

2.6 Microscopic Demand Forecast

2.6.1 Microscopic Demand Forecast

(1) Purpose of Demand Forecast

The purpose of demand forecasting is for the preparation of the long-term expansion plan and the short-term expansion plan.

(2) Objectives of Demand Forecast

Miscellaneous circuits such as telegram, telex, public telephone, etc. are included, besides the telephone, in the objectives of the demand forecast.

(3) Object Exchange Offices of Field Survey

The demand forecast was executed on the office service area of each telephone exchange office to be established in the future in the whole city of Jakarta. The boundary lines of these office service areas were determined in accordance with PERUMTEL's Five-Year Plan.

(4) Time of Field Surveys

Field surveys were conducted in January 1974 in regard to Gambir, Kebayoran, Jatinegara, Cawang, Pasar Rebo and Gandaria exchange offices.

The surveys on other exchange offices were carried out in November 1974.

(5) Object Years of Demand Forecast

The object years of the demand forecast for each telephone office are as follows:

- 1) For Gambir, Kebayoran and Jatinegara exchange offices, the years of 1979, 1982, 1992 and 1993.
- 2) For Cawang, Pasar Rebo and Gandaria exchange offices, the years of 1975, 1980, 1990 and 1993.
- 3) For the other exchange offices, the years of 1983 and 1993.

(6) Method of Demand Forecast

1) In making the demand forecast, field surveys were carried out for actual investigation of the entire area of Jakarta City. The judgement on the future area pattern of each area in 1993 was made by referring to the field survey results and the Master Plan for Jakarta prepared by D.K.I. including the land utilization plan, population density plan, factory placement plan, map on buildings situation, empty lot plan, green area plan, road plan, traffic volume data, etc.

The area pattern was classified into the office area, shopping area, industrial area, residential area, others and the no demand area.

2) The demand per unit area of each pattern was determined by referring to the actual conditions in the developed area in Jakarta with similar characteristics, actual results of the various developed countries, and the results of the questionnaire survey.

The demand as of 1993 of each telephone exchange office can be obtained by totalling the demand of each pattern within the office service area. That is, it can be calculated according to the following equation.

$$\text{Demand} = \sum_{i=1}^n (A_i \times D_i)$$

where A_i : Area size of each pattern

D_i : Demand density of each pattern

3) The present demand was calculated by referring to the number of subscriber lines and number of waiting applicants of the existing exchange offices, results of questionnaire survey, actual conditions in the existing office area, shopping area and residential area and the field surveys.

4) Assuming that the demand will increase by index curves, the demand for the interim fiscal years was obtained by plotting the present demand (1974) and the future demand (1993) on a single-sided logarithmic section paper and reading off the demand for each fiscal year on the straight line connecting these demand years.

5) The classification of area patterns and the demand density are shown in Table 2.6.1.(1).

6) Calculation Basis of Demand Density

(a) Shopping Area

According to the future pattern, the shopping area was classified into the three areas of high class (S-1), middle class (S-2) and the low class (S-3). The demand per hectare can be calculated in accordance with the number of shops per hectare and the ratio of demand per 100 shops. The number of shops per hectare and the average space occupied by one shop was presumed, as shown in the table below, with the developed area of Jakarta as the reference.

Item Classification	Number of shops per hectare	Average occupied area per one shop (m ²)
S - 1	60	165
S - 2	70	145
S - 3	80	125

The demand ratio per 100 shops was presumed by referring to the results of the interview survey and the data of the different foreign countries, as follows:

TABLE 2-6-1-(I) AREA PATTERN

Area	Area Pattern	Demand Per hectare		Applied area
		Standard	Range	
Shopping Area	S - 1	100	80 - 140	High class shopping area, wholesale store for example: Pasar Baru
	S - 2	60	50 - 80	Middle class shopping area, shopping centre in building, for example: Ps. Blok-M Keb. Baru
	S - 3	40	30 - 50	Low class shopping area, small shopping area, also there are many goods for living.
Office Area	O - 1	100	70 - 130	Office area where buildings are more than four floors, for example: Jl. Thamrin.
	O - 2	50	40 - 70	Office area where buildings are less than four floors, residence used for business for example: Jl. Imam Bonjol.
Residential Area	R - 1	20	15 - 25	High class residential area where average site is about 500 square meter per house, for example: Menteng Area, most of Kebayoran Baru Area.
	R - 2	20	15 - 30	Middle class residential area where average site is about 350 square meter per house.
	R - 3	7	5 - 15	Low class residential area where average site is about 150 square meter per house.
Industrial Area	I - 1	5	5 - 10	Large warehousing, large industrial area, for example: Tanjung Priok (Pertamina).
	I - 2	10	10 - 15	Medium and small industrial area, for example: Pluit Area.
Agricultural Area		1		Including green area.
Others				Hospital, Airport, Zoo, Sport center, Hall, Police Office, Army building.
Non demand Area				Port, Park, Pond, cemetery.

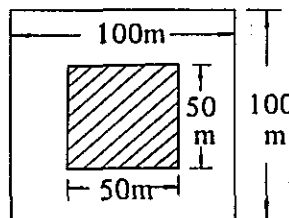
- S-1.....150 Demand/100 shops
- S-2..... 90 Demand/100 shops
- S-3..... 50 Demand/100 shops

From the above, the demand ratio per hectare was determined respectively as under.

- S-1.....100 Demand/hectare
- S-2..... 60 Demand/hectare
- S-3..... 40 Demand/hectare

(b) Office Area

The office area was classified into the two areas, i.e., (O-1): an average of five-storey building will be constructed in the future, and (O-2): an average of two-storey buildings will be constructed in the future. It was assumed that the average of five-storey buildings will be constructed on sites of 1 hectare in the (O-1) area with a scope of 50 m length and 50 m width, as shown in the following figure.



In this case, the total floor space of the building will be 12,500 m² (50 m x 50 m x 5 storeys). The building will have, besides the office rooms, large spaces for conference rooms, guest rooms, toilets, storerooms, etc. In consideration of these spaces, it was assumed that 25 m² will be allocated to one office worker. Consequently, the five-storey building described above will be able to accommodate 500 office workers. Assuming that one telephone line will be required for five office workers in the future, a demand of 100 lines will take place in 1 hectare of the (O-1) area. Regarding the (O-2) area, since the two-storey building will be constructed on a site of 1 hectare with a foundation of 50 m length and 50 m width, and if a space of 20 m² will be assigned to one office worker, the demand per hectare will be 50.

(c) Residential Area

The residential area was divided into the three areas of high class (R-1), middle class (R-2) and low class (R-3) according to the pattern in the future. The average site space per house and the number of houses per hectare of

each class were assumed as shown in the following table.

Item Classi- fication	Average occupied area per one house (m ²)	Number of houses per hectare (houses/ha)
R - 1	500	20
R - 2	350	29
R - 3	150	67

In regard to the demand per 100 houses, assumption was made according to the data of the various developed countries and the result of the interview survey, as shown in the table below.

Item Classi- fication	Demand rate per 100 houses in 1993 (Demand/100 houses)	Demand rate per 100 houses in 1974 (Demand/100 houses)
R - 1	100	75
R - 2	70	35
R - 3	10	2

In view of the foregoing, the demand per hectare will be as follows:

R-120 Demand/ha

R-220 Demand/ha

R-3 7 Demand/ha

(d) Industrial Area

The industrial area was classified into the two areas of large-scale industrial area (I-1) and middle and small scale industrial area (I-2). It was assumed that a large-scale factory will have a site of 2 hectares. According to the questionnaire survey result, one large-scale factory presently has 3.3 office lines, and desires a further 2.5 office lines in the future. This means that the demand per hectare will be 3. However, by referring to the data of the developed countries, the demand per hectare was estimated at 5. It was assumed that the average site of a middle and small scale factory is 0.5 hectare. From the result of the questionnaire survey, it was made clear that a medium and small scale factory presently holds about 2.5 office lines and further desires 1.4 office lines in the future. According to this result and the data of the developed countries, the demand per hectare of the (I-2) area as of 1993 was estimated at 10.

(7) Referential Data

- 1) D.K.I. Jakarta Master Plan
 - a) Diagram of Land Utilization Plan (Fig. 2.6.1.(2))
 - b) Diagram of Population Density Plan (Fig. 2.6.1.(3))
 - c) Diagram of Factory Placement Plan
 - d) Empty Lot Plan
 - e) Green Area Plan
 - f) Road Plan
- 2) Aerial photographs
- 3) Map of special areas of Jakarta City
- 4) Result of Interview Survey
- 5) World Telephones (ITU statistics)
- 6) Number of subscriber lines and waiting applicants list of each exchange office (Table 2.6.1.(4))

(8) Conclusion

- 1) Demand Forecast for Each Exchange Office
Table 2.6.1.(5) shows the telephone demand of each telephone exchange office from 1974 up to 1993.
- 2) Demand according to Area Pattern
The demand and area size classified by area pattern in each exchange office service area are shown in Table 2.6.1.(6).
- 3) The total telephone demand of 808,000 for Jakarta as of 1993 will be about 2.6 times the total demand of 122,640 as of 1975.
- 4) The total telephone demand and demand density of each exchange office as of 1993 is shown in Fig. 2.6.1.(7).
- 5) The population and population density as of 1973 and 1993 in each telephone exchange office are shown in Fig. 2.6.1.(8).



Fig. 2-6-1-(2)(3)

FUTURE EXCHANGE AREAS IN JAKARTA



JAWA SEA

-  PUBLIC BUILDING
-  MIXED BUILDING
-  HOUSING
-  INDUSTRY
-  GREEN
-  FISHERY
-  SEA. LAKE. RIVER
-  SPECIAL BUILDING
-  CATTLE BREEDING
-  ROAD



Fig. 2-6-1-(2)
 JAKARTA CITY LAND USE PLAN IN 1985



Fig. 2-6-1-(2).(3) FUTURE EXCHANGE AREAS IN JAKARTA

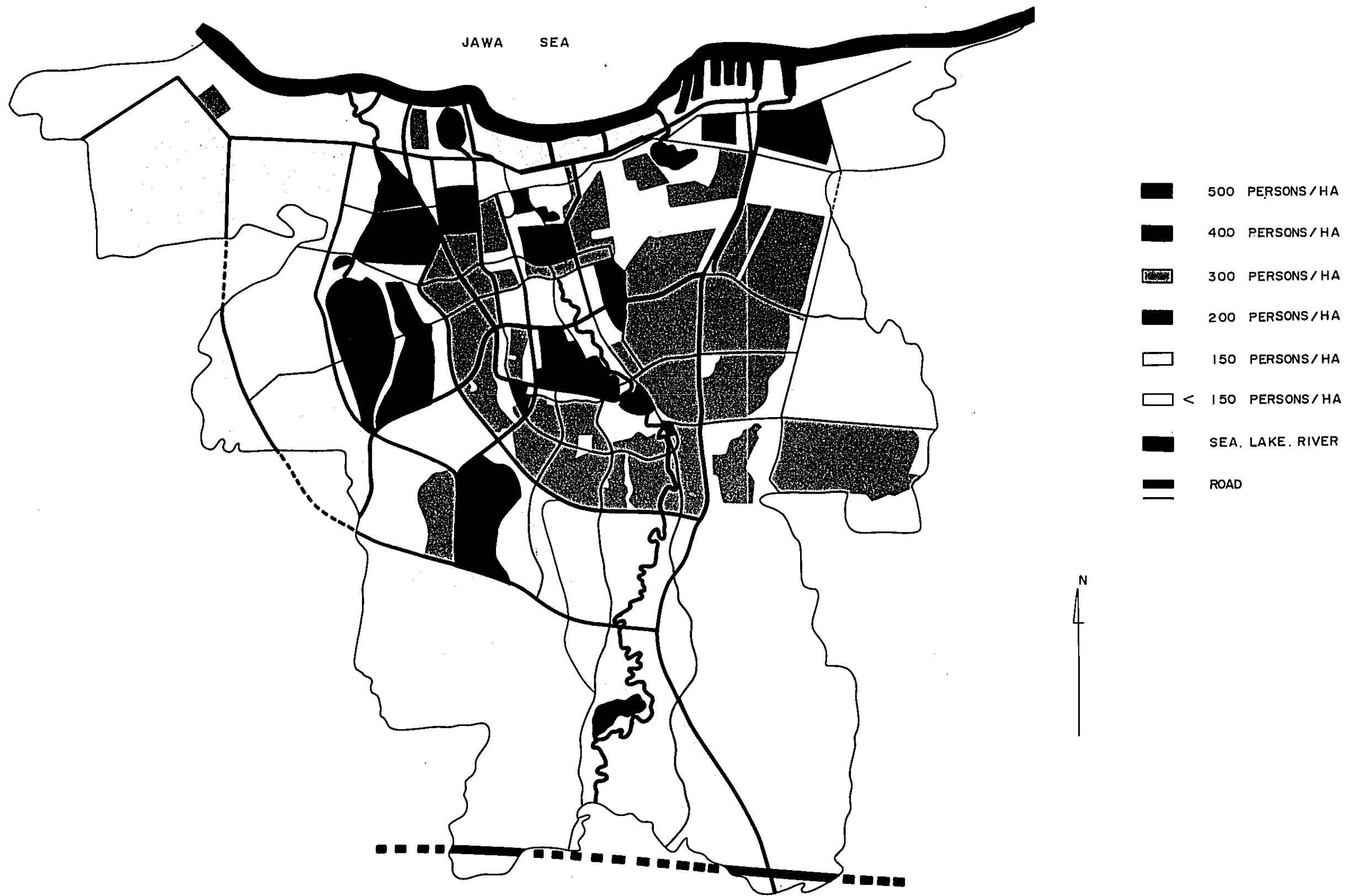


Fig. 2-6-1-(3)
 JAKARTA CITY PROPOSED POPULATION DENSITY IN 1985

TABLE 2-6-1-(4) THE NUMBER OF SUBSCRIBERS LINES AND WAITING LISTS IN EACH EXCHANGE AREA

Survey time: November 1974.

Exchange Office	K O T A		TANJUNG PRIOK		GAMBIR		SLIPI		JATINEGARA		SEMANGGI		KEBAYORAN		GANDARIA		CIPETE		TOTAL	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
1 JAKARTA KOTA	9,853	600			98	11													8,951	611
2 ANCOL	185	100	150	40	415	127													750	267
3 PLUIT	619	200																	619	200
4 CENGKARENG	18	52					29	31											47	83
5 TEGAL ALUR																				
6 GAMBIR	300	20			15,078	3,686			234	85									15,612	3,801
7 SEMANGGI					22						1,647	705	110	398					1,779	1,103
8 SLIPI							1,022	563			206	59	30	149					1,022	563
9 PALMERAH					108	19	159	198											503	425
10 KEDAYA													12							12
11 MERUYA																			1,331	593
12 CEMPAKA PUTIH			118	7	1,100	516			113	70									500	63
13 RAWAMANGUN					28	18			472	45									11	1
14 PULO GADUNG			11	1					40	4									40	4
15 PENGILINGAH																			1,533	179
16 TANJUNG PRIOK			1,533	179															75	56
17 CILINCING			75	56															5,703	1,500
18 KEBAYORAN											13	5,690	1,500						198	839
19 CIPETE													158	839			40		668	759
20 KALIBATA									91	9			577	750					219	85
21 PASAR MINGGU									47	5			172	80						
22 JAGAKARSA																			1,882	175
23 JATINEGARA									1,882	175									105	10
24 CAWANG									105	10									57	16
25 PASAR REBO									38	4						19	12		42	4
26 KLENDER									42	4									1,331	163
27 TEBET					341	48			888	83	102	32							59	44
28 GANDARIA																				
TOTAL	9,975	972	1,887	283	17,190	4,435	1,210	792	3,952	494	1,968	796	6,749	3,716	78	56	40		43,048	11,544

Gandaria does not include west Jawa.
(Subscribers: 16 Waitinglists: 57)

TABLE 2-6-1-15) TELEPHONE DEMAND OF EACH TELEPHONE EXCHANGE OFFICE
April 1975

except miscellaneous circuits

EXCHANGE OFFICE	Area (ha)	74	75	76	77	78	79	80	82	83	88	92	93
1 JAKARTA KOTA	1,576	22,200	24,100	26,400	28,900	31,700	34,600	37,500	44,100	48,200	75,300	105,300	117,400
(1)	(562)	6,300	6,700	7,100	7,500	8,000	8,500	9,100	10,300	11,100	15,100	19,200	20,900
(2)	(471)	7,700	8,500	9,600	10,700	11,900	13,100	14,300	17,500	19,100	33,800	50,400	57,100
(3)	(543)	8,200	8,900	9,700	10,700	11,800	13,000	14,100	16,300	18,000	26,400	35,700	39,400
2 ANCOL	2,140	2,250	2,600	2,950	3,350	3,850	4,200	4,500	5,000	5,500	7,500	14,500	28,300
3 PLUIT	1,366	3,750	4,050	4,400	4,800	5,250	5,700	6,200	7,300	8,000	12,200	17,000	18,800
4 CENGKARENG	3,267	550	650	770	910	1,100	1,300	1,500	2,550	2,550	6,000	11,900	14,600
5 TEGAL ALUR	3,108	300	350	420	500	610	730	900	1,250	1,500	3,800	6,800	9,300
6 GAMBIR	2,137	26,900	28,300	30,100	32,200	34,500	36,900	39,400	44,700	48,000	67,500	88,700	95,900
(1)	(1,139)	13,200	13,700	14,500	15,500	16,600	17,700	18,800	21,000	22,500	31,500	40,100	43,700
(2)	(998)	13,700	14,600	15,600	16,700	17,900	19,200	20,600	23,700	25,500	36,000	48,600	52,200
7 SEMANGGI	1,588	10,100	10,900	11,750	12,700	13,750	14,950	16,200	19,250	20,850	32,150	45,500	51,000
(1)	(871)	7,100	7,650	8,200	8,850	9,550	10,400	11,250	13,450	14,550	22,450	31,900	36,100
(2)	(717)	3,000	3,250	3,550	3,850	4,200	4,550	4,950	5,800	6,300	9,700	13,600	14,900
8 S L I P I	1,481	4,500	5,200	5,950	6,750	7,700	8,600	9,500	11,700	13,000	21,300	31,000	35,100
9 PALMERAH	1,505	1,320	1,550	1,800	2,100	2,450	2,950	3,400	4,300	5,300	11,700	22,200	26,000
10 KEDUYA	1,315	200	250	300	350	400	480	550	650	1,080	3,200	8,300	10,100
11 MERUYA	1,881	260	310	390	480	590	720	880	1,300	1,600	4,300	9,700	11,800
12 CEMPAKA PUTIH	1,424	6,600	7,200	8,000	8,800	9,700	10,700	11,800	14,000	15,200	23,700	35,800	40,200
13 RAWAMANGUN	1,468	2,250	2,450	2,800	3,200	3,600	4,000	4,500	5,800	6,500	12,000	19,400	21,900
14 PULO GADUNG	1,692	180	220	260	320	390	470	570	820	1,000	2,600	5,700	6,900
15 PENGILINGAN	1,529	210	260	310	370	450	520	640	950	1,150	3,100	6,700	8,300
16 TANJUNGPRIK	2,441	4,100	4,600	5,400	6,200	7,000	8,300	9,700	12,800	14,400	29,500	53,500	61,500
(1)	(1,214)	2,300	2,500	3,000	3,500	4,000	4,600	5,300	7,000	7,900	16,000	28,500	32,500
(2)	(1,227)	1,800	2,100	2,400	2,700	3,000	3,700	4,400	5,800	6,500	13,500	25,000	29,000
17 CILINCING	1,759	350	420	500	600	730	870	1,050	1,500	1,800	4,600	9,600	11,700
18 KEBAYORAN	2,070	12,200	12,800	13,500	14,300	15,200	16,100	17,000	19,300	20,600	29,500	38,300	41,600
(1)	(1,107)	10,000	10,400	10,900	11,500	12,100	12,700	13,300	14,700	15,400	20,200	24,500	26,000
(2)	(963)	2,200	2,400	2,600	2,800	3,100	3,400	3,700	4,600	5,200	9,300	13,800	15,600
19 CIPETE	2,450	1,250	1,400	1,600	1,850	2,100	2,400	2,700	3,600	4,100	8,000	13,700	15,700
20 KALIBATA	2,289	2,350	2,700	3,050	3,500	4,000	4,550	5,100	6,600	7,500	14,700	25,500	29,200
21 PASAR MINGGU	2,194	790	900	1,050	1,200	1,400	1,600	1,800	2,400	2,750	5,600	9,800	11,400
22 JAGAKARSA	2,064	250	290	340	400	470	550	650	910	1,050	2,450	4,900	5,800
23 JATINEGARA	1,802	5,050	5,700	6,600	7,600	8,600	9,600	10,800	13,400	14,700	23,400	33,800	37,700
(1)	(672)	1,300	1,600	2,000	2,500	3,000	3,500	4,100	5,300	5,900	10,100	15,900	17,700
(2)	(1,130)	3,750	4,100	4,600	5,100	5,600	6,100	6,700	8,100	8,800	13,300	18,200	20,000
24 CAWANG	2,660	1,100	1,200	1,400	1,650	1,950	2,300	2,700	3,600	4,200	10,000	20,600	24,600
25 PASAR REBO	3,630	420	430	580	680	790	910	1,050	1,400	1,700	4,800	12,300	15,400
26 KLENDER	1,892	210	260	340	430	530	700	880	1,400	1,800	6,000	15,600	20,300
27 TEBET	1,167	2,750	3,100	3,500	3,900	4,400	4,950	5,600	7,100	7,800	14,700	23,900	27,700
28 GANDARIA	3,258	340	400	460	540	640	740	900	1,300	1,550	3,850	7,400	9,800
T O T A L	57,154	112,730	122,640	134,920	148,580	163,650	180,590	198,510	240,490	265,480	450,450	707,800	808,000

TABLE 2-6-1-(6) 1/5
 AREA PATTERN AND TELEPHONE DEMAND OF EACH EXCHANGE OFFICE IN 1993
 April 1975.

EXCHANGE OFFICE	TOTAL		S	O	R	I	A	N
	Demand	Area (ha)						
1 JAKARTA KOTA	Demand	117,381	101,590	6,902	7,087	1,902		
	Area (ha)	1,575.6	762.3	98.6	452.7	236.4		25.6
2 ANCOL	Demand	28,300	8,019		18,740	1,541		
	Area (ha)	2,140	229.1		987	154.1		769.8
3 PLUIT	Demand	18,799	599		11,500	6,700		
	Area (ha)	1,366	13.3		655.9	515.4		181.4
4 CENGKARENG	Demand	14,600	600		11,968	2,032		
	Area (ha)	3,267	20		1,242.7	203.2		1,801.1
5 TEGAL ALUR	Demand	9,300	480		8,820			
	Area (ha)	3,108	16		1,075.1			2,016.9
6 GAMBIR	Demand	95,922	7,716	65,847	22,359			
	Area (ha)	2,137	112.7	716.1	1,168.0			140.2
			5.3 %	33.5 %	54.7 %			6.5 %

TABLE 2-6-1-(6) 2/5
 AREA PATTERN AND TELEPHONE DEMAND OF EACH EXCHANGE OFFICE IN 1993

	EXCHANGE OFFICE	TOTAL		S	O	R	I	A	N
		Demand	Area (ha)						
7	SEMANGGI	Demand	50,980	13,520	18,600	17,850	1,010		
		Area (ha)	1,588	26.5 %	36.5 %	35.0 %	2.0 %		
8	SLIPI	Demand	35,095	143	171	959	101		214
		Area (ha)	1,481.2	9.0 %	10.8 %	6.3 %	60.4 %		13.5 %
9	PALMERAH	Demand	25,984	4,125	8,139	21,976	855		
		Area (ha)	1,505	11.8 %	23.2 %	62.6 %	2.4 %		
10	KEDOYA	Demand	10,051	60	127.2	1,197.3	85.5		11.2
		Area (ha)	1,315	4.1 %	8.6 %	80.8 %	5.8 %		0.7 %
11	MERUYA	Demand	11,800	3,540	1,330	21,114			
		Area (ha)	1,881	13.6 %	5.1 %	81.2 %			
12	CEMPAKA PUTIH	Demand	40,200	70.8	19	1,283.0			132.2
		Area (ha)	1,424	4.7 %	1.3 %	85.2 %			8.8 %
		Demand	10,051	580		9,200	110	161	
		Area (ha)	1,315	5.8 %		91.5 %	1.1 %	1.6 %	
		Demand	11,800	13		800	11	161	330
		Area (ha)	1,881	1.0 %		61.0 %	1.0 %	12.0 %	25.0 %
		Demand	11,800	1,085		10,715			
		Area (ha)	1,881	9.2		90.8 %			
		Demand	40,200	27.7		1,583.3			27.6
		Area (ha)	1,424	1.2 %		84.2 %			14.6 %
		Demand	40,200	1,746	12,078	25,808	568		
		Area (ha)	1,424	4.4 %	30.0 %	64.2 %	1.4 %		
		Demand	1,424	29.1	174.1	1,081.3	56.8		82.7
		Area (ha)	1,424	2.0 %	12.2 %	76.0 %	4.0 %		5.8 %

TABLE 2-6-1-(6) 3/5
 AREA PATTERN AND TELEPHONE DEMAND OF EACH EXCHANGE OFFICE IN 1993

EXCHANGE OFFICE	TOTAL		S	O	R	I	A	N
	DEMAND	AREA (ha)						
13 RAWAMANGUN	DEMAND	21,910	2,000	2,600	15,240	2,070		
	AREA (ha)	1,468	46	26	886	352		158
14 PULO GADUNG	DEMAND	6,879	1,000		4,000	1,500	379	
	AREA (ha)	1,692	20		400	300	379	593
15 PENGGILINGAN	DEMAND	8,300	2,220		1,660	4,070	350	
	AREA (ha)	1,529	53		166	814	350	146
16 TANJUNG PRIOK	DEMAND	61,510	8,300	17,670	29,660	5,880		
	AREA (ha)	2,441	115	156	1,510	588		72
17 CILINGING	DEMAND	11,690	1,640		5,800	4,250		
	AREA (ha)	1,759	34		480	850		395
18 KEBAYORAN	DEMAND	41,561	3,400	6,120	32,011	30		
	AREA (ha)	2,070	58	102	1,875.8	3		31.2

TABLE 2-6-1-(6) 4/5
AREA PATTERN AND TELEPHONE DEMAND OF EACH EXCHANGE OFFICE IN 1993

	EXCHANGE OFFICE	TOTAL		S	O	R	I	A	N
		Demand	Area (ha)						
19	CIPETE	Demand	15,700	2,960		12,090	75	575	
		Area (ha)	2,450	82		1,260	75	575	458
				18.9 %		77 %	0.4 %	3.7 %	
				3.3 %		51.4 %	3.1 %	23.5 %	18.7 %
20	KALIBATA	Demand	29,230	3,520	4,920	20,070	230	490	
		Area (ha)	2,289	88		1,575	23	490	31
				12.1 %	16.8 %	68.6 %	0.8 %	1.7 %	
				3.8 %	3.6 %	68.6 %	1.0 %	21.4 %	1.4 %
21	PASAR MINGGU	Demand	11,413	600	800	8,475	575	963	
		Area (ha)	2,194	15		979	115	963	102
				5.3 %	7.0 %	74.3 %	5.0 %	0.4 %	
				0.8 %	0.9 %	44.6 %	5.2 %	43.9 %	4.6 %
22	JAGAKARSA	Demand	5,800	360	200	4,005		1,235	
		Area (ha)	2,064	9		639		1,235	176
				6.2 %	3.5 %	69.0 %		21.3 %	
				0.5 %	0.2 %	31.0 %		59.8 %	3.5 %
23	JATINEGARA	Demand	37,680	3,780	8,350	25,210	340		
		Area (ha)	1,802	80		1,439	34		115
				10.0 %	22.0 %	67.0 %	1.0 %		
				4.0 %	8.0 %	80.0 %	2.0 %		6.0 %
24	CAWANG	Demand	24,616	2,260	4,500	16,880	330	646	
		Area (ha)	2,660	49		1,021	33	646	764
				9.2 %	18.3 %	68.6 %	1.3 %	2.6 %	
				1.9 %	5.5 %	38.4 %	1.2 %	24.3 %	28.7 %

TABLE 2-6-1-(6) 5/5
 AREA PATTERN AND TELEPHONE DEMAND OF EACH EXCHANGE OFFICE IN 1993

EXCHANGE OFFICE	TOTAL		S	O	R	I	A	N
	Demand	Area (ha)						
25 PASAR REBO	Demand	15,398	1,200		9,530	2,420	2,248	
	Area (ha)	3,630	7.8 %		61.9 %	15.7 %	14.6 %	
26 KLENDER	Demand	20,300	30		640	242	2,248	470
	Area (ha)	1,892	0.8 %		17.6 %	6.7 %	61.9 %	13.0 %
27 TEBET	Demand	27,700	1,720		18,360		220	
	Area (ha)	1,167	8.0 %		91.0 %		1.0 %	
28 GANDARIA	Demand	9,783	43		1,147		220	482
	Area (ha)	3,258	2.0 %		61.0 %		12.0 %	25.0 %
TOTAL	Demand	807,882	480	4,520	22,600	100		
	Area (ha)	57,152.8	1.7 %	16.3 %	81.6 %	0.4 %		
	Demand	9,783	12	52	983.2	10		109.8
	Area (ha)	3,258	1.0 %	4.5 %	84.3 %	0.9 %		9.3 %
	Demand	9,783	800		4,300	3,620	1,063	
	Area (ha)	3,258	8.2 %		43.9 %	37.0 %	10.9 %	
	Demand	807,882	20		378	362	1,063	1,435
	Area (ha)	57,152.8	0.6 %		11.6 %	11.1 %	32.6 %	44.1 %
	Demand	807,882	179,840	162,576	417,028	40,108	8,330	
	Area (ha)	57,152.8	22.3 %	20.1 %	51.6 %	5.0 %	1.0 %	
	Demand	807,882	2,245	2,030	27,864.3	5,164.4	8,330	11,519.1
	Area (ha)	57,152.8	3.9 %	3.6 %	48.7 %	9.0 %	14.6 %	20.2 %

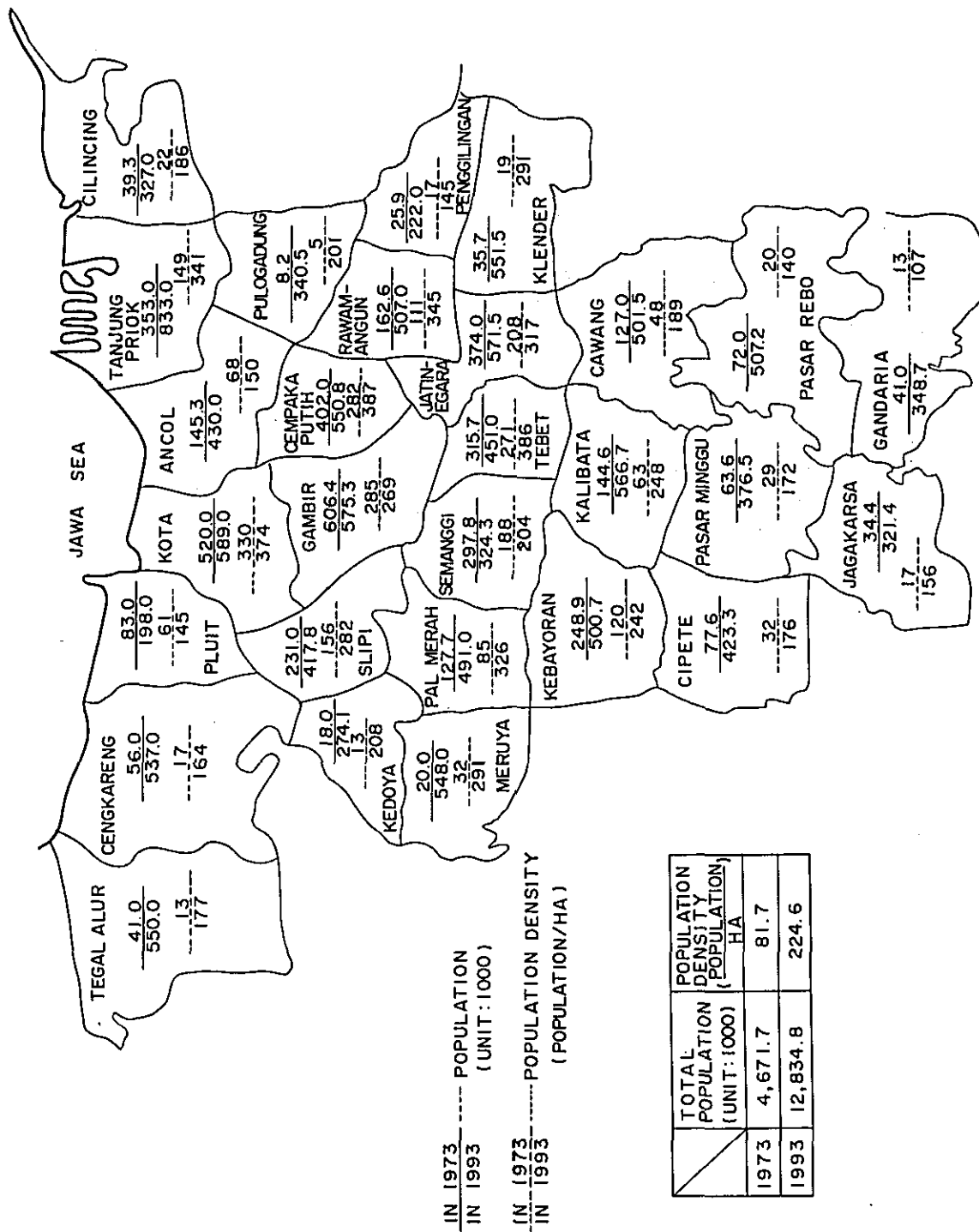


FIG. 2-6-1-(8) POPULATION AND POPULATION DENSITY IN JAKARTA

2.6.2 Result of Telephone Demand Forecast for Each Exchange Office

2.6.2.1	Kota	-----
2.6.2.2	Ancol	-----
2.6.2.3	Pluit	-----
2.6.2.4	Cengkareng	-----
2.6.2.5	Tegal Alur	-----
2.6.2.6	Gambir	-----
2.6.2.7	Semanggi	-----
2.6.2.8	Slipi	-----
2.6.2.9	Palmerah	-----
2.6.2.10	Kedoya	-----
2.6.2.11	Meruya	-----
2.6.2.12	Cempaka Putih	-----
2.6.2.13	Rawamangun	-----
2.6.2.14	Pulo Gadung	-----
2.6.2.15	Penggilingan	-----
2.6.2.16	Tanjung Priok	-----
2.6.2.17	Cilincing	-----
2.6.2.18	Kebayoran	-----
2.6.2.19	Cipete	-----
2.6.2.20	Kalibata	-----
2.6.2.21	Pasar Minggu	-----
2.6.2.22	Jagakarsa	-----
2.6.2.23	Jatinegara	-----
2.6.2.24	Cawang	-----
2.6.2.25	Pasar Rebo	-----
2.6.2.26	Klender	-----
2.6.2.27	Tebet	-----
2.6.2.28	Gandaria	-----

2.6.2.1 JAKARTA KOTA

(1) General Description

The future service area of Jakarta Kota Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL.

As shown in Table 2.6.2.1.(1) this area is crowded with business offices and shops. It prospers as a commercial center. In the City Plan of the Municipality of Jakarta also it is earmarked for a business office and commercial area.

According to statistics of 1973 compiled by the Municipal Authority of Jakarta (Daerah Khusus Ibukota . . . D.K.I.) the future service area of Jakarta Kota Exchange Office embraces 1,576 hectares with 99,577 households and a population of 519,638.

The switching system at Jakarta Kota Exchange Office was changed from the manual system to the automatic system in 1960. Subscriber switches with 10,000 line units are installed at the Exchange Office. The existing service area includes the future service areas of Ancol, Pluit, Cengkareng and Gambir exchange offices. As of November 1974 the subscriber lines in the existing service area number 9,975 and those in the future service area number 8,951. The number in the future service area comprises 8,853 which remain to be the subscriber lines of Jakarta Kota Exchange Office and 98 which now belong to Gambir Exchange Office.

The new building of Jakarta Kota (B) Exchange Office is under construction on Raya Mangga Besar Street.

(2) Existing Service Area and Future Service Area

As shown in Fig. 2.6.2.1.(2) the existing service area of Jakarta Kota Exchange Office includes part of future service areas of Pluit, Gambir and Cengkareng exchange offices plus the major part of future service area of Ancol Exchange Office.

The future Jakarta Kota Exchange Office service area determined by PERUMTEL is the object area of our study.

This object area of study is composed of 22 kelurahans (4 kecamatans) as shown in Fig. 2.6.2.1.(2) and Fig. 2.6.2.1.(3).

(3) Telephone Demand Forecast

1) Area Development Estimation

In our area development estimation we used as major reference the City Plan (Rencana Induk Jakarta 1965 – 1985), the aerial photograph (Pemotretan Udara, Agustus 1971) and the topographic map of Jakarta (Daerah Khusus Ibukota Jakarta, Scala 1 : 20,000).

In the City Plan also the most part of future service area of Jakarta Kota Exchange Office is designed to be the commercial area.

2) Area Pattern

The telephone demand and the area pattern as of 1993 are shown in Table 2.6.2.1.(3) and Fig. 2.6.2.1.(4), respectively.

The telephone demand and the area pattern in each kelurahan as of 1983 and 1993 are shown in Table 2.6.2.1.(5) and Table 2.6.2.1.(6).

3) Result of Demand Forecast

The telephone demand forecast for the period from 1974 through 1993 prepared by the microscopic demand forecast method described in Section 2.6.1 is shown in Fig. 2.6.2.1.(7).

Fig. 2.6.2.1.(8) presents the population density per hectare and Fig. 2.6.2.1.(4) the area pattern.

(4) Conclusion

The telephone demand, as well as the population, number of households, population density and telephone diffusion rate as of 1993 appears in Table 2.6.2.1.(9).

TABLE 2-6-2-1-(1)
ECONOMIC SITUATION IN EACH KELURAHAN
FOR FUTURE KOTA EXCHANGE AREA

Survey time : September 1974

Kelurahan	Economic Field									TOTAL
	Government Office	Wholesaler	Industry	Transportation	Bank	Service	Warehouse	Market	Retailer	
Mangga Dua Utara *										
Mangga Dua Selatan	1	314	74	2	-	94	-	1	-	486
Karanganyar	2	11	10	-	-	3	2	1	30	59
Kartini	1	55	64	-	-	-	-	-	41	161
Pinangsia	27	300	131	15	35	8	10	1	182	709
Glodok	2	100	8	-	6	2	4	2	40	164
Mangga Besar	3	25	10	-	-	7	-	2	412	459
Tangki	1	16	48	-	-	3	2	1	172	243
Keagungan	1	27	6	2	-	2	-	1	30	69
Krukut	3	30	8	-	-	5	-	1	180	227
Taman Sari	3	39	17	2	1	-	-	-	121	183
Maphar	1	195	59	4	5	-	-	2	291	557
Pekojan	3	103	96	-	-	3	20	2	134	361
Malaka	12	1,000	16	20	33	7	2	-	400	1,490
Krendang	1	-	23	-	-	4	-	1	57	86
Tambora	1	6	17	-	1	3	-	-	175	203
Jembatan Lima	4	3	15	2	-	3	-	1	325	353
Duri	1	1	25	-	-	5	-	1	10	43
Tanah Sereal	1	7	53	-	-	3	-	-	62	126
Angke	1	-	118	3	-	5	-	1	98	225
Jembatan Besi	2	1	11	-	-	3	-	1	12	30
Kali Baru	1	-	2	-	-	-	-	-	-	3
TOTAL	72	2,223	811	50	81	160	40	19	2,272	6,238

* Data of this area is not available.

