foreign companies, such as those of Australia, New Zealand and Japan.

(4) Concept Towards The Use of Local Contractors and Local Materials

As mentioned in (3), most of the construction material, equipment and engineers cannot be obtained locally, and must be carefully considered.

(5) Concept Towards The Maintenance and Management Capabilities of Implementing Organizations.

As the financial conditions, maintenance and management capabilities of the Civil Aviation Division are inadequate, qualities, such as durability, simple maintenance and easily obtainable spare parts, must be considered when setting the specifications for the facilities.

(6) Concept Towards The Scope and Grade of the Facilities

Based on the above concepts, the designed facility should be able to adequately cope with the demands, satisfy the technical demands, be economical and, at the same time, easy to maintain.

(7) Concept Towards The Construction Schedule

Based on the contents and amount of work, the project will be a two-year Project (1996 and 1997) and the construction schedule will be carefully examined.

2-3-2 Basic Design

(1) Overall Plan

The Project area is the approximately 13 ha of land next to the present Henderson International Airport Terminal. A new international terminal facility will be constructed, including an international terminal building, apron, taxiway, car parking and associated facilities.

The new apron will be constructed 300m north of the existing runway, and will be connected by a taxiway. Facing the new apron, the new international terminal building (1 floor) will be constructed, with car parking on the north side and access roads leading to the new Henderson Road going to the Honiara city center. The site is a grass strip with coconut trees. As the land is relatively flat, there will be no need for large- scale earthwork. The site has been completely expropriated and is presently under the control of the Land Commission. The power, water supply and telephone lines presently located along the Henderson Road, will be diverted so as not to hinder the new taxiway construction, and will be connected to the new terminal area. When the new Henderson Road will be completed, each line may be relocated to the new road.

(2) Facility Design

1) Apron

a) Layout Plan

i) Location of Apron

The location of the apron should be such that it will not interfere with expansion of the runway strip that may be increased to 300m in the future, and the construction of the parallel taxiway.

ii) Type and Number of Design Aircraft, and Parking Configuration

One berth each will be provided for a B727 and a B737 in the apron stand and the aircrafts will be parked in a self-maneuvering angled parking configuration. Parking angle is 45 degree in principle except the east stand of 60 degree which will not send jet blast to the existing cargo terminal building.

iii) Dimension

Size of apron will be decided as follows:

- For B727 and B737, nose gear angle and clearance are set at the following values:

  Nose gear angle

  Standard angle for maneuvering

  B727: 50 deg.

  B737: 45 deg.

  Clearance between taxing aircraft and parking aircraft in the apron

  7.5 m (based on ICAO Annex 14)

- In case of parking B767, the space for the above two aircrafts can accommodate one B767. Nose gear angle is set at 60 deg which is slightly sharper angle since this is occasionally operation such as charter or non-schedule flights.

  Therefore, the dimension of the apron is set at

  110 m width

  65 m depth

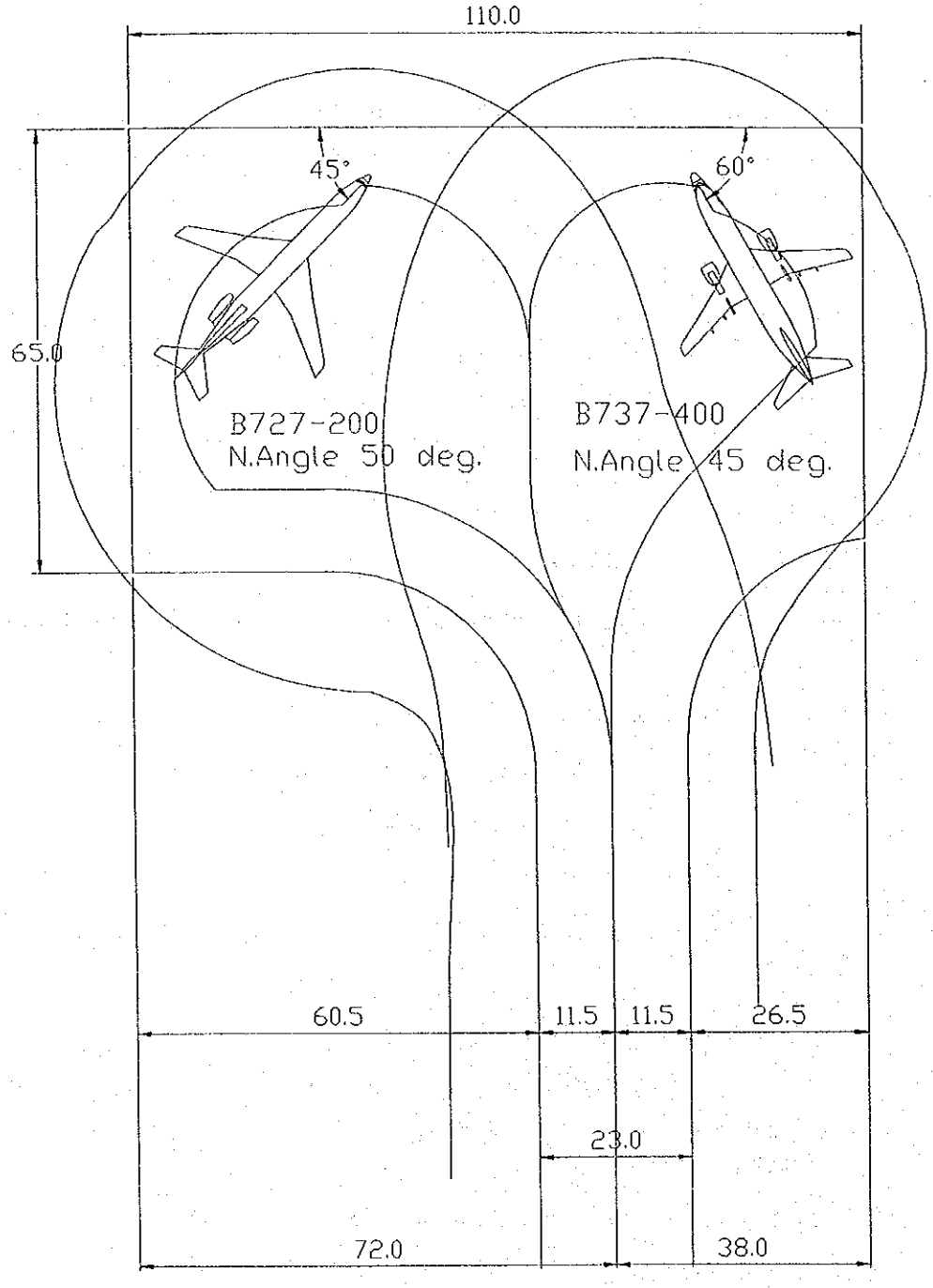


Fig. 2-3-1 Aircraft Maneuvering (B727, B737)

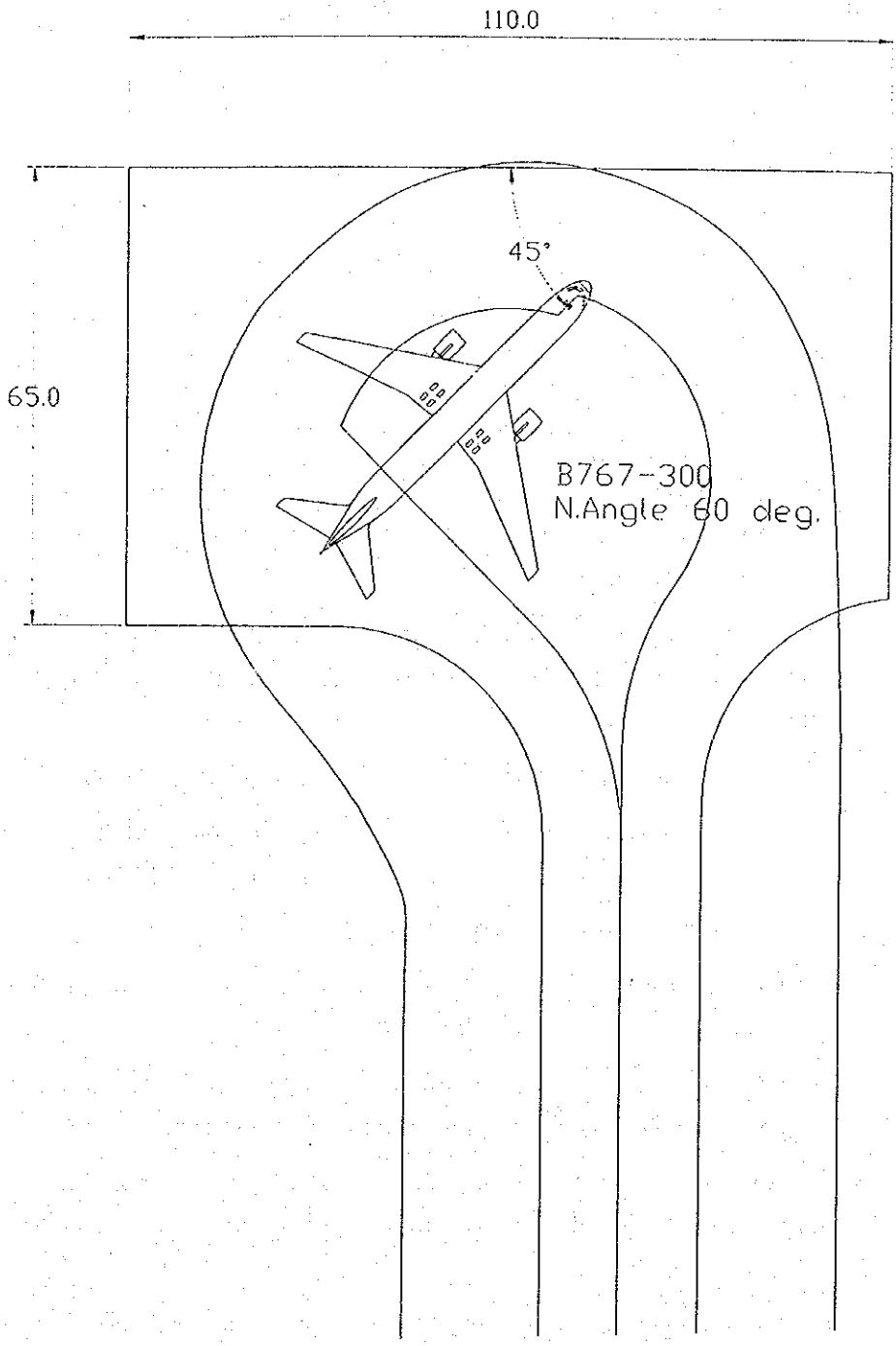


Fig. 2-3-2 Aircraft Maneuvering (B767)

b) Profile and Cross-sectional Design

The elevation of the new facility will be planned so that minimum earthwork will be required. The floor level of the new terminal building will be designed 1 m higher than the surrounding ground levels so as not to receive flood damage.

c) Pavement Design

i) Type of Pavement

Two types of pavement, asphalt (flexible pavement) and concrete (rigid pavement), were considered for the apron. As shown in Table 2-3-1, asphalt and concrete pavements have merits and demerits. For the following reasons, asphalt pavement will be used for this Project:

1. When medium and large sized jets such as the B747 and B767 are parked and boarding bridges are used, rutting may be developed in asphalt pavement, and therefore concrete pavement is desirable in general. However, in this project, such flights are very limited to land.
2. When the rough construction costs are compared in the Solomons, there is not much difference in price between asphalt and concrete pavement (per 1 sq.m in the case of B767)

Asphalt pavement	230 Solomon dollars
Concrete pavement	229 Solomon dollars (not including joints)

Thus, if joints are included, concrete will be more expensive.

3. As there are hardly any cases of concrete pavement in the Solomon Islands, local contractors are not familiar with it.
4. The runway, taxiway and apron of the present Henderson Airport all have asphalt pavement and the staff are used to maintaining and repairing it.
5. Although concrete pavement is superior to asphalt in resisting oil leaks from parked aircraft, asphalt may resist in the same way if oil proof coats are applied.

Of the neighboring countries that have received Japanese Grant Aid in the airport development, the following pavement were used in Vanuatu and Western Samoa:

Vanuatu Bauerfield International Airport:		Asphalt (B767)
Western Samoa, Faleolo International Airport:	(Apron)	Concrete (B767)
	(Other areas)	Asphalt

Table 2-3-1 Comparison of Asphalt and Concrete Pavements

Item	Asphalt Pavement	Concrete Pavement
Flatness, Mobility	Due to the smooth surface, mobility is good.	Accurate concrete slab and joint construction is necessary. Poor joint work result in bad mobility.
Durability, Aging	Rutting may be developed by heavy and wide area of static load and repeated loading. The surface may be affected by oil and heat. Aging of concrete is fast and it may lose toughness and cause material separation.	It is strong against concentrated load. The durability of the concrete slab is strong and has a long life. The joints may be the weak points of the pavement.
Construction and Construction Period	As curing time is short, it may soon be put to use. The construction period may be shortened.	Joint making takes some time. A certain amount of curing time is necessary before use.
Maintenance and Repair	Partial dismantling is possible, making repair easy. The time taken is relatively short.	When the concrete slabs begin to deteriorate, repair is difficult. A certain amount of time is necessary to dismantle the concrete, hindering airport operations at times.

ii) Design Load

The design load for the new apron and taxiway is a B767. The improvement project for the runway includes the overlay of the runway in order to service B767s.

iii) Pavement Structure

Pavement structure is designed as shown below based on ICAO Aerodrome Design Manual, Part 3.

Surface Course	4 cm
Binder Course	6 cm
Base Course (Graded Aggregate)	31 cm
Subbase Course (Crusher-run)	64 cm
Total	105 cm

2) Taxiway

a) Layout Plan

i) Location of New Taxiway

Location of the new taxiway was decided so as to minimize the relocation of the existing facilities. The centerline of the new taxiway was fixed so that the existing PAPI and meteorological sensors may not be obstructions in the taxiway strip.

ii) Width

Width of the new taxiway and shoulders were decided as follows based on the ICAO Annex 14.

Taxiway: 23 m

Shoulder: 7.5 m

b) Profile and Cross-sectional Design

Profile of the new taxiway was designed along the existing terrain so as to minimize the earthwork volume.

c) Pavement Design

Pavement structure is same as that of the apron.

3) Roads and Car Parking

a) Layout Plan

The roads network and the number of lanes in the terminal area are shown in Figure 2-3-3 taking into consideration the traffic flow. Cross-section of the roads are designed based on the Japanese standards as follows:

2-lane road:

shoulder 0.5 m + traffic lane 3.25 m x 2 + shoulder 0.5 m = 7.5 m

1-lane road:

loading lane 1.5 m + traffic lane 3.25 m + shoulder 0.5 m = 5.25 m

Terminal frontage road:

loading lane 3.0 m + traffic lane 3.25 m x 2 + shoulder 0.5 m = 10.0 m

Airside service road: 4.0 m

The car parking in front of the terminal building to serve international passengers, other visitors and airport staff will be toll parking. Capacity of the car park is 210. Taxi standing is separately planned for parking of ten taxis. Unit parking space in the car park is 2.25 m by 5.00 m with 90 deg. parking configuration.

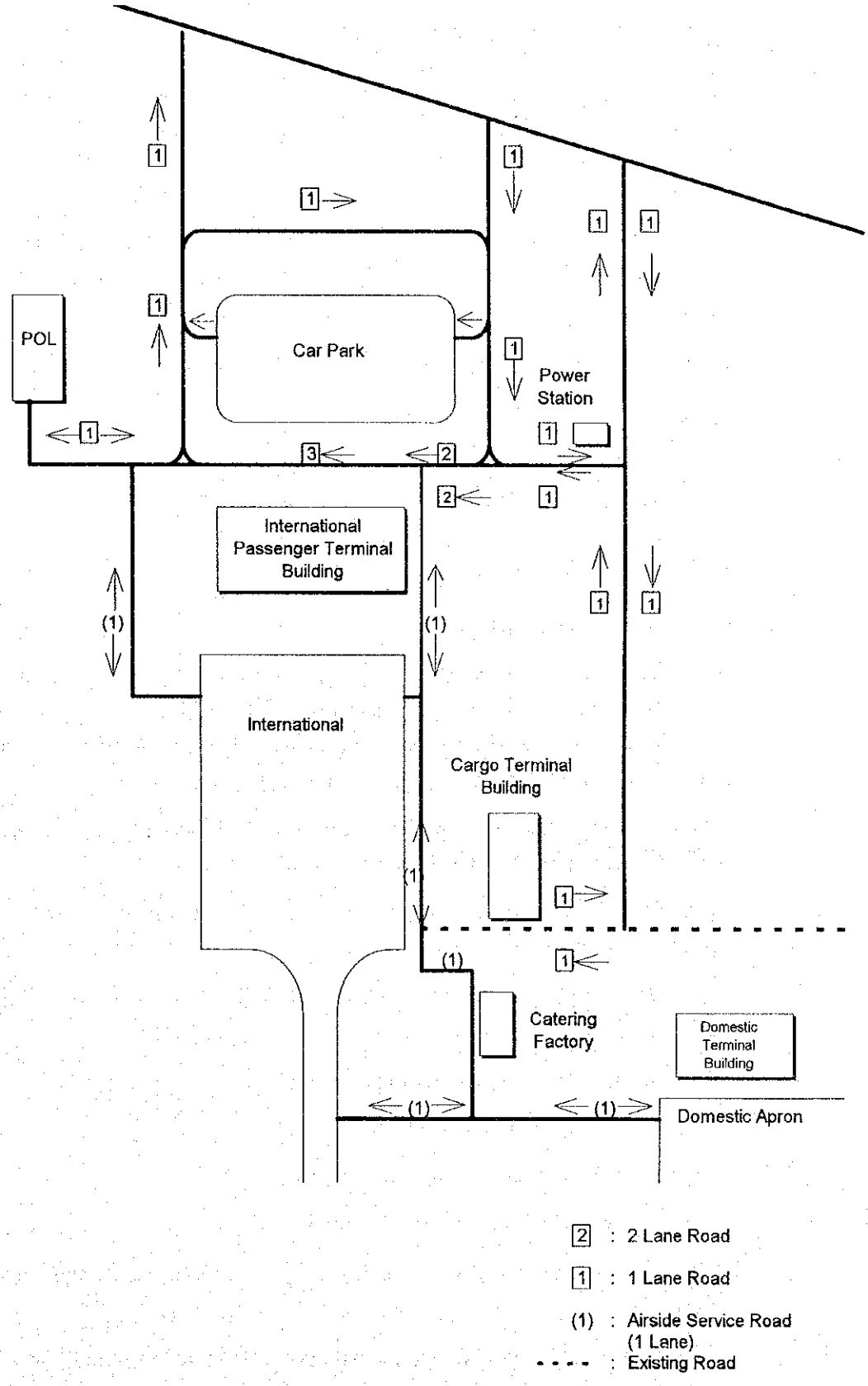


Fig. 2-3-3 The Roads Network and the Number of Lanes in the Terminal Area

b) Profile and Cross-Sectional Design

Car parking has the down slope of 2.5 % from the terminal building on the embankment towards the existing ground level of the north side.

c) Pavement Design

Pavement for the roads and carpark is designed based on the experiences in the Solomon Islands and the similar projects in the neighboring countries. Pavement structure is as follow:

Bituminous double seal:	5 cm
Base course:	10 cm
Subbase course:	10 cm
Total:	25 cm
(Subgrade CBR = 5 %)	

4) Utility

a) Electric power supply system

Electrical power will be supplied from the 3 phase 11 kV aerial distribution lines of the Solomon Islands Electricity Authority (SIEA) through an underground cable line to the new power house. The 11 kV power will be transformed to three phase, four wires, 415/240V by the main transformer.

The watt-hour meter for the power supply contract between the airport and SIEA will be installed to the low voltage (415V) side.

All high voltage equipment, main transformer and watt-hour meter will meet SIEA specifications and will be maintained by SIEA.

