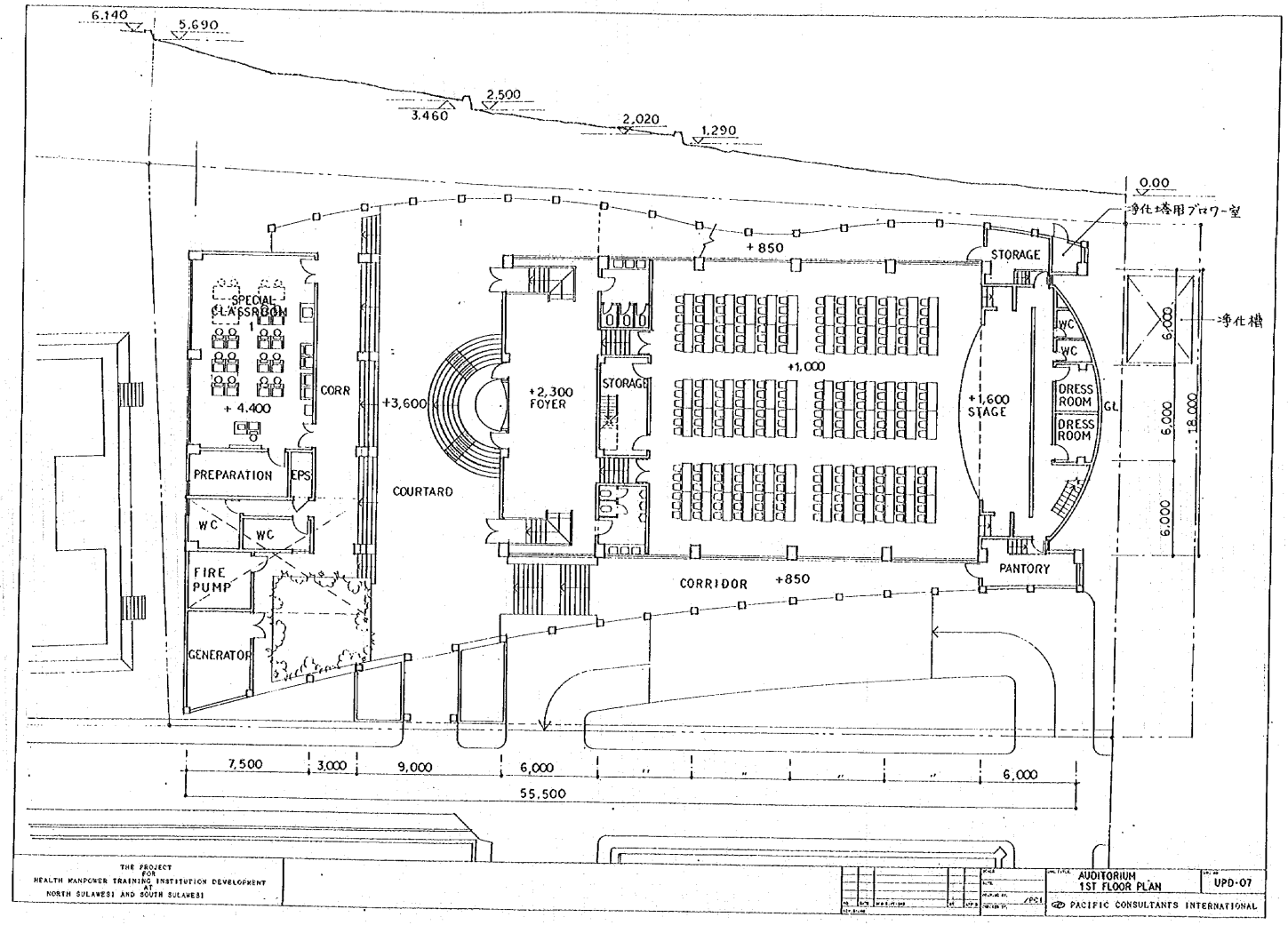
51.000

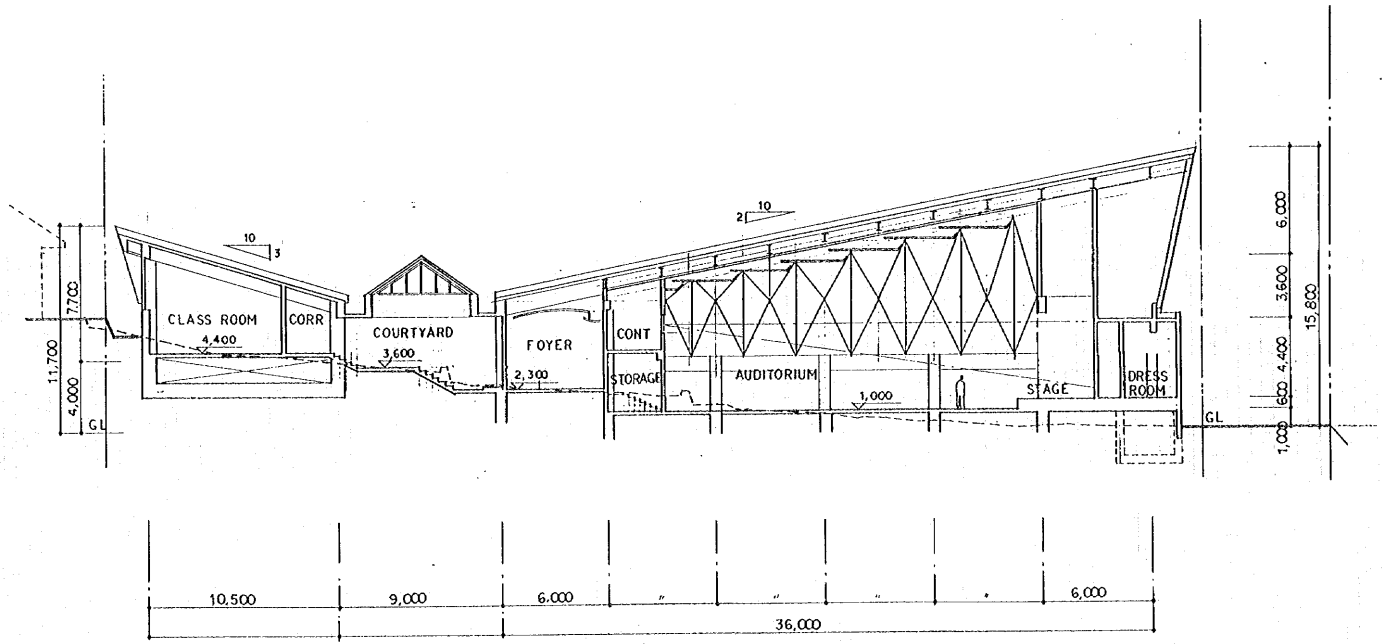
THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESI

/PCI

PACIFIC CONSULTANTS INTERNATIONAL

UPD-06


6.140
5.690
2.500
3.460
2.020
1.290
0.00
浄化槽用ブロワー室
浄化槽
+850
STORAGE
SPECIAL CLASSROOM
CORR
+ 4.400
+3,600
+2,300
FOYER
STORAGE
+1,000
+1,600
STAGE
GL
WC
WC
DRESS ROOM
DRESS ROOM
PREPARATION
EPS
COURTARD
WC
WC
FIRE PUMP
GENERATOR
CORRIDOR
+850
PANTORY
6,000
6,000
6,000
18,000
7,500
3,000
9,000
6,000
6,000
55,500
THE PROJECT FOR HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT AT NORTH SULAWESI AND SOUTH SULAWESI
AUDITORIUM 1ST FLOOR PLAN
UPD-07
PACIFIC CONSULTANTS INTERNATIONAL