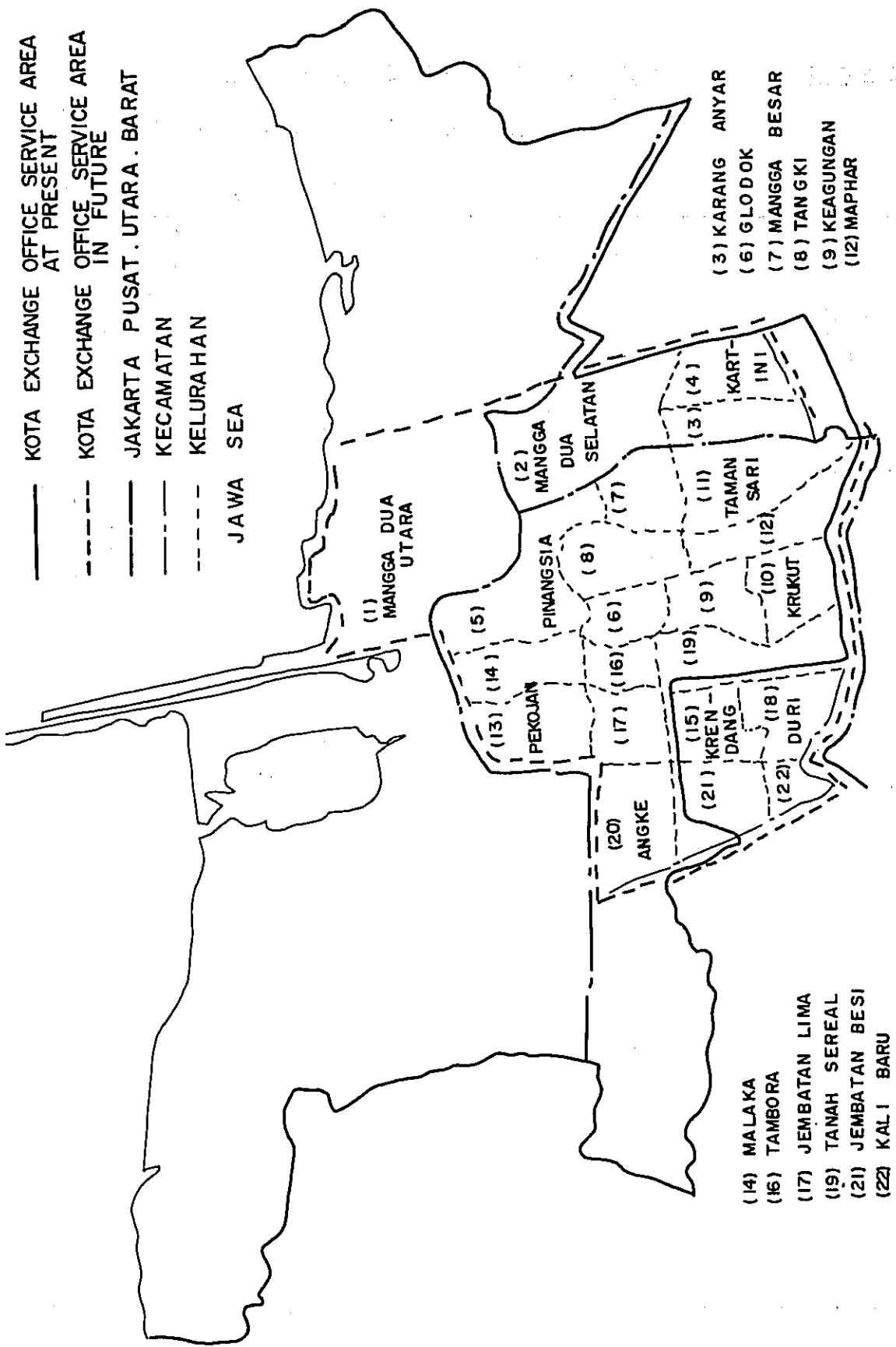


FIG.2-6-2-1-(2) KOTA EXCHANGE OFFICE SERVICE AREA

TABLE 2-6-2-1-(3) FUTURE KOTA EXCHANGE
AREA AND TELEPHONE DEMAND

(Excluding miscellaneous)

Kecamatan	Kelurahan	Area (ha)	Telephone Demand in 1993
PENJARINGAN	Mangga dua utara	400.0	4,563
SAWAH BESAR	Mangga dua selatan	125.2	12,242
	Karang Anyar	48.0	5,775
	Kartini	50.8	6,552
TAMAN SARI	Pinangsia	98.0	10,430
	Glodok	33.2	4,648
	Mangga Besar	34.0	4,760
	Tangki	57.6	8,064
	Keagungan	34.8	4,872
	Krukut	62.4	8,736
	Taman Sari	82.0	11,480
	Maphar	56.0	7,840
PEKOJAN	Pekojan	75.2	2,753
	Malaka	49.2	4,900
	Krendang	40.0	990
	Tambora	31.2	4,368
	Jembatan Lima	50.0	2,740
	Duri	67.2	1,464
	Tanah Sareal	52.4	7,336
	Angke	38.0	620
	Jembatan Besi	55.2	1,896
	Kali Baru	35.2	352
TOTAL		1,575.6	117,381



FIG. 2-6-2-1-(4) AREA PATTERN MAP (KOTA)

TABLE 2-6-2-1-(5) KOTA EXCHANGE OFFICE TELEPHONE DEMAND

Item Classification		Area (ha)	1983		1993		Remarks
			Demand	Demand density	Demand	Demand density	
S	S - 1	698.1	37,620	53.9	97,734	140.0	
	S - 2	32.2	1,760	54.7	2,576	80.0	
	S - 3	32.0	825	25.8	1,280	40.0	
	Total	762.3	40,205	52.7	101,590	133.3	87
O	O - 1						
	O - 2	98.6	3,590	36.4	6,902	70.0	
	Total	98.6	3,590	36.4	6,902	70.0	6
R	R - 1						
	R - 2	256.0	2,770	10.8	5,120	20.0	
	R - 3	196.7	960	4.9	1,967	10.0	
	Total	452.7	3,730	8.2	7,087	15.7	6
I	I - 1	112.4	215	1.9	562	5.0	
	I - 2	124.0	415	3.3	1,240	10.0	
	Total	236.4	630	2.7	1,802	7.6	1
Agriculture							
Others							
Non - Demand		25.6					
Sub - Total		1,575.6	48,155	30.5	117,381	74.5	100
Miscellaneous			1,800		4,600		
TOTAL		1,575.6	49,955		121,981		

Survey time : September 1974

TABLE 2-6-2-1-(6) I/7 KOTA EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (1)

Survey time : September 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks
				Demand	Demand density	Demand	Demand density	
PENJA - RINGAN	Mangga Dua Utara (1)	R - 2	86.0	540	6.3	1,720	20.0	
		I - 1	112.4	215	1.9	562	5.0	
		I - 2	124.0	415	3.3	1,240	10.0	
		R - 3	23.3	115	4.9	233	10.0	
		S - 3	11.7	175	15.0	468	40.0	
		R - 2	17.0	80	4.7	340	20.0	
		N	25.6					
		Sub Total	400.0	1,540	3.9	4,563	11.4	
		Miscella- neous		50		135		
		TOTAL		400.0	1,590		4,698	
SAWAH - BESAR	Mangga Dua Setelan (2)	R - 3	36.2	100	2.8	362	10.0	
		S - 3	5.8	160	27.6	232	40.0	
		S - 1	83.2	2,720	32.7	11,648	140.0	
		Sub Total	125.2	2,980	23.8	12,242	97.8	
		Miscella- neous		100		430		
TOTAL		125.2	3,080		12,672			

TABLE 2-6-2-1-(6) 2/7 KOTA EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (2)

Survey time : September 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
SAWAH BESAR	Karang - Anyar (3)	O-2	13.5	500	37.0	945	70.0		
		S-1	34.5	1,500	43.5	4,830	140.0		
	Sub Total	48.0	2,000	41.7	5,775	120.3			
	Miscellaneous		100		225				
	TOTAL		48.0	2,100		6,000			
	Kartini (4)	O-2		8.0	250	31.3	560	70.0	
		S-1		42.8	2,050	47.9	5,992	140.0	
		Sub Total		50.8	2,300	45.3	6,552	129.0	
		Miscellaneous			100		250		
	TOTAL			50.8	2,400		6,802		
Pinangsia (5)	S-1		51.0	3,810	74.7	7,140	140.0		
	O-2		47.0	970	20.6	3,290	70.0		
	Sub Total		98.0	4,780	48.8	10,430	106.4		
	Miscellaneous			220		460			
TOTAL			98.0	5,000		10,890			

TABLE 2-6-2-1-(6) 3/7 KOTA EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (3)

Survey time : September 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks
				Demand	Demand density	Demand	Demand density	
TAMAN SARI	Glodok (6)	S - I	33.2	3,050	91.9	4,648	140.0	
		Sub Total	33.2	3,050	91.9	4,648	140.0	
		Miscellaneous		100		150		
	TOTAL		33.2	3,150		4,798		
	Mangga Besar (7)	S - I	34.0	2,200	64.7	4,760	140.0	
		Sub Total	34.0	2,200	64.7	4,760	140.0	
		Miscellaneous		100		140		
	TOTAL		34.0	2,300		4,900		
	Tangki (8)	S - I	57.6	3,330	57.8	8,064	140.0	
		Sub Total	57.6	3,330	57.8	8,064	140.0	
Miscellaneous			120		290			
TOTAL		57.6	3,450		8,354			
Keagungan (9)	S - I	34.8	2,580	74.1	4,872	140.0		
	Sub Total	34.8	2,580	74.1	4,872	140.0		
	Miscellaneous		70		180			
TOTAL		34.8	2,650		5,052			
Krukut (10)	S - I	62.4	2,500	40.1	8,736	140.0		
	Sub Total	62.4	2,500	40.1	8,736	140.0		
	Miscellaneous		100		360			
TOTAL		62.4	2,600		9,096			

TABLE 2-6-2-1-(6) 4/7 KOTA EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (4)

Survey time : September 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks
				Demand	Demand density	Demand	Demand density	
TAMAN SARI	Taman Sari (11)	S - 1	82.0	3,800	46.3	11,480	140.0	
		Sub Total	82.0	3,800	46.3	11,480	140.0	
		Miscellaneous		100		420		
	TOTAL		82.0	3,900		11,900		
	Mia phar (12)	S - 1	56.0	2,660	47.5	7,840	140.0	
	Sub Total	56.0	2,660	47.5	7,840	140.0		
	Miscellaneous		90		310			
	TOTAL		56.0	2,750		8,150		
PEKOJAN	Pekojan (13)	R - 2	22.0	300	13.6	440	20.0	
		S - 3	5.0	155	31.0	200	40.0	
		S - 3	1.5	45	30.0	60	40.0	
		R - 3	19.0	85	4.5	190	10.0	
		R - 2	15.8	250	15.8	316	20.0	
		S - 1	10.2	900	88.2	1,428	140.0	
		O - 2	1.7	70	41.2	119	70.0	
		Sub Total	75.2	1,805	24.0	2,753	36.6	
	Miscellaneous		50		170			
	TOTAL		75.2	1,855		2,923		

TABLE 2-6-2-1-(6) 5/7 KOTA EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (5)

Survey time: September 1974.

Kecamatan	Kelurahan	Pottern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
PEKOJAN	Malaka (14)	O - 2	28.4	1,800	63.4	1,988	70.0		
		S - 1	20.8	2,200	105.8	2,912	140.0		
		Sub Total	49.2	4,000	81.3	4,900	99.6		
		Miscellaneous		200		300			
	TOTAL		49.2	4,200		5,200			
	Krendang (15)	R - 3		17.0	150	8.8	170	10.0	
		R - 2		17.0	280	16.5	340	20.0	
		S - 2		6.0	300	50.0	480	80.0	
		Sub Total		40.0	730	18.3	990	24.8	
			Miscellaneous		20		30		
	TOTAL			40.0	750		1,020		
	Tambora (16)	S - 1		31.2	1,550	49.7	4,368	140.0	
		Sub Total		31.2	1,550	49.7	4,368	140.0	
		Miscellaneous			50		180		
TOTAL			31.2	1,600		4,548			

TABLE 2-6-2-1-(6) 6/7 KOTA EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (6)

Survey time : September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
PEKOJAN	Jembatan Lima (17)	S-1	12.0	570	47.5	1,680	140.0		
		S-2	5.0	250	50.0	400	80.0		
		R-2	33.0	480	14.5	660	20.0		
		Sub Total	50.0	1,300	26.0	2,740	54.8		
		Miscellaneous		40		110			
	TOTAL		50.0	1,340		2,850			
	Duri (18)	S-2		2.0	60	30.0	160	80.0	
		R-2		65.2	840	12.9	1,304	20.0	
		Sub Total		67.2	900	13.4	1,464	21.8	
		Miscellaneous			10		40		
TOTAL			67.2	910		1,504			
Tanah Sereal (19)	S-1		52.4	2,200	42.0	7,336	140.0		
	Sub Total		52.4	2,200	42.0	7,336	140.0		
	Miscellaneous			110		290			
TOTAL			52.4	2,310		7,626			

TABLE 2-6-2-(16) 7/7 KOTA EXCHANGE OFFICE TELEPHONE DEMAND
OF EACH KELURAHAN (7)

Survey time : September 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
PEKOJAN	Angke (20)	S - 3	8.0	290	36.3	320	40.0		
		R - 3	30.0	110	3.7	300	10.0		
		Sub Total	38.0	400	10.5	620	16.3		
		Miscellaneous		10		30			
	TOTAL		38.0	410		650			
	Jembatan Besl (21)	S - 2		19.2	1,150	59.9	1,536	80.0	
		R - 3		36.0	200	5.6	360	10.0	
		Sub Total		55.2	1,350	24.5	1,896	34.3	
		Miscellaneous			50		60		
	TOTAL			55.2	1,400		1,956		
	Kali Baru (22)	R - 3		35.2	200	5.7	352	10.0	
		Sub Total		35.2	200	5.7	352	10.0	
Miscellaneous				10		40			
TOTAL			35.2	210		392			

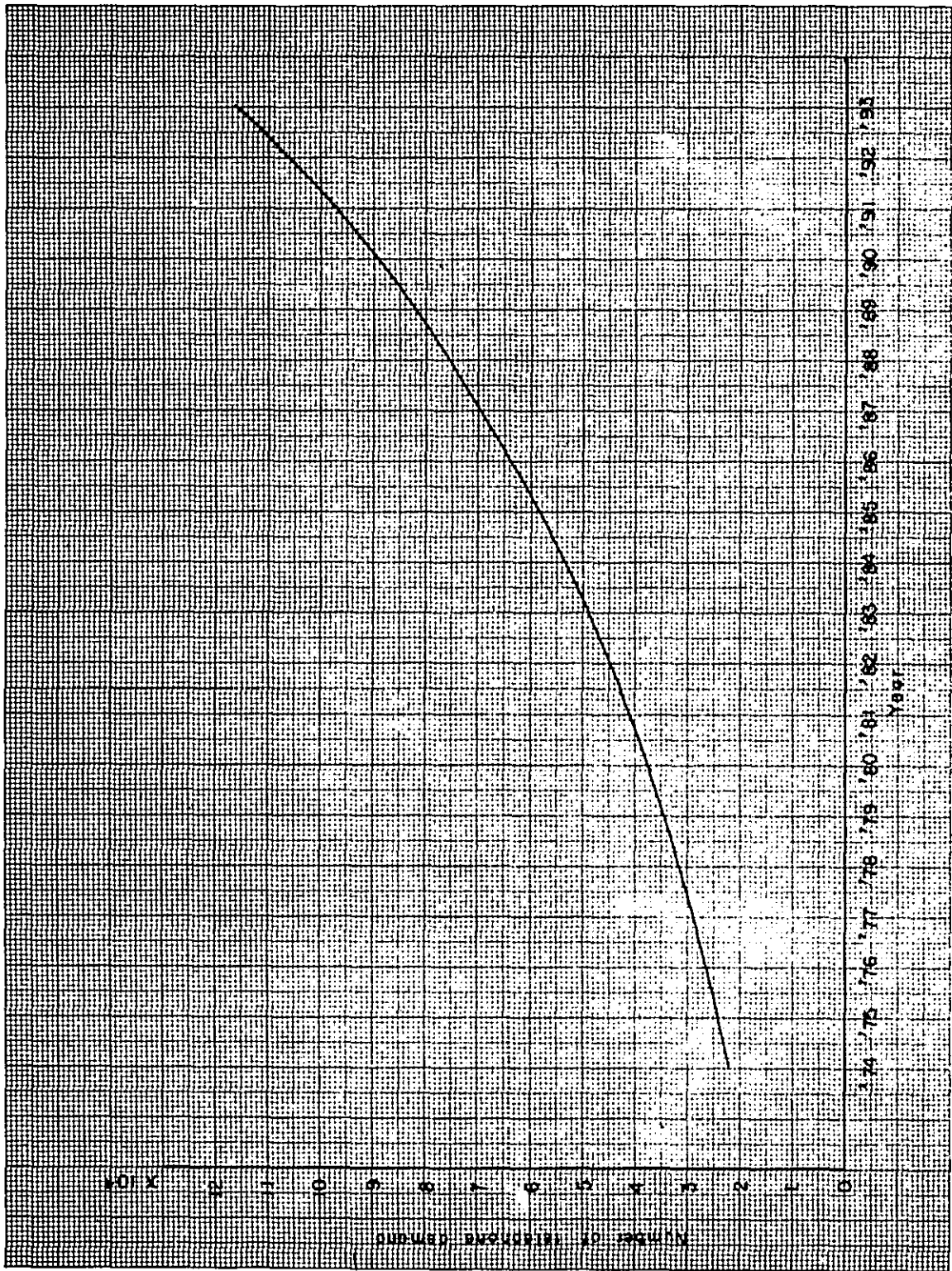


FIG.2-6-2-1-(7) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
 (KOTA EXCHANGE OFFICE)

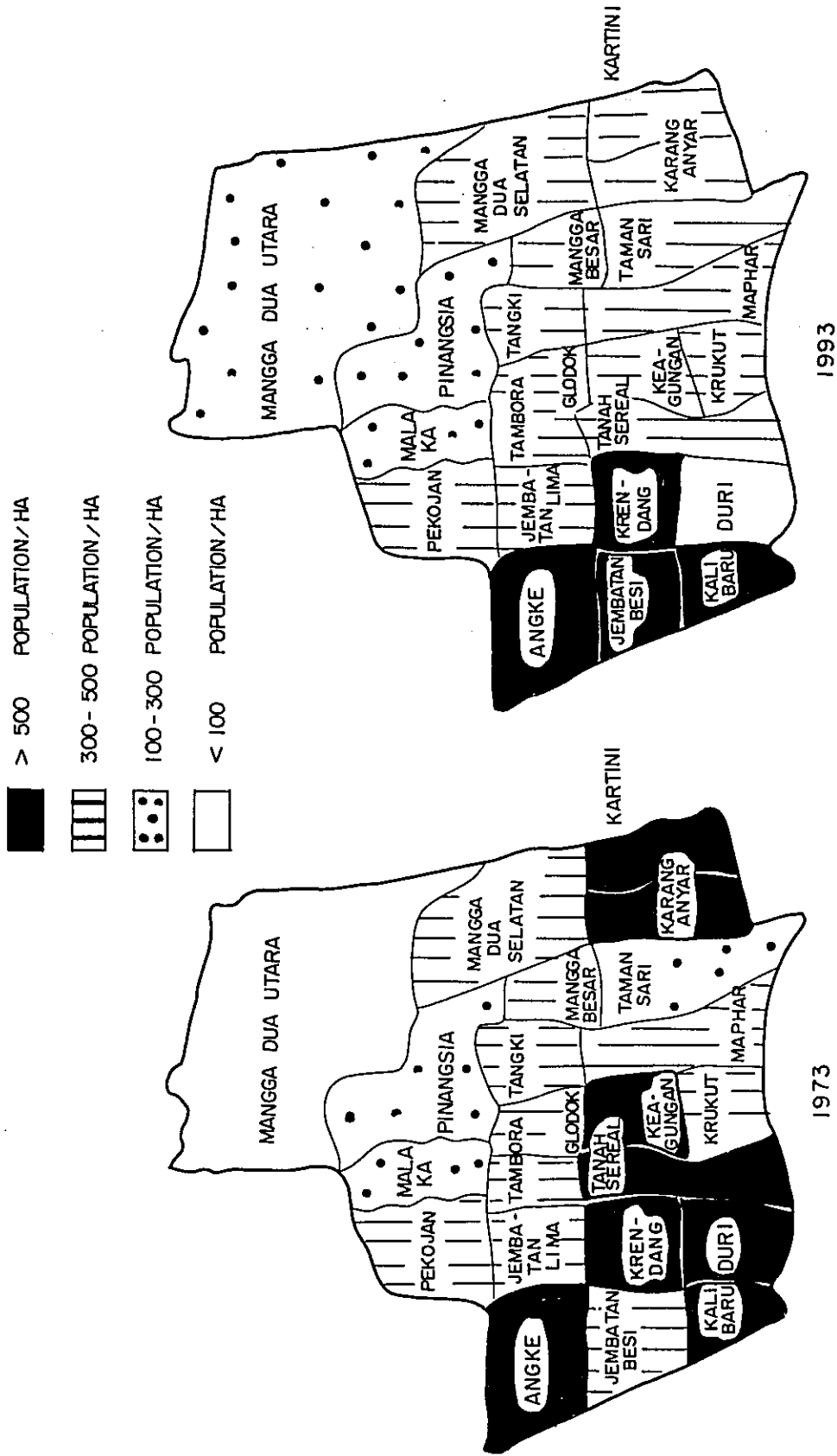


FIG. 2-6-2-1-(8) POPULATION DENSITY (KOTA)

TABLE 2-6-2-1 (9)
 TELEPHONE DEMAND, POPULATION
 AND DIFFUSION RATIO IN 1993
 KOTA EXCHANGE AREA

(Excluding miscellaneous)

Area	(ha)	1,576
Telephone demand		117,400
Population		589,000
Household		117,800
Population density (Population/ha)		374
Diffusion ratio (Demand/100 inhabitants)		19.9
Diffusion ratio (Demand/100 households)		99.7

2.6.2.2 ANCOL

(1) General Description

Kemeyoran Airport located in Ancol prospered until the end of 1974 as an international and domestic airport in Jakarta. After the inauguration of a new international airport in Halim, Kemeyoran Airport operates the domestic airline service only. Although it no longer operates the international service, Kemeyoran Airport will further develop as an air transportation base because the domestic airline service is indispensable to the people of Indonesia which consists of a great number of islands scattered approximately 5,000 km wide from east to west and 1,500 km long from north to south and the travel by ship requires too many days. The feature of Ancol has an amusement center along the coast. The center will further prosper keeping pace with the increase of the national income.

The service area of Ancol Exchange Office shown in the figure is that determined by the 2nd Five-Year Plan of PERUMTEL. According to the City Plan, the area will comprise in the future the airport, residential area, factory area and green field. At present factories are under construction along Komodor Yos Sudarso Street, Indonesia-Japan joint ventures, such as Sanyo Electric and Tancho Pomade, are found in this area.

According to statistics of 1973 compiled by D.K.I., the area is 2,140 hectares in size and has 22,800 households, with a population of 114,000. Data compiled by Kota Exchange Office shows that the existing subscriber lines number 512, with the waiting applicants totaling 402.

(2) Existing Service Area and Future Service Area

At present, the most part of the Ancol Exchange Office service area belongs to Kota Exchange Office. The major part of the existing subscriber lines are those of the shopping area, airport and factories in the area bordering on the Kota Exchange Office service area. The future service area comprises 3 kelurahans, i.e., Pademangun, Gunung Sahari and Sunter as shown in Fig. 2.6.2.2.(1).

(3) Telephone Demand Forecast

1) Area Development Estimation

For telephone demand forecast, the field survey was carried out by referring to the City Plan, the topographic map, etc. An area along the coast now prospers as the amusement center, which will further develop as an amusement and recreation center. Some area near the runway is scheduled to be a factory area. In view of the noise at the time of taking off and landing of the airplanes, it can be said a good plan to design that place as a factory site.

Based on our forecast study, it is estimated that the population will increase

to 145,000 in 1993 from 430,000. Figure 2.6.2.2.(2) presents the population density as of 1973 and 1993.

2) Area Pattern

The area pattern as of 1993 is given in Fig. 2.6.2.2.(3).

3) Result of Demand Forecast

Table 2.6.2.2.(4) presents the area size and the demand in each kelurahan, Table 2.6.2.2.(5) presents the demand by area pattern, and Table 2.6.2.2.(6) presents the demand by area pattern in each kelurahan prepared based on our demand forecast. Fig. 2.6.2.2.(7) presents the demand growth during the period from 1974 through 1993.

(4) Conclusion

Table 2.6.2.2.(8) shows the telephone demand, population, number of households, telephone density and telephone diffusion rate.

- GAMBIR. KOTA. TANJUNG PRIOK EXCHANGE OFFICE SERVICE AREA AT PRESENT
- - - - ANCOL EXCHANGE OFFICE SERVICE AREA IN FUTURE
- JAKARTA PUSAT. UTARA
- KECAMATAN
- - - - KELURAHAN

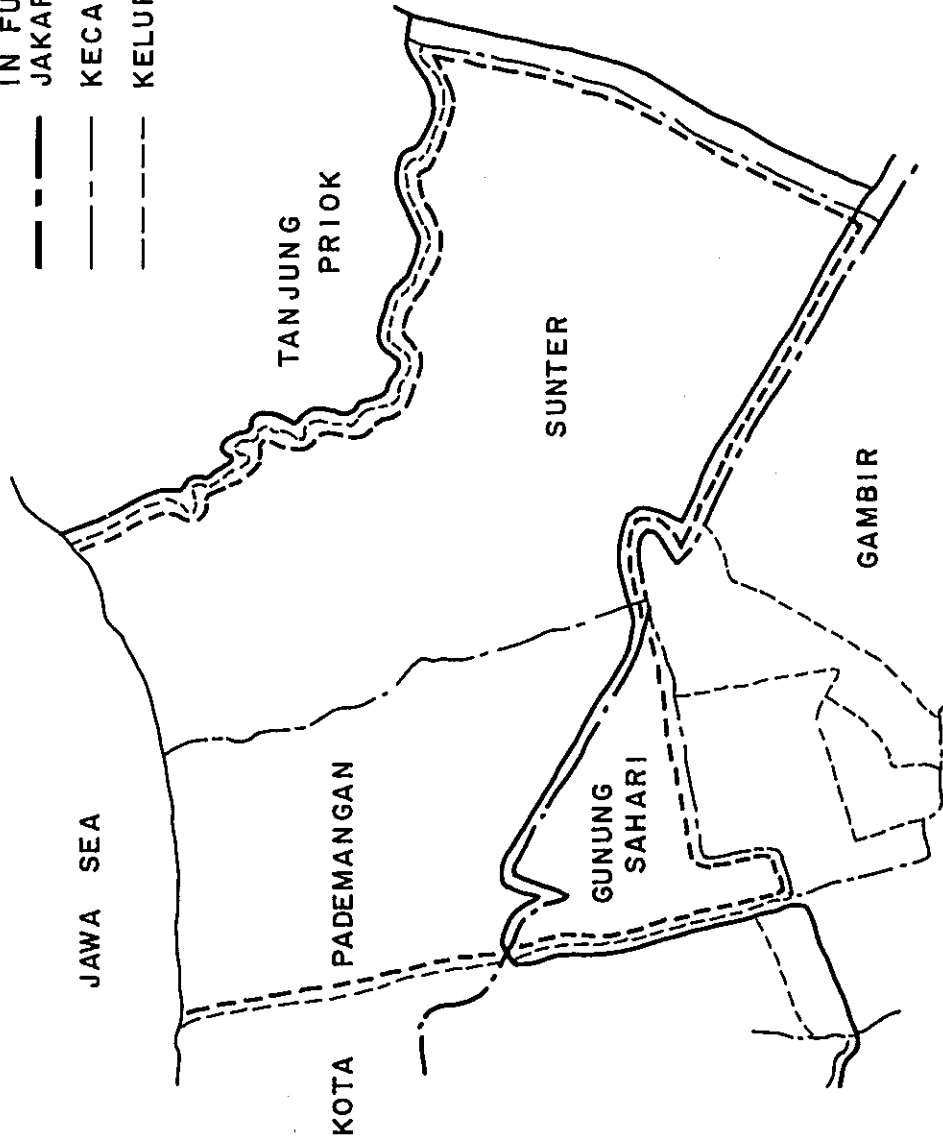


FIG. 2-6-2-2-(1) ANCOL EXCHANGE OFFICE SERVICE AREA

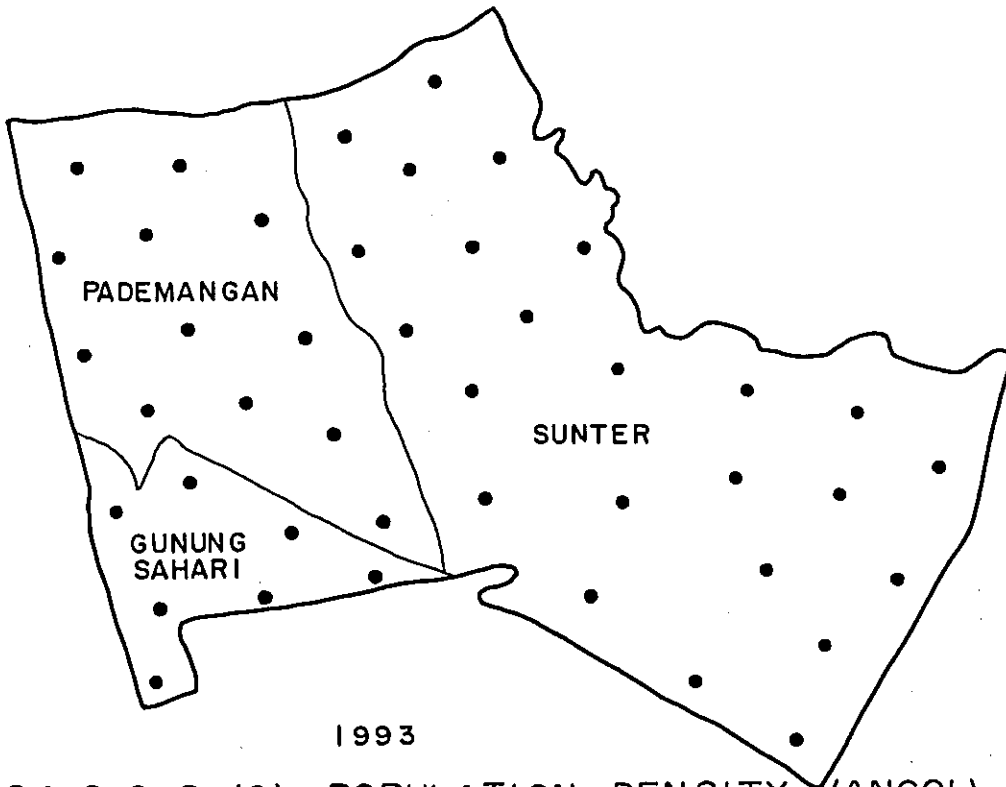
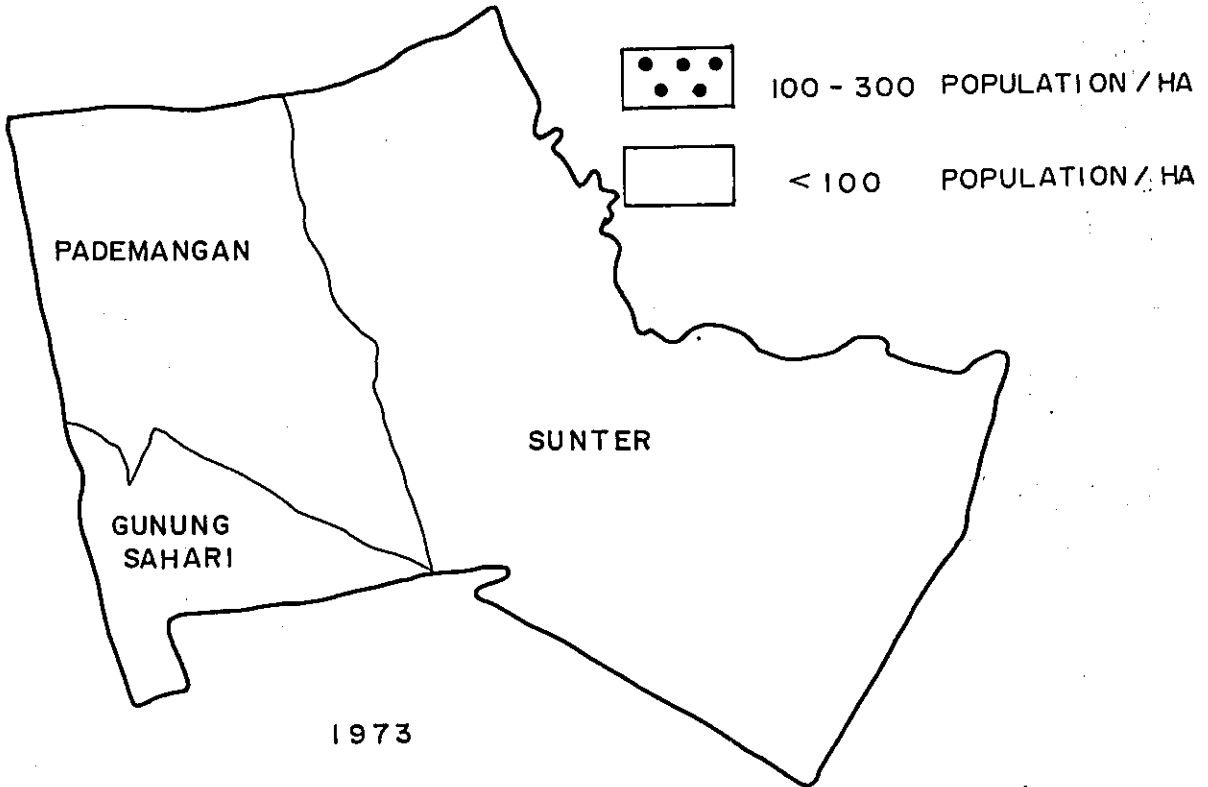


FIG.2-6-2-2-(2) POPULATION DENSITY (ANCOL)

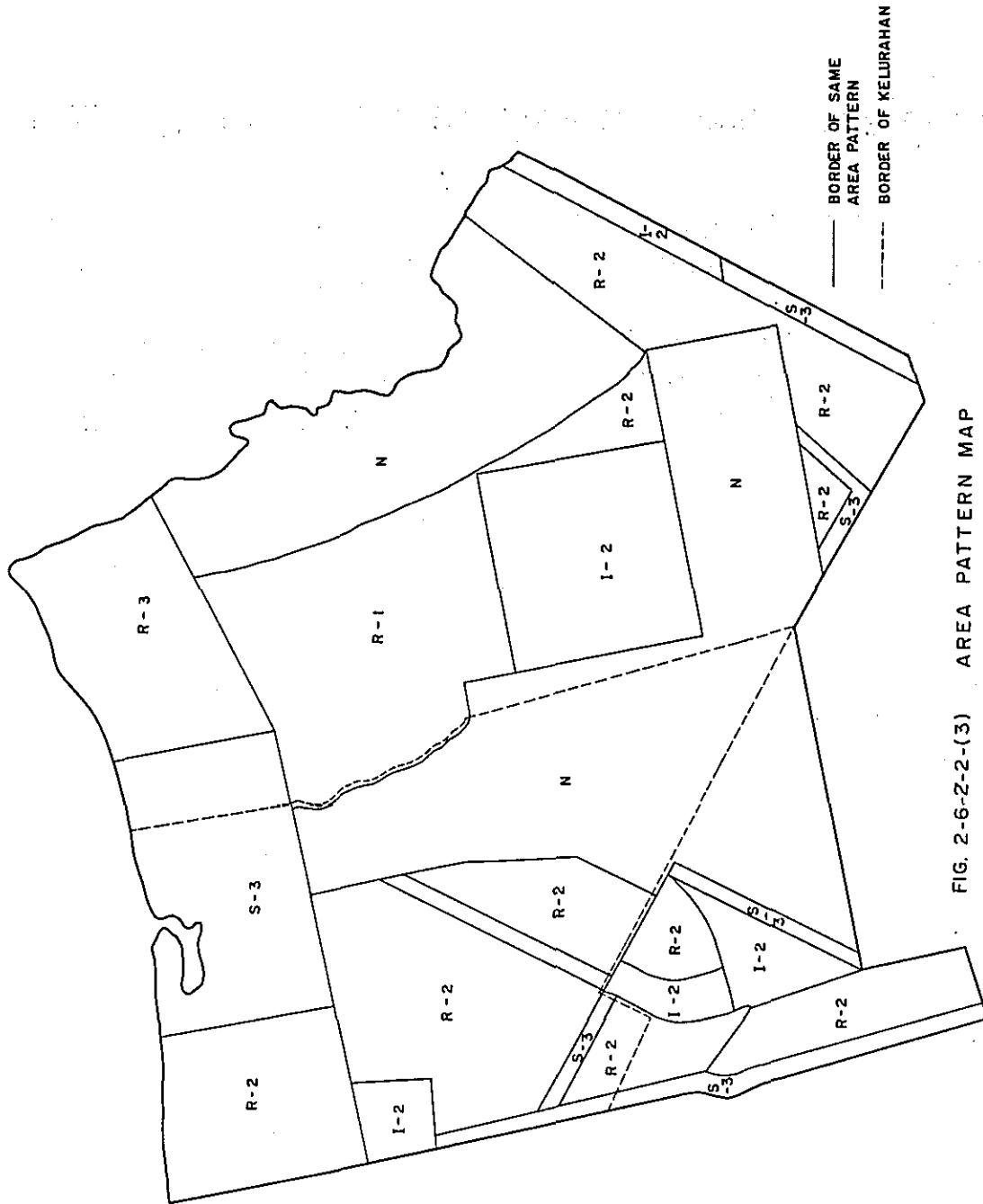


FIG. 2-6-2-2-(3) AREA PATTERN MAP
(ANCOL)

TABLE 2-6-2-2-(4) ANCOL EXCHANGE AREA AND TELEPHONE DEMAND

Kecamatan	Kelurahan	Area (ha)	Telephone demand in 1993	
Ancol	Gunung Sahari	244	2,730	
	Pademangan	522	8,075	
	Sunter	1,374	17,495	
	TOTAL		2,140	28,300

TABLE : 2-6-2-2-(5) ANCOL EXCHANGE OFFICE TELEPHONE DEMAND

Survey time: September 1974.

Item Classification	Area (ha)	1983		1993		Remarks
		Demand	Demand density	Demand	Demand density (%)	
S - 1						
S - 2						
S - 3	229.1	1,720	5.3	8,019	35	
Total	229.1	1,720	5.3	8,019	35	
O - 1						
O - 2						
Total						
R - 1						
R - 2	887	3,980	4.5	17,740	20	
R - 3	100	700	7.0	1,000	10	
Total	987	4,680	4.7	18,740	19	
I - 1						
I - 2	154.1	1,100	7.1	1,541	10	
Total	154.1	1,100	7.1	1,541	10	
Agriculture						
Others						
Non Demand	769.8					
Sub Total	2,140	7,500	3.5	28,300	13.2	
Miscellaneous		155		405		
TOTAL	2,140	7,655	3.5	28,705	13.2	

TABLE : 2-6-2-2-(6) ANCOL EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN
 Survey time: September 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
Ancol	Gunung Sahari	R-2	64	400	6.3	1,280	20.0		
		I-2	40	280	7.0	400	10.0		
		S-3	30	400	13.3	1,050	35.0		
	(1)	N	110						
	TOTAL	Sub Total		244	1,080	4.4	2,730	11.2	
		Miscellaneous			30		69		
				244	1,110	4.4	2,799	11.5	
	Pademangan	R-2		173	980	5.7	3,460	20.0	
		I-2		10	92	9.2	100	10.0	
		S-3		129	870	6.7	4,515	35.0	
	(2)	N		210					
	TOTAL	Sub Total		522	1,942	3.7	8,075	15.5	
		Miscellaneous			35		90		
				522	1,977	3.7	8,115	15.5	
	Sunter	R-2		650	2,600	4.0	13,000	20.0	
R-3			100	700	7.0	1,000	10.0		
I-2			104.1	728	7.0	1,041	10.0		
(3)	S-3		70.1	450	6.0	2,454	35.0		
	N		449.8						
TOTAL	Sub Total		1,374	4,478	3.3	17,495	12.7		
	Miscellaneous			90		246			
			1,374	4,568	3.3	17,741	12.9		

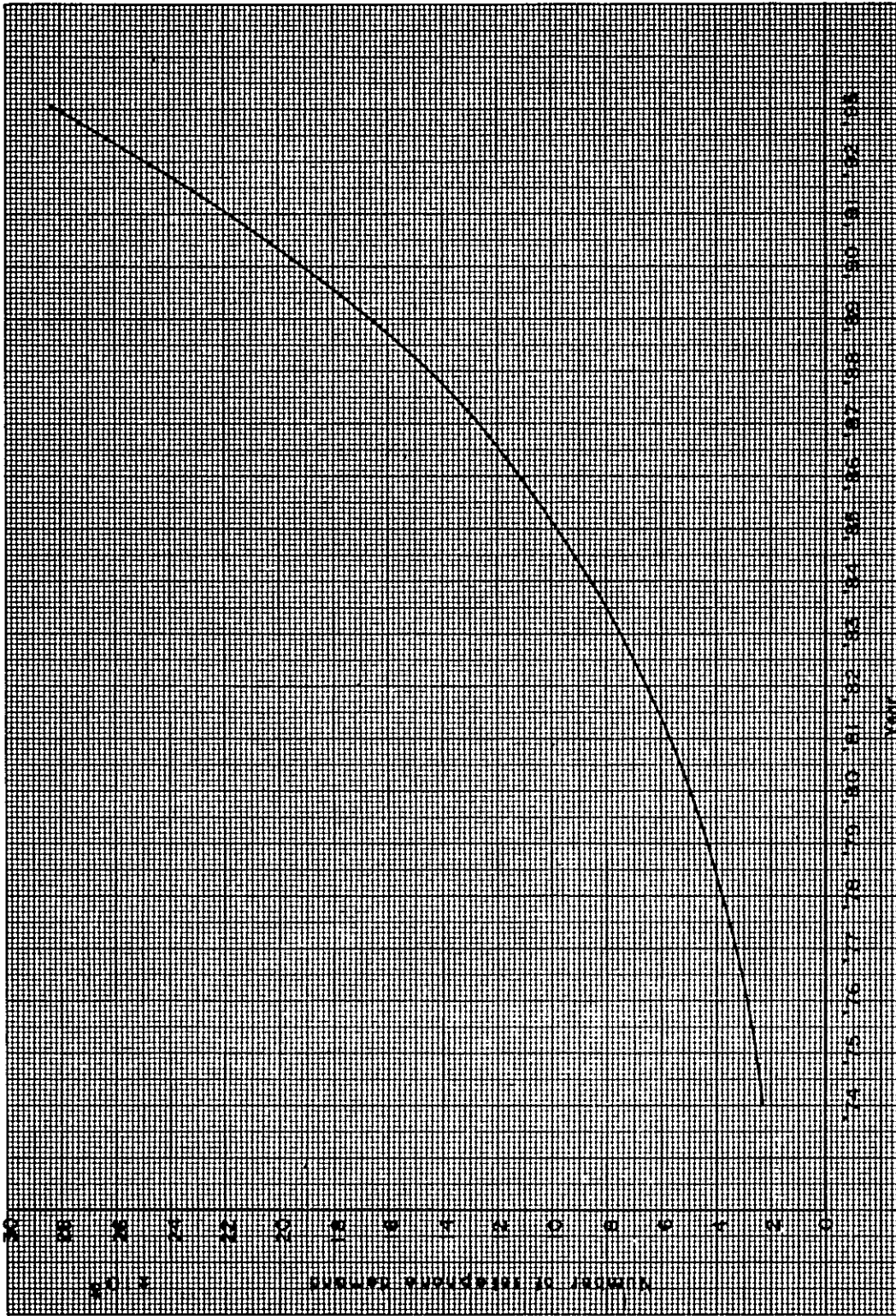


FIG. 2-6-2-2-(7) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
 (ANCOL EXCHANGE OFFICE)

TABLE : 2-6-2-2- (8)
 TELEPHONE DAMAND, POPULATION
 AND DIFFUSION RATIO IN 1993
 ANCOL EXCHANGE AREA

(Excluding miscellaneous)

A r e a	(ha)	2,410
Telephone demand		28,300
Population		430,000
Household		86,000
Population density (Population/ha)		150
Diffusion ratio (Demand/100 inhabitants)		6.6
Diffusion ratio (Demand/100 households)		32.7

2.6.2.3 PLUIT

(1) General Description

The future service area of Pluit Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. In the City Plan this area is designed to be an industrial and residential area. In the northern part of the area, many middle class houses are now under construction. In the north-eastern part scheduled to be a factory area, ground leveling has already been completed.

According to statistics of 1973 compiled by D.K.I. the future service area of Pluit Exchange Office is 1,366 hectares in size and has 17,600 households with a population of 83,000.

As of December 1974 the telephone subscriber lines number 619 and the waiting applicants 200. At present the subscribers are accommodated in Kota Exchange Office in the adjacent area. A new exchange office building has been completed, and the service-in with 5,000 line units is scheduled for 1975.

(2) Existing Service Area and Future Service Area

At present the telephone service in the Pluit Exchange Office service area is provided by Kota Exchange Office located in the adjacent area as shown in Fig. 2.6.2.3.(1).

The future service area comprises 1 kecamatan as shown in Fig. 2.6.2.3.(1) and Table 2.6.2.3.(2).

(3) Telephone Demand Forecast

1) Area Development Estimation

For telephone demand forecast the field survey was carried out by referring to the City Plan and the topographic map of Jakarta. In the southern half of the area many houses and factories are mixed. The houses surrounded by factories will be transferred in the future, according to the City Plan, to a western residential area proposed in the Plan.

The population in the Pluit Exchange Office service area will increase to 200,000 in 1993 from 83,000 as of 1973. Fig. 2.6.2.3.(3) presents the population density as of 1973 and 1993.

2) Area Pattern

The telephone demand by area pattern as of 1983 and 1993 is given in Table 2.6.2.3.(4). The telephone demand by area pattern in each kelurahan is shown in Table 2.6.2.3.(5).

The area pattern map of the Pluit Exchange Office service area as of 1993 is given in Fig. 2.6.2.3.(6).

3) Result of Demand Forecast

Our study result shows that the demand for residential telephones as of 1993 accounts for 61% and that for business telephones 39%. The Pluit Exchange Office service area will develop as a middle or small scale industrial area and, at the same time, as a middle class residential area.

Fig. 2.6.2.3.(7) presents the telephone demand growth curve during the period from 1974 through 1993. The demand as of 1993 is approximately 5 times that as of 1974.

(4) Conclusion

The telephone demand, as well as the population, number of households, population density and telephone diffusion rate, of the Pluit Exchange Office service area as of 1993 appears in Table 2.6.2.3.(8).