Low voltage power feeders will be connected from a low voltage distribution panel to the following facilities;

i) New passenger terminal building

ii) New apron flood lights

iii) New car parking area lighting

iv) New terminal road lighting

All existing airport facilities are supplied with power from the existing power house as is.

The new fire station will be supplied with power from the existing power house to prevent confusing of two types of power feeders (one is connected to a new power source, and the other is connected to the existing power house in the same area).

Electric power to the new fuel farm will be supplied directly by SIEA.

Power demand of new power house is estimated as follows;

i) New terminal building	250 kVA
ii) New apron flood lights	10 kVA
iii) New car parking area lighting	10 kVA
iv) New terminal road lighting	10 kVA
v) Others	20 kVA
Total	300 kVA

One emergency generating system will be provided in the new power house and will supply power to the following essential consumers;

i) Essential lighting in new passenger terminal building	100 kVA
ii) New essential apron lighting	3 kVA
iii) Fire hydrant pump	10 kVA
iv) Water supply and sewage pumps	10 kVA
v) Baggage handling conveyor	10 kVA
vi) Others	17 kVA
Total	150 kVA

A fuel tank for the emergency generator having a three day (72 hour) continuous operation capacity will be installed at the new power house site.

b) Telephone system

An underground telephone service cable will be installed from the existing telephone relay terminal (located in the existing power house) of the Solomon Telekom Company (TELEKOM) to the new main distribution frame (MDF) in the new power house.

New telephone cables will be installed from the MDF to each telephone terminal board in the passenger terminal building.

c) Water supply and sewage system

Three types of water source (city water service, rain water storage, and well water) will be provided to the new passenger terminal facilities.

A reservoir will be installed in the new passenger terminal building site and will receive and store city water.

Rainfall on the new passenger terminal building and well water will be filtered and reserved in the reservoir.

The water will be transferred to toilets and faucets in the building by a pressure type water supply pump. As this water is mixed with rain and well water it is unsuitable for drinking several portable type water fountains will be provided in the building.

Waste and sewage water will be treated in the septic tank and the treated water will be distributed to a specified site through percolating pipes.

d) Fuel supply system

A new fuel farm will be constructed on the planned site by a private company. The existing farm will be demolished.

The design, construction and operation of the entire system will be performed by the company.

e) New parking area lighting

Ten light poles equipped with high pressure sodium lamps will be installed to the new parking area. The average lighting intensity will be 3 lux.

The lighting will be automatically controlled either by a time switch or photo switch but can also be manually controlled at the new power house.

f) New terminal road lighting

Light poles equipped with high pressure sodium lamps will be installed to the new parking area. The average lighting intensity will be 3 lux.

The lighting will be automatically controlled either by a time switch or photo switch but can also be manually controlled at the new power house.

g) Trash and garbage handling

Trash will be burned at the temporary burning site. The city will provide garbage collection services.

h) Diversion works

The existing distribution lines of SIEA, the city telephone lines of TELEKOM and the city water main line will be diverted as follows;

i) Electric power lines

Some of the existing 11 kV aerial and underground distribution lines which are installed along the existing Henderson road and will be rerouted through new taxiway crossing conduits and will be operated as is. When the new Henderson road is completed they will be relocated along the new road.

Existing low voltage power lines from the existing power house to the existing airline's office and workshops will be rerouted through new taxiway crossing conduits.

j) Telephone lines

Some sections of the existing underground telephone cable installed along the existing Henderson road will be rerouted through taxiway crossing conduits and be operated as is. Also, when the new Henderson road is completed the cable will be relocated the new road.

The existing microwave antenna and tower, relay panels and telephone exchange shall remain and be operated as is.

k) City water supply main line

Some sections of the existing city water main line that are installed along the existing Henderson road will be temporarily rerouted to during the project construction period. When the new Henderson road is completed they will be relocated along the new road.

5) Airport lighting system

a) Apron floodlights

Three floodlights poles will be installed on the new apron.

Each lighting tower is equipped with two 400 watt halogen lamp floodlight fixtures and four 400 watt high presser sodium lamp floodlight fixtures. They will be located to provide an average lighting intensity of 20 lux.

All halogen lamp flood light fixtures will be connected to an emergency supply feeder so that the apron will be continued to be lit in the event of a power failure. Average lighting intensity will be 5 lux.

All apron floodlights will be controlled from a remote control panel located in the new power house.

Each floodlights pole will be equipped with a flight obstacle light and a lightning rod.

b) Taxiway lighting

Taxiway lighting will be provided to the new taxiway.

The new taxiway lights will be connected to the existing taxiway light circuit and will be controlled by the existing CCT (4.5kVA) located in the existing power house.

Both the existing and new taxiway lighting will be operated by the existing operation desk located in the existing control tower.

(3) Architectural Design

1) Passenger Terminal Building

a) Basic Concept

- Simple Layout and Simple Passenger Flow

  The basic concept of the passenger terminal building will be determined, first of all, based on the forecasts of air traffic demand during the peak hours of the target year.

  A one-level and frontal system is applied for this building as the passenger processing concept, considering the small air traffic demand (2B737s; 180 passengers (one way)).

- Future Expandability

  It is considered the possibility of extending the building eastward and westward, namely parallel to the runway, in the future.

- Easy Maintenance and Operation

  Consideration is to be given in the design so as to minimize maintenance cost.

  Design standard for architectural design is National Building Code for Solomon Islands. If necessary standards area not available, Australian and Japanese standards are also referred.

i) Basic Design Principles

- To design the building so that it is attractive to tourists.
- To make the building adaptable to the environment..
- To design the functional and economical building
- To introduce the traditional motives.
- To make the building durable and resistant against natural disasters.
- To economize the running and maintenance costs of the building.

ii) Basic Design Procedures

- To minimize the length of passenger flowlines.
- To maximize the use of natural ventilation by designing a high ceiling and a large wall opening.
- To use traditional motives both inside and outside the building.
- To use materials of high durability, especially for exterior finishing, and to give consideration to rustproofing steel members.
- To design a rain water drainage system capable of handling high intensity rainfall and to raise the floor level to protect the building from flood damage.
- To procure and use local materials as much as possible.

b) Layout of Facilities

i) Required Facilities and Flow of Passengers and Baggage

The required passenger terminal building facilities and their functional classification and are listed in the Table 2-3-2.

Table 2-3-2 Facilities in the Passenger Terminal Building

Categories	Facilities
Access Area	Curb Area
Departing Passenger Area	Check-In Lobby, Check-In Counters, Departure Lounge,
Arriving Passenger Area	Arrival Lounge, Baggage Claim Area, Baggage Claim Conveyor
Baggage Handling Area	Baggage Make-Up Area, Baggage Breakdown Area
CIQS Checks	Customs Counters, Immigration Counters, Quarantine Counters, Security Check Area
Offices	Offices for CIQS, Airport Administration Office, Airline Office, Crew's Rest Room, Workers' Room, Police Offices, First Aid
Concessions	Coffee Bar, Snack Bar, Duty Free Shop, Bank, CIP Lounge, Rent-A-Car Counters
Other Services	Public Lobby, Travel Information, Observation Deck, Storage's, Toilets, VIP Room

The relationship between the Required Facilities are shown as in Figure 2-3-4

ii) Flows of Passengers, Baggage and Officers

• Passenger Flow

The flow of departing passengers(Curb Area to Apron) and that of arriving passengers(Apron to Curb Area) is to be as straight and short as possible. The flow of passengers with baggage is to be carefully designed.

• Flow of Consigned Baggage

The flow of arriving and departing passengers' consigned baggage is designed to be rapid and simple and involves a minimum number of handling operations.

The baggage handling system is manual; simple conveyors will be provided.

Passengers and consigned baggage flowlines are to be designed to minimize the cross-point thereby reducing interference.

• Flow of CIQS Officers and Airline Officers

CIQS Offices are to be located in close proximity to their checking points.

The airline's office is located between the check-in counters and apron at the center of the building. This will give airline officers convenient access to their processing areas and aircraft operation areas.

iii) Calculation of Area Requirements

• Passenger Processing Area

The calculations were made using the "Capacity Calculation Formulae, Airport Development Reference Manual, 8th Edition, April 1995, IATA" and based on the data collected during the investigation of the existing terminal building.

• Offices

The necessary floor space for each office was calculated using the standard area requirements for governmental offices of the Ministry of Transport of Japan and based on the present number of officers.

iv) Facility Layout Concept

Considering the above-mentioned relationship between the facilities, the passenger and baggage flow and the requests from the Government of Solomon Islands, the layout of facilities was designed as follows:

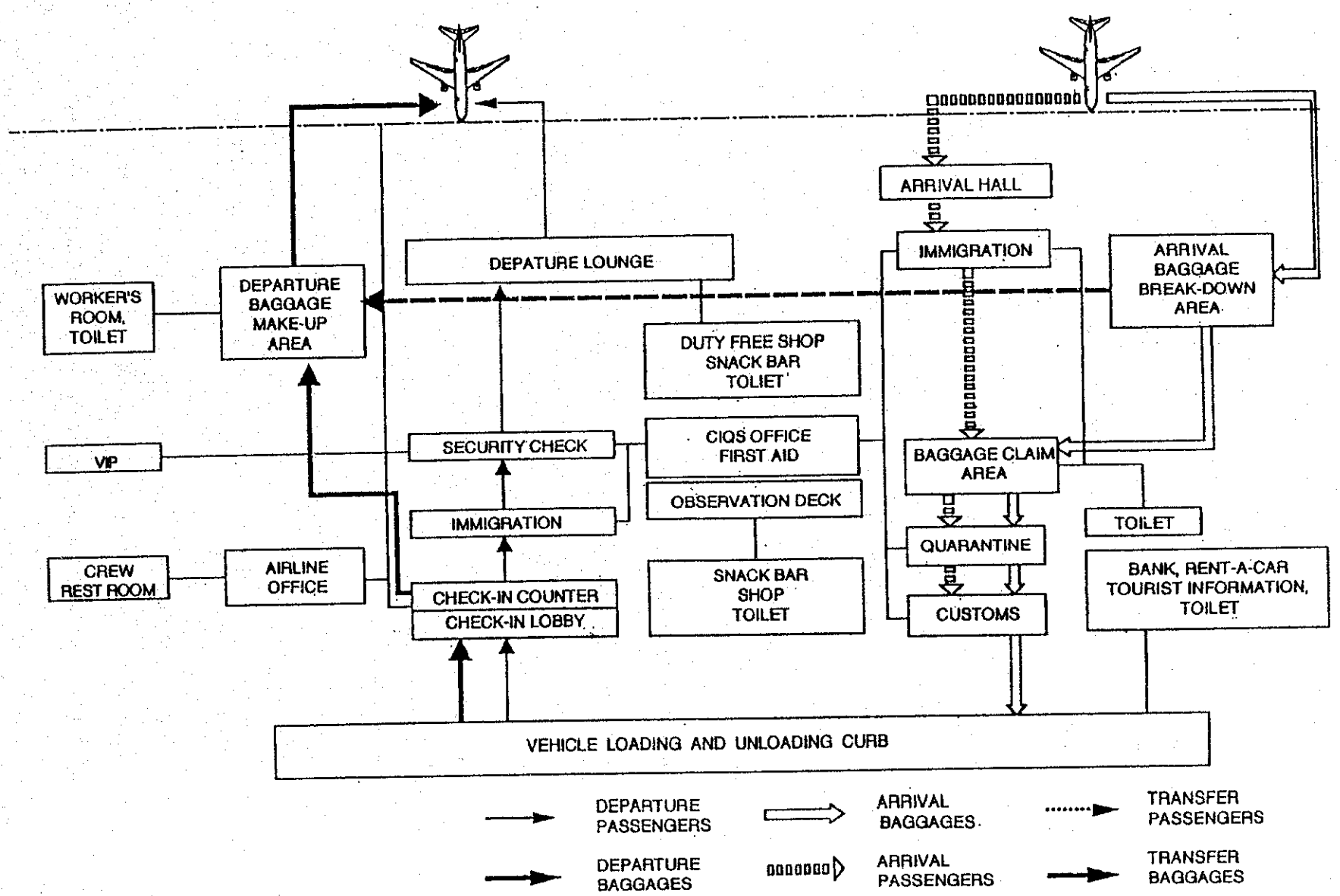


Fig. 2-3-4 Function of the facilities in the passenger terminal building

- Check-In Lobby, Check-in Counters and Public Lobby :

  The check-in lobby and check-in counters are to be located in the front of the main entrance of the building for the convenience of departing passengers.

  The public lobby surrounds the check-in lobby so that the departing passengers who are checking in may keep in contact with their well-wishers.

  Six check-in counters are planned, and the conveyor for check-in baggage is installed behind the counter.

- Immigration(Departure) Counter and Hand Baggage Inspection Counter :

  These counters are to be situated close to the public lobby.

  An X-ray metal detector is provided at the hand baggage inspection point.

  The Immigration, security and police offices are located adjacent to the counters.

- Departure Lounge and CIP Lounge :

  The departure lounge faces the apron and departing passengers can easily board aircraft. Spaces for a walk-in duty free shop and a snack bar are provided in the departure lounge.

  The CIP lounge having 24 seats is located next to departure lounge.

- Arrival Lounge, Immigration(arrival) Counters and Health Check :

  Passengers disembarking aircraft will walk to the arrival lounge via the apron. The lounge provides a enough space for queuing in front of the immigration counters.

  A space for the extension of immigration counters is provided.

  Health inquiries will be collected on the way from immigration counters to baggage claim area.

- Baggage Claim Area, Customs Counters and Quarantine Counter :

  The baggage claim area is so located that passengers claiming baggage do not interfere with passengers going to the custom counter from the immigration counters.

  One baggage conveyor is provided in the baggage claim area.

  A space for the extension of custom counters is provided.

  In the customs check area, a quarantine counter is provided next to the customs counter.

- CIQS Offices

  The customs, immigration, quarantine and security officer are located close to their inspection points.

- Airport Administration Offices

  The existing office building for the Civil Aviation Division is to be demolished and the offices will be shifted to the new building.

  The offices are located on the first floor at the center of the building. They have a good view of the apron and public lobby and a good relation with apron and airline offices.

- Airline Offices

  The two-thirds of the staff working in the existing airline operation office will be shifted to the new building.

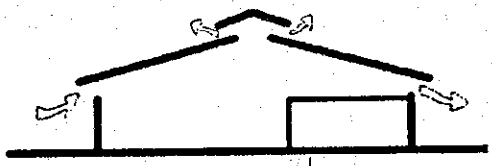
  The offices are located at the center of the Building in close proximity to the check-in counters and apron.

iv) Floor Areas of Facilities

The floor areas of the facilities are shown in Appendix and are compared with the floor areas of the existing passenger terminal building.

c) Sectional Design

Considering the local weather conditions, namely high temperature and high humidity, the lifted ceilings and appropriate openings are obtained for general rooms. The air-conditioned rooms will have lower ceilings in order to provide good ventilation throughout the building.



The public lobby and check-in lobby are located in the center of the building.

Most of the passengers and their friends or relatives gather here and remain for lengthy periods of time. These lobbies will have double ceiling heights in order to create a good atmosphere and provide the visitors with an example of local architecture that will forever remain in their memories.

The floor level of the ground floor is designed to be 1 m higher than the surrounding ground level in order to prevent flood damage.

d) Structural Design

The one story terminal building is to be 90 meters long and 41 meters wide and will have a partial upper story on the center.

Because the building is to accommodate big free spaces, such as the public lobby, departure lounge, baggage claim area etc., either a steel structure or a reinforced concrete structure would be appropriate. However, after considering the local conditions, the steel structure was adopted because the quality of work can be better controlled and the construction cost is less than for a reinforced concrete structure.

The airport administration offices and observation deck are located on the upper story. They will have a reinforced concrete floor that will provide good stiffness.

A soil bearing capacity of about 5 to 10 t/m2 is expected from the report on the soil investigation carried out in May 1995. As the superstructure of a steel frame construction is relatively light, a spread foundation is appropriate.

The foundation will either be on be independent footing system or a continuous footing system made of reinforced concrete.

It is recommended that trial pits be dug at 6 points and load-bearing tests be conducted at 3 points before beginning construction work to determine the subsurface conditions of the soil.

The calculations will be made in accordance with the Solomon Islands' National Building Code of 1990 :

e) Facilities for Passenger Terminal Building

i) Lighting System

Lighting fixtures and lamps that can be purchased locally will be used considering easy maintenance.

The lighting system for each room or area will be designed to be of the appropriate lighting intensity and proper fixture type.

High power discharge lamps will be used for main lighting in high ceiling rooms, such as the departure lounge, arrival lobby, baggage handling area and check-in lobby. Fluorescent lamp fixtures will be installed as subsidiary lighting to prevent a blackout in the event of a power failure. These subsidiary fixtures, connected to an emergency generator, will turn on when there is a power interruption of the SIEA distribution line.

The immigration, custom, quarantine and security control counters will be provided with task lighting.

The lighting fixtures in offices and similar rooms will be provided with diffusers, and 20% of the installed fixtures will be connected to an emergency power circuit so that they can be turned on in the event of a power failure.

The lighting fixtures and lamps installed in the VIP room, CIP room, and shops will be appropriate types. These rooms will also be provided with subsidiary lights that are connected to an emergency circuit for use in the event of a power failure.

All rooms and areas occupied by passengers or airport workers will be provided with a self-contained battery operated emergency light.

Emergency escapes and exits will be provided with lighted "EXIT" signs.

All lighting fixtures in public areas or rooms will be operated either by remote control or local switches.

Normal and emergency power will be supplied from the distribution boards installed in the passenger terminal building.

ii) Socket outlets

General use three pin socket outlets rated as 15 amp will be installed in large rooms such as the departure lounge, arrival lobby, check-in lobby. One socket outlet per 100 square meter, for the use of cleaning equipment will be sufficient.

The number of socket outlets to be provided offices will depend on the number of workers and office equipment.

Exclusive use socket outlets will be installed to drinking fountain and advertisement boards.

Normal power will be supplied to socket outlets from the distribution boards.

iii) Motor control system

To supply power and control building and airport equipment, such as air-conditioning, exhaust fans, pumps and baggage handling equipment etc., motor control panels will be installed at proper locations throughout the building.

iv) Telephone system

The following three types of telephones will be provided depending on their usage purpose:

a. Administrative telephones

This telephone system will be used by the CAD and will consist of a private telephone exchange, cables and telephone sets.

b. Public telephone

These telephones will be used by passengers, well-wishers and the like. The system will consist of outlet boxes and conduits in the building.

c. Private telephones

These telephones will be used by airline companies and tenants. The system will consist of outlet boxes and conduits in the building.

The administrative telephone will be separated from the existing telephone exchange and communications between the existing and new systems will be carried out through the TELEKOM lines.

A new digital type telephone exchange will be installed in the civil aviation office. Telephone sets will be installed in offices as required.

Several public telephone outlets will be provided in the public area, VIP room and CIP room. All public telephone sets and associated cables will be installed and maintained by the TELEKOM.

All private telephones and cables will be installed and maintained either by the user or by the TELEKOM based on a contract.

v) Intercommunication systems

The interphone system and conduit line system for office electronics equipment will be provided as the intercommunication system.

a. Interphone system

The interphone systems will be provided between the departure immigration office and the immigration counters and the arrival immigration office and immigration counters, security office, police office and security counters.

Conduit lines will be provided between the check-in counters and airline offices. The interphone sets and cables will be installed by the airline.

b. Conduit line system for office electronics equipment

The conduit lines and terminal boards for airport operation equipment to be installed to the offices, airline offices and check-in counters will constitute an information network at the airport.

vi) Public address system

To announce flight schedules and emergency notices, a public address system will be provided.

The main amplifier and controller of the system will be installed in an office.

The output lines will be as follows;

a. Administrative office line

b. Check-in lobby line

c. Departure area line

d. Arrival area line

e. VIP line

To announce flight schedules, a remote control amplifier will be provided at the flight information counter and announcing through the main amplifier to the selected public area.

