

4.3.2 Civil Work Plan

(1) Basic design

- 1) The pavement for the entrance road, boarding & off-boarding platforms, parking lot, service area and concourse are selected by considering traffic amount, usage and soil condition as well as easy maintenance.
- 2) An effective drainage network is prepared in view of the wide pavement area.

(2) Outline of the plan

Good earth to fill up the site is available from the mountain surrounding the Kathmandu valley, but since the amount from one location is small, earth must be collected early from a number of area in order to secure necessary amount in a short time. Pavement on top of the filled up soil shall be performed separately for the boarding/off-boarding platforms, parking lot, service area and bus washing location.

Different types of pavement include cement concrete, asphalt concrete, asphalt surface and asphalt macadam, but for the Project, cement concrete, asphalt concrete are mainly selected.

As a principle, the demarcation for usage is as follows;

Service area:

In consideration of necessity of oil proofing and water proofing, cement concrete pavement is used.

All other areas than above-mentioned:

In consideration of low cost and maintenance and repair condition, asphalt concrete pavement is used.

An asphalt treated surface was selected for the pedestrian pathway in order to prevent storm water from infiltrating into the base.

Curb stones will be provided for the safety of pedestrians and vehicles.

The drainage of storm water will be conducted by providing necessary slope on the site surface, and water will be directed into the Vishumati river through a drainage ditch, storm water pits with grating will be provided on the terminal building, boarding/off-boarding platforms and parking lot for assuring good drainage. Site preparation and paving shall be conducted by a mechanical method in view of the short construction period and for assuring good quality.

(3) Basic design standard for civil work

The civil work for the Project may be summarized into land preparation, pavement, bus boarding/off-boarding platforms, storm water drainage and safety facilities work.

The standard for land fill-up is as shown in the following diagram. The design California Bearing Ratio, (CBR), (refer to JIS A1211) is expected to be over 6.

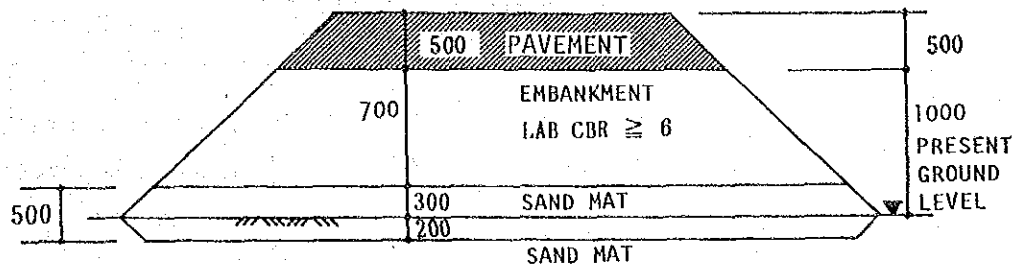


Fig. 4-5 Cross Section of Land Preparation

Pavement design follows the Asphalt and Cement Concrete Pavement Specification of the Japan Road Association. In this design, the traffic was determined as follows:

Number of medium/long route buses

Arriving & departing buses	400 buses/day
No. of buses to be parked	124 buses/day
No. of buses passing the service area	200 buses/day

The traffic classification as specified in the specification was applied as follows:

Classification	large vehicle traffic (buses/day·direction)
A traffic	100 - 250
B traffic	250 - 1000

Pavement for the city bus arrival and departure platforms and the parking space for taxis and passenger cars are based on A traffic.

Based on this classification the traffic at the bus terminal was set as shown in the following table.

Table 4-7 Traffic Classification and Types of Pavement

Traffic	Classification	Pavement
Medium & long route bus arrival/departure berth, road	B traffic	Asphalt concrete
Bus parking lot	A traffic	Asphalt concrete
Service area	A traffic	Cement concrete
City bus arrival/departure berth road	A traffic	Asphalt concrete
Taxi passenger car parking lot	A traffic	Asphalt concrete

For the subgrade of design CBR 6, the pavement structure was established as shown in the following figure (refer to Appendix).

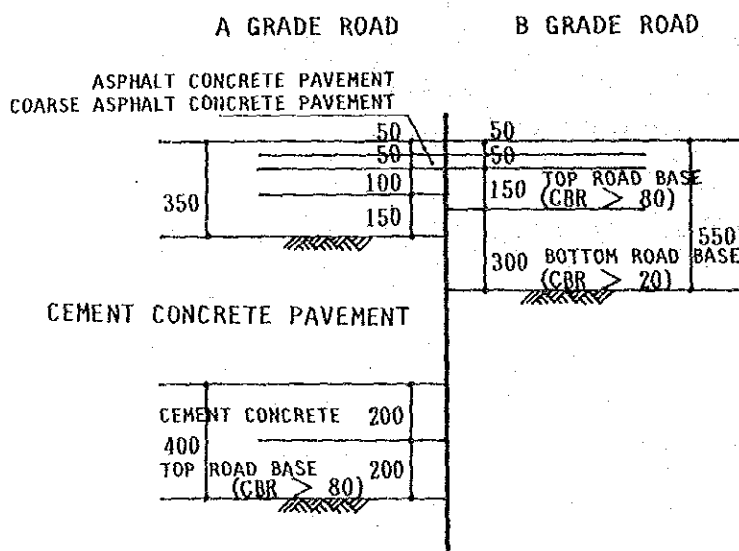


Fig. 4-6 Standard Pavement Cross Section

Road curbstones, grated covers for storm water pits, and storm water drainage manholes were designed in accordance with the standard drawing specified by the Ministry of Panchayat and Local Development and the Ministry of Housing and Physical of the Kingdom of Nepal.

4.3.3 Building Plan

(1) Basic design

- 1) Local construction materials, equipment and method were applied as much as possible.
- 2) Simple structure, finish and equipment were selected to provide facilities easy to maintain at a low cost.
- 3) Outdoor facilities were designed to be easily accessible from the terminal building.
- 4) A compact layout was selected.

(2) Outline of main facilities

1) Terminal building

The terminal building is the control center of bus operation and also the service center for passengers. Therefore the terminal building must be easily accessible by passengers, especially passengers transferring from city transport to medium and long route buses.

The building is separated into an office as an inside core and an open space where passenger waiting rooms and walking space are located. The closed space is for the operators of the terminal and the interface with passengers are the service facilities located facing the waiting room and walking space. The service facilities consist of a baggage checking room, a telephone booth, a post office, an information counter, a bank, a first aid room, a police stand, a kiosk and a tea stand.

2) Public toilet

This is absolutely necessary for passengers taking a long journey. The toilet is set independent of the main building and provided with sufficient ventilation.

(3) Finish

- Materials which match the building, do not dirty easily, is durable and easy to maintain are selected.
- The characteristics of structural materials and other materials will be utilized.
- Local materials will be used as much as possible.

1) Exterior finish

Exterior finish for the terminal building, public toilet, fee collecting stand, store house and rubbish disposal shed are as follows:

i) Exterior wall

- ① Brick finish
- ② Brick base with mortar paint finish
- ③ Color steel sheets

ii) Roof

- ① Color corrugated sheets
- ② Waterproof mortar

2) Interior finish

i) Type A

Floor: terrazzo
Skirt: terrazzo
Wall: mortar EP
Ceiling: sound absorption board

- For terminal building

Manager's room, assistant manager's room,
conference room, office, bus drivers rest room,
first aid room, information counter, bank, post
office public telephone booth, police stand,
kiosk

ii) Type B

Floor: clinker tile
Skirt:
Wall: brick finish
Ceiling: color corrugated sheets

- For terminal building

Waiting room, outside concourse, tea stand

iii) Type C

Floor: trowelled
Skirt: mortar VP
Wall: mortar VP
Ceiling: hard board EP

- For terminal building

Baggage room, electricity room

- For warehouse

iv) Type D

Floor: clinker tile

Skirt:

Wall: ceramic tile

Ceiling: sound absorption board or concrete EP

- For terminal building

Toilet

- For public toilet

(4) Structure design

1) Standard

Since there is no structure standard in the Kingdom of Nepal, the Indian Standard, which mainly follows the BS standard, is normally applied. The structure standard for the Project is based on the Japan structure standard, but in places, the Indian standard is applied according to local condition.

2) Load condition

i) Dead load

Dead load was calculated for structure members and finishing materials.

ii) Live load

The live load specified in the Japan building code for different types of rooms was applied as shown in the following table.

Table 4-8 Live Load

(Unit: kg/cm²)

Room	Floor & joist	Girder, column and foundation	For earthquake
Ordinary room	180	130	60
Office, waiting room	300	180	80
Warehouse	500	400	200

iii) Seismic force

According to the Indian Standard, Kathmandu is in Zone V where the basic horizontal seismic factor is 0.08.

iv) Wind force

$$P = c \times q$$

p = Wind pressure force kg/m²
 c = Wind pressure factor
 q = speed pressure

According to the Indian Standard, $q = 150 \text{ kg/m}^2$; the Japan building code standard was applied for c .

v) Earth bearing capacity

The earth bearing capacity is estimated as 9 t/m^2 from sub-soil survey results.

3) Structure

Main structure

Foundation: Direct foundation of reinforced concrete.

Frame: Riddit frame steel structure was applied to the terminal building and the boarding & off-boarding platforms, after studying the span length, soil condition and construction period. Other buildings are masonry structure in combination with reinforced concrete structure.

4) Construction materials

i) Concrete

Since the supply of Nepal cement is limited, imported cement is mostly used. Both fine and coarse aggregates are available locally. A ready-mixed concrete batcher plant shall be installed at the site to control concrete mix. Concrete of 180 kg/cm^2 compressive strength at 28 days is believed to be suitable in view of the quality of local aggregate, but the actual design strength should be determined after providing for construction deviation.

ii) Steel bars

Since the production capacity of Nepalese twisted bars is very small, Japanese deformed bars SD 30 shall be mainly used.

iii) Steel

Supply of steel is not organized in Nepal owing to limited demand and most steel is imported, therefore Japanese steel SS-41 or equivalent JIS standard steel shall be used.

(5) Outline of the facilities

1) City transportation zone

Construction of boarding and off-boarding platforms with roofs for city buses, taxis, tempos and private cars.

● Boarding and off-boarding platforms with roofs

building area	1,100 m ²
structure	steel frame

2) Medium and long route bus and terminal building zone

Boarding and off-boarding platforms with roofs are completely separated on both sides of the terminal building.

● Terminal building

building area	
(total floor area)	2,025.00 m ²
story	1 story
structure	steel frame-partly reinforced concrete

● Boarding, off-boarding platform

building area	1,540 m ²
structure	steel frame

● Public toilet

building area	
(total floor area)	185.00 m ²
story	1 story
structure	reinforced concrete

- Administration storehouse

building area
(total floor area) 70.00 m²
story 1 story
structure reinforced concrete

- Waste disposal shed

building area
(total floor area) 35.00 m²
story 1 story
structure reinforced concrete

3) Water supply, drainage, sanitary facilities zone

City water receiving tank, deep well, deep well water receiving tank, filter, waste water treatment tank, infiltration tank, oil and water separation tank.

4) Parking zone

A parking lot and a service area are constructed.

- Parking lot

- Service area

a) Bus washing equipment

b) Fuel supply service stand

building area 70.00 m²
structure steel frame

c) Bus bottom washing pit

d) Terminal charge collecting stand (3 stands)

building area	4.0 m ²
structure	reinforced concrete

4.3.4 Facilities Plan

(1) Electric equipment

1) Basic Design

Since there are no standards for electrical equipment in Nepal, the electrical equipment for the Project shall be designed in accordance with the electrical regulations and electrical equipment wiring specifications of Japan. However, materials shall be selected from the viewpoint of easy installation and maintenance in Nepal.

2) Transformer

Power supply in Kathmandu is adequate for the present demand, although there are power failures sometimes. three-phase, three-wire 11 kV, 50 Hz cable line runs along the ring road near the site.

Power to the site shall be supplied by NEA, which will install an overhead high tension cable to the boundary of the site and from there an underground high tension cable to the substation in the terminal building shall be provided by a project contractor.

Received power: 3 phase, 3 wire, 11 kV, 50 Hz

Distributed power: 3 phase, 4 wire, 400 V/230 V,
50 Hz

Transformer capacity: approximately 200 kVA

Cubicle type indoor equipment shall be provided. The wiring diagram of power received from NEA is shown in Fig. 4-7. Power generators are not provided.