- KOTA EXCHANGE OFFICE SERVICE AREA AT PRESENT
- - - - - PLUIT EXCHANGE OFFICE SERVICE AREA IN FUTURE
- - - - - JAKARTA UTARA
- - - - - KECAMATAN
- - - - - KELURAHAN

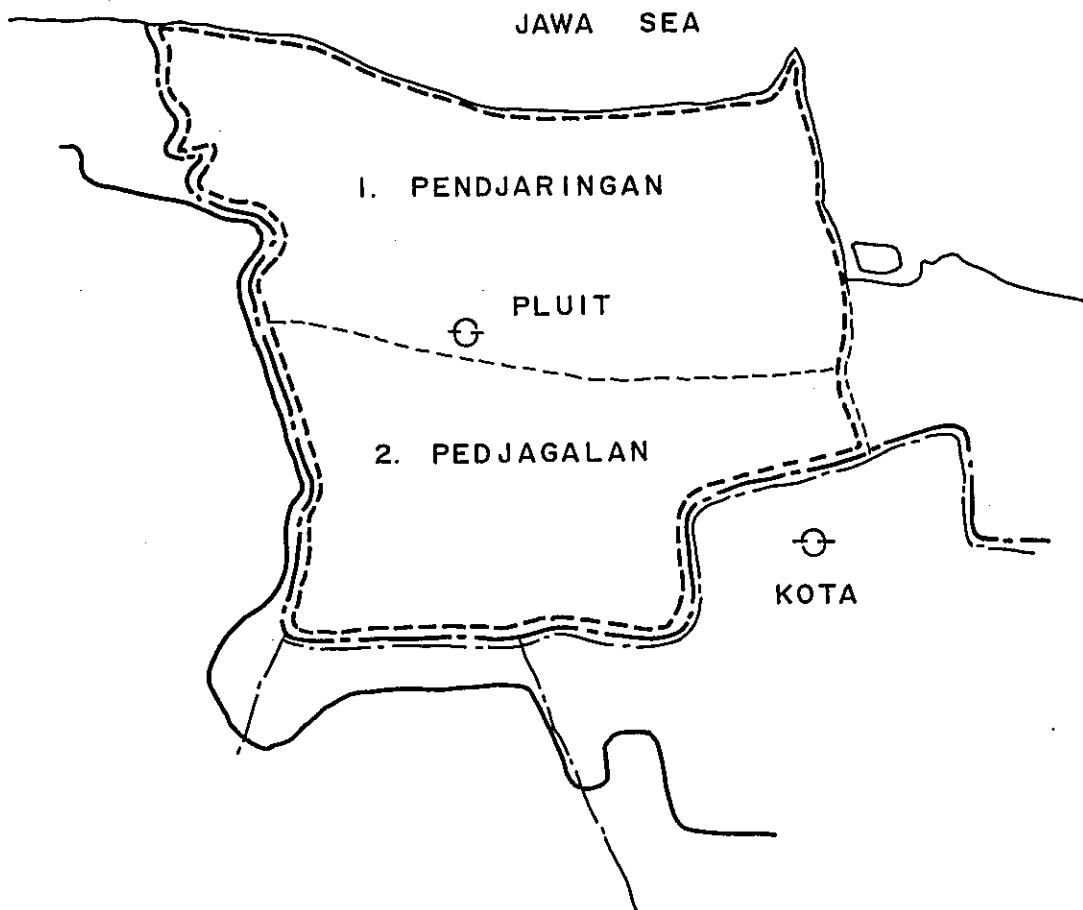
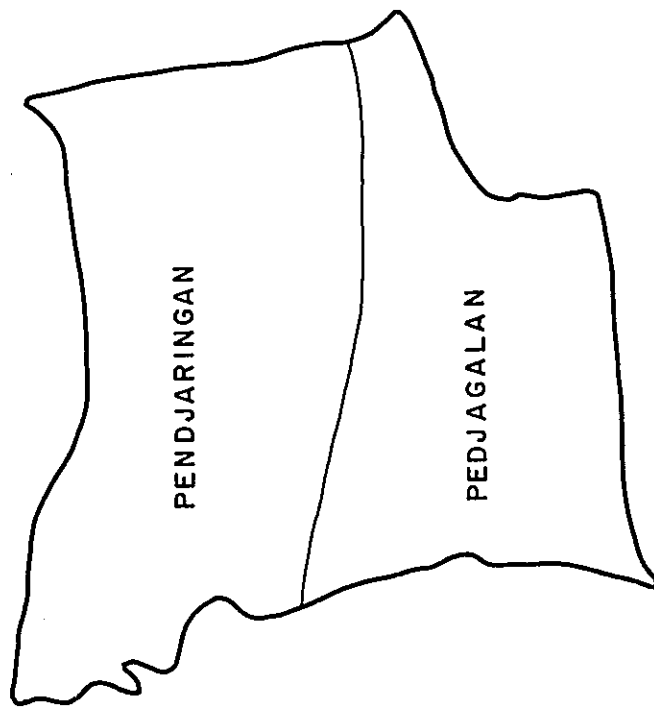
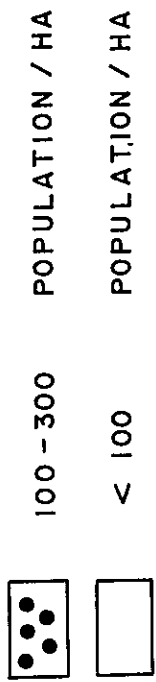
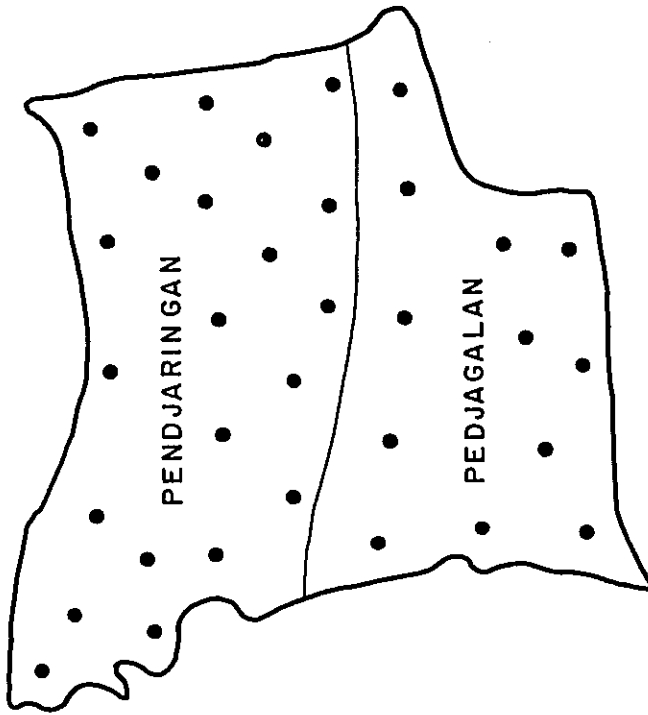


FIG. 2-6-2-3-(1)
 PLUIT EXCHANGE OFFICE SERVICE AREA



1973



1993

FIG. 2-6-2-3--(3) POPULATION DENSITY (PLUIT)

TABLE 2-6-2-3-(4) PLUIT EXCHANGE OFFICE TELEPHONE DEMAND

Survey time: September 1974.

Classification	Item	Area (ha)	1983		1993		Remarks
			Demand	Demand density	Demand	Demand density	
S	S-1						
	S-2						
	S-3	13.3	195	14.7	599	45.0	3.2
	Total	13.3	195	14.7	599	45.0	3.2
O	O-1						
	O-2						
	Total						
R	R-1						
	R-2	521.1	5,063	9.7	10,422	20.0	55.4
	R-3	134.8	531	4.0	1,078	8.0	5.7
	Total	655.9	5,594		11,500	17.6	61.1
I	I-1						
	I-2	515.4	2,211	4.4	6,700	13.0	35.7
	Total	515.4	2,211	4.4	6,700	13.0	35.7
Agriculture							
Other							
Non-Demand		181.4					
Sub-Total		1,366.0	8,000		18,799		100.0
Miscellaneous			200		501		
TOTAL		1,366.0	8,200		19,300		

TABLE 2-6-2-3-(5) PLUIT EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN

Survey time: September 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
PENJARINGAN	Penjaringan (1)	R-2	442.9	4,296	9.7	8,858	20.0		
		R-3	25.0	114	4.0	200	8.0		
		I-2	71.4	312	4.4	928	13.0		
		N	174.7						
		Sub Total		714.0	4,722	6.6	9,986	14.0	
		Miscellaneous			60		140		
		TOTAL		714.0	4,782		10,125		
	(2)	Pejagaian	S-3	13.3	195	15.0	599	45.0	
			R-2	78.2	767	9.1	1,564	20.0	
			R-3	109.8	417	4.0	878	8.0	
		I-2	444.0	1,899	4.4	5,772	13.0		
		N	6.7						
	Sub Total		652.0	3,278	5.0	8,813	13.5		
	Miscellaneous			140		361			
	TOTAL		652.0	3,418		9,174			

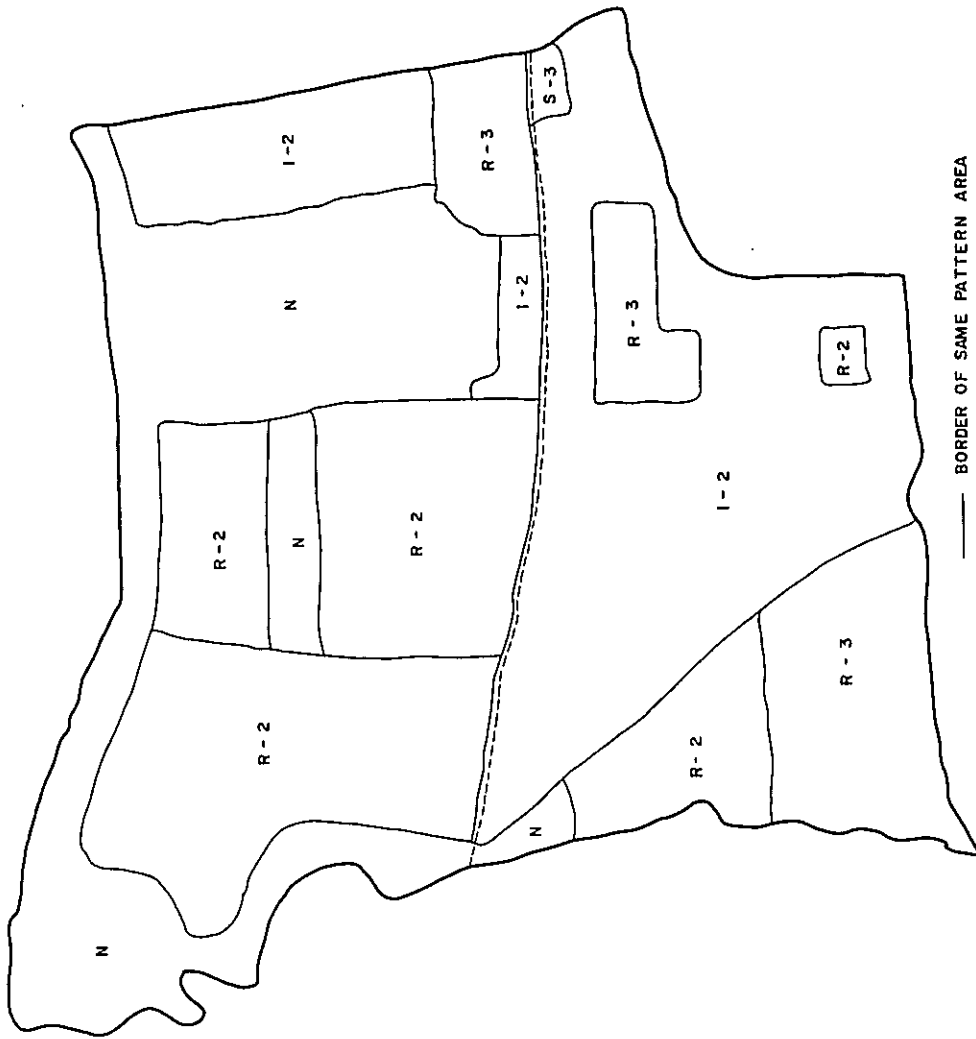


FIG. 2-6-2-3-(6) AREA PATTERN MAP (PLUIT)

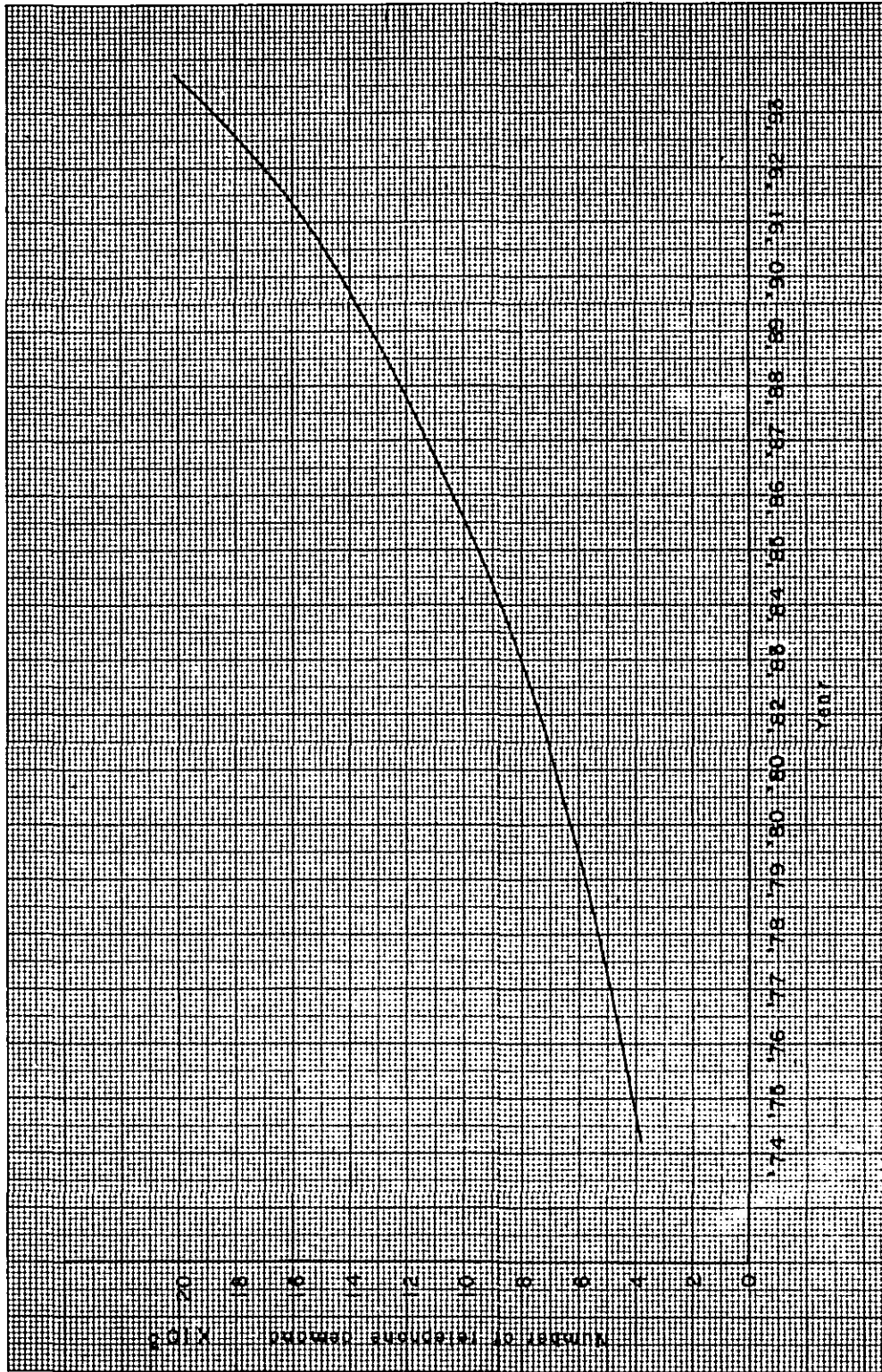


FIG. 2-6-2-3-(7) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
 (PLUIT EXCHANGE OFFICE)

TABLE 2-6-2-3-(8)
 TELEPHONE DEMAND, POPULATION AND
 DIFFUSION RATIO IN 1993
 PLUIT EXCHANGE AREA

(Excluding miscellaneous)

Area	(ha)	1,366
Telephone Demand		18,800
Population		198,000
Household		39,600
Population Density (Population/ha)		145.0
Diffusion ratio (Demand/100 inhabitants)		9.5
Diffusion ratio (Demand/100 households)		47.5

2.6.2.4 CENGKARENG

(1) General Description

The future service area of Cengkareng Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. In the City Plan this area is designed to be a residential and green area. In the northern part of Kapul kelurahan lies a vast rice field, which will remain to be a green area with no telephone demand even in the future. In the southern part a number of villages called Kampung are found. The area near the villages is designed to be a low class residential area.

According to statistics compiled by D.K.I. this service area is 3,267 hectares in size and, as of 1973, has 13,700 households with a population of 55,900. The population increase in the future is foreseen.

At present the subscribers are accommodated in Kota Exchange Office. As of November 1974 the telephone subscriber lines number 47 and the waiting applicants 83. Construction of a new exchange office building is scheduled for 1975.

(2) Existing and Future Service Area

Fig. 2.6.2.4.(1) presents the future service area of Cengkareng Exchange Office. This area comprises 1 kecamatan as shown in Table 2.6.2.4.(2).

(3) Telephone Demand Forecast

1) Area Development Estimation

In our area development estimation the City Plan was used as the major reference. In the area new roads are under construction and, for the existing narrow roads, road width expansion works are under way. New residences are observed in places but small in number. In the future, however, a number of middle and low class residences will be built there by private companies and the townsmen.

A sharp population increase will be seen in the area, that is, from 55,900 as of 1973 to 537,000 as of 1993. Fig. 2.6.2.4.(3) presents the population density as of 1973 and 1993.

2) Area Pattern

The telephone demand by area pattern as of 1983 and 1993 is shown in Table 2.6.2.4.(4). The telephone demand by area pattern in each kelurahan is given in Table 2.6.2.4.(5).

Fig. 2.6.2.4.(6) presents the area pattern map of the Pluit Exchange Office service area as of 1993.

3) Result of Demand Forecast

Our study result shows that the residential telephone demand accounts for 82% and the office telephone demand 18%. The area will develop in the future as

a low class residential area. The rice field will remain as a green area where the telephone demand will scarcely take place.

Fig. 2.6.2.4.(7) presents the telephone demand growth curve during the period from 1974 through 1993. The demand as of 1993 is 26 times as much as that as of 1974.

(4) Conclusion

Table 2.6.2.4.(8) shows the telephone demand, population, number of households, population density and telephone diffusion rate.

- JAKARTA BARAT
- EXCHANGE OFFICE SERVICE AREA IN FUTURE
- CITY BOUNDARY
- KECAMATAN
- KELURAHAN

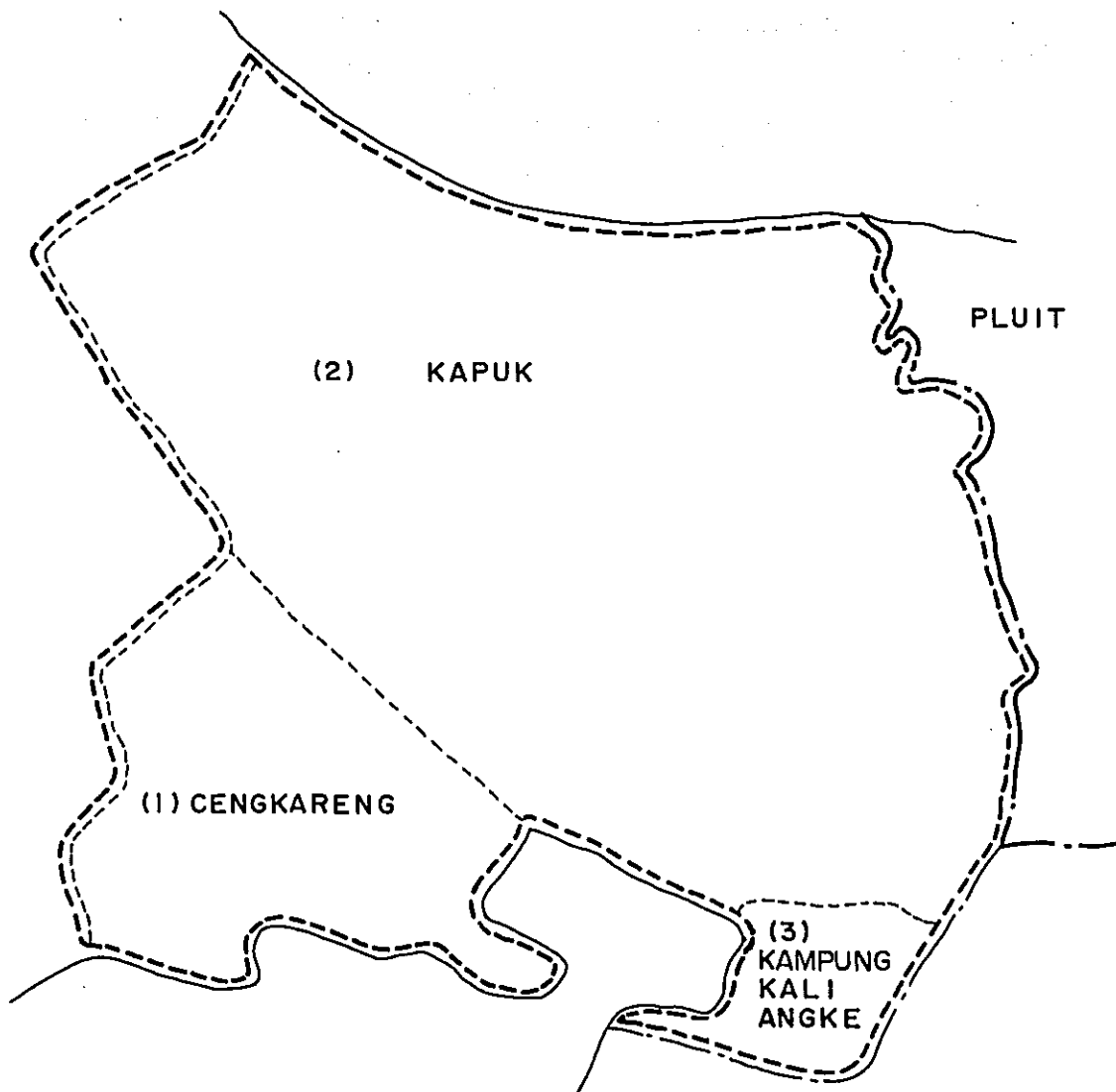
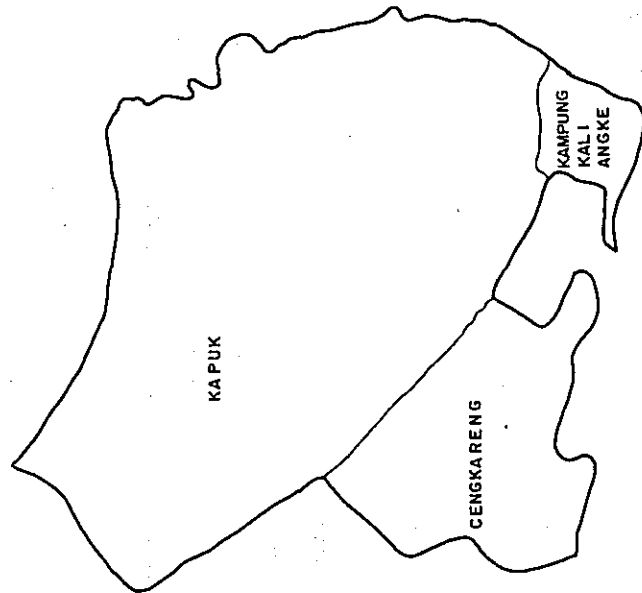
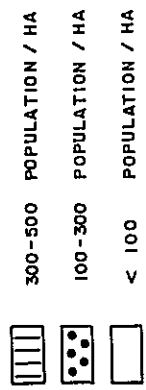


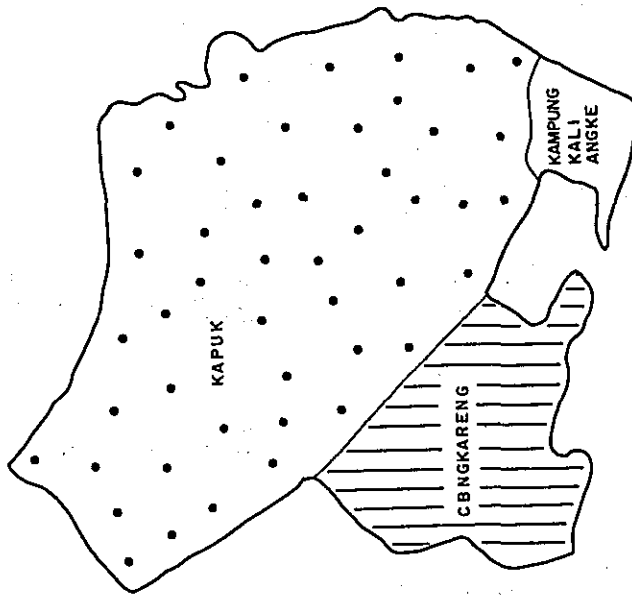
FIG. 2-6-2-4-(1)
 CENKARENG EXCHANGE OFFICE SERVICE AREA

TABLE 2-6-2-4-(2)
 FUTURE CENGKARENG EXCHANGE AREA
 AND TELEPHONE DEMAND

Kecamatan	Kelurahan	Area (ha)	Telephone Demand in 1993	
CENGKARENG	Cengkareng	674	7,057	
	K a p u k	2,429	5,601	
	Kampung Kali Angke	164	1,942	
	TOTAL		3,267	14,600



1973



1993

FIG. 2-6-2-4 (3) POPULATION DENSITY (CENKARENG)

TABLE 2-6-2-4-(4) CENGKARENG EXCHANGE OFFICE TELEPHONE DEMAND

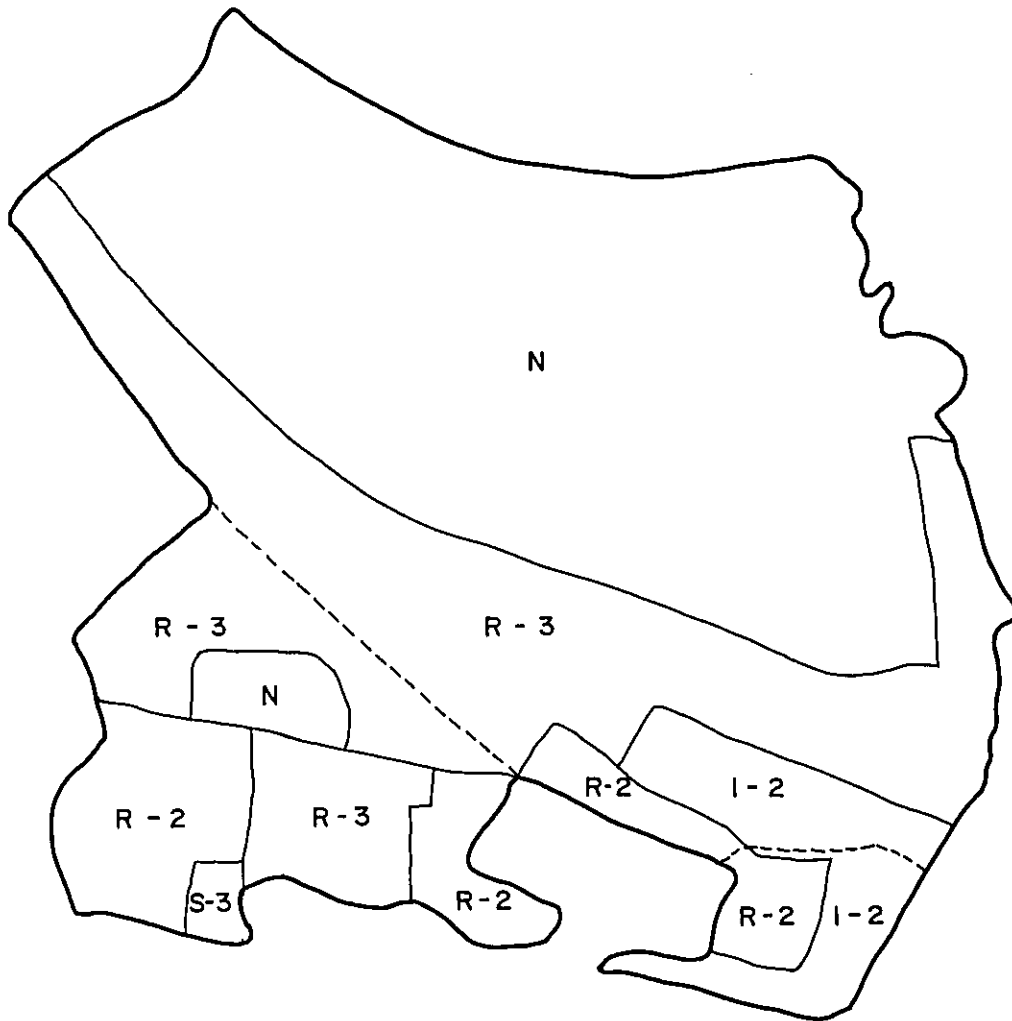
Survey Time: September 1974.

Item	Area (ha)	1983		1993		Remarks
		Demand	Demand density	Demand	Demand density	
S	S-1					
	S-2					
	S-3	180	9.0	600	30.0	4.1
	Total	180	9.0	600	30.0	4.1
O	O-1					
	O-2					
	Total					
R	R-1					
	R-2	1,144	2.8	6,129	15.0	42.0
	R-3	917	1.1	5,839	7.0	40.0
	Total	1,242.7	1.7	11,968	9.6	82.0
I	I-1					
	I-2	203.2	1.3	2,032	10.0	13.9
	Total	203.2	1.3	2,032	10.0	13.9
Agriculture						
Others						
Non - Demand	1,801.1					
Sub - Total	3,267.0	2,550		14,600		100.0
Miscellaneous		50		300		
TOTAL	3,267.0	2,600		14,900		

TABLE 2-6-2-4-(5) CENGKARENG EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN

Survey Time: September 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
CENGKARENG	Cengkareng (1)	S-3	20.0	180	9.0	600	30.0		
		R-2	302.0	846	2.8	4,530	15.0		
		R-3	275.3	303	1.1	1,927	7.0		
		N	76.7						
		Sub Total	674.0	1,329	2.0	7,057	10.5		
		Miscellaneous		25		105			
		TOTAL		674.0		7,162			
	Kapuk (2)		R-2	46.2	130	2.8	693	15.0	
			R-3	558.8	614	1.1	3,912	7.0	
			I-2	99.6	130	1.3	996	10.0	
		N	1,724.4						
		Sub Total	2,429.0	874	0.4	5,601	2.3		
	Miscellaneous		16		120				
	TOTAL		2,429.0		5,421				
Kampung Kali Angke (3)		R-2	60.4	168	2.8	906	15.0		
		I-2	103.6	129	1.2	1,036	10.0		
		Sub Total	164.0	297	1.8	1,942	12.8		
		Miscellaneous		9		75			
	TOTAL			306		2,017			



—— BORDER OF SAME PATTERN AREA
 - - - - - BORDER OF KELURAHAN

FIG. 2-6-2-4-(6)
 AREA PATTERN MAP (CENKARENG)

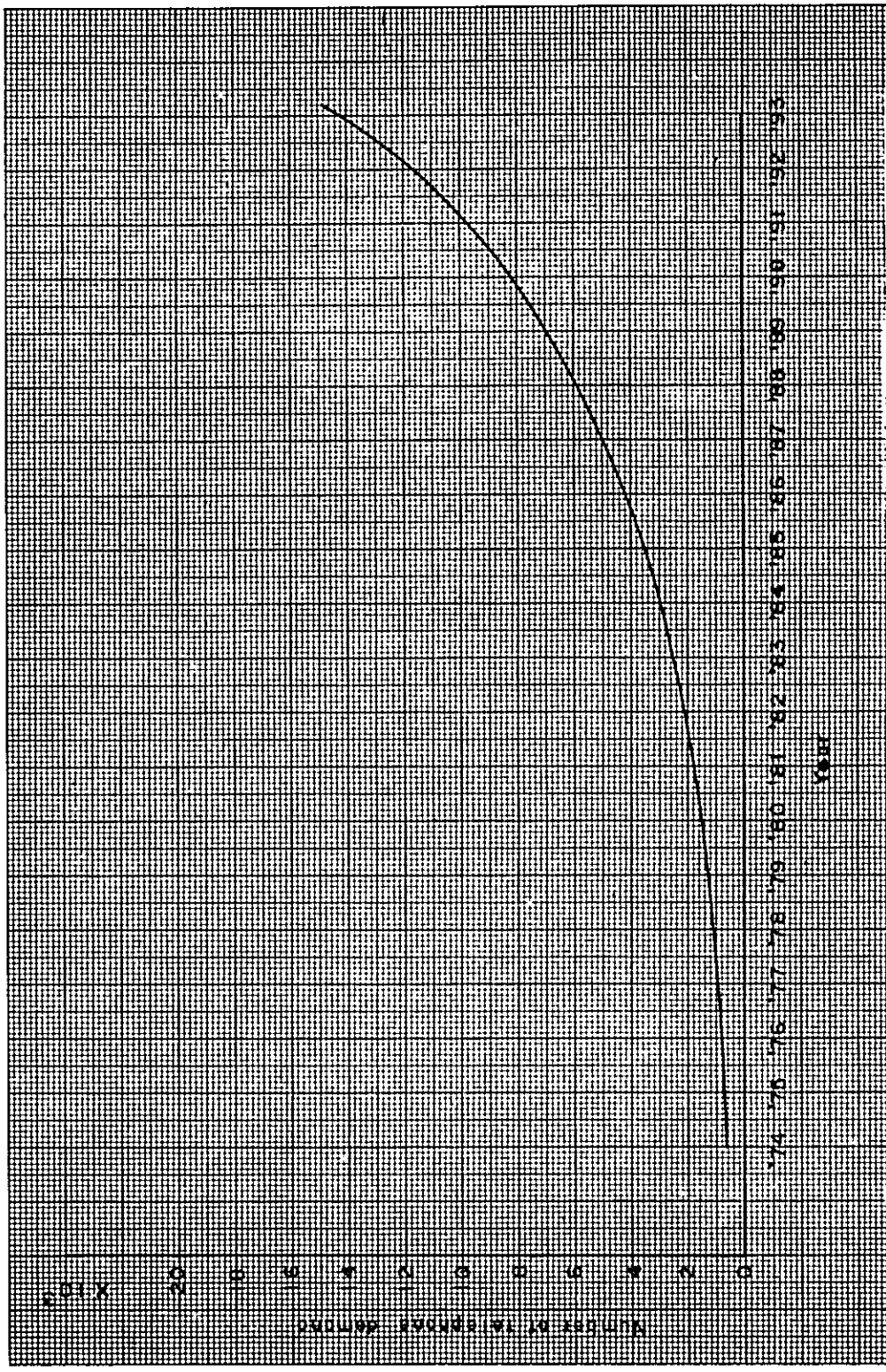


FIG. 2-6-2-4-(7) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
 (CENKARENG EXCHANGE OFFICE)

TABLE 2-6-2-4-(8)
 TELEPHONE DEMAND, POPULATION AND
 DIFFUSION RATION IN 1993
 CENGKARENG EXCHANGE AREA

(Excluding miscellaneous)

Area	(ha)	3,267
Telephone demand		14,600
Population		537,000
Household		107,400
Population density (Population/ha)		164.0
Diffusion ratio (Demand/100 inhabitants)		2.7
Diffusion ratio (Demand/100 households)		13.6

2.6.2.5 TEGAL ALUR

(1) General Description

The future service area of Tegal Alur Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. This area is located in the north-western part of Jakarta. At present no telephone exchange office exists in the area. A rice field occupies the most part, and farmhouses are scattered here and there.

According to statistics compiled by D.K.I. this service area is 3,108 hectares in size and, as of 1973, has 8,300 households with a population of 40,600. In the City Plan the area is designed to be a residential area and a green area. The rice field will remain as it is and no telephone demand will take place even in the future.

(2) Future Service Area

The future service area of Tegal Alur Exchange Office comprises 1 kecamatan as shown in Fig. 2.6.2.5.(1) and Table 2.6.2.5.(2).

(3) Telephone Demand Forecast

1) Area Development Estimation

In the City Plan this area is designed to be a green area and a residential area. The rice field which occupies the major part of the area will remain as it is.

Low class houses will be built in the far future but not in the near future. The population will increase to 550,000 in 1993 from 40,600 as of 1973.

Fig. 2.6.2.5.(3) presents the population density as of 1973 and 1993.

2) Area Pattern

The telephone demand by area pattern as of 1983 and 1993 is shown in Table 2.6.2.5.(4). The telephone demand by area pattern in each kelurahan is shown in Table 2.6.2.5.(5).

Fig. 2.6.2.5.(6) presents the area pattern map of the object area as of 1993.

3) Result of Demand Forecast

Our study result shows that the ratio of the residential telephone demand to the whole demand is 95%.

Fig. 2.6.2.5.(7) shows the telephone demand growth rate during the period from 1974 through 1993. The telephone demand as of 1993 is 32 times the demand as of 1974.

(4) Conclusion

Table 2.6.2.5.(8) presents the telephone demand, population, number of households, population density and telephone diffusion rate in the Tegal Alur Exchange Office service area as of 1993.

- EXCHANGE OFFICE SERVICE AREA IN FUTURE
- CITY BOUNDARY
- KELURAHAN

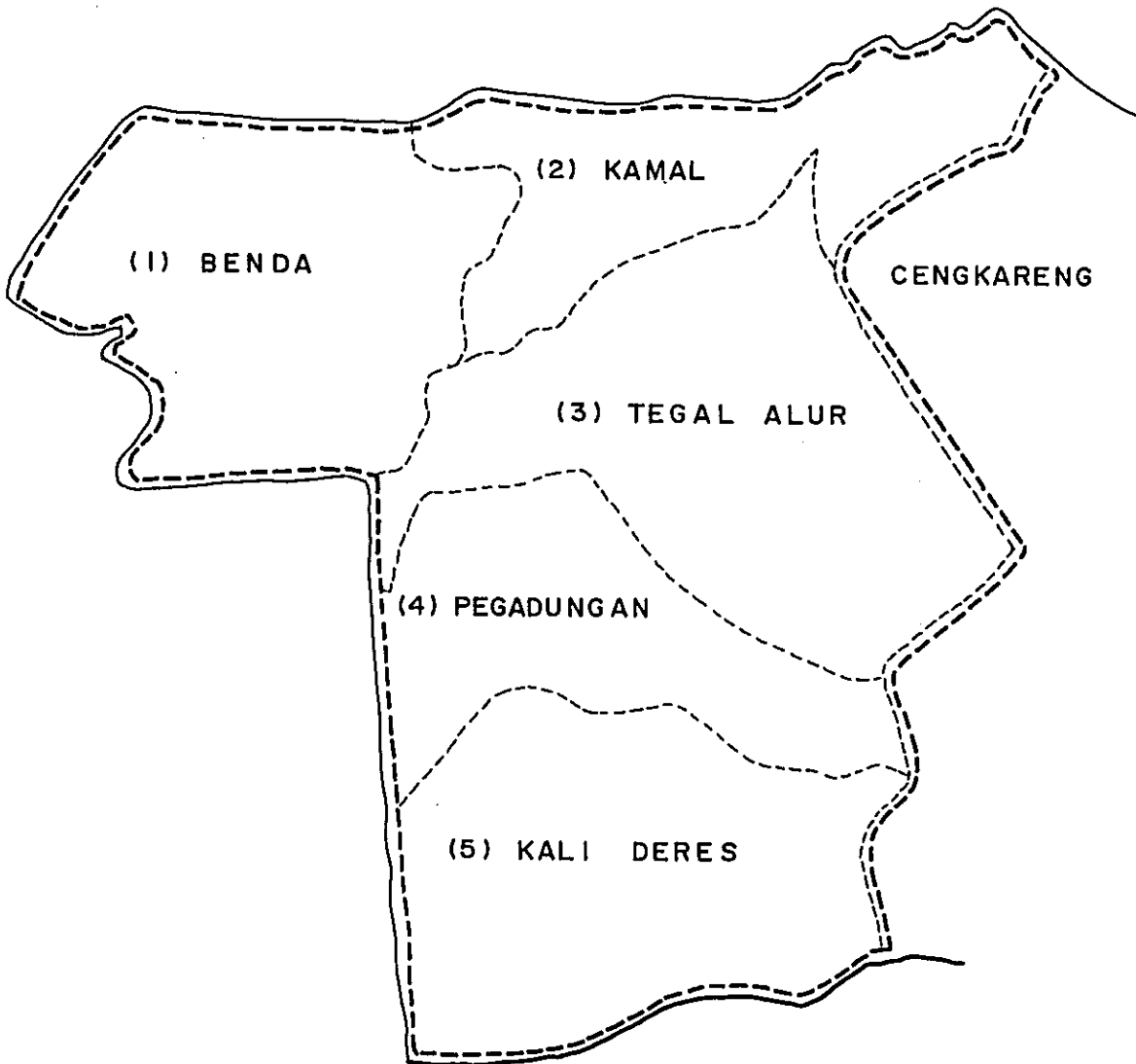


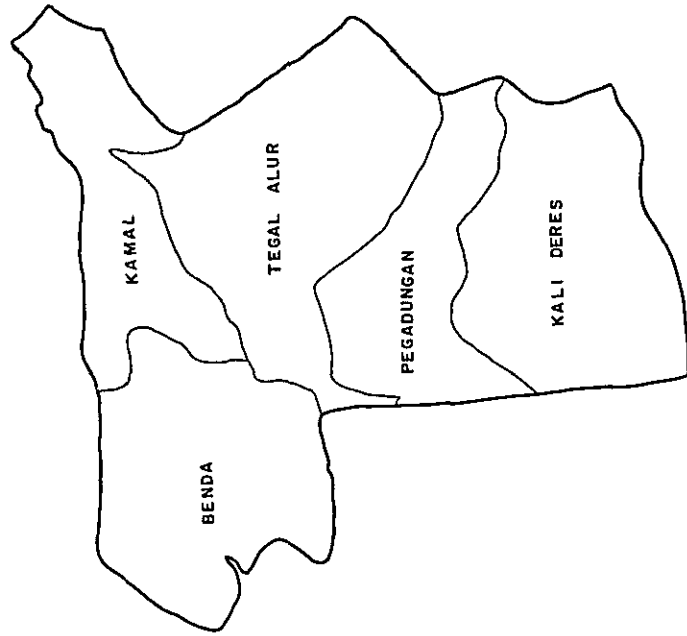
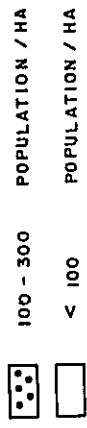
FIG. 2-6-2-5-(1)
 TEGAL ALUR EXCHANGE OFFICE SERVICE AREA

TABLE 2-6-2-5-(2)

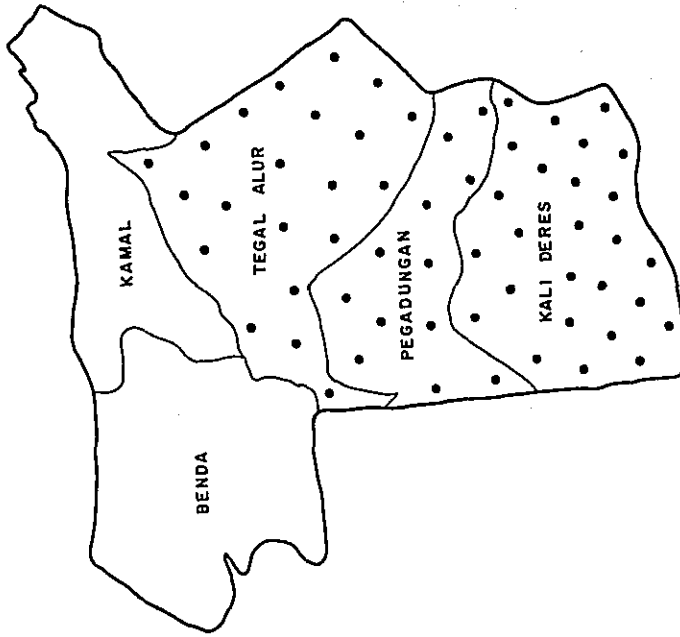
FUTURE TEGAL ALUR EXCHANGE AREA AND TELEPHONE DEMAND

Kecamatan	Kelurahan	Area (ha)	Telephone demand in 1993	
CENGKARENG	Benda	689.2	888	
	Kamal	451.6	578	
	Tegal Alur	761.2	1,723	
	Pegadungan	489.8	1,492	
	Kali Deres	716.2	4,019	
	TOTAL		3,108	9,300

(TEGAL ALUR)



1973



1993

FIG. 2-6-2-5-(3)
POPULATION DENSITY

TABLE 2-6-2-5-(4)

TEGAL ALUR EXCHANGE OFFICE TELEPHONE DEMAND

Survey time: September 1974.