The speaker system to be installed in high ceiling areas will provide clear sound even if there is some noise in the area. The speakers installed in other rooms or areas will be dynamic type ceiling mounted speakers.

A local volume control will be installed in the VIP and CIP rooms.

vii) Clock system

Some self-contained type clocks will be provided in public areas.

viii) Fire detecting and alarm system

The system will consist of detectors, alarm switches, an indicating panel, a control panel and a sub-indication panel.

An appropriate type and sufficient number of heat and smoke detectors will be installed in all rooms and areas to detect fires automatically.

An alarm switch will be installed in each fire hydrant box in the building.

The indication panel contained in the control panel will be installed in the CAD office; it will indicate the fire zone when the system detects a fire.

The sub-indication panel will be installed in the new fire station and connected to the control panel by cables.

The control panel will be installed in the civil aviation office; it will automatically transmit a fire signal to new fire station when a fire is detected.

ix) Air-conditioning and ventilation system

Basically, a natural ventilation system will be adopted for the building, but the VIP room, the offices located in first floor and all toilets will be provided with ventilation fans.

Offices occupied by workers during airport operation hours and the VIP room will be provided with package-type air-conditioning units.

Airline offices, the CIP room and shops will be provided with power outlets and installation space for air-conditioning equipment to be installed by the airlines or tenants.

x) Water supply and sewage systems

Water will be distributed from a reservoir tank to each toilet and kitchen by pressure tank type water supply pumps.

All waste water and sewage will be directly discharged into a sewage tank and will be pumped into a septic tank.

All drinking water will be supplied by portable type drinking fountains.

xi) Security system

An X-ray detecting system will be installed in the security check area and in check-in lobby.

One metal detector will be installed in the security check area.

ix) Fire hydrant system

The system will consist of a fire hydrant pump and fire hydrants.

The fire hydrant pump will be installed in the pump room; it will activate automatically when a fire signal is received at the fire detecting control panel.

In the event of a power failure, the pump will operate on power from the emergency generator.

ix) Baggage handling system

A baggage handling conveyor will be installed at the check-in counter and departure baggage handling area, and at the arrival lobby handling the passengers' baggage.

f) Finishing Schedule

The finishing materials shown in Table 2-3-3 were selected after considering the following factors:

i) To minimize the types of materials by grouping facilities according their functions.

ii) To choose durable and solid materials to minimize building maintenance costs.

iii) To use locally produced or locally purchasable materials as much as possible.

Table 2-3-3 Finishing Materials

Work Item	Building Part	Finishing Materials		Grounds for choice
		1st choice	Alternative	
・Exterior	Floor	Terracotta tile	Interlocking paver	easy to maintain
	Opening	Glazed Aluminium	Wood painted w/glazing	solid, durable
	Wall	Concrete block painted	Galvanised & prefinished steel siding	durable, locally produced
	Roof	Galvanised & prefinished steel profile	Prefinished Aluminium profile	durable
・Interior (Public space) Departure Lounge Check-In Lobby Public Lobby Arrival Lounge Baggage Claim etc.	Floor	Rubber tile	Linoleum	durable
	Skirting	Wood painted	Vinyl	locally produced
	Wall	Cement mortar painted, Versilux painted & Wood lacquered		solid, locally purchasable
	Ceiling	Wood painted	Versilux paint ed	locally produced
・Interior (Office) CIQS Offices Airport Adminis-tration Office Airlines Office	Floor	Linoleum	Vinyl tile	durable
	Skirting	Wood painted	Vinyl	locally produced
	Wall	Cement mortar painted & Versilux painted		solid, locally purchasable
	Ceiling	Rockwool panel (for aircondnd) & steel mesh painted		insulating
・Interior (Water section) Toilets Shower room Kitchen	Floor	Mosaic tile	Cement mortar	easy to maintain
	Wall	Ceramic tile & cement mortar painted	Cement mortar painted	easy to maintain
	Ceiling	Versilux painted		waterproofing; locally purchasable

2) Fire Station

a) Facilities Layout

The fire station is situated north of midway of the runway.

The fire station will be a one story building having a floor area of about 450m2.

The facilities to be accommodated are as follows:

i) Vehicle storage (Three major vehicles, one ambulance and one command car, or four major vehicles)

ii) Office with overlook

iii) Lecture/recreation room

iv) Dormitory

v) Work shop and extinguishing agencies storage

vi) Stores

vii) Toilets, showers and cleaner's room

viii)Hose tower (with 3 pulleys)

b) Sectional Design

The door of the vehicle storage will have an overhead clearance of 4.5m.

With some exceptions, the ceiling heights of other rooms will be 2.5m.

c) Structural Design

The vehicle storage consists of a space free from interfering columns or walls; it will be 20.6m long and 13m wide. Thus, there will be four 5.15m spans in a longitudinal direction and one 13m span in a cross sectional direction.

The other part of the building will be framed in reasonable and economical way.

Considering the functions of the building and the local conditions of construction, a steel frame structure will be built.

Based on the report of the soil investigation carried out at the construction site of the passenger terminal building in May 1995, the soil bearing capacity is presumed to be about around 5t/sq.m. Therefore, a spread foundation will be appropriate.

The foundation will either be an independent footing system or a continuous footing system made of reinforced concrete.

The calculations be made in accordance with the Solomon Islands' National Building Code of 1990.

d) Facilities for new fire station

i) Lighting system

All rooms of the building will be provided with fluorescent lamp fixtures lighting of appropriate intensity.

ii) Socket outlet system

Some general purpose and maintenance purpose socket outlets will be installed.

iii) Telephone system

An administrative telephone set will be installed in the office and night duty room.

iv) Fire detecting system

Smoke detectors will be installed in each room and connected to the sub indication panel located in the office.

v) Ventilation system

Package type air-conditioning will be installed in the office and dormitory.

Exhaust fans will be installed in toilets and storage rooms.

e) Finishing Schedule

· Exterior	Base Wall	Opening	Wall	Roof
	Concrete	Glazed aluminum, and steel shutter	Galvanized prefinished steel siding	Galvanized prefinished steel profile
· Interior	Floor	Wall		Ceiling
		Inner	Outer	
Vehicle Storage, Work Shop & Ext-inguishing Agen-cies Store	Concrete	Versilux painted	Steel frame exposed	Steel frame exposed, Aluminum foil under purlin
Office, Dormitory, Lecture/rec., Storage	Vinyl tile	Versilux painted		Versilux painted
Toilets, Shower Room, Cleaner's Room	Mosaic tile	Ceramic tile & Cement mortar painted		Versilux painted

3) Power House

a) Facility Layout

The one story power house will be located east of the car parking. It will have a floor area of about 130 sq.m.

The required facilities are as follows :

i) High Tension Switchgear Room

ii) Low Tension Switchgear Room

iii) Generator Room

iv) Fuel Tank Shed

The layout of the facilities will be designed by taking in consideration the points of intake of high tension cable and the outlet points of low tension cable.

The dimensions of doors and the bearing capacity of floor slabs must be suitable for the installation of heavy machinery.

b) Cross Sectional Design

To accommodate the equipment, the height of the bottom of beams is designed to be 3.5m from the floor elevation.

The height of the floor elevation is one meter from the surrounding ground level to prevent flood damage to equipment.

c) Structural Design

Considering the function of the Building and the local conditions of construction, the steel frame structure is appropriate.

The framing is composed of two 6.0m spans in a longitudinal direction and two 5.5m spans in cross-sectional direction .

Based on the report of soil investigation carried out at the construction site of the passenger terminal building in May 1995, the soil bearing capacity is expected around 5 t/sq.m.

The foundation will either be an independent footing system or an continuous footing system made of reinforced concrete.

The calculations will be made in accordance with the Solomon Islands' National Building Code of 1990.

d) Facilities for New Power House

i) Lighting system

All rooms of the building will be provided with fluorescent lamp fixtures having a lighting intensity of 300 lux.

Half of the lighting fixtures will be connected to an emergency power supply for easy operation and maintenance work in the event of a power failure.

ii) Socket outlet system

Some general purpose and maintenance purpose socket outlets will be installed.

iii) Telephone system

An administrative telephone set will be installed in the low voltage distribution room.

iv) Interphone system

An interphone system will be provided between the new and existing power house.

v) Fire detecting system

Smoke detectors will be installed in each room and connected to the indication panel located in the office of the passenger terminal building.

vi) Ventilation system

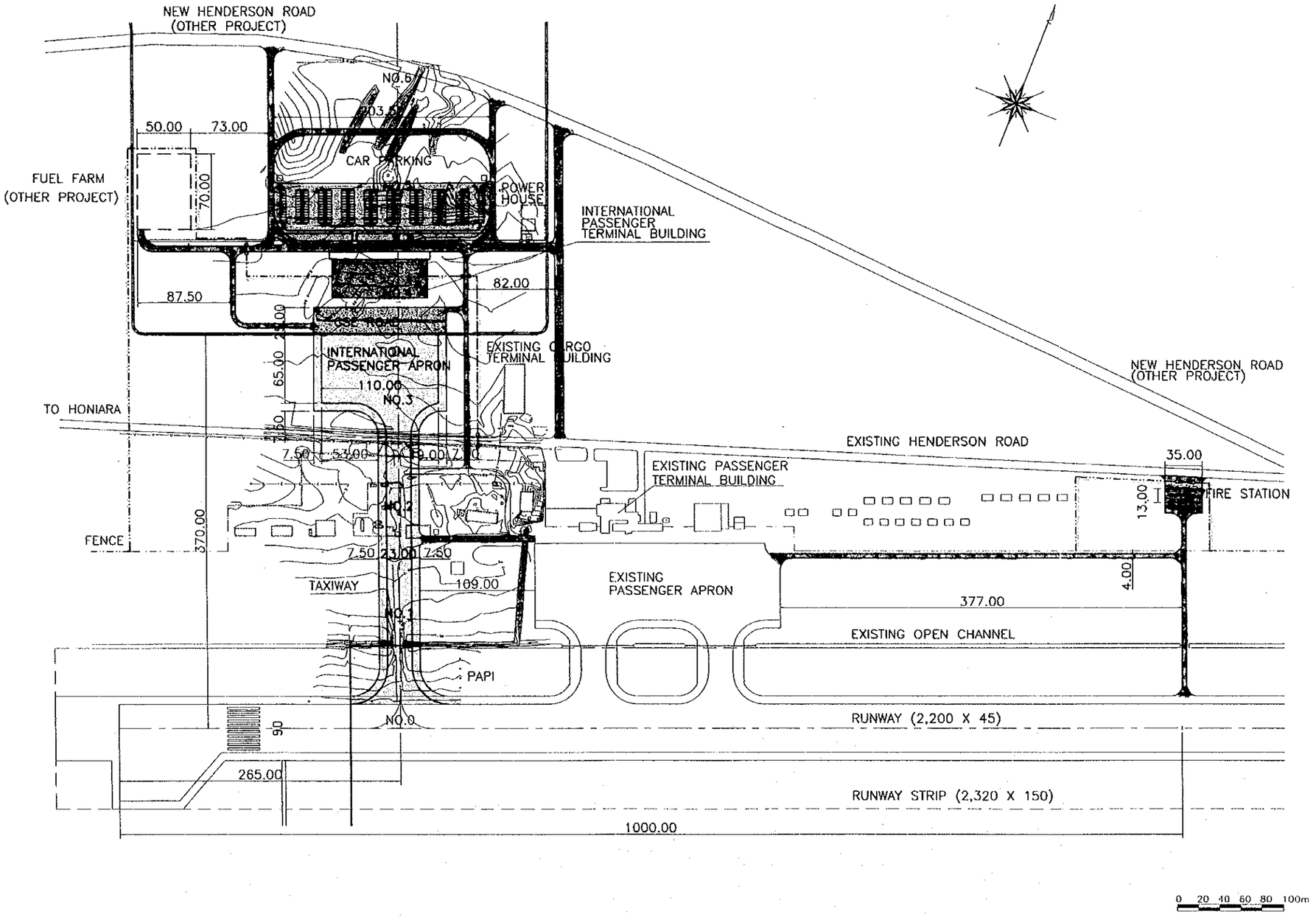
An exhaust fan will be installed in each room. These fans will be connected to an emergency power supply to maintain normal operating condition in the event of a power failure.

e) Finishing Schedule

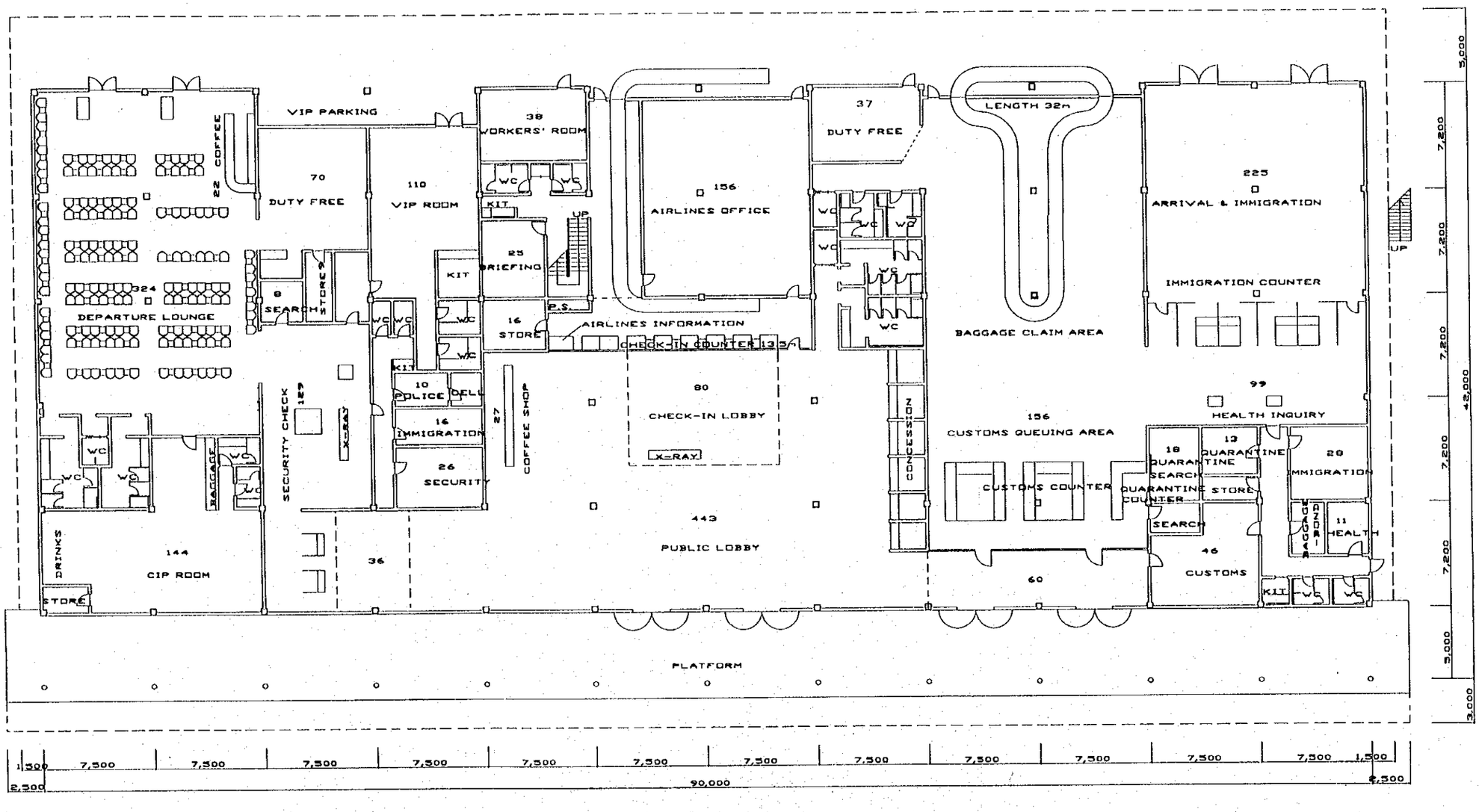
· Exterior	Base Wall	Opening	Wall	Roof
	Concrete	Prefinished steel sash	Galvanised & prefinished steel siding	Galvanised & prefinished steel profile w/underlayed insulation
· Fuel Tank Shed : Floor = Concrete, Footing for Fuel Tank = Concrete, Oil Fence = Concrete Block, Net Fence = Steel Painted				
· Interior	Floor	Wall		Ceiling
		Inner	Outer	
	Concrete	Versilux painted	Steel frame exposed (Insulation, Generator Rm. only)	Steel frame exposed, Aluminum foil under purlins
· Piping pit : Waterproof cement mortar, steel plate covering				

(4) Basic Design Drawings

1 Terminal area, Layout plan
2 Passenger terminal building, Plan (ground floor)
3 Passenger terminal building, Plan (first floor)
4 Passenger terminal building, Cross section
5 Passenger terminal building, Elevation
6 Terminal area, Detailed layout plan
7 Taxiway and apron, Detailed layout plan
8 Profile of taxiway
9 Cross section of apron and taxiway
10 Cross section of terminal area
11 Pavement plan
12 Drainage plan
13 Taxiway lighting and apron flood lighting system plan
14 Fire station area, Layout plan
15 Fire station, Plan
16 Fire station, Cross section
17 Fire station, Elevation
18 Power house, Plan
19 Power house, Cross section and elevation
20 Power supply system diagram
21 LT feeder diagram
22 Telephone system diagram
23 PA system diagram

