CHAPTER 4

PRESENT CONDITIONS AND IDENTIFICATION OF PROBLEMS IN THE PROJECT SITE

4.1 PRESENT CONDITIONS

4.1.1 General

The project site is shown in Fig. 4.1. Adjacent to the project site, PJKA railway repair workshop is located to the east; a car repair workshop owned by PT Wahana Bhakti Utama which is an affiliated office of the Ministry of Security and Defense is situated to the west; railways are located to the north east; and a bus terminal connecting with Jl. Sultan Agung and Jalan Dr. Saharjo is located to the north west. Surrounding the bus terminal neighbourhood commercial functions are seen. The project site is about 7.6 Ha in total, and about 9,900 inhabitants live in the project site.

The characteristics of the project site are predominantly urban residential area and combined with home industry (kompor production). The home industry producing kompors has about 140 kompor factories in deteriorated row houses in the centre part of the project site. These are not compatible with an urban residential area because of noise pollution and therefore they are scheduled to move out to a small industrial complex in Pulo Gadung soon after the middle of September 1983.

KIP has almost been completed in the project site and has obviously improved environmental conditions in the project site compared with those before. However, more environmental improvements are necessary in the project site due to lack of public facilities and physically unsound houses.

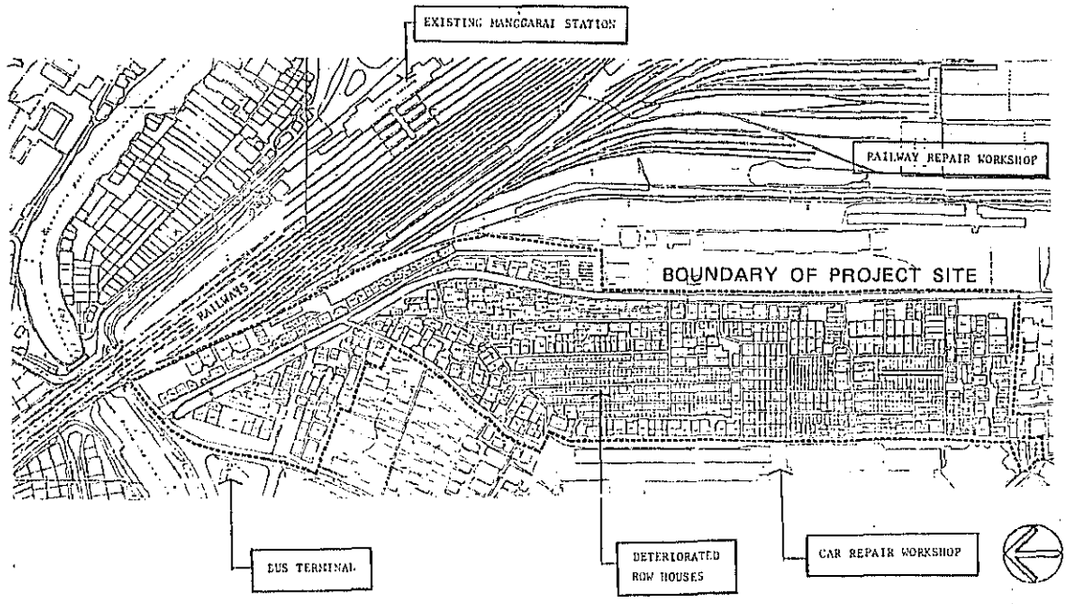


Fig. 4–1 PRESENT SITUATION IN THE PROJECT SITE

4.1.2 Population

Total Population	Total No. of Households	Average Household size	Population Density
9,900 person	1,800 families	5.5 person/family	1,250 person/ha

4.1.3 Land Use and Building Conditions

Land Use

Unit : m^2

Roads		Open Area Railway, River, Bus, Terminal	Community Facility Area	Residential Area	Home Industrial Area	Commercial Area (Shops/ Houses)	Total
Major roads	Neigh. roads						
3,100	8,300	5,300	900	51,400	4,300	2,300	75,600
4%	11%	7%	1%	68%	6%	3%	100%

Building Use (Ref. Fig. 4–2)

Unit : m^2

Houses	Shops/Houses	Home Industry	Community Facilities	Total
42,600	2,300	4,300	900	50,100
85%	5%	9%	1%	100%

Building Structure (Ref. Fig. 4–3)

Unit: m^2

Permanent	Semi-Permanent	Temporary	Total
14,200	18,800	17,100	50,100
28%	38%	34%	100%

Building Age (Ref. Fig. 4–4)

Unit: m^2

1-5 years	6-15 years	16-30 years	Over 31 years	Total
5,000	18,500	18,000	8,600	50,100
10%	37%	36%	17%	100%

Number of Building Storeys (Ref. Fig. 4–5)

One storey	Two storeys	Above three storeys	Total
225 bldgs.	127 bldgs.	0 bldg.	352 bldgs.
64%	36%	0%	100%

Number of Households by Floor Area

Unit: No of Household

Less 20 m2	21–30 m2	31–42 m2	43–64 m2	65–80 m2	Over 81 m2	Total
595	414	324	252	90	125	1,800
33%	23%	18%	14%	5%	7%	100%

Note: The data given above was obtained from the physical inventory survey carried out at the beginning of Stage II.

4.1.4 Road Network and KIP

Road network and KIP in and surrounding the project site are shown in Figs. 2–10, 11 and 4–6. As described previously, KIP has been almost completed.

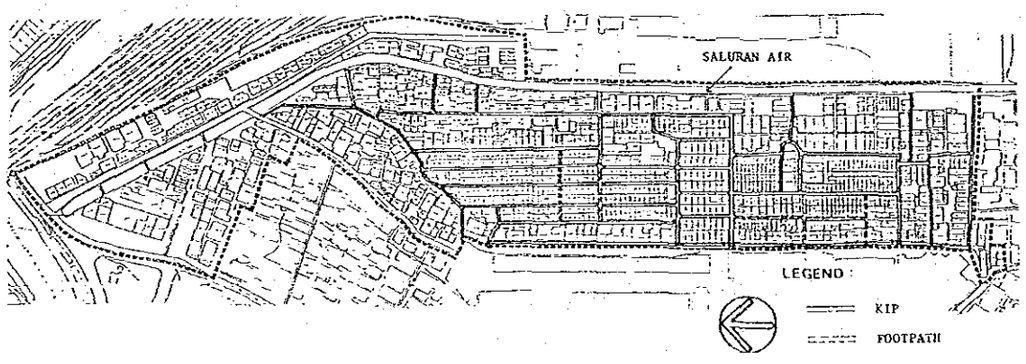


Fig. 4–6 KIP (Kampungs Improvement Programme)

4.1.5 Community Facilities and Public Utilities

Community Facilities

Community facilities, such as religious, educational, health facilities in and surrounding the project site are shown in Fig. 4–7. The data was obtained from Kelurahan Manggarai in Stage I and the Physical inventory survey in Stage II.

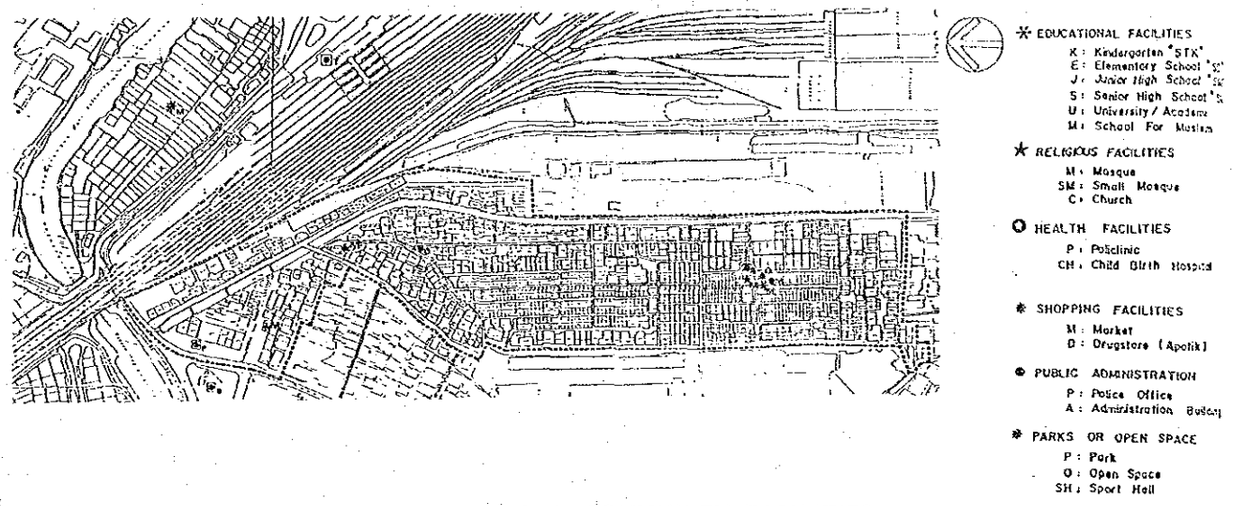


Fig. 4–7 COMMUNITY FACILITIES

Public Utilities

Public utilities such as piped water (PAM) and city gas pipe are shown in Fig. 2–4 in this volume. As a result of the physical invetory survey, only about 20 families have piped water (PAM) in their houses; the rest of families get water from wells.

4.1.6 Socio-Economic Conditions

Age Structure

The population distribution in the site is shown in Fig. 4–8. There is a predominance of the younger generation and about half of the population are less than 17 years old.

POPULATION RATIO BY AGE GROUP AND SEX

Unit: %

Age Group	0 - 5	6–11	12–27	18–23	24–30	31–40	41–55	56–	Total
Male	8.1	9.3	7.6	7.6	8.0	5.5	3.5	2.6	52.2
Female	8.1	8.3	7.4	7.8	6.9	4.6	2.9	1.8	47.8
Total	16.2	17.6	15.0	15.4	14.9	10.1	6.4	4.4	100.0

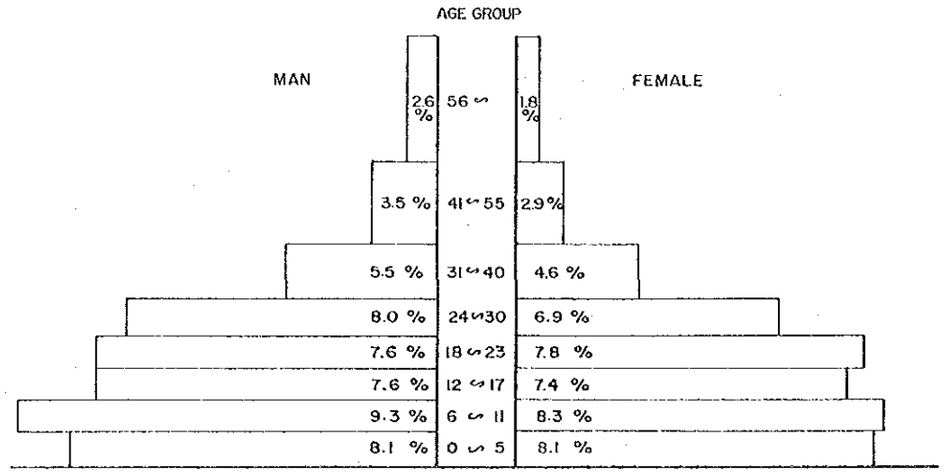


Fig. 4–8 POPULATION DISTRIBUTION (POP. PYRAMIDE)

Job

The most common occupation is civil servant and this is 23% of workers. Second are private employees and labourers, and the next is retailers. Most civil servants are working for PJKA, and most of the pensioners are retired from PJKA.

KIND OF JOB

Civil Servant	Private Employee	Labourer	Retailer	Pensioner	Others	Total
23%	20%	20%	17%	14%	6%	100%

Household Income and Expenditure

The distributions of household income and expenditure are shown in Fig. 3–9. The average monthly income is Rp.80,700, and the average monthly expenditure is Rp.82,900. The shortage of income is probably caused by secondary income that inhabitants didn't report. More than half of the households have monthly income of less than Rp.60,000.

Only 25% of households have expenditure for housing and the average monthly housing expenditure is only Rp.4,100. The average housing expenditure ratio to income is only 7%, but 4% of households expend more than 30% of income for housing.

HOUSING EXPENDITURE RATIO TO INCOME

– 5%	5 –10%	10 – 15%	15 – 20%	20 – 25%	25 – 30%	30 –	Total
218	43	29	19	15	6	14	344
63%	13%	8%	6%	4%	2%	4%	100%

Religious

97% of inhabitants are Mulsims.

Islam	Christian	Hinduism	Buddhism	Others	Total
97%	3%	0%	0.02%	0%	100%

Social Activities

More than half of the inhabitants enjoy Koran reading, lottery and voluntary activities. About one third of inhabitants have good relationship with their neighbours and the ratio of inhabitants who have a bad relationship is only 5%. (Ref. Appendix C in Vol. I item No. 25(6)).

RATIO OF FAVOURITE SOCIAL ACTIVITIES

Lottery	Koran Reading	Voluntary Activities	Recreation	Cultural Meeting	Festival
78%	80%	74%	16%	29%	43%

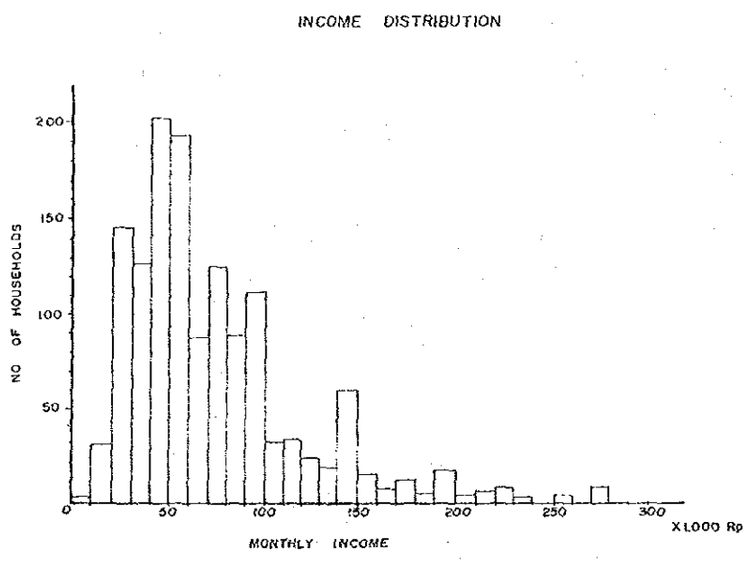
Economic Activities

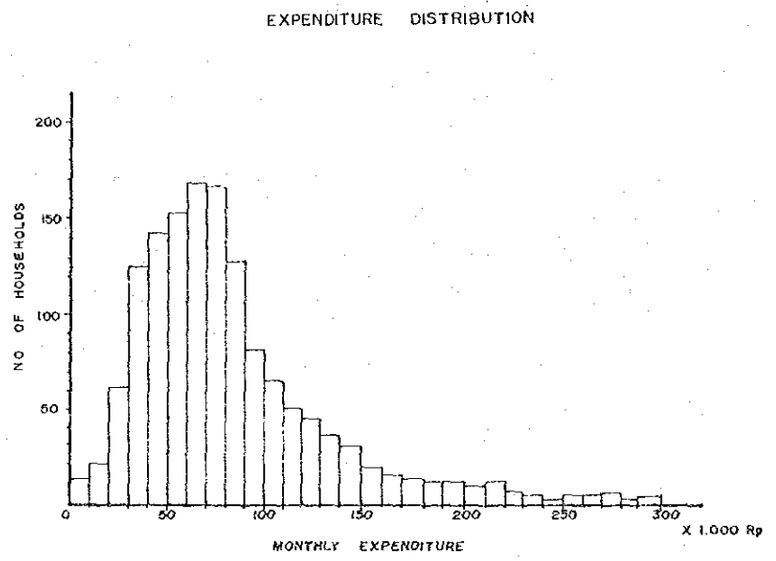
The ratio of inhabitants who have a business in their home is 15%, and there are many hawkers who work in the neighbourhood.

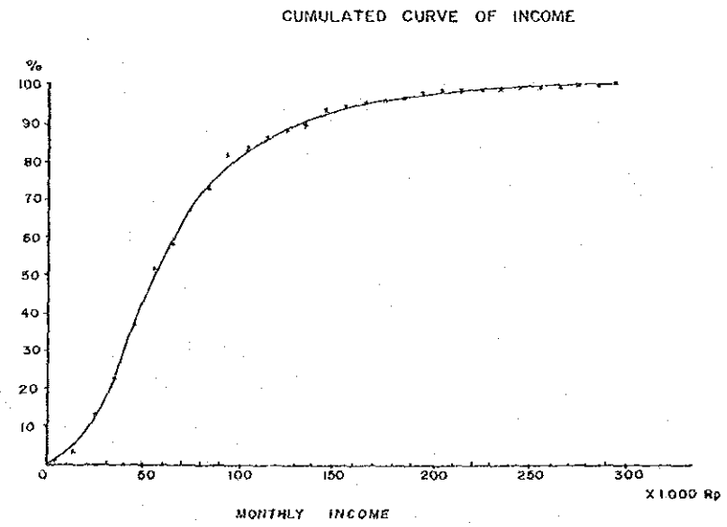
NUMBER OF BUSINESS IN HOME

Unit: No. of Household

Shop	Handicraft	Home Industry	Services	Workshop	Business Office	Others	Total
145	11	19	34	5	3	4	221
65%	5%	9%	15%	3%	1%	2%	100%







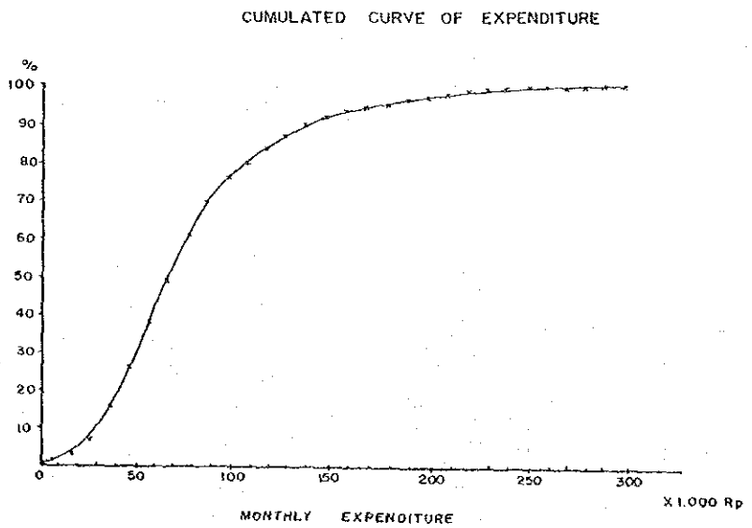


Fig. 4–9 DISTRIBUTIONS OF HOUSEHOLD INCOME AND EXPENDITURE

Urban Renewal Sense in the Project Site

About 80% of the inhabitants are feeling that a living environment should be improved through urban renewal project. As to resettlement ratio, approximate 75% of the inhabitants wish to live in the original place after the urban renewal project.