Item Classification	Area (ha)	1983		1993			Remarks
		Demand	Demand density	Demand	Demand density	Demand (%)	
S	S-1						
	S-2						
	S-3	144	9.0	480	30.0	5.2	
	Total	144	9.0	480	30.0	5.2	
O	O-1						
	O-2						
	Total						
R	R-2						
	R-2	453	2.8	2,426	15.0	26.1	
	R-3	903	1.0	6,394	7.0	68.7	
	Total	1,356	1.3	8,820	8.2	94.8	
I	I-1						
	I-2						
	Total						
Agriculture							
Others							
Non-Demand	2,016.9						
Sub-Total	3,108.0	1,500		9,300		100.0	
Miscellaneous		20		100			
TOTAL	3,108.0	1,520		9,400			

TABLE 2-6-2-5-(5) 1/2

TEGAL ALUR EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (1)

Survey Time: September 1974

Kecamatan	Kelurahan	Pattern	Area	1983		1993		Remarks
				Demand	Demand density	Demand	Demand density	
CENGKARENG	Benda (1)	R - 3	126.8	127	1.0	888	7.0	
		N	562.4					
		Sub Total	689.2	127	1.0	888	7.0	
		Miscellaneous		2		9		
		TOTAL	689.2	129		897		
	Kamal (2)	R - 3	82.6	83	1.0	578	7.0	
		N	369.0					
		Sub Total	451.6	83	1.0	578	7.0	
		Miscellaneous		1		6		
		TOTAL	451.6	84		684		
Tegal Alur (3)	R - 3	246.2	246	1.0	1,723	7.0		
	N	515.0						
	Sub Total	761.2	246	1.0	1,723	7.0		
	Miscellaneous		3		17			
	TOTAL	761.2	249		1,740			

TABLE 2-6-2-5-(5) 2/2
TEGAL ALUR EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (2)
 Survey Time: September 1974

Kecamatan	Kelurahan	Pattern	Area	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
CENGKARENG	Pegadungan (4)	R-3	213.1	202	1.0	1,492	7.0		
		N	276.7						
		Sub Total	489.8	202	1.0	1,492	7.0		
		Miscellaneous		2		15			
	TOTAL		489.8	204		1,507			
	Kali Deres (5)	S-3		16.0	144	9.0	480	30.0	
		R-2		161.7	453	2.8	2,426	15.0	
		R-3		244.7	245	1.0	1,713	7.0	
		N		293.8					
		Sub Total		716.2	842	1.2	4,619	6.5	
	Miscellaneous			12		53			
	TOTAL		716.2	854		4,672			

(TEGAL ALUR)

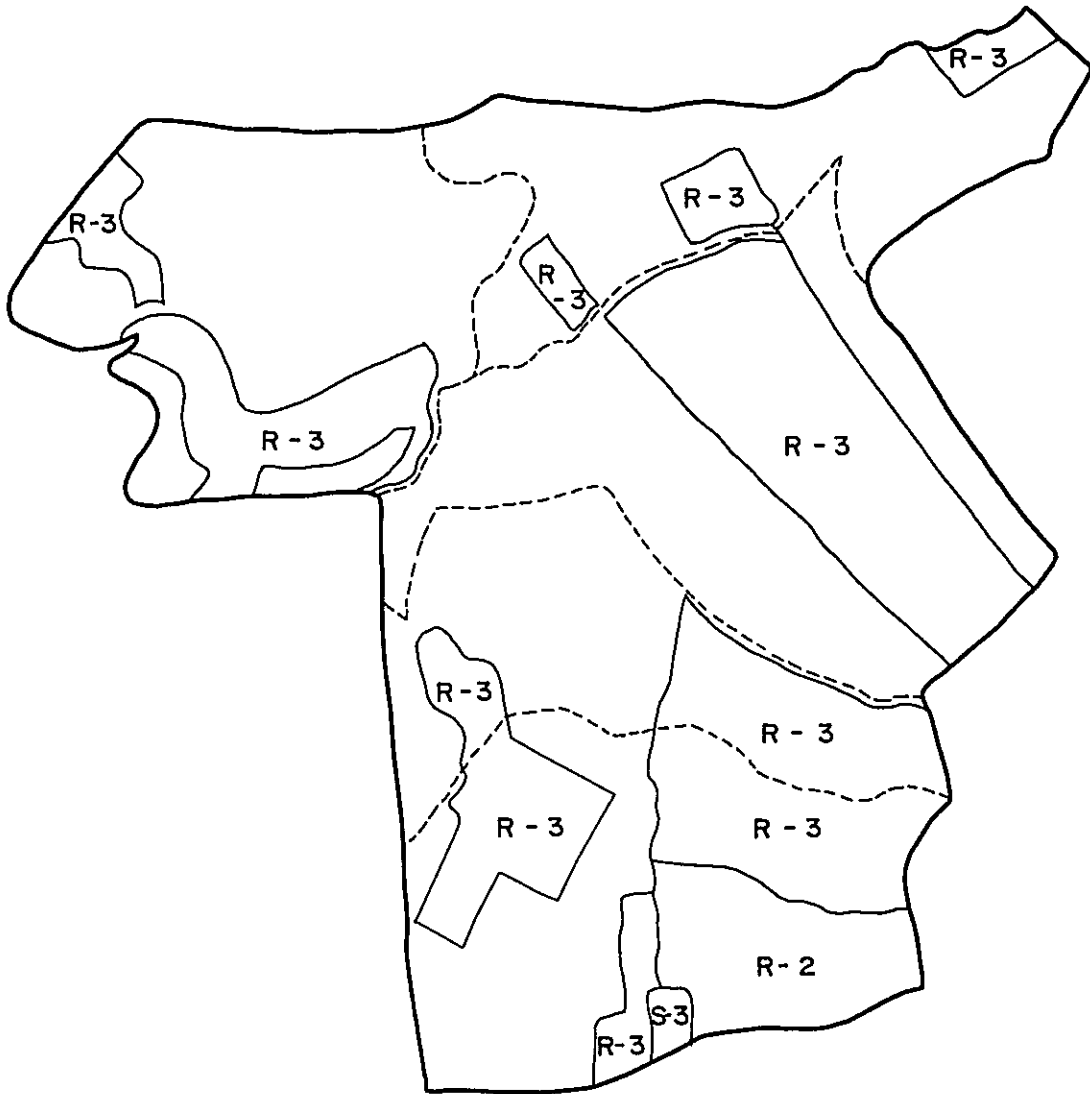


FIG. 2-6-2-5-(6)
AREA PATTERN MAP

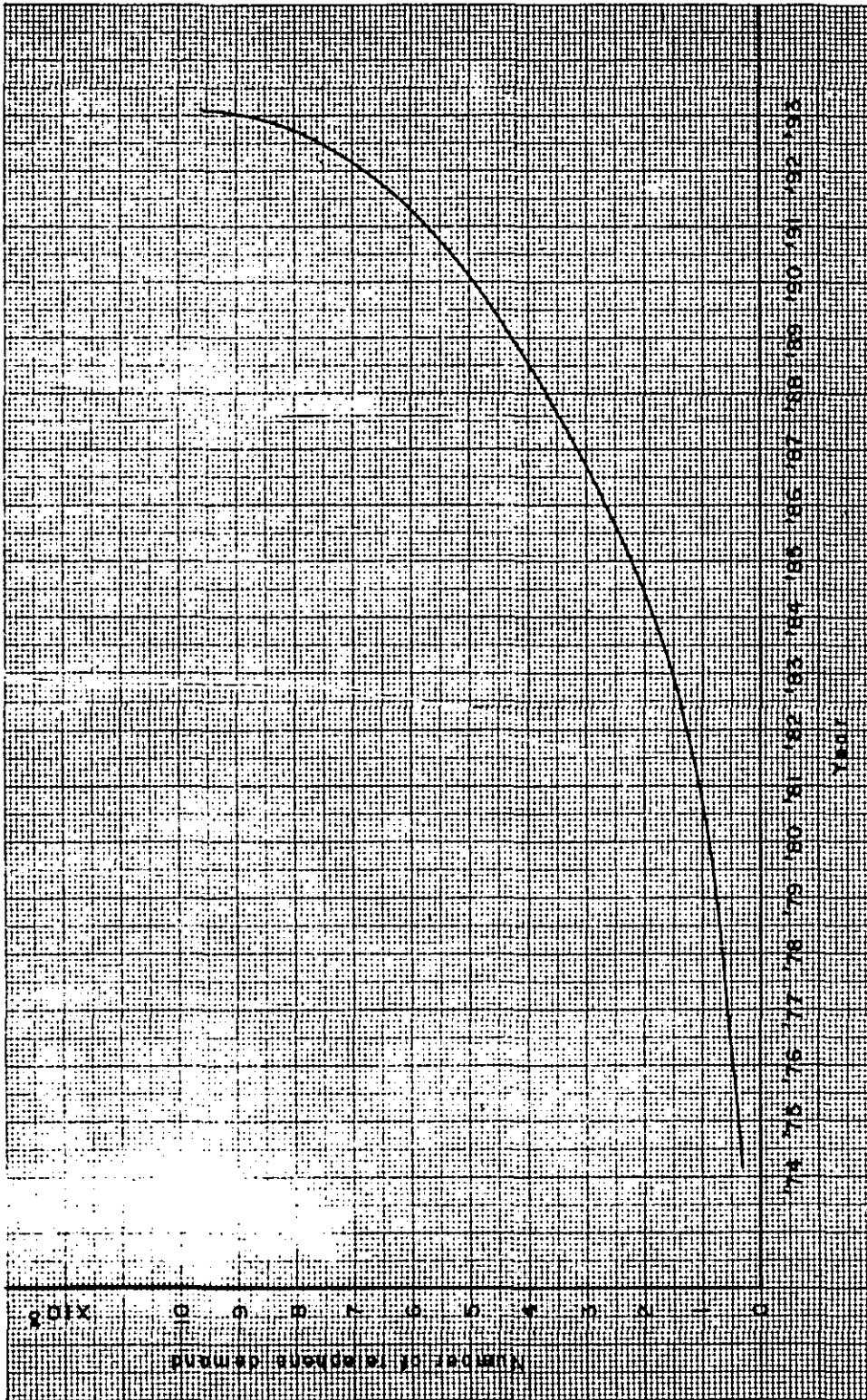


FIG. 2-6-2-5-(7) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
 (TEGAL ALUR EXCHANGE OFFICE)

TABLE 2-6-2-5-(8)

TELEPHONE DEMAND, POPULATION AND DIFFUSION RATIO IN 1993

TEGAL ALUR EXCHANGE AREA

(Excluding miscellaneous)

Area	(ha)	3,108
Telephone demand		9,300
Population		550,000
Household		110,000
Population density (Population/ha)		177.0
Diffusion ratio (Demand/100 inhabitants)		1.7
Diffusion ratio (Demand/100 households)		8.5

2.6.2.6 GAMBIR

(1) General Description

Demand forecast was carried out for the future service area of Gambir Exchange Office determined by the 2nd Five-Year Plan of PERUMTEL. The future service area is 2,136.7 hectares in size and, as of the end of 1972, has 104,917 households with a population of 607,955. The subscriber lines number 12,649, while the waiting applicants amount to 1,377.

Being located in the center of Jakarta, the Gambir Exchange Office service area is a political, economic and cultural center of the whole nation, not to speak of Jakarta. There exist many governmental, public and their related organizations' buildings, as well as private enterprises' buildings. Therefore, the day population exceeds the night population there. In the morning and evening the vehicle traffic congestion is often observed on Thamrin Street. The telephone traffic, too, is concentrated in Gambir Exchange Office from other exchange offices. Gambir Exchange Office is not only the largest office in Indonesia but also the gateway for international communications.

Whereas the telephone diffusion rate per 100 inhabitants in Jakarta is as small as 0.9, that of the Gambir Exchange Office service area is 2.4, the maximum figure among the service areas in Jakarta.

In the center of this area lies a large public place called Monas Square or National Memorial Square. There exists a tall memorial tower erected in commemoration of many heroes of Independence. The Monas Square is surrounded by governmental and public organizations' buildings, such as the official residence of the President (Independence Palace), buildings of Perutamina, and private companies' buildings. It can be said that this is the most important area in Indonesia. It is forecasted that the Monas Square will remain unchanged but the peripheral area will be occupied by buildings of more than 4 stories in the future.

The northern part of the Gambir Exchange Office service area adjoins the Kota Exchange Office service area. In this part is found Pasar Baru which will further prosper in the future as a high class shopping area.

In the vicinity of Pasar Baru and Nusantara Street many business offices are located. Their business is flourishing at present and will become more prosperous in the future. This area will develop into a middle scale office area having buildings of less than 4 stories.

In the eastern part near Cempaka Putih a public market named Pasa Senen lies. In the vicinity of the market is found a small space where land adjustment is yet to be done. In the future this area will prosper as a large scale public market as designed in the City Plan.

On both sides of Kramat Raya Street and Salemba Street many tall buildings exist. The areas along these main streets will prosper as large or middle scale business areas in the future. However, the middle and low class residences behind the buildings on the streets will remain even in the future.

Thamrin Street lies to the south of the Monas Square. On both sides of the street stand many companies, banks, hotels, embassies, etc. In addition many new buildings are under construction. At present only this area in Jakarta deserves the name of "business office area", and will further prosper as a business center.

The western part of Gambir is adjacent to Slipi. This area is crowded mostly with middle and low class residences. This area will remain as it is even in the future.

(2) Existing Service Area and Future Service Area

Fig. 2.6.2.6.(1) presents the existing service area and the future service area of Gambir Exchange Office, the latter being the object area of our demand forecast. This area comprises 5 kecamatans as shown in Table 2.6.2.6.(2).

(3) Telephone Demand Forecast

1) Area Development Estimation

(a) Trend in Population Density

According to our forecast result, the population of the Gambir Exchange Office service area will decrease to 575,000 in 1993 from 608,000 as of 1972. This phenomenon is usually observed in major city centers in the world.

Speaking of the trend in population in each kelurahan, the population in such kelurahans as Petojo Selatan, Kebon Kelapa, Pasar Baru and Kramt, will decrease, while in Kebon it will continue to increase even in the future.

Fig. 2.6.3.6.(3) presents the population density as of 1973 and 1993.

(b) Area Pattern

The area pattern of the Gambir Exchange Office service area as of 1993 is given in Fig. 2.6.2.6.(4).

2) Area Pattern

Table 2.6.2.6.(5) presents the area size and the telephone demand by area pattern as of 1993. As seen in the table, a fairly large part of the residential area will turn into an office area. Main office areas are located in the periphery of the Monas Square and along the main streets, such as Thamrin Street, Hayam Wuruk Street and Gajahmada Street. Along with the development of Jakarta these areas will prosper further in the future. In 1993 the business office area will occupy 39% of the whole service area of Gambir Exchange Office.

Pasar Senen and its periphery are expected to develop into a shopping area in the future. It however will occupy only 5% of the whole service area.

According to the random sampling data, 55% of the existing subscriber lines are used for business activities, while 45% for personal communication.

In the service area of Gambir Exchange Office, the business office and commercial area occupies only 39% as mentioned previously; however, the telephone demand there accounts for as much as 77% of the whole demand. On the contrary, the residential area occupies 55%, while the demand there accounts for only 23%. Since the Gambir Exchange Office service area will develop further as a political, economic and cultural center of Indonesia, the demand for business telephones will naturally increase far exceeding that for residential telephones. In 1993 the telephone demand will increase to 96,000. To satisfy such large demand economically, construction of another exchange office will be necessary.

3) Result of Demand Forecast

(a) Demand Growth Curve

As of end of 1973 the subscriber lines in the future service area of Gambir Exchange Office number 12,600, and the waiting applicants 1,900. At present however too long waiting time before installation makes many people refrain from applying for telephone installation. When such people are taken into account, the number of potential applicants will be approximately the same as that of the subscriber lines.

Fig. 2.6.2.6.(5) presents the demand growth curve of Gambir Exchange Office. The telephone demand as of 1993 will increase to 96,000, which is approximately 3.8 times the demand of 26,000 as of 1974. Since the development as a midtown area is in progress, the drastic increase of demand, as is the case with the rural areas, will not be seen.

(b) Demand Forecast

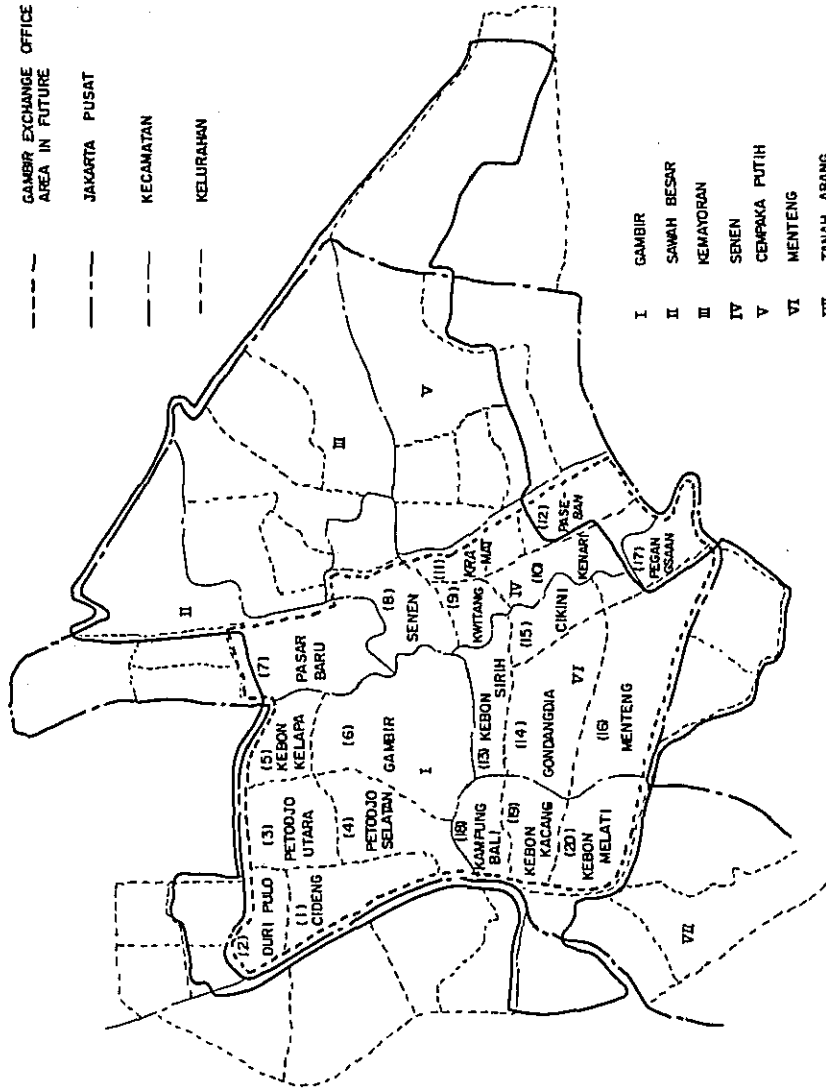
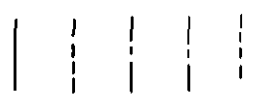
The telephone demand in the service area of Gambir Exchange Office as of 1972, 1982 and 1992 is given in Table 2.6.2.6.(7). The demand by area pattern in each kelurahan is given in Table 2.6.2.6.(8).

(4) Conclusion

The telephone demand was forecasted as described above. Table 2.6.2.6.(9) presents the telephone demand, population, number of households, population density and telephone diffusion rate as of 1973, 1977, 1982, 1992 and 1993. These data are based on the assumption that the number of households and population will increase linearly. As seen in the table the demand as of 1993 becomes 6.7 times the number of subscriber lines as of 1973. The demand rate per 100 inhabitants as of 1993 will be 16.7, which is approximately 7 times the rate of 2.4 as of 1973.

In 1993 the number of households will increase to 1.14 times the number as of 1973. However, the population will decrease to 575,000 from 608,000.

GAMBIR
 EXCHANGE OFFICE SERVICE AREA
 AT PRESENT
 GAMBIR EXCHANGE OFFICE SERVICE
 AREA IN FUTURE



- I GAMBIR
- II SANDAH BESAR
- III KEMAYORAN
- IV SENEN
- V CEMPAKA PUTIH
- VI MENTENG
- VII TANAH ABANG

FIG. 2-6-2-6-(1) GAMBIR EXCHANGE OFFICE SERVICE AREA

TABLE 2-6-2-6-(2)
FUTURE GAMBIR EXCHANGE AREA
AND TELEPHONE DEMAND

Kecamatan	Kelurahan	Area (ha)	Telephone demand in 1993
GAMBIR	Cideng	140.4	3,230
	Duri Pulo	74.1	1,309
	Petojo Utara	106.8	4,966
	Petojo Selatan	97.6	4,148
	Kebon Kelapa	82.0	5,740
	Gambir	240.0	14,400
SAWAH BESAR	Pasar Baru	173.9	14,685
SEKEN	Senen	90.5	3,735
	Kwitang	44.2	1,751
	Kenari	88.0	4,205
	Kramat	67.6	3,614
	Paseban	76.8	1,732
MENTENG	Kebon Sirih	81.6	6,140
	Gondangdia	135.2	6,119
	Cikini	80.0	3,184
	Menteng	220.3	7,173
	Pegangsaan	81.5	3,406
TANAH ABANG	Kampung Bali	63.7	2,749
	Kebon Kacang	84.0	1,843
	Kebon Melati	108.8	1,796
TOTAL		2,137.0	95,922

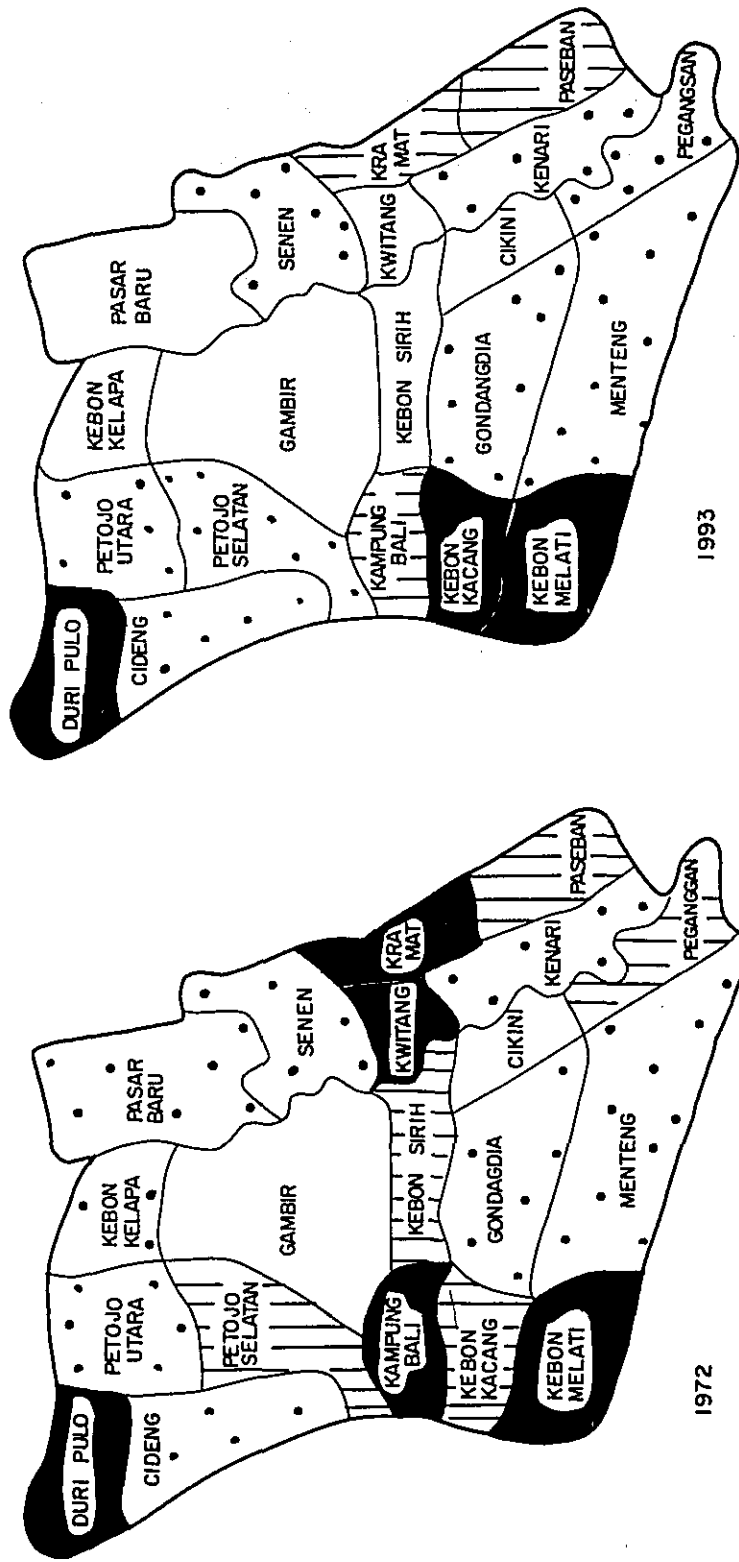
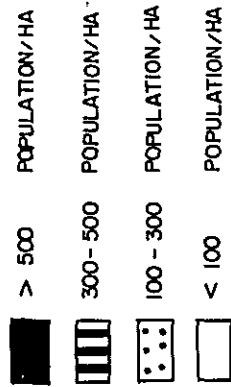


FIG.2-6-2-6(3) POPULATION DENSITY (GAMBIR)

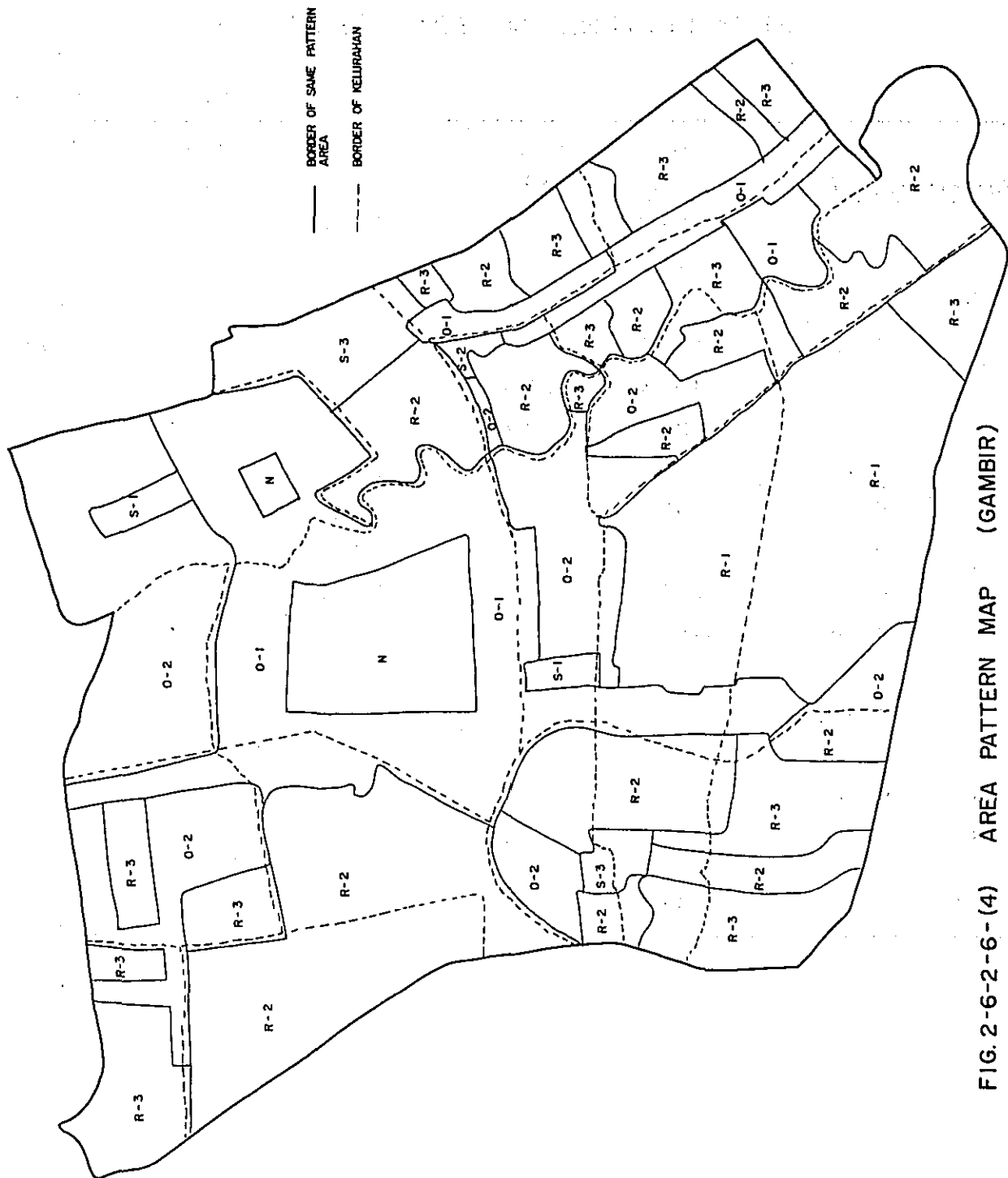


FIG. 2-6-2-6-(4) AREA PATTERN MAP (GAMBIR)

TABLE 2-6-2-6-(5)
AREA PATTERN IN 1993 (GAMBIR)

(Excluding miscellaneous)

Item Classification		Area (ha)	Area (%)	Demand	Demand (%)	D/ha
S	S - 1	33.3	1.6	3,330	3.5	100
	S - 2	60.5	2.8	3,630	3.8	60
	S - 3	18.9	0.9	756	0.8	40
	Total	112.7	5.3	7,716	8.1	68.5
O	O - 1	314.4	14.7	37,728	39.3	120
	O - 2	401.7	18.8	28,119	29.3	70
	Total	716.1	33.5	65,847	68.6	92
R	R - 1	241.0	11.3	4,820	5.0	20
	R - 2	570.2	26.7	12,544	13.1	22
	R - 3	356.8	16.7	4,995	5.2	14
	Total	1,168.0	54.7	22,359	23.3	19.1
I	I - 1					
	I - 2					
	Total					
Agriculture						
N		140.2	6.5			
TOTAL		2,137.0	100.0	95,922	100.0	44.9

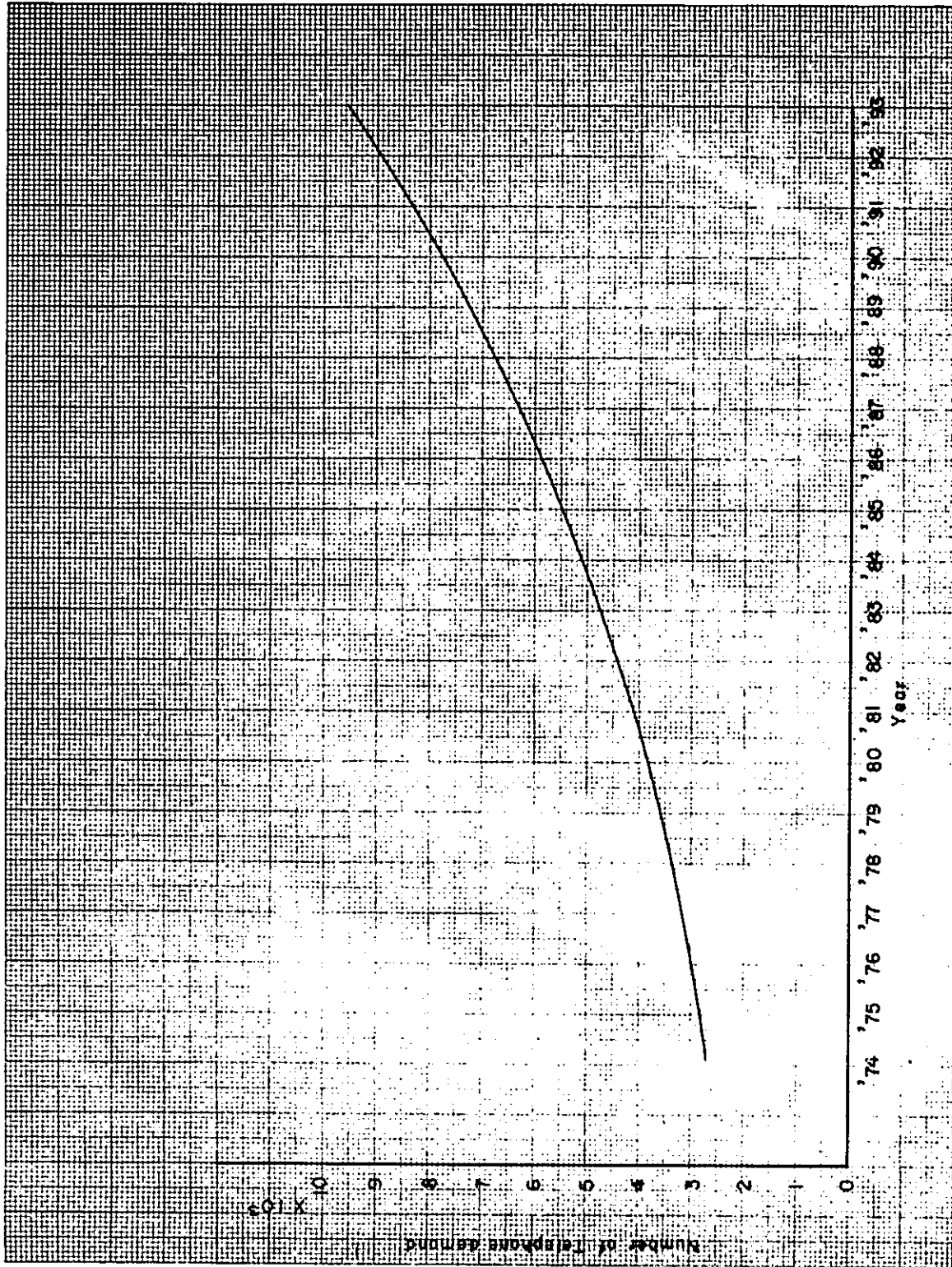


FIG.2-6-2-6-(6) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
(GAMBIR EXCHANGE OFFICE)

TABLE 2-6-2-6-(8) 1/7 GAMBIR TELEPHONE EXCHANGE OFFICE (1)

Survey Time: January 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1977		1982		1992		
				Demand	Demand density	Demand	Demand density	Demand	Demand density	
GAMBIR	Cideng (1)	1 R-2	140.4	710	5.1	1,140	8.1	2,950	21.0	
		Sub Total		710	5.1	1,140	8.1	2,950	21.0	
		Miscellaneous		7		11		30		
	TOTAL		140.4	717		1,151		2,980		
	Duri Pulo (2)	1 R-3		62.1	280	4.5	400	6.4	710	11.4
		2 R-3		5.0	25	5.0	32	6.4	60	12.0
		3 O-2		7.0	190	27.1	260	37.1	455	65.0
		Sub Total			495	6.7	692	9.3	1,225	16.5
	TOTAL				16		22		40	
	Petojo - Utara (3)	1 R-3		74.1	511		714		1,265	
2 R-3			30.0	78	2.6	129	4.3	340	11.3	
3 O-1			23.4	65	2.8	100	4.3	270	11.5	
4 O-2			10.7	400	37.4	480	44.9	1,160	108.4	
5 O-2			36.7	700	19.1	1,100	30.0	2,350	64.0	
Sub Total			6.0	115	19.2	175	29.2	310	51.7	
TOTAL				1,358	12.7	1,984	18.6	4,430	41.5	
Petojo - Selatan (4)	Miscellaneous			87		114		273		
	TOTAL		106.8	1,445		2,098		4,703		
	1 R-2		78.1	970	12.4	1,170	15.0	1,700	21.8	
	2 O-1		19.5	520	26.7	820	42.1	2,100	107.7	
TOTAL				1,490	15.3	1,990	20.4	3,800	38.9	
TOTAL	Miscellaneous			46		69		164		
	TOTAL		97.6	1,536		2,059		3,964		

TABLE 2-6-2-6-(8) 2/7 GAMBIR TELEPHONE EXCHANGE OFFICE (2)

Survey Time: January 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1977		1982		1992	
				Demand	Demand density	Demand	Demand density	Demand	Demand density
G A M B I R	Kebon Ketapa (5)	1	82.0	2,000	24.4	2,815	33.5	5,300	64.6
		Sub Total		2,000	24.4	2,815	33.5	5,300	64.6
		Miscellaneous		140		192		371	
	TOTAL			2,140		3,007		5,671	
	G a m b i r (6)			120.0	5,100	42.5	7,000	58.3	13,500
SAWAH - BESAR	Pasar Baru (7)	1	17.1	560	32.7	810	47.4	1,600	93.6
		2	71.3	2,500	35.1	3,600	50.5	7,700	108.0
		3	65.3	1,300	19.9	1,950	29.9	4,300	65.8
	4	20.2							
	TOTAL			240.0	5,457		7,490		14,445
S E N E N (8)	Senen (8)	1	45.5	430	9.5	570	12.5	990	21.8
		2	45.0	820	18.2	1,200	26.7	2,500	55.6
		Sub Total		1,250	13.8	1,770	19.6	3,490	38.6
	Miscellaneous		29		42		85		
	TOTAL			90.5	1,277		1,812		3,575

TABLE 2-6-2-6-(8) 3/7 GAMBIR TELEPHONE EXCHANGE OFFICE (3)

Survey Time: January 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1977		1982		1992		
				Demand	Demand density	Demand	Demand density	Demand	Demand density	
SEKEN	Kwitang	1 R-2	26.6	250	9.4	330	12.4	580	21.8	
		2 S-2	8.8	215	24.4	275	31.3	280	45.7	
		3 0-2	4.4	85	19.3	125	28.4	280	63.6	
		4 0-2	4.4	85	19.3	125	28.4	280	63.6	
		Sub Total		635	14.4	855	19.4	1,630	37.0	
		Miscellaneous		21		29		60		
		TOTAL		44.2	656		884	1,690		
		Kenari	1 R-2	12.6	110	8.7	150	11.9	570	21.4
			2 R-2	5.0	39	7.8	54	10.8	105	21.0
			3 R-3	12.0	25	2.1	44	3.7	140	11.7
	4 R-3		23.2	48	2.1	84	3.6	270	11.6	
	5 0-1		17.6	660	37.5	940	53.4	1,900	108.0	
	6 0-2		14.6	275	18.8	420	28.8	909	62.3	
	7 0-2		3.0	58	19.3	86	28.7	190	63.3	
	Sub Total		1,215	13.8	1,778	20.2	4,084	46.4		
	Miscellaneous		72		105		153			
	TOTAL		88.0	1,287		1,883		4,237		

TABLE 2-6-2-6-(8) 4/7 GAMBIR TELEPHONE EXCHANGE OFFICE (4)

Survey Time: January 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1977		1982		1992		
				Demand	Demand density	Demand	Demand density	Demand	Demand density	
SEKEN	Kramat (11)	1 R-2	19.4	220	11.3	280	14.4	420	21.6	
		2 R-2	5.5	54	9.8	69	12.5	110	20.0	
		3 R-3	12.7	56	4.4	80	6.3	150	11.8	
		4 R-3	3.0	15	5.0	20	6.7	35	11.7	
		5 S-2	6.7	115	17.2	180	26.9	380	56.7	
		6 O-1	20.3	420	20.7	720	35.5	2,350	115.8	
	Sub Total				880	13.0	1,349	20.0	3,445	51.0
	Miscellaneous				35		60		183	
	TOTAL			67.6	915		1,409		3,628	
		Poseban (12)	1 R-2	4.7	48	10.2	59	12.6	95	20.2
			2 R-2	3.0	28	9.3	39	13.0	62	20.7
			3 R-3	50.6	195	3.9	280	5.5	600	11.9
4 R-3			7.0	28	4.0	42	6.0	82	11.7	
5 O-2			11.5	220	19.1	340	29.6	740	64.3	
Sub Total					519	6.8	760	9.9	1,509	20.6
Miscellaneous				18		28		60		
TOTAL			76.8	537		788		1,639		

TABLE 2-6-2-6-(8)5/7 GAMBIR TELEPHONE EXCHANGE OFFICE (5)

Survey Time : January 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1977		1982		1992	
				Demand	Demand density	Demand	Demand density	Demand	Demand density
M E N T E N G	Kebon Sirih (13)	1 R-3	8.2	24	2.9	38	1.6	94	11.5
		2 S-1	16.2	340	21.0	540	33.3	1,490	92.0
		3 O-1	5.2	220	42.3	300	57.7	590	113.5
		4 O-2	3.0	80	26.7	130	43.3	320	106.7
		5 O-2	49.0	860	17.6	1,300	26.5	3,200	65.3
	Sub Total		1,657	20.3	2,308	28.3	5,694	69.8	
	Miscellaneous		91		137		334		
	T O T A L		81.6	1,748		2,445		6,028	
	Gondangdia (14)	1 R-1	81.2	1,100	13.5	1,190	14.7	1,550	19.1
		2 R-2	13.5	33	2.4	62	4.6	285	21.1
		3 O-1	27.0	1,340	49.6	1,700	63.0	3,000	111.1
		4 O-2	13.5	180	13.3	275	20.4	845	62.6
		Sub Total		2,653	19.6	3,227	23.9	5,680	42.0
	Miscellaneous		117		150		287		
	T O T A L		135.2	2,770		3,377		5,967	
C i k i n i (15)	1 R-2	17.4	149	8.6	200	11.5	380	21.8	
	2 R-2	11.9	130	10.9	170	14.3	260	21.8	
	3 R-3	18.7	34	1.8	61	3.3	185	9.9	
	4 O-2	24.0	425	17.7	690	28.8	1,500	62.5	
	5 O-2	8.0	150	18.8	220	27.5	500	62.5	
Sub Total		880	11.1	1,341	16.7	2,825	35.3		
Miscellaneous		43		68		148			
T O T A L		80.0	931		1,409		2,473		

TABLE 2-6-2-6-(8) 6/7 GAMBIR TELEPHONE EXCHANGE OFFICE (6)

Survey Time : January 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1977		1982		1992		
				Demand	Demand density	Demand	Demand density	Demand	Demand density	
MENTENG	Menteng (16)	1 R-1	159.8	2,565	16.1	2,790	17.5	3,010	18.8	
		2 R-2	26.3	120	4.6	180	6.8	400	15.2	
		3 0-2	22.8	840	30.2	1,200	43.1	2,500	89.9	
		4 0-2	11.4	220	19.3	320	28.7	720	63.2	
	Sub Total			3,745	17.0	4,490	20.4	6,630	30.1	
	Miscellaneous			101		136		259		
	TOTAL			220.3	3,846		4,626		6,889	
	TANAH ABANG	Kampung Bali (18)	1 R-2	42.9	400	9.3	520	12.1	900	21.0
			2 R-2	6.0	56	9.3	74	12.3	125	20.8
			3 0-2	32.6	790	24.2	1,110	34.0	2,100	64.4
Sub Total				1,246	15.3	1,704	20.9	3,125	38.3	
Miscellaneous				60		84		157		
TOTAL			81.5	1,306		1,788		3,282		
TANAH ABANG	Kampung Bali (18)	1 R-2	27.5	290	10.5	340	12.4	600	21.8	
		2 R-2	4.6	50	10.9	62	13.5	95	20.7	
		3 S-3	6.3	105	16.7	140	22.2	235	37.3	
		4 0-2	25.3	425	16.8	680	26.9	1,600	63.2	
	Sub Total			870	13.7	1,222	19.2	2,530	39.7	
	Miscellaneous			36		56		126		
TOTAL			63.7	906		1,278		2,656		

TABLE 2-6-2-6-(8) 7/7 GAMBIR TELEPHONE EXCHANGE OFFICE (7)

Survey Time: January 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1977		1982		1992		
				Demand	Demand density	Demand	Demand density	Demand	Demand density	
TANAH - ABANG	Kebon - Kacang (19)	1 R - 2	32.1	275	8.6	390	12.1	695	21.7	
		2 R - 2	6.0	52	8.7	70	11.7	125	20.8	
		3 R - 2	3.0	27	9.0	38	12.7	63	21.0	
		4 R - 3	23.3	85	3.6	130	5.6	280	12.0	
		5 R - 3	7.0	25	3.6	39	5.6	82	11.7	
		6 S - 3	12.6	165	13.1	230	18.3	480	38.1	
		Sub Total			629	7.5	897	11.8	1,725	20.5
		Miscellaneous			10		14		26	
		TOTAL		84.0	639		911		1,751	
		Kebon - Melati (20)	1 R - 2	19.2	220	11.5	270	14.1	420	21.9
	2 R - 2		17.0	200	11.8	240	14.1	360	21.2	
	3 R - 2		2.0	23	11.5	28	14.0	43	21.5	
4 R - 3	36.6		175	4.8	235	6.4	440	12.0		
5 R - 3	34.0		165	4.9	225	6.6	420	12.3		
	Sub Total			783	7.2	998	9.2	1,683	14.5	
	Miscellaneous			8		10		16		
	TOTAL		108.8	791		1,008		1,699		

TABLE 2-6-2-6-(9)

DEMAND , POPULATION AND DIFFUSION RATIO
(GAMBIR)

(Excluding miscellaneous)

Year \ Item	1973	1977	1982	1992	1993
Area (ha)	2,137	2,137	2,137	2,137	2,137
Demand	12,650	32,240	44,680	88,720	95,920
	1	2.5	3.5	7.0	7.6
Population	606,400	600,200	592,400	576,900	575,300
	1	0.99	0.98	0.95	0.95
Household	105,600	108,400	111,900	118,900	119,600
	1	1.03	1.06	1.12	1.13
Population density (Population / ha)	284.5	280.9	277.3	270.0	269.3
	1	0.99	0.97	0.95	0.95
Population demand ratio (Demand /100 inhabitats)	2.1	5.4	7.5	15.4	16.7
	1	2.6	3.6	7.3	8.0
Household demand ratio (Demand/100 households)	12.0	29.7	39.9	74.6	80.2
	1	2.5	3.3	6.2	6.7

Note : Down side figure is ratio to 1973

2.6.2.7 SEMANGGI

(1) General Description

The future service area of Semanggi Exchange Office determined by the 2nd Five-Year Plan of PERUMTEL comprises 11 kelurahans as shown in Fig. 2.6.2.7.(1). This area is 1,588 hectares in size and, as of 1974, has a population of 297,800.