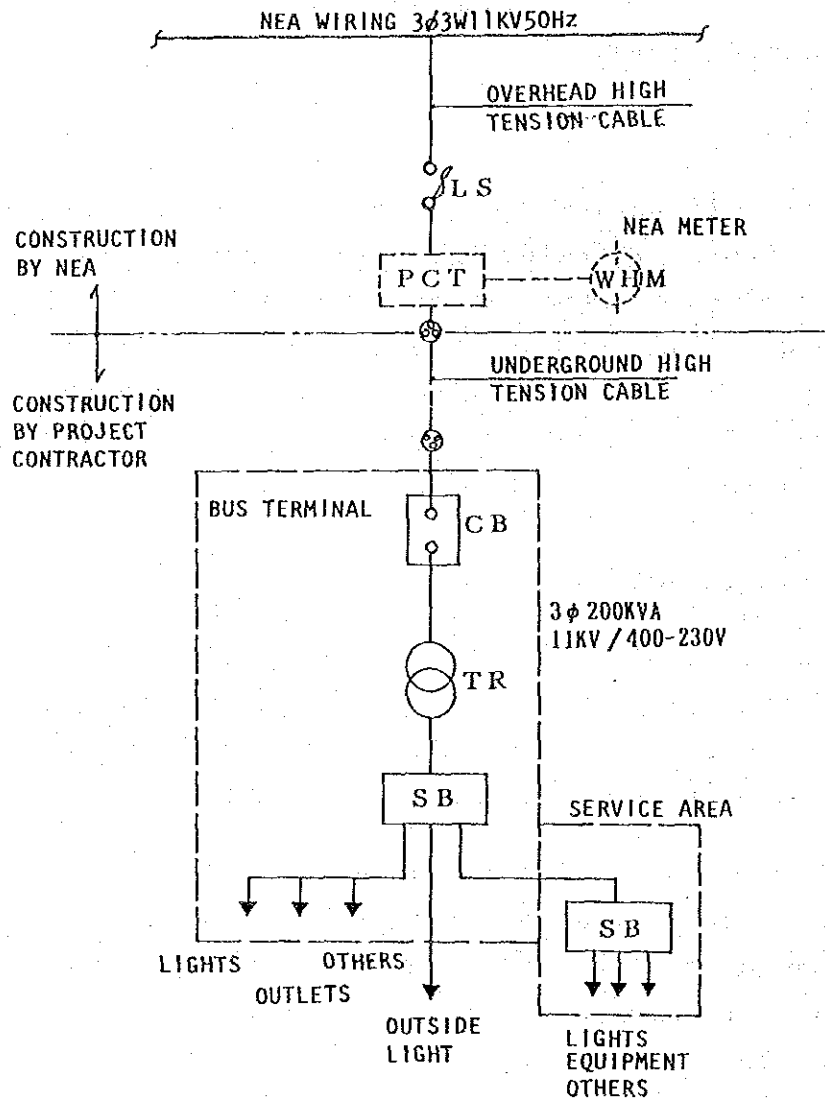


Fig. 4-7 Diagram of Power Receiving

3) Trunk cable equipment

Power is supplied to the distribution panel and the power control panel of each building from the low tension distribution panel of the substation. The outdoor cable is installed underground with CD pipes and indoor wiring is performed with F-cables. The secondary wiring from the power control panel is performed mainly with cables, and equipment installed in humid places is provided with a power leakage prevention breaker.

4) Lights and outlets

i) Lighting fixtures

Lighting fixtures shall be mainly directly fixed fluorescent lamps of single phase, 2 wires, 230 V. Wiring is mainly by F-cables and cables will be buried in walls using CD conduits. Brightness of main rooms are designed as shown below.

<u>Rooms</u>	<u>Lighting fixtures</u>	<u>Brightness (Lx)</u>
Office rooms	fluorescent lamp 40W x 2 directly fixed V type	500
Waiting room and counters	"	300
Kiosk	"	300
Other room	"	150

Emergency lights are not provided.

ii) Outlets

Power outlets are installed at necessary places. The outlets are mainly single phase and large capacity equipment shall be provided with switches. Power is supplied at single phase, 2 wires, 230 V.

5) Telephone equipment

The telephone lining into the site shall be performed by the Nepal Telecommunication Corporation up to MDF in the electricity room of the bus terminal. Three direct circuit lines shall be provided for the offices, one for the manager's office, two for the terminal office. Conduits will be provided for the telephone lines. Also three circuit lines shall be provided for public phones which shall be connected to an operator-operated exchange board and telephone charges shall be collected when placing the call.

6) Public address system

An amplifier shall be placed in the office and a repeater in the information counter. Speakers shall be placed at suitable places including the terminal building and the service area.

7) Television

Piping for an antenna shall be placed on top of the roof and two outlets shall be located in the waiting room and one outlet in the office.

8) Outside lighting

High tension sodium lamps shall be placed 8 m high in the parking lot and along the road. A floodlight shall be provided on the eave of the terminal building. Fluorescent lamps shall be fixed on each platform. Brightness at each locations shall be as follows:

<u>Location</u>	<u>Lighting fixtures</u>	<u>Brightness (Lx)</u>
Platform	Fluorescent lamp 40 W x 1 directly fixed lights	50
Road	Sodium lamp 250 W on pole	20
Parking lot	Sodium lamp 150 - 250 W on pole	10

9) Electric clock

Electric clocks shall be placed at the bus boarding & off-boarding platforms, waiting room and office as a passenger service and to regulate operation time. The outdoor clocks shall be lighted and placed on speaker poles.

10) Others

Fire alarms and lightening rods will not be provided.

(2) Water supply, drainage and sanitary facilities

1) Basic design

Since there are no standards nor regulations regulating water supply and drainage equipment, the equipment for the Project is based on the Design Standard of Equipment for Building specified by the Ministry of Construction and on the Design Standard of the Air Conditioning and Sanitary Engineering Association of Japan, but conditions in Nepal shall be considered.

2) Water supply equipment

Water shall be supplied from two sources in view of the condition in Nepal. Drinking water shall be supplied from city water supply and water for washing buses shall be well water.

i) City water supply

City water shall be supplied from the city water main 125 A located approximately 2 km from the site through a pipeline installed by the Nepalese side up to the boundary of the project site by 50 A pipe. In the Project, city water from the boundary shall be routed to the city water receiving tank and from there water shall be pumped up to an elevated water tank and then distributed to necessary places (pantry, washing basins of the public toilet, and a drinking fountain in the waiting room). The city water supply system is shown in Fig. 4-8.

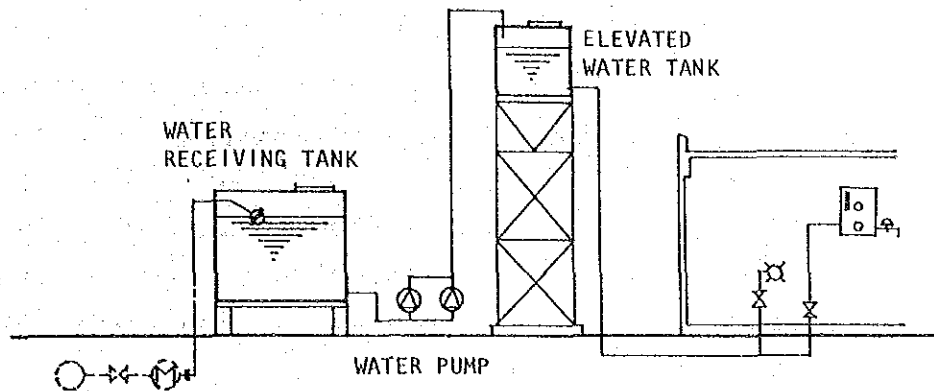


Fig. 4-8 City Water Supply System

Amount of city water supply

Staff		
68 persons	$\times 0.05 \text{ m}^2/\text{day}\cdot\text{person}$	$= 3.4 \text{ m}^2/\text{day}$
Subcontractor staff		
290 persons	$\times 0.05 \text{ m}^2/\text{day}\cdot\text{person} \times 30\%$	$= 4.35 \text{ m}^2/\text{day}$
Passengers		
1,152*	$\times 0.007 \text{ m}^2/\text{day}\cdot\text{person} \times 30\%$	$= 2.42 \text{ m}^2/\text{day}$
		$10.17 \text{ m}^2/\text{day}$
	Total	

Note: * Refer to (4.2 - Fig. 4-2) Public Toilet and Toilet Equipment Estimation Graph

Receiving water tank capacity

12 tons \times 1 tank (FRP sandwich panel)

Elevated water tank capacity

5 tons \times 1 tank (FRP sandwich panel)

Water pump

20 A \times 21 $\ell/\text{min.}$ \times 20 m \times 0.75 kW

Two pumps installed in parallel are operated alternately.

ii) Underground water supply

A well is provided for supplying water for washing buses, flushing toilets and sprinkling the site. Water treatment equipment is provided and water received in a water tank is pumped into an elevated tank from where it is distributed to the necessary locations by gravity. The underground water supply system is shown in Fig. 4-9.

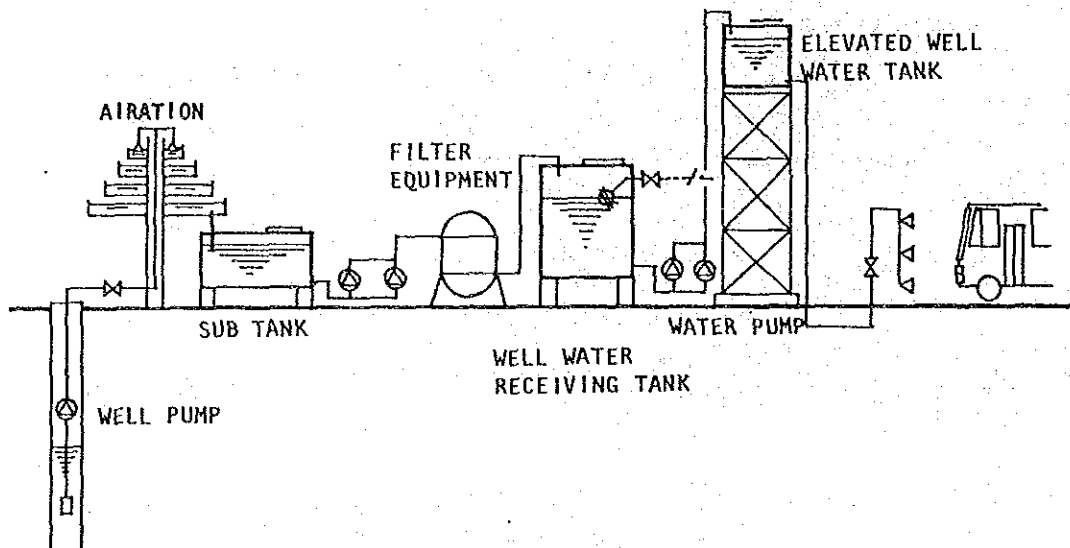


Fig. 4-9 Well Water Supply System

Amount of underground water supply

Passengers (toilet)		
1,150 persons x 0.007 m ³ /day.person x 70%	=	5.64 m ³ /day
Employees (toilet)		
68 persons x 0.06 m ³ /day.person	=	4.08 m ³ /day
Contractor staff (toilet)		
290 persons x 0.06 m ³ /day.person x 30%	=	5.22 m ³ /day
Bus washing		
120 buses x 0.2 m ³ /bus x 0.9	=	21.6 m ³ /day
Bus interior washing		
120 buses x 0.1 m ³ /bus x 0.9	=	10.8 m ³ /day
Bus high pressure washing		
120 buses x 0.9 ÷ 4 days x 0.265 m ³ /bus	=	7.2 m ³ /day
Floor washing	1 set	= 3.0 m ³ /day
<hr/>		
Total		= 57.54 m ³ /day

Note: Since buses get very dirty during the rainy season, 60% of the buses are expected to be washed.

Receiving water tank capacity
60 tons x 1 tank (FRP sandwich panel)

Subtank capacity
60 tons x 1 tank (FRP sandwich panel)

Elevated water tank capacity
30 tons x 1 tank (FRP sandwich panel)

Water pump
40 A x 115 l/min. x 50 m x 3.7 kW

iii) Sewage aeration facilities

Waste water discharged from the building includes waste water from living and industrial waste water. Living waste water is separated into ordinary waste water and sewage. Sewage is treated in a septic tank and permeated into the ground through a permeation tank. Ordinary waste water is passed through a grease trap, if necessary, then permeated into the ground through a permeation pit.