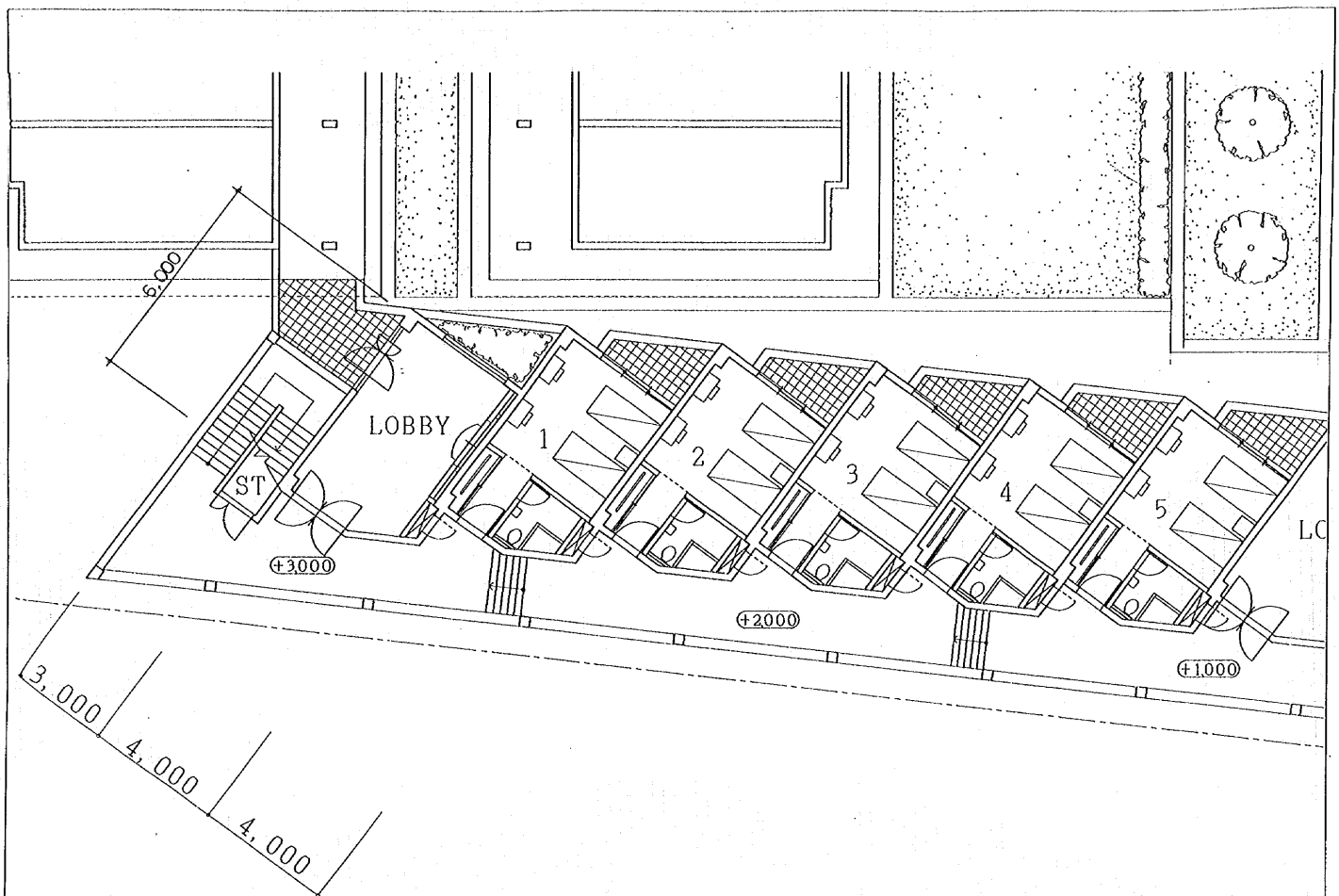


THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESI

AUDITORIUM SECTION

UPD - 08

PACIFIC CONSULTANTS INTERNATIONAL



THE PROJECT
FOR
HEALTH MANPOWER TRAINING INSTITUTION DEVELOPMENT
AT
NORTH SULAWESI AND SOUTH SULAWESI

DORMITORY
ROOM PLAN

UPD-09

PACIFIC CONSULTANTS INTERNATIONAL

CHAPTER 3
Implementation Plan

CHAPTER 3 IMPLEMENTATION PLAN

3-1 Implementation Plan

3-1-1 Implementation Concept

The understanding of the basic procedure of this project as Japan's Grant Aid Programme is important prior to the implementation of the Project. The procedure of the Project and the matters to be considered and confirmed are as follows:

(1) Basic Items

1) The Exchange of Notes (E/N) for the detailed design shall be concluded between the Japanese Government and the Government of Indonesia after the completion of the basic design study in 1997.

2) With the E/N, Japan shall commit itself officially to assist and initiate specific action.

3) After the above-mentioned conclusion, a consultant contract shall be concluded between a consultant of Japanese nationality and the Government of Indonesia and detailed design work shall be started immediately.

(2) Detailed Design Stage

1) For the Detailed Design, full details of facilities and equipment in the Basic Design should be carefully confirmed and discussed with the implementation agency.

2) The consultant shall discuss the technical problems through meetings with the relevant authorities in Japan and Indonesia during the detailed design stage.

3) The detailed design will probably require approximately 4 months to complete after the agreement of the E/N.

(3) Tender

1) The tender for the construction work and purchase and installation of training equipment shall be conducted in accordance with JICA guidelines.

2) The Contract shall be conducted either as one package with a Contractor or classified in two packages with a Contractor to carry out the construction work and a supplier for the procurement and installation of the equipment necessary to the facility.

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

(4) Contractor and Supplier

1) The Prime Contractor for the Project will be a Japanese contractor to undertake the construction work, with local contractors sub-contracted by the Prime Contractor.

2) The Construction should be liaised closely with the procurement of the equipment necessary for the facility so that the implementation schedule and technical management can be controlled smoothly.

3) It is considered that the transportation plans and schedules for construction equipment and materials are the major factors in formulating an implementation schedule.

(5) Implementation Organization

The organizations involved in this project are as shown below:

1) The Ministry of Health (*1) of the Government of Indonesia is responsible for the administration of this project, and Secretary General (*2) of Ministry of Health is responsible for the execution of the project dealing with the Grant Aid Programme:

2) The Center for Education and Training of Health Personnel, Ministry of Health (CETHP*3) and the each provincial offices of Ministry of Health (KANWIL*4) is the implementation agency which will implement the Project with a Japanese consultant and contractor.

The following diagram shows the relationship between the Government of Indonesia, the Japanese Consultant and the Contract

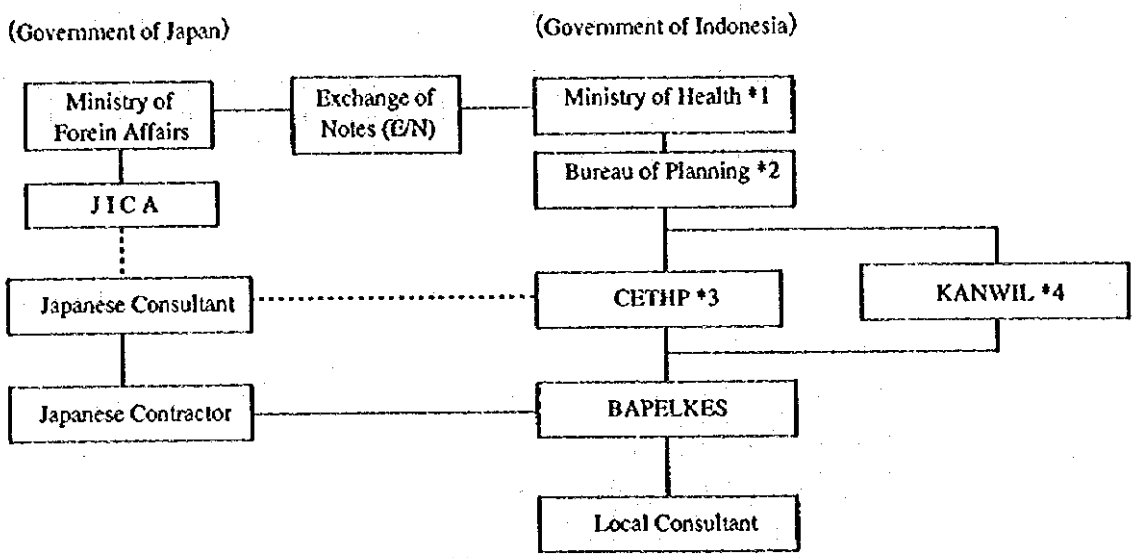


Fig. 3-1 Implementation Organization

3-1-2 Implementation Conditions

Based on the consultants' experiences from various projects in Indonesia and the result of the basic design study, the consultant team has recognized that mostly local construction materials should be used so as to reduce the construction, operation and maintenance costs. Although most of the equipment and other fittings for utilities will be imported, the study team has studied, through discussions with local agents, in order to select those materials available in Indonesia. Maximized use of local materials will contribute to the development of local industries.

In the long term view of the project, together with the consideration of the operation and maintenance costs of the project, local construction materials and construction methods of Indonesia should be used in principle.

The specific situation of construction in Indonesia and points to be considered are as follows:

(1) According to the basic procedure of Japanese Grant Aid, a Japanese contractor will be tendered and will undertake construction of this project. However, because of Indonesia's specific conditions on executing building construction such as communication and language problems, local customs and religious matters, local regulations and governmental approval, etc., local contractors will be subcontracted to give instructions directly to local labourers, assemble a suitable work force and plan the work allocation.

(2) Considering the construction constraints of Indonesia, the implementation schedule shall be well-planned particularly in consideration of the rainy season. The civil works, foundations and building frame works should be executed preferably during the dry season.

(3) Basically, Indonesian regulations and laws are respected for the design. However, as the building regulations, codes and standards for some special facilities are not systematically established in Indonesia, JIS, BS or ASTM will be applied.

(4) The implementation schedule should consider the time required for obtaining the approval of the relevant Government authorities for various construction permits through a locally certified Architect of a local Architectural or a local Consultant Office.

(5) The construction of a staff house for BAPELKES-MND will be started in August 1997 and the building will be completed by December 1997. The joining of the staff house and existing building (BAPELKES-MND) with this project shall be done by the appropriate method required.

The site preparation and the external works required of the Indonesian side by the Japanese side, as well as the water supply required, should be completed before starting project construction.

(6) Most of the site for BAPELKES-UPD is used and locates the existing buildings at various locations. Therefore, all operations necessary for the execution of the Project shall not interfere with the convenience of BAPELKES activities as much as possible. Because BAPELKES-UPD has large demands for water, the plan for the water supply system and facility should be given careful consideration.

3-1-3 Implementation Body of the Project

The Ministry of Health is the main responsible for the administration of the Project and Secretary General of Ministry of Health is responsible for the execution of the Project. The CETHP and each KANWIL will be in charge of the implementation of the Project.

Hopefully engineers and architects from PIU Local consultants and Local Contractors will joint in this project in order to provide a technical advice during the construction.