The area is located in the central part of Jakarta and, in the City Plan, designed to be a combined commercial-residential area. Particularly the area along the main roads running through this service area is earmarked for a business building area.

Existing Semanggi Exchange Office has 2,000 line units and, at present, 1,779 subscriber lines are accommodated. The waiting applicants number 1,103.

(2) Existing Service Area and Future Service Area

Fig. 2.6.2.7.(1) presents the existing and future service areas. The area size of each kelurahan in the future service area, as well as the telephone demand as of 1993, is given in Table 2.6.2.7.(2).

(3) Telephone Demand Forecast

1) Area Development Estimation

The field survey for telephone demand forecast was carried out by referring to the City Plan, the aerial photograph, and the topographic map of Jakarta.

Recent urban development in Jakarta has brought about many tall buildings in this area located in the city center. Such buildings include Senayan Sport Stadium, Metropolitan Police Headquarters, and Ministry of Education. Residence behind these buildings will disappear according as the urbanization develops with the increasing number of new buildings.

As seen in Fig. 2.6.2.7.(3), no substantial change will be observed in population. However, the population in two business office areas, namely, Petanburan and Setiabudi, besides the commercial area, will tend to decrease along with the change of area pattern. On the contrary, the population of Kuningan Timur will increase as the land re-adjustment for residential sites is now in progress.

2) Area Pattern

Fig. 2.6.2.7.(4) presents the area pattern map as of 1993. Table 2.6.2.7.(5) shows the forecasted telephone demand by area pattern as of 1983 and 1993 in each kelurahan.

3) Result of Demand Forecast

Through our demand forecast study, the telephone demand as of 1993 in the future service area of Semanggi Exchange Office is estimated to be 52,940 (including miscellaneous circuits) as shown in Table 2.6.2.7.(6). The residential telephone demand accounts for 35% and the business telephone demand 65%.

The telephone demand growth curve during the period from 1974 through 1993 is given in Fig. 2.6.2.7.(7).

(4) Conclusion

Table 2.6.2.7.(8) presents the telephone demand, population, number of households, population density and telephone diffusion rate as of 1993.

The existing subscriber lines of Semanggi Exchange Office number 1,779, which will increase to approximately 53,000 in 1993. From the viewpoint of economy and maintenance, it is not advisable to accommodate all of these lines in one exchange office. The service area should be divided in the future.

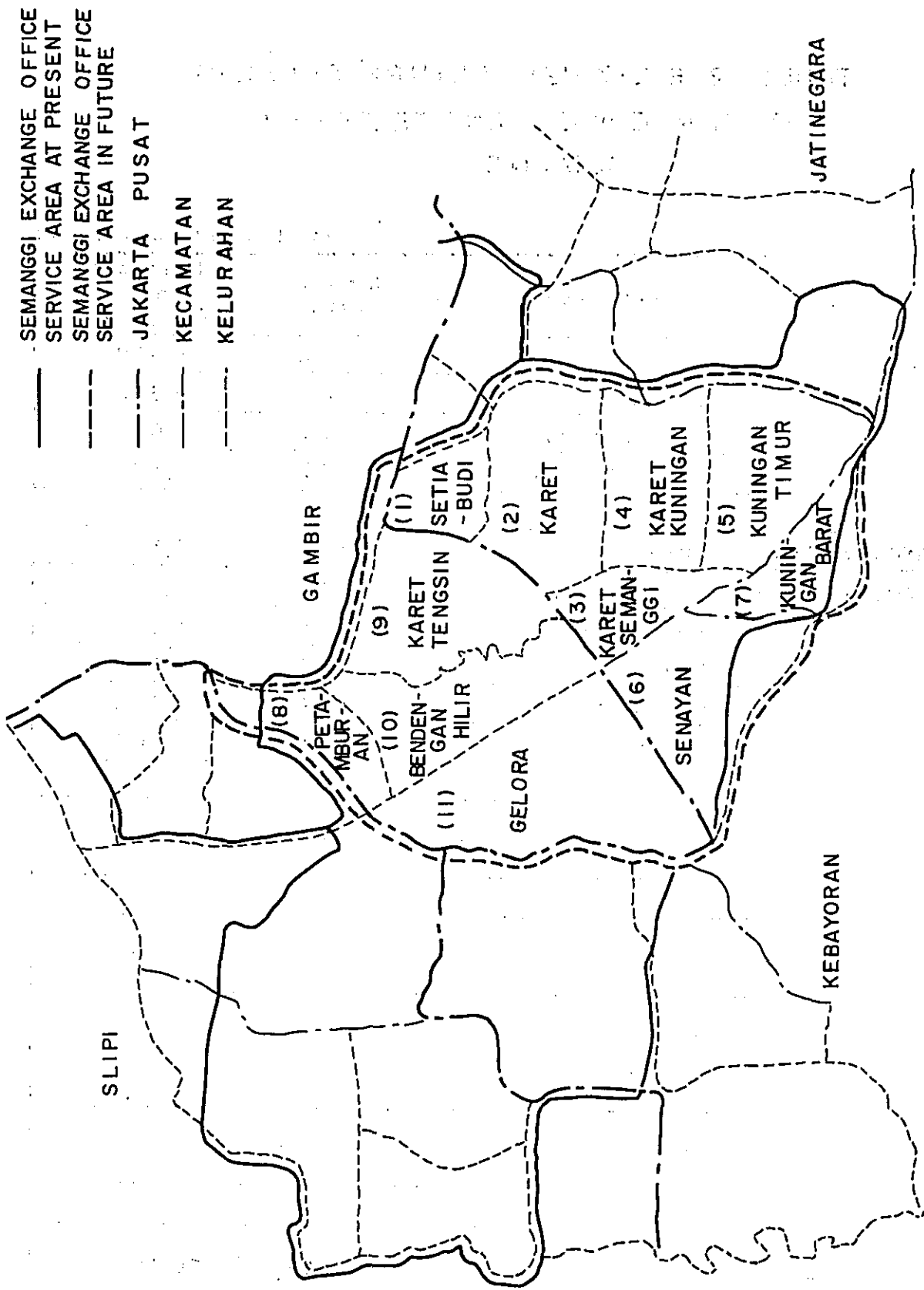


FIG. 2-6-2-7 (1) SEMANGGI EXCHANGE OFFICE SERVICE AREA

**TABLE 2-6-2-7-(2) FUTURE SEMANGGI
EXCHANGE AREA AND TELEPHONE
DEMAND**

(Excluding miscellaneous)

Kecamatan	Kelurahan	Area (ha)	Telephone Demand in 1993	
SETIA BUDI	Setia Budi	72	3,420	
	K a r e t	187	5,830	
	Karet Semanggi	71	4,660	
	Karet Kuningan	130	3,360	
	Kuningan Timur	159	6,990	
KEBAYORAN BARU	Senayan	152	6,840	
MANPANG PRAPATAN	Kuningan Barat	100	5,040	
	Petamburan	84	1,900	
	Karet Tengsin	165	5,670	
	Bendungan Hilir	154	4,010	
	Gelora	314	3,260	
T O T A L		1,588	50,980	

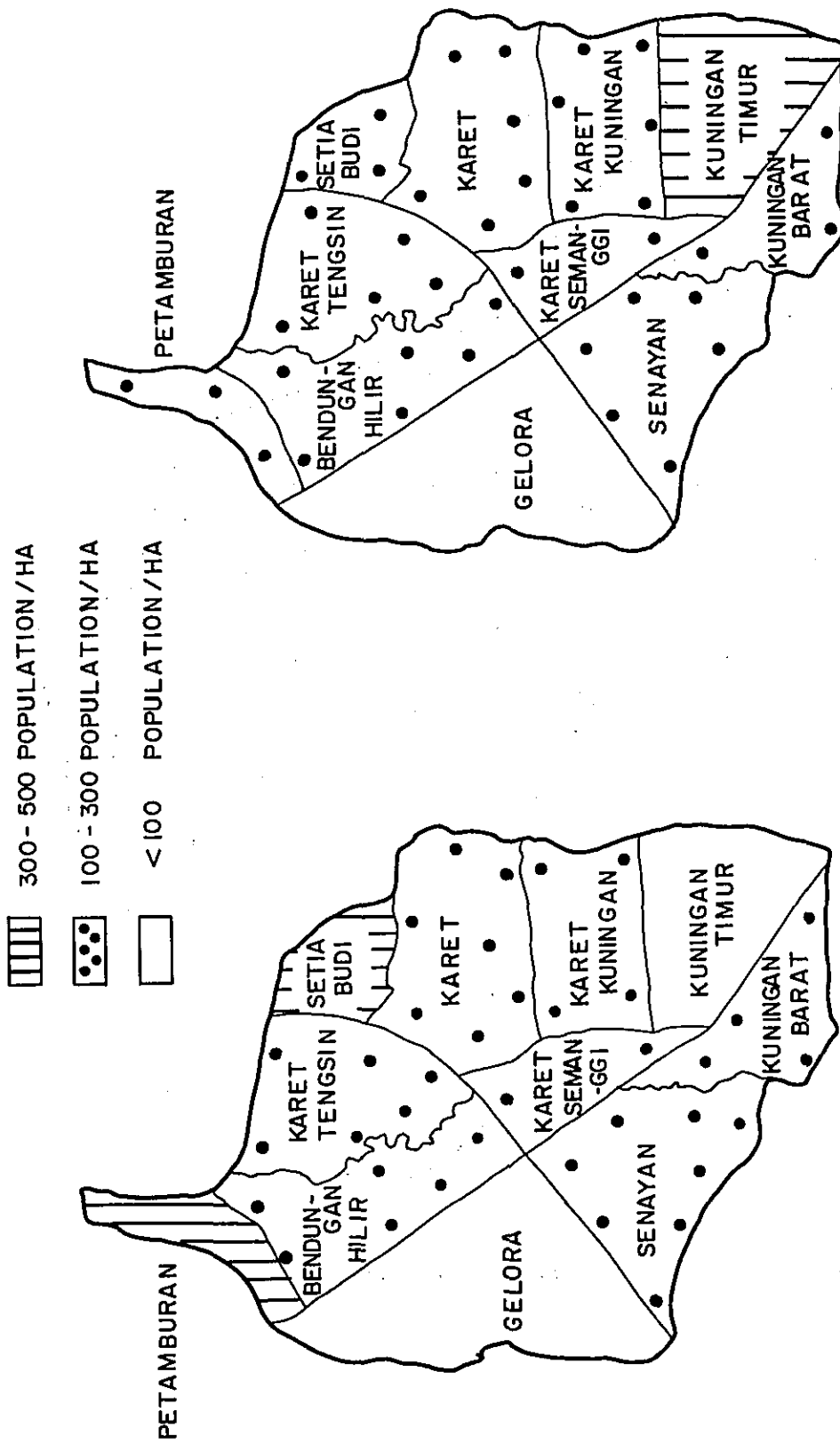


FIG. 2-6-2-7-(3) POPULATION DENSITY (SEMANGGI)

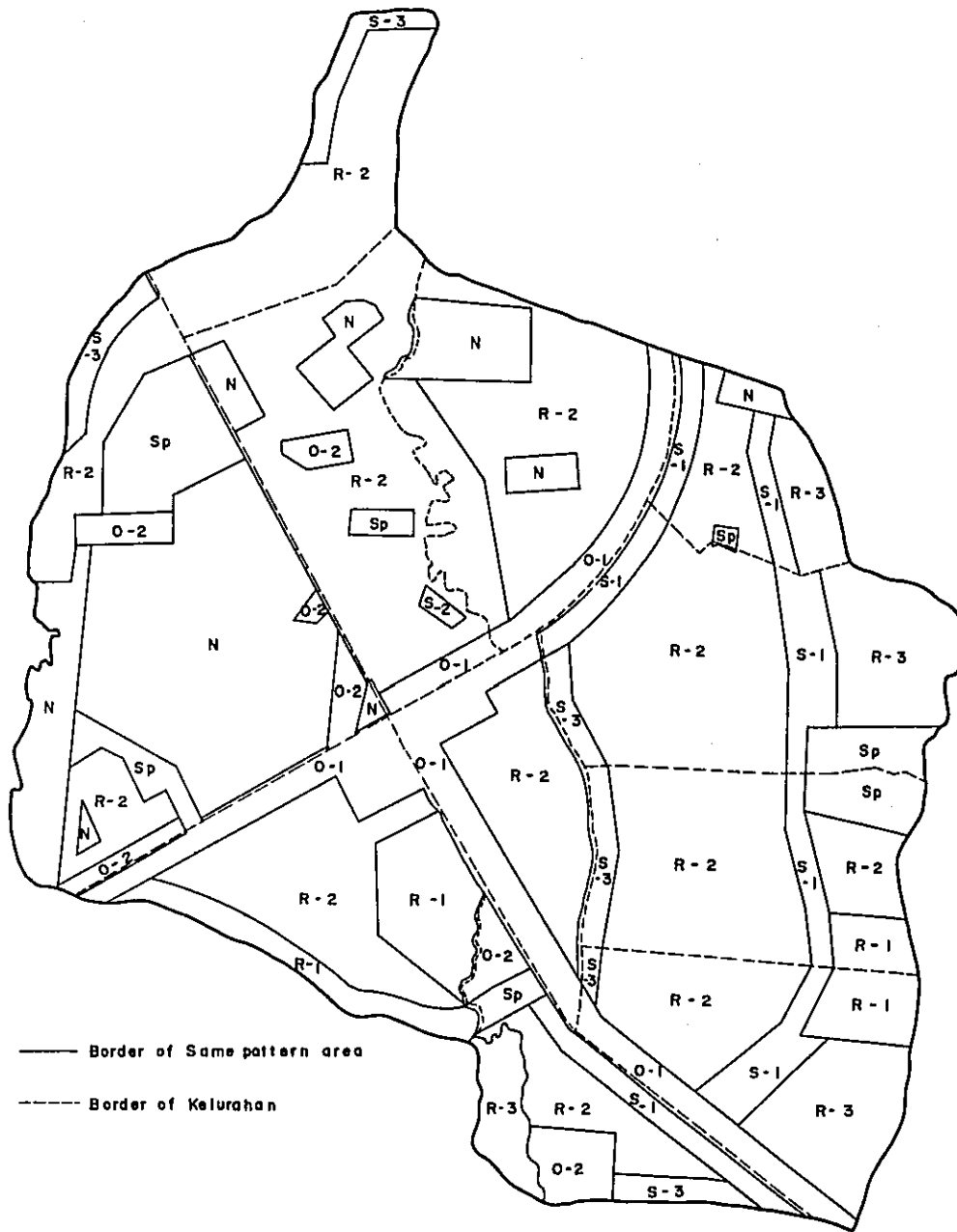


FIG. 2-6-2-7-(4) AREA PATTERN MAP (SEMANGGI)

TABLE 2-6-2-7-(5) 1/4 SEMANGGI EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (1)

Survey Time: September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks		
				Demand	Demand density	Demand	Demand density			
SETIA BUDI	Setia Budi (1)	R - 2	31	260	8.4	620	20			
		R - 3	14	55	3.9	140	10			
		S - 1	22	700	31.8	2,640	120			
		Sp	2	10	5.0	20	10			
		N	3	-	-	-	-			
		Sub Total		1,025	14.2	3,420	47.5			
		Miscella- neous		25		90				
		TOTAL		72	1,050		3,510			
		Karet (2)	R - 2		112	900	8.0	2,240	20	
			R - 3		34	125	3.7	340	10	
S - 1			25	800	32.0	3,000	120			
S - 3			3	50	16.7	120	40			
Sp			13	55	4.2	130	10			
Sub Total				1,930	10.3	5,830	31.2			
SEMANGGI	Semanggi (3)	Miscella- neous		40		125				
		TOTAL		187	1,970		5,955			
		R - 2		33	310	9.4	660	20		
		S - 3		7	120	17.1	280	40		
		O - 1		31	1,960	63.2	3,720	120		
		Sub Total			2,390	33.7	4,660	65.6		
		Miscella- neous			145		275			
		TOTAL			71	2,535		4,935		

TABLE 2-6-2-7-(5) 2/4 SEMANGGI EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (2)

Survey Time: September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks
				Demand	Demand density	Demand	Demand density	
SETIA BUDI	Karet Kuningan (4)	R-1	10	95	9.5	200	20	
		R-2	96	800	8.3	1,920	20	
		S-1	8	260	32.5	960	120	
		S-3	4	65	16.3	160	40	
	Sp	12	50	4.2	120	10		
	Sub Total		1,270	9.8	3,360	25.8		
	Miscellaneous		20		60			
	TOTAL		130	1,290		3,420		
	Kuningan Timur (5)	R-1	18	170	9.4	360	20	
		R-2	54	420	7.8	1,080	20	
R-3		43	180	4.2	430	10		
S-1		13	420	32.3	1,560	120		
S-3		2	30	15.0	80	40		
O-1		29	1,850	63.8	3,480	120		
Sub Total		3,070	19.3	6,990	44			
Miscellaneous		150		310				
TOTAL		159	3,220		7,300			
KEBAYORAN BARU	Senayan (6)	R-1	45	430	9.6	900	20	
		R-2	69	550	8.0	1,380	20	
		O-1	38	2,300	60.5	4,560	120	
	Sub Total		3,280	21.6	6,840	45.0		
	Miscellaneous		170		360			
TOTAL		152	3,450		7,200			

TABLE 2-6-2-7-(5) 3/4 SEMANGGI EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (3)

Surevy Time: September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
MAMPANG PRAPATAN	Kuningan Barat (7)	R - 2	24	205	8.5	480	20		
		R - 3	15	60	4.0	150	10		
		S - 1	29	920	31.7	3,480	120		
		S - 3	7	120	17.1	280	40		
		O - 2	8	210	26.3	480	60		
	Sp	17	70	4.1	170	10			
			Sub Total		1,585	15.9	5,040	50.4	
			Miscellaneous		50		160		
		TOTAL		100	1,635		5,200		
	TANAH ABANG	Petamburan (8)	R - 2	73	450	6.2	1,460	20	
S - 3			11	190	17.3	440	40		
Sub Total				640	7.6	1,900	22.6		
Miscellaneous				10		30			
TOTAL				84	650		1,930		
Karet Tengsin (9)		R - 2	84	630	7.5	1,680	20		
		R - 3	27	140	5.2	270	10		
		O - 1	31	1,030	33.2	3,720	120		
		N	23	-	-	-	-		
		Sub Total		1,800	10.9	5,670	34.4		
	TOTAL		165	1,880		5,950			

TABLE 2-6-2-7-(5) 4/4 SEMANGGI EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (4)

Survey Time: September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks
				Demand	Demand density	Demand	Demand density	
TANAH ABANG	Bendungan Hijir (10)	R - 2	120	1,370	11.4	2,400	20	
		R - 2	2	60	30.0	120	60	
		O - 1	10	690	69.0	1,200	120	
		O - 2	4	190	47.5	240	60	
		Sp	5	20	4.0	50	10	
		N	13	-	-	-	-	
		Sub Total		2,330	15.1	4,010	26.0	
		Miscella- neous		80		135		
		TOTAL		154	2,410		4,145	
		Gelora (11)	R - 2	57	440	7.7	1,140	20
S - 3	10		180	18.0	400	40		
O - 2	20		680	34.0	1,200	60		
Sp	52		230	4.4	520	10		
N	175		-	-	-	-		
Sub Total			1,530	4.9	3,240	10.4		
TOTAL		314	1,600		3,395			

TABLE 2-6-2-7-(6) SEMANGGI EXCHANGE OFFICE TELEPHONE DEMAND

Survey Time: September 1974

Item Classification	Area (ha)	1983		1993		Remarks
		Demand	Demand density	Demand	Demand density	
S	S - 1	3,100	32.0	11,640	120	22.8
	S - 2	60	30.0	120	60	0.2
	S - 3	750	17.0	1,760	40	3.5
	Total	3,910	27.3	13,530	94.6	26.5
O	O - 1	8,200	59.0	16,680	120	32.7
	O - 2	820	25.6	1,920	60	3.8
	Total	9,020	52.8	18,620	108.9	36.5
R	R - 1	700	9.6	1,460	20	2.9
	R - 2	6,250	8.4	15,060	20	29.5
	R - 3	540	3.9	1,330	10	2.6
	Total	7,490	7.8	17,850	18.6	35.0
I	I - 1					
	I - 2					
	Total					
Agriculture						
Others	101	4.3	1,010	10	2.0	
Non - Demand	214					
Sub - Total	1,588	20,850	13.1	50,980	32.1	100.0
Miscellaneous		840		1,960		
TOTAL	1,588	21,690		52,940		

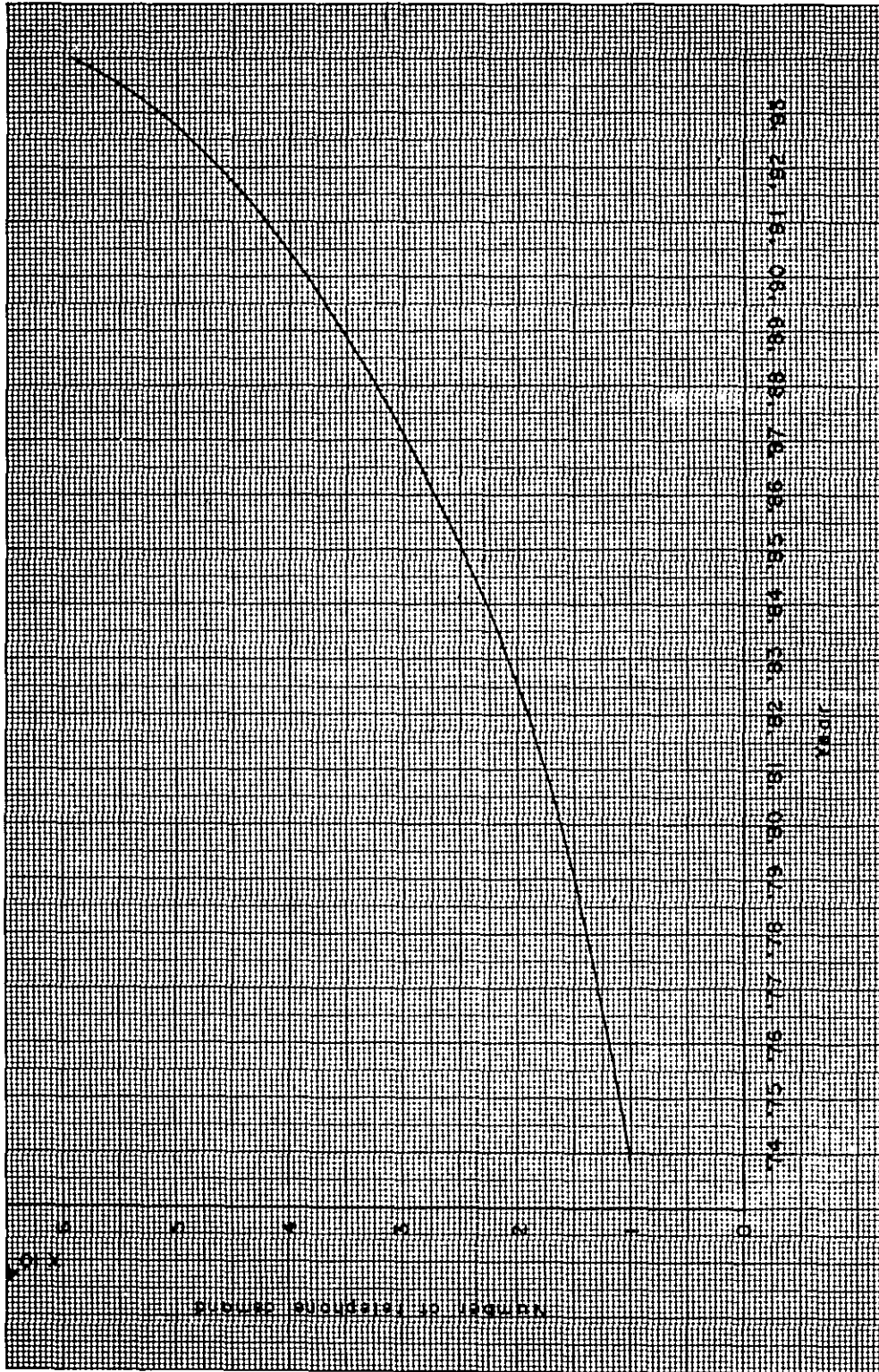


FIG. 2-6-2-7-(7) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
(SEMANGGI EXCHANGE OFFICE)

TABLE : 2-6-2-7-(8)
 TELEPHONE DEMAND, POPULATION
 AND DIFFUSION RATIO IN 1993
 SEMANGGI EXCHANGE AREA

(Excluding miscellaneous)

Area	(ha)	1,588
Telephone demand		51,000
Population		324,300
Household		64,860
Population density (Population/ha)		204
Diffusion ratio (Demand/100 inhabitants)		15.7
Diffusion ratio (Demand/100 households)		78.6

2.6.2.8 SLIPI

(1) General Description

The future service area of Slipi Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL, and is suitable for the future telecommunications network in Jakarta.

Through our field survey a number of comfortable residences are found in Grogol and Tanjung Duren and, in addition, many residences are under construction in other areas. In the City Plan, the major part of the future service area of Slipi Exchange Office is designed to be a residential area excepting the area along Let. Jen. S. Parman Street which is expected to develop as a business office area.

Slipi Exchange Office started the telephone service on October 19, 1972, with the automatic switching system. Slipi Exchange Office is provided with the subscriber switches having 1,500 line units. As of November 1974 the subscriber lines number 1,319 including those in the future service areas of Cengkareng and Pal Merah exchange offices. Among them, those in the future service area of Slipi Exchange Office number 1,131. According to statistics of 1973 compiled by D.K.I. this area has 46,238 households with a population of 231,303.

(2) Existing Service Area and Future Service Area

As shown in Fig. 2.6.2.8.(1), the existing service area includes part of the future service areas of Pal Merah and Cengkareng exchange offices.

The future service area determined by the 2nd Five-Year Plan of PERUMTEL is the object area of our study.

As seen in Table 2.6.2.8.(2) and Fig. 2.6.2.8.(1), the object area comprises 7 kelurahans or 2 kecamatans and is 1,481 hectares in size.

(3) Telephone Demand Forecast

1) Area Development Estimation

In our area development estimation we used as major reference the City Plan, the aerial photograph and the topographic map of Jakarta. In the City Plan the most part of this area is designed to be the residential area. Our field survey was carried out by referring to these data.

2) Area Pattern

The telephone demand and the area pattern as of 1993 are shown in Table 2.6.2.8.(2) and Fig. 2.6.2.8.(3). The telephone demand and the area pattern in each kelurahan as of 1983 and 1993 are shown in Table 2.6.2.8.(4) and Table 2.6.2.8.(5).

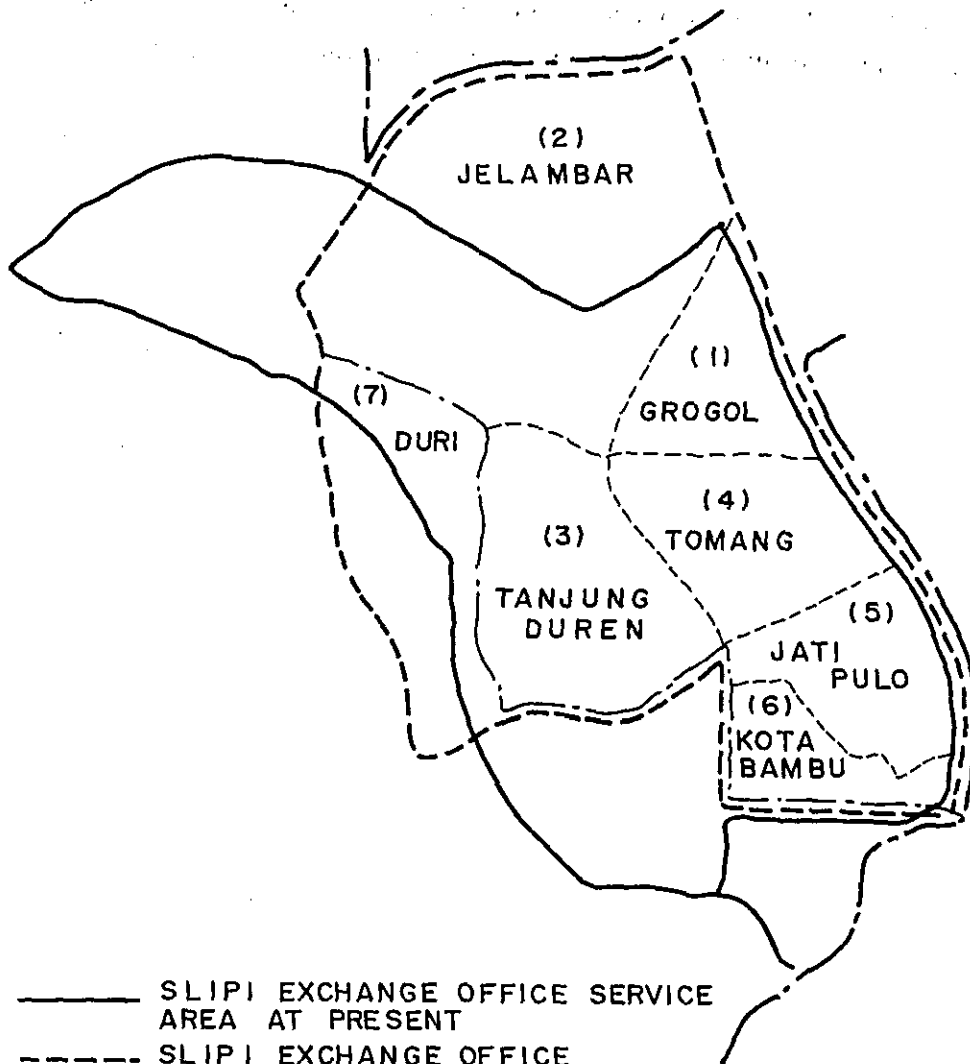
3) Result of Demand Forecast

The telephone demand forecast for the period from 1974 through 1993 prepared by the microscopic demand forecast method described in Section 2.6.1. is

shown in Fig. 2.6.2.8.(6). Fig. 2.6.2.8.(7) presents the population density per hectare.

(4) Conclusion

The telephone demand, population, number of households, population density and telephone diffusion rate as of 1993 are given in Table 2.6.2.8.(8).



- SLIPI EXCHANGE OFFICE SERVICE AREA AT PRESENT
- - - - SLIPI EXCHANGE OFFICE SERVICE AREA IN FUTURE
- - - - JAKARTA BARAT
- - - - KECAMATAN
- KELURAMAN

FIG. 2-6-2-8-(1)
 SLIPI EXCHANGE OFFICE SERVICE AREA

TABLE 2-6-2-8-(2)
FUTURE SLIPI EXCHANGE AREA AND TELEPHONE DEMAND

(EXCLUDING MISCELLANEOUS)

KECAMATAN	KELURAHAN	A R E R (ha)	TELEPHONE DEMAND IN 1993
GROGOL PETAMBURAN	G R O G O L	95.2	2,686
	J E L A M B A R	526.0	9,947
	TANJANG DUREN	260.0	6,667
	T O M A N G	180.8	5,416
	JATI PULO	121.2	3,149
	KOTA BAMBU	74.0	2,570
KEBON JERUK	DURI	224.0	4,660
T O T A L		1,481.2	35,095

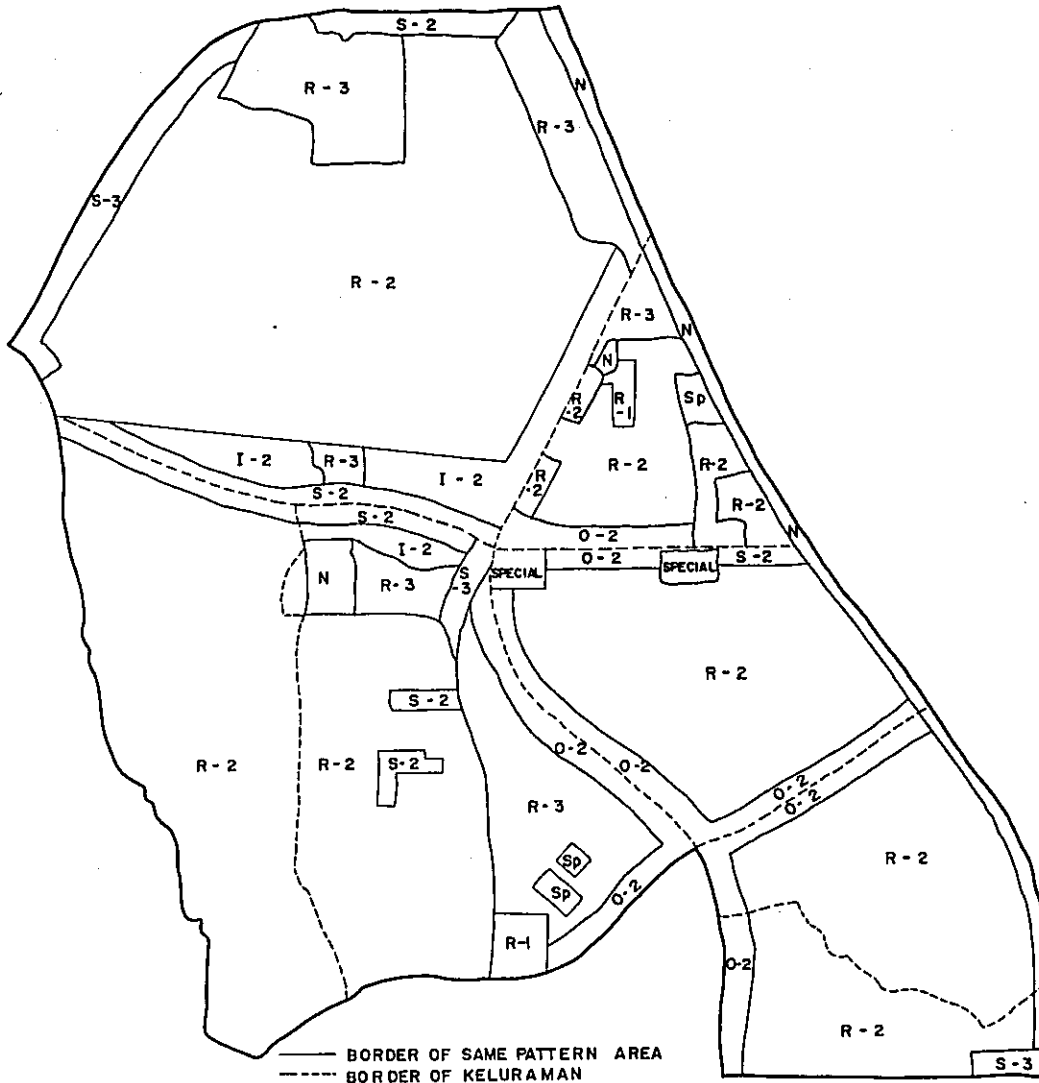


FIG. 2-6-2-B-(3)
 AREA PATTERN MAP (SLIPI)

TABLE 2-6-2-8-(4)

SLIPI EXCHANGE OFFICE TELEPHONE DEMAND

SURVEY TIME : SEPTEMBER 1974.

ITEM CLASSIFICATION	AREA (ha)	1983		1993		REMARKS	
		DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY		
S	S - 1						
	S - 2	950	25.3	3,000	80.0		
	S - 3	220	9.8	1,125	50.0		
	TOTAL	1,170	19.5	4,125	68.8	12	
O	O - 1						
	O - 2	1,925	17.2	7,833	70.0		
	TOTAL	1,925	17.2	7,833	70.0	22	
	R - 1	70	10.4	134	20.0		
R	R - 2	9,220	9.3	19,872	20.0		
	R - 3	230	1.2	1,970	10.0		
	TOTAL	9,520	8.0	21,976	18.4	63	
	I - 1						
I	I - 2	280	3.3	855	10.0		
	TOTAL	280	3.3	855	10.0	2	
	AGRICULTURE						
OTHERS	15.3		105	6.9	306	20.0	1
NON-DEMAND	11.2						
SUB TOTAL	1,481.2	13,000	8.8	35,095	23.7	100	
MISCELLANEOUS		350		900			
TOTAL	1,481.2	13,350	9.0	35,995	24.3		

TABLE 2-6-2-8-(5) 1/4

SLIPI EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (1)

SURVEY TIME : SEPTEMBER 1974.

KECAMATAN	KELURAHAN	PATTERN	A R E A (ha)	1 9 8 3		1 9 9 3		REMARKS	
				DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY		
GROGOL PETAMBURAN	GROGOL (1)	R-1	2.3	30	13.0	46	20.0		
		R-2	60.0	900	15.0	1,200	20.0		
		R-3	10.0	70	7.0	100	10.0		
		S-2	8.2	450	54.9	656	80.0		
		O-2	9.0	420	46.7	630	70.0		
		OTHERS	2.7	30	11.1	54	20.0		
		N	3.0						
		SUB TOTAL	95.2	1,900	20.0	2,686	28.2		
		MISCELLA- NEOUS		50		110			
		TOTAL		1,950		2,796			
		JELAMBAR (2)	R-2	327.9	2,200	6.7	6,558	20.0	
			R-3	105.0	100	1.0	1,050	10.0	
			S-2	14.4	200	13.9	1,152	80.0	
S-3	10.0		100	10.0	500	50.0			
I-2	68.7		200	2.9	687	10.0			
SUB TOTAL	526.0	2,800	5.3	9,947	18.9				
MISCELLA- NEOUS		50		150					
TOTAL		2,850		10,097					

TABLE 2-6-2-8-(5) 2/4

SLIPI EXCHANGE OFFICE TELEPHONE DEMAND OF EACE KELURAHAN (2)

SURVEY TIME : SEPTEMBER 1974

KECAMATAN	KELURAHAN	PATTERN	A R E A (ha)	1 9 8 3		1 9 9 3		REMARKS	
				DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY		
GROGOL PETAMBURAN	TANJUNG (3)	R-1	4.4	40	9.1	88	20.0		
		R-2	93.0	1,500	16.1	1,860	20.0		
		R-3	13.0	10	0.8	130	10.0		
		S-2	11.4	100	8.8	912	80.0		
		S-3	4.5	20	4.4	225	50.0		
		O-2	36.0	360	10.0	2,520	70.0		
		I-2	16.8	80	4.8	168	10.0		
		R-3	69.0	50	0.7	690	10.0		
		OTHERS	3.7	40	10.8	74	20.0		
		N	8.2						
		SUB TOTAL	260.0	2,200	8.5	6,667	25.6		
		MISCELLA- NEOUS		50		230			
		TOTAL	260.0	2,250		6,897			
		TOMANG (4)	R-2	136.6	2,500	18.3	2,732	20.0	
S-2	3.5		200	57.1	280	80.0			
O-2	31.8		465	14.6	2,226	70.0			
OTHERS	8.9		35	3.9	178	20.0			
SUB TOTAL	180.8		3,200	17.7	5,416	30.0			
MISCELLA- NEOUS			80		140				
TOTAL	180.0	3,280		5,556					

TABLE 2-6-2-8-(5) 3/4

SLIPI EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (3)

SURVEY TIME: SEPTEMBER 1974.

KECAMATAN	KELURAHAN	PATTERN	A R E A (ha)	1 9 8 3		1 9 9 3		REMARKS	
				DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY		
GROGOL PETAMBURAN	JATI PULO (5)	0-2	14.5	330	22.8	1,015	70.0		
		R-2	31.5	320	10.2	630	20.0		
		R-2	75.2	750	10.0	1,504	20.0		
		SUB TOTAL		121.2	1,400	11.6	3,149	26.0	
		MISCELLA- NEOUS			50		100		
		TOTAL		121.2	1,450		3,249		
	KOTA BAMBU (6)		0-2	20.6	350	17.0	1,442	70.0	
			S-3	2.0	50	25.0	100	50.0	
			R-2	51.4	600	11.7	1,028	20.0	
		SUB TOTAL	74.0	1,000	13.5	2,570	34.7		
	MISCELLA- NEOUS			50		130			
	TOTAL		74.0	1,050		2,700			

TABLE 2-6-2-8-(5) 4/4

SLIPI EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (4)

SURVEY TIME: SEPTEMBER 1974.