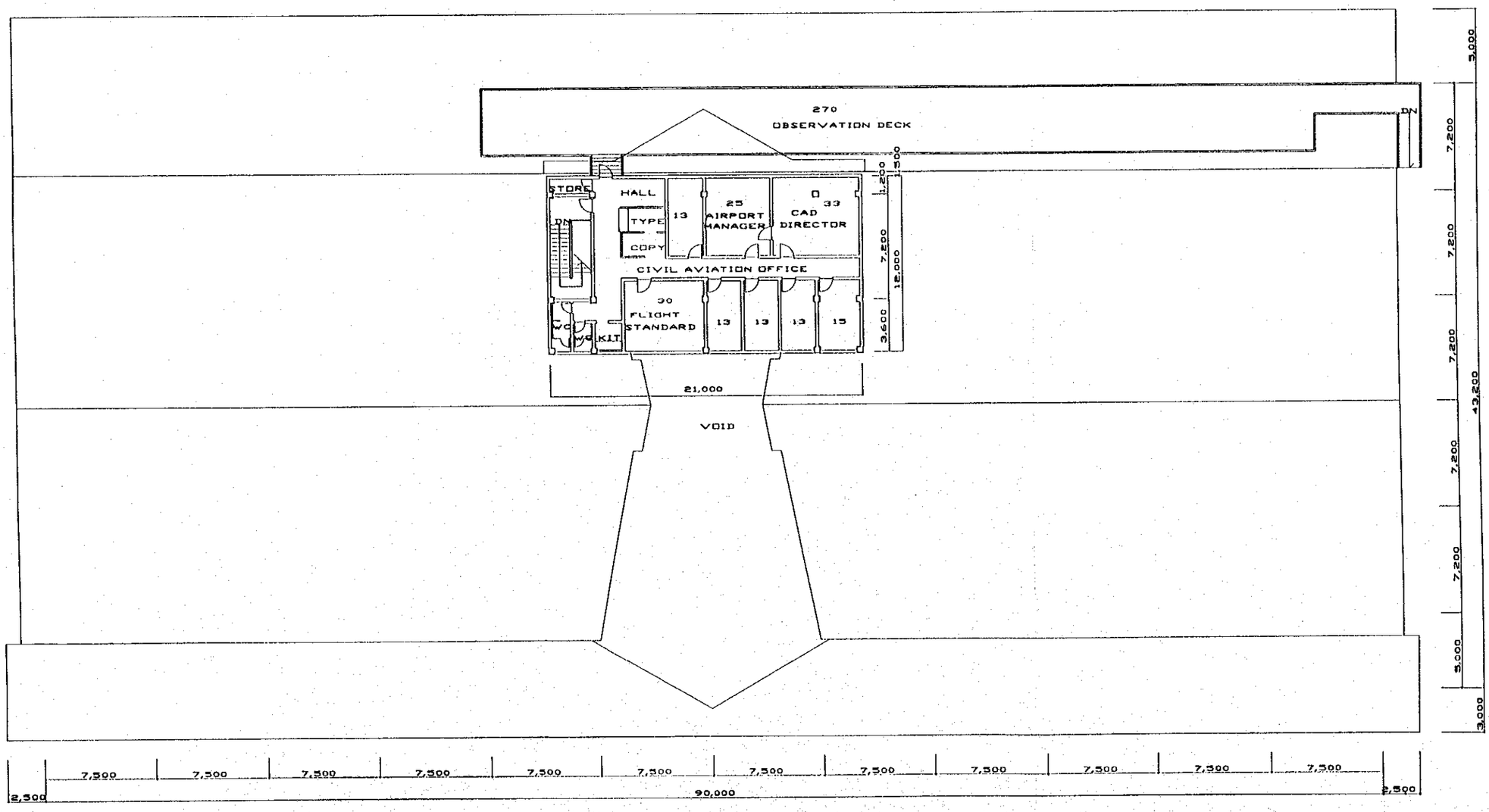


1 TERMINAL AREA, LAYOUT PLAN



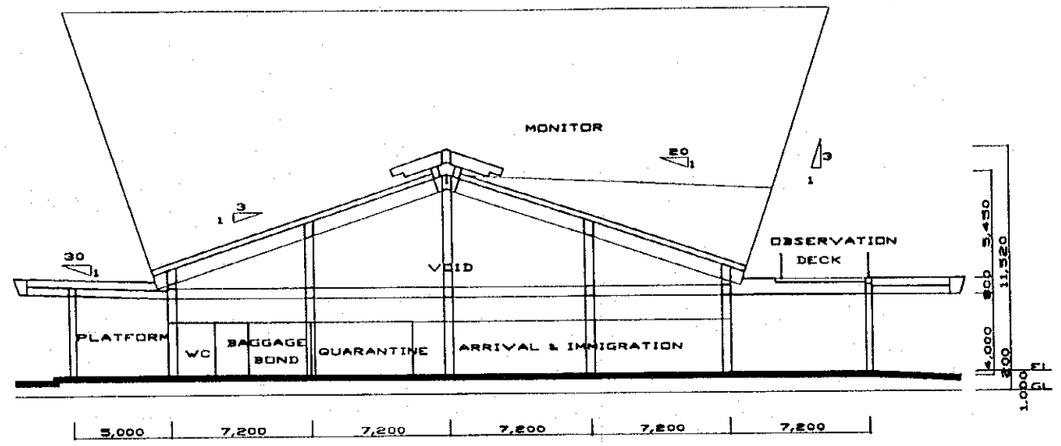
GROUND FLOOR PLAN 1:300

2 PASSENGER TERMINAL BUILDING, PLAN (GROUND FLOOR)

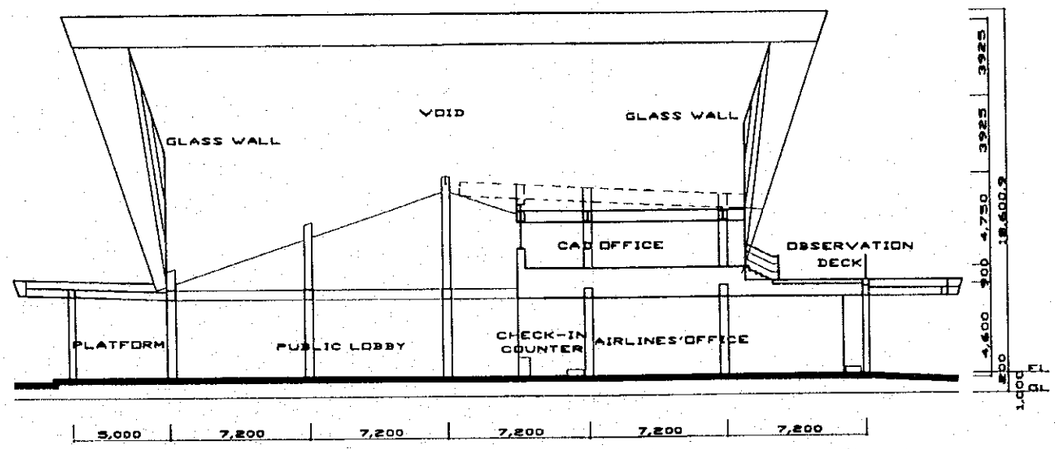


FIRST FLOOR PLAN 1:300

3 PASSENGER TERMINAL BUILDING, PLAN (FIRST FLOOR)

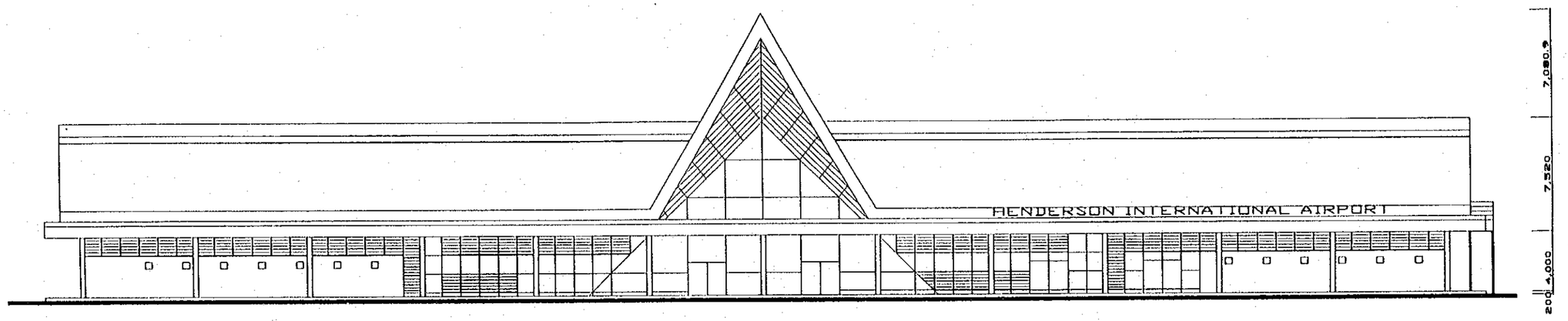


SECTION 1:300

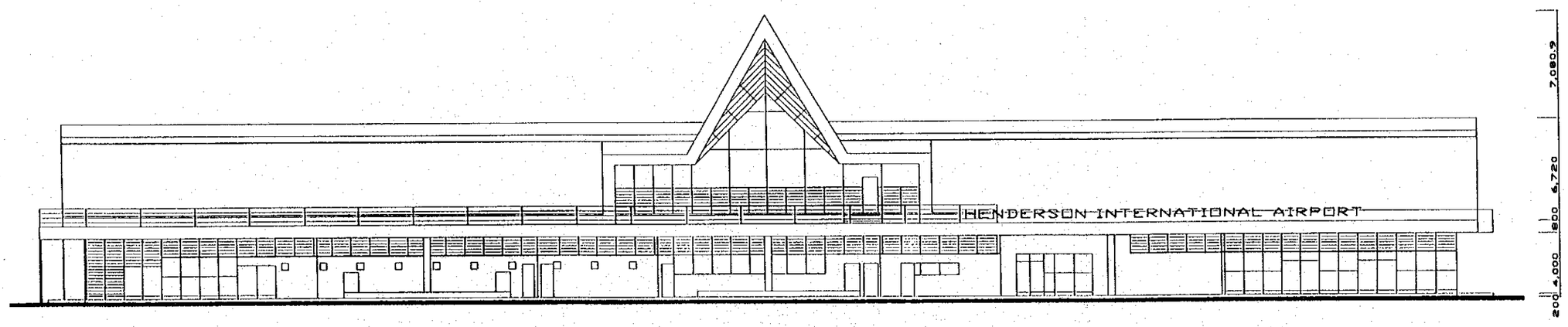


SECTION 1:300

4 PASSENGER TERMINAL BUILDING, CROSS SECTION

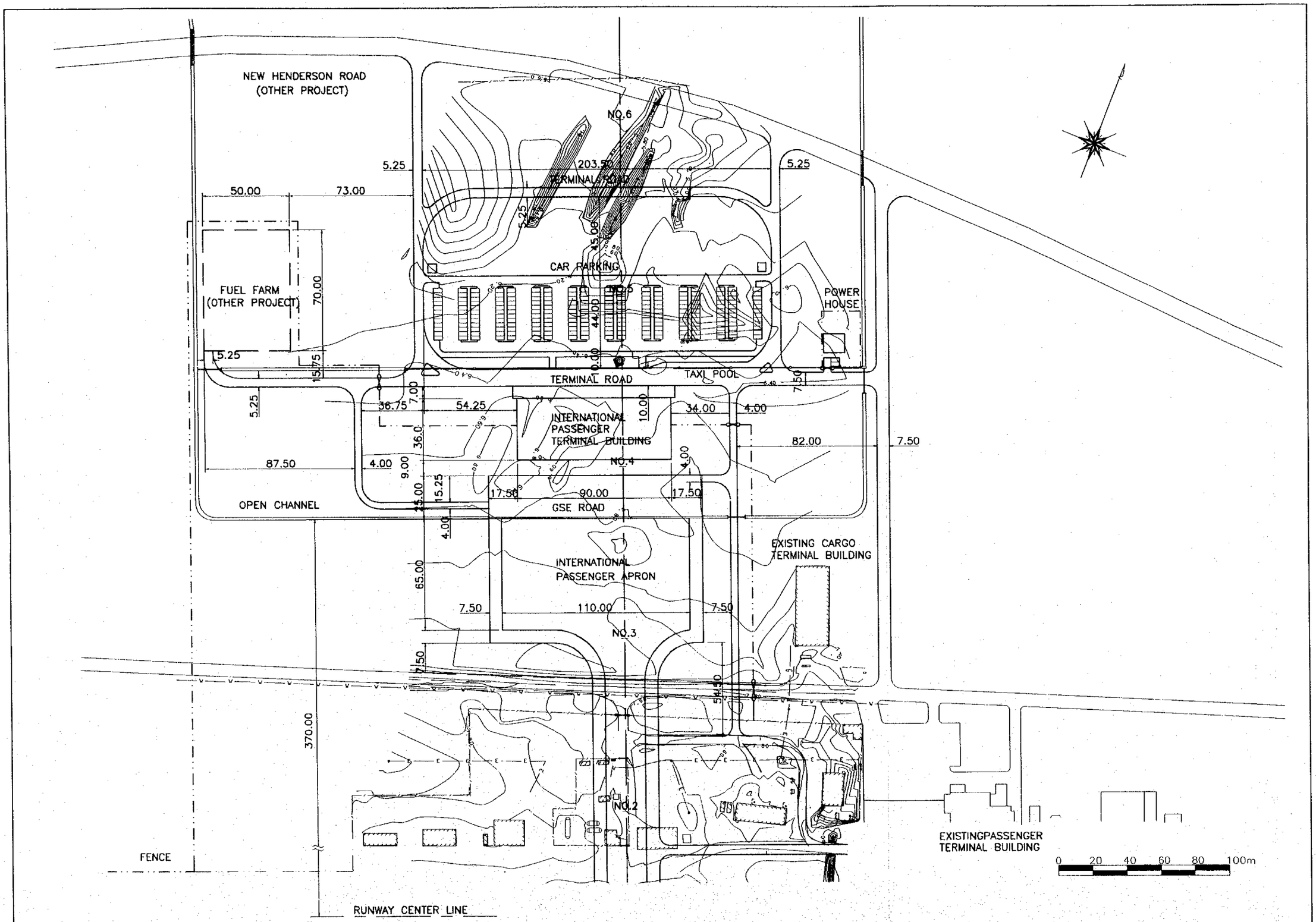


NORTH ELEVATION 1:300

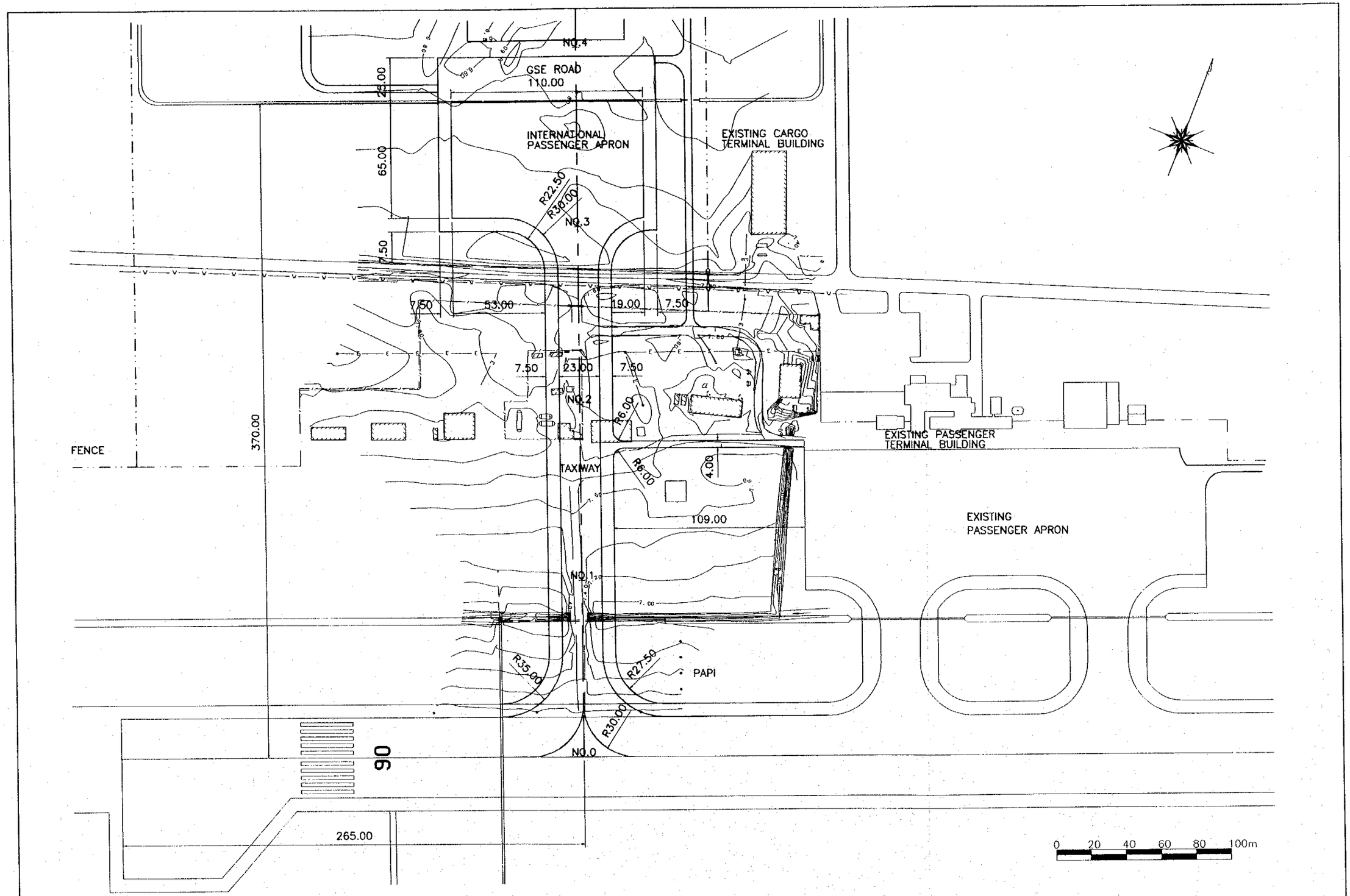


SOUTH ELEVATION 1:300

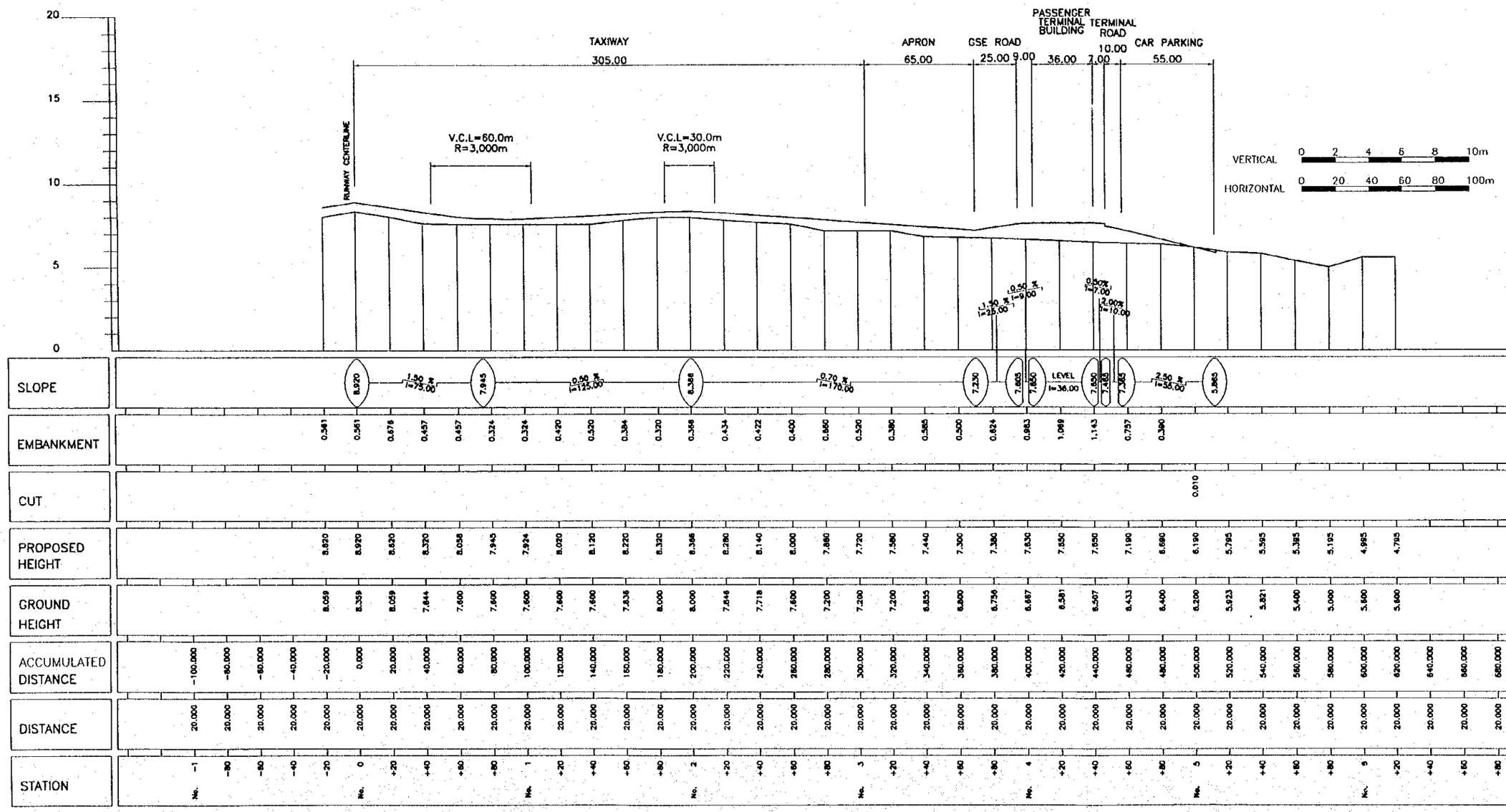
5 PASSENGER TERMINAL BUILDING, ELEVATION