Industrial waste water or water from the service area containing oil is permeated into the ground, after separating oil by an oil trap, through a permeation pit.

Waste water drainage is shown in Fig. 4-10.

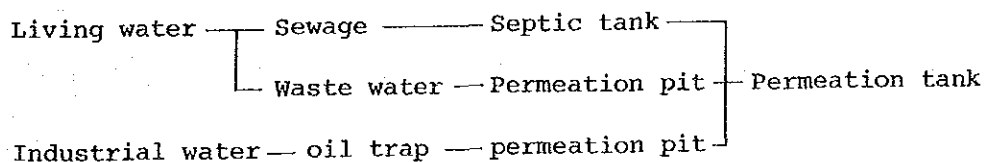


Fig. 4-10 Waste Water Drainage

Septic tank (no aeration) for 100 persons
Storm water is discharged directly into the river.

iv) Sanitary fixtures

Water saving type sanitary fixtures are adopted for saving water resources. Toilets, water basins and faucets are located at necessary locations. Toilets are of an Asian type and urinals are of a continuous type with tanks.

v) Others

Gas equipment and fire extinguishing equipment are not provided.

(3) Air ventilation equipment

1) Basic design

Since there are no standards and regulations for mechanical equipment, the design of air conditioning equipment is based on the Design Standard of Equipment for Building specified by the Ministry of Construction and on the Design Standard of the Air Conditioning and Sanitary Engineering Association of Japan, but the condition in Nepal shall be considered.

2) Cooling and heating equipment

Overhead ceiling fans shall be provided.

Air conditioning and ventilation equipment for each room are shown in Table 4-9.

3) Ventilation equipment

A ventilation fan is provided for the electricity room, toilet and warehouse. Toilets are provided with natural ventilation.

Table 4-9 Air-condition and Ventilation Equipment for Each Room

Room	Fan	Ceiling fan	Remarks
Electricity room	o		Grade 3 ventilation
Drivers rest room		o	
Male & female toilets	o		Grade 3 ventilation
Post office		o	
Telephone room		o	
Waiting room			Natural ventilation
Baggage room		o	
Information counter		o	
Bank		o	
First aid room		o	
Police stand		o	
Conference room		o	
Manager's room		o	
Assistant manager's room		o	
Office		o	

4.3.5 Materials Plan

(1) Basic standard

Based on the site survey, the following standards were applied for selecting construction materials.

- 1) Materials which are easy to maintain.
- 2) Local materials will be used if their quality, prices and supply are stable.
- 3) A construction method which is suitable for local condition will be applied.
- 4) Sturdy materials which do not soil easily will be used.

(2) Condition of construction materials

Construction materials are scarce in Nepal, and only bricks and cement are manufactured.

(3) Civil work materials

Pavement

- 1) Asphalt concrete
- 2) Cement concrete
- 3) Asphalt surface treatment (walkway)

Drainage

- 1) Underground drainage by concrete pipes
- 2) Surface drainage through reinforced concrete drains (either open or with covers)

Road and platform

Provide guardrails and handrails.

(4) Building construction materials

Foundation

Reinforced concrete

Frame

The terminal building and platforms are of steel frames, and the others are a combination of reinforced concrete and masonry

(5) Building finish materials

1) Exterior finish

Exterior finish for the terminal building, public toilet, fare collecting stand, storehouse and rubbish disposal shed are as follows:

i) Exterior wall

- ① Brick finish
- ② Brick base with mortar paint finish
- ③ Color steel sheets

ii) Roof

- ① Color corrugated sheets
- ② Waterproof mortar

2) Interior finish

i) Type A

Floor: terrazzo
Skirt: terrazzo
Wall: mortar EP
Ceiling: sound absorption board

- For the terminal building

Manager's room, assistant manager's room,
conference room, office, bus drivers rest room,
first aid room, information counter, bank, post
office public telephone booth, police stand,
kiosk

ii) Type B

Floor: clinker tile
Skirt:
Wall: brick finish
Ceiling: color corrugated sheets

- For the terminal building

Waiting room, outside concourse, tea stand

iii) Type C

Floor: trowelled
Skirt: mortar VP
Wall: mortar VP
Ceiling: hard board EP

- For the terminal building

Baggage room, electricity room

- For the warehouse

iv) Type D

Floor: clinker tile

Skirt:

Wall: ceramic tile

Ceiling: sound absorption board or concrete EP

- For the terminal building

Toilet

- For the public toilet

4.3.6 Basic Design Drawing

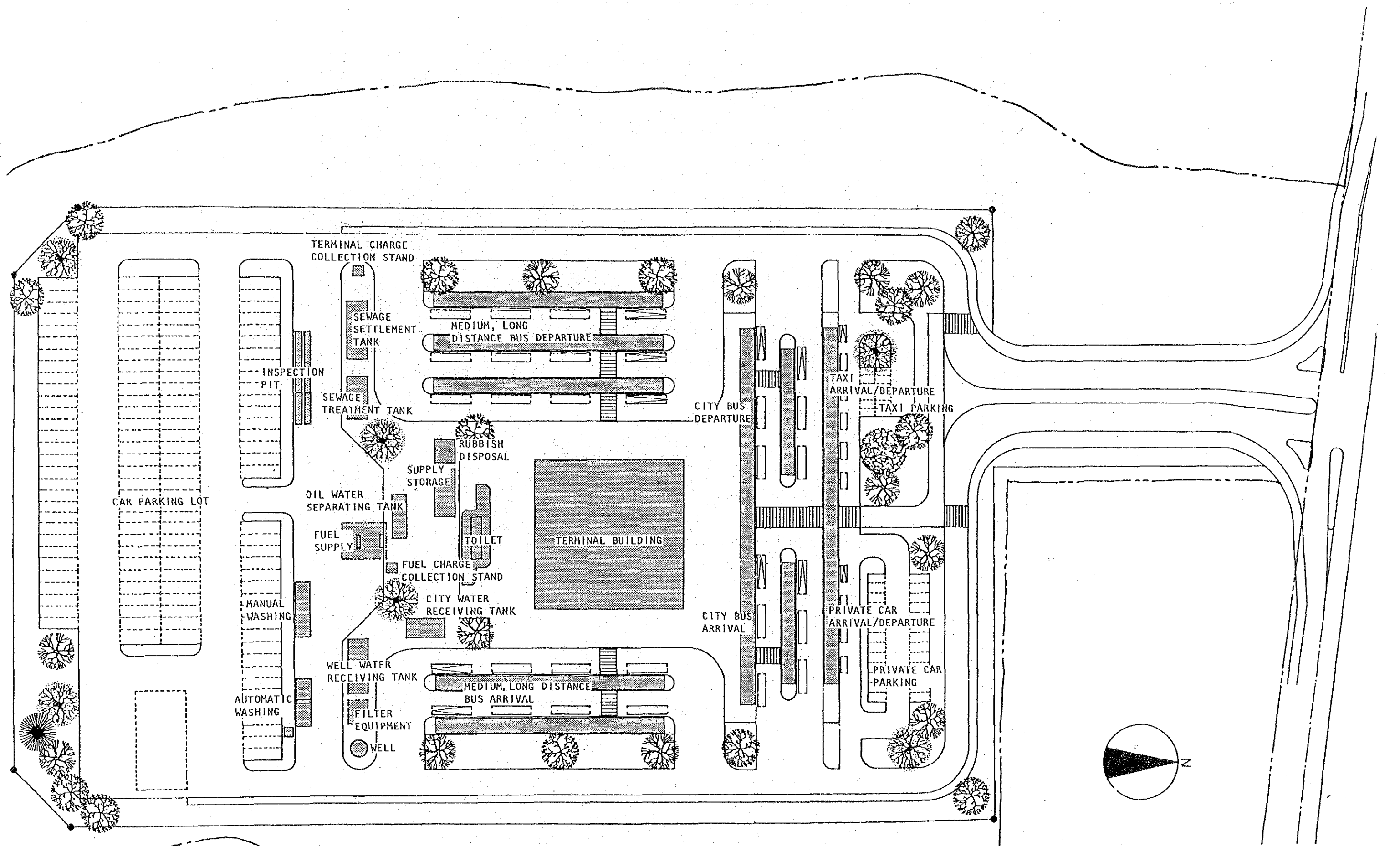
(1) Designed Floor Area

Table 4-10 Designed Floor Area

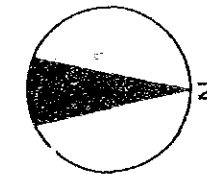
Building	Structure	Floor area
Terminal building	Steel frame, partially reinforced concrete	2,025 m ²
Boarding, off-boarding platform roof	Steel frame	2,640 m ²
Public toilet	Reinforced concrete	185 m ²
Supply storage	Reinforced concrete	70 m ²
Rubbish disposal	Reinforced concrete	35 m ²
Fuel supply stand	Steel frame	70 m ²
Fee collection stand	Reinforced concrete, 3 places	12 m ²
Total		5,037 m ²

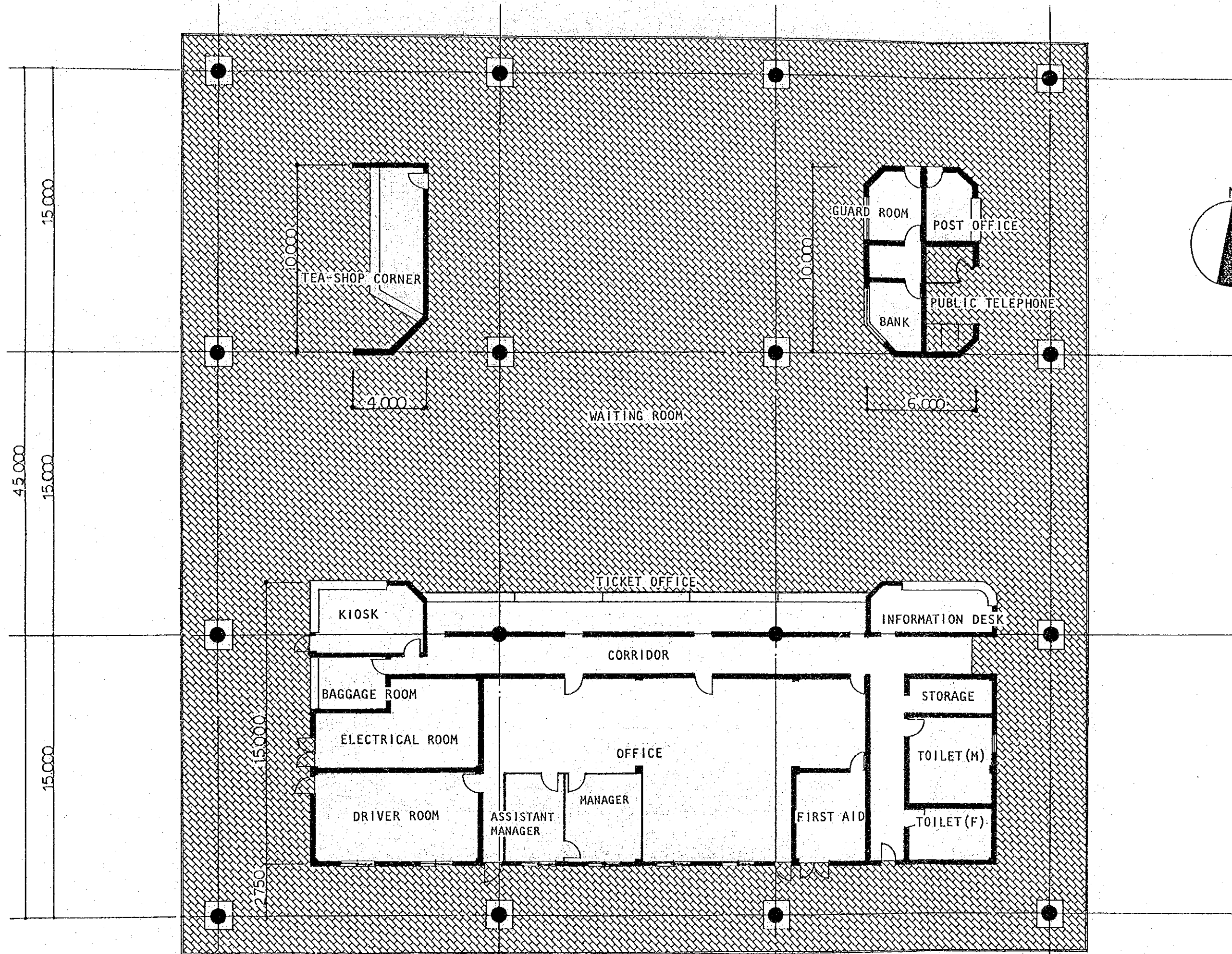
(2) Basic Design Drawing

Layout		Scale 1/1,000
Terminal Building Plan		Scale 1/200 (No.1)
Terminal Building Elevation		Scale 1/200 (No.2)
Terminal Building Elevation & Section		Scale 1/200 (No.3)
Toilet Plan, Elevation & Section		Scale 1/200 (No.4)
Boarding/Off-boarding		
Platform	Plan,	
Supply Storage	Elevation	Scale 1/200 (No.5)
Rubbish Disposal	& Section	
Fuel Supply Stand		