KECAMATAN	KELURAHAN	PATTERN	A R E A (ha)	1 9 8 3		1 9 9 3		REMARKS
				DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY	
KEBON JERUK	D U R I (7)	S-3	6.0	50	8.3	300	50.0	
		R-2	3.0	50	16.7	60	20.0	
		R-2	215.0	400	1.9	4,300	20.0	
	SUB TOTAL	224.0	500	2.2	4,660	20.8		
	MISCELLA- NEOUS		20		40			
	TOTAL		224.0	520		4,700		

TABLE 2-6-2-8-(6)

TELEPHONE DEMAND, POPULATION AND DIFFUSION RATIO IN 1993
 SLIPI EXCHANGE AREA

(EXCLUDING MISCELLANEOUS)

A R E A	(ha)	1,481
TELEPHONE DEMAND		35,100
POPULATION		417,800
HOUSEHOLD		83,560
POPULATION DENSITY (POPULATION/ha)		282.1
DIFFUSION RATIO (DEMAND/100 INHABITANTS)		8.4
DIFFUSION RATIO (DEMAND/100 HOUSEHOLDS)		42.0

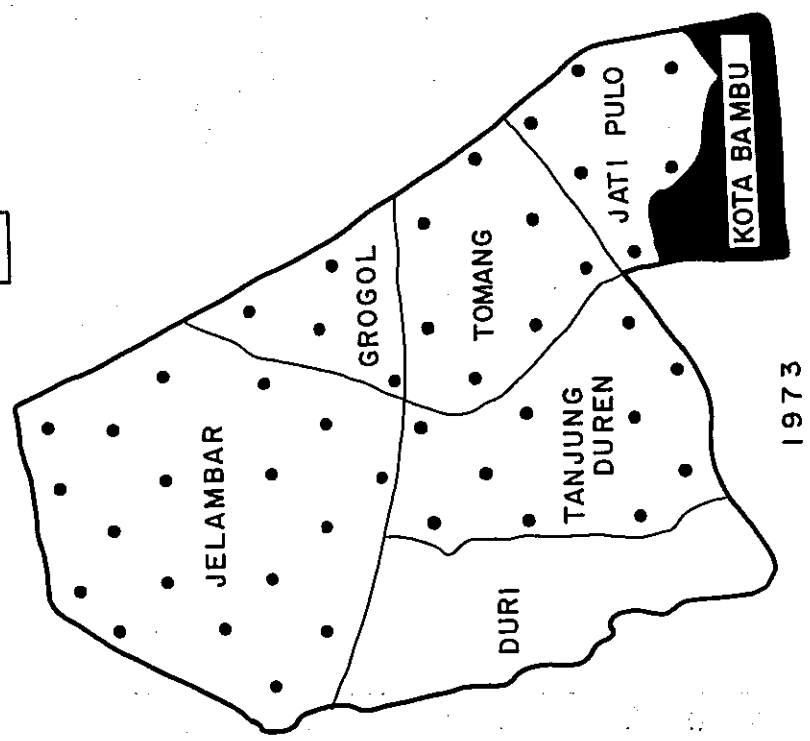
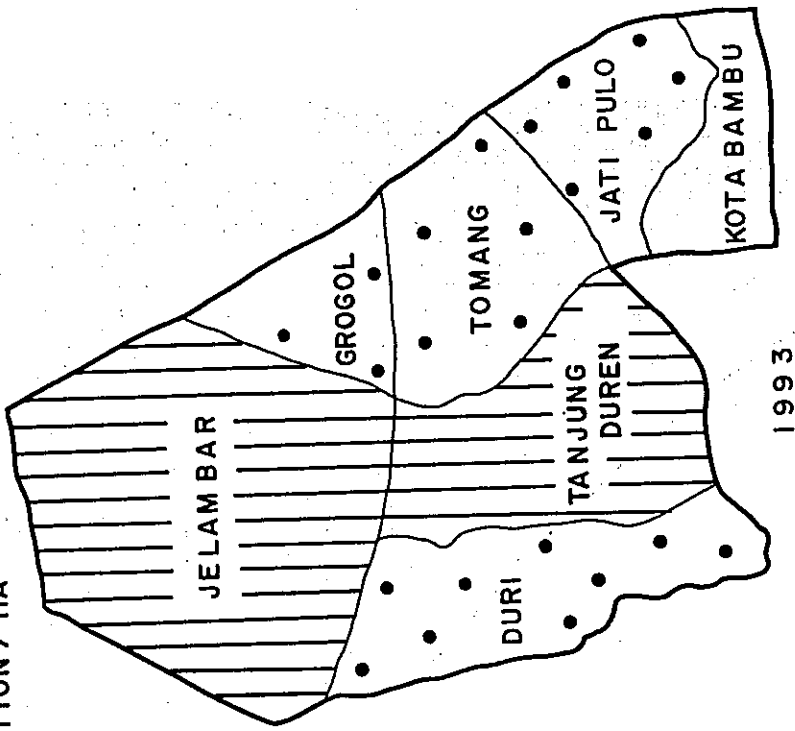
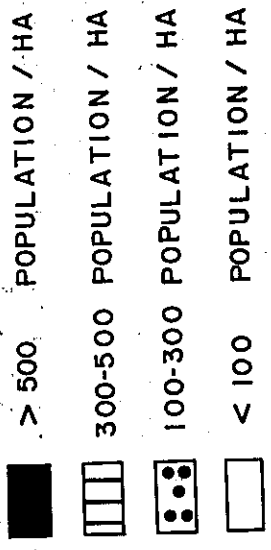


FIG. 2-6-2-8-(7)
 POPULATION DENSITY (SLIPI)

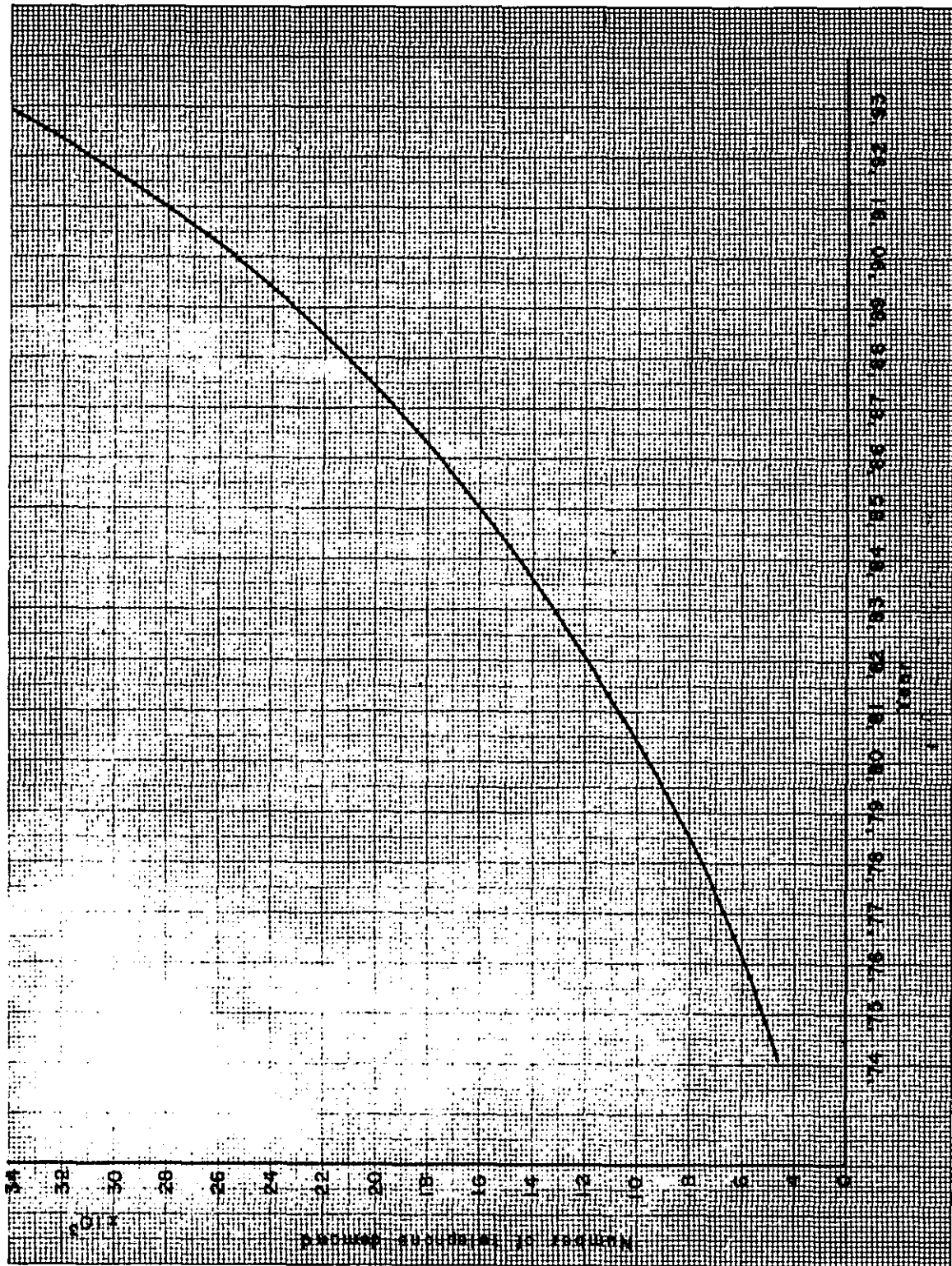


FIG. 2-6-2-8-(8) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
(SLIP EXCHANGE OFFICE)

2.6.2.9 PAL MERAH

(1) General Description

The service area of Pal Merah Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. In the City Plan, the major part of this area is designed to be a residential area, and the eastern part along Jalan S. Parman is scheduled to be a combined office-residential area in the future.

In the north and north-eastern part of the area are found middle class residence houses and in the area along Jalan S. Parman lie offices and houses.

According to statistics of 1973 compiled by D.K.I., the area is 1,505 hectares in size and has 22,800 households.

PERUMTEL plans to open an exchange office having 5,000 line units in this area early 1976. The office site has already been selected.

(2) Existing Service Area and Future Service Area

The subscriber lines in this area are accommodated in Slipi Exchange Office at present. The boundary of the area is given in Fig. 2.6.2.9.(1). The area has 7 kelurahans.

(3) Telephone Demand Forecast

1) Area Development Estimation

For telephone demand forecast, the field survey was carried out by referring to the City Plan, the topographic map, etc. Jalan S. Parman is a paved and wide road. Along the road offices and residences stand. This road leads to the building of Telecommunication Bureau and Slipi Exchange Office. In the future the area along the road will develop into a residence and shopping area. According to the City Plan, both the area bordering on the low level land in the north and the area bordering on the Meruya area in the west will be green fields.

Based on our forecast study, the population as of 1993 is estimated to be 491,000, and the number of households 98,000. Fig. 2.6.2.9.(2) presents the population density as of 1973 and 1993.

2) Area Pattern

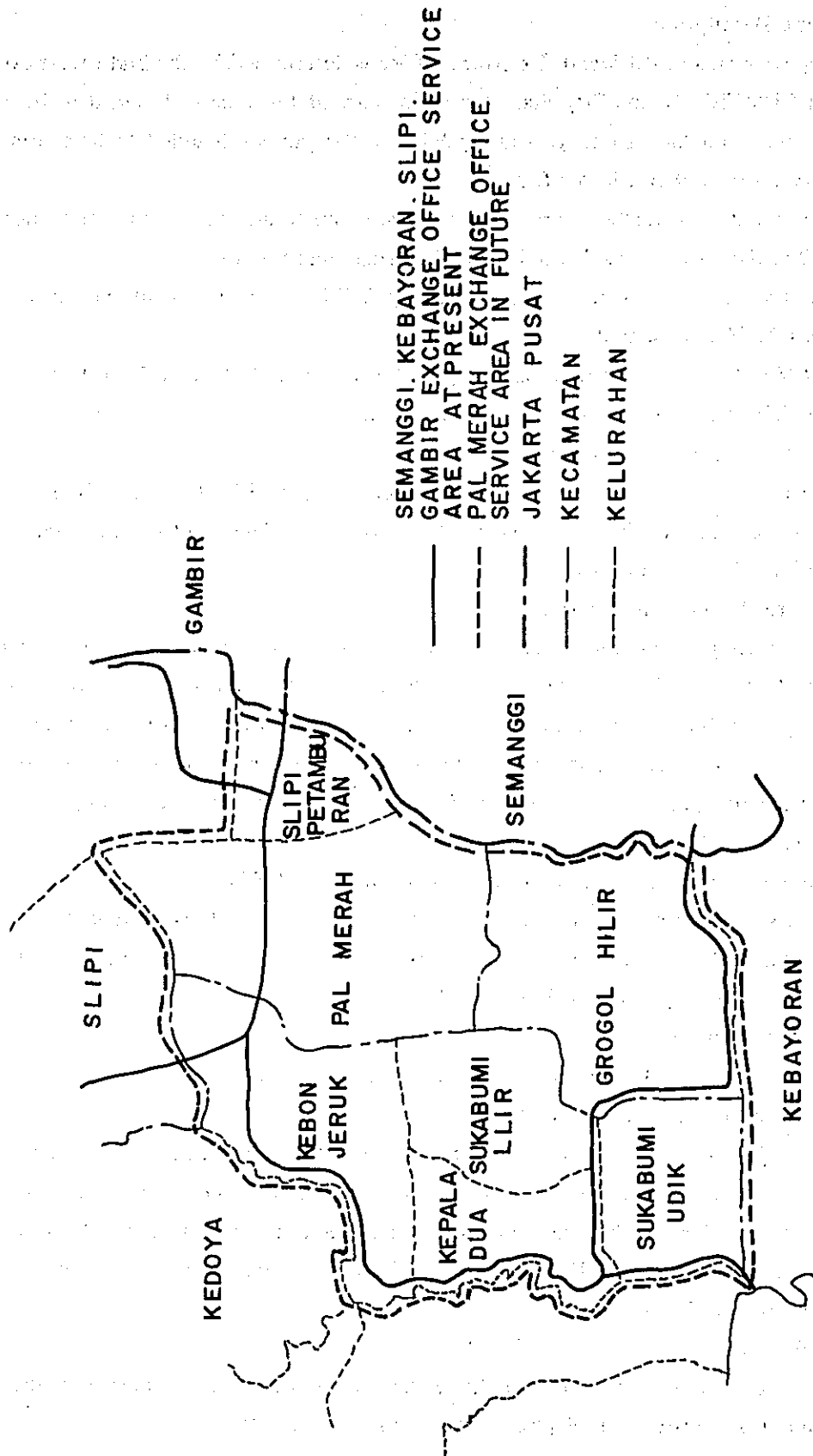
Fig. 2.6.2.9.(3) presents the area pattern as of 1993.

3) Result of Demand Forecast

Table 2.6.2.9.(4) presents the area size and the demand in each kelurahan, Table 2.6.2.9.(5) presents the demand by area pattern, and Table 2.6.2.9.(6) presents the demand by area pattern in each kelurahan prepared based on our demand forecast result. Fig. 2.6.2.9.(7) shows the demand growth during the period from 1974 through 1993.

(4) Conclusion

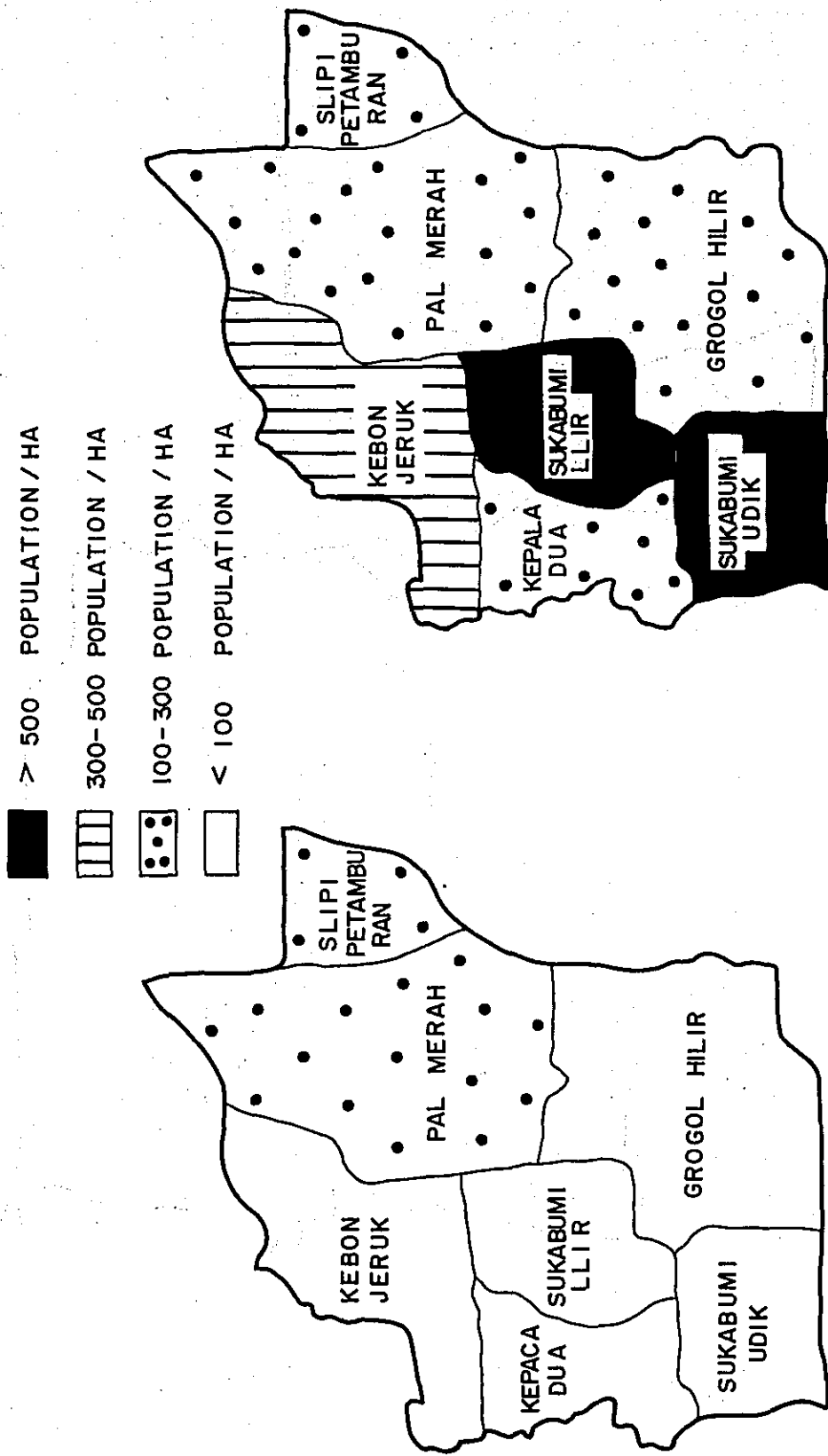
Table 2.6.2.9.(8) shows the telephone demand, population, number of households, population density and telephone diffusion rate as of 1993.



SEMANGGI, KEBAYORAN, SLIPI.
 GAMBIR EXCHANGE OFFICE SERVICE
 AREA AT PRESENT
 PAL MERAH EXCHANGE OFFICE
 SERVICE AREA IN FUTURE
 JAKARTA PUSAT
 KECAMATAN
 KELURAHAN

FIG 2-6-2-9 (1)

PAL MERAH EXCHANGE OFFICE SERVICE AREA



1973

1993

FIG. 2-6-2-9-(2)

POPULATION DENSITY (PALMERAH)

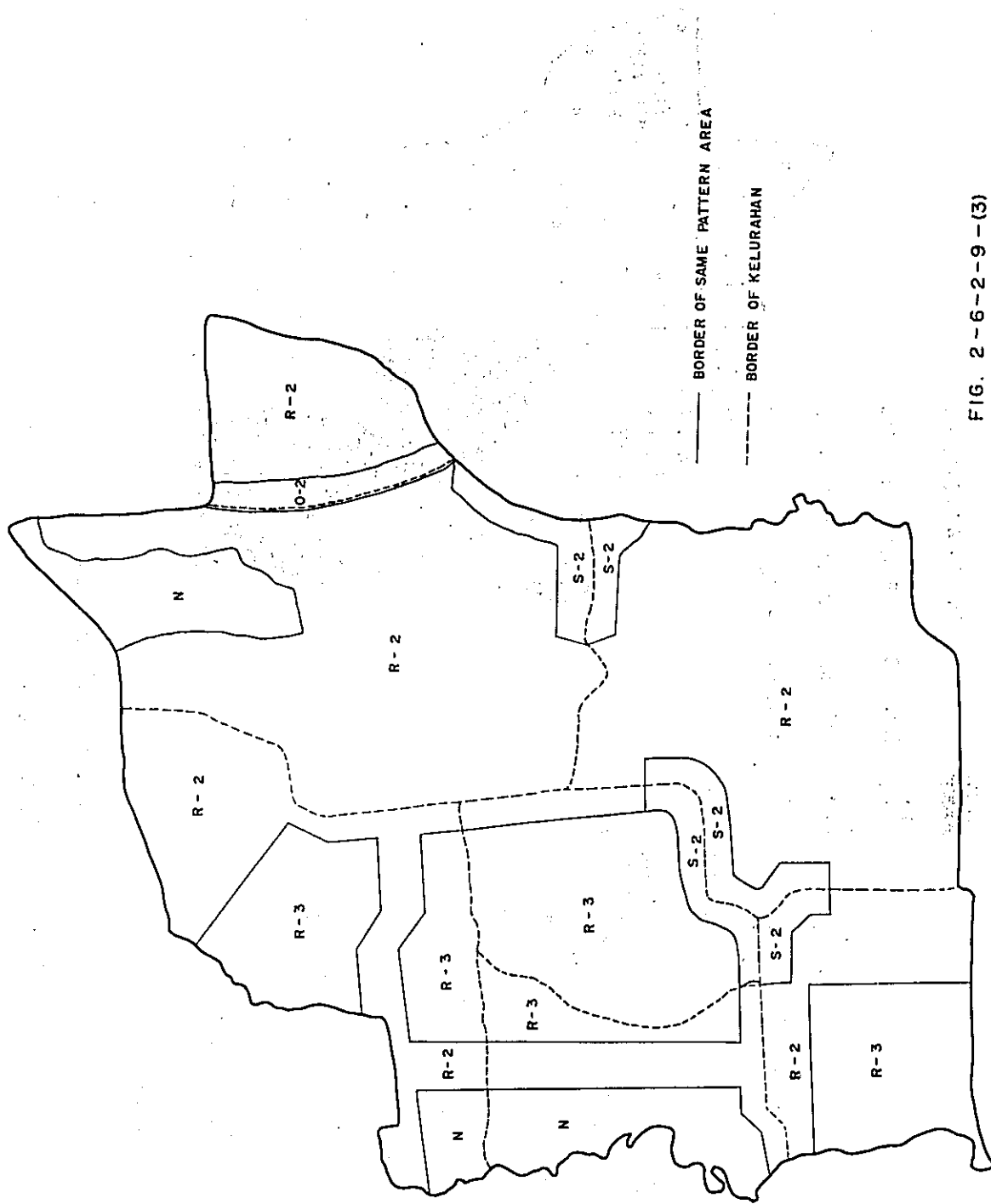


FIG. 2-6-2-9-(3)
 AREA PATTERN MAP (PAL MERAH)

TABLE 2-6-2-9-(4)

PALMERAH EXCHANGE AREA AND TELEPHONE DEMAND

KECAMATAN	KELURAHAN	AREA (ha)	TELEPHONE DEMAND IN 1993
GROGOL PETAMBURAN	PETAMBURAN SLIPI	97.8	2,827
	PALMERAH	388.8	6,900
KEBON JERUK	KEBON JERUK	254.3	3,401
	SUKABUMI ILIR	145.9	2,211
	SUKABUMI UDIK	138.0	2,056
	KELAPA DUA	134.2	1,209
KEBAYORAN	GROGOL UTARA	346.0	7,389
TOTAL		1,505	25,984

TABLE 2-6-2-9-(5)

PALMERAH EXCHANGE OFFICE TELEPHONE DEMAND

SURVEY TIME: SEPTEMBER 1974

CLASSIFICATION	ITEM	AREA (ha)	1983		1993		REMARKS
			DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY (%)	
S	S-1						
	S-2	70.8	623	8.8	3,540	50	
	S-3						
	TOTAL	70.8	623	8.8	3,540	50	
O	O-1						
	O-2	19.0	694	36.5	1,330	70	
	TOTAL	19.0	694	36.5	1,330	70	
R	R-1						
	R-2	986.3	3,461	3.5	18,740	19	
	R-3	296.7	525	1.8	2,374	8	
	TOTAL	1,283.0	3,986	3.1	21,114	16.5	
I	I-1						
	I-2						
	TOTAL						
AGRICULTURE							
OTHERS							
NON-DEMAND		132.2					
SUB-TOTAL		1,505.0	5,303	3.5	25,984	17.3	
MISCELLANEOUS			108		410		
TOTAL		1,505.0	5,411	3.5	26,394	17.3	

TABLE 2-6-2-9-(6) 1/3

PALMERAH EXCHANGE OFFICE TELEPHONE DEMAND OF EAGE KELURAHAN (1)

SURVEY TIME : SEPTEMBER 1974

KECAMATAN	KELURAHAN	PATTERN	AREA (ha)	1983		1993		REMARKS	
				DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY		
GROGOL PETAMBURAN	PETAMBURAN SLIPI (1)	R-2	78.8	331	4.2	1,497	19.0		
		R-2	19.0	691	36.4	1,330	70.0		
		SUB TOTAL MISCELLA- NEOUS	97.8	1,025	10.5	2,827	28.9		
	TOTAL				52		107		
	PAL MERAH (2)	R-2		97.8	1,077	10.5	2,934	28.9	
		S-2		315.0	1,165	3.7	5,985	19.0	
		N		18.3	161	8.8	915	50.0	
		SUB TOTAL MISCELLA- NEOUS		55.5					
	TOTAL			388.8	1,326	3.4	6,900	4.9	
	KEBON JERUK	KEBON JERUK (3)	R-2		17		88		
R-3				388.8	1,343	3.4	6,988	4.9	
N			138.3	470	3.4	2,628	19.0		
SUB TOTAL MISCELLA- NEOUS			96.6	164	1.7	773	8.0		
TOTAL			19.4						
			254.3	634	2.5	3,401	13.4		
				7		34			
			254.3	641	2.5	3,435	13.4		

PALMERAH EXCHANGE OFFICE TELEPHONE DEMAND OF EACE KELURAHAN (2)

SURVEY TIME : SEPTEMBER 1974.

KECAMATAN	KELURAHAN	PATTERN	AREA	1983		1993		REMARKS	
				DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY		
KEBON JERUK	SUKABUMI ILIR	R-2	24.2	77	3.2	460	19		
		R-3	103.2	196	1.9	826	8		
		S-2	18.5	163	8.8	925	50		
		SUB TOTAL		145.9	436	3.0	2,211	15.2	
		MISCALIA - NEOUS			35		41		
		TOTAL		145.9	471	3.0	2,251	15.2	
		SUKABUMI UDIK	R-2	56.0	168	3.0	1,064	19.0	
	R-3		74.0	126	1.7	592	8.0		
	R-2		8.0	70	8.8	400			
		SUB TOTAL		138.0	364	2.6	2,056	14.9	
		MISCALIA - NEOUS			5		29		
		TOTAL		138.0	369	2.6	2,085	14.9	
	KELAPA DUA	R-2	54.0	162	3.0	1,026	19.0		
R-3		22.9	39	1.7	183	8.0			
N		57.3							
	SUB TOTAL		134.2	201	1.3	1,209	9.0		
	MISCALIA - NEOUS			2		12			
	TOTAL		134.2	203	1.3	1,221	9.0		

TABLE 2-6-2-9-(6) 3/3
 PALMERAH EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (3)

SURVEY TIME : SEPTEMBER 1974

KECAMATAN	KELURAHAN	PATTERN	AREA (No)	1 9 8 3		1 9 9 3		REMARKS
				DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY	
KEBAYORAN	GROGOL UTARA	R - 2	320	1,088	3.4	6,080	19	
		S - 3	26	229	8.8	1,300	50	
	SUB TOTAL MISCELLA- NEOUS	(7)	346	1,317	3.8	7,380	21.3	
		TOTAL	346	1,334	3.8	7,479	21.3	

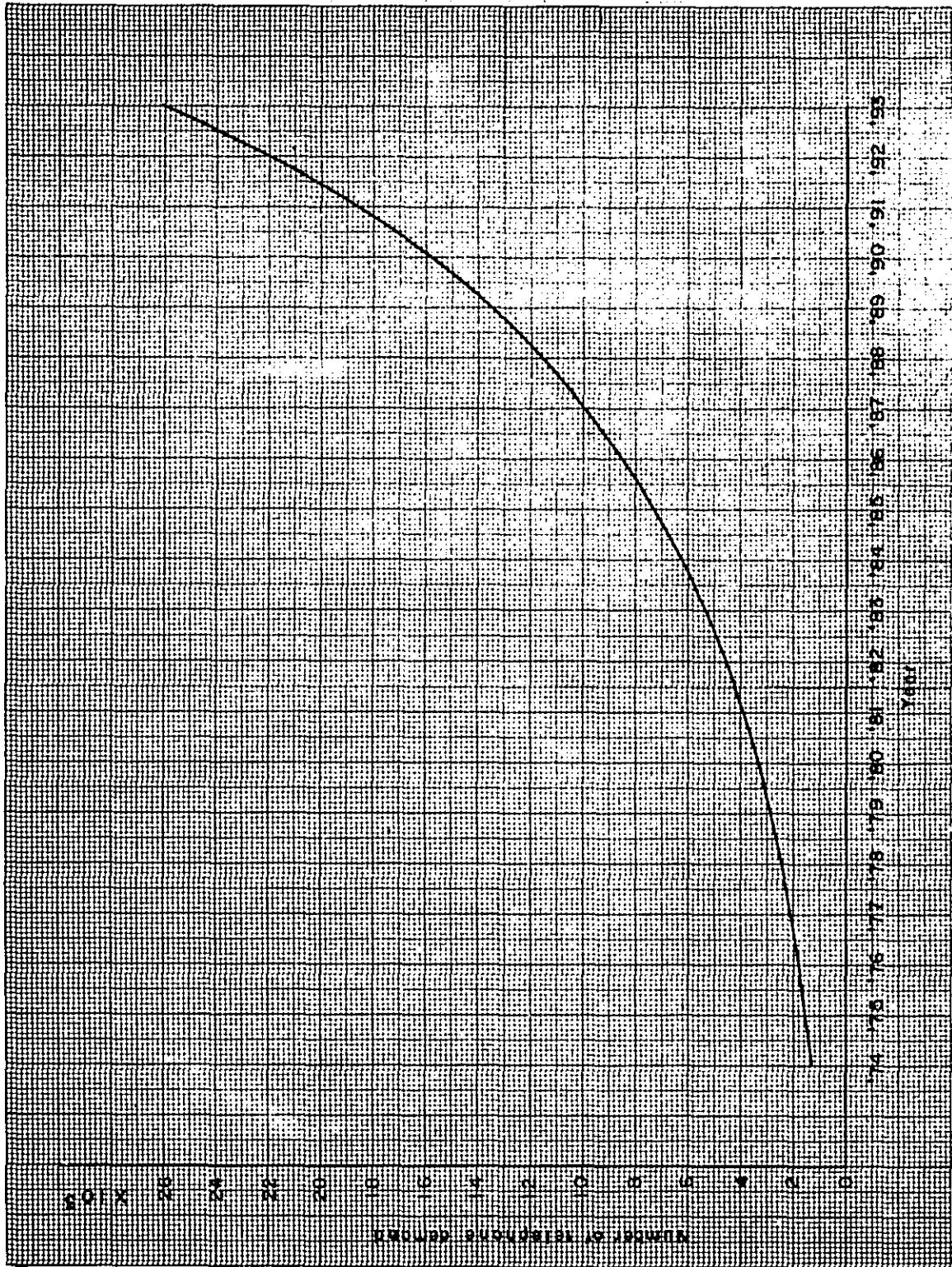


FIG. 2-6-2-9--(7) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)

TABLE 2-6-2-9-(8)

TELEPHONE DEMAND, POPULATION AND DIFFUSION

RATIO IN 1993

PALMERAH EXCHANGE AREA

(EXCLUDING MISCELLANEOUS)

AREA	(ha)	1,505
TELEPHONE DEMAND		26,000
POPULATION		491,000
HOUSEHOLD		98,200
POPULATION DENSITY, (POPULATION / ha)		326
DIFFUSION RATIO (DEMAND/100 INHABITANTS)		5.3
DIFFUSION RATIO (DEMAND/100 HOUSEHOLDS)		26.4

2.6.2.10 KEDOYA

(1) General Description

The future service area of Kedoya Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL.

At present major part of this area still remains undeveloped. However, this area is suitable for a residential area and located not far away from the center of Jakarta. In the City Plan this area is designed to be a residential area.

According to the statistics of 1973 compiled by D.K.I. this area is 1,315 hectare in size and has 3,890 households with a population of 17,617.

(2) Future Service Area

As shown in Table 2.6.2.10.(1) and Fig. 2.6.2.10.(2) the future office service area comprises 2 kelurahans.

(3) Telephone Demand Forecast

1) Area Development Estimation

In our area development estimation we used as major references the City Plan, the aerial photograph, and the topographic map of Jakarta. The field survey was carried out by referring to these data.

The major part of this area will develop as a residential area in the future.

2) Area Pattern

Table 2.6.2.10.(1) and Fig. 2.6.2.10.(3) present the telephone demand and the area pattern as of 1993. Table 2.6.2.10.(4) and Table 2.6.2.10.(5) present the telephone demand and the area pattern as of 1983 and 1993 in each kelurahan.

3) Result of Demand Forecast

The telephone demand forecast for the period from 1974 through 1993 prepared by the microscopic demand forecast method described in Section 2.6.1 is shown in Fig. 2.6.2.10.(6).

Fig. 2.6.2.10.(7) shows the population density per hectare and Fig. 2.6.2.10.(3) shows the area pattern.

(4) Conclusion

The telephone demand, population, number of households, population density and telephone diffusion rate as of 1993 are given in Table 2.6.2.10.(8).

TABLE 2-6-2-10-(1)

FUTURE KEDOYA EXCHANGE AREA AND TELEPHONE DEMAND

(EXCLUDING MISCELLANEOUS)

KECAMATAN	KELURAHAN	A R E A (HA)	TELEPHONE DEMAND IN 1993	
KEBON JERUK	KEMBANGAN	695	3,549	
	K E D O Y A	620	6,502	
	T O T A L		1,315	10,051

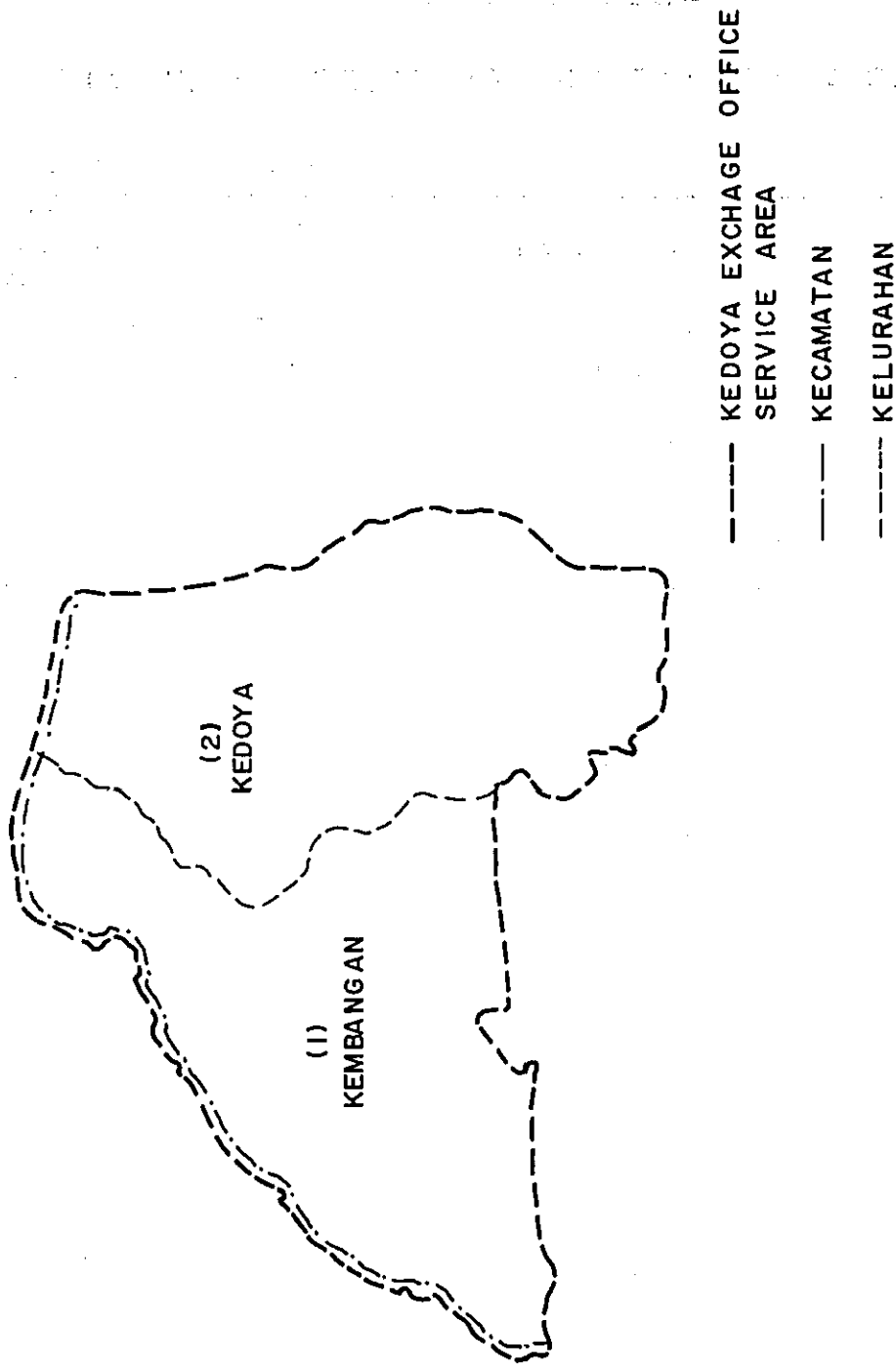
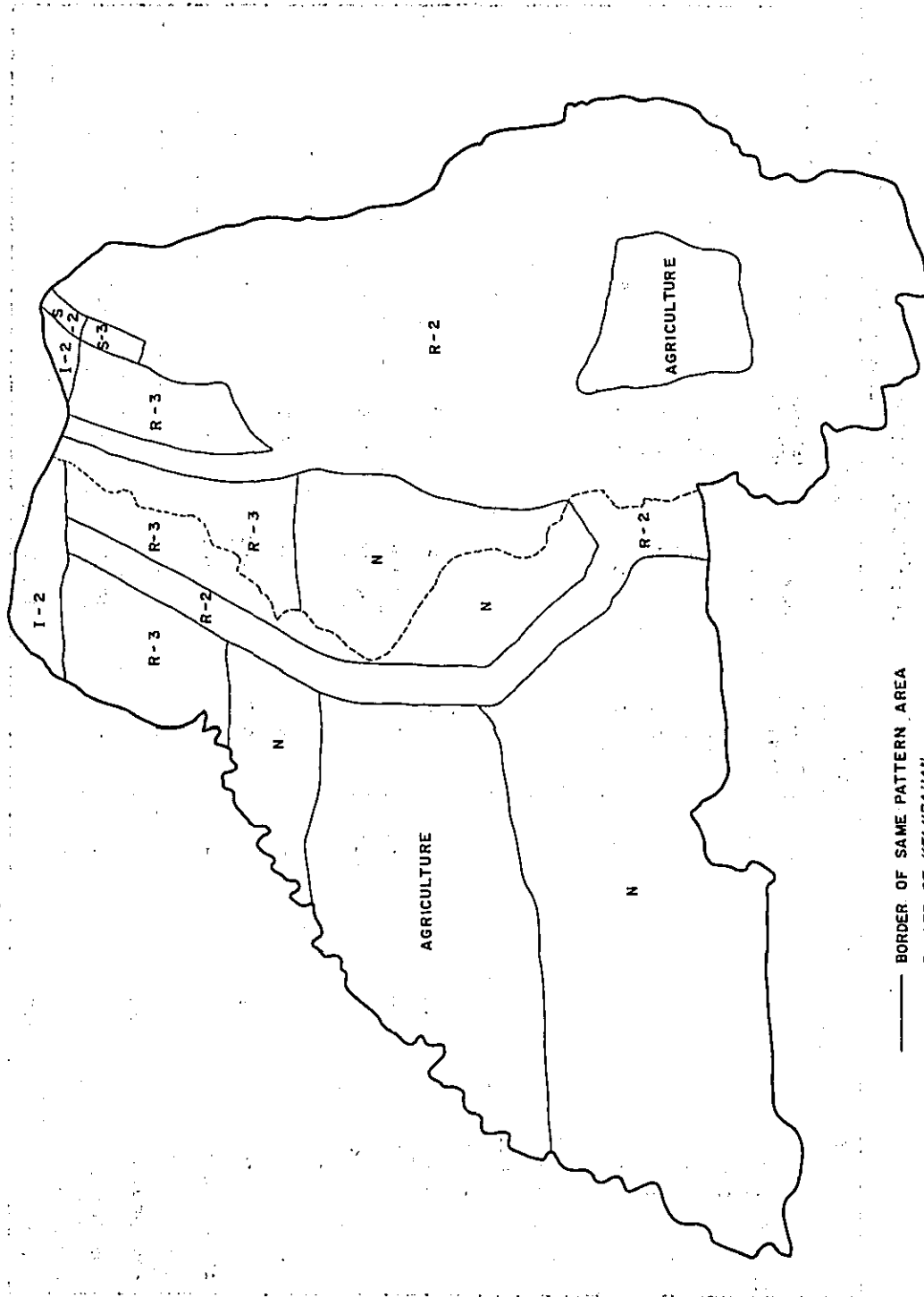


FIG. 2-6-2-10-(2)

KEDOYA EXCHANGE OFFICE SERVICE AREA

(KEDOYA)



—— BORDER OF SAME PATTERN AREA
----- BORDER OF KELURAHAN

FIG. 2-6-2-10-(13)
AREA PATTERN MAP

TABLE 2-6-2-10-(4)

KEDOYA EXCHANGE OFFICE TELEPHONE DEMAND

SURVEY TIME: SEPTEMBER 1974

ITEM	CLASSIFICATION	AREA (ha)	1983		1993		REMARKS
			DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY	
S	S-1						
	S-2	3	40	13.3	180	60.0	
	S-3	10	60	6.0	400	40.0	
	TOTAL	13	100	7.7	580	44.6	6
O	O-1						
	O-2						
	TOTAL						
R	R-1						
	R-2	450	530	1.2	6,750	15.0	
	R-3	350	310	0.9	2,450	7.0	
	TOTAL	800	840	1.1	9,200	11.5	91
I	I-1						
	I-2	11	55	5.0	110	10.0	
	TOTAL	11	55	5.0	110	10.0	1
	AGRICULTURE	161	85	0.5	161	1.0	
	OTHERS						
	NON-DEMAND	330					
	SUB TOTAL	1,315	1,080	0.8	10,051	7.6	100
	MISCELLANEOUS		20		120		
	TOTAL	1,315	1,100		10,171		

TABLE 2-6-2-10-(5)
KEDOYA EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN
 SURVEY TIME: SEPTEMBER 1974

KECAMATAN	KELURAHAN	PATTERN	A R E A (ha)	1983		1993		REMARKS	
				DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY		
KEBON JERUK	KEMBANGAN (1)	I-2	9.0	40	4.4	90	10.0		
		R-2	150.0	140	0.9	2,250	15.0		
		R-3	155.0	130	0.8	1,085	7.0		
		Ag	124.0	70	0.6	124	1.0		
		N	257.0						
		SUB TOTAL	695.0	380	0.5	3,549	5.1		
	T O T A L	MISCELLA- NEOUS			5		40		
			695.0	385		3,589			
		KEDOYA (2)	I-2	2.0	15	7.5	20	10.0	
			R-2	300.0	390	1.3	4,500	15.0	
			R-3	195.0	180	0.9	1,365	7.0	
			S-2	3.0	40	13.3	180	60.0	
S-3	10.0		60	6.0	400	40.0			
KG	37.0	15	4.4	37	1.0				
N	73.0								
SUB TOTAL	620.0	700	1.1	6,502	10.5				
T O T A L	MISCELLA- NEOUS			15		80			
		620.0	715		6,582				

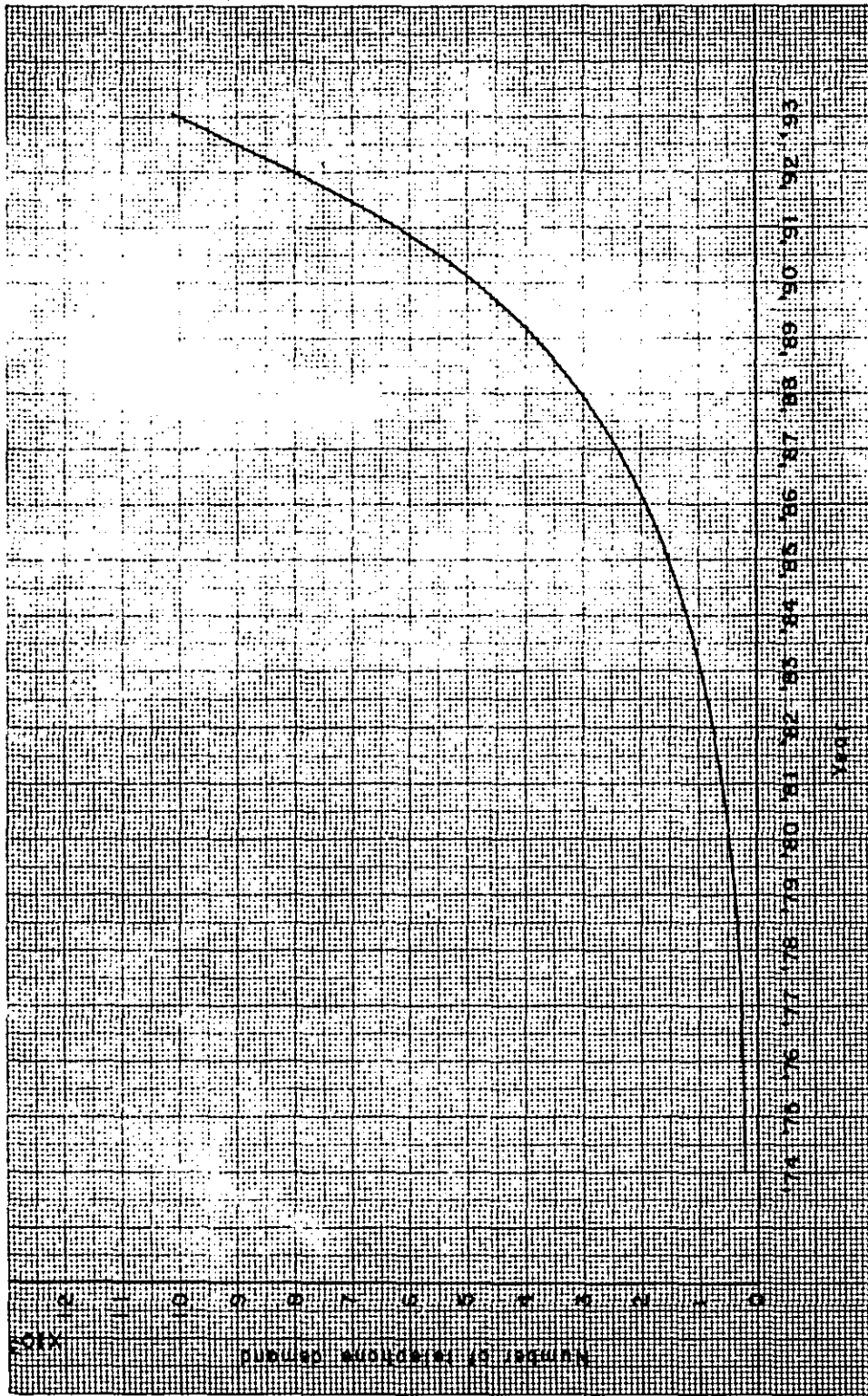
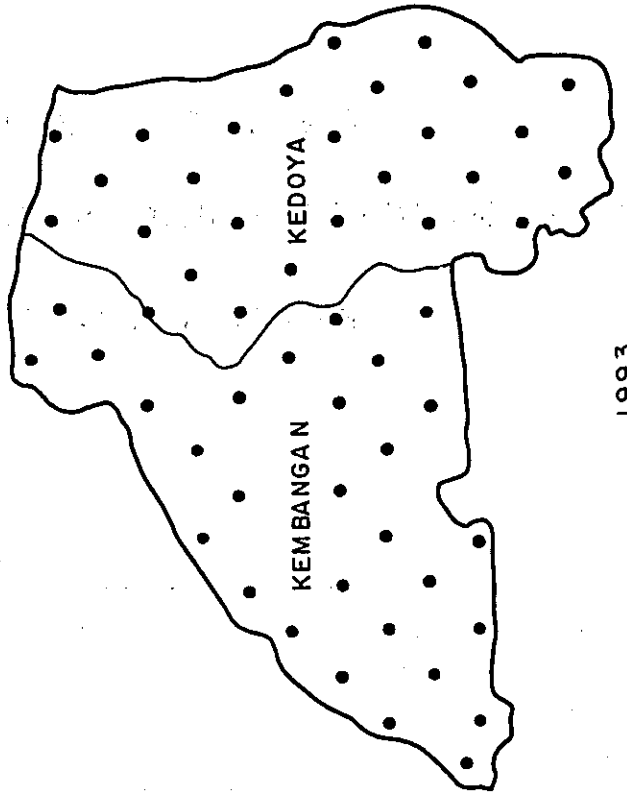
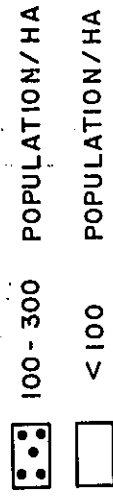
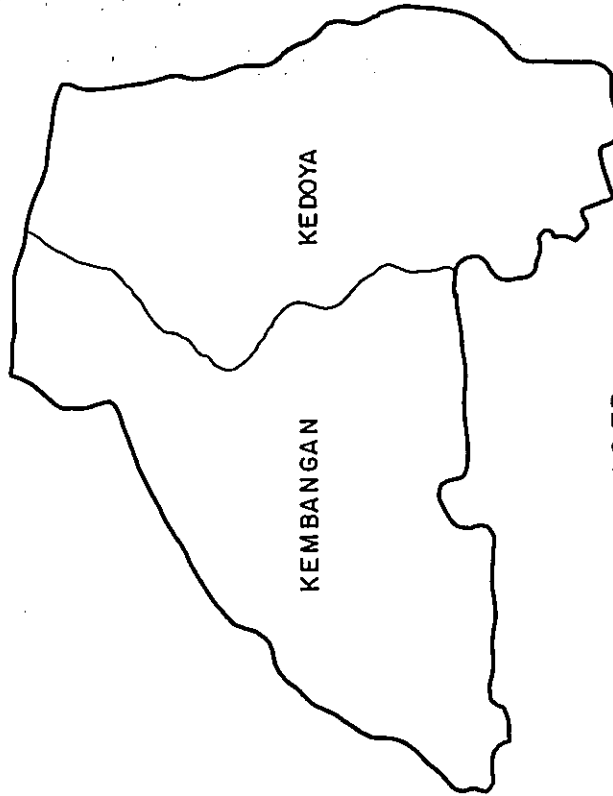


FIG. 2-6-2-10 - (6) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
(KEDOJA EXCHANGE OFFICE)

(KEDOYA)



1993



1973

FIG. 2-6-2-10-(7)

POPULATION DENSITY

TABLE 2-6-2-10-(8)

TELEPHONE DEMAND, POPULATION AND DIFFUSION RATIO IN 1993

KEDOYA EXCHANGE AREA

(EXCLUDING MISCELLANEONS)

A R E A	(ha)	1,315
TELEPHONE DEMAND		10,100
POPULATION		274,100
HOUSEHOLD		54,820
POPULATION DENSITY (POPULATION / ha)		208.4
DIFFUSION RATIO (DEMAND/100 INHABITANTS)		3.7
DIFFUSION RATIO (DEMAND/100 HOUSEHOLDS)		18.4

2.6.2.11 MERUYA

(1) General Description

The service area of Meruya Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. In the City Plan this area is designed to be a residential area in the future. As of 1973, this area has a population of 20,016 and 3,960 households, with an area size of 1,881 hectares. At present the area is a green field with low class and a small number of middle class houses scattering here and there. The area is still inconvenient for residence, because the road, the water and power facilities are poor. The borderline between Palmera and Meruya is a river which has bridges at three places. However, these bridges are so poor that a man can narrowly pass over them. That is, it is impossible to travel by car. Therefore, it will not be easy for the area to develop into a bed-town of Jakarta. However, according to the City Plan, there will be a road running through Meruya by 1979. At present the area has no subscriber lines. Upon completion of the road, it will develop as a residential area and the telephone demand will grow rapidly.