6 TERMINAL AREA, DETAILED LAYOUT PLAN

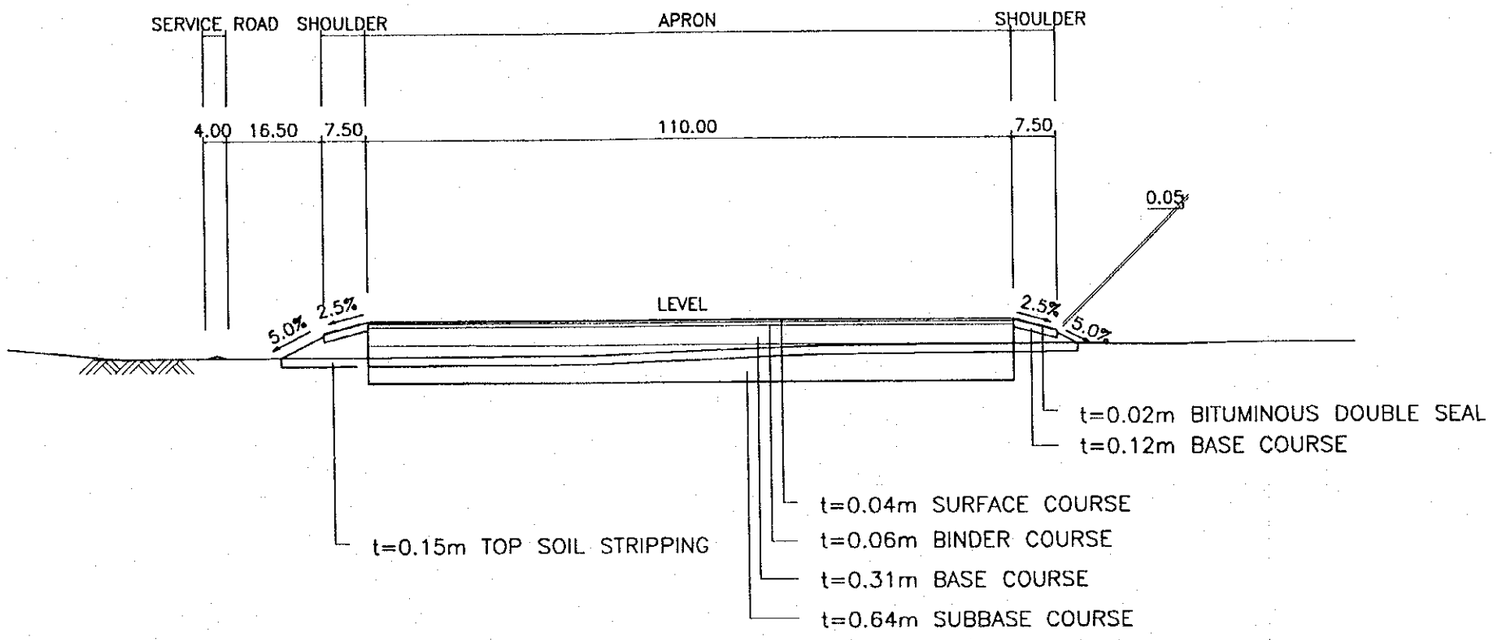


7 TAXIWAY AND APRON, DETAILED LAYOUT PLAN

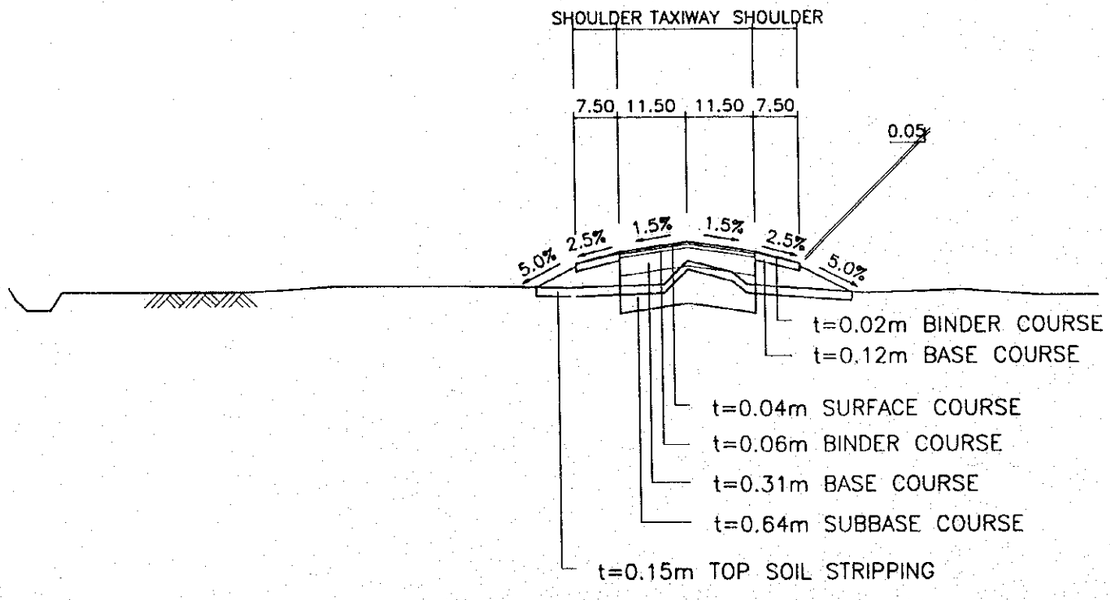


8 PROFILE OF TAXIWAY

APRON
STA. 3+40



TAXIWAY
STA. 1+00

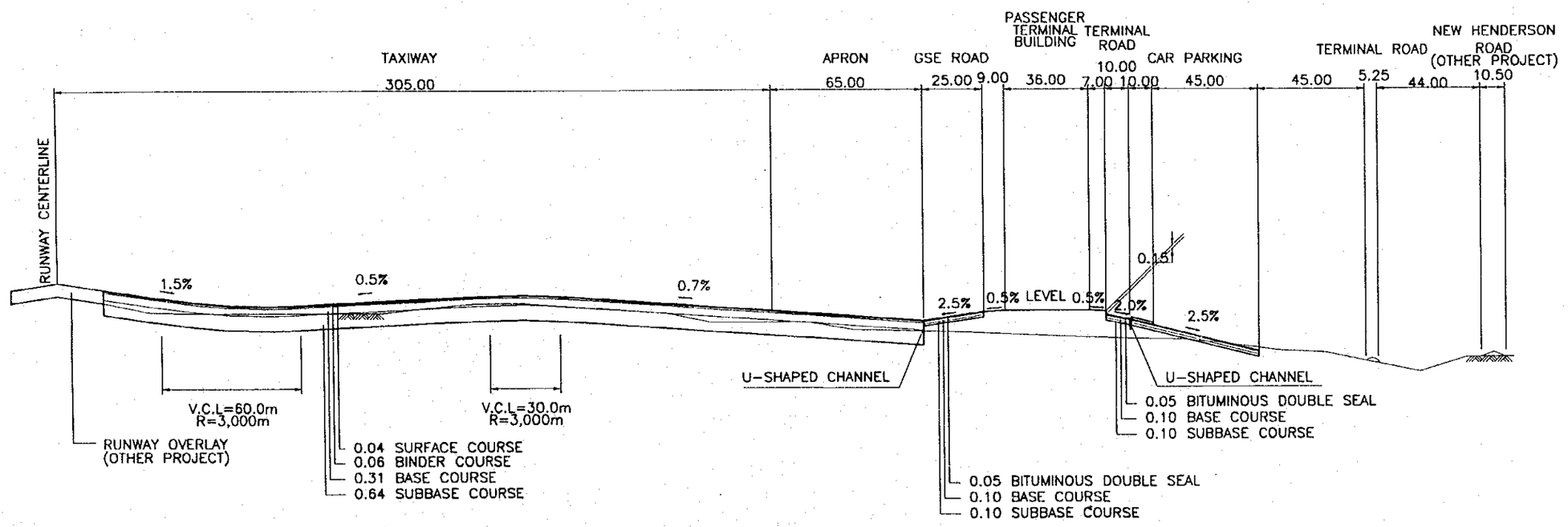


VERTICAL 0 1 2 3 4 5m

HORIZONTAL 0 10 20 30 40 50m

9 CROSS SECTION OF APRON AND TAXIWAY

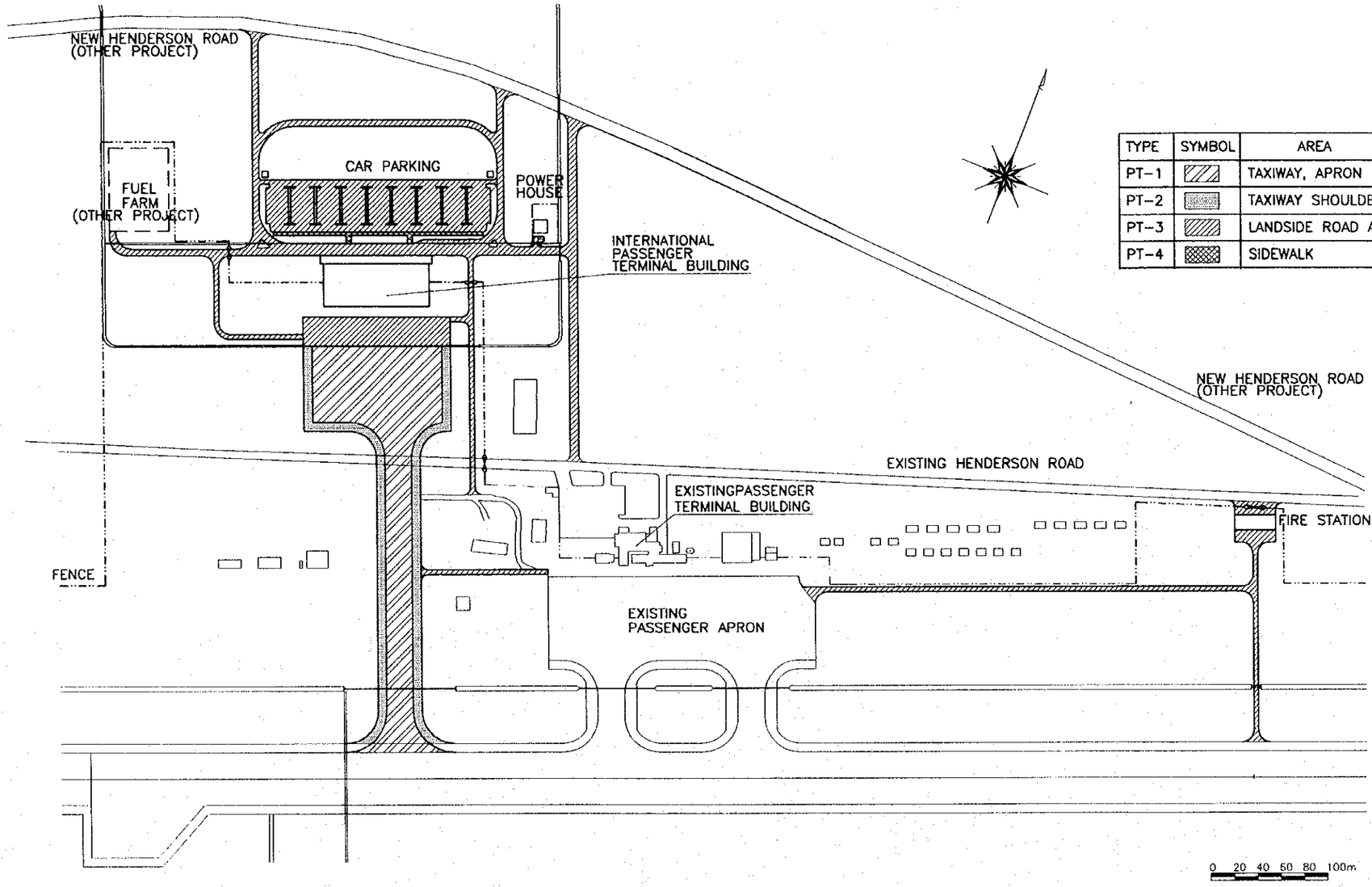
TAXIWAY AND TERMINAL AREA



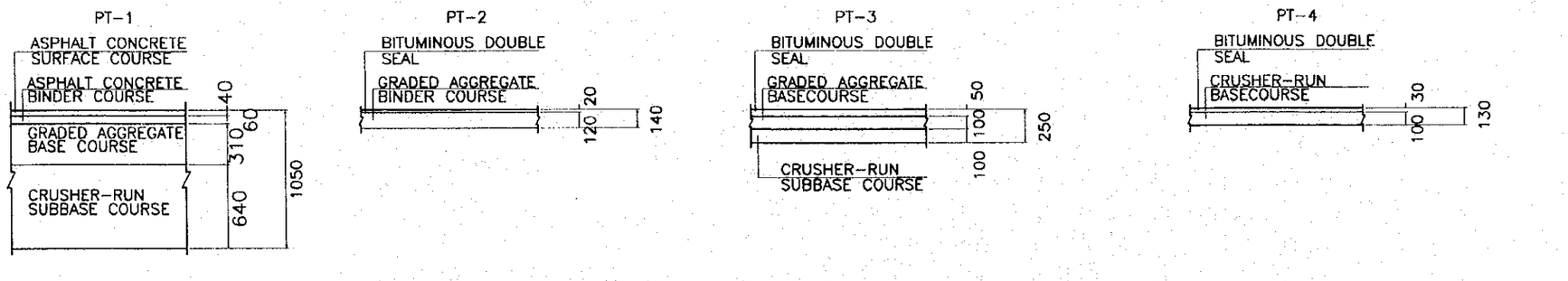
VERTICAL 0 2 4 6 8 10m

HORIZONTAL 0 20 40 60 80 100m

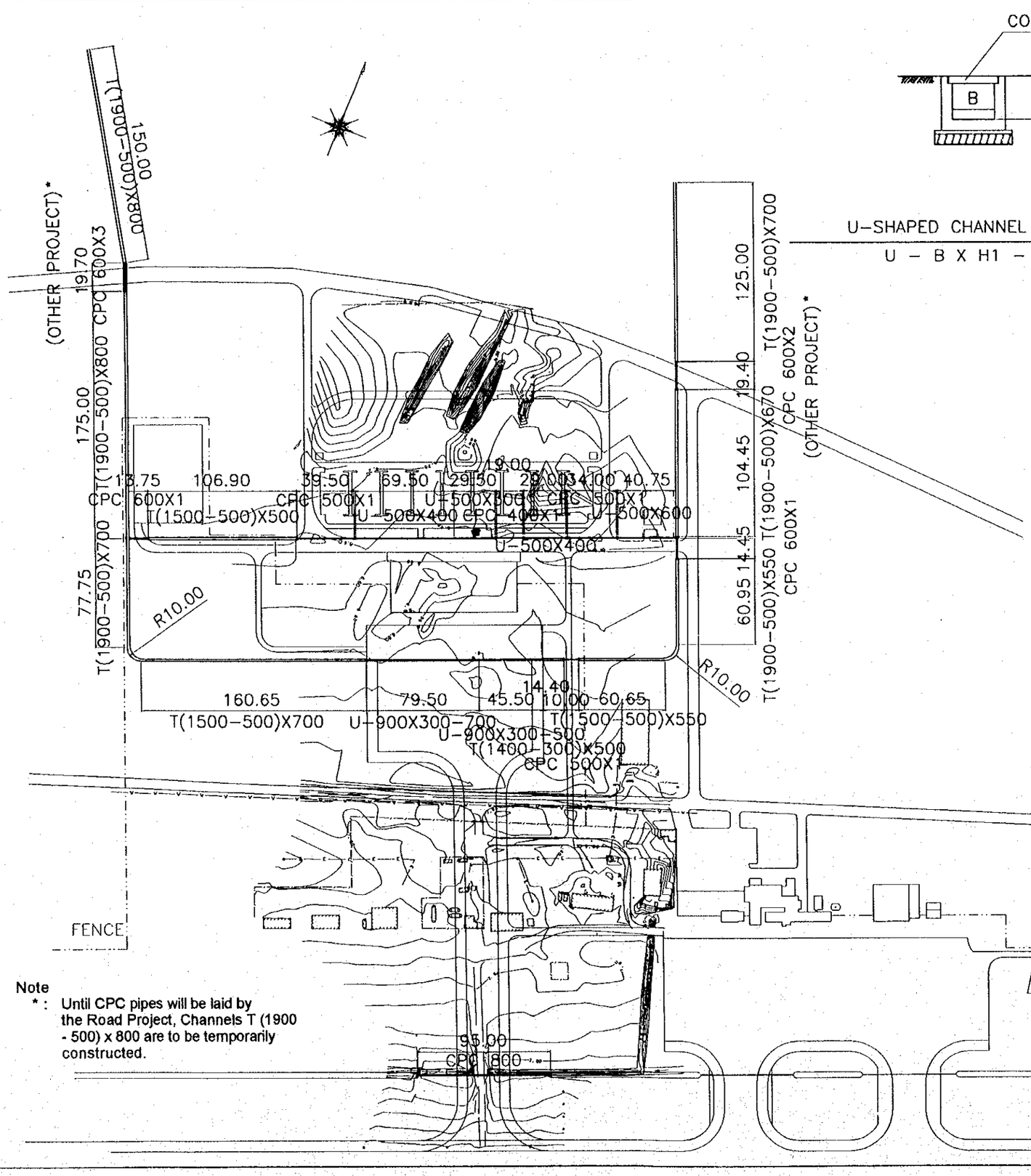
10 CROSS SECTION OF TERMINAL AREA



TYPE	SYMBOL	AREA
PT-1		TAXIWAY, APRON
PT-2		TAXIWAY SHOULDER
PT-3		LANDSIDE ROAD AND SERVICE ROAD
PT-4		SIDEWALK



11 PAVEMENT PLAN

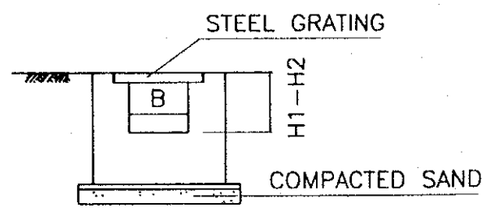


Note

* : Until CPC pipes will be laid by the Road Project, Channels T (1900 - 500) x 800 are to be temporarily constructed.