4.1.7 Ownership on Land and Buildings

Ownership on Land (Ref. Fig. 4–10)

As a result of ownership analysis on land, about 80% of building lot area is occupied by Garapan (on government land) which is the right to cultivate as shown below.

Unit: m^2

Right of Ownership (Hak Milik)		Right of Business (Hak Usaha)	Right of Lease (Hak Sewa)	Right to Cultivate (Gara pan)	Others	Total
With Certificate	Without Certificate		States land	States land		
500	5,000	1,000	3,000	40,100	500	50,100
1%	10%	2%	6%	80%	1%	100%

Ownership of Buildings (Ref. Fig. 4–11)

Unit: No. of Household

Own house	House rent	House contract	Lodging	Total
1,080	180	270	270	1,800
60%	10%	15%	15%	100%

Note: The data given above was obtained from the physical inventory survey results in Stage II.

4.2 IDENTIFICATION OF PROBLEMS

The following are major problems occuring in and around the project site and the problems are also shown in Fig. 4–12.

- A living environment problem is seen in the project site because of poor and crowded dwellings as well as lack of public facilities.
- Traffic congestion problem is seen at the underneath of the railway in the north side of the project site, because the road suddenly narrows at the underpass.
- Traffic congestion problem is also seen at the bus terminal in the north west side of the project site. The reason is that there is a shortage of parking space for buses, taxis, and bajay in the bus terminal.
- Water pollution problem is seen in the drainage channel (Saluran Air) running through the project site as a lot of garbage and waste-water are directly discharged into the channel. The channel flows into the Kali Malang (Banjin Canal), the water of which is used as a source of water supply.
- Because of the location of the existing station in the east side of the railways and the bus terminal in the west side of the railways, there is a considerable inconvenience of the connection between railway and road traffic.

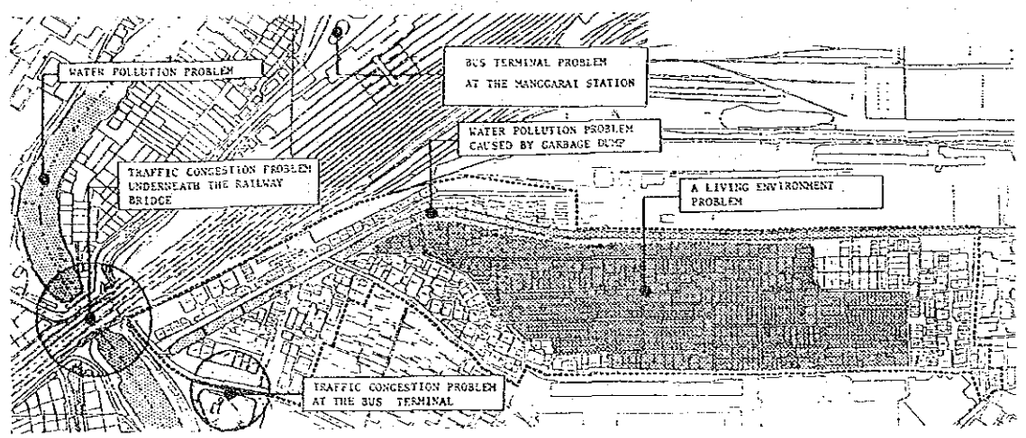


Fig. 4–12 IDENTIFICATION OF PROBLEMS

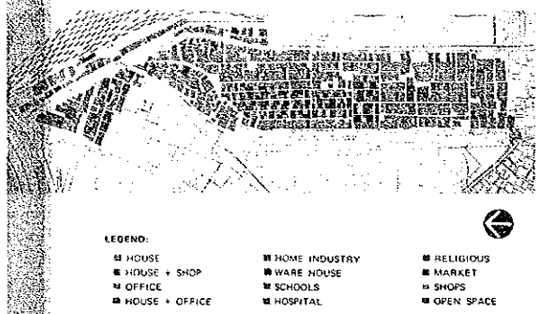


Fig. 4–2 BLDG. USE

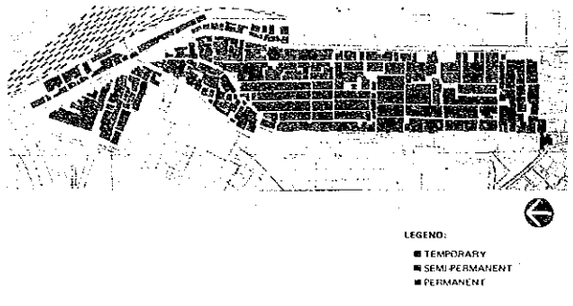


Fig. 4–3 BLDG. STRUCTURE

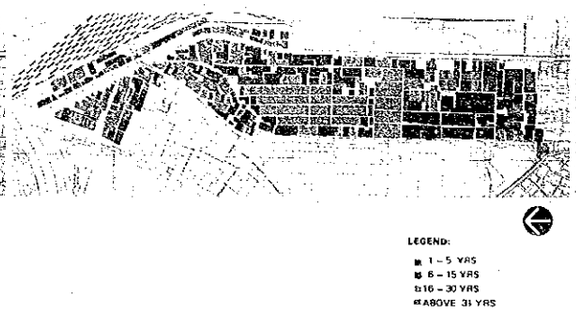


Fig. 4–4 BLDG. AGE

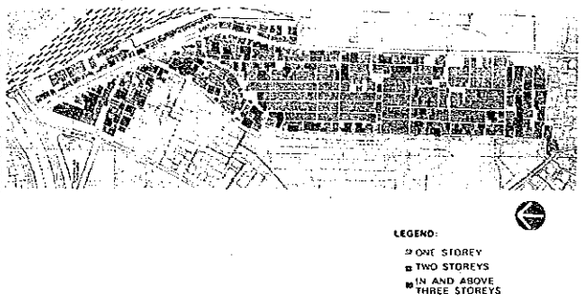


Fig. 4–5 NUMBER OF BLDG. STOREYS

OWNERSHIP ON LAND AND BLDGS

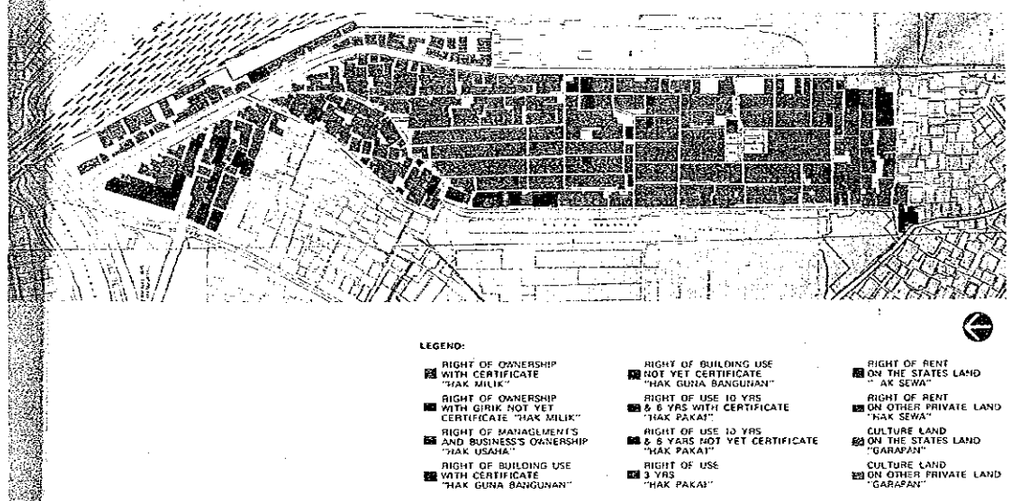


Fig. 4–10 LAND OWNERSHIP

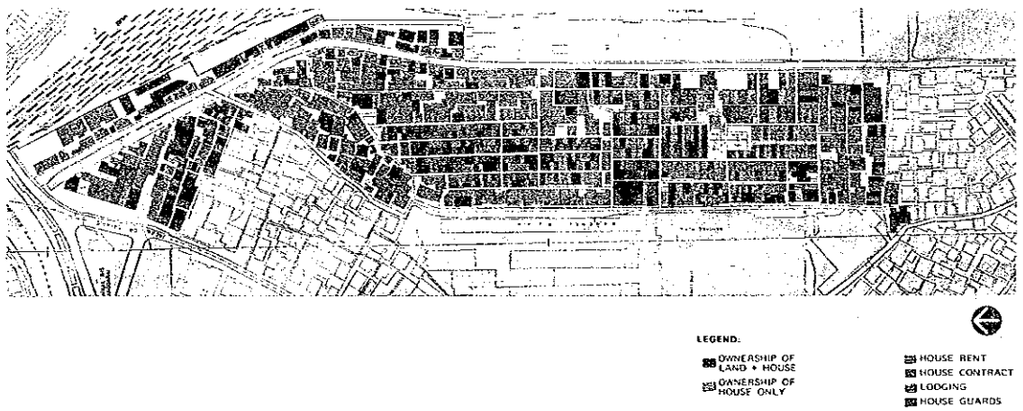


Fig. 4–11 BLDG. OWNERSHIP

4.3 PRIORITY PROGRAMMES

Five priority programmes have been planned in and around the project site and they are shown in Fig. 4–13 and described below.

Name of Priority Programme	Implementation Agencies	Implementation Schedule
(1) Manggarai Station Development Project including Railway Improvement	PJKA	Within 5 years according to the Railway Master Plan

Feasibility study on the Manggarai station development is being carried out by another JICA study team and is scheduled to finish sometime in April 1984.

(2) Sewerage system	CIPTA KARYA	Engineering design has been completed and construction is expected to start soon.
(3) Road widening to 25 m in Jalan Sultan Agung	DKI	Not decided yet.
(4) Road widening to 18 m in Jl. Dr. Sahardjo	DKI	Not decided yet.
(5) Movement of the home industries (kompor factories)	DKI	Expected in September 1983.

As mentioned previously, 140 kompor factories are planned to move out to a small industrial complex in Pulo Gadung in September 1983.

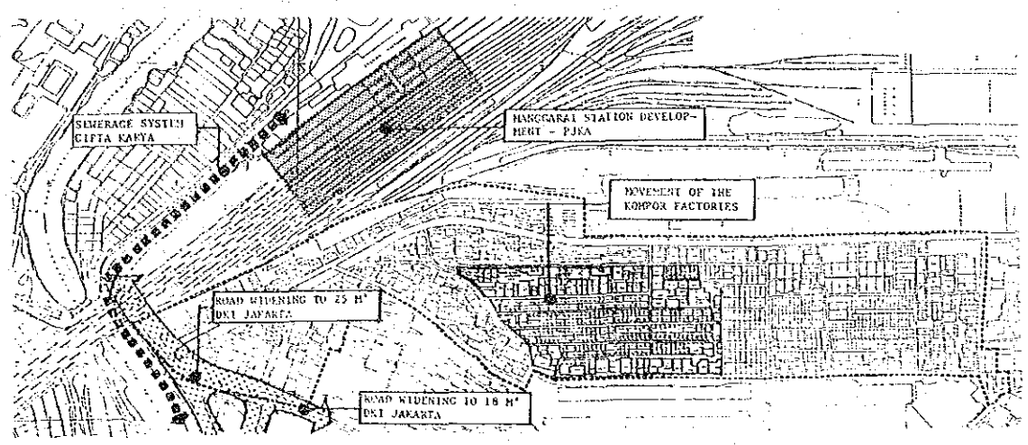


Fig. 4–13 PRIORITY PROGRAMMES

CHAPTER 7

PRELIMINARY URBAN RENEWAL DESIGN

5.1 FORECAST OF FUTURE DEMAND

5.1.1 Future Demand of Commercial Floor

Trade Area

Major markets*1 around the Manggarai area are shown in Table 5–1. Amongst the central markets, Pasar Cikini is nearest to Manggarai but is rather of a small scale, so Pasar Senen would be a competitive market against the proposed commercial development at the site in Manggarai.

The primary trade area is determined first as the walk-in area and to which is added the equidistant area amongst all the markets around the site.

The secondary trade area is determined by the boundary which has the equidistance between the central and city markets. The primary and secondary trade areas thus determined, are shown in Fig. 5–2.

Furthermore, if considering the future improvement of the railways and the resultant increase in passengers, Manggarai would be an important junction point for railway and road traffic, having the character of a city sub-centre. The commercial development in Manggarai is therefore considered to attract the potential customers now living in the suburban areas such as Klender and Depok, both easily accessible to Manggarai by rail. These suburban areas are regarded as the tertiary trade area.

Sales Potential

(1) Estimate of sales amount

Table 5–3 shows the sales amount from the present primary and secondary trade area.

Population growth rate in Jakarta is estimated as 2.9% per annum in the period 1980 through 1995, and 1.9% per annum in the period 1995 through 2005. (Source: Draft DKI Jakarta Master Plan 2005)

Assuming that the population in the trading area of the new commercial development will increase at the same rate of whole DKI Jakarta, the monthly sales amount is estimated as Rp.2,199 million in year 1995 and Rp.2,654 million in year 2005.

In future, after improvement of the railway, more customers will be attracted from the tertiary trade area. The renewal project will therefore need to develop com-

*1 According to the classification by P.T. Pasar Jaya - quasi-public corporation of DKI Jakarta, central markets are categorised as the largest, followed by city markets (medium scale) and neighbourhood markets (small scale).

Table 5–1 LIST OF PUBLIC MARKETS AROUND MANGGARAI

No.	Name	Classification	Distance from Manggarai (m)	Floor Area (m^2)	No. of Shops
1.	Jatinegara	Central	2,000	25,665	2,758
2.	Cikini	Central	1,400	7,700	354
3.	Senen Block II	Central	3,600	23,450	2,660
4.	Tanah Abang	Central	4,500	33,462	4,138
5.	Melawai	Central	6,600	7,757	1,319
6.	Rumput	City	900	?	?
7.	Burung	Regional	1,500	?	?
8.	Pal Meriam	Regional	1,300	?	?
9.	Bukit Duri Puteran	Neighbourhood	1,500	?	?
10.	Menteng Pulo	Neighbourhood	1,300	?	?

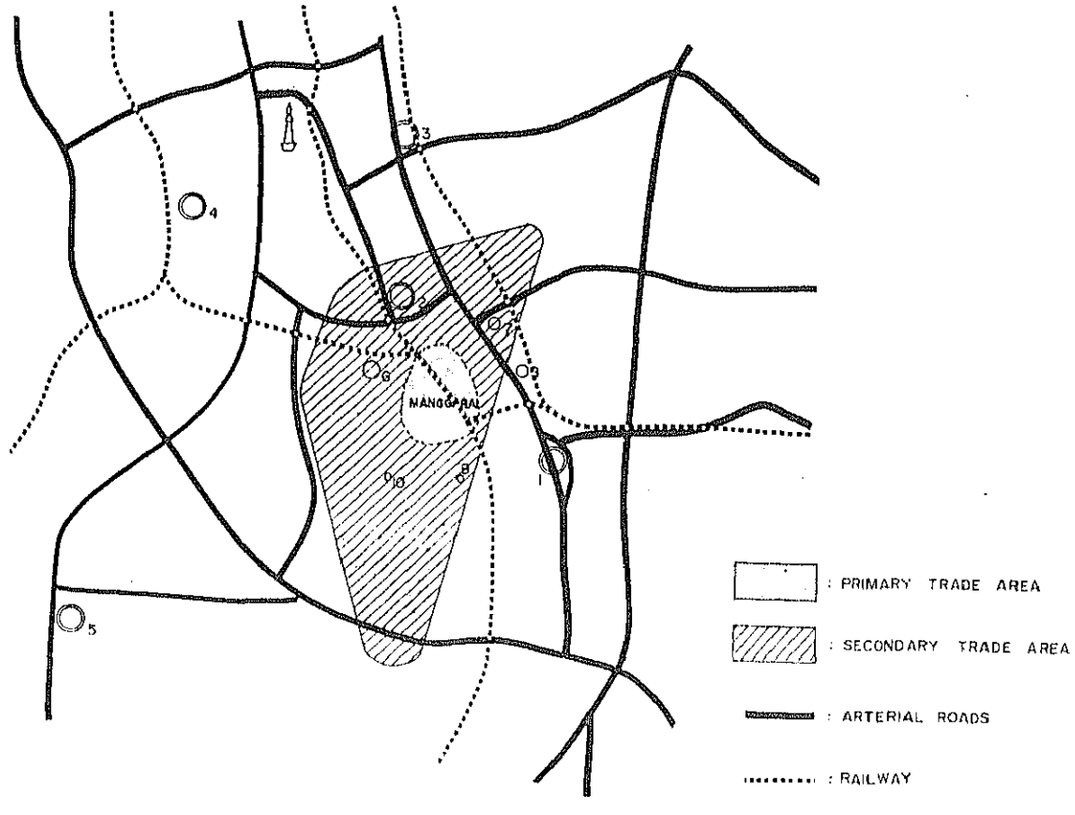


Fig. 5–2 EXISTING PUBLIC MARKETS AND TRADE AREA

Table 5–3 SALES AMOUNT FROM THE PRIMARY AND SECONDARY TRADE AREA

	Primary Trade Area	Secondary Trade Area	Total
Area	150 Ha	1,400 Ha	1,550 Ha
Population	43,200	364,200	407,400
Total Consumption for General Merchandise	Rp.626 Mill./Month	Rp.5,281 Mill./Month	Rp.2,505 Mill./Month
Attractive Ratio	60%	20%	-
Sales Amount	Rp.376 Mill./Month	Rp.1,056 Mill./Month	Rp.1,432 Mill./Month

mercial as well as business functions. After renewal, the workers in these shops and offices will in turn become the customers of the developed commercial area.