(2) Future Service Area

The service area of Meruya Exchange Office is now included in the service area of Slipi Exchange Office. The area is located far away from Slipi Exchange Office and no governmental or public organizations exist. At present there are no subscriber lines in this area. The boundary of this area is given in Fig. 2.6.2.11.(1). The area comprises 4 kelurahans.

(3) Telephone Demand Forecast

1) Area Development Estimation

For telephone demand forecast, the field survey was carried out by referring to the City Plan, the topographic map, etc. In this area lie only residences and schools and no business offices are found. According to the City Plan, 70% of the area is scheduled to be a residential area, and the remaining 30% a green field. The population of this area as of 1993 is estimated to be 548,000. Fig. 2.6.2.11.(2) presents the population density as of 1973 and 1993.

2) Area Pattern

The area pattern as of 1993 is given in Fig. 2.6.2.11.(3).

3) Result of Demand Forecast

As the result of our demand forecast, the telephone demand in the service area of Meruya Exchange Office is estimated to be 11,800. Table 2.6.2.11.(4) presents the demand in each kelurahan, Table 2.6.2.11.(5) presents the demand by area pattern, and Table 2.6.2.11.(6) presents the demand by area pattern in each kelurahan as of 1993. Fig. 2.6.2.11.(7) shows the demand growth during the period from 1974 through 1993.

(4) Conclusion

Table 2.6.2.11.(8) presents the telephone demand, population, population density, number of households and telephone diffusion rate as of 1993.

- SEMANGGI KEBAYORAN EXCHANGE OFFICE SERVICE AREA AT PRESENT.
- - - - MERUYA EXCHANGE OFFICE SERVICE AREA IN FUTURE
- KECAMATAN
- - - - KELURAHAN

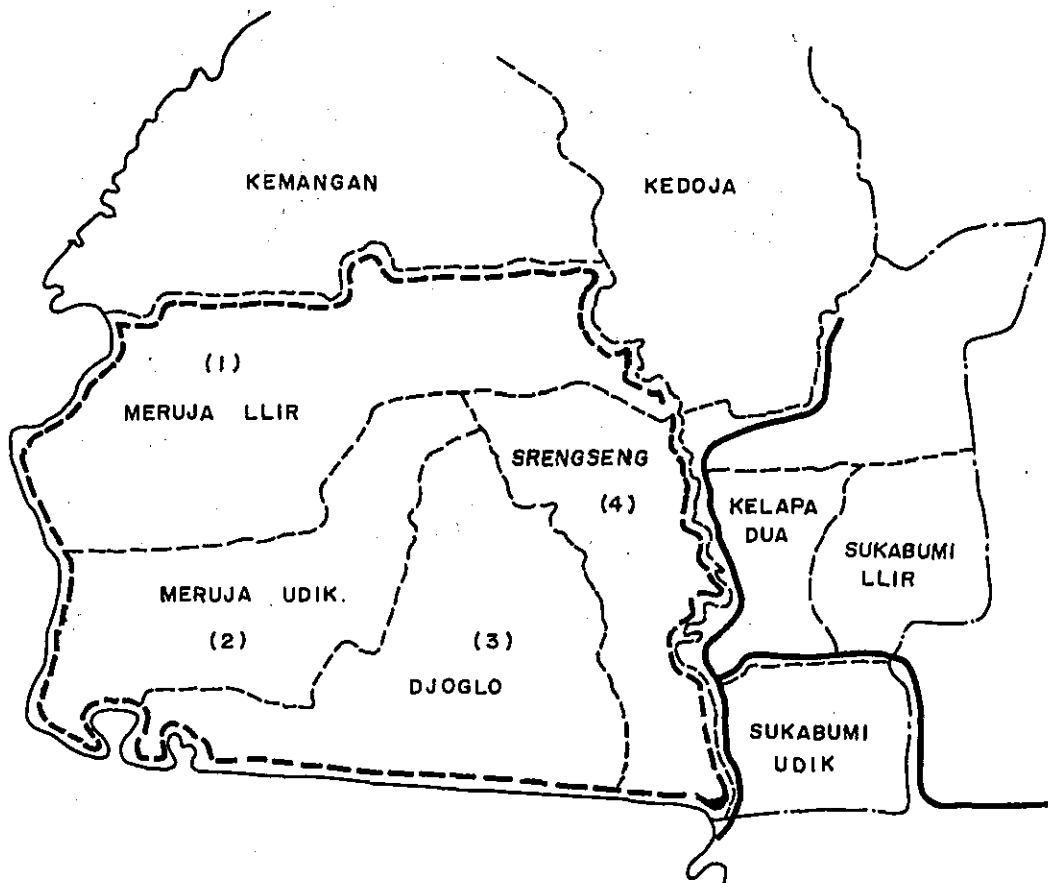


FIG. 2 - 6 - 2 - II - (I)

MERUYA EXCHANGE OFFICE SERVICE AREA

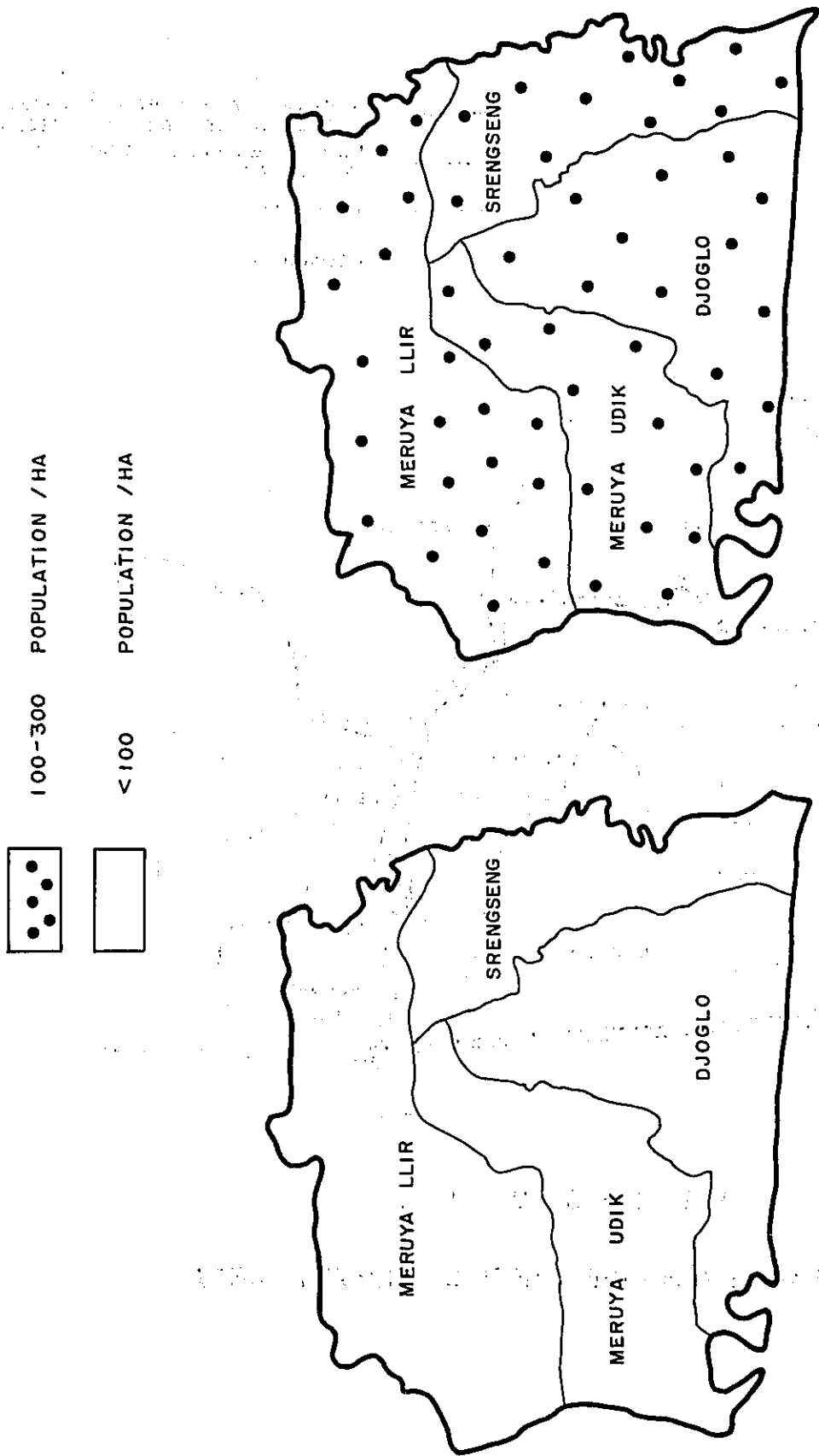
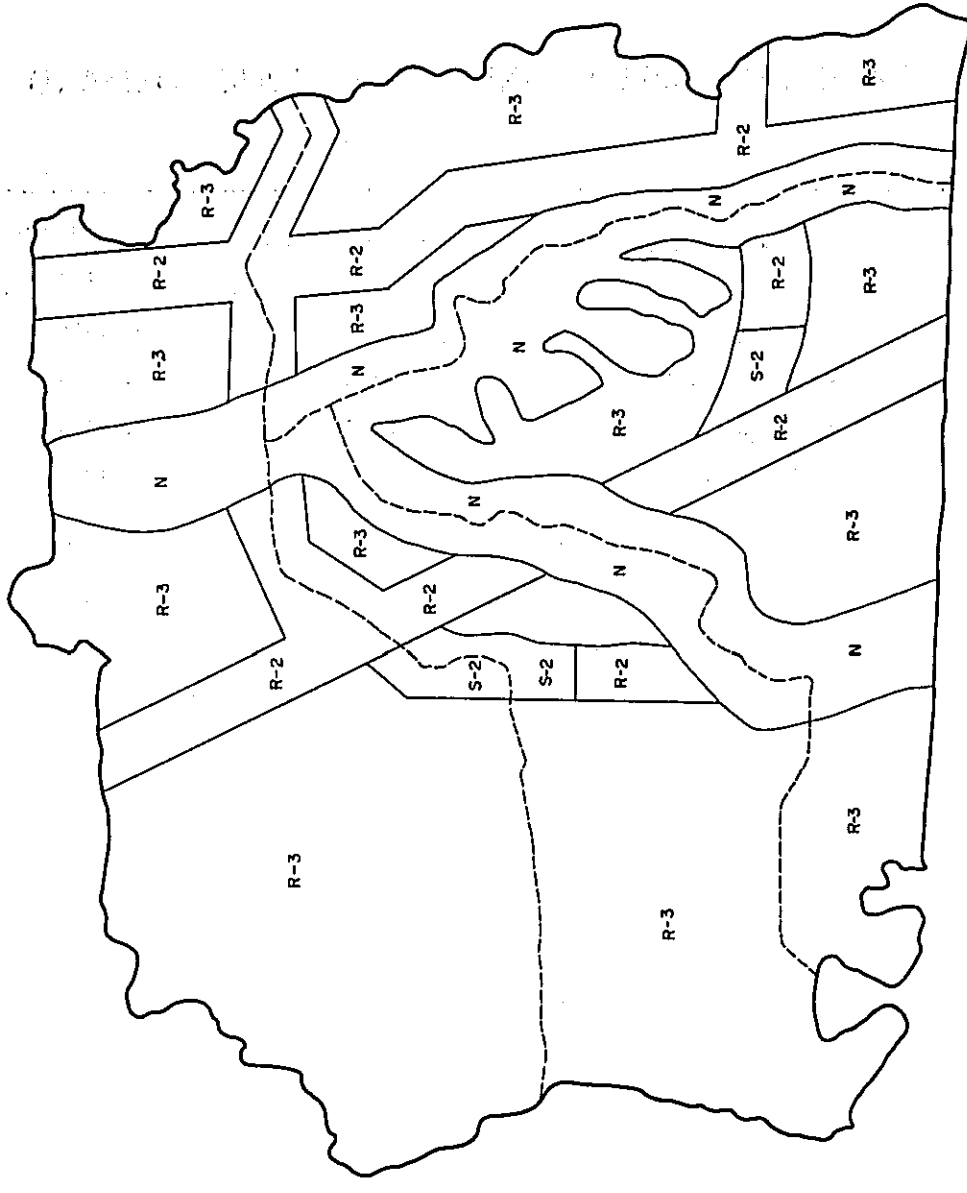


FIG. 2-6-2-11-(2)

POPULATION DENSITY (MERUYA)



— BORDER OF SAME PATTERN AREA

- - - BORDER OF KELURAHAN

FIG. 2-6-2-11-(3)

AREA PATTERN MAP (MERUYA)

TABLE 2-6-2-11-(4)

MERUYA EXCHANGE AREA AND TELEPHONE DEMAND

KECAMATAN	KELURAHAN	AREA (ha)	TELEPHONE DEMAND IN 1993
	MERUYA ILIR	643.0	4,503
	MERUYA UDIK	406.0	2,324
	JOGLO	534.0	2,773
	SRENGSENG	307.0	2,200
	TOTAL		1881.0

TABLE 2 - 6 - 2 - 11 - (5)
 MERUYA EXCHANGE OFFICE TELEPHONE DEMAND

SURVEY TIME : SEPTEMBER 1974

CLASSIFICATION	ITEM	AREA	1983		1993		REMARKS
			DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY	
S	S - 1						
	S - 2	21.7	338	15.9	1,085	50	
	S - 3						
	TOTAL	21.7	338	15.6	1,085	50	
O	O - 1						
	O - 2						
	TOTAL						
R	R - 1						
	R - 2	279.8	494	1.8	4,197	15	
	R - 3	1,303.5	769	0.6	6,518	5	
	TOTAL	1,583.3	1,213	0.8	10,715	6.8	
I	I - 1						
	I - 2						
	TOTAL						
AGRICULTURAL							
OTHERS							
NON -- DEMAND		276.0					
SUB - TOTAL		1,881.0	1,601	0.8	11,800	6.2	
MISCELLANEOUS			24		140		
TOTAL		1,881.0	1,625	0.8	11,940	6.3	

TABLE 2-6-2-11-(6) 1/2
 MERUYA EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (1)

SURVEY TIME : NOVEMBER 1974

KECAMATA	KELURAHAN	PATTERN	AREA (ha)	1983		1993		REMARKS	
				DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY		
KOJA	MERUYA ILIR (1)	R ~ 2	119.7	228	1.9	1,796	1.5		
		R ~ 3	474.4	232	0.5	2,372	5		
		S ~ 2	6.7	104	15.6	335	50		
		N	33.2						
		SUB-TOTAL MISCELLA- NEOUS	634.0	564	0.9	4,448	7		
	TOTAL			634.0	572	0.9	4,554	7	
	MERUYA UDIK (2)	R ~ 2	29.5	44	1.5	443	1.5		
		R ~ 3	330.3	131	0.4	1,651	5		
		S ~ 2	4.6	69	15	230	50		
		N	41.6						
SUB-TOTAL MISCELLA- NEOUS		406.0	244	0.6	2,324	5.6			
TOTAL			406.0	248	0.6	2,352	5.7		

TABLE 2-6-2-11-(6) 2/2

MERUYA EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (2)

KECAMATAN	KELURAHAN	PATTERN	AREA	1983		1993		REMARKS	
				DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY		
KOJA	JOGLO (3)	R-2	43.4	65	1.5	651	15		
		R-3	320.4	192	0.6	1,602	5		
		S-2	10.4	165	15.9	520	50		
		N	159.8						
		SUB-TOTAL		534.0	442	0.8	2,773	5.1	
		MISCELLA-NEOUS			8		38		
		TOTAL		534.0	430	0.8	2,811	5.1	
	SRENGSENG (4)	R-2		87.2	157	1.8	1,308	15	
		R-3		178.4	214	1.2	892	5	
		N		41.4					
		SUB-TOTAL		307.0	371	1.3	2,200	7.2	
	MISCELLA-NEOUS			4		22			
	TOTAL		307.0	375	1.3	2,222	7.3		

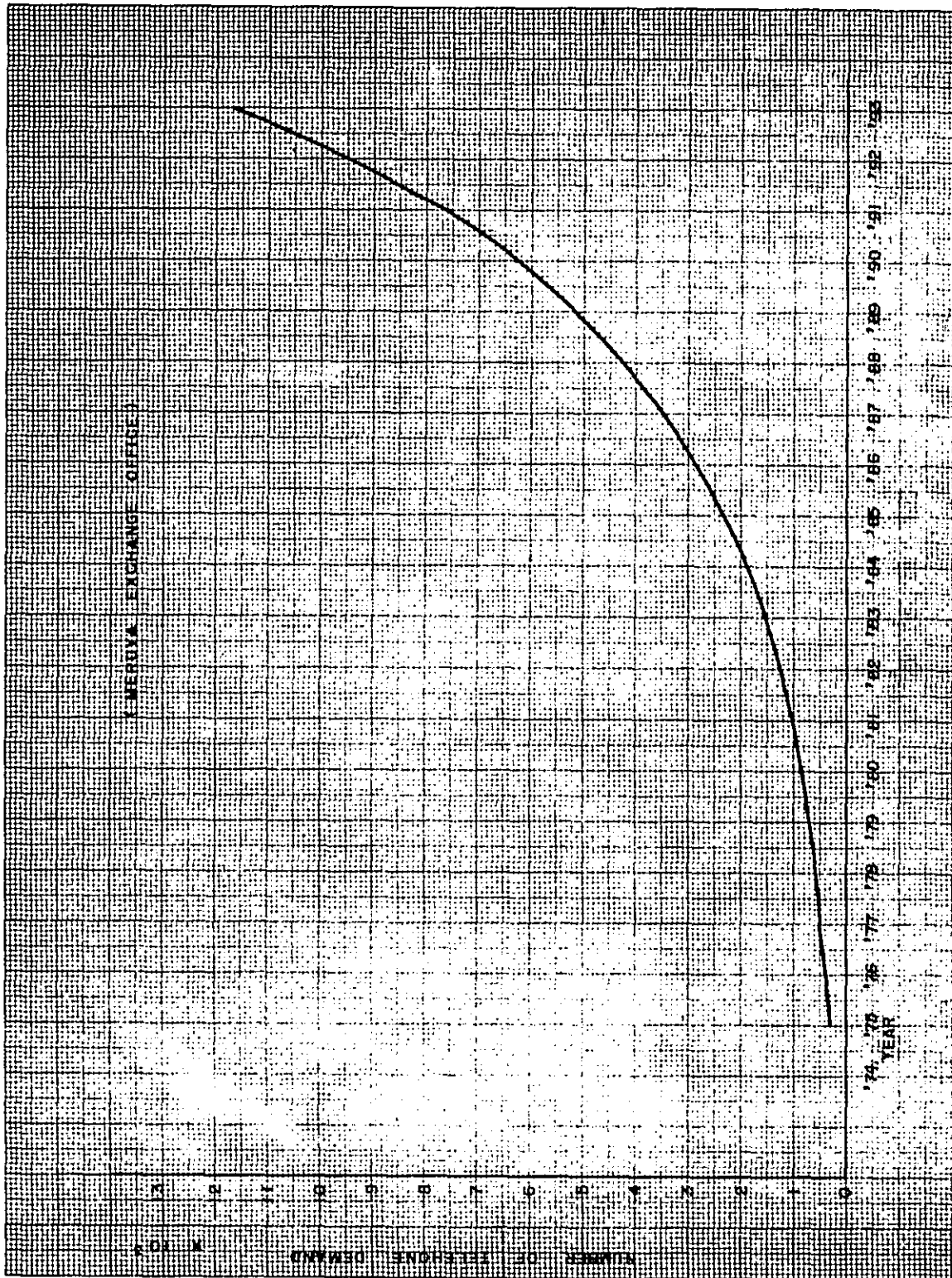


FIG. 2-6-2-11 - (7) TELEPHONE DEMAND EXCLUDING (MISCELLANEOUS)

TABLE 2 - 6 - 2 - 11 - (8)

TELEPHONE DEMAND, POPULATION AND DIFFUSION
RATIO IN 1993

MERUYA EXCHANGE AREA

(EXCLUDING MISCELLANEOUS)

AREA	(ha)	1,881.0
TELEPHONE DEMAND		11,800
POPULATION		548,000
HOUSEHOLD		109,600
POPULATION DENSITY (POPULATION / ha)		291
DIFFUSION RATIO (DEMAND / 100 INHABITANTS)		2.2
DIFFUSION RATIO (DEMAND / 100 HOUSEHOLDS)		10.8

2.6.2.12 CEMPAKA PUTIH

(1) General Description

The future service area of Cempaka Putih Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. This area is located near the center of Jakarta. In the City Plan this area is designed not to be an office area but to be a residential area. A number of middle class houses are now under construction. The area along Letnan Jendral Suprpto Street and Jendral Achmad Yani Street will develop as an office or industrial area. As a whole, however, the future service area of Cempaka Putih Exchange Office will develop as a middle class residential area.

According to statistics compiled by D.K.I. the area is 1,424 hectares in size and, as of 1973, has 78,700 households with a population of 422,600.

At present the subscribers in this area are accommodated mainly in existing Jatinegara Exchange Office. As of December 1974 the subscriber lines number 1,329 and the waiting applicants 593. The telephone diffusion rate per 100 inhabitants is 0.3.

(2) Existing Service Area and Future Service Area

The future service area of Cempaka Putih Exchange Office, an object area of our study, is shown in Fig. 2.6.2.12.(1). The telephone service in this area is now provided by existing Gambir Exchange Office and Jatinegara Exchange Office, with the former covering more than 80% of the whole area.

As shown in Table 2.6.2.12.(2) this area comprises 3 kecamatans.

(3) Result of Demand Forecast

1) Area Development Estimation

In the service area of Cempaka Putih Exchange Office lies Kemayoran Air Port for the domestic airline service. As seen in the map, Indonesia consists of a great number of large and small islands scattered far and wide. As a most efficient transportation facility to connect these islands distant from each other, an aviation network is indispensable to Indonesia. Therefore Kemayoran Air Port will continue its operation in the future.

In the City Plan this area is designed to be a residential area. In the major part of kelurahans of Cempaka Putih, the land levelling for housing sites has already been completed. Many handsome houses are now under construction. The area on either side of the road along Letnan Jendral Suprpto Street running, from east to west, through the center of the area is expected to develop as an office area or an industrial area. The population as of 1993 of this area will increase to 550,700 from 401,900 as of 1973.

Fig. 2.6.2.12.(3) presents the population density as of 1973 and 1993.

2) Area Pattern

Table 2.6.2.12.(4) shows the telephone demand by area pattern as of 1983

and 1993. The demand by area pattern in each kelurahan is shown in Table 2.6.2.12.(5), while the area pattern as of 1993 is given in Fig. 2.6.2.12.(6).

3) Result of Demand Forecast

The demand forecast result shows that the residential telephones as of 1993 account for 64% and the business telephones 36%. This area, though located in the central part of Jakarta, will develop as a middle class residential area and not as an office area like the Gambir Exchange Office service area.

Fig. 2.6.2.12.(7) shows the telephone demand growth curve during the period from 1974 through 1993. The demand as of 1993 is approximately 2.5 times the demand as of 1974.

(4) Conclusion

Fig. 2.6.2.12.(8) presents the telephone demand, population, number of households, telephone diffusion rate as of 1993 in the service area of Cempaka Putih Exchange Office.

TABLE 2-6-2-12-(2) FUTURE CEMPAKA PUTIH EXCHANGE
AREA AND TELEPHONE DEMAND

Kecamatan	Kelurahan	Area (ha)	Telephone Demand in 1993
KEMAYORAN	Gunung Sahari Selatan	136.0	7,344
	Kemayoran	52.0	1,789
	Kebon Kosong	118.0	1,773
	Serdang	144.8	2,533
	Harapan Mulya	232.4	6,183
SEKENEN	Bungur	62.0	1,934
CEMPAKA PUTIH	Tanan Tinggi	59.6	1,413
	Djohar Baru	64.0	1,792
	Galur	52.4	1,320
	Kampung Rawa	50.8	1,422
	Cempaka Putih	336.4	9,890
	Rawa Sari	115.6	2,807
TOTAL		1,424	40,200

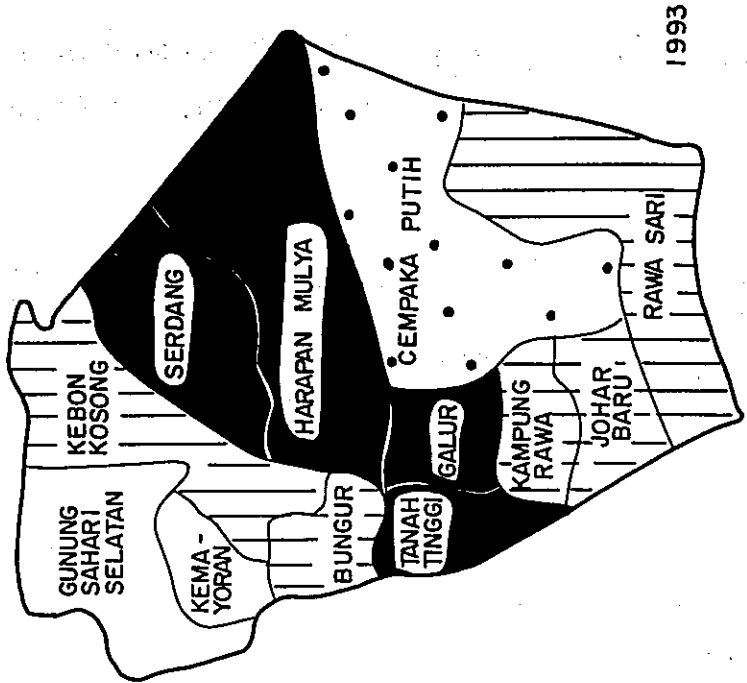
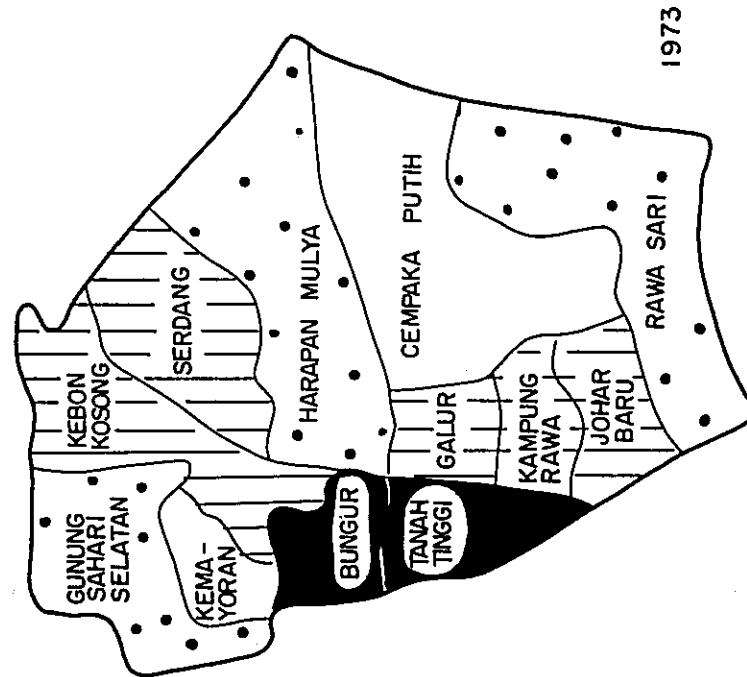
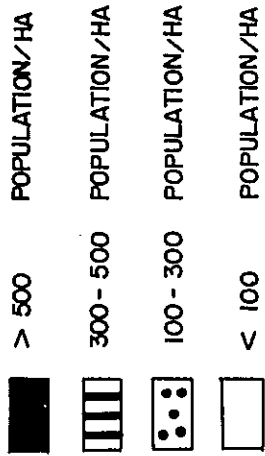


FIG. 2-6-2-12-(3) POPULATION DENSITY (CEMPAKA PUTIH)

TABLE 2-6-2-12-(4) CEMPAKA PUTIH EXCHANGE OFFICE
TELEPHONE DEMAND

Survey Time: September 1974

Item Classification	Area (ha)	1983		1993		Remarks
		Demand	Demand density	Demand	Demand density	
S - 1						
S - 2	29.1	640	22.0	1,746	60.0	4.3
S - 3						
Total	29.1	640	22.0	1,746	60.0	4.3
O - 1	27.2	1,030	37.3	3,264	120.0	8.1
O - 2	146.9	2,585	17.6	8,814	60.0	21.9
Total	174.1	3,615	20.8	12,078	69.4	30.0
R - 1						
R - 2	783.4	9,035	11.5	21,935	28.0	54.6
R - 3	297.9	1,610	5.4	3,873	13.0	9.6
Total	1,081.3	10,645	9.8	25,808	23.9	64.2
I - 1	56.8	300	5.3	568	10.0	1.5
I - 2						
Total	56.8	300	5.3	568	10.0	1.5
Agriculture						
Others						
Non - Demand	82.7					
Sub - Total	1,424.0	15,200	10.7	40,200	28.2	100.0
Miscellaneous		400		1,200		
TOTAL	1,424.0	15,600		41,400		

TABLE 2-6-2-12-(5) 1/4 CEMPAKA PUTIH EXCHANGE OFFICE. TELEPHONE
DEMAND OF EACH KELURAHAN (1)

Survey time : September 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
KEMAYORAN	Gunung Sahari Selatan (1)	0 - 1	27.2	1,030	37.3	3,264	120.0		
		0 - 2	68.0	1,197	17.6	4,080	60.0		
		N	40.8						
		Sub Total		136.0	2,227	16.4	7,344	54.0	
		Miscellaneous			162		530		
		TOTAL		136.0	2,399		7,874		
	Kemayoran (2)	0 - 2		10.4	183	17.6	624	60.0	
		R - 2		41.6	478	11.5	1,165	28.0	
		Sub Total		52.0	661	12.7	1,789	34.4	
		Miscellaneous			18		56		
	TOTAL		52.0	679		1,845			
Kebon Kasong (3)	R - 2		46.9	541	11.5	1,313	28.0		
	R - 3		35.3	191	5.4	460	13.0		
	N		35.8						
	Sub Total		118.0	732	6.2	1,773	15.0		
	Miscellaneous			7		18			
	TOTAL		118.0	739		1,791			

TABLE 2-6-2-12-(5) 2/4 CEMPAKA PUTIH EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (2)

Survey time : September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
KEMAYORAN	Serdang (4)	R-2	43.4	499	11.5	1,215	28.0		
		R-3	101.4	548	5.4	1,318	13.0		
		Sub Total	144.8	1,047	7.2	2,533	17.5		
		Miscellaneous		10		25			
	TOTAL		144.8	1,057		2,558			
	Harapan Mulya (5)	S-2		11.6	255	22.0	696	60.0	
		O-2		34.9	614	17.6	2,094	60.0	
		R-2		69.7	801	11.5	1,952	28.0	
		R-3		93.0	502	5.4	1,209	13.0	
		I-1		23.2	123	5.3	232	10.0	
Sub Total			232.4	2,295	9.9	6,183	26.6		
	Miscellaneous			70		212			
	Total		232.4	2,365		6,395			
SEKEN	Bungur (6)	S-2	6.2	136	22.0	372	60.0		
		R-2	55.8	642	11.5	1,562	28.0		
	Sub Total	62.0	778	12.6	1,934	31.2			
	Miscellaneous		10		27				
	TOTAL		62.0	788		1,961			

TABLE 2-6-2-12-(5)34 CEMPAKA PUTIH EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (3)

Survey time : September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
CEMPAKA PUTIH	Tanah Tinggi (7)	S - 2	6.0	132	22.0	360	60.0		
		R - 2	23.8	234	11.5	666	28.0		
		R - 3	29.8	161	5.4	387	13.0		
		Sub Total	59.6	527	8.8	1,413	23.7		
		Miscellaneous		8		22			
	TOTAL			59.6	535		1,435		
	Djohar Baru (8)	R - 2		64.0	736	11.5	1,792	28.0	
		Sub Total			736	11.5	1,792	28.0	
		Miscellaneous			7		18		
	TOTAL			64.0	743		1,810		
Galur (9)	S - 2		5.3	117	22.0	318	60.0		
	R - 2		26.0	304	11.5	728	28.0		
	R - 3		21.1	114	5.4	274	13.0		
	Sub Total		52.4	535	10.1	1,320	25.2		
	Miscellaneous			8		20			
TOTAL			52.4	543		1,340			

TABLE 2-6-2-12-(5) 4/4 CEMPAKA PUTIH EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (4)

Survey time : September 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
CEMPAKA - PUTIH	Kampung Rawa (10)	R-2	50.8	584	11.5	1,422	28.0		
		Sub Total	50.8	584	11.5	1,422	28.0		
		Miscellaneous		6		14			
	TOTAL		50.8	590		1,436			
	Cempaka - putih (11)	0-2		33.6	591	17.6	2,016	60.0	
		R-2		269.2	3,153	11.7	7,538	28.0	
		I-1		33.6	177	5.3	336	10.0	
		Sub Total		336.4	3,921	11.7	9,890	29.4	
		Miscellaneous			82		233		
	TOTAL			336.4	4,003		10,123		
	Rawa - Sari (12)	R-2		92.2	1,063	11.5	2,582	28.0	
		R-3		17.3	94	5.4	225	13.0	
N			6.1						
Sub Total			115.6	1,157	10.0	2,807	24.4		
Miscellaneous				12		28			
TOTAL			115.6	1,169		2,835			



FIG.2-6-2-2-12-(6) AREA PATTERN MAP (CEMPAKA PUTIH)

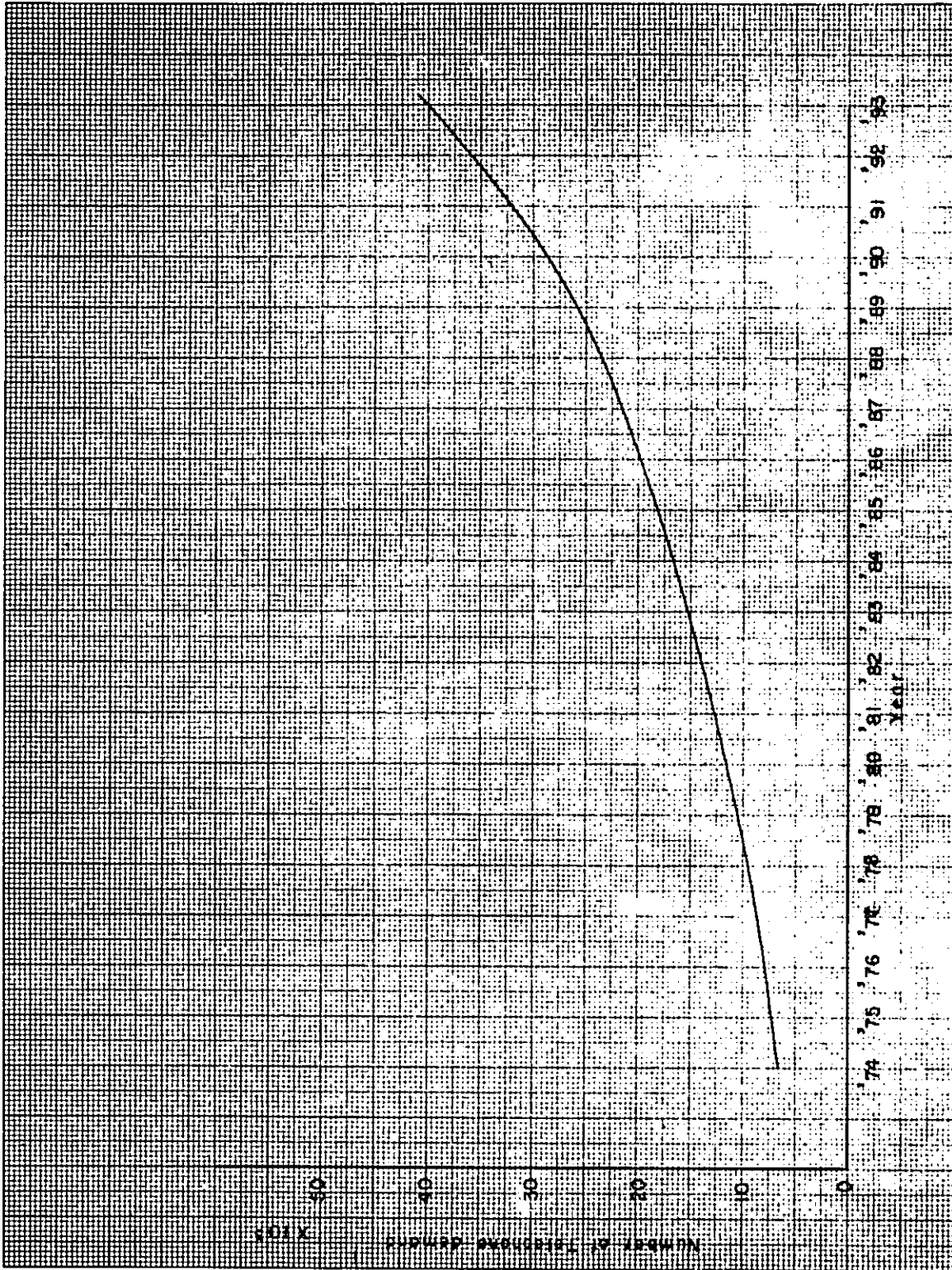


FIG. 2-6-2-12-(7) TELEPHONE DMAND (EXCLUDING MISCELLANEOUS)
 (CEMPAKA PUTIH EXCHANGE OFFICE)

TABLE 2-6-2-12-(8)
 TELEPHONE DEMAND, POPULATION AND
 DIFFUSION RATION IN 1993
 CEMPAKA PUTIH EXCHANGE AREA

(Excluding miscellaneous)

Area	(ha)	1,424
Telephone demand		40,200
Population		550,800
Household		110,800
Population density (Population/ha)		386.8
Diffusion ratio (Demand/100 inhabitants)		7.3
Diffusion ratio (Demand/100 households)		36.3

2.6.2.13 RAWAMANGUN

(1) General Description

The future service area of Rawamangun Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. From the view of the future telephone network in Jakarta, it is also suitable and we forecasted the demand in this area.

Rawamangun, one of the high class residential areas in Jakarta, is located in the western part of Jakarta.

According to the statistics of 1973 compiled by D.K.I. the future service area is 1,468 hectares in size and has 34,271 households with a population of 162,552.

(2) Existing Service Area and Future Service Area

At present major part of the Rawamangun Exchange Office service area is included in the service area of Jatinegara Exchange Office. The area thus covered by Jatinegara Exchange Office, as well as the future service area, is shown in Fig. 2.6.2.13.(1).

(3) Telephone Demand Forecast

1) Area Development Estimation

In our area development estimation we used as major reference the City Plan, the city map and the aerial photograph of Jakarta. The field survey was carried out by referring to these data.

A number of middle and high class residential districts are found in this area. In the City Plan this area is earmarked for a residential area. Along the main street, new office buildings and factories are under construction. In the future both sides of the street will be fully occupied with such buildings and factories.

The population density is forecasted as shown in Fig. 2.6.2.13.(2).

2) Area Pattern

In accordance with the Area Pattern Standard described in Section 2.6.1.(6), the area pattern map as of 1993 is drawn up as shown in Fig. 2.6.2.13.(3).

3) Result of Demand Forecast

The telephone demand as of 1993 in each kelurahan based on the area pattern map mentioned in the preceding paragraph 2) is given in Table 2.6.2.13.(4), together with the demand as of 1983 calculated based on the demand as of 1993. Table 2.6.2.13.(5) presents the demand in each area pattern summed up by the demand of Table 2.6.2.13.(4). As seen in the table, the demand as of 1993 in the S area accounts for 9%, the demand in the O area 12%, the demand in the R area 70%, and the demand in the I area 9%, while the telephone demand density per hectare is 14.9.