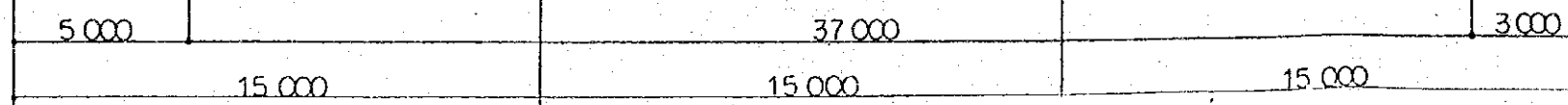


SITE PLAN Scale 1:1000





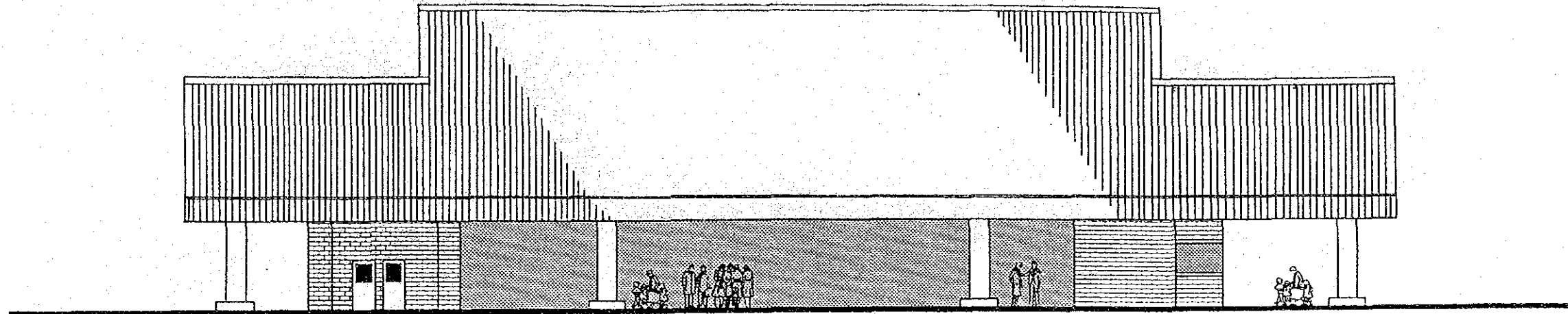
GROUND FLOOR PLAN



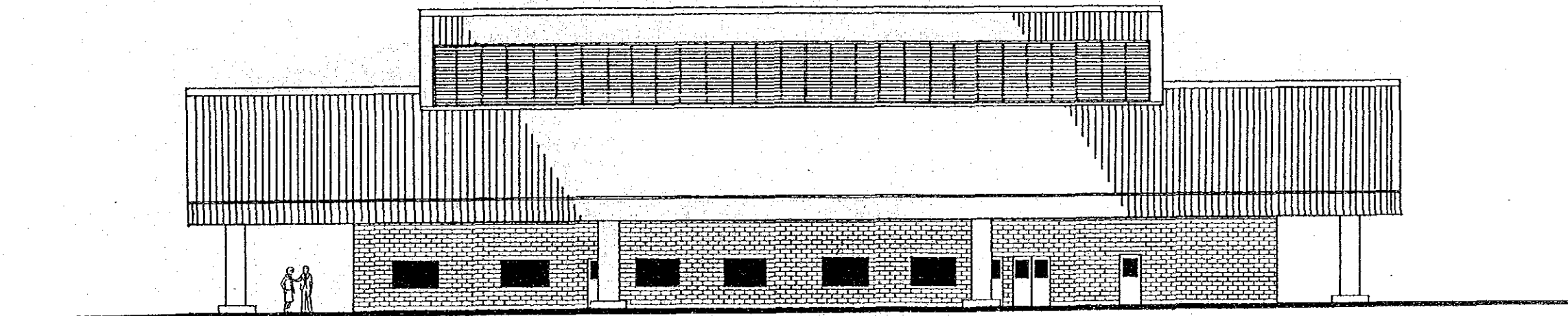
TERMINAL

Scale 1:200

Project for
Constructing a Bus Terminal



NORTH ELEVATION

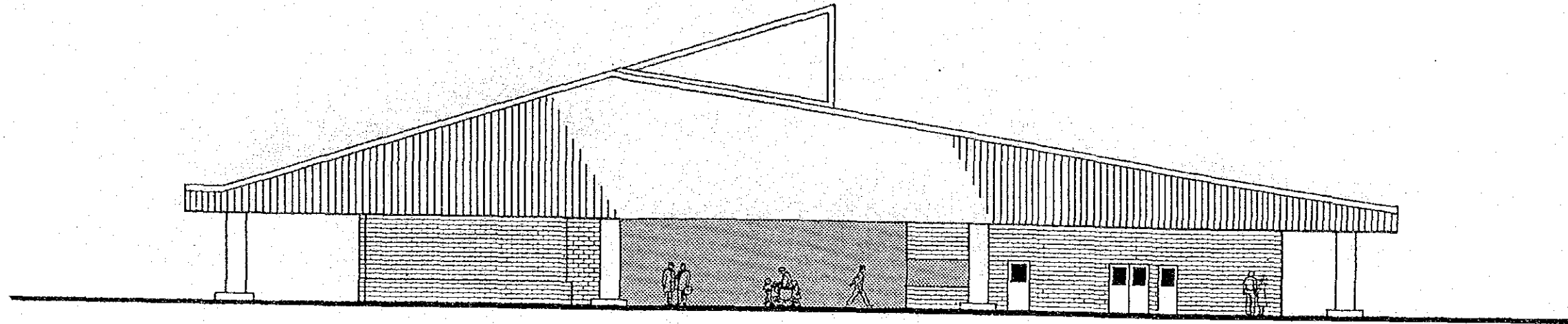


SOUTH ELEVATION

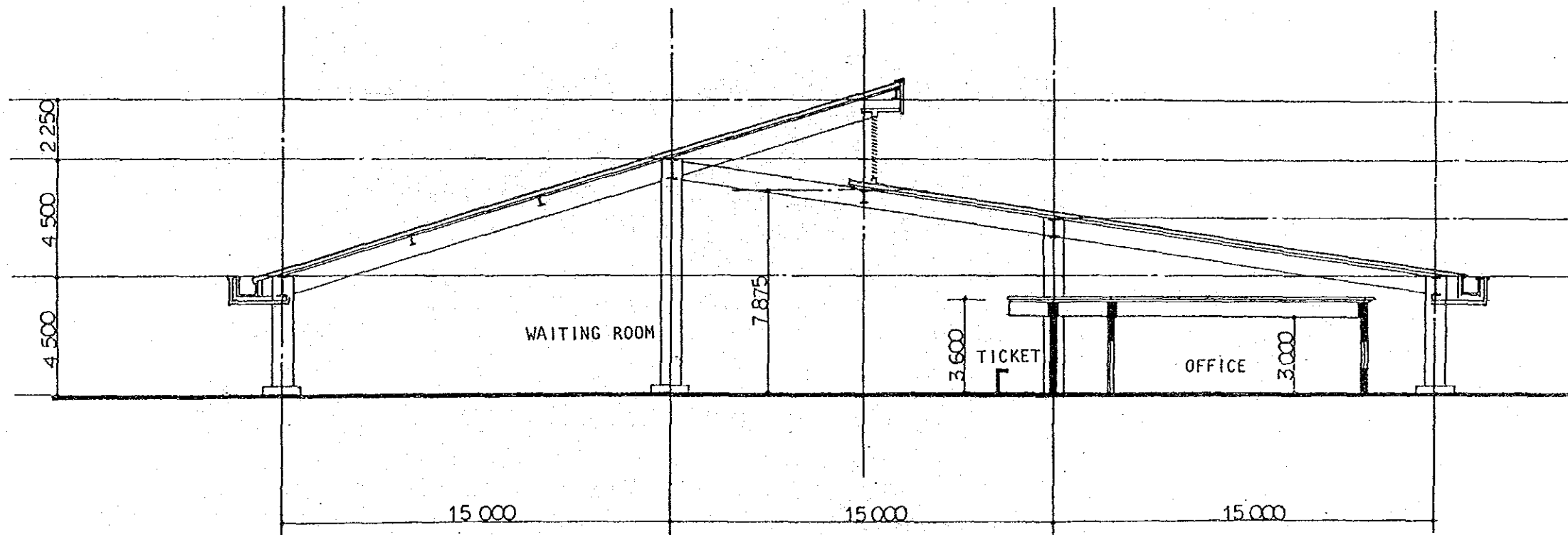
TERMINAL

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Project for
Constructing a Bus Terminal



WEST ELEVATION

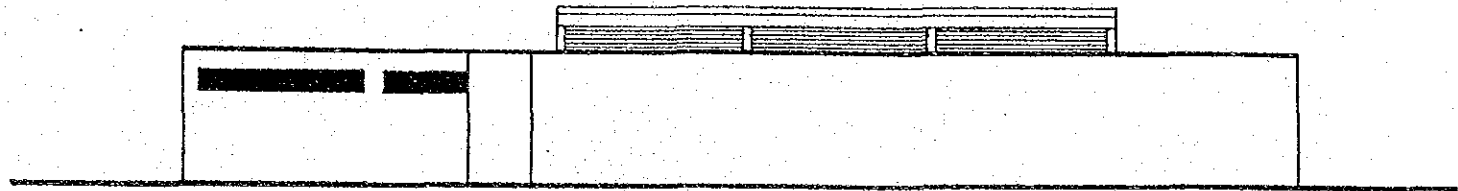


SECTION

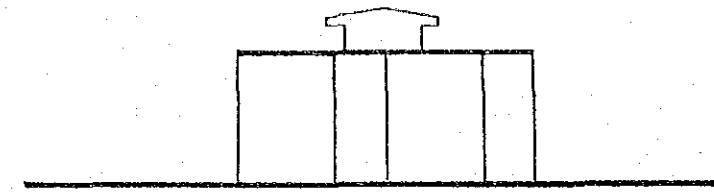
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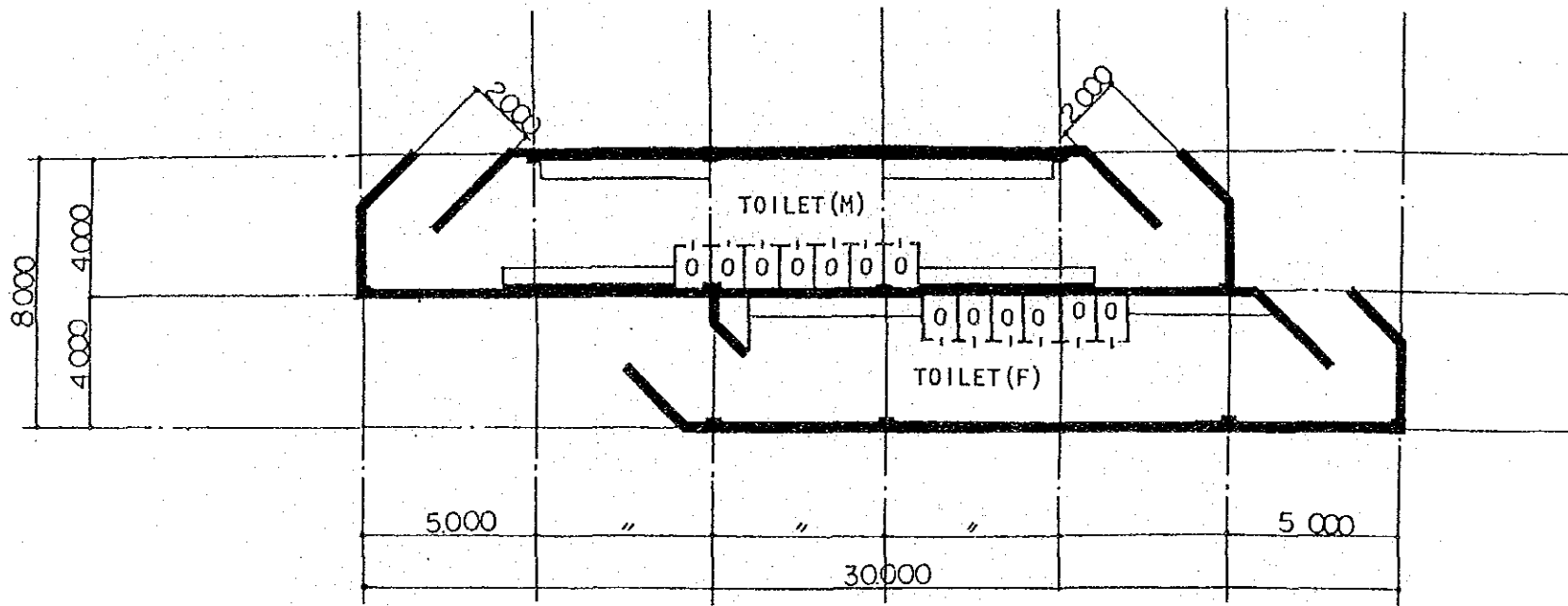
Project for
Constructing a Bus Terminal