(2) Demand forecast for commercial floor

There are a few small retail shops and semi-illegal food markets in and around the site. The future increase in household consumption, and development as a city sub-centre would necessitate a fairly large commercial development in the area.

The required commercial floor area would be about 14,000 sq.m. for the primary and secondary trade area, estimated under the present conditions.

Of this commercial floor area, the area required for the primary trade accounts for 30% of the total floor area or 5,800 sq.m., and would be developed for low-class shops which sell food, family clothes and other daily commodities. Another 70% of the total floor area or 10,200 sq.m. would be developed as middle-class or high-class shopping area, which would attract customers from the secondary trade area.

The above figures are calculated on the present conditions. If considering the future population increase in the trade area, purchasing powers increase and hence the demand for commercial floor area would increase accordingly. Even considering the population increase, trade could grow 1.5 times by year 1995 and 1.9 times by the year 2005.

In other words, the intended development will produce half of the commercial floor that may be required by the year 2005.

5.1.2 Future Demand for Business Floor Space

Location of Office Buildings in Jakarta

More than half of the existing office buildings are located along the main roads. In addition to this, many office buildings are now being constructed, and most of them are located along by Jl. Jendral Sudirman, Jl. Gatot Subroto and Jl. Rasuma Said.

Potential of Business Floor Development

At present, transportation is dependent mainly upon road vehicles. Because of this, office buildings are located and being developed along the main roads, and Manggarai is not included in such office building areas.

However, Manggarai will be developed as a future sub-centre and this would change the feature of the area completely.

The urban renewal area in Manggarai is located nearby the future main railway station and connected by arterial roads to the central area of Jakarta. Manggarai, as a connecting point between railway traffic and road transportation, has good potential to be developed as a future sub-centre and as such, the necessity of and importance for business developments in the area would increase remarkablely.

5.1.3 Future Demand for a Hotel

Location of Hotels in Jakarta

At present, all the five-star and four-star hotels are located around the National Monument (MONAS) or along by the main roads, except for a few hotels being located near the domestic airport.

Potential for Hotel Development

At present, the railway shares only a small percentage of passenger traffic, and thus hotels are not necessarily located near the railway stations in Jakarta.

In future, the railway will be improved and the Manggarai station will have the role of serving as a long-distance train terminal, and the railway passengers will change trains or transfer to road transportation. Commercial buildings and business office buildings will also be developed in Manggarai to meet new sub-centre functions. As a result, many passengers will come to Manggarai on business.

Therefore, future Manggarai has a good potential for hotel development which primarily serve for the domestic business market. The grade of these hotels is therefore preferred to be of the three-star or two-star, with the target of collecting local

guests on business trips.

It is said that the multi-functional characters that hotels can offer, such as communications, culture, sports and leisure, business and shopping, etc., can serve as a community centre. And it is also said that over-supplied facilities induce new demands. In the light of these, the introduction of a hotel having various functions is considered appropriate in the proposed urban renewal in Manggarai.

5.1.4 Future Demand for Housing

Classification of Housing Demand

Housing demand in an urban renewal project is classified into two kinds. The one is an internal demand for rehousing the people living there and the other is an external demand to increase the housing stocks which are continuously in short supply against the ever growing need.

Housing Demand in Manggarai

Usually, in any urban renewal project, some of the inhabitants wish to dislocate to other places for some reason or other without resettling in the place after renewal. According to the results of socio-economic survey, anticipated dislocation rate is read to be 25% in the case of Manggarai. Despite the probable fact of dislocation, however, housing units are to be provided sufficiently to rehouse all the inhabitants, in preparation for a contingent case.

The number of households and housing floor area actually surveyed in the site of Manggarai is 1,700 and 43,990 sq.m. respectively. Recognising the fact that in many houses two or more households are living together, housing units required may be less than the number of households, whilst housing floor area should remain the same or become larger than the present one.

5.1.5 Future Demand for Community Facilities

Demand for Community Facilities in Accordance with the Criteria

Table 5–4 shows the needs based on the criteria of Cipta Karya, DKI Jakarta and PERUM PERUMNAS. The needs based on the criteria of PERUM PERUMNAS is the least of all.

Actual Community Facility Area

The community facility area actually provided in Tanah Abang and Kebon Kacang projects, is much lower than the criteria of PERUM PERUMNAS (Ref. 7.5 in Vol. I).

Taking into consideration this fact, it may be tolerable that the community facility area provided in the urban renewal area may not necessarily meet the criteria.

Table 5–4 COMMUNITY FACILITY AREA BASED ON THE CRITERIA

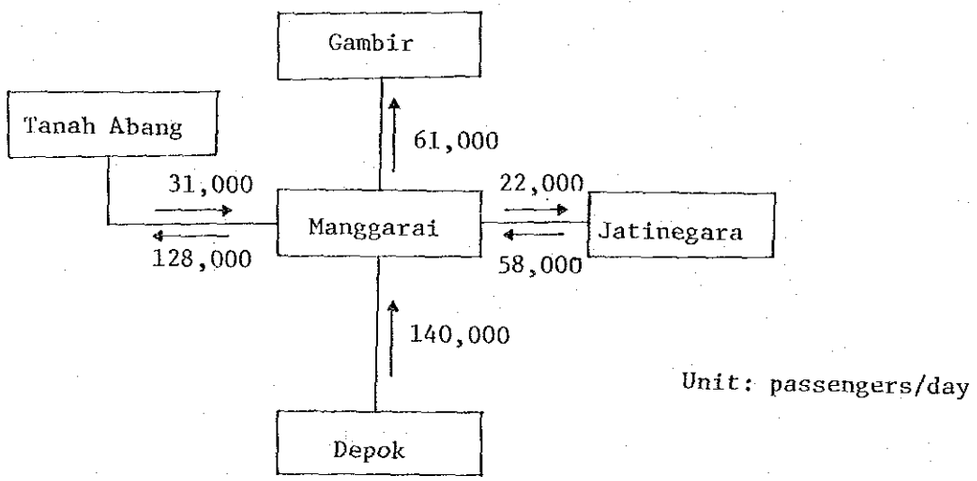
	Cipta Karya*1 9,000*2)	DKI *2 9,000*2)	Perumnas *3 12–1500*3) (9 Ha)
Playground	0.9 Ha		0.4 ha
Garden and sports field	0.45		0.3
Neighbourhood park		0.45	
Kiosk	(0.36)	(0.43)	(0.2)
Shop	(0.43)		(0.2)
Kindergarten	0.72	0.6	0.2
Elementary School	1.35	0.9	0.5
Junior High School	0.41	0.09	
Small mosque	0.11	0.09	
Security box, Meeting hall, Mail box	0.11		
Practicing Doctor	(0.03)	0.08	
Branch Helath Clinic	0.08		
Miscellaneous Facilities			0.2
Public Parking and Toilet	(0.04)	(0.03)	
Deep well		(0.09)	
Open gallery			
Total	4.13 Ha	2.21 Ha	1.6 Ha

*1 Cipta Karya, DKI & PERUMNAS Guideline
*2 Number of Population
*3 Number of Household

5.1.6 Demand for the Station Plaza in Year 2000

Railway Passengers at Manggarai Station

According to the JICA study report in February 1981, the railway passengers at Manggarai station are estimated to be as follows:



Unit: passengers/day

Fig. 5–5 PASSENGERS AT MANGGARAI (in 2000)

– Passengers coming to Manggarai (in 2000)

From	Passengers/day
Depok	140,000
Jatinegara	58,000
Tanah abang	31,000
Total	229,000

– Passengers leaving from Manggarai (in 2000)

To	Passengers/day
Tanah abang	128,000
Gambir	61,000
Jatinegara	22,000
Total	211,000

When Manggarai be developed as a sub-city center in 2000, about 50% of the above passenger will get on and off at the station. In that case, the proposed number of the passengers is

100,000 persons/day, in the year 2000

Peak-hours Passengers

Concentration of passengers in the two peak hours is estimated to be 35%. Assuming that the passengers transfer to their subsequent means of transportation within an average of 10 minutes, the number of passengers (Np) who use the station plaza can be calculated as follows:

$$Np = 100{,}000 \times 35\% \times \frac{10 \text{ min.}}{2 \text{ hrs. } (120 \text{ min.})}$$

$$= 3{,}000 \text{ persons/10 min.}$$

In addition, 10% of non-railway users (to see off or to welcome passengers and just users of the plaza) are included, and the number of the station plaza users is

$$Nu = 3{,}000 \times 1.1$$

$$= 3{,}300 \text{ persons/10 min.}$$

Proportion by Traffic Modes

The percentages of each traffic mode are estimated by the study team to be as follows:

Public bus	40%
Private car	20%
Taxi	10%
Pedestrians	30%

In this study, 80% of the users of the two existing but terminals in Jl. Sultan Agung are assumed to transfer to the Manggarai station plaza, because the improved and widened Manggarai station will attract many people to the station plaza.

Users of Each Traffic Mode

Users (3,300 persons) are distributed as follows:

Public bus	3,300 x 0.4 = 1,300 persons
Private car	3,300 x 0.2 = 700 persons
Taxi	3,300 x 0.1 = 300 persons
Pedestrians	3,300 x 0.3 = 1,000 persons

Numbers of Vehicles to be Parked

– Public bus

Average persons per bus : 40 persons
Buses to be parked : 50%
Required number of parking : Nb

$$Nb = 1{,}300 \times 0.5 \times \frac{1}{40 \text{ persons/bus}} = 16 \text{ No.}$$

– Private car

Average persons per car : 2 persons
Cars to be parked : 10%
Required number of parking : Nc

$$Nc = 700 \times 0.1 \times \frac{1}{2 \text{ persons/car}} = 35 \text{ No.}$$

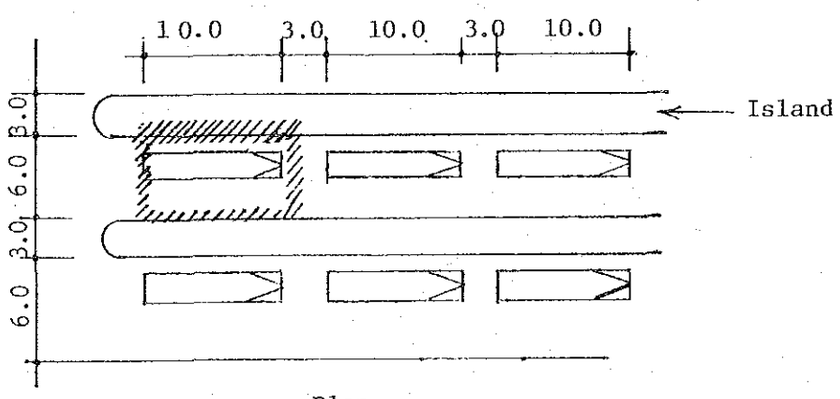
– Taxi

Average persons per car : 2 persons
Taxis to be parked : 30%
Required number of parking : Nt

$$Nt = 300 \times 0.3 \times \frac{1}{2 \text{ persons/car}} = 45 \text{ No.}$$

Required Parking Spaces

– Public bus



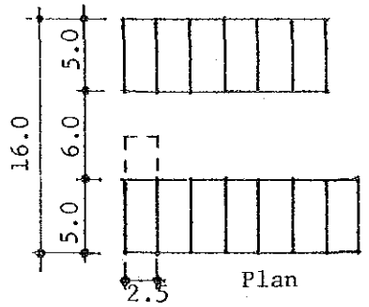
Plan

Minimum parking space per bus : Ab (Mercedes Benz D 306)
Ab = (6 + 3 ÷) x (10 + 3 ÷ 2)
= 90 m²

Required parking space of buses : Pb
Pb = Ab x Nb = 90 x 16
= 1,440 m²

In the preliminary design, an area of 1,650 m² is provided for the public bus terminal.

– Private car



Plan

Minimum parking space per car : Ac
Ac = (5 + 6 ÷ 2) x 2.5 = 20 m²

Required parking space of cars : Pc
Pc = Ac x Nc
= 20 x 35
= 700 m²

In the preliminary design, the area of 900 m² is provided for the private cars.

– Taxi

Minimum parking space per taxi : At
At = 20 m² (same as private car)

Required parking space of taxis : pt
Pt = At x Nt
= 20 x 45
= 900 m²

Required Space for Pedestrians

For maximum 1,000 persons, 2 m² /person space is provided.
Required space for pedestrians : Pp

Pp = 2 x 1,000
= 2,000 m²

Summary of Required Space

Summary of required space is as shown in Table 5–6.

Table 5–6 REQUIRED SPACE FOR STATION PLAZA

For	Space	Remarks
Bus	1,440 m^2	
Car	700 m^2	
Taxi	900 m^2	
Pedestrian	2,000 m^2	(A) = 6,300 m^2 in total
Access roads	1,260 m^2	
Greenery and open space	1,900 m^2	(A) x 0.3
Administration	1,900 m^2	(A) x 0.3
Total	10,100 m^2	

For the design, pedestrian deck is provided, and the total area is:

Station-front plaza	6,900 m²
Pedestrian deck	3,400 m²
Total	10,300 m²

5.2 STRATEGY OF URBAN RENEWAL

5.2.1 Forming a City Sub-centre

Manggarai, which is predominantly characterized by the existence of the major railway station, is planned to be a city sub-centre of DKI Jakarta to meet the following objectives.

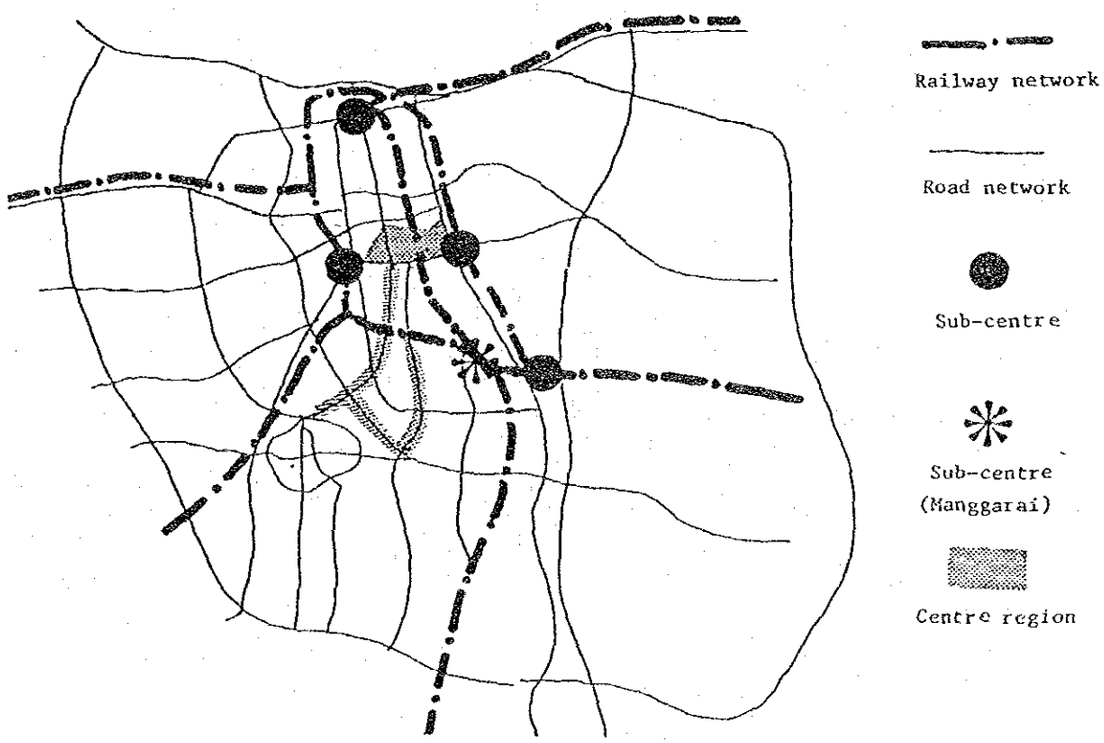
(1) South entrance of Jakarta

Railway development for a rapid commuting system is being planned in the north-south direction and as a connection between east and west. In both cases, Manggarai station will be the key station in both directions.

In future, when railway transportation has increased its share, the Manggarai station will become the southern entrance to Jakarta.

(2) Compliance with the Master Plan of DKI Jakarta (1985 – 2005)

The Plan characterises the area as, "Strategical location for a commercial centre as the secondary trade and business centre supported by infrastructure developments, such as railway and arterial road improvements" (Ref. 1–3).



5.2.2 Improvement of Public Facilities

Access Road

An access road will be constructed between the inter-section of Jl. Sultan Agung/ Jl. Dr. Saharjo and the proposed station-front plaza (approximately 350 m with 25 m right-of-way).

Station-front Plaza

The total area of the plaza is 10,300 m², including 6,900 m² at ground level and 3,400 m² on the deck slab. The existing open drain (Saluran Air) within the station-front Plaza will be covered to bear vehicle loads.

Neighbourhood Roads

Neighbourhood roads will be provided along the site perimeter and along the different land use boundary.

Parks and Open Areas

A north-south walkway (or pedestrian mall)*1 will be provided through the housing cluster.

5.2.3 *Improvement of Housing and Commercial/Office and Public Buildings*

Improvement of Housing

- In the urban renewal design, more than the existing floor spaces are provided, considering the case that most of the inhabitants want to resettle in the original area.

  Consequently, the proposed population will remain the same as existing.

- Provision of a variety of unit types and sizes (F-21, 25, 36, 54, 70, 100).

- Total of housing units: 1363 (Ref. 5.3.2).