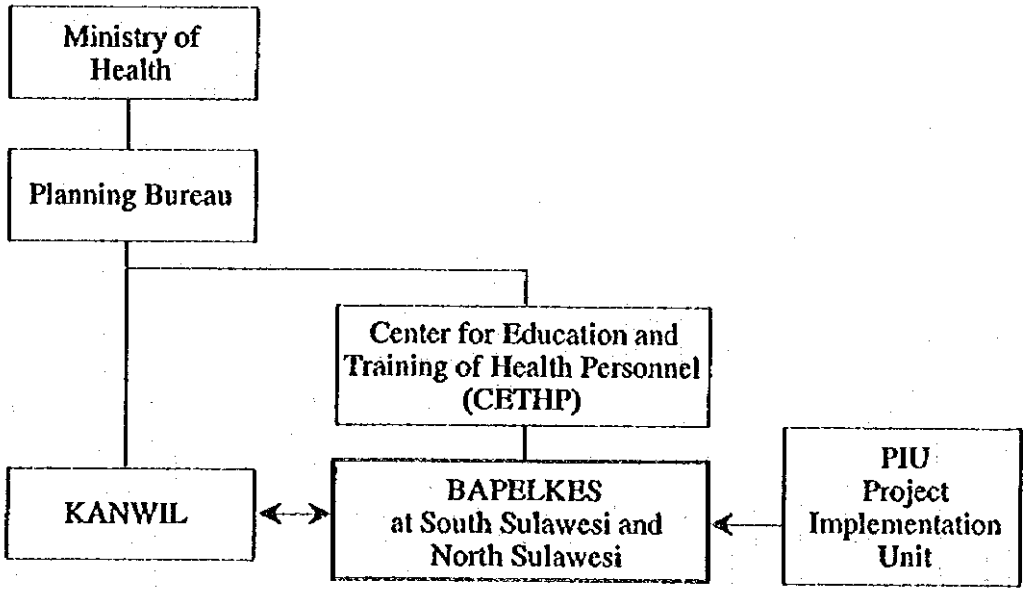


Fig. 3-2 Organization of the Project Implementation

3-1-4 Scope of Works

The portions to be dealt with by the Japanese side and by the Government of Indonesia for the implementation of the Japan's Grant Aid Program are shown in Table 3-1. The project cost for the portions to be dealt with by the Indonesian side is as shown on Appendix-5.

Table 3-1 Extent of Works

Portions by the Japanese Side	Portions by the Indonesia Side BAPELKES-MND	Portions by the Indonesia Side BAPELKES-UPD
(1) Building Works Structure Works, finishing works (2) Electrical Works Power trunk facilities, lighting, power outlets, P/A (3) systems a) Utilities and Facilities Water Supply Construction works for the Water supply from the valve at the water supply meter to the building and all the related internal works for the water b) supply. Sewerage system including piping works up to the c) connection manhole Sanitation facilities (waste d) water treatment facility) e) Elevated tank and reserve tank f) Fire-extinguishing facilities Electrical supply and transformer system Cabling works from the high tension receiving panel in the g) PLN room to the facilities. Telecommunication system Cabling works from MDF to the facilities, including installation of conduit from the cross connection point at the h) site boundary to MDF i) Lightning Protection System Lighting system in the site	(1) Site Preparation a) Ground preparation including the grading of the land. b) Temporary power and water supply for the construction c) Temporary access road for the construction. (2) Eternal Works Landscaping, planting, fence and approach road beyond the site. (3) Utilities and Facilities a) Water Supply - Construction of the piping works from the main feeder to the existing water receiver tank. - Realocation works for existing well water line. b) Sewerage Piping works from the connection manhole in the side to the existing sewerage line. c) Storm Drainage Drainage line from the site to the existing line. d) Power Supply - Increase the contract power value from the existing power supply capacity. - Instalation of cable from transformer to the meter of both building. e) Telecommunication work Apply additional telephone line and connection of cables.	(1) Site Preparation a) Ground preparation including the clearing and leveling of the land, demolish and repair the existing fence. b) Temporary power and water supply for the construction. c) Temporary access road for the construction. (2) External Works Landscaping, planting, fence and approach road beyond the site (3) Utilities and Facilities a) Water Supply Construction from the main feeder to the water valve at the water supply meter including the water supply meter. b) Sewerage Piping works from the connection manhole in the site to the existing sewerage line. c) Storm Drainage Drainage line from the site to the existing line including the expansion work of the existing drainage line beside the existing building d) Power Supply Cabling works from the existing power supply point to the PLN room, the installation of high tension receiving panel and connection works. e) Telecommunication Work Cabling works from existing cross connection point to MDF and connection of cables including the public telephones and the connections to the public telephones. f) The provision of gas cylinders for the Kitchen

(continue to next page)

Portions by the Japanese Side	Portions by the Indonesia Side BAPELKES-MND	Portions by the Indonesia Side BAPELKES-UPD
(4) Exterior Work Road, path and parking lots within the site (5) Equipment Equipment for training (6) PLN Room, Electric Room, Electric Generator Room, Pump Room	(4) Others a) Governmental works including the application and obtaining Governmental approvals and permissions b) Smooth custom clearance and tax exemptions for the imported construction materials and equipment (5) Management, operation and maintenance cost for the new building and facilities (6) Tax exemptions and necessary preferential treatment for the construction staff from Japan or a third country (7) Smooth entry, re-entry and departure of Indonesia for the Japanese technical staff	(4) Others a) Governmental works including the application and obtaining Governmental approvals and permissions b) Smooth custom clearance and tax exemptions for the imported construction materials and equipment (5) Management, operation and maintenance cost for the new building and facilities (6) Tax exemptions and necessary preferential treatment for the construction staff from Japan or a third country (7) Smooth entry, re-entry and departure of Indonesia for the Japanese technical staff

3-1-5 Consultant Supervision

The scope of the supervision works during the construction phase is as follows:

(1) Check and approval of the construction plans and drawings

Checking and approving of the construction plans, construction schedules, working drawings, materials, samples, equipment lists, etc. submitted by the Contractor.

(2) Management of the construction schedule

Giving instructions to the contractor and reviewing the progress report submitted by the Contractor in order to complete the construction work as scheduled. In the event of the construction work being carried by the Government of Indonesia is found to be delayed, the Consultant may urge a faster schedule for the construction work.

(3) Quality control

Checking and giving approval for the quality of materials and construction works in accordance with the specifications. However, the materials which are imported from Japan or other third countries will be checked by architects and engineers in the head office or branch offices of the Consultant.

(4) Checking of the finished product

Checking the finished products and confirming the quantity.

(5) Assistance of payment and issuance of certificates

Assisting with the procedures of checking bills, etc., relating to the payment of construction expenditure and issuance of certificates such as the certificate of practical completion, the completion certificate, etc., if necessary.

(6) Check and submission of monthly progress reports

Checking and approving monthly progress, completion documents and photos of works from the contractor and reporting the progress of the construction work to the Government of Indonesia and JICA.

The Consultant shall also prepare and submit the completion report in accordance with the Grant Aid Programme guidelines to the Japanese Government.

(7) Others

Manage and coordinate the schedule and works in order to achieve smooth operation with works executed by the Government of Indonesia, if necessary.

3-1-6 Procurement Plan

(1) Procurement Plan for Building Construction

The procurement plan is prepared by considering the fact that most building materials are available in Indonesia. When procuring the materials for the project, it is necessary to select those which facilitate good maintenance and management. Besides this, the procurement period and of the transportation procedure must be carefully investigated.

Procurement of materials used in this project is defined as shown in Table 3-2.

Table 3-2(1) Procurement Situation of Construction Materials

Name of material	Locally Produced	From Japan	From Third Country	Remarks
Sand/Gravel	○			
Cement	○			
Bricks	○			
Timber	○			
Re-bar	○			
Concrete Blocks	○			
Tiles	○			
Wood Fittings	○			
Metal Fittings	○			
Glass	○			
Waterproof Agent	○			
Sheeting Plywood	○			
Roof Tile	○			
Roofing Material	○			
Plastic Tiles	○			
Ceiling Board	○			
Paint	○			
Miscellaneous Hardware	○			
Distribution Panel Board	○			
Lighting Appliances	○			
Electric Cable/Conduit	○			
Wiring Equipment	○			
Control Panel	○			
Transport	○			
Communication Appliance	○			
PVC pipes	○			
Sanitary Fixtures	○			
Elevated Reservoir Tank	○			
Pumps	○			

Table 3-2(2) Procurement Situation of Construction Equipment

Name of material	Locally Produced	From Japan	From Third Country	Remarks
Back hoe (0.6m^3)	O			with breaker
Shovel loader	O			
Dump truck (4t)	O			
Truck (4t)	O			with boom
Vibrating roller	O			
Rammer	O			
Compactor	O			
Concrete mixer (0.3m^3)	O			tilting mixer
Re-bar cutter	O			
Re-bar bender	O			
Mortar mixer (0.3m^3)	O			
Concrete Block making machine	O			
Water pump	O			
Generator (35kVA)	O			
Generator (2.2 kVA)	O			
Engine welding machine	O			
Crusher	O			
Tank lorry	O			
Temporary scaffolding	O			
Concrete Dumper	O			for transporting on site
Batcher plant	O			

(2) Procurement plan for Equipment

Many of the equipment for the project, specially general electrical products and furniture, are covered by the importation ban in Indonesia, thus, will have to be procured in said country.

However, some items such as simulation equipment composed of medical items, folded type desk, computer projector, and CCTV set are not produced in Indonesia, thus, may be procured in Japan or any member country of OECD. However, the possibility of ordering the furniture from local manufacturers and the local purchasing of a computer projector and CCTV set will be looked into during the course of project implementation. The necessity of the local procurement of personal computers, copying machines and vehicles is recognized because this equipment would need repair and maintenance services from the agent which are located in Ujung Pandang and Manado.

To summarize, equipment and furniture which are produced in Japan, any member country of OECD or Indonesia will be procured in Japan or Indonesia.