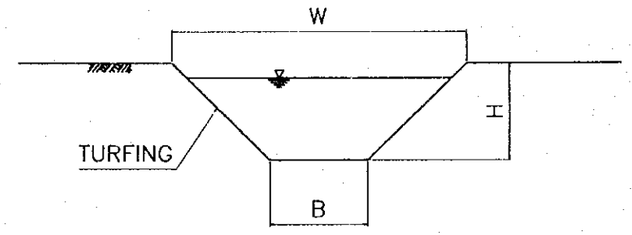
U-SHAPED CHANNEL (ROAD)

U – B X H1 – H2



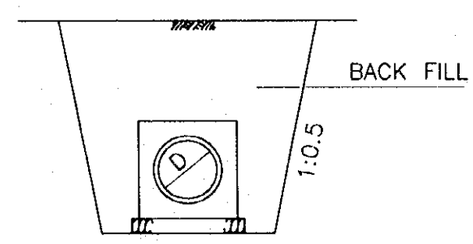
U-SHAPED CHANNEL (APRON)

U – B X H1 – H2



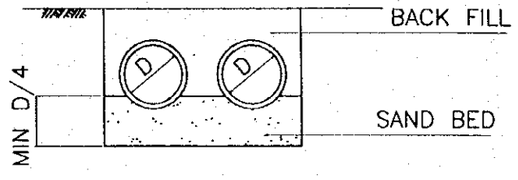
TRAPEZOIDAL CHANNEL

T (W – B) X H



REINFORCED CONCRETE PIPE

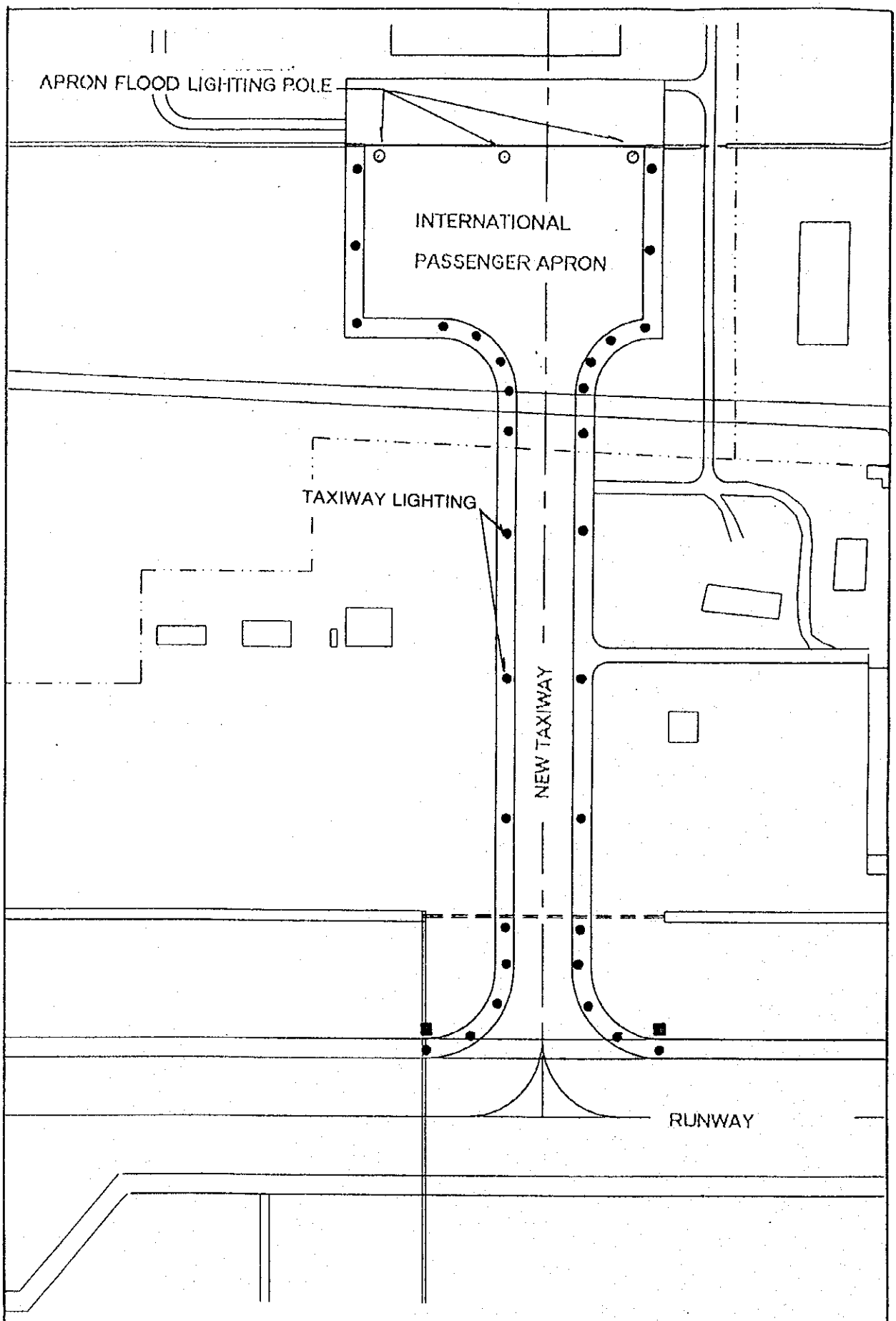
CPC D



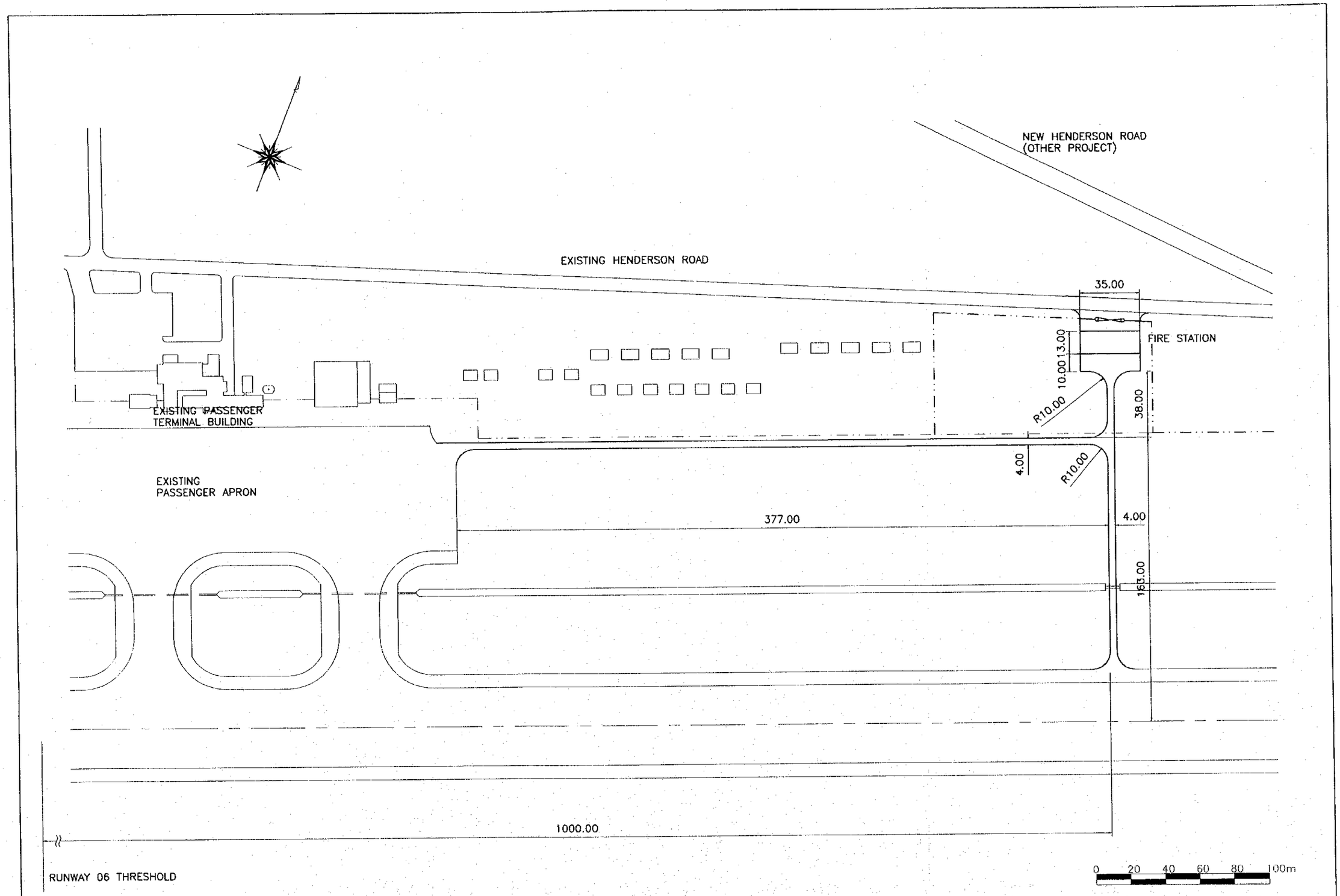
REINFORCED CONCRETE PIPE

CPC D X n

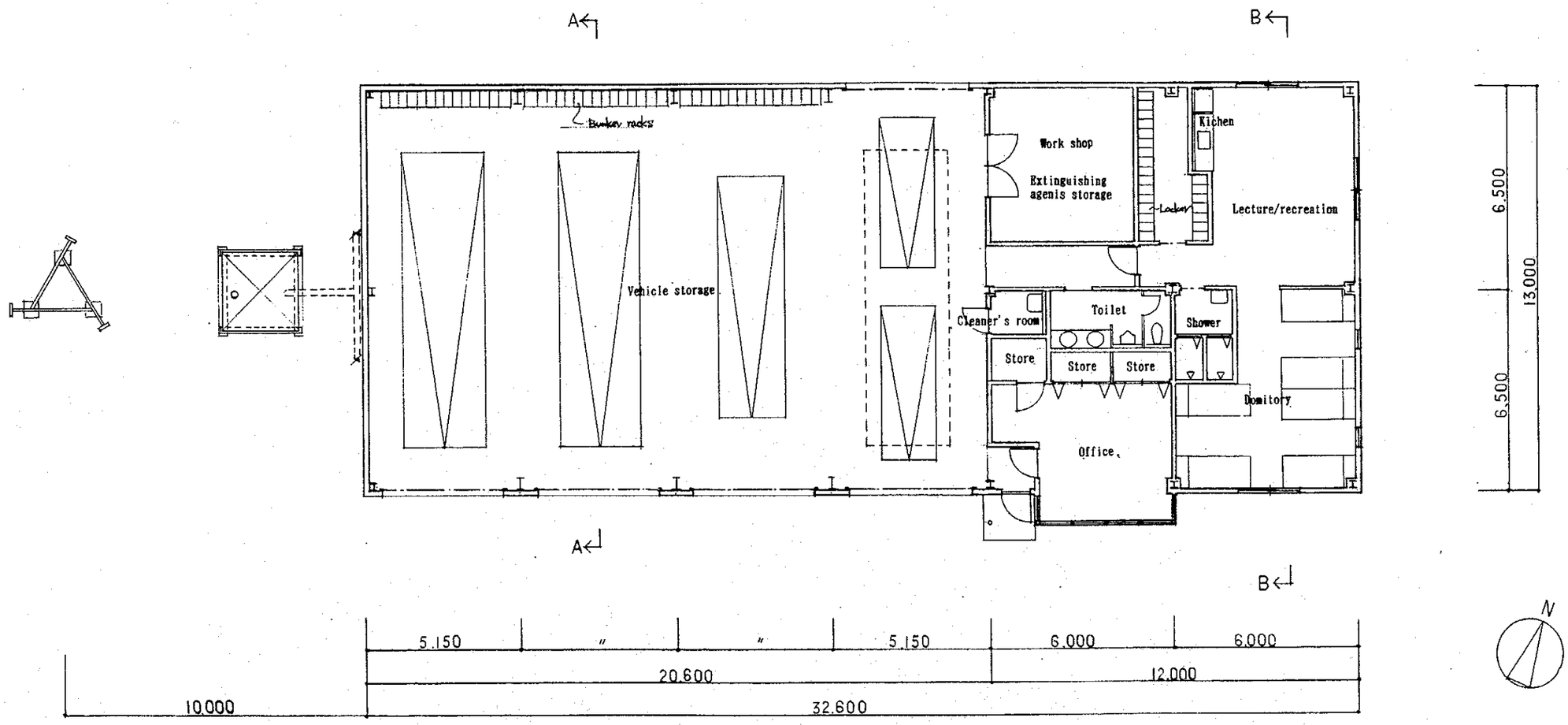
12 DRAINAGE PLAN



13 TAXIWAY LIGHTING AND APRON FLOOD LIGHTING SYSTEM PLAN

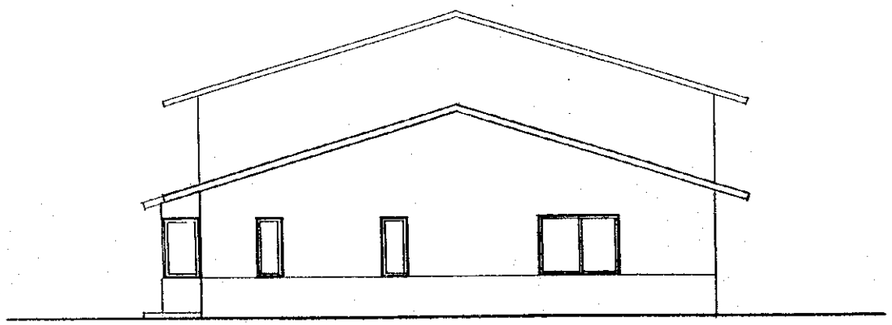


14 FIRE STATION AREA, LAYOUT PLAN

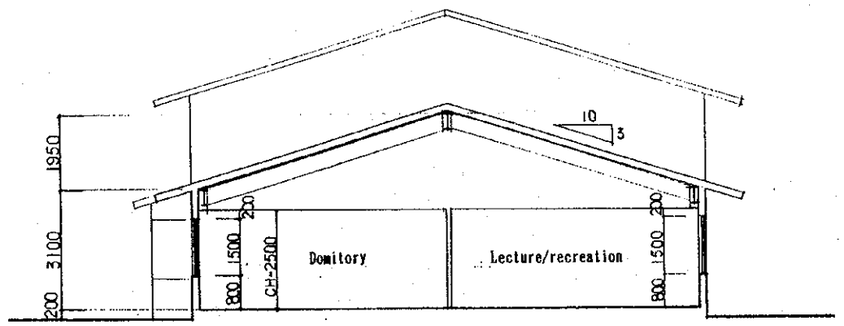


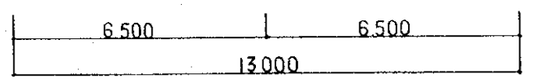
S. 1:150

15 FIRE STATION, PLAN

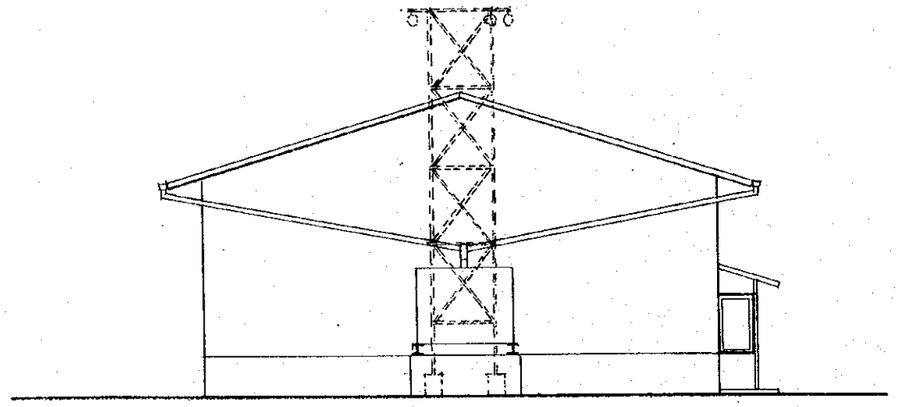


EAST-ELEVATION

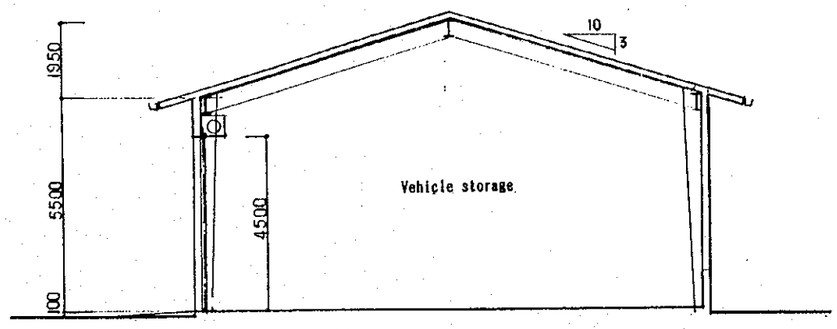


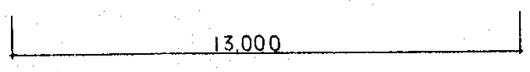


A-SECTION



WEST-ELEVATION

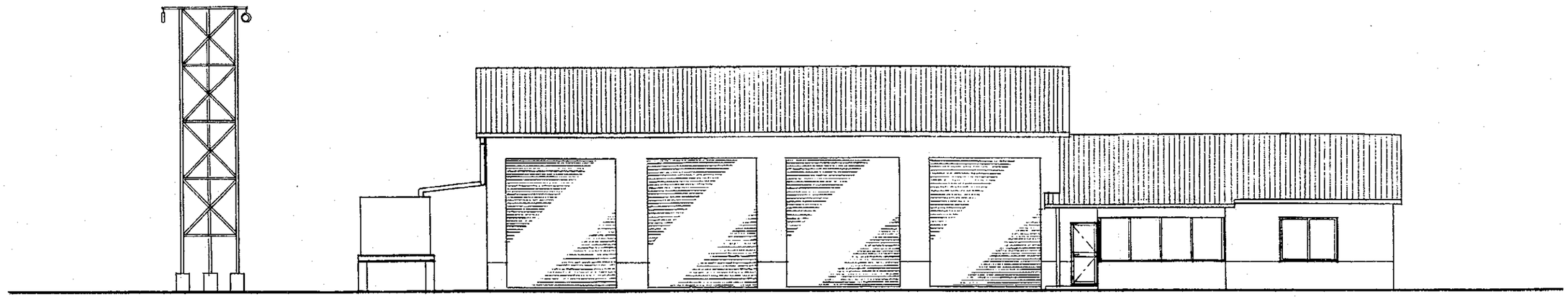




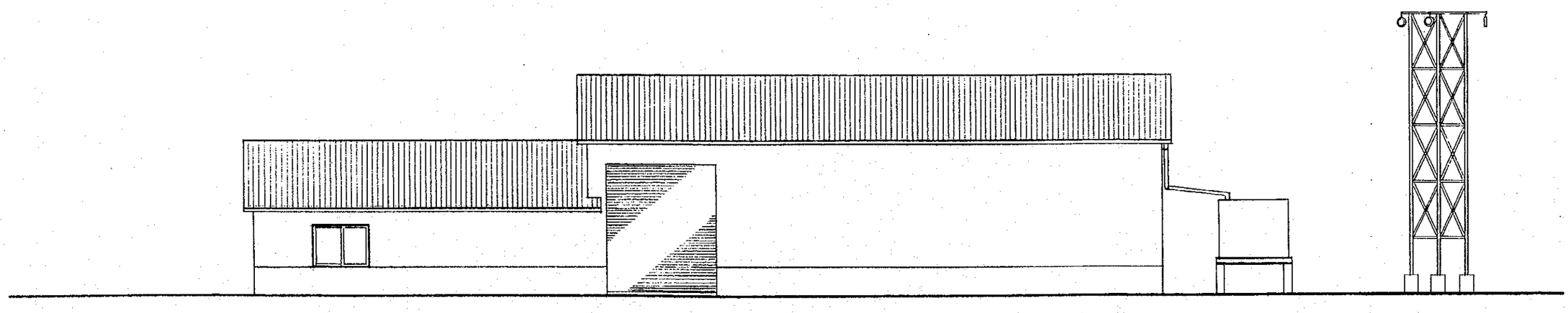
B-SECTION

S, 1:150

16 FIRE STATION, CROSS SECTION



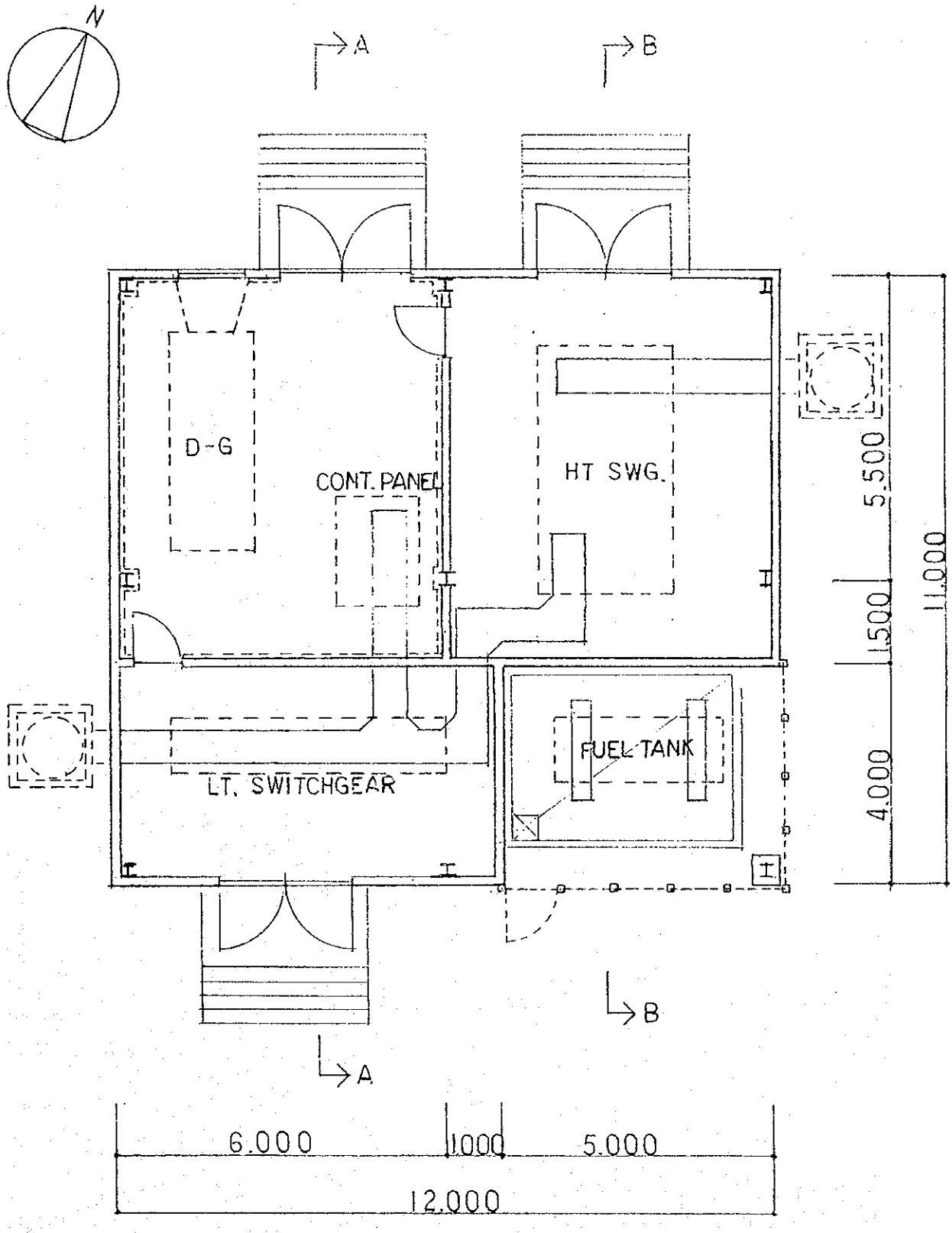
SOUTH-ELEVATION



NORTH-ELEVATION

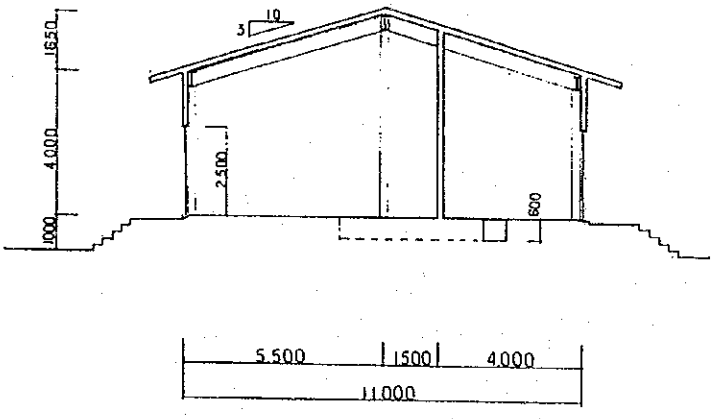
S, 1:150

17 FIRE STATION, ELEVATION

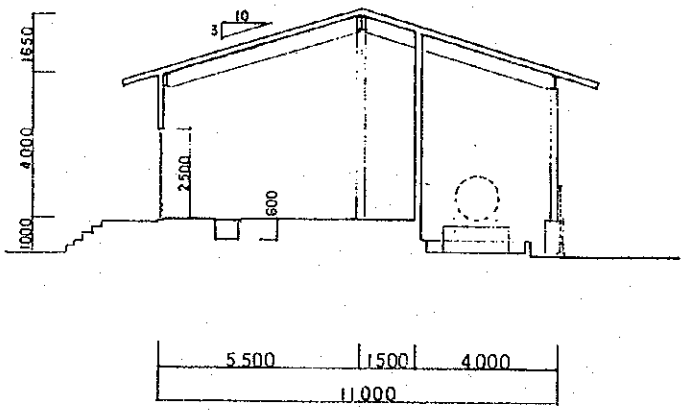


S, 1:100

18 POWER HOUSE, PLAN

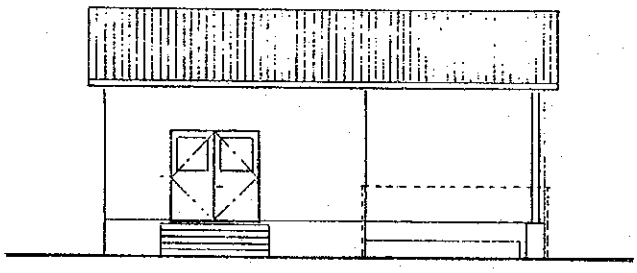


A-SECTION