- Provision of housing to the lowest-income people who have little ability of buying houses or paying rents.

- The people who are affected by the development of public facilities shall also be provided with housing for re-settlement.

- Temporary housing till the completion of new housing shall be properly provided.

Introduction of "Revenue-Producing" Buildings

According to the market research of the commercial demand, the following "revenue-producing" buildings are introduced in the design.

- Commercial building
- Office building
- Hotel

Construction of Public Buildings

In accordance with the standard requirements of DKI Jakarta, the following public buildings will be constructed.

– Primary school	1 No.
– Kindergarden	2 Nos. *1
– Meeting hall	2 Nos. *1
– Mosque	2 Nos. *1
– Library *2	1 No.

5.2.4 Stage Construction of the Project

Target Year of the Plan

It is assumed that the project will start up within two years and particularly section I should start as soon as possible.

Implementation on a Stage Basis

- It appears to be impractical to implement the project all over the site (7.6 Ha) at one time because of its physical size and financial involvements.

- Sale of the revenue-producing floor of buildings before improving and re-modelling the area will be difficult.

- Therefore, it is recommended that the implementation should be divided into two stages, namely, Section I (about 5 Ha) and Section II (about 2.6 Ha).

  Section I selects the area of kompor factory which will be relocated to outside the

*1 Planner's intention to design as an attractive community mall providing a restful atmosphere. The mall may present a temporary play ground for badminton and volleyball.

*1: Although 4 buildings for each category are required by standard requirements, 2 buildings of equivalent capacity will be constructed.

*2: Not specifically specified in the requirements but preferred in view of social and cultural needs of the area.

project site in the near future.

Section II contains the rest of the areas.

– Furthermore, to avoid too much concentration of construction works and too many temporary housings in a short period, Section I is subdivided into Section I (a) and Section I (b).

5.3 PRELIMINARY URBAN RENEWAL DESIGN

5.3.1 *Design Concept* (Ref. Fig. 5–7)

Supply of Low-cost Housing and Adequate Community Facilities

– In general, 8-storey flats are designed, whilst for low-income families, 5-storey walk-up flats are provided with house type of F – 21(21 sq.m.).

– In every flat, Open Gallery is designed to provide community spaces.

– Community facilities (Ref. 5.2.3) are laid out closely between the housing lots, so as to enable the inhabitants to use them more effectively.

– Public open areas are provided for

- Play ground
- Garden
- Sports field, etc.

– Manggarai Mall (a pedestrian road connecting housing to the Manggarai station) is designed for access.

Development of Station-Front Plaza

With the development of the Manggarai station, a new station front plaza is designed. The development includes;

– Relocation of bus terminals to the station-front plaza

– Elevated pedestrian deck which separates the pedestrians from the traffic

Development of Commercial and Business Facilities in Front of the Station

– A block

A middle-class hotel with 20 storeys and 300 rooms. It will be used by railway passengers, and will become a land-mark of the Manggarai area.

– B block

- A shopping centre (from 1st floor to 6th floor), private floor area 8,000 sq.m.
- Office (from 7th floor to 12th floor), private floor area 8,000 sq.m.

– A and B blocks are connected with the station front plaza by the elevated pedestrian deck.

25 m Wide Road

– 25 m wide road (R.O.W.) is designed for the approach to the station front plaza.

– 25 m wide road will serve as a future main road connecting the north and the south areas of Manggarai district.

5.3.2 Detail of Design (Ref. Fig. 5–10 ∿ 15)

A Block (Ref. Fig. 5–10)

Section	:	II
Location	:	North of the site
Area	:	7,600 sq.m.
Function	:	Commercial and business
Facilities	:	Complex of a hotel, shops and parking.

– Complex building

For the effective land use, a complex building that include a hotel, shops and parking space is designed in A Block. (Ref. Fig. 5–14). They are vertically arranged in each floor and the facilities and the floor areas are shown on the Table 5–8.

– Hotel

Hotel guests are expected mainly to be the railway passengers arriving at the Manggarai station from the country side to Jakarta. Through the elevated pedestrian deck they can enter the hotel directly from the station. A sky restaurant and meeting halls are provided at the highest floor of 19th and 18th respectively and they will give the guests a wonderful view of Jakarta day and night.

– Shops

Shops are designed together with the hotel and facing to the station front plaza for easy access. For the shops a little higher class of tenants are expected.

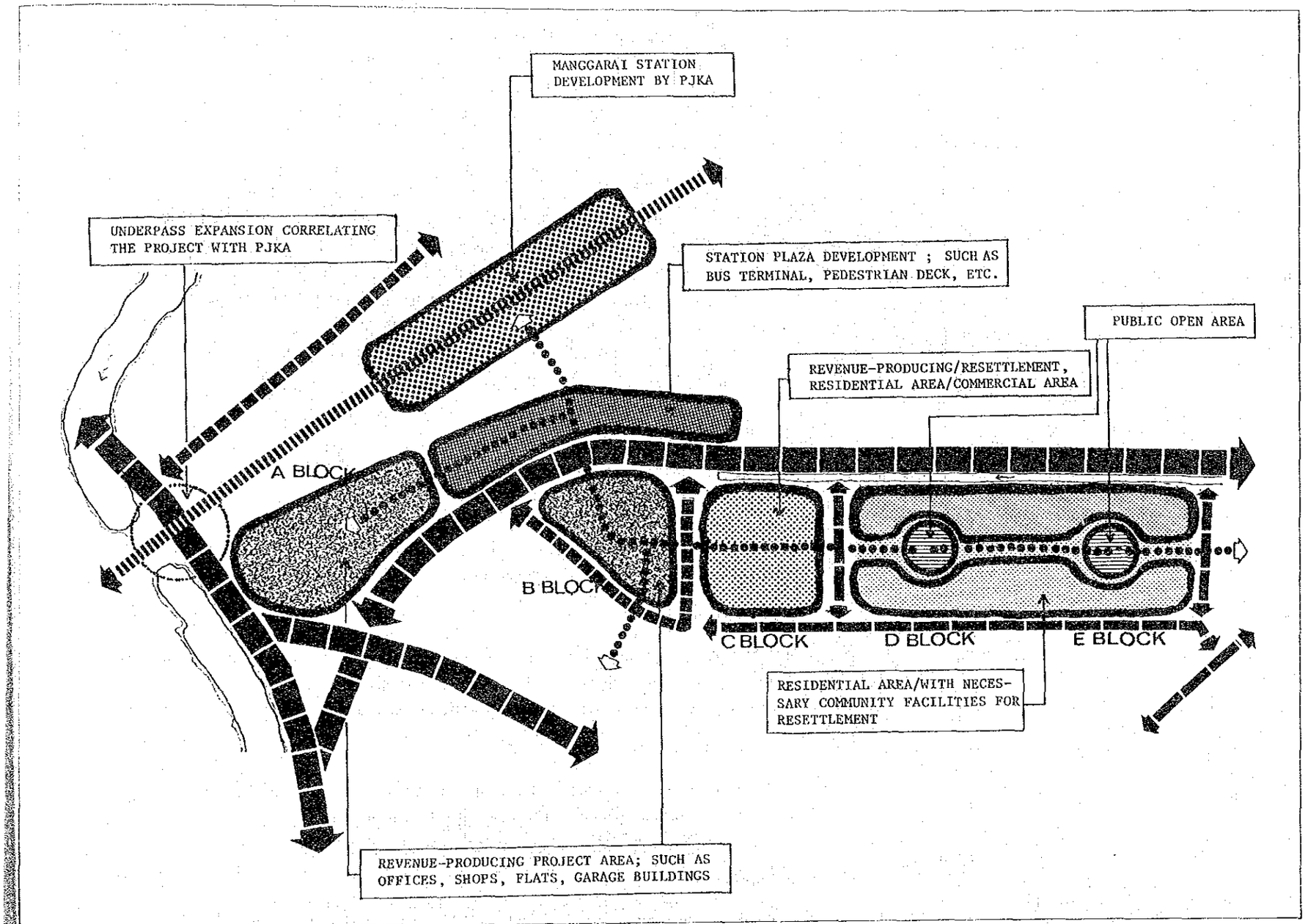


Fig. 5–7 URBAN RENEWAL CONCEPT PLAN – MANGGARAI

Overall facilities and the floor areas are shown on Table 5–8.

Table 5–8 FLOOR AREA AND FACILITIES

	Hotel		Shops	Parking Building	
	Gross Floor Area	Remarks	Gross Floor Area	Gross Floor Area	Remarks
Penthouse	50 m^2	Machine room			
20 F	1,000	Machine room			
19	1,250	Sky restaurant,bar			
18	1,250	Meeting halls			
7 ~ 17	13,750	Guest room ~ 300 rooms			
5	1,250	Machine room Swimming pool			
3 ~ 5	270		3,900 m^2	10,400 m^2	Number of parking
2	1,730	Grill, meeting hall	1,690	620	358 > 356 (*1) DKI Standard
1	2,180	Lobby, reception, coffee house	1,300	310	
B	800	Machine room	370		
Sub total	23,530 m^2		7,260 m^2	11,330 m^2	
Total	42,120 m^2				

*1) 23,530/100 = 235
7,260/60 = 121
356

Station Front Plaza (Ref. Fig 5–10)

Section : I (Station-front plaza) and II (Elevated pedestrian deck)
Location : West of the Manggarai station
Area : 6,900 sq.m (Station-front plaza)
3,400 sq.m (Elevated pedestrian deck)
10,300 sq.m (Total)
Function : Space for all passengers and pedestrians
Facilities : Bus, taxi and private cars terminal pedestrian deck

– Bus terminal

Existing bus terminals are located 450 m away from the station and many passengers are walking along the railway, even when trains are passing. When the West entrance of Manggarai station is opened, the proposed bus terminal in the plaza will benefit the passengers greatly. As to the design, considering the Indonesian climate, the use of "pergola type" to the pedestrian deck and sun shades at the bus stops are proposed.

– Pedestrian deck

On the pedestrian deck, a lot of green trees and grasses are provided to avoid artificial or hard impression to the pedestrians. Furthermore, with the provision of small shops on the deck, people will enjoy their walking and lively circumstances. The pedestrian deck is provided for the connection between commercial and business blocks and it is designed as a plaza directly connecting to B block. In front of the shops, a shopping plaza is provided and this will lead to the Manggarai mall in D and E Blocks.

B Block (Ref. Fig. 5–10)

Section : I
Location : West of station front plaza
Area : 6,200 sq.m.
Function : Commercial and business
Facilities : Shopping centre, office and parking.

– Approach

B Block is connected with the station-front plaza by the elevated pedestrian deck, and people can reach here directly from the station. And B Block is also connected to C Block at the same level by the pedestrian deck. (Ref. Fig. 5–12)

– Complex building

B Block consists of shopping centre, offices and car parks and they are all designed in one building called the complex building. These are vertically arranged in each floor to use the land more effectively. (Ref. Fig. 5–15)

– Shopping centre

As this shopping centre is located just beside the bus terminal, with the development of the railway, large patronage is expected. The grade of the shopping centre is middle class. The customers from the suburbs of Jakarta, particularly from Klender and Depok, are also expected.

– Office

For the design, we expected that branch offices of the Pulo Gadung Industrial area and the regional industrial area in Bekasi would be located here.

Floor areas and the facilities are shown in Table 5–9.

Table 5–9 FLOOR AREA AND FACILITIES

	SHOPPING CENTRE	OFFICE	PARKING BUILDING	
	Gross Floor Area	Gross Floor Area	Gross Floor Area	REMARKS
PENTHOUSE		210 m2		
7 – 12		9,780		
4 – 6	8,280 m2	330		
3	1,020	110	10,450 m2	Number of parking 347 > 341 (DKI standard *1)
2	1,820	110		
1	1,190	1,460		
B	400	1,000		
SUB TOTAL	12,710 m2	13,000 m2	10,450 m2	
TOTAL	36,160 m2			

*1) 12,710/60 = 211
13,000/100= 130
341

C Block (Ref. Fig. 5–10)

Section : I
Location : Beside commercial and business block in the north of housing block
Function : Commercial and housing
Facilities : Shops (1,600 sq.m.) and flats

– Shops

For the connection of commercial and business block, shops are laid out in the first floor (1,600 sq.m.). The roof of the shops are designed as a plaza directly connecting with B Block by a pedestrian deck. In front of the shops, a shopping plaza is provided and this leads to the Manggarai mall in D and E Blocks.

– Flats

In C Block, larger unit types are provided, such as, F-70 and F-100.

Type of flats:

Type	Private Floor area	Number of units	
F70	76.5 m^2	60	Total of
F100	105.0	60	units: 120

D and Blocks (Ref. Fig. 5–10)

D Block

Section : I
Area : 10,950 sq.m.
Type of flats :

Type	Private Floor area	Number of units	
F21	21.0 m^2	235	
F25	27.4	240	Total of
F36	38.6	128	units: 723
F54	52.7	120	

E Block

Section : II
Area : 11,050 sq.m.

Type of flats:

Type	Private Floor area	Number of units	
F21	21.0 m^2	110	
F25	27.4	202	Total of
F36	38.6	112	units: 520
F54	52.7	96	

– Flats

Housing units are designed in accordance with the physical inventory results. There are 4 types, namely F-21, F-25, F-36 and F-54. Flats are mostly 8-storey. 5-storey walk-up flats with F-21 type units are provided especially for low-income families, because without lifts, initial and maintenance costs can be deducted from the construction cost.

– Manggarai mall

The Manggarai Mall is laid out between the flats, (Ref. Fig. 5–11) so as to connect B, C, D, E Blocks with the station through the pedestrian deck. It is a

pedestrian road with water-falls, streams and greeneries.

– Public open area

Public open areas are located in the center of D and E Blocks. They will give the place for neighbourhood communications and playgrounds for the children. Around the area, community facilities such as, shops, kindergarten, meeting hall, mosque, etc. are allocated. As they are closely located, mutual approach becomes easier. As shown on Fig. 5–11 a pergola style is applied to suit the Indonesian hot climate. Under the pergola, people can enjoy cool air even in the day time.

– Community facilities

An elementary school with 12 classes and a library in the south end are provided. Neighbourhood people can also use them.

– Open gallery

Between the flats, open gallery is designed to offer the place for the neighbourhood communication, cooling off in the evening and children's playground. Open gallery is provided at 4th and 7th floors, connecting two flats and enabling mutual approaches (Ref. Fig. 5–13).

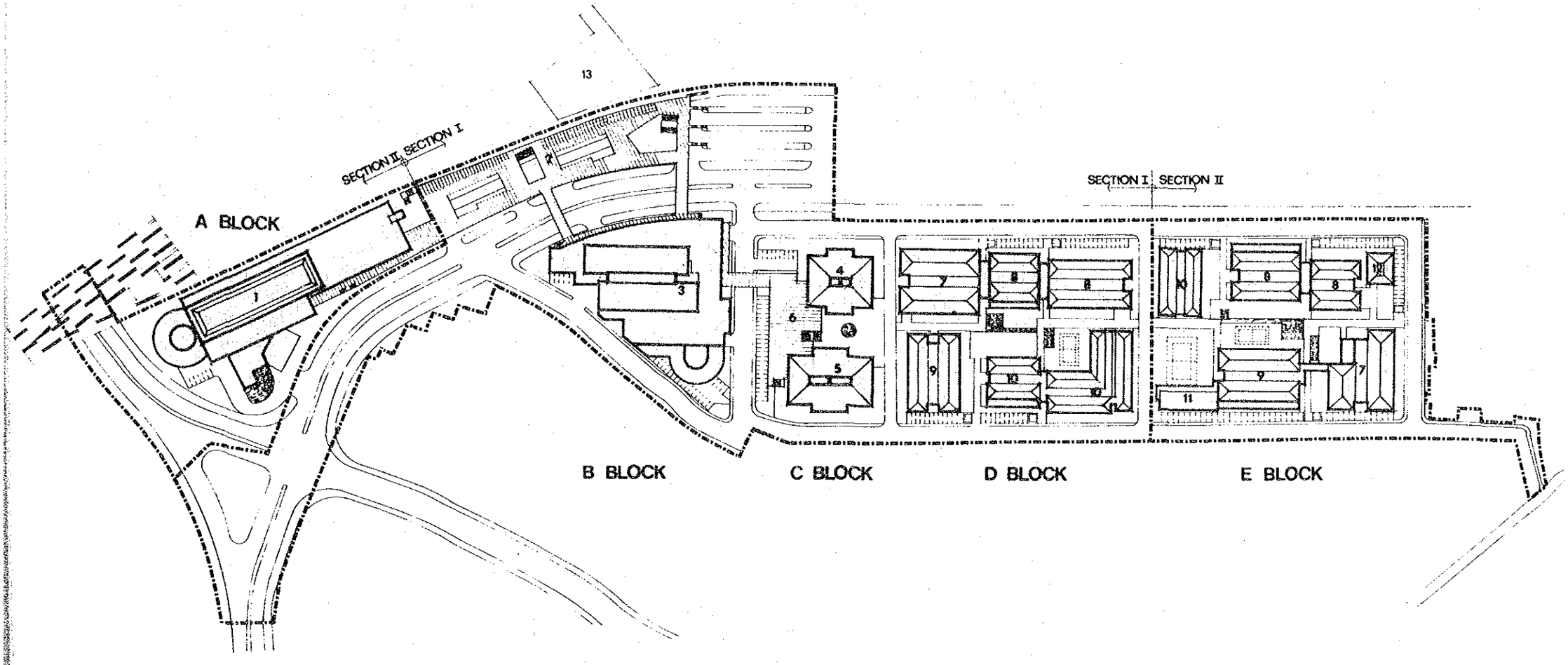
– Parking spaces for flats

Due to densely populated flats, parking spaces for flats cannot follow the DKI's standard *1. But here in Manggarai, as the railway and the bus terminal will develop shortly and most of the people belong to low-income families, car generation is considered small. 160 car parking spaces for flats are designed instead of 362 cars required according to the DKI standard.