3-1-7 Transportation Plan

The schedules and expected routes of transportation are described as follows:

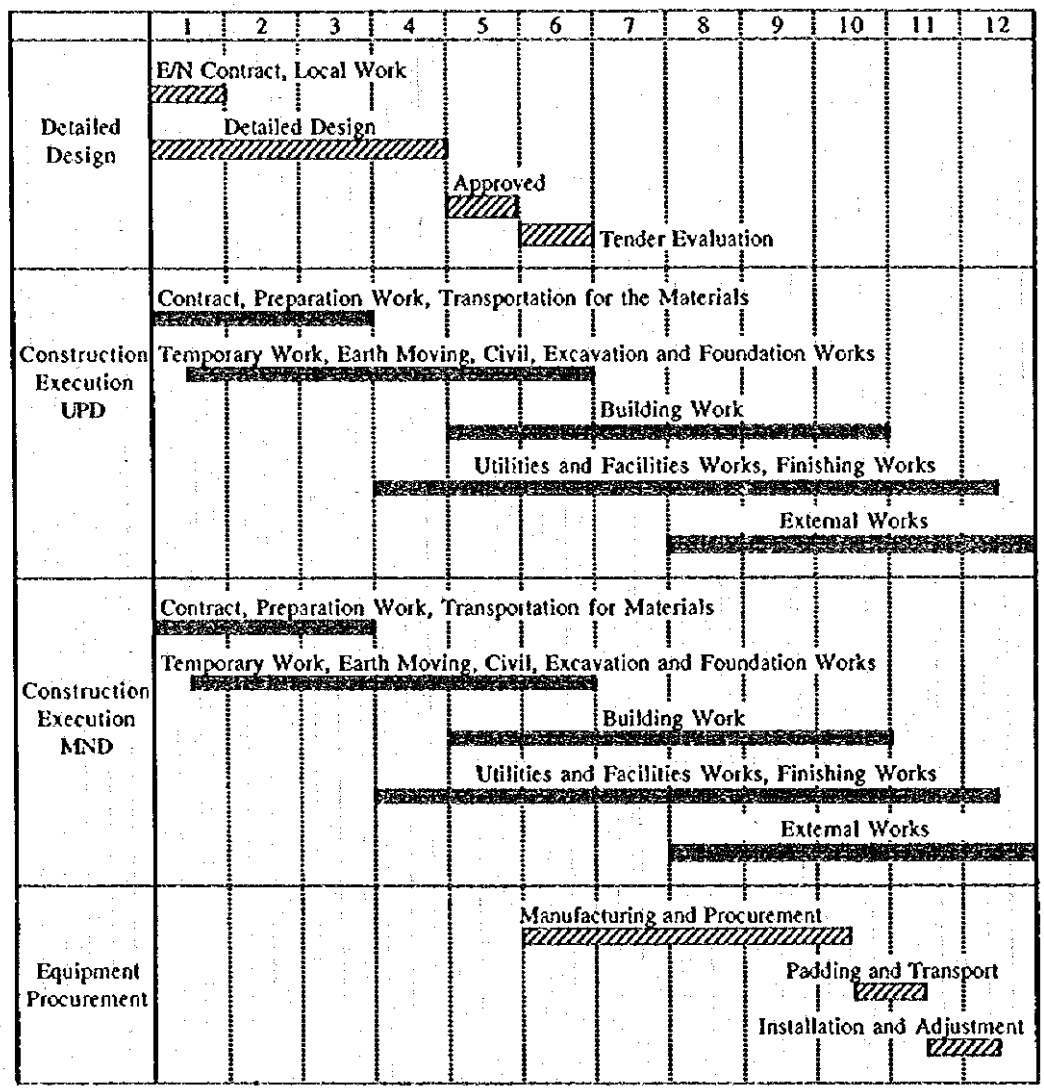
A) Japan —sea (2 weeks)→ Jakarta —sea (1 month including customs clearance)→ MND —road (1 week including unloading)→ the Project Site

B) Japan —sea (2 weeks)→ Jakarta —sea (1 month including customs clearance)→ UPD —road (1 week including unloading)→ the Project Site

3-1-8 Implementation Schedule

The tentative implementation schedule for the Project is expected to be as shown in Table 3-3.

Table 3-3 General Project Scheule



3-1-9 Obligations of the Recipient Country

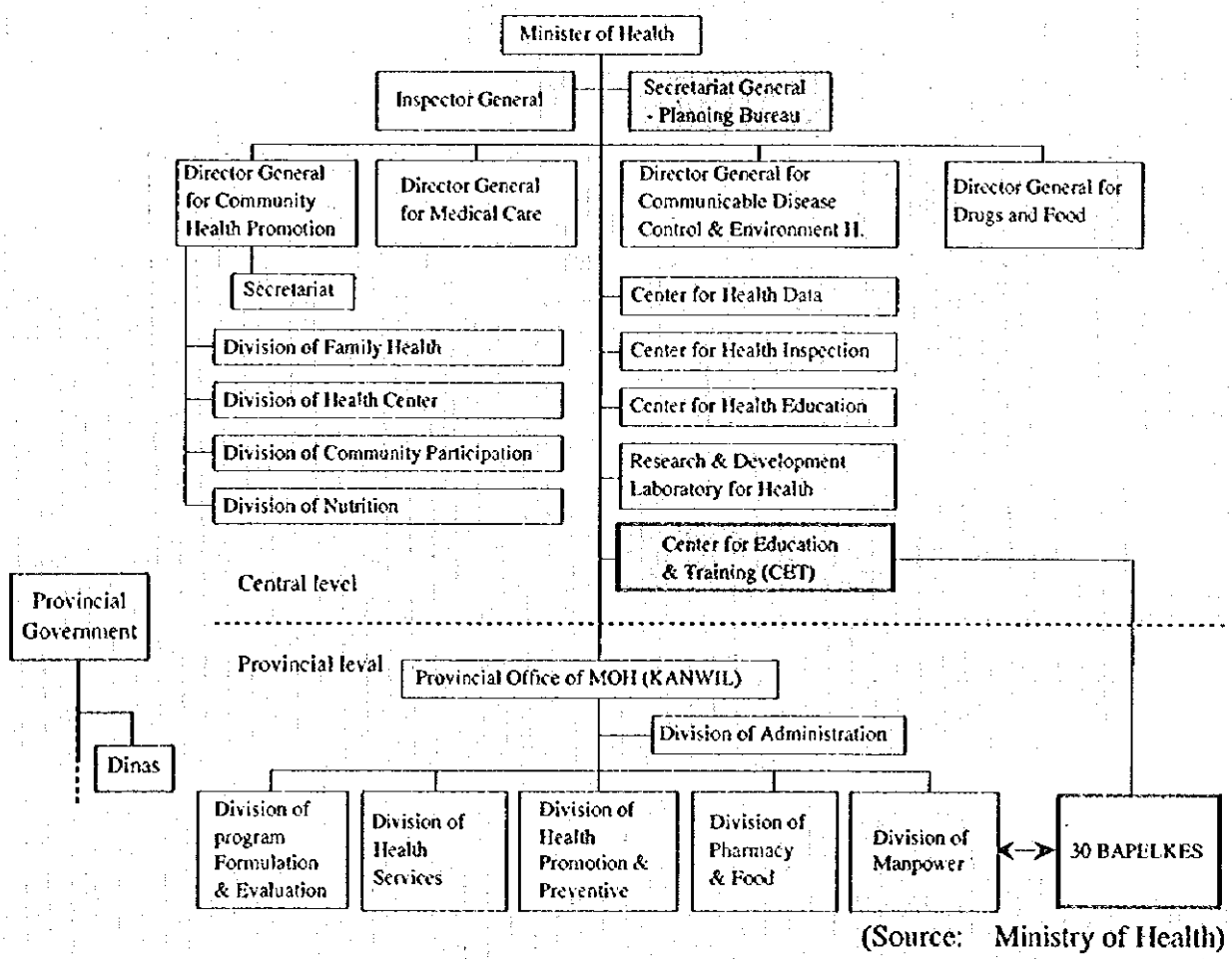
See Table 3-1 Undertaking required to the Government of the recipient country.

3-2 Operation and Maintenance Plan

3-2-1 Operational Body

(1) Project Implementing Agencies

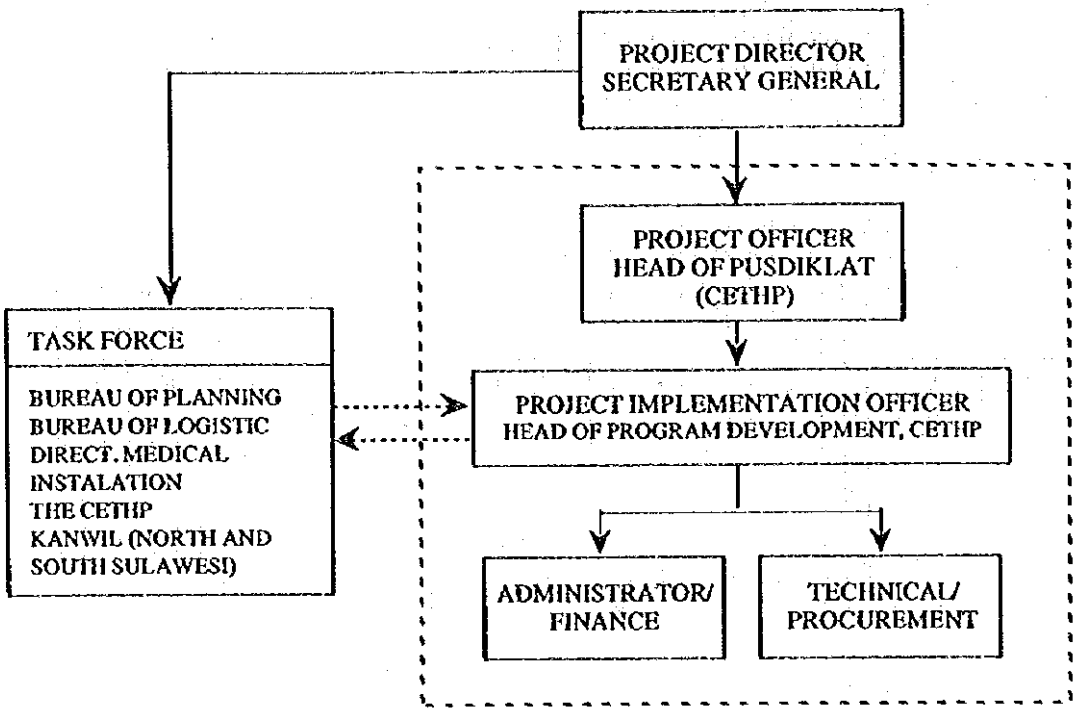
The Ministry of Health, Government of Indonesia is responsible for the administration of the Project. The Center for Education and Training of Health Personnel (CETHP) is responsible for the execution of the Project with the support of the Planning Bureau (see Fig. 3-3).