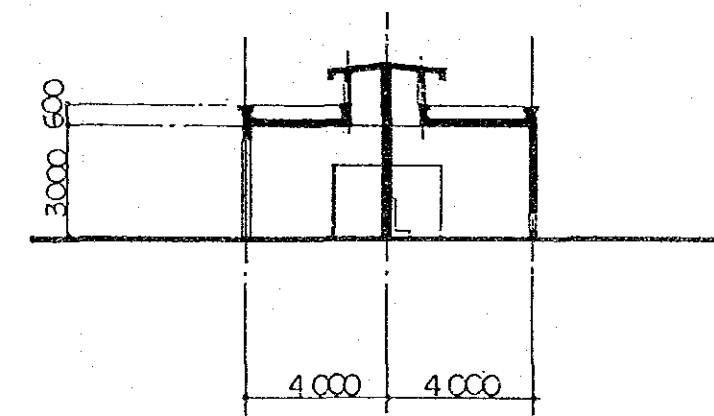
SOUTH ELEVATION



EAST ELEVATION



PLAN

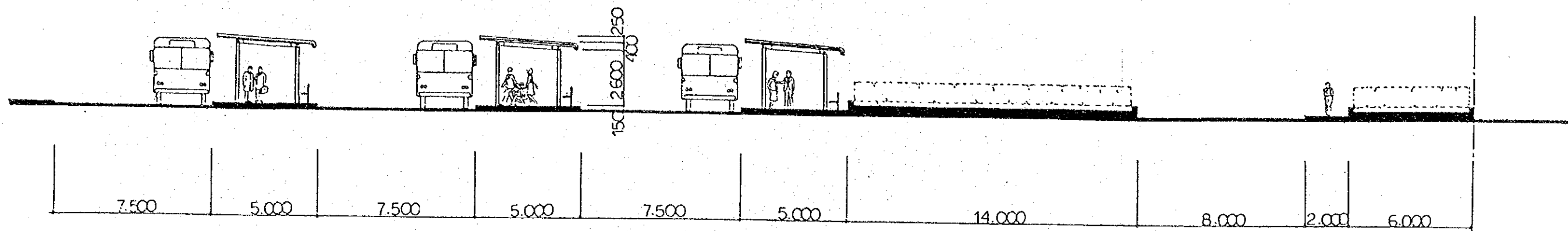


SECTION

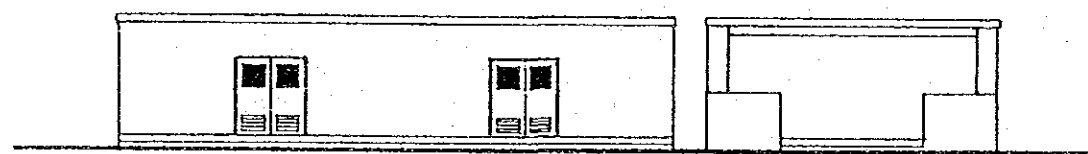
TOILET

Scale 1:200

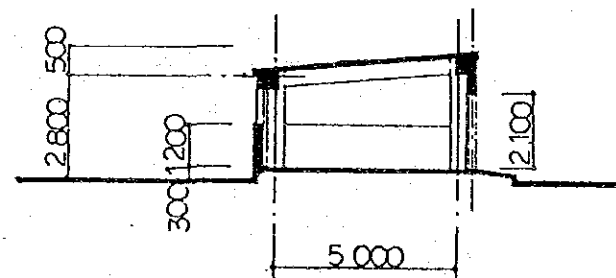
Project for
Constructing a Bus Terminal



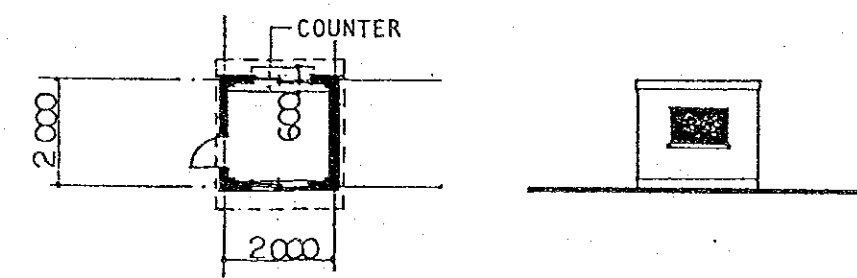
LONG DISTANCE BUS DEPARTURE SECTION



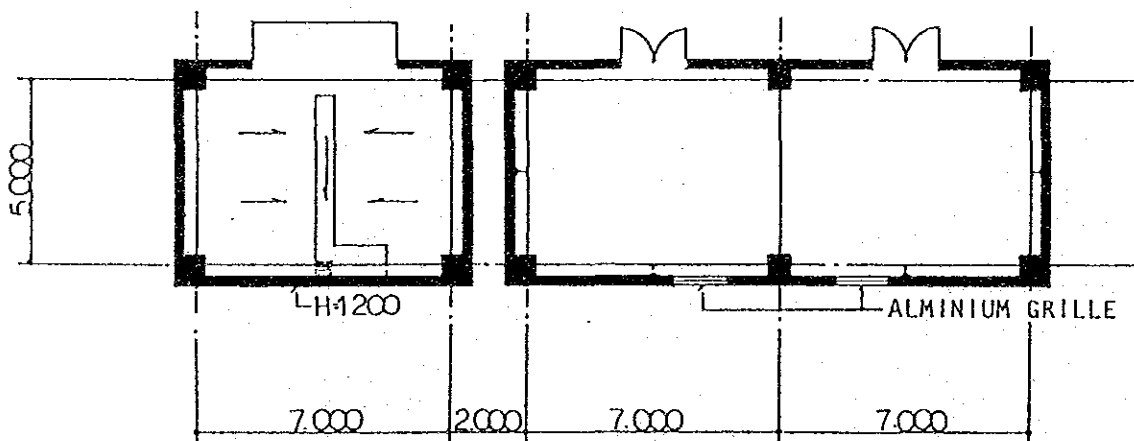
NORTH ELEVATION



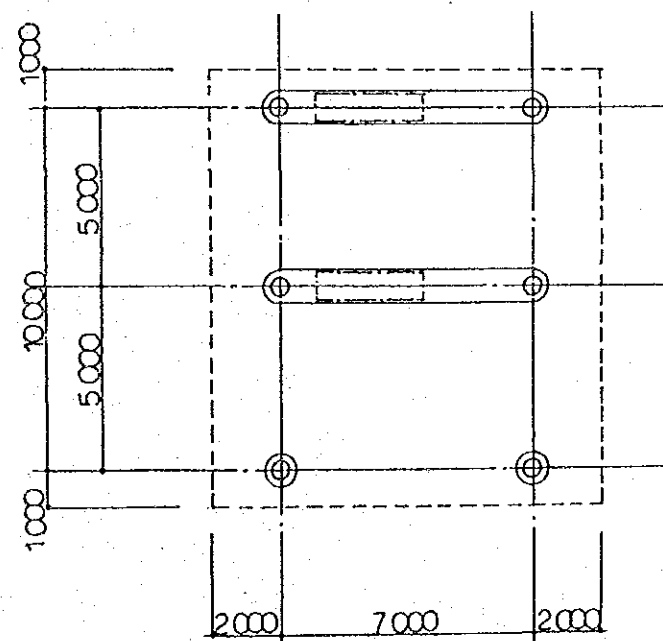
SECTION



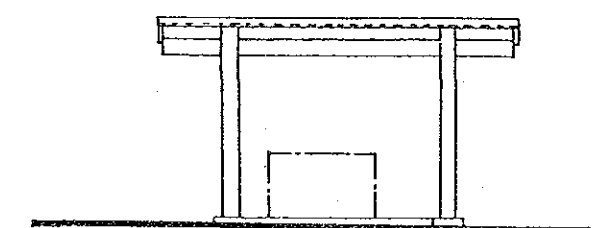
CHARGE COLLECTION PLAN ELEVATION



RUBBISH DISPOSAL SUPPLY STORAGE PLAN



FUEL SUPPLY PLAN



SOUTH ELEVATION

Scale 1:200

Project for
Constructing a Bus Terminal

4.4 Equipment Plan

The equipment for the Project, as shown in Table 4-11, was selected by considering the following points.

- (1) Equipment was selected after studying similar facilities in order to provide equipment materials suitable for the condition, to avoid excess capacity.
- (2) Equipment easy to handle, maintain and repair was selected.
- (3) Equipment was selected and laid out in the most effective way for the flow within the terminal and the service area.

In order to operate the equipment effectively, it must be operated and maintained properly. For this purpose, English instructions, and maintenance manuals must be provided with the equipment.

Since spare parts are difficult to obtain in Nepal, sufficient spare parts must be provided and well planned supply should be secured.

Table 4-11 Equipment List

Item	Equipment	Number	Specification
(A. Bus guiding equipment)			
1.	Signal	1 set	Single side, horizontal 3 color type with a controller (3 sets)
2.	Crossing gate	1 set	
(B. Bus service equipment)			
1.	Bus washing equipment	1 set	Gate type, self running type, rotary brush type
2.	High pressure washing equipment	2 sets	High pressure, cold water type
3.	Fuel supply equipment	2 sets	Meter (kerosene, gaso- line) tank capacity 20 kℓ
(C. Passenger service equipment)			
1.	Baggage carts	10	Load 500 kg Table 780 mm x 1200 mm

CHAPTER 5 PROJECT EXECUTION PLAN

CHAPTER 5 PROJECT EXECUTION PLAN

5.1 Execution Organization

The execution agent of the Project is the Ministry of Panchayat and Local Development and actual operation is to be carried out by the Kathmandu Nagar Panchayat which will newly set up a bus terminal section.

The construction and installation of the equipment shall be performed under the grant aid program of Japan. Under this program a Japanese consultant shall be selected to prepare detailed design of the facilities and equipment, and after completion of detailed design, a Japanese construction contractor shall be selected by tender.

5.2 Demarkation of Undertakings

The Project shall be undertaken by the Japanese side and the Nepalese side as shown below.

The reclamation work will be undertaken by the Japanese side owing to the following reasons.

1. The purpose of the reclamation work is as listed below.
 - . Prevent flooding of the site.
 - . Secure sufficient incline for draining storm water from paved surface.
 - . Secure a subgrade for road pavement by replacing soft paddy field soil with soil suitable for subgrade.

This reclamation is a foundation work of the terminal facilities.

2. Since the Nepalese side has few experience on large reclamation work, it is uncertain whether the land can be filled up to the required strength.
3. Since this reclamation is a large scale work, execution with heavy construction equipment is necessary in order to complete the work with the required quality, on schedule.
 - . Private construction firms have very few construction equipment.
 - . Both MPLD and KNP have no heavy construction equipment.
 - . Department of Road has heavy construction equipment, but owing to lack of spare parts, the number of usable heavy construction equipment is

so limited that it is barely sufficient to meet the present work conducted by the Department of Road.