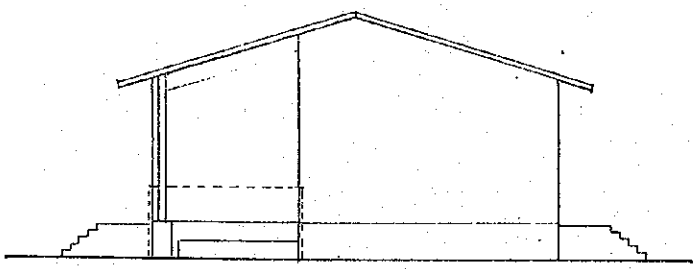


B-SECTION

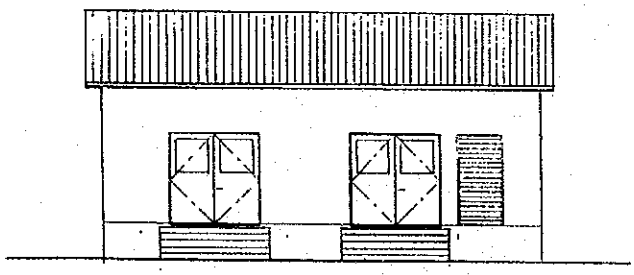
S. 1:100



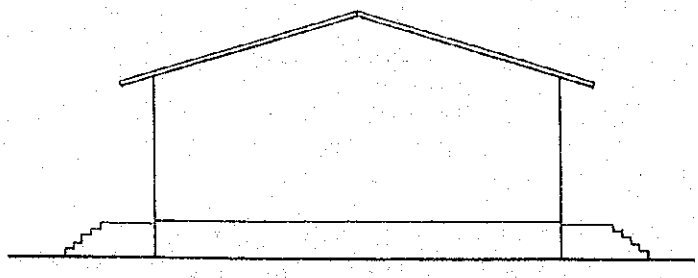
SOUTH-ELEVATION



EAST-ELEVATION



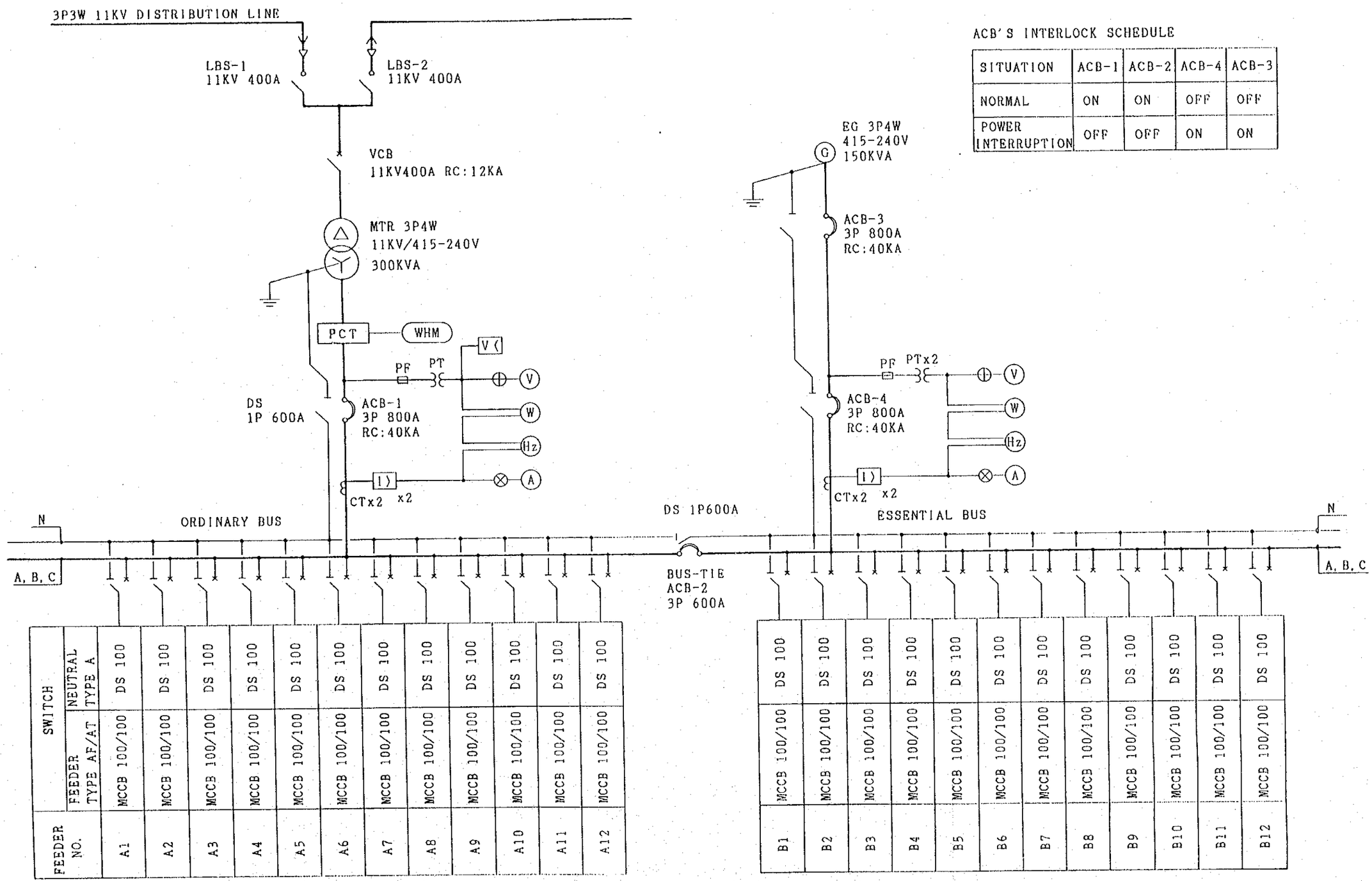
NORTH-ELEVATION



WEST-ELEVATION

19 POWER HOUSE, CROSS SECTION AND ELEVATION

S. 1:100



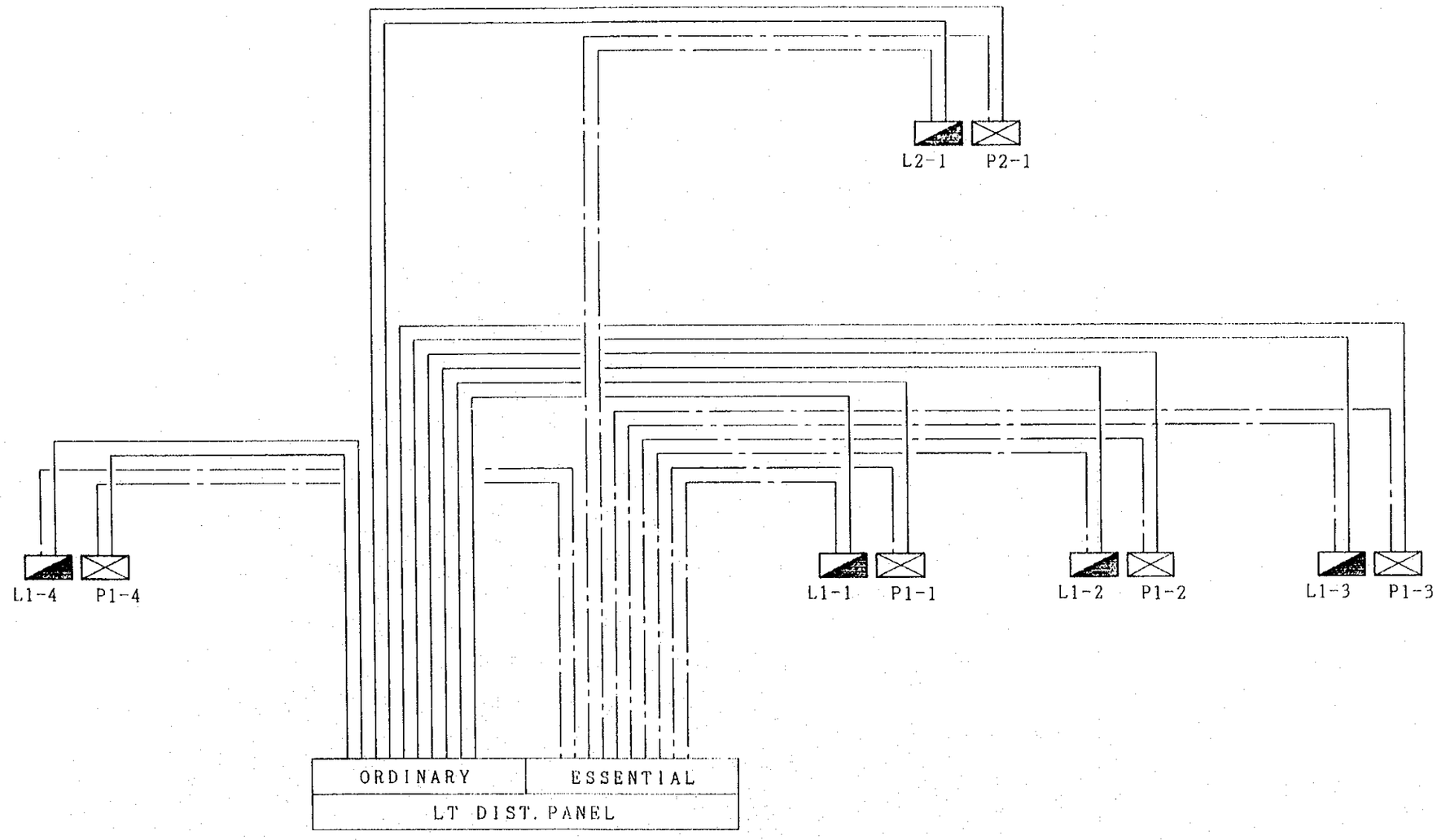
ACB'S INTERLOCK SCHEDULE

SITUATION	ACB-1	ACB-2	ACB-4	ACB-3
NORMAL	ON	ON	OFF	OFF
POWER INTERRUPTION	OFF	OFF	ON	ON

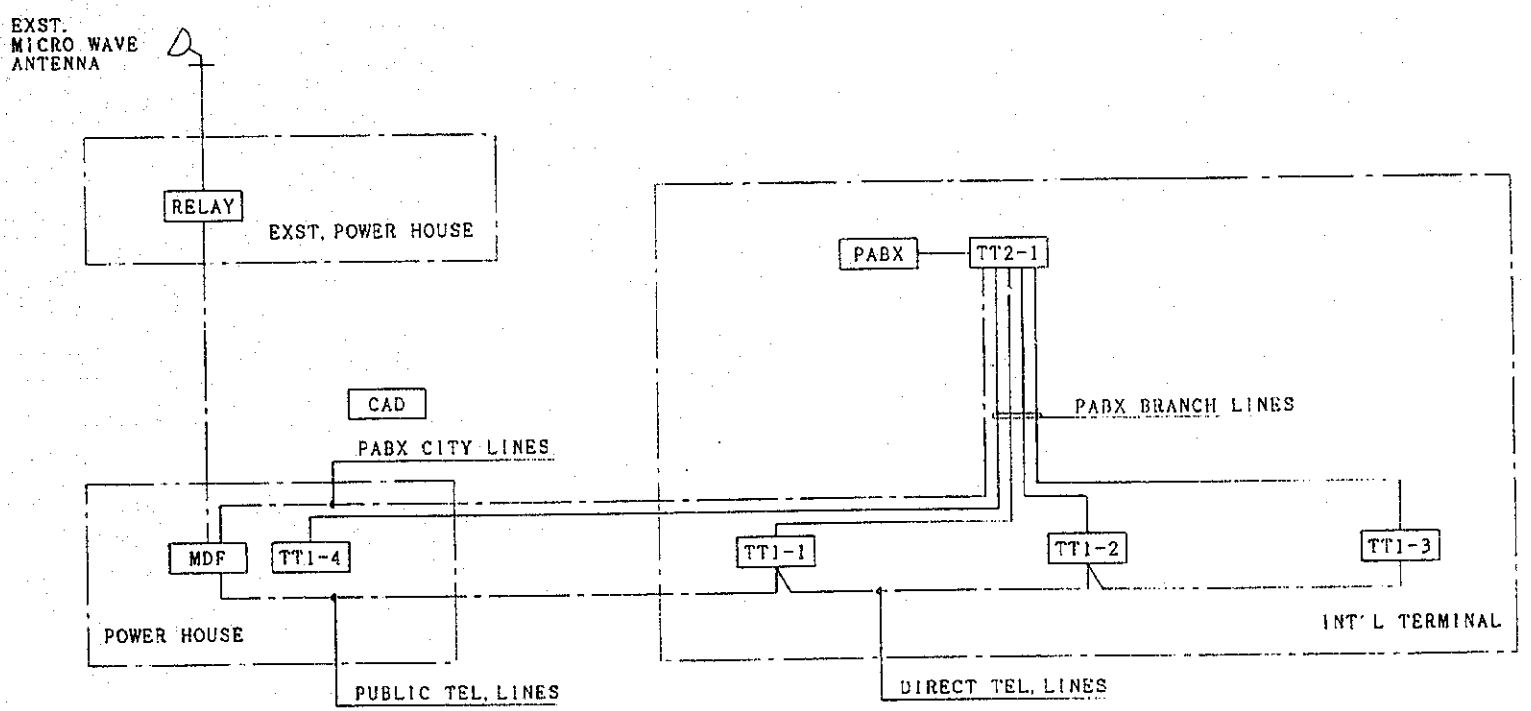
SWITCH														
FEEDER NO.	FEEDER TYPE AF/AT	NEUTRAL TYPE A												
A1	MCCB 100/100	DS 100												
A2	MCCB 100/100	DS 100												
A3	MCCB 100/100	DS 100												
A4	MCCB 100/100	DS 100												
A5	MCCB 100/100	DS 100												
A6	MCCB 100/100	DS 100												
A7	MCCB 100/100	DS 100												
A8	MCCB 100/100	DS 100												
A9	MCCB 100/100	DS 100												
A10	MCCB 100/100	DS 100												
A11	MCCB 100/100	DS 100												
A12	MCCB 100/100	DS 100												

B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
MCCB 100/100	MCCB 100/100	MCCB 100/100	MCCB 100/100	MCCB 100/100	MCCB 100/100	MCCB 100/100	MCCB 100/100	MCCB 100/100	MCCB 100/100	MCCB 100/100	MCCB 100/100
DS 100	DS 100	DS 100	DS 100	DS 100	DS 100	DS 100	DS 100	DS 100	DS 100	DS 100	DS 100