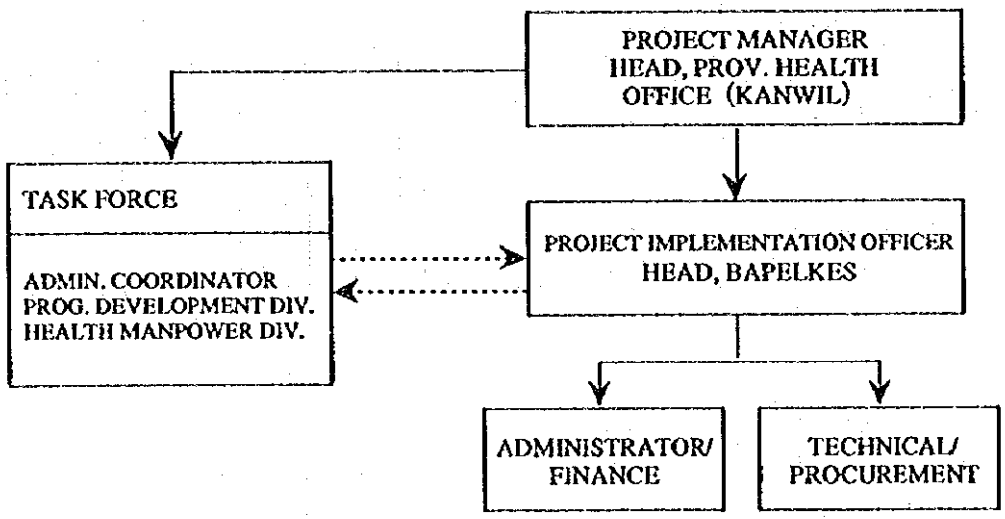
(Source: Ministry of Health)

Fig. 3-3 Organization of the Ministry of Health

For implementing this project, Project Implementation Units will be established in both the of central level and provincial level, as shown in Fig. 3-4.



<Central Level>



<Provincial Level, North Sulawesi and South Sulawesi>

Fig. 3-4 Organization of Project Inplementation Units in Central Level and Provintial Level

(2) Project Facility Management Organization

Presently, BAPELKES-MND is classified as a "C" class health manpower training institution and BAPELKES-UPD is classified as a "B" class. After completing Project construction, BAPELKES-MND and BAPELKES-UPD will be upgraded to "B" and "A" classes, respectively. Accordingly, organization changes and an increase of staff are planned. Management and operation organization and the staff of each BAPELKES are described below:

A. BAPELKES-MND

1) Management and Operation Organization

Present and future organization charts of BAPELKES-MND are as shown below. Changing of the organization and staff increasing are planned in accordance with upgrading of "C" class to "B" class after Project completion.

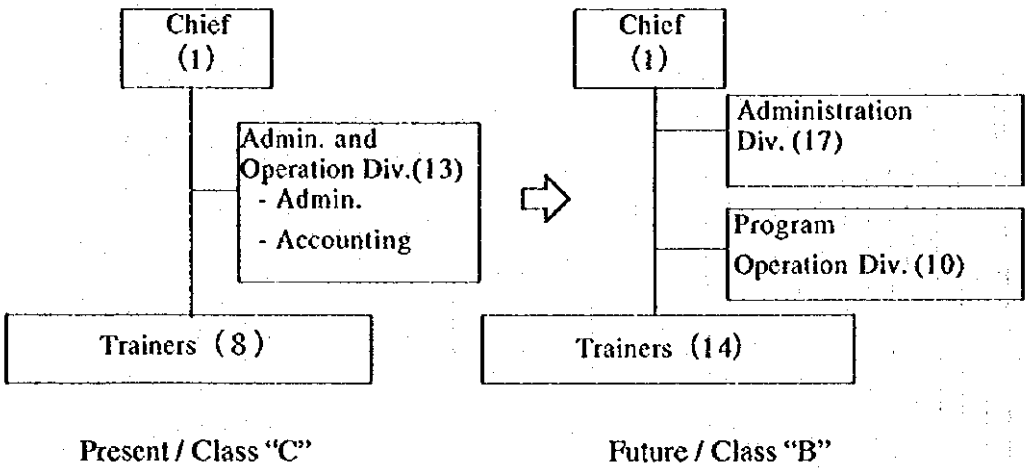


Fig. 3-5 Management and Operation Organization of BAPELKES-MND.

As shown in Fig. 3-5, the present organization of BAPELKES-MND is simple: It has a chief, trainers, and the Administration and Operation Division. In accordance with upgrading to a class B BAPELKES, the present administration and operation section will be strengthened by separating it into an Administration Division and an Operation Division. The staff of BAPELKES-MND are those who were dispatched from KANWIL and DINAS. Each staff's capability greatly varies from individual to individual. It will be an important subject to establish a strong organization under the chief and upgrade the capabilities of the staff.

2) Staff Members and Increase Plan

The present staff members and future increase plan of BAPELKES-MND are explained as below. When the present "C" class is upgraded to "B" class, the staff should be increased to twice its present number.

Table 3-4 Number of Staff Members of BAPELKES-MND (Unit: Persons)

Position	Present	Future	Remarks
A. Chief	1	1	
B. Administration Division	12	19	Including a building, equipment maintenance staff and Librarian present.
C. Program Operation Division	-	9	Including a statistician and Librarian (future).
D. Trainers	8	14	
Total	22	44	

* A Librarian will be included in the Administration Division in Future. However, at present, Librarian belongs to the Admiistration Division.

(Source: BAPELKES-MND)

a) Administration and Operation Division

In accordance with the upgrading of the present "C" class to "B" class, staff members in the Administration and Operation Division should be increased. (See Table 3-4.) It is planned to increase the staff by 16 over a two year period. Authorization for the staff increase has been requested to KANWIL.

During the fiscal year 1999/2000, the Administration and Operation Division will be separated into an Administration Division with 17 staff members and an Operation Division with 10 staff members. For the Facility and Equipment maintenance, it is planned to assign a sanitarian for sanitation/Water and Sewerage Control work and an engineer graduated from Technical School for Electrical work.

The head of Administration and Operation Division was transferred last year prior to this project without obtaining a replacement. Thus, the head of BAPELKES has to be also in charge of Administration and Operation matters. However, a new division head shall be selected by KANWIL and will be assigned in the near future. In order to improve this situation, it is hoped that the skill and knowledge of the staff can be upgraded. On the other hand, as a head of the Operation Division, a staff is under training to be brought up.

Table 3-5 Staff Increase Plan (Unit: persons)

	1997/98	1998/99	1999/2000
Number of Increase	–	6	9
Total Number	12	18	27 (Admin.: 19, Operation: 9)

(Source: BAPELKES-MND)

b) Trainer

Based on the request from BAPELKES, trainers are selected and placed by KANWIL, and they should be approved by CETHP based on BAPELKES's application. The number of the trainers are regulated by CETHP's standards. Presently there are eight trainers at BAPELKES-MND. From time to time, additional lecturers are dispatched from KANWIL depending upon the contents of training. Most of the trainers are sanitarians, nutritionists, and medical doctors who retired from KANWIL, DINAS and hospitals.

As it is planned to have 14 trainers after the project completion, it would be necessary to add six new trainers. Two of them have already been secured and will be assigned in this year. Four others of them have already been requested to KANWIL as follows and are being selected.

Table 3-6 Trainer Increase Plan (Unit: persons)

	1997/98	End of 1997/98	1998/99
Type and Number of Trainers	- Medical Doctor: 4 - Sanitarian: 1 - Nutritionist: 1 - Nurse: 1 - Health Administrator: 1	To be increased: - Medical Doctor: 2 (October 1, November 1)	Requested to add: 4 - Pharmacist: - Midwife - Health Administrator - Health Educator
Total Number	8	10	14

(Source: BAPELKES-MND)

Full time trainers of BAPELKES-MND frequently participate in the training program held by program holders such as KANWIL and DINAS according to their request. Thus, they are aware of the type of training being held in the entire North Sulawesi area and the type of equipment units being used for training by each program holder. Sometimes, they assist the training method held by the program holders outside of the BAPELKES.

B. BAPELKES-UPD

1) Management and Operation Organization

The management and operation organization of BAPELKES-UPD is shown in the figure below. In accordance with the upgrading of the classes from "B" to "A", the alteration of the organization and staff increase should be made. Further, it is planned to add a Program Planning Division. The feature of the Program Planning Division has not been decided upon as of this date.

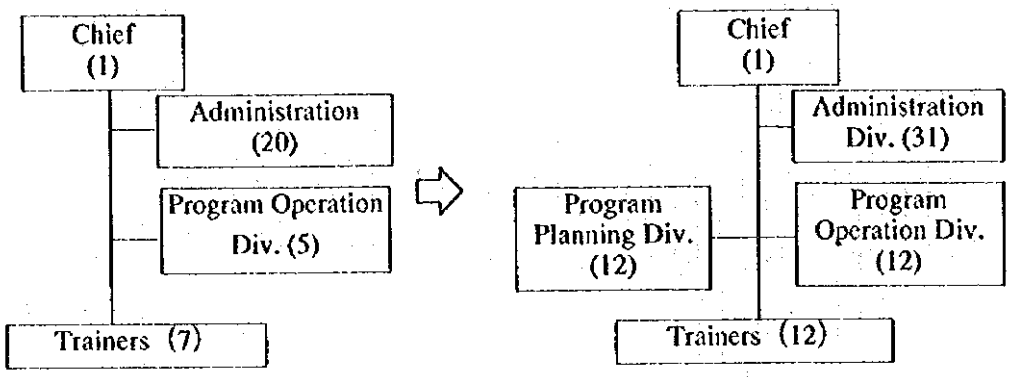


Fig. 3-6 Operation and Management Organization of BAPELKES-UPD

2) Staff Members and Increase Plan

a) Administration and Operation Sections

Presently, there are 34 staff members at BAPELKES-UPD. In the future (target year 2000) it is planned to increase the staff to 68, twice the present number. The Administration Division and Program Operation Division are presently independent divisions. The Administration Division includes accounting, personnel affairs, facility and equipment maintenance staff. As for the maintenance staff, 2 are for facilities and 1 is for equipment has been assigned. However, future provisions to increase the maintenance staff must be clearly confirmed.