Owing to these reasons, it is difficult to execute this reclamation work using heavy construction equipment.

	Undertakings on the Japanese side	Undertakings on the Nepalese side
(1) Basic construction		
① Road crossing		. Pavement and route change of the ring road and the approach road intersection (within a 10 m range from the ring road center)
② Site preparation		. Site preparation at the present level and removal of obstructions
③ Reclamation	. Reclamation and subgrade work including those for the approach road	
④ Water supply (city water)	. Piping inside the terminal	. Piping from the main branch to the site boundary
⑤ Water drainage	. Construction of drainage & treatment facilities . Drainage equipment within the terminal	. Drainage from the terminal drainage boundary to the Vishumati river
⑥ Power	. Wiring from the site boundary	. Wiring up to the site boundary from the main cable. . Expenses relating to wiring
⑦ Telephone	. Wiring from the main exchange board (the exchange board is installed by the Japanese side)	. Wiring from the main line to the exchange board . Expenses related to this wiring

	Undertakings on the Japanese side	Undertakings on the Nepalese side
(2) Road facilities	<ul style="list-style-type: none"> . Road inside the terminal . Boarding & off-boarding platforms for all transport means . Parking lot, washing equipment work . Pedestrian pathway work 	<ul style="list-style-type: none"> . Plant planting
(3) Building	<ul style="list-style-type: none"> . Structures for the Project & related construction 	<ul style="list-style-type: none"> . Expenses for permission & licenses . Construction not included in Japanese side undertaking
(4) Other facilities	<ul style="list-style-type: none"> . Terminal lighting facilities . Deep well water supply facilities . Vehicle routing equipment . Installation of signboards (road sign, room information board) 	
(5) Equipment	<ul style="list-style-type: none"> . Procurement and installation of equipment . Baggage transporting carts 	
(6) Furniture & fixtures	<ul style="list-style-type: none"> . Benches in the waiting room . First aid set 	<ul style="list-style-type: none"> . Carpets, curtains, desks & chairs and other fixtures
(7) Equipment & materials transportation	<ul style="list-style-type: none"> . Sea freight & insurance . Inland transportation 	<ul style="list-style-type: none"> . Customs clearance and duties
(8) Other work related to the Project		<ul style="list-style-type: none"> . Banking arrangement and related expenses . Provide necessary assistance for entrance and exit of consultant and contractor staff . Exemption from taxes and duties for consultant and contractor staff.

5.3 Construction and Supervision Plan

5.3.1 Construction Plan

Technical assistance

There are many construction companies in the Kathmandu Metropolitan area, but there is limitation in the number of technicians and skilled workers that can be mobilized. Assistance of Japanese experts is especially necessary in asphalt pavement work and steel frame work.

Pavement work

Pavement work, road work and related drainage work cover the entire site area, so in order to implement high quality work in a short period, a well studied construction schedule must be set up and construction must be complemented with heavy construction machinery.

Construction machinery

Since it is difficult to procure construction machinery such as a bulldozer, a back hoe, a pavement roller, an asphalt plant, a finisher and an aggregate crushing plant locally, procurement from foreign countries must be considered.

Local material

Recently, it is becoming difficult to get good materials for bricks, the main construction material in Nepal. Therefore the procurement of bricks must be started early, and it is necessary to conduct strict inspection to assure good quality.

Nepalese aggregates for concrete are generally poor in quality, since fine aggregates are too fine and crushed rocks are mostly flat-shaped. As these aggregates affect the quality of concrete, mix design and trial mix must be conducted carefully.

Measures for the rainy season

Since the period from June to September is the wet season in the Kathmandu Metropolitan area, earthwork, foundation work and pavement work are seriously affected. Therefore construction methods and construction schedules must be carefully studied.

Work done by the Nepalese side

Some construction work must be completed by the Nepalese side before the work on the Japanese side begins. The Nepalese side and the consultant must have discussions to set up a good construction arrangement.

5.3.2 Supervision Plan

(1) Supervision work

The content of supervision work is as listed below.

- 1) Assistance and guidance for concluding a construction contract.

Conduct prequalification of tenderers, prepare for and conduct tendering, evaluate the contents of the tenders, select the successful tender and attend the signing of a construction contract.

- 2) Inspect and approve shop drawings, etc.

Inspect and approve shop drawings, samples of materials and equipment.

- 3) Supervision and inspection

Supervise the construction schedule, provide advice and assistance for construction work and conduct inspection.

- 4) Approving payments

Verify, inspect and approve the implementation of construction work for interim and final payments.

- 5) Reporting construction condition

Submit periodic reports on construction work progress to the executing agency and the concerned parties of the Government of Japan. Also, assist in the smooth implementation of work undertaken by the Nepalese side and the Japanese side.

- 6) Handover of the facilities, equipment and materials

After completion of the Project, verify that it has been implemented according to the contract and attend the handover of the Project.

The supervision work will be completed with the issuance of the Acceptance Certificate issued by the executing agency.

(2) Construction supervision system

A construction supervision team will be organized under a project manager to supervise construction.

Project Manager	Will visit the site as necessary
Residential engineer	Will reside at the site
Architect	Will visit the site as necessary
Civil engineer	"
Structure engineer	"
Electrical engineer	"
Mechanical engineer	"
Equipment engineer	"
Estimation engineer	"

Only the residential engineer will reside at the site, and the other engineers will visit the site for inspection and whenever the residential engineer requests their presence.

5.4 Procurement Plan

5.4.1 Construction Materials

(1) Among the equipment and materials necessary for the Project, the following materials can be procured in Nepal.

1) Aggregates for concrete, mortar and pavement

For fine aggregates, sand from nearby rivers is available, but since sand is fine and clayey material is mixed, sand should be washed and concrete mix should be prepared carefully. Coarse aggregate consists of crushed rocks from mountains and rivers. Since the Himalaya mountain range is created by orogenic movement, rocks are subjected to pressure from a fixed direction resulting in stratified rocks which take a flat shape when crushed. Since production of crushed rocks is low, a crushing plant should be provided for the Project.

2) Cement

The annual production of cement is 330,000 tons in Nepal, with Hetauda cement amounting to 260,000 tons and Himal cement amounting to 50,000 tons. In view of construction activities and supply condition in Nepal, some domestic cement may be used, but imported cement from India, Korea and Indonesia must also be used.

3) Bricks

Bricks are the most popular material for exterior walls in Nepal, but owing to a heavy demand,

production is not keeping up with the demand at present. Therefore it is necessary to procure bricks early.

4) Terrazzo

Terrazzo placed on site is a common finishing material, together with bricks in Nepal, which may be used in this construction.

5) Lumber

Lumber shall be used for interior finishing of the building.

(2) Other materials

Materials which cannot be procured locally shall be imported. Imported materials are landed in Calcutta and shipped overland into Nepal. Customs clearance must be performed at the border between Raxaul and Birganj.

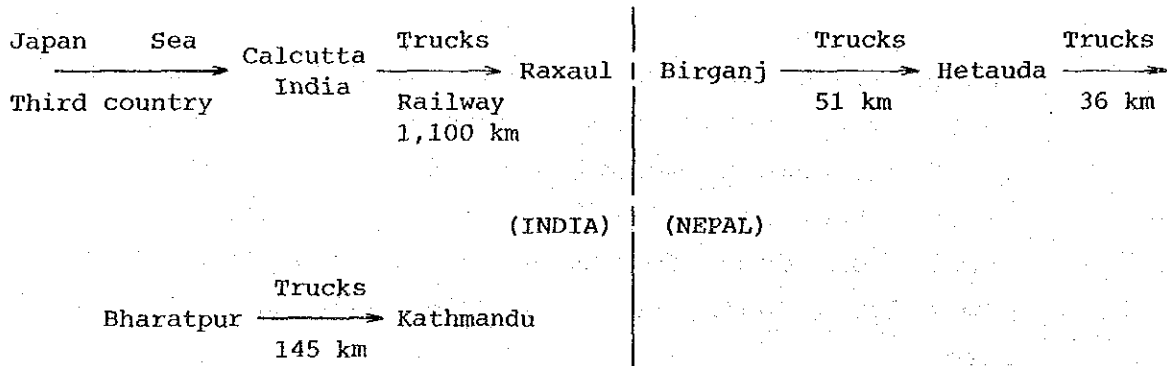


Table 5-1 Material Procurement List

Material	Nepal	Japan	Third country	Reason for selection
Aggregate	o			Aggregate may be produced by crushing.
Cement	Δ		o	Third country produce is stable in quality, supply and price.
Steel bars		o		Quality and supply are stable.
Steel		o		Quality and supply are stable.
Bricks	o			Local produce is available.
Lumber		o	Δ	Local produce is available, but types of lumber is restricted.
Tiles		o		Supply is stable.
Window frames		o		Quality and supply are stable.
Asphalt		o	Δ	Quality and supply are stable.
Finishing materials		o		Quality and supply are stable.
Main equipment		o		Quality and supply are stable.

(3) Materials for water supply equipment

Deep well equipment, including filtering equipment, shall be procured locally, in view of easier maintenance. Since the water pump and filtering materials must be inspected and maintained periodically to prevent serious damage, and unless a breakdown is repaired immediately, bus operation will be largely affected. Therefore it is desirable to select equipment used widely for deep wells in Kathmandu.

5.4.2 Equipment

The equipment for the Project shall all be imported from Japan.

5.5 Execution Schedule

Construction for the Project is expected to take approximately 14 months and an outline of the schedule is shown in the following diagram.

N.B.

- (1) Since June to September is the monsoon season, make an outdoor construction plan taking this fact into consideration.
- (2) Construction work to be undertaken by the Government of the Kingdom of Nepal (refer to Section "5.2 Demarkation of Undertakings").

1) Intersection construction

The completion time of construction shall be the same as that undertaken by the Japanese side.

Construction in accordance with the specification in Section "4.3.2 Civil Work Plan, (3) Basic design standard for civil work" is desired.

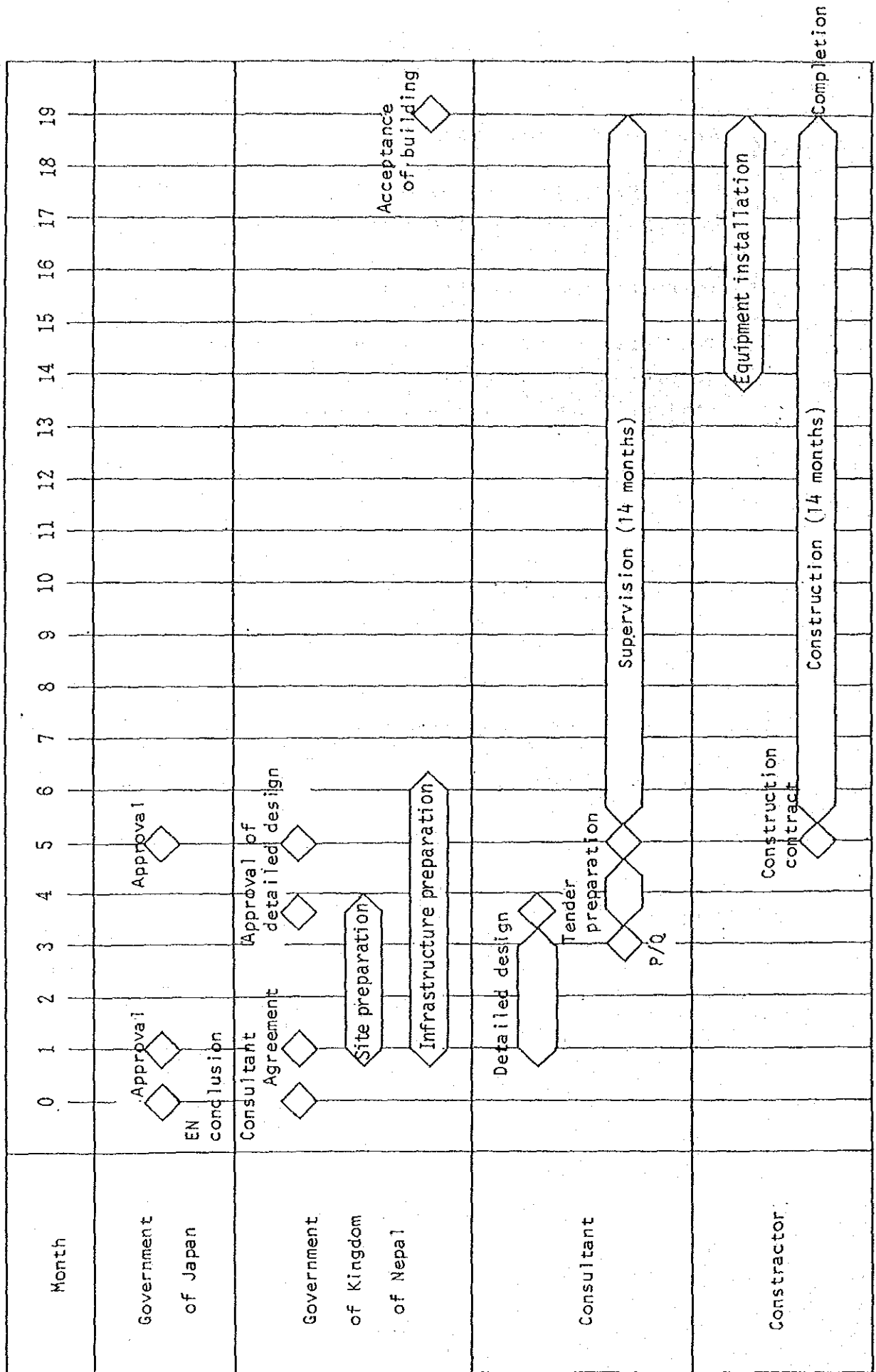
2) Site preparation work

Completion shall be more than one month before the conclusion of construction contract.