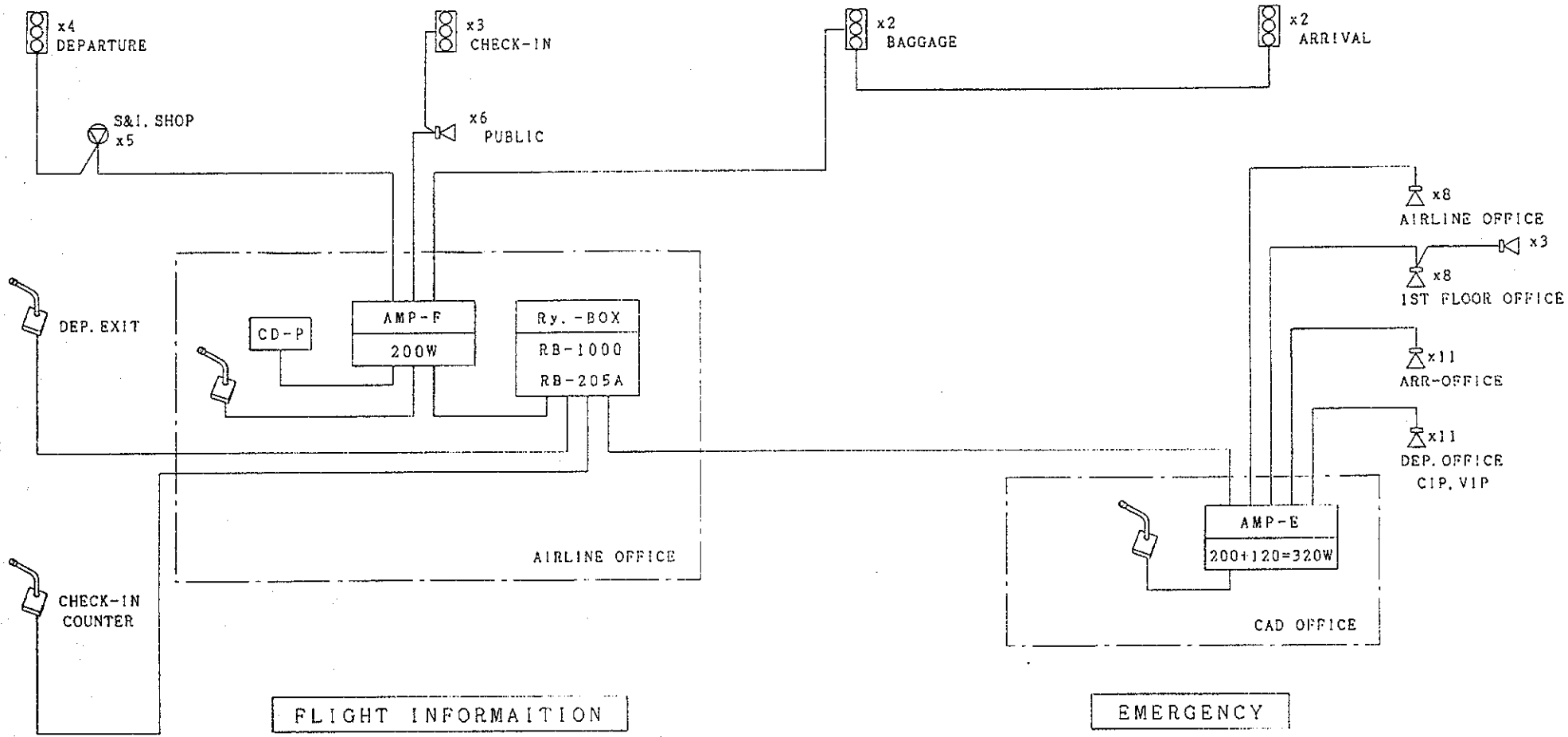
20 POWER SUPPLY SYSTEM DIAGRAM



21 LT FEEDER DIAGRAM



22 TELEPHONE SYSTEM DIAGRAM



23 PA SYSTEM DIAGRAM

CHAPTER 3 IMPLEMENTATION PLAN

CHAPTER 3 IMPLEMENTATION PLAN

3-1 Implementation Plan

3-1-1 Implementation Concept

The following facilities will be built under this Project: Civil Facilities (pavement work for taxiway, apron , roads and car parking and drainage works); Building Facilities (passenger terminal building, fire station and power house); Utilities (power, telephone and water); Other facilities (apron flood lights and taxiway edge lights).

Due to the great amount of construction work involved, it is important to note such matters as the procurement of materials and the availability of laborers in order to proceed effectively and smoothly and to prepare an efficient implementation schedule.

As the local consultant and construction companies do not have the capability to handle big projects such as public construction works, most large projects are conducted by foreign companies, such as those from Australia, New Zealand, Japan and elsewhere, or by affiliated companies. Thus, it is more appropriate to hire competent workers and engineers, rather than hiring local companies as subcontractors.

It is therefore necessary to dispatch specialists from Japan to assist in such areas of the airport as the baggage conveyors in the terminal building, and the installation and testing of airport lighting. The implementing agency of the Solomon side is the Ministry of Culture, Tourism and Aviation. All negotiations will be conducted through the Civil Aviation Division, which is the division in charge.

3-1-2 Implementation Conditions

In implementing the Project, the following points must be noted:

(1) As the Project will be implemented at an operating airport, the safety of the aircraft must be considered. Especially with regard to the construction of the taxiways and the installation of taxiway edge lights that will be conducted in the runway strip, there will be limits to the working hours, and restoration work will need to be done every day after normal working hours. Thus, adequate negotiations with regard to the implementation procedure must be carried out with the airport authorities.

(2) The Project area is linked to the runway upgrading project area and the new Henderson Road project. The installation of the fuel hydrant will be carried out within the Project site at the same time. The work schedule, work area and work boundaries of these projects should be carefully discussed, so that the construction work can be carried out smoothly.

(3) As the rainy season is from December to mid-April, it is advisable that construction work that can be affected by rain, such as the foundation work of the terminal building and paving work should not be performed, as far as possible, during this period of time.

(4) Apart from such materials as concrete, asphalt aggregate and lumber, locally available materials are limited and most of the materials will need to be imported. A detailed delivery schedule for Project materials should be planned.

(5) The site will be handed over to the Project after the existing buildings are removed, and the power, telephone and water supply lines are relocated. It will be the responsibility of the Solomon Islands side to remove all unexploded bombs and shells within the site before handing it over.

3-1-3 Scope of Works

The scope of work for the Japan side and the Solomon Islands side is shown in the following table.

Table 3-1 Scope of Work

	Japan Side	Solomon Islands Side
International Terminal Building	- Structure construction - Power, telephone works (inside from the junction in the new power house) - Water supply work (inside from the junction) - Ventilation facility work - Air conditioning of VIP and 2nd floor rooms - Finishing work (excluding airline offices, concessions and duty free shop); - Other installations, such as check-in counters, baggage conveyors, metal detectors, immigration counter, chairs for the departure lounge.	- Securing land for the site - Disposal of unexploded bombs and shells - Clearing the land - Finishing work (interior of airline offices, concessions and duty free shop) - Furniture (office desks, chairs, beds, etc.) - Power and telephone work (to the new power house) - Water supply (up to junction)
Apron and Taxiway	- Subgrade work - Paving - Drainage works - Planting - Road signs and markings - Apron edge lights - Apron floodlights - Taxiway edge lights	- Securing land - Removal of existing buildings including power, telephone and water facilities. - Disposal of unexploded bombs - Clearing of land - Relocation of power, telephone and water pipes - Removal of existing fuel hydrant system and construction of new fuel hydrant system.
Roads and Car Parking	- Subgrade work - Paving - Drainage works - Planting - Road signs - Security fence - Lighting for roads and car parking	- Securing land - Disposal of unexploded bombs. - Clearing of land - Drainage pipes crossing under the new Henderson Road
Fire Station	- Building construction - Power, water supply and drainage, telephone works - Ventilation facilities - Finishing works	- Securing land - Clearing land
Power House	- Building construction - Power, water supply and drainage works - Ventilation facilities - Finishing work - Installation of devices	- Securing land - Disposal of unexploded bombs - Clearing land

3-1-4 Consultant Supervision

The basic concept of consultant supervision :

(1) The completion of the facilities without delay is to be achieved through the close communication with the authorities concerned of both countries.

(2) As the construction is based on design drawings and specifications, prompt and appropriate guidance and advice must be given to the people concerned.

(3) Local materials and local methods will be used as much as possible.

(4) Implementing methods and techniques will be transferred to the Solomon Island side, which is one of the effects of the grant aid project.

(5) Appropriate advice and guidance will be given for the smooth maintenance and management of the facilities after completion.

The following must be noted with regards to consultant supervision:

1) As the Project includes civil works, architectural works and equipment installation, detailed coordination among these departments is necessary.

2) In order not to interfere with daily airport operations, coordination must be made with the Civil Aviation Division, to decide on the contents and area of work and working hours. The Civil Aviation Division will be requested to issue NOTAM.

Although the areas of the Project are separated into building works, facility installation, lighting system and civil works, the building works which is a continuous operation, should be checked regularly. Thus, the consultant supervision system will be a permanent one. As for installation and lighting works, on-the- spot supervision will be carried out, as there is some time between ordering the materials and actual implementation.

The supervision work entails the discussion with the government of various matters that may come up during the Project (including the publication of NOTAM, notification to the control tower, etc.). Other matters include work schedule control, quality control (confirmation of materials to be used, examination of delivered material, examination and supervision at each stage of construction) and safety control.

3-1-5 Procurement Plan

(1) Construction Materials

Concrete, asphalt aggregate, and lumber are the only locally available materials. The lumber is mostly hardwood such as pometia and vitex. There are no artificial drying facilities, and therefore lumber is dried naturally for 90-100 days, reducing the water content by 19-25%. Although measures to protect against insect and decay are not performed, local hardwood is thought satisfactory.

Raw materials, such as sand and gravel, are obtainable from the Lungga River.

Apart from raw materials and lumber, the cement, steel pipes, electrical equipment, and wiring will be imported from New Zealand, Australia and Singapore. The factors affecting the choice of importing companies will include the business connections of local contractors as well as the prices.

(2) Construction Equipment

Construction equipment such as bulldozers, road rollers and asphalt finishers are owned by the Ministry of Transport Works and Utilities, and other big construction companies. As these can be leased, they are basically obtainable locally. Any other necessary equipment will be procured from neighboring countries.

(3) Building Materials

There are manufacturers of concrete secondary products, such as raw concrete, and there are contractors dealing in reinforced steel bars and frames and lumber processing, in the local area.

(4) Skilled Laborers

There are few skilled laborers in the Solomon Islands. As there is not enough work in the country, New Zealand and Australian companies can provide skilled workers whenever there is a project. Supervisory and higher positions are all held by foreigners.

3-1-6 Implementation Schedule

The Project Implementation Schedule by Japanese Grant Aid is as shown in Figure 3-1-1.

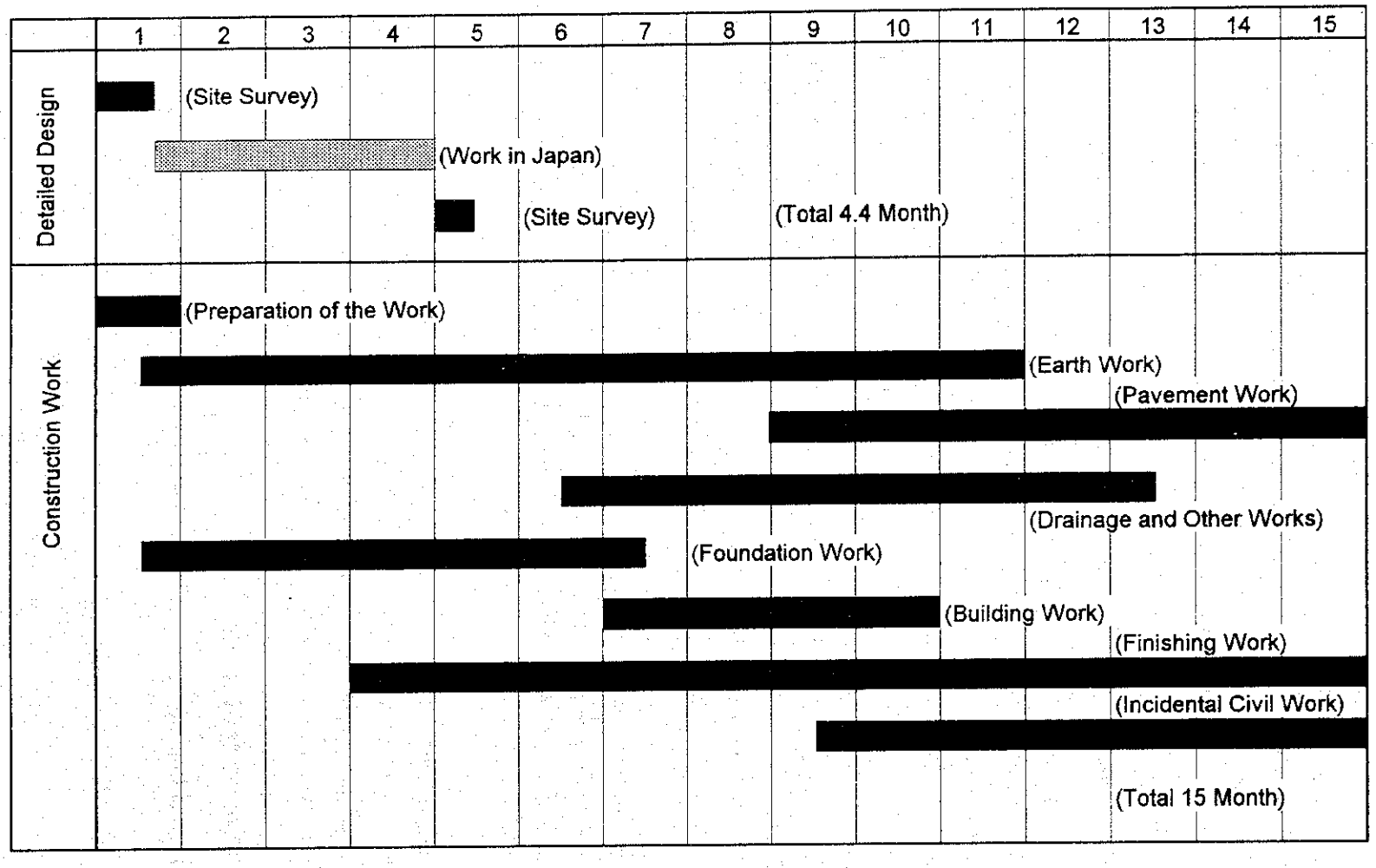


Fig. 3-1-1 Project Implementation Schedule

3-1-7 Obligations of Recipient Country

The obligations to be taken by the Solomon Islands side include the following items of the project:

(1) Assurance of all the expenses and prompt execution for unloading, customs clearance
(2) Exemption of Japanese nationals from custom duties, internal taxes and other fiscal levies
(3) Procedures necessary for entry of Japanese nationals into the Solomon Islands and stay in the country.
(4) Conclusion of Banking Arrangements
(5) Issuance of Authorization to Pay

Moreover, the following works are to be completed by the Solomon Islands side by the respective time limit. (Land acquisition is already complete, which was one item to be executed by the Solomon Islands side.)

Time Limit	Works
By the middle of September 1996:	Disposal of unexploded bombs, and clearing of land
By the end of December 1996:	Relocation of electricity line, water supply, telephone line, drainage and other incidental facilities
By the middle of June 1997:	Demolition of the existing fire station (A new fire station will complete at the end of May)
By the middle of July 1997:	Completion of a new fuel farm and demolition of the existing fuel farm
By the middle of September 1997:	Installation of fuel hydrant system in the new apron

3-2 Project Cost Estimation

Based on the previously mentioned scope of work, the cost to be borne by the Solomon Islands side is estimated as follows:

Demolition of the existing buildings:	72 Thousand Solomon Dollars
Power supply relocation and distribution to the site:	250 Thousand Solomon Dollars
Telephone line relocation and distribution to the site:	74 Thousand Solomon Dollars
Water supply relocation and distribution to the site:	10 Thousand Solomon Dollars

3-3 Operation and Maintenance Costs

The construction of the terminal under the Project will be an expansion or extension of the existing facilities, such as the civil facilities of the apron and taxiway, and the terminal building. The baggage conveyors and X-ray devices for the new terminal will be normal types; no new types will be introduced. Thus, there should be no problems with maintenance or management with regard to the civil and building facilities and equipment.

However, the number of staff and the budget will have to be increased to cope with the maintenance and management of the enlarged facility. An increase of ten staff which consists of maintenance technicians specializing in electric power and mechanical equipment, security staff and cleaning staff will be necessary for the Civil Aviation Division. Increases in maintenance and management costs are estimated as follows:

(Unit: Thousand SID)

Year	1998	1999	2000	2001	2002
Payment for the increased staff	9	13	15	16	18
Maintenance and repair costs of facilities	24	49	95	120	160
Expenses for lighting and fuel	14	18	18	18	18
Total	45	80	130	160	200

CHAPTER 4 PROJECT EVALUATION AND RECOMMENDATION

CHAPTER 4 PROJECT EVALUATION AND RECOMMENDATIONS

4-1 Project Effect

The following direct and indirect effects are expected:

(1) Direct Effects

1) Improvement of Service Level

The service level of a terminal building is, in general, evaluated by the index of floor area per peak hour passenger. In the existing terminal building, the index is 2 sq.m per passenger, which will become 11 sq.m in the new terminal building. This means that the new terminal building will have a sufficient floor area in comparison with the existing smaller one, and the current congestion problem will be solved. The desirable range of this index is generally from 10 to 30 sq.m per person, although it depends on the scale and local conditions of the airport. Since the index is within this range, it is clear that the new terminal building will have a normal capacity.

Regarding the individual facilities in the terminal building, the area of the departure lounge, for example, will increase by four times from the existing 79 sq.m to 324 sq.m. Although the existing departure lounge is tightly packed by passengers at the departure of a B737, sufficient seats will be provided in the new lounge and congestion will be resolved. In the present arrival lounge long queues often extend to the outside of the building due to insufficient space to accommodate all arriving passengers inside the building. In the new terminal building, the area of the arrival lounge will be 225 sq.m against 46 sq.m in the existing one, and all queuing passengers will be accommodated inside the building. The Public lobby, which is always congested with many well-wishers, will be 503 sq.m instead of the current 239 sq.m. The Check-in lobby exclusively used by passengers will be separated from the public lobby, so that check-in procedures will be smoothly processed.

The total area of the existing and new aprons will be expanded to 24,000 sq.m from 16,000 sq.m at present. The new apron will be able to accommodate one B727 class and one B737 class aircraft for international use, and therefore the existing apron will be able to accommodate around ten small aircraft as the domestic apron. The shortage of parking space during the peak time will therefore be resolved, and airport security will be improved due to the separation of international and domestic aprons.

2) Other Effects

i) Improvement of Safety

At present, jet aircraft such as B737s and small aircraft for domestic routes are parked on the same apron. After completion of the new apron, the different types of aircraft will be completely separated into the two aprons which will contribute to an improvement in operational safety.

ii) Improvement of Security

Since international and domestic passengers will be completely separated, airport security will be improved.

iii) Increase of Airport Revenue

Since the area of the duty free shop will be expanded from the current 20 sq.m in the existing terminal building to 70 sq.m in the new terminal building, an increase in foreign currency income is expected.

(2) Indirect Effects

i) Strengthening of the international air transport network with neighboring countries will contribute to the activation of the national economy and improvement of basic human needs.

ii) Since the new terminal will be able to accommodate larger aircraft such as B767s, the operation of charter flights using larger aircraft such as B767s will become easier. It will mean more tourists visiting the Solomon Islands, and it will bring an increase in the income of the tourism sector of the nation. An increase of business-purpose passengers, will contribute to increased business chances, and also contribute to the growth of trade volume and investment from overseas.

iii) For the operation and maintenance of the newly developed facilities, more staff will be required, so creating more employment opportunities.

As described above, this project will not only contribute directly to the convenience of airport users because of increased capacity and an improvement in function of the airport terminal facilities, but it will also contribute to the enhancement of various sectors such as the national economy and basic human needs.

4-2 Recommendations

This project will contribute not only to the improvement in convenience of airport users, but also to an activation of the national economy and an improvement in basic human needs through the development of the infrastructure. Since these benefits are expected, it is justified that this project is suitable for Japan's Grant Aid Program.

In order to maintain the function of the facilities developed by this project, proper operation and maintenance are required. The organization of the Solomon Islands side is considered to be sufficient in terms of manpower and budget. Moreover, organizational reform to establish a Civil Aviation Corporation instead of the existing CAD is now under study. This reform would consolidate various functions of airport management, including finance management, into a new authority, and would contribute to a more smooth and effective implementation of this project.