Table 3-7 Number of Staff Members of BAPELKES-UPD (Unit: persons)

Position	Present	Future	Remarks
A. Chief	1	1	
B. Administration Division	18	24	Including facility and equipment maintenance staff
C. Program Planning Division	-	12	
D. Program Operation Division	7	19	Including Librarians and Statisticians
E. Trainers	7	12	
Total	34	68	

(Source: BAPELKES-UPD)

b) Trainers

The trainer fields at BAPELKES-UPD are listed in the table below. Selection of trainers are decided upon through the approval of CETHP. BAPELKES-UPD is a "B" class training institution with seven trainers. There will be a "A" class with 12 trainers in the future, but it will still be less than the number at BAPELKES-MND. It is considered that the securing of trainers, who are medical doctors, would be easy in the urbanized area of UPD because of its large population.

Further, it is considered that the involvement of trainers in the training program at BAPELKES-UPD is different than at BAPELKES-MND.

Trainers at BAPELKES-UPD only participate in the training programs supported by the ordinary budget of BAPELKES, it is greatly different with the BAPELKES-MND. Thus, it is believed that their understanding of the contents of training programs conducted by program holders such as KANWIL and the training equipment units is superficial. It seems that most of activities of BAPELKES are mainly conducted by KANWIL. When BAPELKES-UPD is upgraded to a "A" class BAPELKES, it is expected that training programs will be conducted more independently by BAPELKES, with not only by increasing the number of trainers, but the trainers positive participation and cooperation should be more encouraged.

Table 3-8 Number of Trainers by Field at BAPELKES-UPD

(Unit: persons)

Field	Present Number	Future Number (2000)
Medical Doctor	3	12
Nurse	2	
Pharmacist	1	
Health Administrator	1	
	7	12

(Source: BAPELKES-UPD)

3-2-2 Budget

(1) Operation and Management Budget

The past, present, and future proposed budget of BAPELKES-MND and UPD are as shown in Table 3-9 (see Appendix-9).

Table 3-9 Operation Budget of BAPELKES (Unit: thousand Rp.)

	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02	2002/03
BAPELKES-MND	150,632	176,017	225,929	261,596*	424,720*	449,490*	475,875*	503,915*
BAPELKES-UPD	195,395	271,097	318,355	392,026	470,431.2	564,517.4	677,420.9	812,905.1
	Current Expenditure			Future Provision				

Source: MOH and BAPELKES-MND (with *)

As seen in the above table, the amount of the budgets of both BAPELKES have increased in accordance with the development of their activities. It is expected that this increase trend will continue in the future. It is planned to increase the budget of the BAPELKES-UPD by 20% each year for the next five years. Realization of the plan is highly expected.

(2) Composition of Budgetary Funds

BAPELKES' budgets are, shown in Table 3-9, comprised of Management and Operation budget and the supplemental budget which including the Project cost for the portions to be dealt with by the Indonesian Side and the construction cost for the stuff housing of BAPELKES-MND. The Management and Operation budget is composed of staff salaries, facility operation and maintenance costs, operation and management costs including own training expenditures and other miscellaneous costs. The training costs for the programs held by KANWIL and DINAS in the BAPELKES' facilities are financed by program holders and committees, which will be revenues of BAPELKES.

Revenue source of BAPELKES is consisting of mainly facility rental fees to the other sections of the Ministry of Health, other public department and private sectors. Different fees are charged dependent upon the "A" or "B" class BAPELKES and fees are classified into 3 steps according to program holders (see APPENDIX-11). Once the facilities of BAPELKES are improved, BAPELKES and other program holders are able to hold training in the facilities more frequently than before, and large seminars and conferences are possible to hold by their own auditoriums.

Recently, the Government of Indonesia has been promoting the SWADANA system (Self Financial System) of each governmental agency. As mentioned above, the improvement

and extension of facilities and equipment by the Project can be expected to strength the BAPELKES' self financial abilities.

(3) Determination Method for Budget

Determination procedures for budgetary funds in the Routine Budget Category are as shown in Fig. 3-7. Thus, budget for operation and maintenance will be increased in accordance with expansion of BAPELKES facilities.

1) Determination Procedures for Routine Budget

a) Each BAPELKES prepares their budgetary plan in the Routine Budget and is to be calculated based on the format set up by the Ministry of Health, and proposes the plan to CETHP during an April and May period. The budgetary request is also submitted to the Ministry of Health through KANWIL.

b) The submitted budgetary requests are examined and adjusted by CETHP during a June through September period. CETHP adjusts all the BAPELKES's budgets and, through discussions with related departments, the final requests are submitted to the Ministry of Health. The Ministry of Health negotiates the budgets based on the requests with BAPPENAS during October.

c) After approval by BAPPENAS, the budgets are allotted to each BAPELKES through the Ministry of Health and CETHP. KANWIL monitors BAPELKES' activities and budget expending conditions.

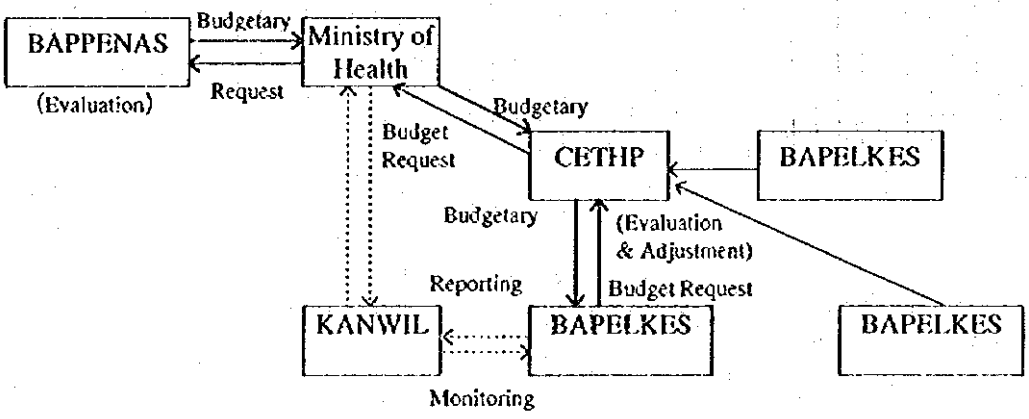


Fig. 3-7 Budgetary Funds Determination Procedures

2) Calculation Method for Budgetary Funds

The Ministry of Health (MOH) has established the budgetary fund calculation method for calculating the amount of the basic budgetary funds in the Routine Budget Category of the agencies within MOH based on the following items:

Budgetary Fund Calculation Base Items:

a) The number of participants in training courses (actual and forecasted number), the number of staff and trainers (by each rank), land area, facility size (by room size for each use purpose), infrastructure conditions, real estate asset value, number of vehicles, BOR and SOR, etc.

b) Training plan implementation plan: Training courses pre-assignment nurses training to be conducted by budgetary funds in the Routine Budget Category. MOH has the budget calculation forms and the following items shall be calculated by using the forms: (1) personnel expenditures (number of trainer management staff times the unit costs), (2) training material preparation costs (text book for each training course), (3) transportation costs (trainees transportation costs plus trainers and specialists transportation costs from CETHP), and (4) other costs (such as trainees' lodging and meal costs, copy making costs, etc.).

c) Existing problems

d) Personnel expenditures

e) Other expenditures (possessing equipment, equipment to be purchased, expendable items, etc.)

f) Facility and equipment operation and maintenance costs (2% of existing equipment price)

g) Transportation costs (CETHP, Jakarta round trip)

h) Additional budget would be granted as the need arises or depending on Program.

(4) Training Programs' Budget Formulation

Other than those training programs that are held with BAPELKES' own budget as described above, there are other training programs that are held by KANWIL and DINAS. The budget for those training programs are formulated as follows:

1) Budget Formulation

During April and May period, each Health Center proposes the training programs to DINAS at the District level. DINAS at the District level evaluates and adjusts the proposals during June then submits the adjusted proposals to DINAS at the provincial level during July. DINAS at the Provincial level evaluates and adjusts the proposals with KANWIL then submits them and budgetary request to the Ministry of Health during an August through September period. Once training program proposals are approved by BAPPENAS, the Ministry of Health notifies the approvals to each

BAPELKES through CETHP, KANWIL and DINAS during a December through January period.

Budgetary requests for training programs are made by the same procedures. Based on the Central Government's "Self Financial System" policy, there is a movement to shift the training courses that are held by KANWIL and DINAS at the provincial level to DINAS at the District level. Once the training courses are shifted to DINAS at the District level, the budget for those training courses will be allocated to DINAS at the District level as well as shifting the program holders. However, due to the lack of facilities at the District level the difficulty in securing trainers, and inefficiency of training, it is believed that adjustments between KANWIL and DINAS at the Provincial level for the matter will be unavoidable.

2) Calculation Method for Training Program Costs:

Cost items for each training program are set as listed below and the training program costs shall be calculated based on these items. Then the costs shall be requested.

a) Lodging costs including three meals per person at BAPELKES:

a)	Low level (two menu meals):	Rp17,500
b)	Medium level (three menu meals):	Rp21,000
c)	High level (four menu meals):	Rp32,500
	Lunch menu varies from Rp5,000 to	Rp17,500

b) Training facility rental fees (per day): The training facility rental fees are set in accordance with the trainee's affiliation, such as the agencies of the Ministry of Health, other government agencies, and private sectors as shown in Appendix-9.

c) Trainees transportation fee:
Depending upon the distance from a trainee's residence to BAPELKES, each trainee is provided with a transportation fee in the range from Rp4,000 to Rp10,000 per one way plus a miscellaneous transportation allowance in accordance with the trainee's position as follows:

a)	Above department head level:	Rp140,000
b)	Medical doctor level:	Rp130,000
c)	Nurse and midwife level:	Rp90,000

d) Trainer Fee (when invited from other organization):
One unit (45 minutes period) per person: Rp15,000 of salary plus Rp10,000 of transportation allowance.

e) Daily allowance during training period:
Daily allowances are set in accordance with the length of a training period. Standard daily allowances are as follows:

a) Three week training period: Rp4,000 / day
b) Three month training period: Rp2,000 / day

f) Area transportation fee:
Actual transportation fees in each training area are paid when training is held at a hospital or health center.