---

*1 *Number of parking lot*

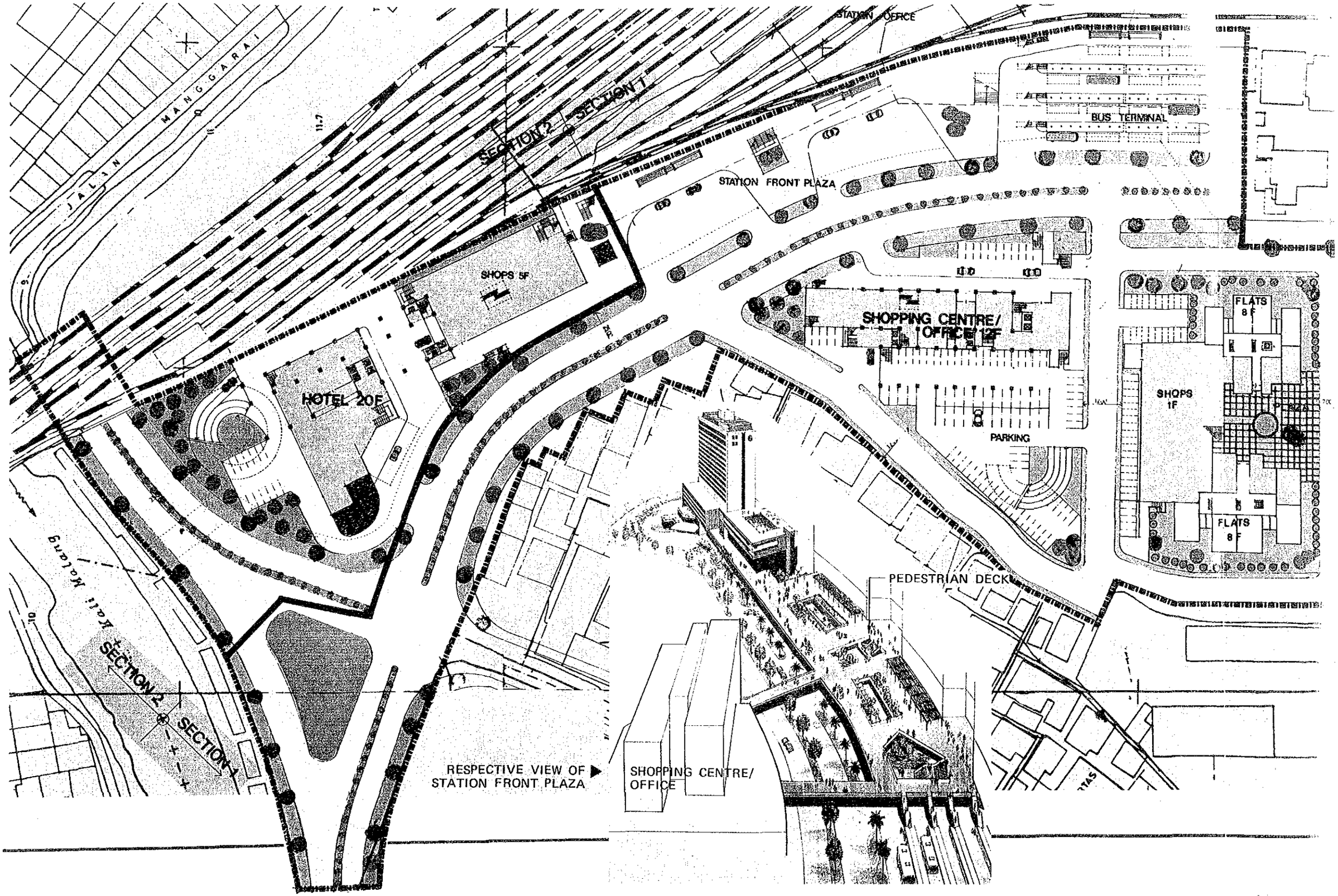
Shop floor area/60 m^2
Business floor area/100 m^2
Housing $< 70\ m^2$ 1 car /5 units
$70 \quad 90\ m^2$ 1 car/2 units
$> 90\ m^2$



1 HOTEL 20F
2 PEDESTRIAN DECK
3 SHOPPING CENTRE/ OFFICE 12F
4 FLATS 8F (F-70)
5 FLATS 8F (F-100)
6 SHOPS 1F
7 FLATS 8F (F-54)
8 FLATS 8F (F-25)
9 FLATS 8F (F-36)
10 FLATS 5F (F-21)
11 SCHOOL 4F
12 LIBRARY 3F
13 STATION OFFICE

0 20 40 100M

Fig. 5-10 BUILDING LAYOUT PLAN – MANGGARAI


JALAN MANGGARAI
STATION OFFICE
SECTION 2
SECTION 1
BUS TERMINAL
STATION FRONT PLAZA
SHOPS 5F
SHOPPING CENTRE/
OFFICE 12F
FLATS
8F
HOTEL 20F
SHOPS
1F
PARKING
FLATS
8F
PEDESTRIAN DECK
Kali Malang
SECTION 2
SECTION 1
RESPECTIVE VIEW OF
STATION FRONT PLAZA
SHOPPING CENTRE/
OFFICE

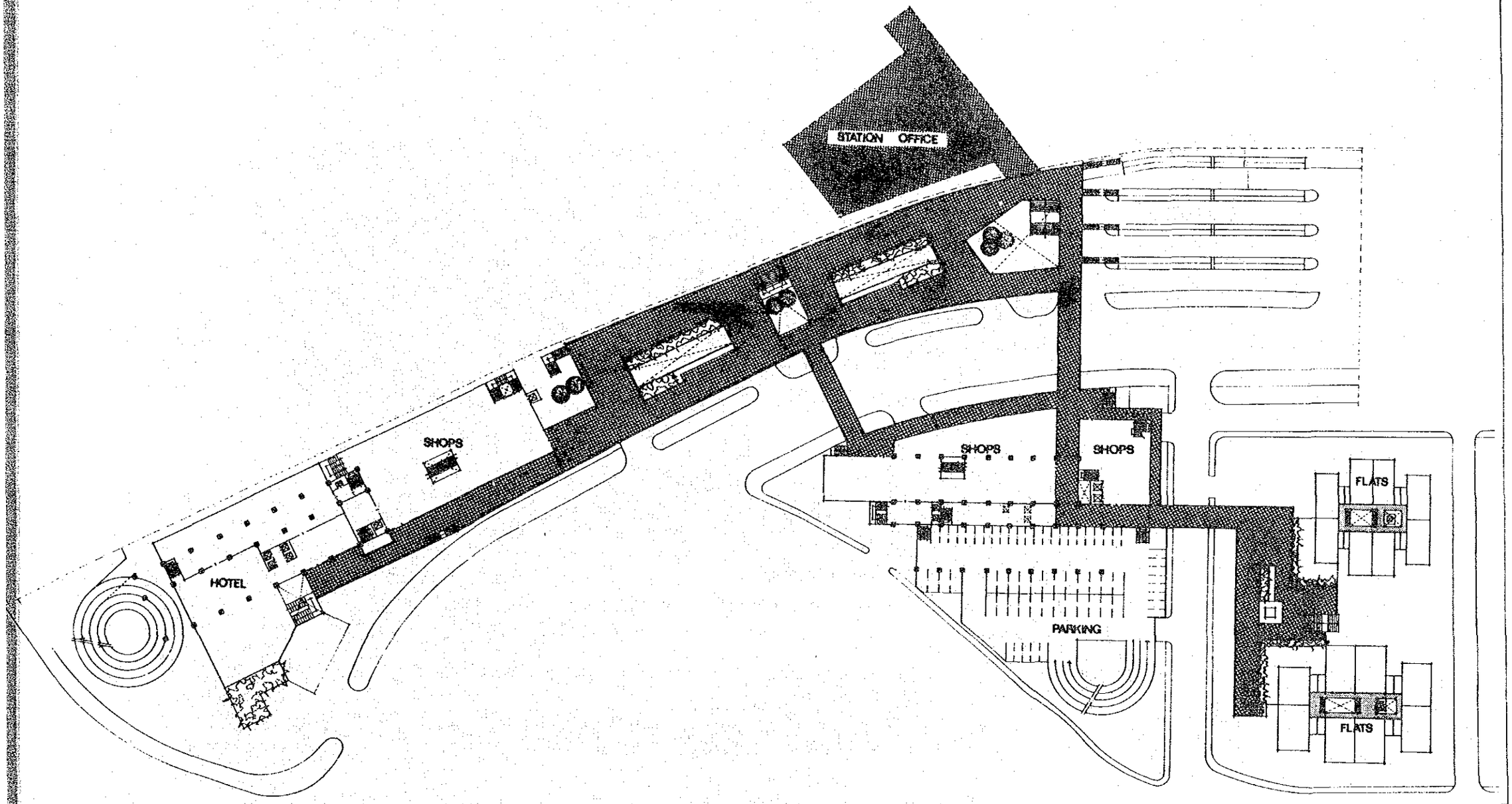
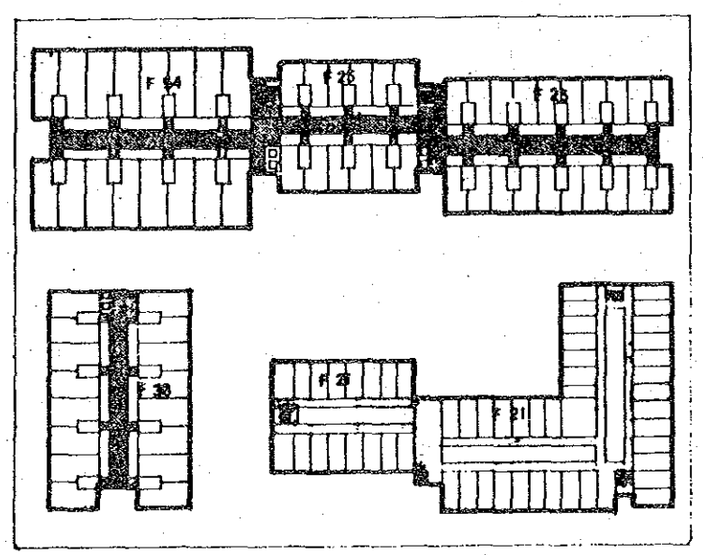
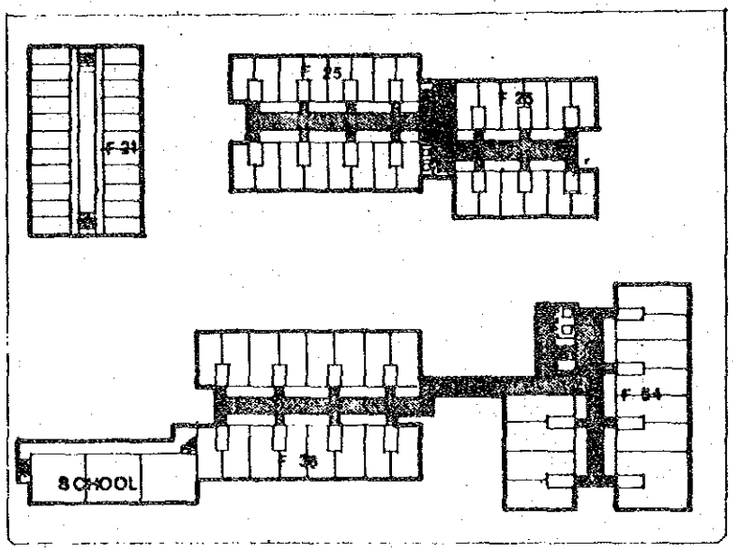


Fig. 5–12 2F PLAN OF A.B.C. BLOCK – MANGGARAI



D BLOCK



E BLOCK

Open Gallery

0 10 20 50M

Fig. 5–13 4F PLAN OF D, E BLOCK – MANGGARAI

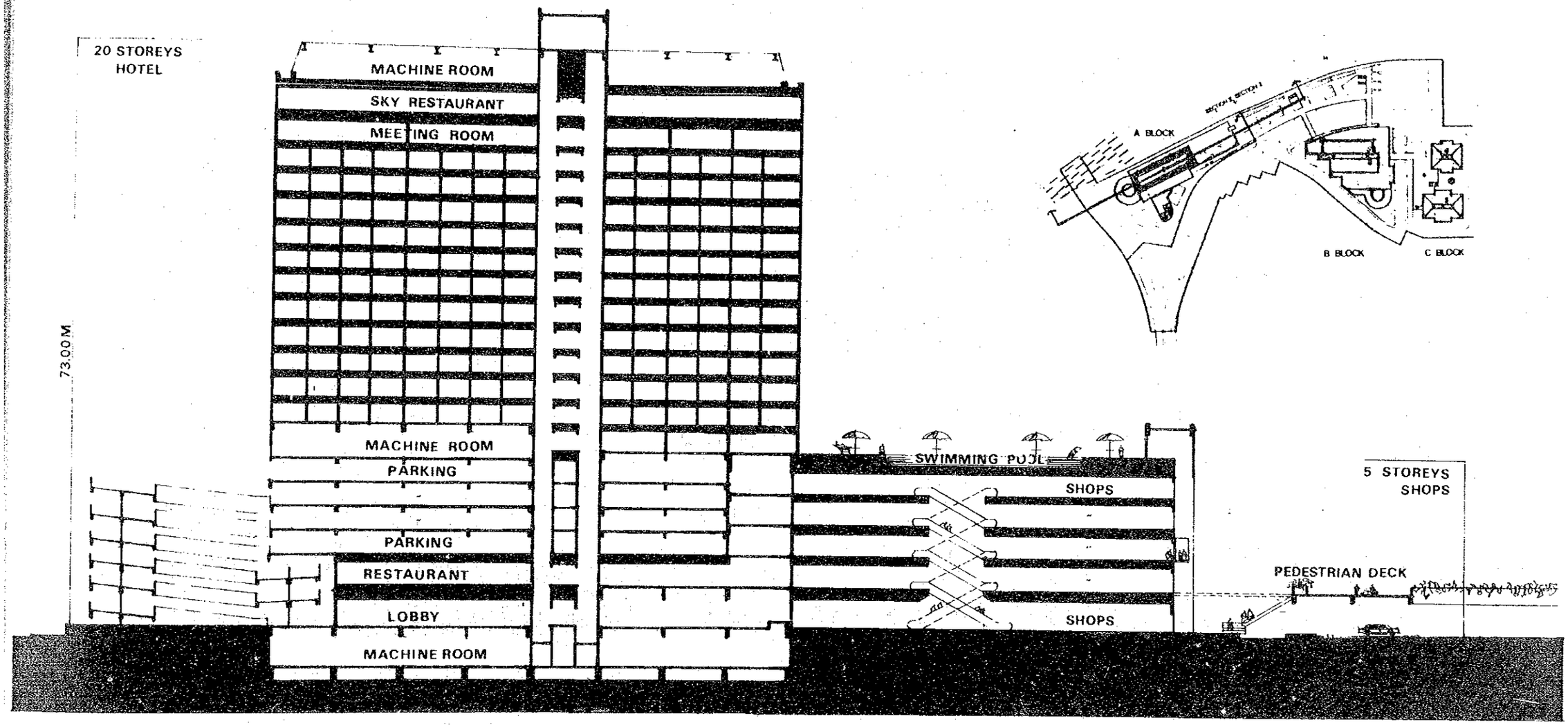
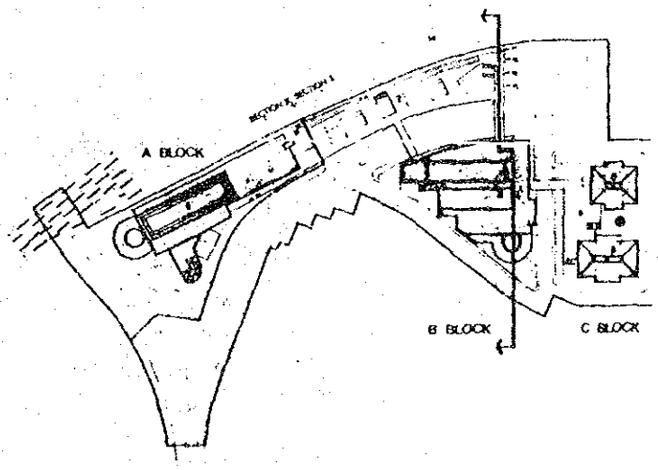