3) Infrastructure construction

The infrastructure to be constructed shall be in accordance with Sections "5.2 Demarkation of Undertakings" and "4.3.4 Facilities Plan".

Project implementation schedule



5.6 Maintenance and Management

5.6.1 Maintenance Organization

A mechanic, an electrician and a carpenter are posted in the Maintenance Subsection and periodic maintenance should be performed by these technicians. Scheduled inspection and maintenance may be implemented by concluding a maintenance agreement with special construction companies or local construction companies.

5.6.2 Maintenance and Management

(1) Facilities

The following pieces of equipment must be serviced regularly.

- ① Sewage septic tank
- ② Water drainage tank and oil trap
- ③ Deep well pump and filter
- ④ Water receiving tank

The Administration Subsection should employ about 10 employees to keep the entire terminal clean.

(2) Equipment

Mechanics and electricians should regularly inspect and maintain the equipment. When necessary, experts should be called in for repair and correction.

5.6.3 Maintenance and Administration Expense

(1) Maintenance and administration expense

1) Labor cost

KNP 18 persons x Rs 1,400/month* x 12 = Rs 302,400/year
NTEA 49 persons x Rs 1,600/month* x 12 = Rs 940,800/year

Rs 1,243,200/year

Note: * Average monthly wages

2) Power

- ① Estimated average consumption 31,050 kWh/month*
- ② Basic charge Rs 100/month
- ③ Charge kWh (Rs 1.8/kWh x 31,050kWh = Rs 55,890/month)
- ④ Annual power expense (Rs 100 + Rs 55,890) x 12 months = Rs 671,880/year

Note: * Refer to Appendix.

3) Water

- ① Estimated average monthly consumption 310 m³/month*
- ② Basic charge Rs 200/month (Rs 7 up to 10 m³)
- ③ Charge per public meter Rs 1.2/m³ x (310-10)m³/month) = Rs 360/month
- ④ Annual water expense (Rs 207/month + Rs 360/month) x 12 months = Rs 6,804/year

Note: * (10.17 m³/day x 365) ÷ 12 = 310 m³/month

4) Facilities maintenance and administration expenses

Cleaning expense Rs 300/day x 365 = Rs 109,500/year
Maintenance and administration expense Rs 60,000/year

Total Rs 169,500/year

5) General administration expenses Rs 120,000/year
(estimated as 10% of labor cost)

Grand total Rs 2,211,384/year

(2) Responsibility of maintenance and administration expense

For the operation of the terminal, it is desirable to establish a system which will make the operation self-paying and not rely on the budget of KNP. In other words the operation expenses should be covered by charges collected for the utilization of the terminal and other facilities. The annual revenue from these charges is estimated as follows.

1) Bus terminal utilization charge

Rs 20/bus* x 200 buses/day x 365 = Rs 1,460,000/year

Note: * Present charge

2) Rents

Kiosk 24 m² : 261.36 ft² x Rs 10/ft²* x 12 = Rs 31,363

Tea stand 40 m²: 435.6 ft² x Rs 10/ft² x 12 = Rs 52,272

Bank 12 m² : 130.7 ft² x 10/ft² x 12 = Rs 15,684

Total = Rs 99,319

Note: * Present rent

3) Telephone charge

Telephone revenue: Rs 2.0/1 call

Telephone payment: Re 1.0/1 call

Number of booths : 3 booths

If the number of calls is estimated as 5 calls/hour, the income is as follows:

$$\begin{aligned} \text{Re } 1.0 \times 5 \times 3 \times 18 &= \text{Rs } 270/\text{day} \\ \text{Rs } 270 \times 365 &= \text{Rs } 98,550/\text{year} \end{aligned}$$

4) Baggage checking charge

If the number of pieces of baggage checked in one day is estimated as 100 and the checking charge is Rs 3.0 for one piece of baggage for one day, the revenue is as follows:

$$\text{Rs } 3.0 \times 100 \times 365 = \text{Rs } 109,500/\text{year}$$

5) Parking charges for passenger cars

If the percentage of utilization is 30% and the hourly rate is Rs 5.0, the revenue is as follows:

$$\begin{aligned} 23 \text{ cars} \times 0.3 \times 18 \text{ hrs.} \times \text{Rs } 5.0 &= \text{Rs } 621/\text{day} \\ \text{Rs } 621 \times 365 &= \text{Rs } 226,665/\text{year} \end{aligned}$$

6) Bus washing

Bus washing frequency differs largely in the wet season and the dry season, and although about 120 buses are expected to be washed a day in the rainy season the average daily usage is estimated as 50 buses.

Bus washing	:	50 buses/day
Bus washing charge	:	Rs 10/bus
Monthly operation	:	25 days
Annual total revenue:		$50 \times 10 \times 25 \times 12 = 150,000$
		Rs 150,000

7) Fuel supply service

The annual running distance of a long route bus is estimated as about 60,000 km, and if the fuel consumption of TATA buses is estimated as 3 km/liter the annual fuel consumption is estimated as 20,000 liters.

If 50% of buses utilizing the terminal refuel at the terminal, the annual income from fuel sales is as follows:

Number of buses	:	about 100 buses
Annual fuel consumption of buses	:	about 20,000 liters
Annual total fuel consumption	:	about 2,000,000 liters
Fuel charge (diesel)	:	Rs 7.5/liter
Annual sales	:	Rs 15,000,000
Estimated income (5%)	:	Rs 750,000

Rs 750,000.-

The total annual income is estimated as Rs 2,894,034 which is sufficient to cover the annual maintenance and administration expense estimated as Rs 2,211,384.

(Unit: Rs)

Income		Expense	
Bus terminal utilization charge	1,460,000	Labor cost	1,243,200
Rents	99,319	Power	671,880
Telephone charge	98,550	Water	6,804
Baggage checking charge	109,500	Facilities maintenance & administration expense	169,500
Parking charges for passenger cars	226,665	General administration expense	120,000
Bus washing	150,000		
Fuel supply	750,000		
Total	2,894,034	Total	2,211,384

(Profit Rs 682,650)

5.7 Project Cost Estimate

The project cost is estimated as follows:

Cost to be borne by the Nepalese side

The project cost to be borne by the Nepalese side is estimated to be about 9.28 million rupees (about 47.14 million yen), and the breakdown is shown in the following table.

	(Unit: Rs)
1. Intersection between the approach road and the ring road	2,700,000
2. Site preparation work	200,000
3. City water intake work	1,300,000
4. Drainage work (from the terminal drainage boundary to the Vishumati river)	1,600,000
5. Power intake work	900,000
6. Telephone intake work	280,000
7. Fencing and landscape work	1,400,000
8. Installation work for furniture and fixtures	900,000
Total	9,280,000 (Yen 47,142,000)

CHAPTER 6 PROJECT EVALUATION

CHAPTER 6 PROJECT EVALUATION

6.1 Benefits of the Project

The benefits expected from the Project are described in the following paragraphs.

(1) Direct Benefits

1) New terminal

The following benefits are expected.

Subject	Present terminal	New terminal	Benefits
1) Medium/long route bus	Difficult for all buses to use the terminal, so some buses must be off-boarded and parked on the street.	All buses can use the terminal.	Medium and long route bus schedules can be kept.
2) City transportation	Connection with medium and long route buses is not considered.	Connection with medium and long route buses is fully considered.	Improved passenger service.
3) Traffic zoning for different vehicles	No clear traffic zoning exists.	A clear traffic zoning is provided.	Confusion is resolved and easy access to different transportation is provided.
4) Separation of boarding and off-boarding	No clear separation exists.	Boarding and off-boarding are clearly separated.	Vehicle and passenger movement is smooth, which resolves confusion.

Subject	Present terminal	New terminal	Benefits
5) Separation of platforms for different destinations	No clear separation exists.	Platforms are clearly separated.	Same as above.
6) Information service	No service exists.	Time table display and announce of arrival and departure through public address are provided.	Improved passenger service.
7) Baggage service	No control on baggage handling.	Handled by terminal attendants	Confusion is resolved and bus waiting time is reduced.
8) Ticket service	Tickets are sold by each company and no control exists.	A ticket counter is provided for separate destinations.	Improved passenger service.
9) Bus maintenance	No facilities exist.	Inspection is provided at the service area.	Operation safety is improved.

2) Present terminal

The present terminal shall be remodeled as a short route and city bus terminal, which is expected to contribute toward smooth operation of buses as well as other transport.

(2) Indirect benefits

Since traffic congestion can be relieved owing to reasons described in 1), 2) and 3) below, air pollution and traffic accidents will be reduced, leading to a better living environment in the city center. Also, population dispersion from the city center to the suburbs can be expected.

- 1) The new terminal will provide transportation to districts outside Kathmandu without entering the city center. (Note: As a result of the survey, it was found that among passengers of medium and long distant route buses only about 25% were destined for the city center and the remaining passengers were destined for the suburbs.
- 2) Prohibiting medium and long route buses from entering the city center.
- 3) Eliminating parking and repairing of medium and long route buses on the road.

6.2 Suitability of the Project

The new bus terminal may be compared to the central station of a railway network since it will serve as the first hub of the bus transportation network in the Kingdom of Nepal, connecting all parts of the Kingdom. It will provide an important service to the people, including the benefits described in the preceding section 6.1.

Furthermore, since the terminal operation will be conducted by the Kathmandu Nagar Panchayat under the cooperation of NTEA, which has rich experience in bus operation as well as necessary organization, efficient operation can be expected.

In view of such condition, the execution of the Kathmandu Bus Terminal Project is expected to revolutionize bus operation service in the Kingdom of Nepal and greatly promote passenger transportation which has a significant meaning for the development of the Kingdom. Therefore the Project is considered to be most suitable for grant aid from Japan.

CHAPTER 7 CONCLUSION AND RECOMMENDATIONS

CHAPTER 7 CONCLUSION AND RECOMMENDATIONS

(1) Conclusion

If the Project is implemented, it will greatly improve the operation of medium and long route buses -- the main passenger transportation in Kathmandu -- departing from and arriving at Kathmandu. Furthermore, it will reduce traffic congestion and confusion during departure and arrival. Also, it will improve the traffic condition in the Kathmandu Metropolitan area and contribute to the provision of better transportation service to the people of the Kingdom of Nepal. To produce the best results from the Project, the implementation of the following items is necessary.

(2) Recommendations

1) Requiring all buses to use the bus terminal

It is recommended to clearly define the objective of the bus terminal as a basic policy of the nation and the city, and make bus operators as well as passengers appreciate the objectives of the terminal. Furthermore, it is recommended to require all medium and long route buses departing from and arriving at Kathmandu to use this new bus terminal.