Each BAPELKES deposits Rp2,500 of the lodging fee and the full amount of the facility rental fee per person as the project tax at a bank specified by the Government. The deposited money is known as the supplemental budgetary fund. Ordinary budgetary funds of each BAPELKES in the following year are formulated by taking into consideration the amount of the supplemental budget. The deposited money is reimbursed to the BAPELKES at the final stage.

3-2-3 Levels of Operational Staff and Trainers

(1) Staff

The operational and management staff of BAPELKES consists of personnel sent from KANWIL and DINAS. The necessary staff increase for upgrading BAPELKES from "B" class to "A" class or from "C" class to "B" class has already been requested. However, in reality the level of staff sent from the organizations varies greatly from individual to individual. This is problematic at the department head and section head levels. At BAPELKES-MND, operation and management division heads are still not filled and, as a result, smooth work is not conducted. In accordance with the upgrading of BAPELKES classes and the organization expansion, upgrading of the level of the staff will be a future subject. Cooperation with KANWIL and DINAS will be very important for each BAPELKES.

(2) Trainers

As described in the previous section, the new trainers stationed by KANWIL based on the request from BAPELKES is evaluated on the administrative matters and approved by CETHP. After that, the National Administration Board evaluates the skill and approves based on the recommendation by CETHP. Most of the trainers either have a medical doctor certificates or a nurse certificates. They are graduates either from universities or post graduate schools. Most of them are retirees either from KANWIL or DINAS after serving a long period of time as high ranking officers, such as department heads, or retired medical doctors from hospitals. Some of the trainers are medical doctors who simultaneously work in their own clinics. Although it is believed that the knowledge and

experience levels of trainers are high, each trainer's method of participation in the training program in BAPELKES-MND varies from that in BAPELKES-UPD. It is expected that trainers in BAPELKES-UPD should participate more positively in the training program.

Trainers of each BAPELKES participate in CETHP's training programs. To provide training for meeting the needs in rapidly progressing medical fields, the upgrading of trainer levels as well as an increase in their number are necessary. Thus, guidance of CETHP for the training contents and methods will be important in the future.

As BAPELKES-UPD will be upgraded to class "A" BAPELKES, they are expected to conduct leader training for local BAPELKES and other medical related fields. Thus, assistance of CETHP to BAPELKES-UPD is thought to be necessary.

(3) Employment and Training for BAPELKES new trainer

Because new trainers are basically recruited from DINASKES Tk I or II staffs, an addition of trainers is regarded as personnel changes within the governmental agency. For this reason, basic and in-service training of the new BAPELKES' trainers is usually held after the transfer. Basic training is held by CETHP for 2 months at the headquarters of CETHP in Jakarta and in-service training is held at each BAPELKES.

Newly transferred trainers are possible to train trainees as soon as they are transferred, because the most of new trainers have teaching experience in training programs held by KANWIL and DINASKES Tk I and II. BAPELKES-UPD and BAPELKES-MND, which will be upgraded to A class BAPELKES and B class BAPELKES in 1999 respectively, will not be increased the number of trainers on April 1999 at once, but will be increased gradually to meet the proposed increase plan standardized by CETHP by 1999/2000 financial year.

3-2-4 Operation and Maintenance of the Facility and Equipment

(1) Maintenance and Management Plan for Facility

(A: BAPELKES-MND)

After the completion of the project, BAPELKES-MND will be elevated from a C class to a B class, and the Management and Operation Division will be changed from an Administration and Operation Division to a separate Administration Division and a Program Operation Division. Accordingly, the staff will be increased from the present 14 to 30 people. Furthermore, the budget to be allocated will be in accordance with the size of the facility (refer to Section 1-4 Project Implementation Organization), and there seems to be no problems with the budget. Considering the present state of maintenance and management of facilities, there should be no major problems. After the completion of the Project, the size of the facility will be three times that of the present facility. As there are also plans for an auditorium and a special training classroom, necessary staff to maintain

and manage the facility needs to be secured. The staff should be capable of dealing with easy repairs to the facility. As with the operation of the facility, the staff should be educated and trained to conduct maintenance and management with responsibility.

(B: BAPELKES-UPD)

As mentioned previously, BAPELKES-UPD will also be elevated from a B class to an A class and accordingly the number of staff is planned to be increased. Although the budget will increase in accordance with the increase in size of the facility, there should be no problems. Although the present facility was constructed more than ten years ago, maintenance and management have been properly conducted and there should be no problems. However, due to the construction of an auditorium and special training rooms, the number of maintenance and management staff needs to be increased and improvements in their standards must be conducted.

(2) Maintenance and Management Plan for Equipment

Training at BAPELKES is conducted mostly through lectures, with practical training being conducted at hospitals and public health centers. Thus, equipment that require high technology or special maintenance are not included in the request. Maintenance and management difficulties in the present facility is centered on the computer. However the cause of the problem was related to changes in voltage and frequent power outages. In order to solve the problem, computers and copying machines that are affected by changes in voltage are to be equipped with a constant voltage supply device. The BAPELKES have a maintenance staff that can handle easy repairs. UPD and MND also have no problems with regard to the procurement of expendable supplies for the equipment. Halogen lamps for overhead projectors and slide projectors need to replaced every three months. Although they are expensive items, they have been replaced without problem and there should be no problems with regard to the budget.

Thus, it can be seen that both UPD and MND BAPELKES are fully capable of maintaining and managing the equipment.

(3) Maintenance and Management Cost

The Operation and Maintenance Costs have been analyzed in order to review the Budget Plan proposed by Indonesian side. The results are as follows:

The running costs for the utilities for the proposed facilities were estimated as follows by assuming that the demand factors as same are the existing conditions:

<A: BAPELKES-MND>

1) Electricity Costs (MND)

a) New Building

By applying the standard rates of the Electric Power Company (P.T. PLN) in Indonesia, electricity costs for the Project building were estimated as follows:

No.:	23	
COL. TARIF:	G-2/MU	
Basic Service Rate:	4,560 Rp/kVA month	
Standard Rate / kWh:	WBP (18:00 - 22:00)	176.50 Rp/kWh
	LWBP (22:00 - 18:00)	130.50 Rp/kWh

The contract demand was assumed based on the demand factor of 0.85 as follows:

$$250\text{kVA} \times 0.85 \fallingdotseq 210\text{kVA}$$

The rate for the contract will be as follows:

Basic Service Rate: 210kVA x 4,560 Rp/kVA month x 12 month
=11,491,200 Rp/yr.

Service Rate/kWh: WBP: 210kVA x 0.8 (power factor) x 276 days x 2hr. x 0.2 x 176.50 Rp/kWh = 3,273,580Rp/yr

LWBP:210kVA x 0.8 (power factor) x 276 days x 10hr x 0.6 x 130.50 Rp/kWh = 36,306,144

Estimated total electricity costs for new building: = 51,070,924Rp/yr ··· ①

b) Existing Building

Based on the data received from BAPELKES, the electricity costs for electricity use are approximately 2,683,380 Rp/yr ··· ②

c) Estimated total electricity costs for the new and existing buildings:

① + ② = 51,070,924 Rp/yr + 2,683,380 Rp/yr = 53,754,304 Rp/yr

The estimated electricity costs for BAPELKES-MND after Project completion is 7.3 times the present budget amount allocated for 1999/2000 (7,353,540Rp). Therefore, BAPELKES must acquire the necessary funds from the Government of Indonesia.

2) Water Use Costs (MND)

a) New Building

The estimated daily water use at the new building is 23m^3/day. The cost of water was calculated as follows:

Monthly water use:	23m^3/day x 23 days/month	= 529m^3/month
	10m^3 x 450Rp	= 4,500 Rp/month
	10m^3 x 675 Rp	= 6,750 Rp/month
	10m^3 x 900 Rp	= 9,000 Rp/month
	499m^3 x 1,350 Rp	= 673,650 Rp/month
Basic Service Rate:		1,500 Rp/month
Tax Stamp:		1,250 Rp/month
Total:		696,650 Rp/month
Estimated yearly water use costs:	696,650 Rp/month x 12 month/yr x 0.6	
	= 5,015,880 Rp/yr ··· ①	

b) Existing Building:

Based on the data received from BAPELKES, the running costs for Water Supply is approximately 466,625 Rp/yr ··· ②

c) Estimated total water use costs for the new and existing buildings:

① + ② = 5,015,880 Rp/yr + 466,625 Rp/yr = 5,482,505 Rp/yr

The estimated water use costs for BAPELKES-MND after Project completion is 5,482,505 Rp/yr. The 1999/2000 budget allocated for water is 5,529,960 Rp/yr. Therefore the budget will be sufficient.

3) Fuel Costs (MND)

a) New Building:

For the emergency electric generator, diesel fuel will be used. Fuel cost is 380 Rp/litter.

Rainy Season (Nov. - Feb.):	Assuming one 10hr power outage a week; 50 l/hr. x 10 hr. x 16 times x 380 Rp/l =3,040,000 Rp/yr
Dry Season (Mar. - Oct.):	Assuming one 3hr period power outage a week; 50 l/hr. x 3 hr. x 32 times x 380 Rp/l = 1,824,000 Rp/yr
Total Fuel Costs:	4,864,000 Rp/yr ··· ①

b) Existing Building

Presently, no emergency generator is installed for the existing building. Therefore, fuel costs haven't been appropriated in the budget. ··· ②

c) Estimated total fuel costs for the new and existing buildings:

① + ② = 4,864,000 Rp/yr + 0 = 4,864,000 Rp/yr

The estimated fuel costs for BAPELKES-MND after Project completion is 3.2 times the budget allocated for 1999/2000 (1,500,000Rp). Therefore, BAPELKES must acquire the necessary funds from the Government of Indonesia.