Fig. 5–14 SECTION OF BLOCK A – MANGGARAI



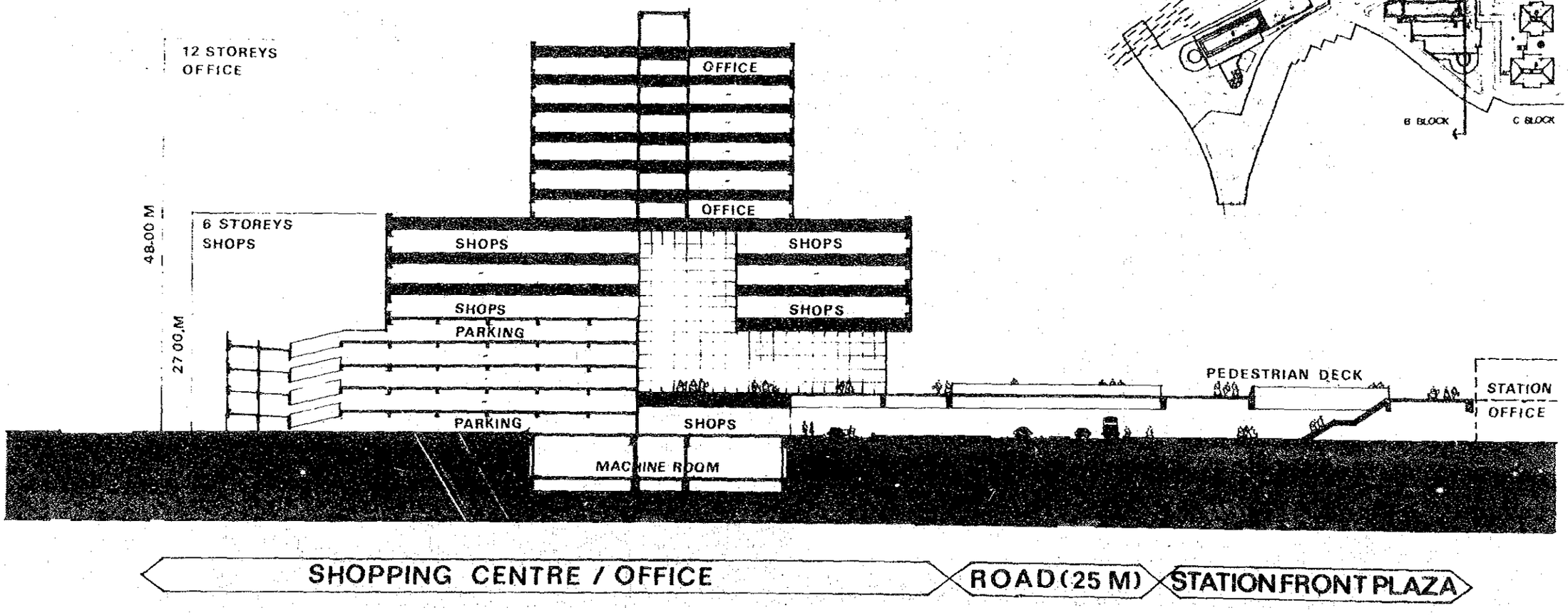


Fig. 5–15 SECTION OF BLOCK B – MANGGARAI

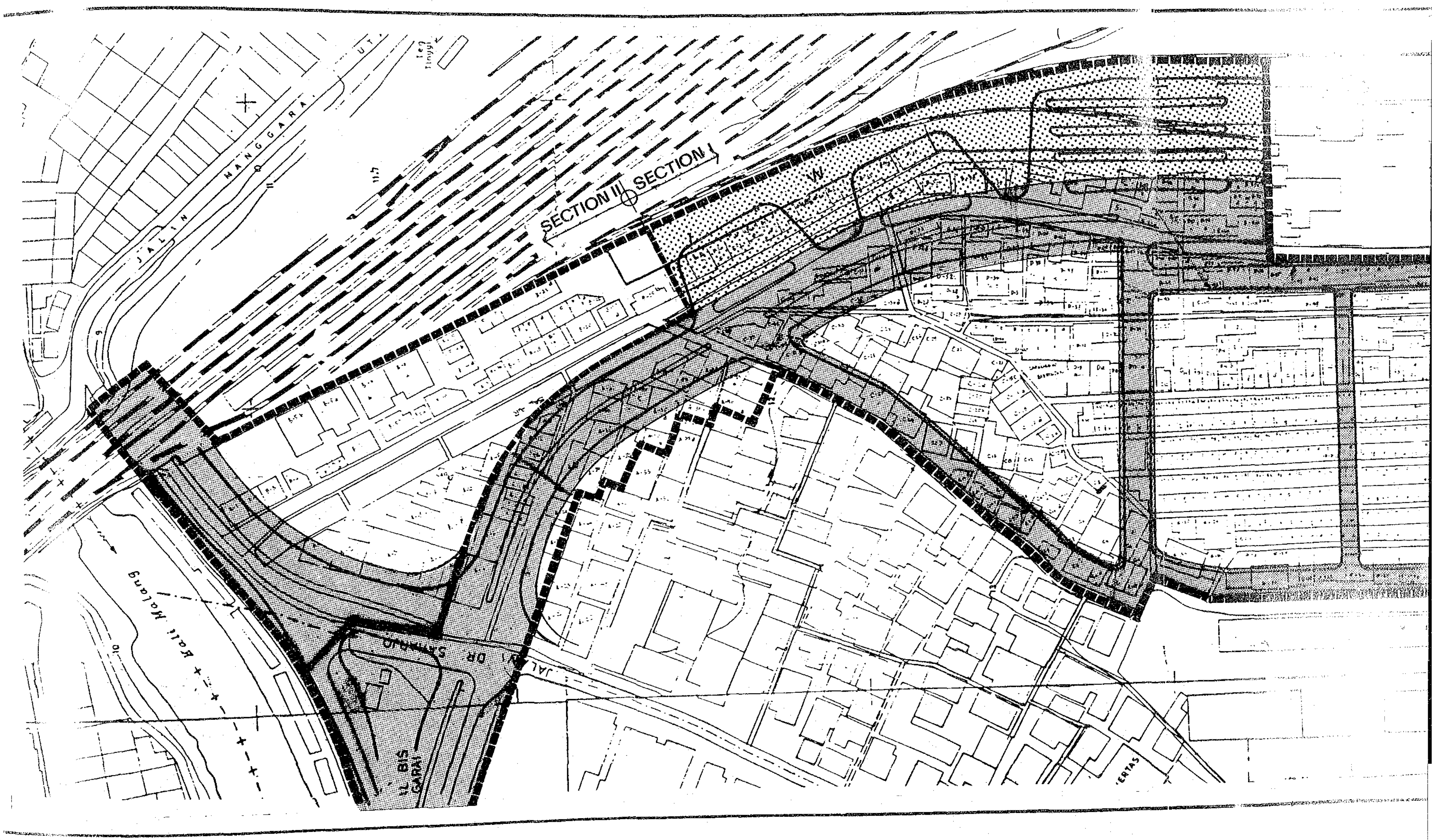
5.3.3 Land and Floor Use (Ref. Fig. 5–17)

Land and floor use both before renewal and after renewal is shown on the comparative Table 5–16.

Table 5–16 COMPARISON OF BEFORE AND AFTER RENEWAL

			Section I				Section II				Total				Remarks
			Before Renewal		After Renewal		Before Renewal		After Renewal		Before Renewal		After Renewal		
Land area	Public Use	Major road	1,800	3.6%	12,300	24.6%	1,300	5.1%	3,400	13.3%	3,100	4.1%	15,700	20.8%	
		Neighbourhood road	5,400	10.8%	7,600	15.2%	2,900	11.3%	4,300	16.8%	8,300	11.0%	11,910	15.7%	
		Station front plaza	Bus terminal 1,800	3.6%	6,900	13.0%	0		0		1,800	2.4%	6,900	9.1%	
		River	1,600	3.2%	0		1,400	5.5%	0		3,000	4.0%	0	0	
		Others	0	0	0		500	1.9%	0		500	0.7%	0	0	
		Sub-total	10,600	21.2%	26,800	53.5%	6,100	23.8%	7,700	30.1%	16,700	22.1%	34,500	45.6%	
	Building lot area		39,450	78.8%	23,250	46.4%	19,500	76.2%	17,900	69.9%	58,950	77.9%	41,150	54.4%	include community facilities
	Project area		50,050	100%	50,050	100%	25,600	100%	25,600	100%	75,650	100%	75,650	100%	
Floor Area	House		31,900		40,610		12,090		21,650		43,990		62,260		
	Shop		1,000		14,740		1,300		7,900		2,300		22,640		
	Office		0		13,000		0		0		0		13,000		
	Hotel		0		0		0		23,530		0		23,530		
	Workshop		4,100		0		200		0		4,300		0		
	Car park		0		10,450		0		11,330		0		21,780		
	Community facilities		400		570		500		2,640		900		3,210		
	Total		37,400		79,370		14,090		67,050		51,490		146,420		
Floor area ratio			95%		296 %		72%		311%		87%		302%		without car parking area
Coverage ratio			75%		49 %		65%		49%		70%		49%		

Note: Floor area of the after renewal indicates the area of total floors and includes the communal areas of the floors.



SECTION II
SECTION I
JALAN MANGGARA UT.
Kali Malang
JL. BIS GARAI

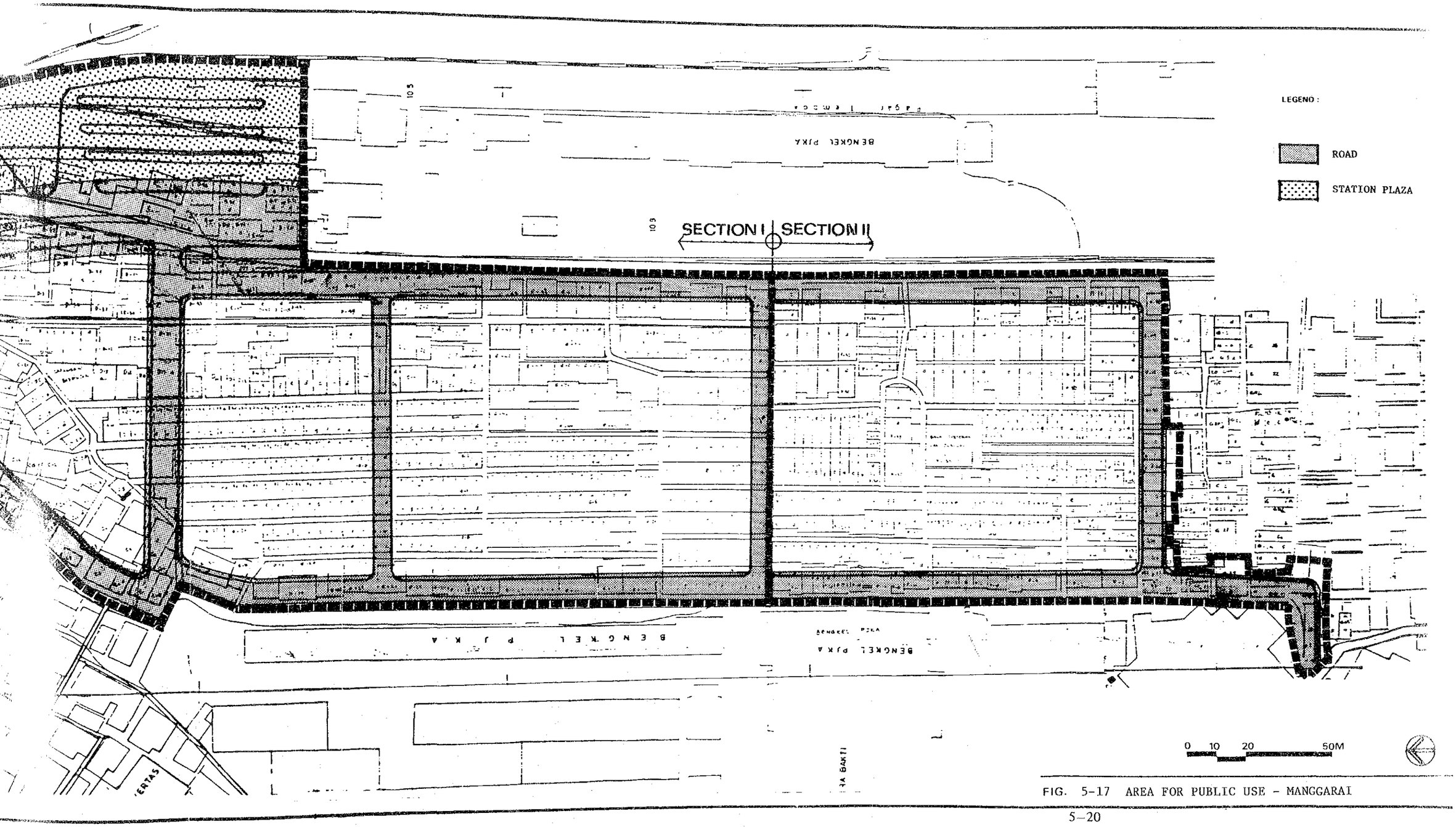


FIG. 5-17 AREA FOR PUBLIC USE - MANGGARAI

As shown in Table 5–16 the urban renewal design has the following principal advantages.

Increase of Public Land Use

Before renewal, the area for public use is 16,700 sq.m. and it will increase to 34,500 sq.m. after renewal.

Increase in Road Area

The percentage of land utilized for road areas will increase, from 15% to 35%.

Rearrangement of Building Lot Area

Before renewal:
Building lot area – 59,000 sq.m (78%)
After renewal:
Building lot area – 41,200 sq.m (54%)

Applying the high-rise flats in the urban renewal design, the building lots can be reduced and the remaining area can be used for the commercial and business development.

Increase in Housing Floor Area

Total floor area for housing (after renewal) : 62,000 sq.m. and its private-use floor area (after renewal) : 49,600 sq.m. The latter figure is larger than the existing one before renewal.

Development of Commercial and Business Facilities

By the urban renewal project, new shopping centres, business offices and a hotel will be constructed and they will improve the city function, creating a desirable urban environment.

Increase of Floor Area Ratio

Floor area ratio (before renewal) : 70%
Floor area ratio (after renewal) : 300%

By increasing the floor area ratio, the land is used more effectively.

5.4 PRELIMINARY PUBLIC FACILITY DESIGN

5.4.1 Road Network

Existing Road Network and Its Problems

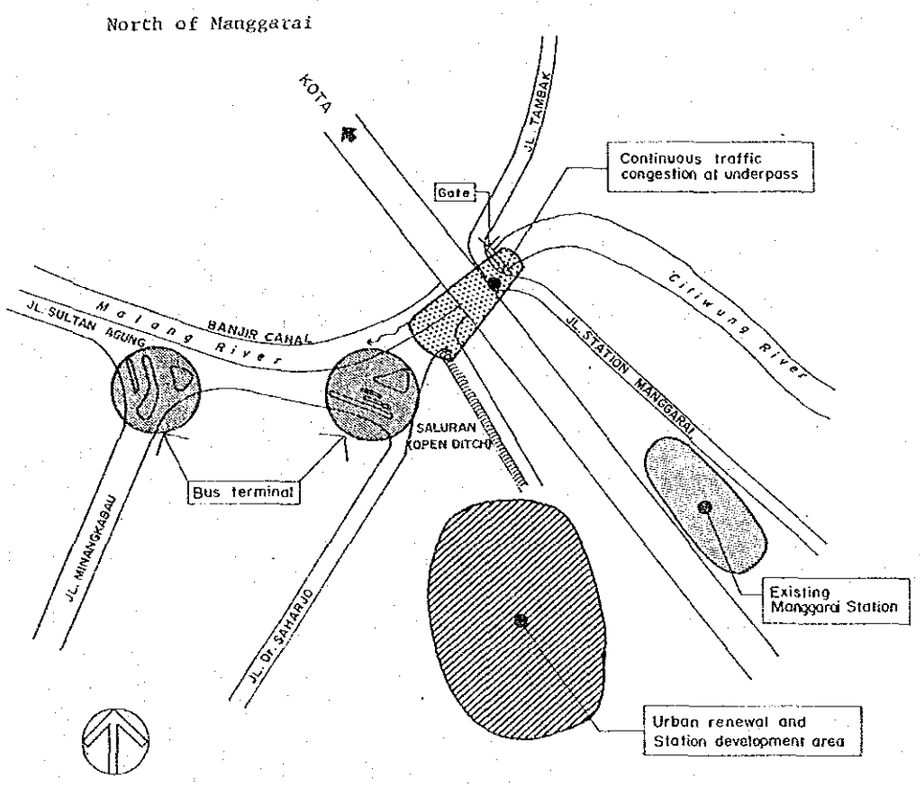


Fig. 5–18 EXISTING ROAD NETWORK (NORTH OF MANGGARAI)

As shown on Fig. 5–18, the major roads which connect the study area to other areas are located in the north of Manggarai. The biggest and the busiest road is Jl. Sultan Agung and there are two bus terminals serving for local transportation. The traffic volume is 4,000 pcus/hours, both in morning/evening peak hour (1982). The volume itself is not large, but there always exists a big traffic jam in the morning and in the evening in th e underpass area.

The reasons why the vehicles cannot smoothly pass through the underpass are:

– the existing underpass has a clearance of only 6 m in width and 3 m in height (two way carriage way), and furthermore,

– after the underpass, the road sharply bends at 90 degrees (Jl. Tambak) due to crossing the Banjir Canal along the top of the flood control gate.

As the main traffic flow is disturbed by the above two obstacles, more than half of the traffic use Jl. Sultan Agung and Jl. Minangkabau instead of the underpass. When the underpass will be widened and will have more clearance (height), the traffic congestion will be eased significantly.

Improvement of the Underpass

It is proposed to widen the underpass up to 17 m, increase the height up to 3.5 m, and connect the underpass and Jalan Tambak with a new bridge. (Fig. 5–19)

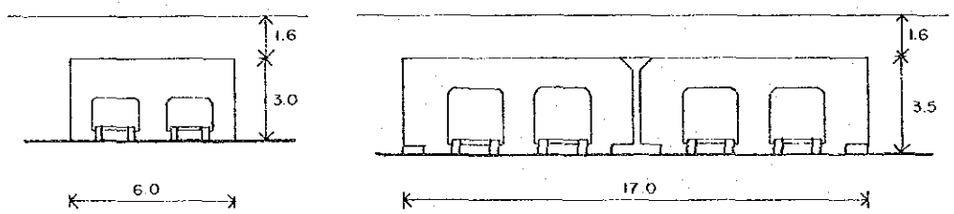


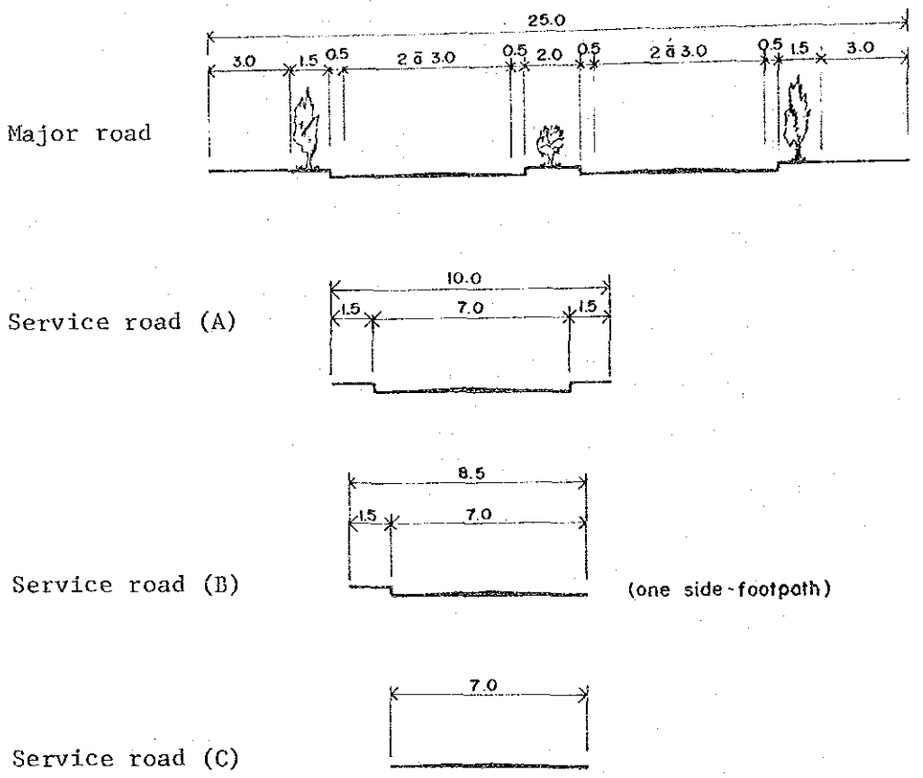
Fig. 5–19 EXISTING AND PROPOSED UNDERPASS

The plan and the sections are shown on the Fig. 5–20, 21 and 22. The underpass is so close to the Banjir Canal, that the clearance of 3.5 m is considered maximum even when minimum radii of vertical and horizontal curves are applied to the highway design.