2) Setting up a new bus operation schedule

A new bus operation schedule should be set up in accordance with the functions of the new terminal. A city bus operation schedule should also be set up to coordinate with the medium and long route bus operation in order to minimize waiting time of passengers.

3) Educating bus drivers and assistant drivers .

It is recommended to educate drivers and assistant drivers on the rules for the new terminal to assure smooth and efficient operation of it, and reeducate drivers to have them observe traffic rules, upraise driving technique and perform inspection before driving.

4) Educating the operation administrator and the building administrator

It is recommended to educate these administrators to give them a full knowledge of the functions of the terminal so that they may apply their knowledge to the operation of the terminal. If necessary, training may be given them at similar facilities in Japan or in a third country.

5) Signals and signs

Signals and signs should be provided at the point where the approach road branches off from the ring road to prevent the flow of vehicles using the terminal from obstructing the traffic of other vehicles. For this purpose, the cooperation of the road administration office is necessary.

6) Consideration for increasing number of buses

The increase of medium and long route buses can be handled to quite an extent by reducing bus waiting time. Now the boarding time is set at 30 minutes, and off-boarding time is set at 20 minutes which are quite longer than the standard. This extra time is

attributable to unloading large pieces of baggage and to passengers who are not used to using a terminal and to confusion in the terminal. But operation of the new terminal is expected to improve this situation. The area south of the site may be extended for a parking lot.

7) Attracting bus companies and related companies

One objective of the new bus terminal is to reduce environmental pollution from traffic in the city center of Kathmandu. It is desirable to set a policy to invite service stations of bus companies and spare part clearers located in the center of the city (i.e., inside the ring road) to relocate near the new terminal, in order to prevent medium and long route buses from running empty in the city center.

8) Construction of bus maintenance facilities

Raising bus operation efficiency is most important to realize smooth bus terminal operation. The maintenance of private buses rely entirely on private maintenance shops. Furthermore, regular scheduled maintenance is not performed. The number of buses is expected to increase in the future. To assure smooth terminal operation and to prevent damaged buses from entering the city, a bus maintenance system should be established and bus maintenance facilities should be constructed near the bus terminal to provide regular scheduled inspection and maintenance.

APPENDIX

APPENDIX

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1. Basic Design Study
- 1.1 Minutes (Basic Design Survey)

MINUTES OF DISCUSSIONS
ON
THE BASIC DESIGN STUDY
ON
THE PROJECT FOR CONSTRUCTING THE BUS TERMINAL IN KATHMANDU
IN
THE KINGDOM OF NEPAL

In response to the request of His Majesty's Government of Nepal (hereinafter referred as HMGN) for Grant Aid for the Project for Construction of the Bus Terminal in Kathmandu (herein after referred to as "the Project"), the Government of Japan decided to conduct a Basic Design Study on the Project and entrusted the study to the Japan International Cooperation Agency (JICA). JICA sent the Basic Design Study Team headed by Mr. Hiroomi MOTOZAKI, Special Assistant to the Director of the Division, Transport Promotion Division, Regional Transport Bureau, Ministry of Transport, to the kingdom of Nepal from 29th January to 24th February, 1989.

The Team had a series of discussions with the authorities concerned of HMGN and conducted a field survey in Kathmandu. As a result of the study, both parties agreed to recommend to their respective Governments that the major points of understandings reached between them as attached herewith should be examined towards the realization of the Project.

Kathmandu, 13th February, 1989

元崎博臣

Hiroomi MOTOZAKI
Leader
Basic Design Study Team
JICA

R. K. Tiwari

R. K. TIWARI
Joint Secretary
Ministry of Panchayat and
Local Development

ATTACHMENT

1. OBJECTIVE OF THE PROJECT

The general objective of the Project is to improve and strengthen the public transportation services in Nepal; and the specific objective of the Project is to alleviate the traffic congestion in Kathmandu city and to maintain smooth operation of the long/middle distance bus services by replacing the existing terminal with new one.

2. EXECUTING AGENCY

The executing agency for the implementation of the Project is Kathmandu City Panchayat, Ministry of Panchayat and Local Development.

3. SITE OF THE PROJECT

By the request of HMGN, Basic Design Study Team has finished the survey of the proposed site No.8, No.8 and No.5, which Survey Team has been informed that the site is finalized. Among these sites, Team identified site No.8 (in Annex I - i) as the best physical condition.

HMGN stated that the Army Quarter is near the site No.8, so that a new site, Kathmandu City Panchayat No.29 Samakhusi (in Annex I - ii), has been proposed by HMGN.

HMGN will through Kathmandu City Panchayat carry out soil investigation and topographical survey for the new proposed site and acquire land.

The proposed site of the Project is along the Ring Road for the purpose that long/middle distance buses should be excluded from the city center and traffic congestion in the city should be alleviated. HMGN stated that the proposed site will be secured and prepared by Kathmandu City Panchayat.

It has been agreed between the two parties that the land acquisition process shall be started for the bus terminal (concentrated on No.8 and the new proposed site only) by the date of February 22, 1989.

4. DEMARCATION OF FUNCTIONS BETWEEN THE EXISTING TERMINAL AND THE PROPOSED TERMINAL

The existing terminal should be used for city buses and short distance buses only. The proposed terminal should be used for long and middle distance buses principally.

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5. REQUEST BY HIS MAJESTY'S GOVERNMENT OF NEPAL

The Team will convey to the Government of Japan the request of His Majesty's Government of Nepal that the former takes necessary measures to cooperate in implementing the Project and provides necessary facilities and equipment as listed in Annex-II within the scope of Japanese economic cooperation programme in Grant form.

6. JAPAN'S GRANT AID SYSTEM

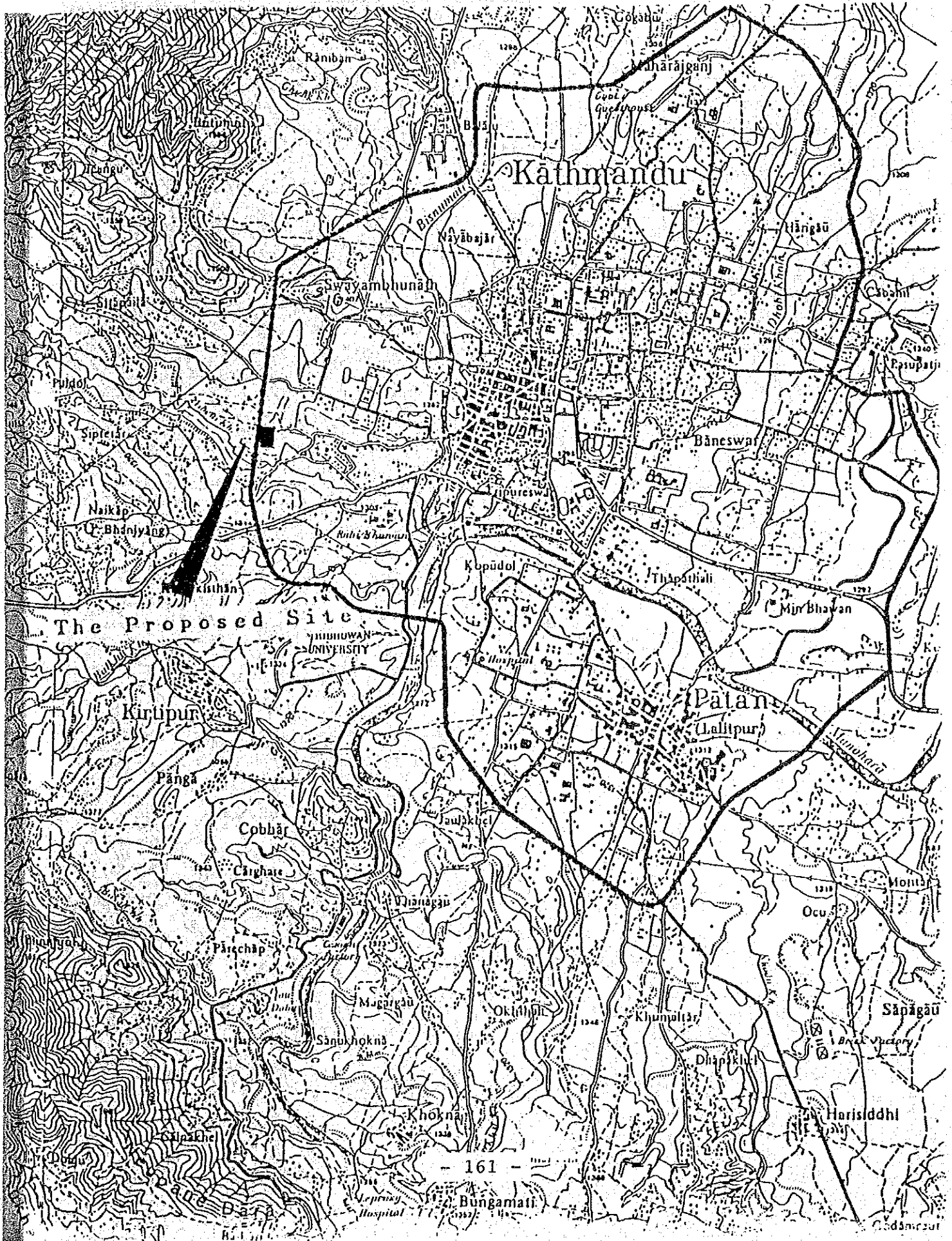
The Nepalese side has understood Japan's grant aid system explained by the Team including the principle that a Japanese consultant firm and a Japanese general contractor should be used for the implementation of the Project.

7. MEASURES TO BE TAKEN BY HIS MAJESTY'S GOVERNMENT OF NEPAL

His Majesty's Government of Nepal will take necessary measures as listed in Annex-III on condition that the grant aid by the Government of Japan is extended to the Project.

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THE PROPOSED SITE

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ANNEX II

I. The major items requested by His Majesty's Government of Nepal are as follows:

1. Facilities

- 1-1 Bus boarding / off boarding facilities (long/middle distance buses)
 - 1) Platforms
 - 2) Bus lanes
- 1-2 Terminal Building (long/middle distance buses)
 - 1) Administration office
 - 2) Ticket selling counter
 - 3) Other auxiliary facilities
- 1-3 Bus service station (long/middle distance buses)
 - 1) Light repair workshop
 - 2) Inspection facility
 - 3) Fuel supply system
- 1-4 Parking lots
 - 1) Bus parking lot (long / middle distance buses)
 - 2) Car and taxi parking lot
- 1-5 Kerb for other traffics (part of inner city bus, taxis etc.)

2. Equipment for 1-3 bus service station

- 2-1 Equipment for light repair workshop
- 2-2 Equipment for inspection including car washer
- 2-3 Equipment for fuel supply system

II. The team stated that the requested items will be examined on the basis of results of the field survey.

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ANNEX III

The necessary measures to be taken by His Majesty's Government of Nepal are as follows:

1. To secure site necessary for the Project as shown in Annex-I-ivii by the end of June 1989, at the latest.
2. To clear, level and reclaim the site in accordance with basic specification provided by the Basic Design Study Team prior to commencement of the construction.
3. To provide facilities for distribution of electricity, water supply, drainage, telephone system and other incidental facilities to the site.
4. To provide data and information necessary for the Project.
5. To take any legal measures to force long and middle distance buses to depart from and arrive to the proposed terminal only.
6. To clarify the type of management of the terminal and /or any part of the terminal.
(Direct management, consignment rental etc.)
7. To secure the connection bus services from the new terminal to the existing terminal and also to the other final destination of the passenger.
8. To bear two kinds of commissions to the Japanese foreign exchange bank for the banking services, based upon the "Banking Arrangement", namely, the advising commission of the "Authorization to Pay" and payment commission.
9. To ensure prompt loading, tax exemption and customs clearance of materials and equipment under the Grant Aid at the port of disembarkation in Nepal and also to facilitate the internal transportation of them.

10. To exempt Japanese nationals engaged in the Project from custom duties, internal taxes and other fiscal levies which may be imposed in Nepal with respect to the supply of the products and the services under the verified contracts.
11. To provide and/or acquire necessary permissions, licenses and other authorizations necessary for carrying out the project.
12. To bear all the expenses other than those borne by the Grant such as gardening, fencing, gates, exterior lighting etc. and
13. To maintain and use properly and effectively the facilities constructed and equipment provided under the Japanese Grant Aid program and to prepare the maintenance cost for the facilities and equipment sufficiently after completion of the Project.

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