4) Telephone Costs (MND)

a) New Building:

Costs of telephone lines for New Building were estimated as follows:

Basic Service Rate per line: 20,000 Rp/month

Service Rate per call:

Local calls (Metropolitan): Local call rates are set for three different time periods.

(0:00 - 9:00), (9:00 - 15:00), (15:00 - 24:00)

Local calls were assumed to be 115 Rp/2 min. throughout a day.

Long distance calls: Zone - I (30 - 200km): 108 Rp/7 sec
Zone - II (200 - 500km): 108 Rp/5 sec
Zone - III (over 500km): 108 Rp/4 sec

Thus, all long distance calls were assumed as being 108Rp/4 sec.

Local calls were assumed as 6 min. 20 calls a day

Long distance calls were assumed as 6 min. 5 calls a day.

Local calls: 115Rp/2 min. x 6 min. x 20/day x 23 day/month
= 158,700 Rp/month

Long distance calls: 108 Rp/4 sec. x (6 min. x 60 sec) x 5 day x 23 day/month
= 1,117,800 Rp/month

Basic Service Rate: 20,000 Rp/month x 2 lines = 40,000 Rp/month

Total Cost per Month: 1,316,500 Rp/month

Total Cost at BAPELKES-MND per year:
1,316,500 Rp/month x 12 month/yr x 0.7
= 11,058,600 Rp/yr.

b) Existing Building

Presently no telephone lines are installed in the existing building.

c) Estimated telephone costs for new building

① + ② = 11,058,600 Rp/yr. + 0 = 11,058,600 Rp/yr.

The estimated telephone costs for BAPELKES-MND after Project completion is 2.0 times the budget allocated for 1999/2000 (5,529,960Rp). Therefore, BAPELKES must acquire the necessary funds from the Government of Indonesia.

As stated above, estimated utility costs are as follows:

Electric Expense:	53,754,304 Rp/yr.
Water Expense:	5,900,495 Rp/yr.
Fuel Expense:	4,864,000 Rp/yr.

Telephone Expense:	11,058,600 Rp/yr.
Total Utilities Expense:	75,577,399 Rp/yr.
Estimated Total Utilities Expenses:	75,600,000 Rp/yr.

Total utility expenses will be 3.8 times more than the budget allocated for facility operation costs for 1999/2000 (19,913,460 Rp). The utility cost shortage must be discussed with the Government of Indonesia and a sufficient amount of fund must be secured prior to Project completion.

<B: BAPELKES-UPD>

1) Electricity Costs (UPD)

a) New Building:

By applying the standard rates of the Electric Power Company (P.T. PLN) in Indonesia, electricity costs for the Project facility were estimated as follows:

No.:	22
COL. TARIF:	G-1/LV
Basic Service Rate:	8,500 Rp/kVA month
Standard Rate / kWh:	188.50 Rp/kWh

The contract demand was assumed as 110 kVA increase.

The rate for the contract will be as follows:

Basic Service Rate:	110kVA x 8,500 Rp/kVA month x 12 month =11,220,000 Rp/yr.
Service Rate/kWh:	110kVA x 0.8 (power factor) x 276 days x 12hr. x 0.2 x 188.50 Rp/kWh = 10,987,891 Rp/yr.

Estimated total electricity costs for the New Building:= 22,207,891Rp/yr. ··· ①

b) Existing Building:

Based on the data received from BAPELKES, the running costs for electricity use are approximately 9,000,000 Rp/yr. ··· ②

c) Estimated total electricity costs for the new and existing buildings:

① + ② = 22,207,891 Rp/yr. + 9,000,000 Rp/yr. = 31,207,891 Rp/yr.

The estimated electricity costs for BAPELKES-MND after Project completion is 1.3 times the budget allocated for 1999/2000 (23,287,500 Rp). Therefore, BAPELKES must acquire the necessary funds from the Government of Indonesia.

2) Water Use Costs (UPD)

a) New Building:

The estimated daily water use at the new building is 13m³/day. The cost of water was calculated as follows:

Monthly water use:	13m³/day x 23 days/month = 299m³/month	
	15m³ x 750 Rp	= 11,250 Rp/month
	15m³ x 1,500 Rp	= 22,500 Rp/month
	20m³ x 1,750 Rp	= 35,000 Rp/month
	249m³ x 2,000 Rp	= 498,000 Rp/month
Basic Service Rate:		1,500 Rp/month
Tax Stamp:		1,250 Rp/month
Total:		= 569,500 Rp/month
Estimated yearly water use cost:	569,500 Rp/month x 12 month/yr. x 0.7	
		= 4,783,800 Rp/yr. ··· ①

b) Existing Building

Based on the data received from BAPELKES, the running costs for Water Supply is as follows:

(using a water wagon): approximately = 1,440,000 Rp/month
1,440,000 Rp/month x 12 month/yr. = 17,280,000 Rp/yr.

A city water service pipe will be installed next year. Therefore, the water supply will be changed to the city water supply.

Running cost of City water use was estimated as follows:

Daily water use:	5m³/day	
Monthly water use:	5m³/day x 23 days/month = 115 m³/month	
Service rate:	15m³ x 750 Rp	= 11,250 Rp/month
	15m³ x 1,500 Rp	= 22,500 Rp/month
	20m³ x 1,750 Rp	= 35,000 Rp/month
	65m³ x 2,000 Rp	= 130,000 Rp/month
Basic Service Rate:		1,500 Rp/month
Tax Stamp:		1,250 Rp/month
Total:		= 201,500 Rp/month
Estimated yearly water use cost:	201,500 Rp/month x 12 month/yr.	
		= 2,418,000 Rp/yr. ··· ②

c) Estimated total water use costs for the new and existing buildings:

① + ② = 4,783,800 Rp/yr. + 2,418,000 Rp/yr. = 7,201,800 Rp/yr.

The estimated water use costs for BAPELKES-UPD after Project completion is 7,201,800. The 1999/2000 budget allocated for water use is 43,987,500 Rp/yr. Therefore the budget will be sufficient.

3) Fuel Costs (UPD)

a) New Building

Diesel fuel will be used for the emergency electric generator. Fuel cost is 380 Rp/litter.

Rainy Season (Nov. - Feb):	Assuming one 10hr period power outage a week, 50 l/hr. x 10 hr. x 16 times x 380 Rp/l =3,040,000 Rp/yr.
Dry Season (Mar. - Oct.):	Assuming one 3hr period power outage a week, 50 l/hr. x 3 hr. x 32 times x 380 Rp/l = 1,824,000 Rp/yr.
Total Fuel Costs:	4,864,000 Rp/yr.

b) Existing Building:

Presently, no emergency generator is installed for the existing building. Therefore, the fuel cost has been appropriated in the budget.

c) Estimated total fuel costs for the new and existing buildings:

① + ② = 4,864,000 Rp/yr. + 0 = 4,864,000 Rp/yr.

Presently, the fuel cost hasn't been appropriated in the budget allocated for 1999/2000. Therefore, BAPELKES must acquire the necessary funds from the Government of Indonesia.

4) Telephone Costs (UPD)

a) New Building:

Costs of telephone lines for the New Building were estimated as follows:

Basic Service Rate per line: 20,000 Rp/month
Service Rate per call:
Local calls (Metropolitan): Local call rates are set in the three different time period rates:

(0:00 - 9:00), (9:00 - 15:00), (15:00 - 24:00)
Local calls were assumed as being 115 Rp/2 min. throughout a day.
Long distance calls: Zone - I (30 - 200km): 108 Rp/7 sec
Zone - II (200 - 500km): 108 Rp/5 sec
Zone - III (over 500km): 108 Rp/4 sec
Thus, all long distance calls were assumed as being 108Rp/4 sec.
Local calls were assumed as 6 min. 20 calls a day
Long distance calls were assumed as 6 min. 5 calls a day.
Local calls: 115Rp/2 min. x 6 min. x 20/day x 23 day/month
= 158,700 Rp/month
Long distance calls: 108 Rp/4 sec. x (6 min. x 60 sec) x 5 day x 23 day/month
= 1,117,800 Rp/month
Basic Service Rate: 20,000 Rp/month x 1 line = 20,000 Rp/month
Total Cost per Month: 1,296,500 Rp/month
Total Cost at BAPELKES-MND per year:
1,296,500 Rp/month x 12 month/yr. x 0.7
= 10,890,600 Rp/yr.

b) Existing Building:

Based on the data from existing BAPELKES, the running costs for telephones was assumed to be approximately 40,000 Rp/yr.

c) Estimated total telephone costs for the new and existing buildings:

① + ② = 10,890,600 Rp/yr. + 40,000 = 10,930,600 Rp/yr.

The estimated telephone costs for BAPELKES-UPD after project completion is approximately 10,930,600 Rp/yr. The 1999/2000 budget allocated for telephone costs is 21,608,212.5 Rp/yr. Therefore, the budget will be sufficient.

As stated above, estimated utility costs are as follows:

Electric Expenses:	31,207,891 Rp/yr.
Water Expenses:	4,783,800 Rp/yr.
Fuel Expenses:	4,864,000 Rp/yr.
Telephone Expenses:	10,930,600 Rp/yr.
Total Utilities Expenses:	51,786,291 Rp/yr.
Estimated Total Utilities Expenses:	51,800,000 Rp/yr.

Total utility expenses will be 58% of the budget for facility operation costs for 1999/2000 (88,883,212 Rp). Thus, utility costs for the Project facility will be sufficiently secured in the budget for utility costs for BAPELKES-UPD.