Jalan Station Manggarai which runs in front of the existing Manggarai station will be connected to Jl. Tambak near the present intersection with a signal control.

Service Roads in the Project Site

For the service of the project site, four types of roads are proposed. The typical sections are shown below.



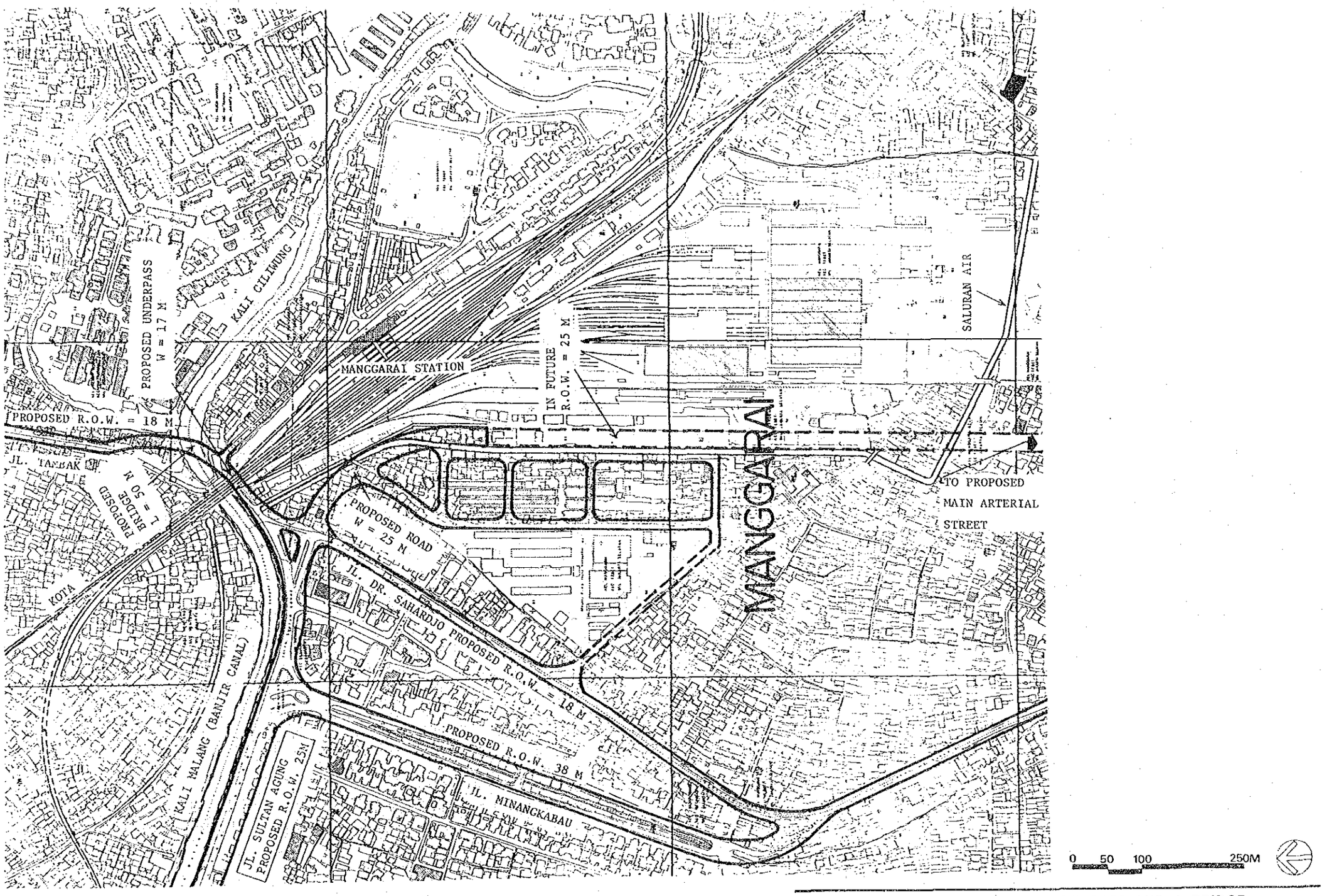


Fig. 5–20 PROPOSED ROADS' UNDERPASS AND A BRIDGE IN MANGGARAI

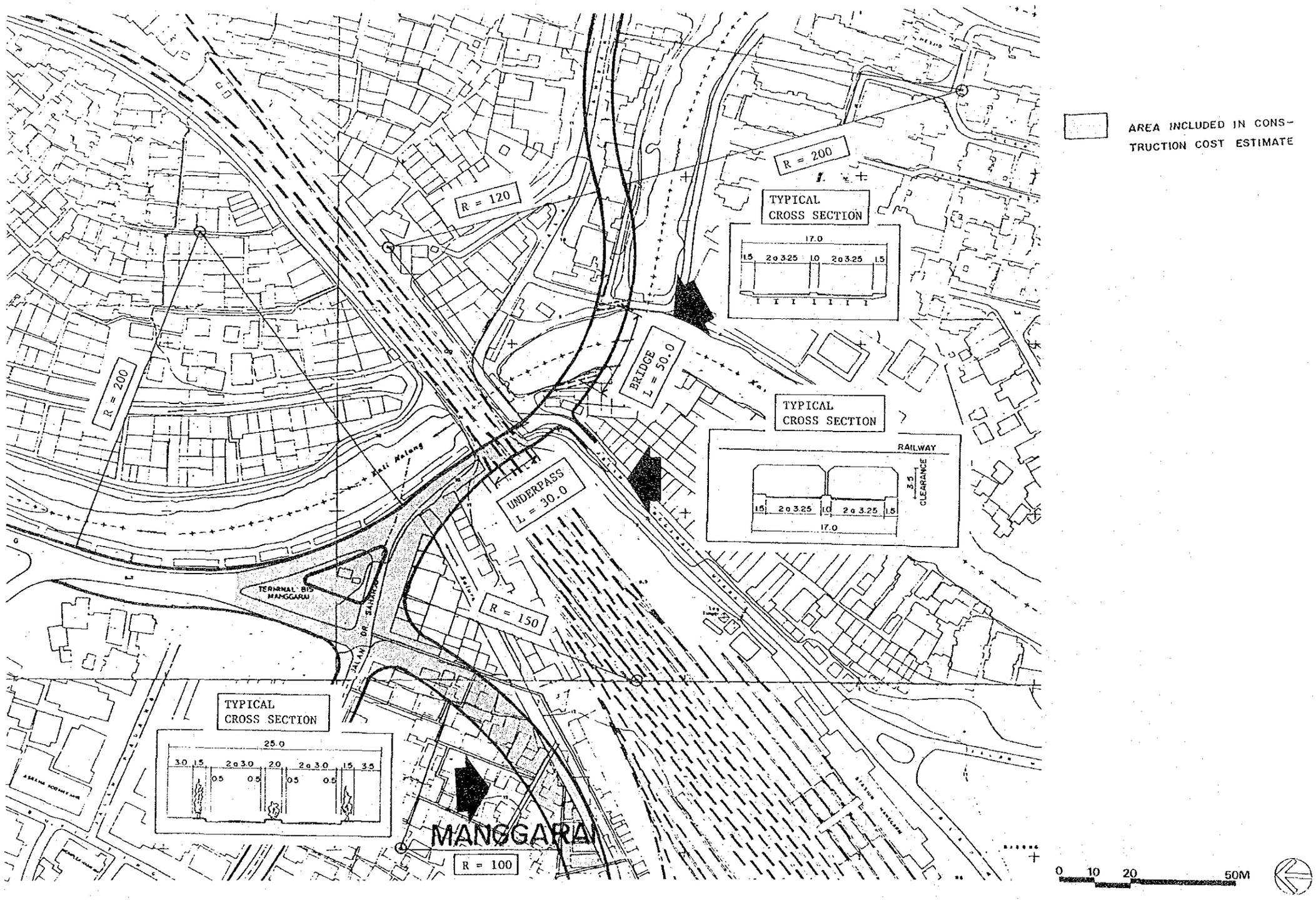
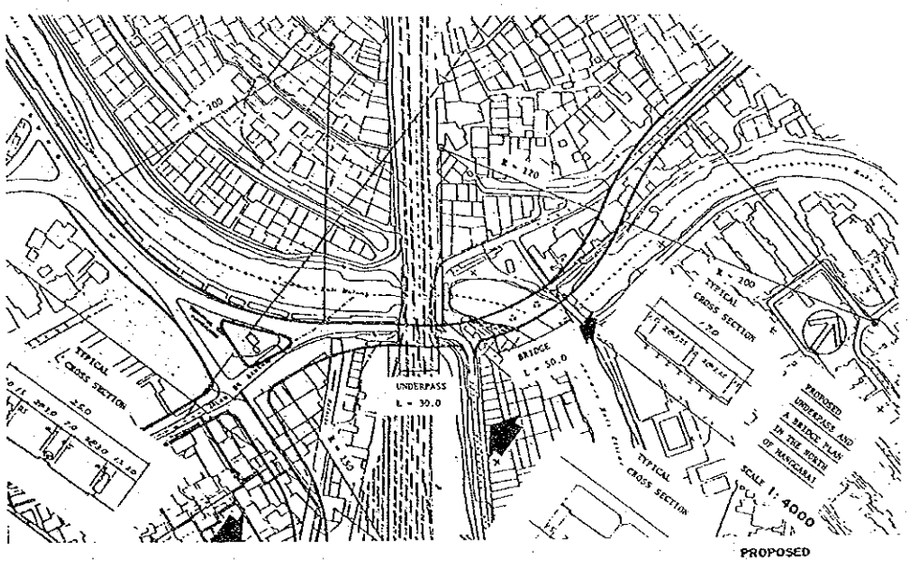
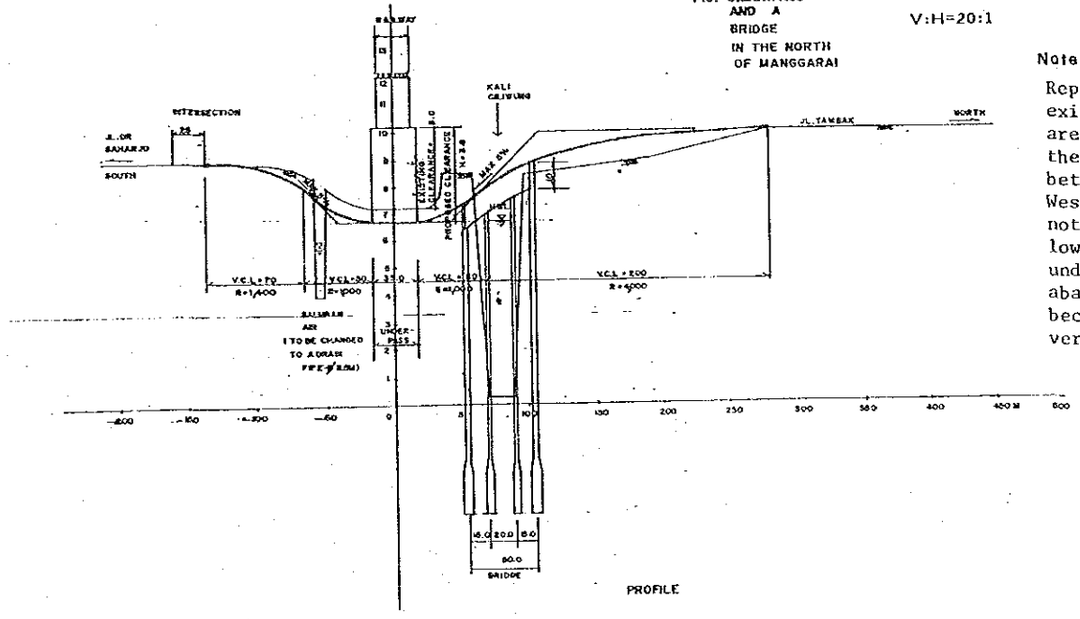


Fig. 5–21 PROPOSED UNDERPASS & BRIDGE PLAN IN THE NORTH OF MANGGARAI



PROPOSED
FIG. UNDERPASS
AND A
BRIDGE
IN THE NORTH
OF MANGGARAI

V:H=20:1



PROFILE

Note:

Reportedly, changes of the existing railway elevations are examined in relation to the grade-separation between the Central and Western lines. It must be noted that any changes that lower the elevations at the underpass may results in the abandonment of this plan because of insufficient vertical clearance.

Fig. 5–22 PROPOSED BRIDGE AND UNDERPASS (MANGGARAI)

Analysis of Road Capacities

(1) 25 m Road (Major Road)

Using the number of railway passengers, generated traffic is estimated and compared with the capacity of the road according to the following flow chart. (Fig. 5–23)

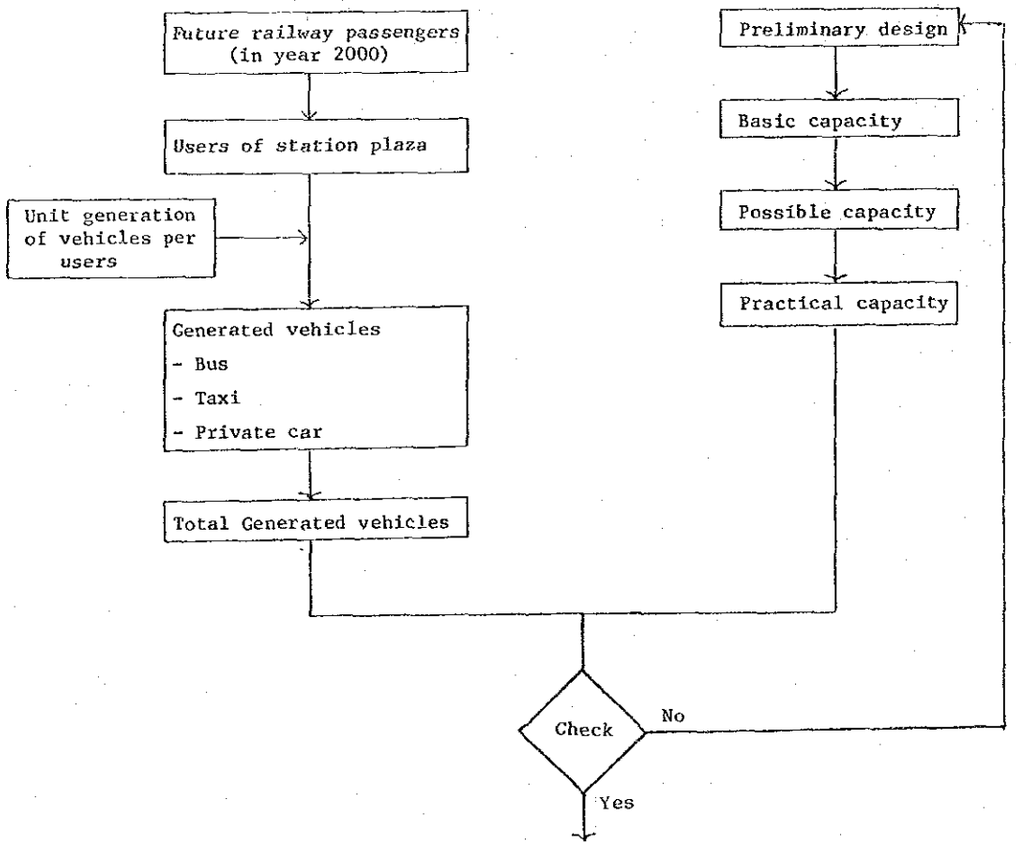


Fig. 5–23 FLOW CHART OF ROAD CAPACITY ANALYSIS

Vehicle Generation at Manggarai Station

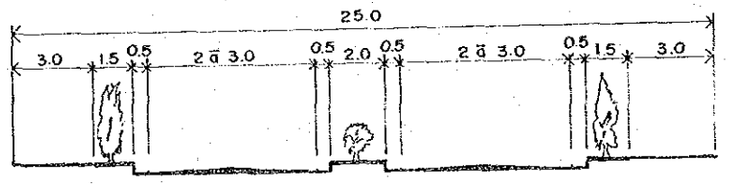
Future Railway Passengers	100,000 persons/day (in year 2000)
Users of Station Plaza (passenger x 1.5)	150,000 persons/day

Vehicle generation

Bus	0.07 cars/person
Taxi	0.03
Private cars	0.10
Total	0.20 cars/person

Number of vehicles: 0.20 x 150,000 = 30,000 cars/day.

– Basic capacity : Cb = 2,500 cars/hr./lane
Design speed 40 km/hr.



– Possible capacity

· Reduction of lane width
lane width: 3.00 m Reduction factor: Fl = 0.85

· Reduction of lateral clearance
lateral clearance: 0.5 m, Reduction factor: Fc = 0.81

· Proportion of heavy vehicles
proportion: Pt = 40%, Conversion factor for heavy vehicles: Et = 1.7

$$Ft = \frac{100}{100 - Pt + Et \times Pt}$$

$$= \frac{100}{100 - 40 + 1.7 \times 40}$$

$$= 0.79$$ Ft = 0.79

· Roadside condition
Urbanized, Fi = 0.8 Fi = 0.8

· Possible capacity

Cp = Cb x Fl x Fc x Ft x Fi
= 2500 x 0.85 x 0.81 x 0.79 x 0.8
= 1,100 cars/hr./lane

– Practical capacity

Level of service : D (in American standard 10 hrs in a year during the traffic jam anticipated)

Thus, V/c : Volume to capacity ratio : 0.90

Design capacity : Cd

Cd = 1,100 x 0.9
= 1,000 cars/hr./lane

Practical capacity

$$Cp = \frac{N \times Cd}{K/100 \times D/50} = \frac{5{,}000\ N}{K \times D} \cdot Cd$$

where Cp = Practical capacity (cars/day)
N = Number of lanes = 4
Cd = Design capacity (cars/hours/lane) = 1,000
K = Peak hour ratio = 10%
D = Split between directions of travel = 60%

$$Cp = \frac{5{,}000 \times 4}{10 \times 60} \times 1{,}000$$

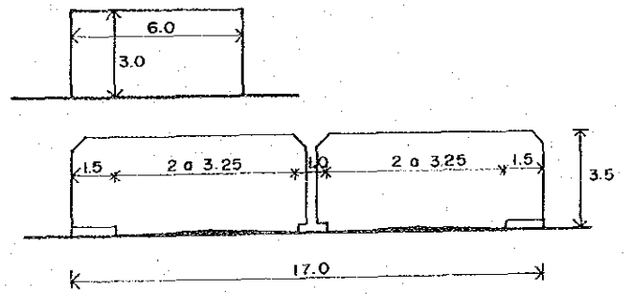
= 33,000 (cars/day0

As generated vehicles are 30,000 cars/day in year 2000, 25 m road is enough and considered as a minimum requirement.

Underpass at Manggarai

Existing

Proposed



– Basic capacity Cb = 2,500 cars/hr./lane
Design speed 60 km/hr.

· Reduction by lane width

Lane width 3.25 m
Reduction factor: Fl = 0.94

· Reduction by lateral clearance

Lateral clearance : 0.25 m
Reduction factor : Fc = 0.90

· Proportion of heavy vehicles (trucks and buses)

Proportion : 40%

$$Ft = \frac{100}{100 - Pt + Et \times Pt}$$

Where
Ft = Adjustment factor by heavy vehicles
Pt = Proportion of heavy vehicles = 40%
Et = Conversion factor of heavy vehicle to personal cars = 1.7

$$Ft = \frac{100}{100 - 40 + 1.7 \times 40}$$

$$= \frac{100}{127} = 0.79 \qquad Ft = 0.79$$

· Roadside condition

Urbanized Fi = 0.8

– Possible capacity

Cp = Cb x Fl x Fc x Ft x Fi
= 2,500 x 0.94 x 0.90 x 0.79 x 0.8
= 1,340 cars/hr./lane

– Practical capacity : Cp

Level of Service : D
V/c : Volume to capacity ratio : 0.90

Design capacity : Cd

Cd = 1,340 x 0.9
= 1,200 cars/hr./lane

Peak hour ratio : K = 10%
60%/40% split between directions of travel in peak hours : D = 60%
Number of lanes : N = 4

– Practical capacity : Cp

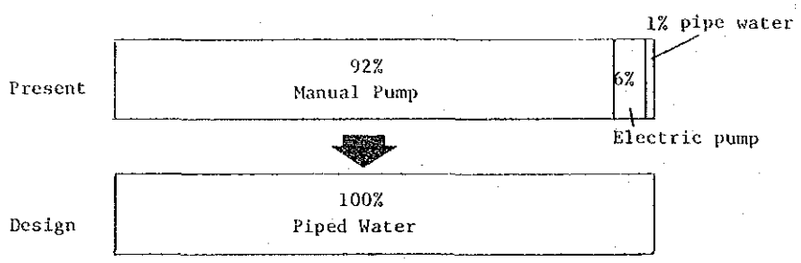
$$Cp = \frac{5{,}000\ N}{K \times D} \cdot Cd$$

$$= \frac{5{,}000 \times 4}{10 \times 60} \times 1{,}200$$

= 40,000 (cars/day)

5.4.2 Fresh Water

Design Criteria



Fresh Water Demand in 2000

– Daily fresh water demand (by estimate of ALPIN CONSULT, May 1982)

200 ℓ/person/day

– Population

9,000 persons

– Daily fresh water consumption by inhabitants

200 ℓ x 9,000 = 1,800 cu.m./day

– Commercial and business users' demand (Estimate).

Number of users: 10,000 persons

Fresh water demand per person (by JMPP Technical report No. T/23, 1980): 100 ℓ/person/day

Daily fresh water consumption : 100 ℓ x 10,000 = 1,000 cu.m./day

– Total demand

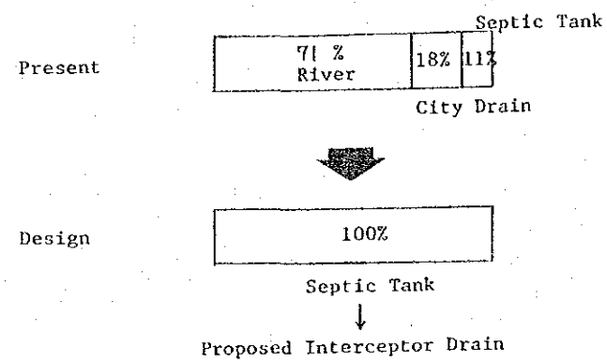
Inhabitants + Users = 1,800 + 1,000 = 2,800 cu.m./day

5.4.3 Sanitary Water

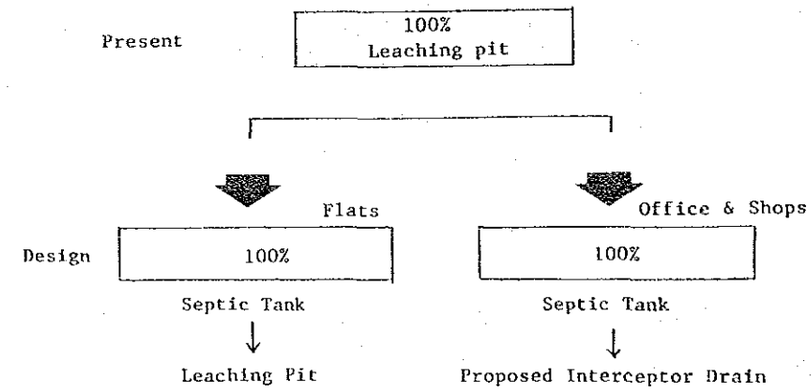
Design Criteria

An intercepter drain for sanitary water along Jl. Sultan Agung was proposed and designed by ALPIN CONSULT in February 1983. It is expected to be ready for the use of the project.

(1) Sanitary Water Drain



(2) Toilet System



Sanitary Water Output

(1) From Inhabitants

70% of fresh water will be drained into proposed intercepter drain system.

Output : 1,800 x 0.7 = 1,300 Cu.m./day

(2) From Office and Shops

100% of fresh water will be drained into proposed intercepter drain system.

Output : 1,000 Cu.m./day

(3) Total Output

(Inhabitants) + (Office and Shops)
= 1,300 + 1,000
= 2,300 Cu.m./day

Fig. 5–24 and Fig. 5–25 illustrate the proposed sanitary and storm water drainage system for Section I and for combined Sections I and II.

Fig. 5–26 and Fig. 5–27 shows the existing toilet system and the proposed system.

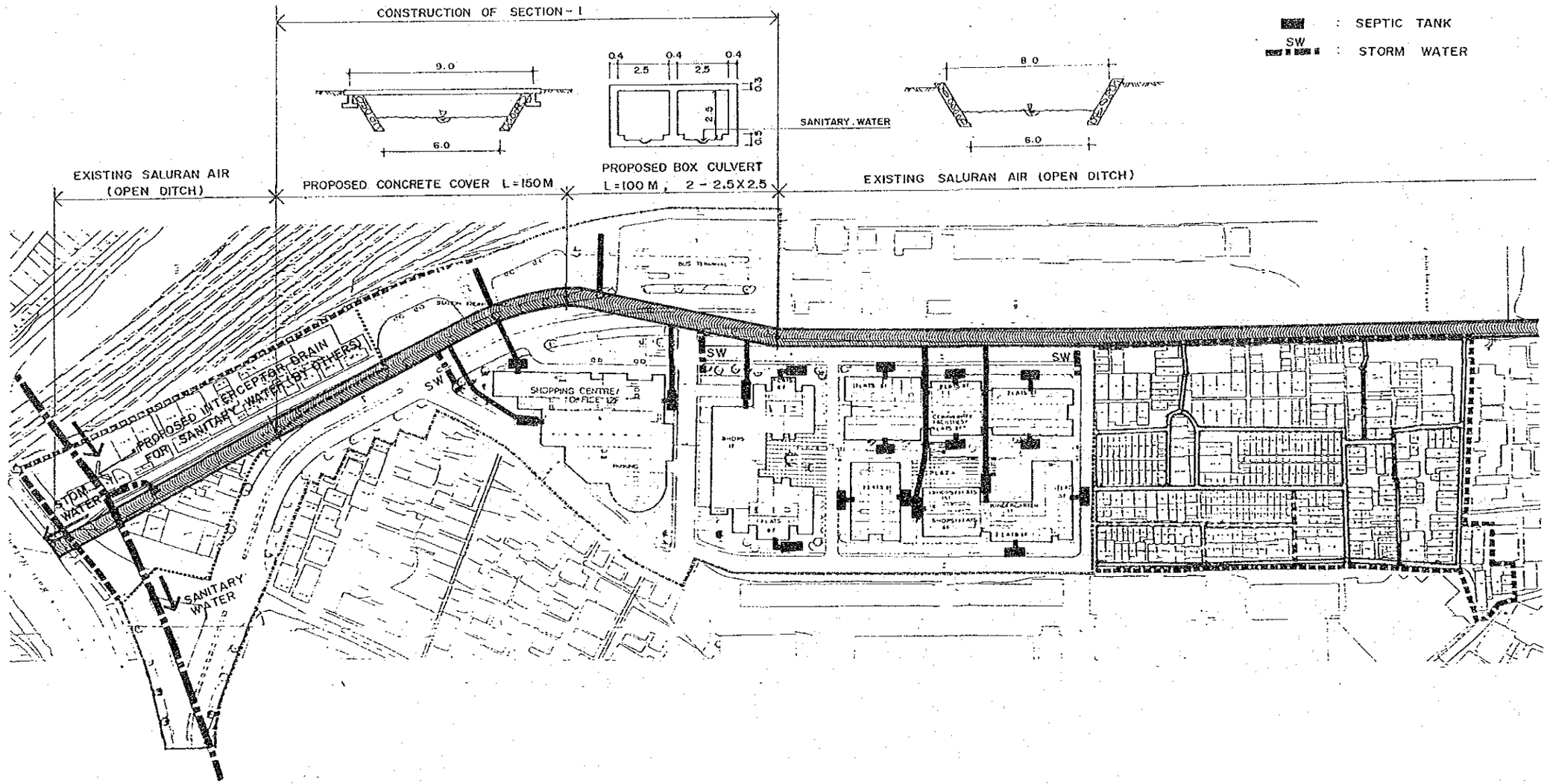


Fig. 5–24 PROPOSED SANITARY AND STORM WATER DRAINAGE (SECTION–I ONLY)

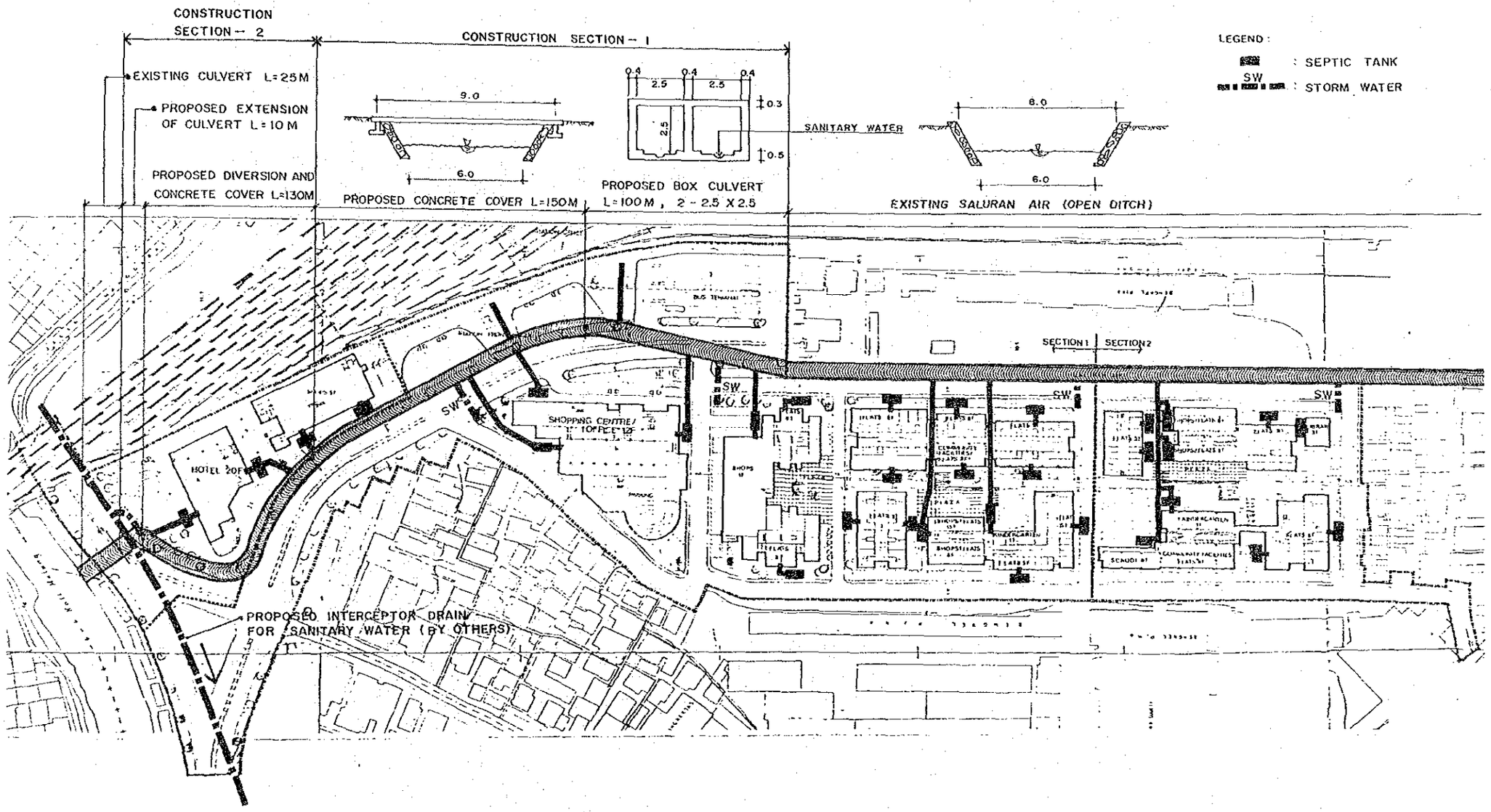
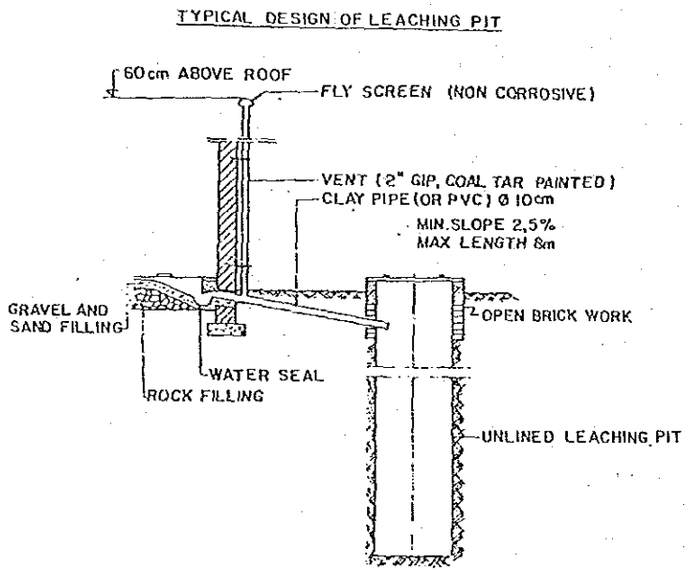
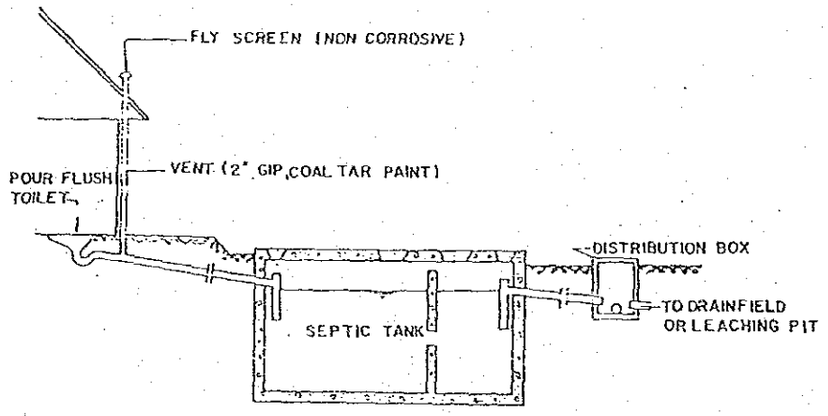


Fig. 5--25 PROPOSED SANITARY AND STORM WATER DRAINAGE (SECTION I AND II)



Source : ALPIN CONSULT MARCH 1983

Fig. 5–26 EXISTING TOILET SYSTEM



(NOT TO SCALE)

Source : ALPIN CONSULT MARCH 1983

Fig. 5–27 PROPOSED TOILET SYSTEM