The area size and the telephone demand as of 1993 in each kelurahan are given in Table 2.6.2.13.(6).

At present the subscriber lines in the service area of Rawamangun Exchange Office number 468. However, the telephone demand as of 1974 is estimated to be 2,250 including the potential demand. Fig. 2.6.2.13.(7) shows the demand during the period from 1974 through 1993.

(4) Conclusion

Table 2.6.2.13.(8) presents the telephone demand, population, number of households, population density and telephone diffusion rate as of 1993.

The telephone demand as of 1993 is estimated to be 21,900, 47 times as much as the number of the existing subscriber lines.

The population as of 1993 is estimated to be 507,000, which is 3.1 times the population in 1973.

The telephone diffusion rate per 100 inhabitants is 0.3 at present will be improved to 4.3 in 1993.

————— JATINEGARA EXCHANGE OFFICE SERVICE
 AREA AT PRESENT
 - - - - - RAWAMAN GUN EXCHANGE OFFICE
 SERVICE AREA IN FUTURE
 ————— JAKARTA TIMOR
 ————— KECAMATAN
 - - - - - KELURAHAN

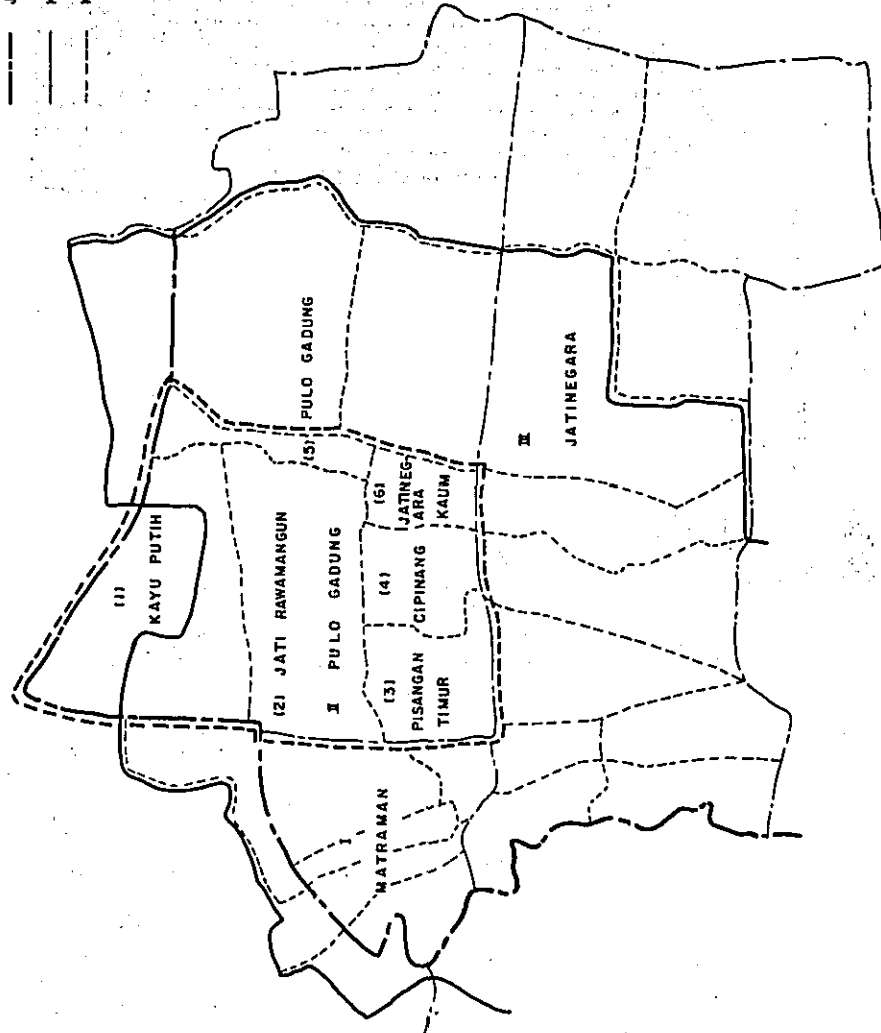


FIG. 2-6-2-13-(1)
 RAWAMANGUN EXCHANGE OFFICE SERVICE AREA

(RAWAMANGAN)

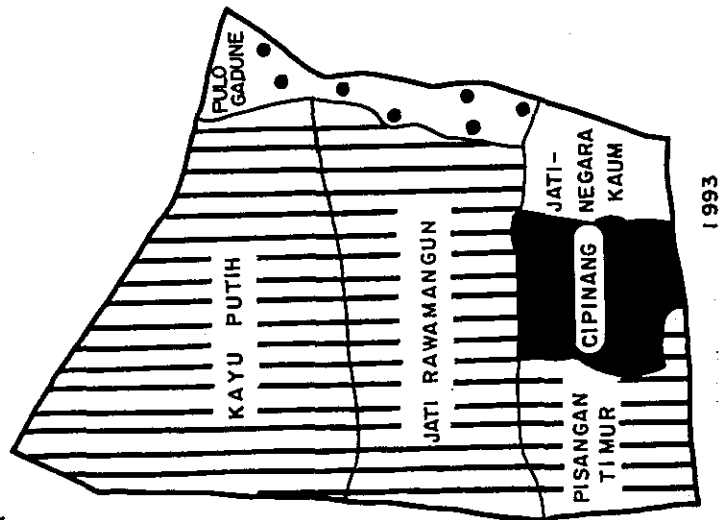
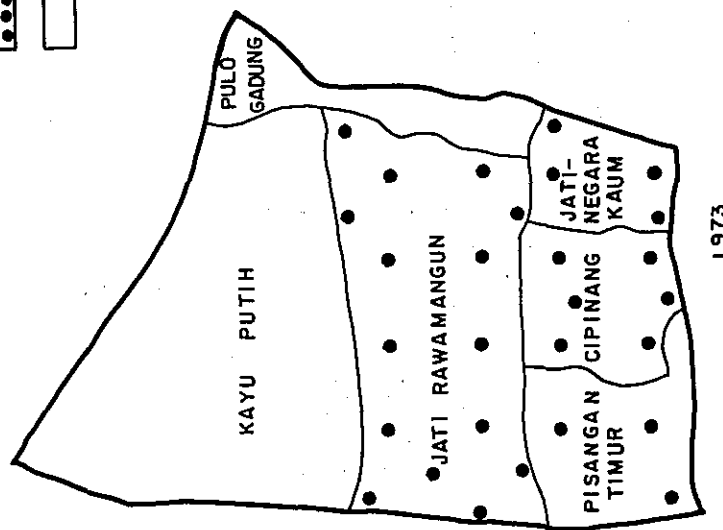
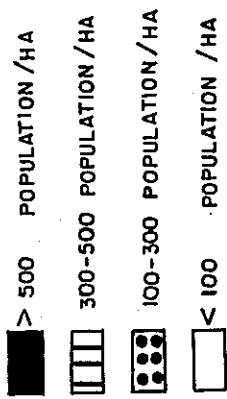


FIG. 2-6-2-13-(2)
POPULATION DENSITY

(RAWAMANGUN)

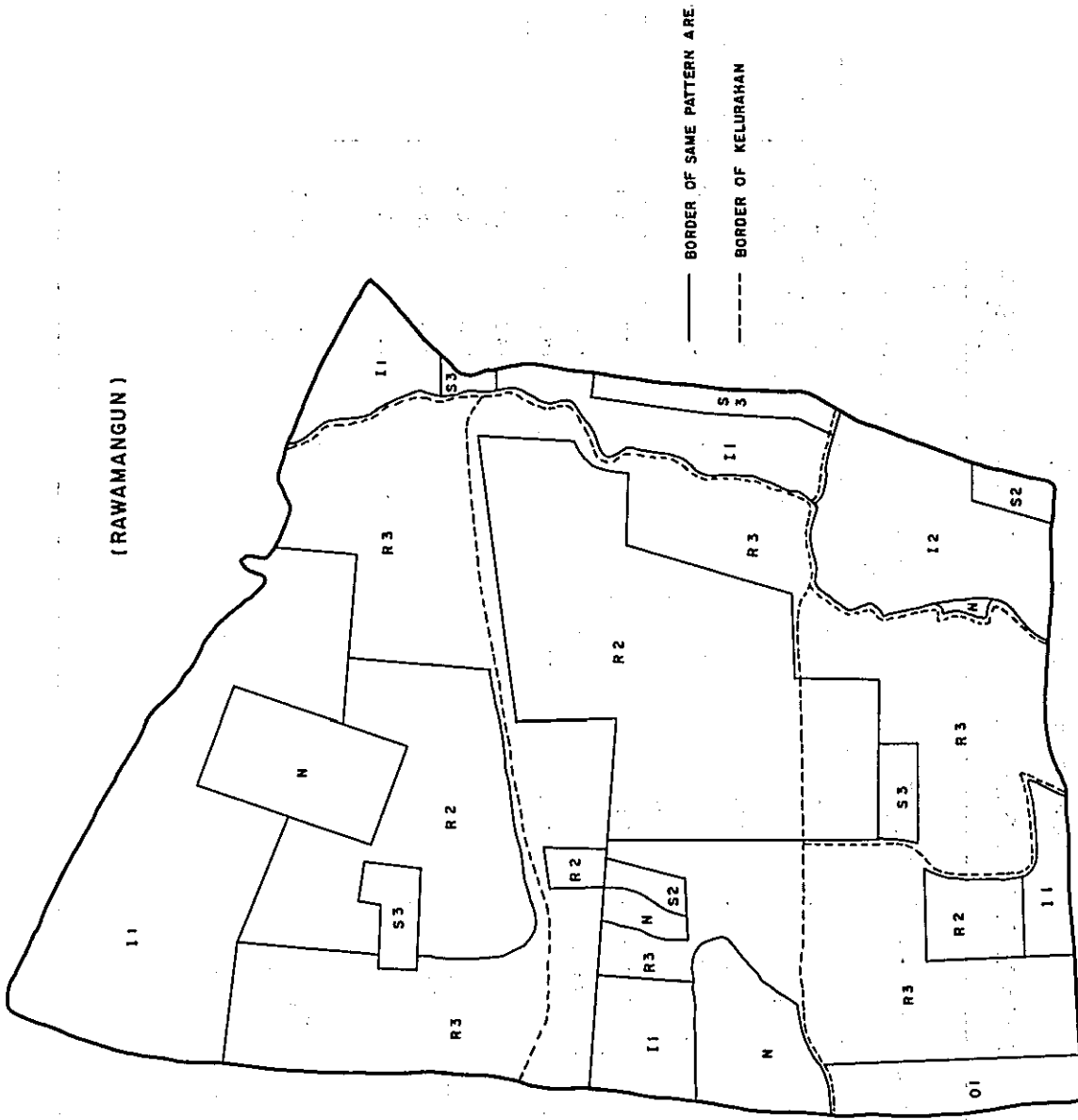


FIG. 2-6-2-13-(3)
AREA PATTERN MAP

TABLE 2-6-2-13-(4) 1/3

RAWAMANGUN EXCHANGE OFFICE TELEPHON DEMAND OF EACH KELURAHAN (1)
SURVEY TIME: SEPTEMBER 1974

KECAMATAN	KELURAHAN	PATTERN	A R E A (HA)	1983		1993		REMARKS	
				DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY		
PULO - GADUNG	KAYU - PUTIH (1)	S-3	15	110	7.3	600	40.0		
		R-2	137	785	5.7	2,740	20.0		
		R-3	195	1,030	5.3	2,925	15.0		
		I-1	161	355	2.2	805	5.0		
		N	30						
		SUB TOTAL		538	2,280	4.2	7,070	13.1	
		MISCELLA- NEOUS			65		115		
		TOTAL		538	2,345		7,185		
	JATI RAWA- MANGUN (2)	S-2		4	40	10.0	240	60.0	
		R-2		183	1,045	5.7	3,660	20.0	
R-3			105	660	6.2	1,575	15.0		
I-1			38	50	1.3	190	5.0		
N			126						
	SUB TOTAL		456	1,795	3.9	5,665	12.4		
	MISCELLA- NEOUS			35		70			
	TOTAL		456	1,830		5,735			

TABLE 2-6-2-13-(4) 2/3

RAWAMANGUN EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (2)

SURVEY TIME: SEPTEMBER 1974

KECAMATAN	KELURAHAN	PATTERN	A R E A (HA)	1983		1993		REMARKS
				DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY	
PULO GADUNG	PISANGAN TIMUR (3)	0-1	26	290	11.2	2,600	100.0	
		R-2	40	230	5.8	800	20.0	
		R-3	80	425	5.3	1,200	15.0	
		I-1	26	100	3.8	130	5.0	
	SUB TOTAL	172	1,045	6.1	4,730	27.5		
	MISCELLA-NEOUS		50		210			
	TOTAL	172	1,095		4,940			
	CIPINANG (4)	S-3	8	60	7.5	320	40.0	
		R-2	30	170	5.7	600	20.0	
		R-3	116	615	5.3	1,740	15.0	
SUB TOTAL		154	845	5.5	2,660	17.3		
MISCELLA-NEOUS		15		30				
TOTAL	154	860		2,690				

TABLE 2-6-2-13-(4) 3/3

RAWAMANGUN EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (3)
 SURVEY TIME: SEPTEMBER 1974

KECAMATAN	KELURAHAN	PATTERN	A R E A (HA)	1983		1993		REMARKS
				DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY	
PULO - GADUNG	PULO - GADUNG	S-3	15	110	7.3	600	40.0	
		I-1	65	145	2.2	325	5.0	
	(5)	SUB TOTAL	80	255	3.2	925	11.6	
		MISCELLA- NEOUS		15		35		
	TOTAL		80	270		960		
	JATINEGARA KAUM	S-2	4	40	10.0	240	60.0	
		I-2	62	240	3.9	620	10.0	
		N	2					
	(6)	SUB TOTAL	68	280	4.1	860	12.7	
		MISCELLA- NEOUS		20		40		
TOTAL		68	300		900			

TABLE 2-6-2-13-(5)

RAWAMANGUN EXCHANGE OFFICE TELEPHONE DEMAND

SURVEY TIME: SEPTEMBER 1974

ITEM CLASSIFICATION	AREA (HA)	1983		1993			REMARKS
		DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY	DEMAND (%)	
S	S-1						
	S-2	8	10.0	480	60.0	2	
	S-3	38	7.4	1,520	40.0	7	
TOTAL	46	360	7.8	2,000	43.5	9	
O	O-1	26	11.2	2,600	100.0	12	
	O-2						
TOTAL	26	290	11.2	2,600	100.0	12	
R	R-1						
	R-2	390		2,230	5.7	7,800	36
	R-3	496		2,730	5.5	7,440	34
	TOTAL	886		4,960	5.6	15,240	70
I	I-1	290		650	2.2	1,450	7
	I-2	62		240	3.9	620	2
	TOTAL	352		890	2.5	2,070	9
AGRICULTURE							
OTHERS							
NON - DEMAND	158						
SUB TOTAL	1,468	6,500	4.4	21,910	14.9	100	
MISCELLANEOUS		200		500			
TOTAL	1,468	6,700	4.6	22,410	15.3		

TABLE 2-6-2-13-(6)

FUTURE RAWAMANGUN EXCHANGE AREA AND TELEPHONE DEMAND

(EXCLUDING MISCELLANEOUS)

KECAMATAN	KELURAHAN	A R E A (HA)	TELEPHONE DEMAND IN 1993
PULO GADUNG	KAYU PUTIH	538	7,070
	JATI RAWAMANGUN	456	5,665
	PISANGAN TIMUR	172	4,730
	CIPINANG	154	2,660
	PULO GADUNG	80	925
	JATINEGARA KAUM	68	860
	T O T A L		1,468

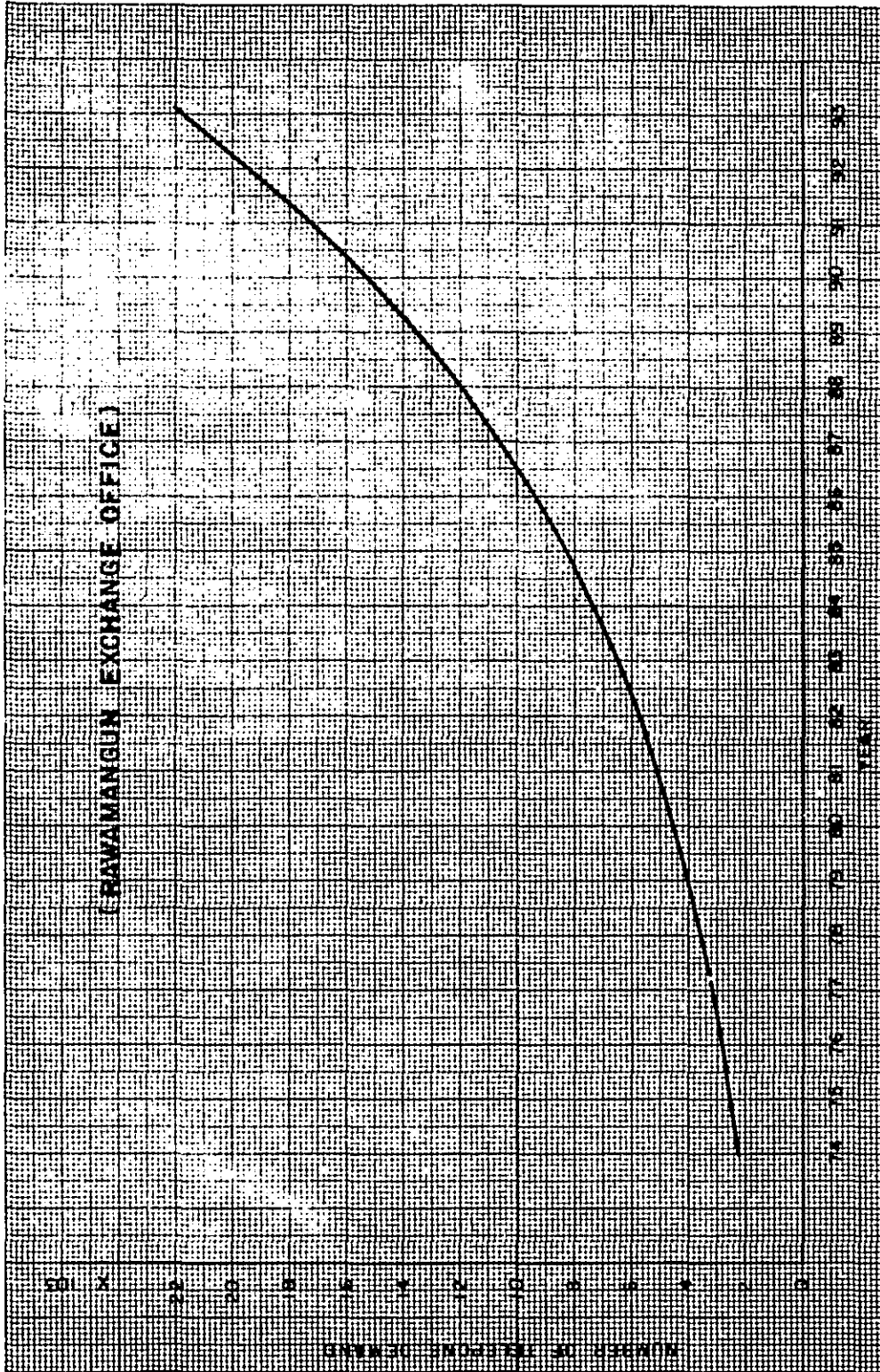


FIG. 2-6-2-13-(7)

TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)

TABLE 2-6-2-13-(8)

TELEPHONE DEMAND, POPULATION AND DIFFUSION RATIO IN 1993
 RAWAMANGUN EXCHANGE AREA

(EXCLUDING MISCELLANEOUS)

A R E A	(HA)	1,468
TELEPHONE DEMAND		21,900
POPULATION		507,000
HOUSEHOLD		101,400
POPULATION DENSITY (POPULATION / HA)		345
DIFFUSION RATIO (DEMAND/100 INHABITANTS)		4.3
DIFFUSION RATIO (DEMAND/100 HOUSEHOLDS)		21.6

2.6.2.14 PULOGADUNG

(1) General Description

The future service area of Pulogadung Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. From the view point of the future telephone network in Jakarta, it is also suitable and we forecasted the demand in this area.

Pulogadung is located in the north-eastern part of Jakarta. Along the roads in the western and southern part of the area are found factories and residence houses. However, major part of the future service area is occupied by a rice field.

According to statistics of 1973 compiled by D.K.I. the area is 1,692 hectares in size and has 2,067 households with a population of 8,180.

(2) Existing Service Area and Future Service Area

At present part of the Pulogadung Exchange Office service area is included in the Tanjung Priok Exchange Office and Jatinegara Exchange Office service areas. The area thus covered by these existing exchange offices, as well as the future service area, is shown in Fig. 2.6.2.14.(1).

(3) Telephone Demand Forecast

1) Area Development Estimation

In our area development estimation we used as major reference the City Plan, the city map and the aerial photograph of Jakarta. The field survey was carried out by referring to these data.

Along the western boundary of Pulogadung runs a high road and along the southern boundary runs a new road which has just been completed. Along these roads are found factories and residence houses. Except for them, there hardly exists any road in Pulogadung since the most part is a rice field.

In the City Plan, the northern part of Pulogadung is designated as a green area and the southern part as a factory and residential area. Therefore, the southern part is expected to develop in the future.

The population density in this area is forecasted as shown in Fig. 2.6.2.14.(2).

2) Area Pattern

The area pattern map as of 1993 prepared based on the Area Pattern Standard described in Section 2.6.1.(6) is given in Fig. 2.6.2.14.(3).

3) Result of Demand Forecast

The telephone demand as of 1993 in each kelurahan based on the area pattern map mentioned in the preceding paragraph 2) is given in Table 2.6.2.14.(4), together with the demand as of 1983 calculated based on the demand as of 1993. Table 2.6.2.14.(5) presents the demand in each area pattern summed up by the demand of Table 2.6.2.14.(4). As seen in the table the demand

as of 1993 in the S area accounts for 14%, the demand in the R area 58%, the demand in the I area 22% and the demand in the agricultural area 6%. The ratio of the demand in the I area of the Pulogadung Exchange Office service area is rather high as compared with other office service areas in Jakarta. The telephone demand density per hectare is 4.1.

The area size and the telephone demand as of 1993 in each kelurahan are given in Table 2.6.2.14.(6).

At present the subscriber lines in the future service area of Pulogadung Exchange Office number only 11. The telephone demand as of 1974 including the potential demand is estimated at 180. Fig. 2.6.2.14.(7) presents the telephone demand forecast for the period from 1974 through 1993.

(4) Conclusion

Table 2.6.2.14.(8) presents the telephone demand, population, number of households, telephone density and telephone diffusion rate as of 1993.

The telephone demand as of 1993 is estimated to be 6,900, which is 627 times the number of the existing subscriber lines.

The population as of 1993 is estimated to be 340,000, 42 times the population in 1973.

The telephone diffusion rate per 100 inhabitants at present is 0.1, which will be improved to 2.0 in 1993.

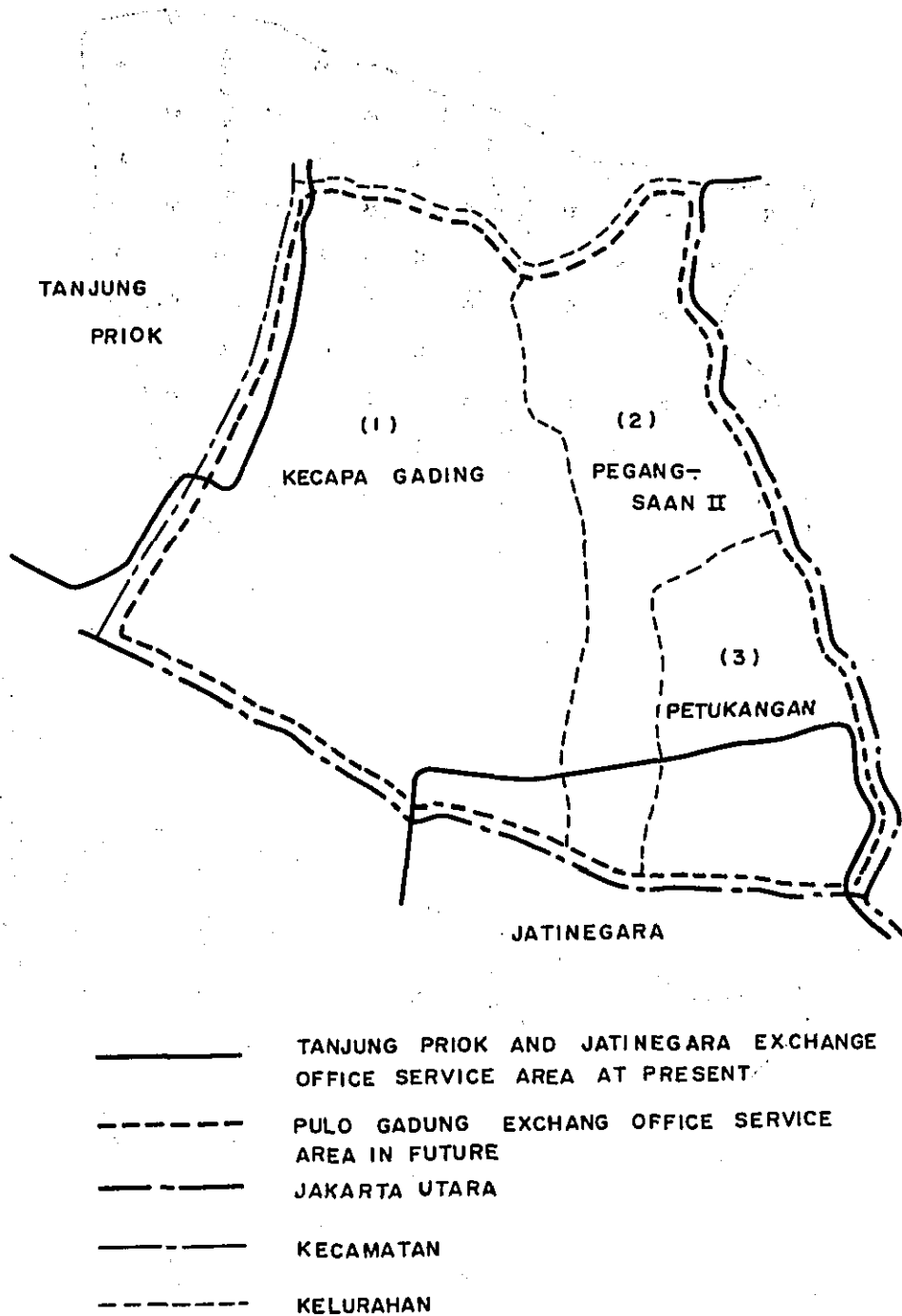


FIG. 2-6-2-14-(1)
 PULO GADUNG EXCHANGE OFFICE SERVICE AREA

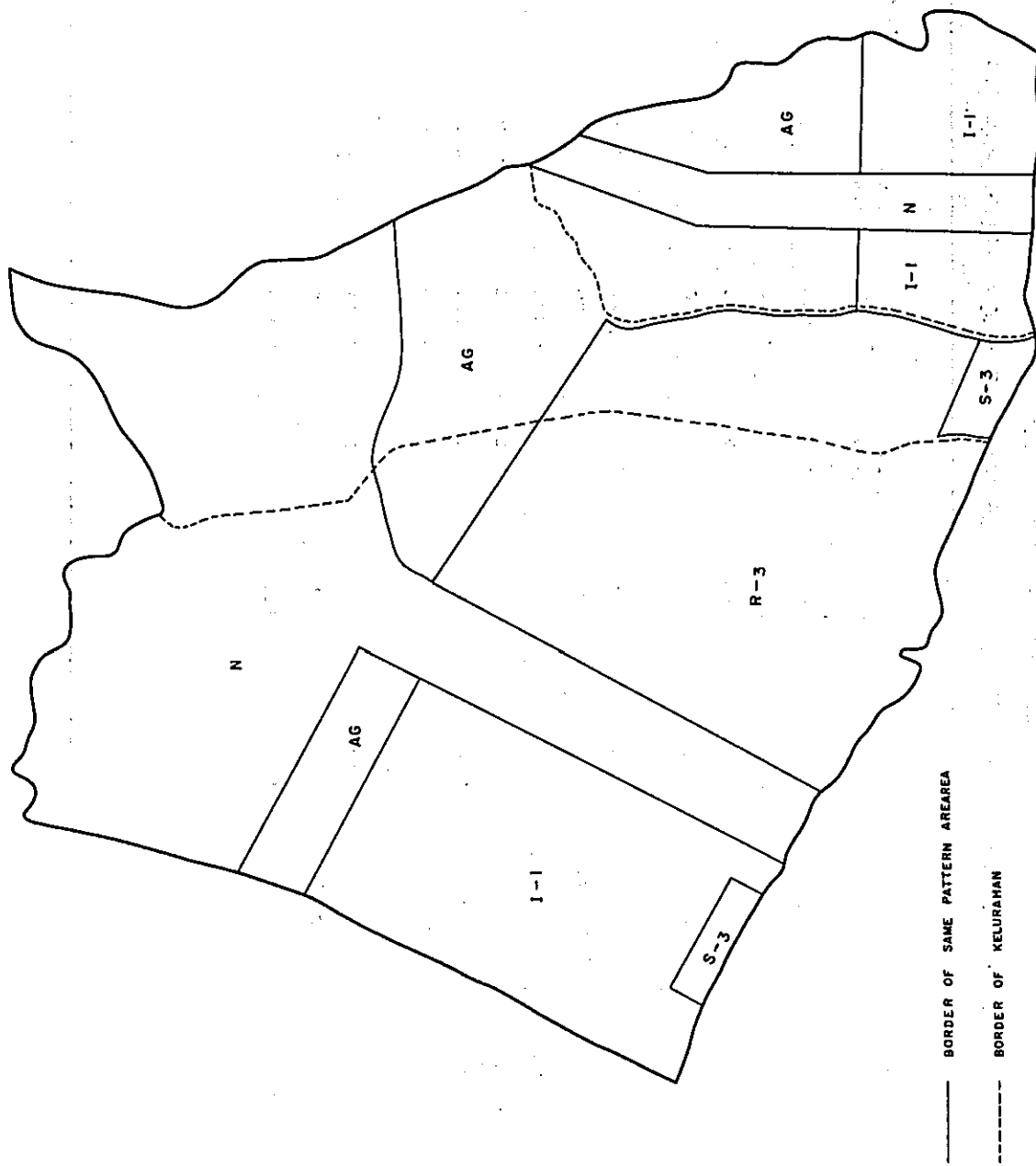


FIG. 2-6-2-14-(3)

AREA PATTERN MAP (PULO GADUNG)

TABLE 2-6-2-14-(4) 1/2
 PULOGADUNG EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (1)
 SURVEY TIME : SEPTEMBER 1974.

KECAMATAN	KELURAHAN	PATTERN	AREA (ha)	1983		1993		REMARKS	
				DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY		
KOJA	KELAPA-GADUNG	S-3	10	45	4.5	500	50.0		
		R-3	200	240	1.2	2,000	10.0		
	(1)	I-1	150	140	0.9	750	5.0		
		AG	50	20	0.4	50	1.0		
	N	209							
	SUB TOTAL	619	445	0.7	3,300	5.3			
	MISCELLANEOUS		50		100				
	TOTAL		619	495		3,400			
	PEGANGSAAN	S-3		10	45	4.5	500	50.0	
		R-3		200	240	1.2	2,000	10.0	
	(2)	AG		79	30	0.4	2,579	1.0	
		N		290					
	SUB TOTAL		579	315	0.5	2,579	4.5		
	MISCELLANEOUS			15		50			
TOTAL		579	330		2,629				

TABLE 2-6-2-14-(4) 2/2
 PULOGADUNG EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (2)
 SURVEY TIME: SEPTEMBER 1974.

KECAMATAM	KELURAHAN	PATTERN	1983		1993		REMARKS	
			AREA (ha)	DEMAND	DEMAND DENSITY	DEMAND		DEMAND DENSITY
PULO - GADUNG	PETUKANGAN (3)	1-1	150	140	0.9	750	5.0	
		AG	250	100	0.4	250	1.0	
		N	94					
	SUB TOTAL	494	240	0.5	1,000	2.1		
	MISCELLA- NEOUS		35		50			
TOTAL			494	275		1,050		

TABLE 2-6-2-14-(5)

PULOGADUNG EXCHANGE OFFICE TELEPHONE DEMAND

SURVEY TIME: SEPTEMBER 1974.

CLASSIFICATION	ITEM	A R E A (no)	1 9 8 3		1 9 9 3		REMARKS
			DEMAND	DEMAND DENSITY	DEMAND	DEMAND DENSITY (%)	
S	S - 1						
	S - 2						
	S - 3	20	90	4.5	1,000	50.0	14
	TOTAL	20	90	4.5	1,000	50.0	14
O	O - 1						
	O - 2						
	TOTAL						
R	R - 1						
	R - 2						
	R - 3	400	480	1.2	4,000	10.0	58
	TOTAL	400	480	1.2	4,000	10.0	58
I	I - 1	300	280	0.9	1,500	5.0	22
	I - 2						
	TOTAL	300	280	0.9	1,500	5.0	22
AGRICULTURE		379	150	0.4	379	1.0	6
O T H E R S							
NON - DEMAND		593					
SUB - TOTAL		1,692	1,000	0.6	6,879	4.1	100
MISCELLANEOUS			100		200		
T O T A L		1,692	1,100	0.7	7,079	4.2	

TABLE 2-6-2-14-(6)

FUTURE PULOGADUNG EXCHANGE AREA AND TELEPHON DEMAND

(EXCLUDING MISCELLANEOUS)

KECAMATAN	KELURAHAN	AREA (ha)	TELEPHONE DEMAND IN 1993
KOJA	KELAPA GADUNG	619	3,300
	PEGANGSAAN II	579	2,579
	PETUKANGAN	494	1,000
TOTAL		1,692	6,879

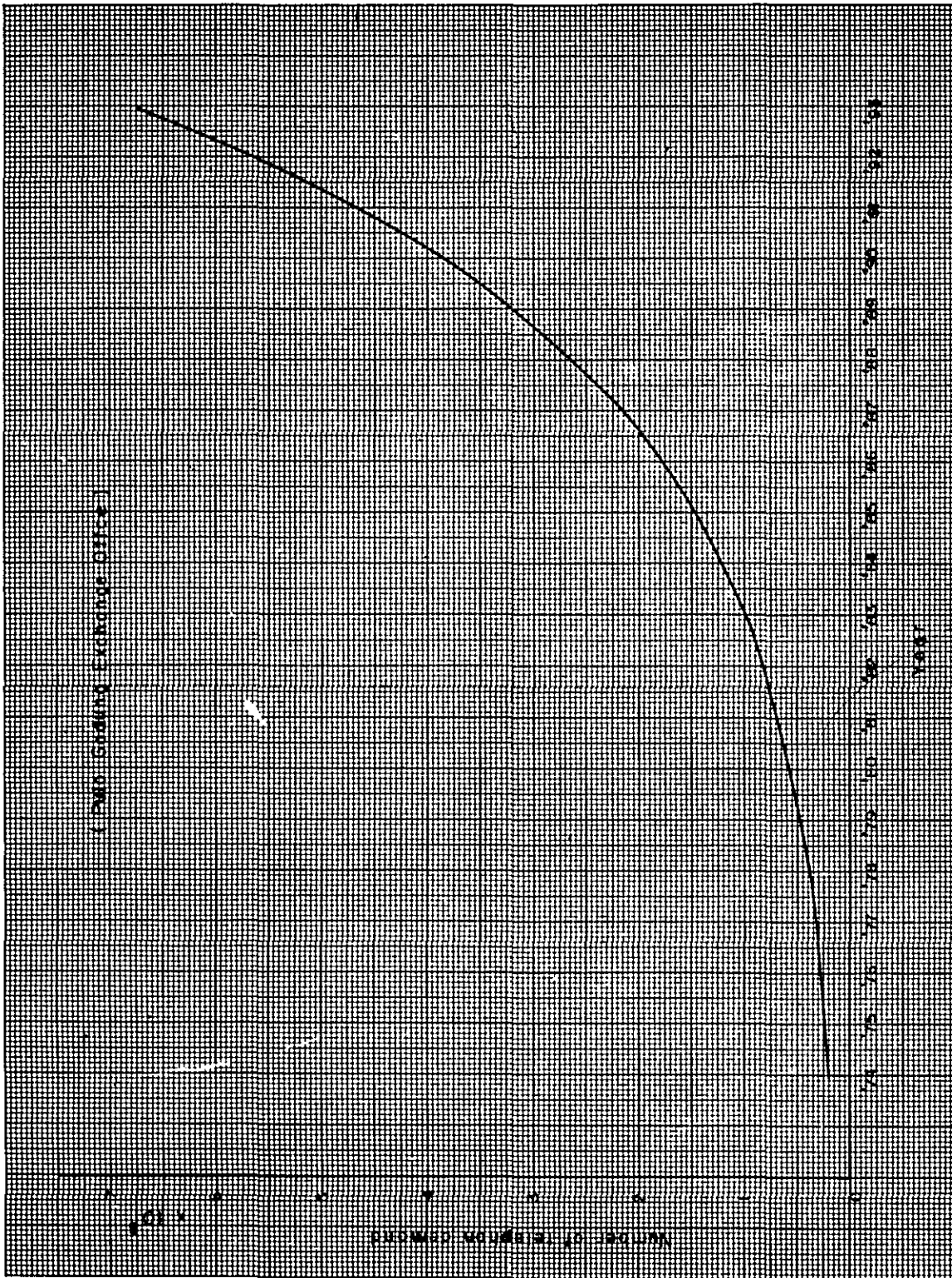


FIG. 2-6-2-14-(7)
TELEPHON DEMAND (EXCLUDING MISCELLANEOUS)

TABLE 2-6-2-14-(8)

TELEPHONE DEMAND, POPULATION AND DIFFUSION RATIO IN 1993

PULOGADUNG EXCHANGE AREA

(EXCLUDING MISCELLANEOUS)

AREA	(ha)	1,692
TELEPHONE DEMAND		6,900
POPULATION		340,500
HOUSEHOLD		68,100
POPULATION DENSITY (POPULATION / ha)		201
DIFFUSION RATIO (DEMAND / 100 INHABITANTS)		2.0
DIFFUSION RATIO (DEMAND / 100 HOUSEHOLDS)		10.1

2.6.2.15 PENGKILINGAN

(1) General Description

The future service area of Pengkilingan Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. From the viewpoint of the future telephone network in Jakarta, it is also suitable and we forecasted the demand in this area.

Pengkilingan is located in the eastern part of Jakarta. Major part of Pengkilingan is a farm area, and big factories are found only in the north-western part.

According to statistics of 1973 compiled by D.K.I. the future service area of Pengkilingan Exchange Office is 1,529 hectares in size, and has 5,349 households and a population of 25,923.

(2) Existing Service Area and Future Service Area

At present more than half of the Pengkilingan Exchange Office service area is included in the service area of Jatinegara Exchange Office. The area thus covered by Jatinegara Exchange Office, as well as the future service area, is given in Fig. 2.6.2.15.(1).

(3) Telephone Demand Forecast

1) Area Development Estimation

In our area development estimation we used as major reference the City Plan, the city map and the aerial photograph of Jakarta. The field survey was carried out by referring these data.

Major part of the future service area is a farm area including rice fields. Only along the main street in the north-western part are found large factories under construction.

In the City Plan this area is earmarked for a factory area. In the future many large factories will be constructed and the area will develop as a large-scale factory area.

The population density is forecasted as shown in Fig. 2.6.2.15.(2).

2) Area Pattern

In accordance with the Area Pattern Standard described in Section 2.6.1.(6), the area pattern map as of 1993 is drawn up as shown in Fig.2.6.2.15.(3).

3) Result of Demand Forecast

The telephone demand as of 1993 in each kelurahan based on the area pattern map mentioned in the preceding paragraph 2) is given in Table 2.6.2.15.(4), together with the demand as of 1983 calculated based on the demand as of 1993. Table 2.6.2.15.(5) presents the demand in each area pattern summed up by the demand of Table 2.6.2.15.(4). As seen in the table, the demand as of 1993 in the S area accounts for 27%, the demand in the R area 20%, the demand in the I area 49%, and the demand in the agricultural area 4%. The ratio of demand in the I area

of the Penggilingan Exchange Office Service area is the highest among the service areas of Jakarta. The telephone demand density per hectare is 5.4.

The area size and the telephone demand as of 1993 in each kelurahan are given in Table 2.6.2.15.(6).

At present the subscriber lines in the future service area of Penggilingan Exchange Office number 37. The demand as of 1974 is estimated to be 210 including the potential demand. Fig. 2.6.2.15.(7) shows the telephone demand forecast for the period from 1974 through 1993.

(4) Conclusion

Table 2.6.2.15.(8) presents the telephone demand, population, number of households, population density and telephone diffusion rate as of 1993.

The demand as of 1993 is estimated to be 8,300, 224 times the number of the existing subscriber lines.

The population as of 1993 is estimated at 222,000, 8.6 times the population in 1973.

The telephone diffusion rate per 100 inhabitants is 0.1 at present and will be improved to 3.7 in 1993.

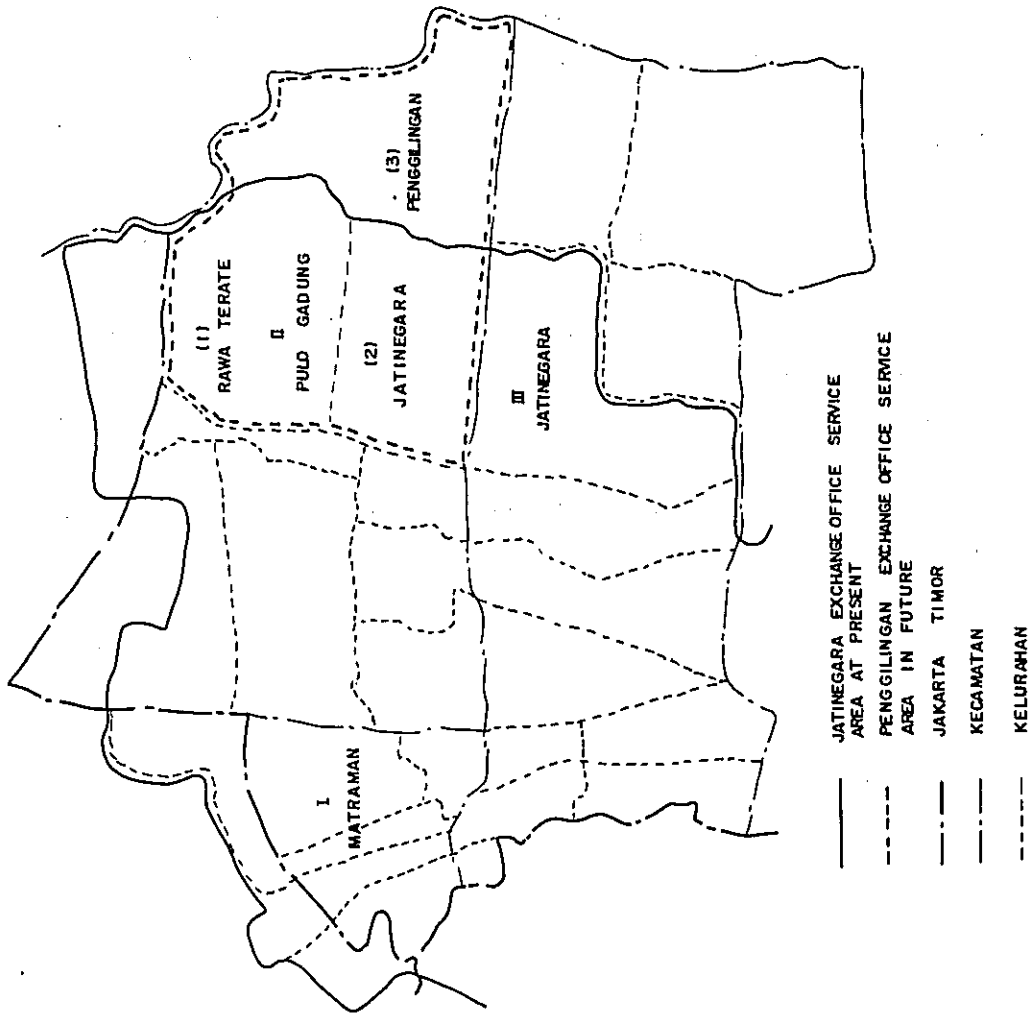


FIG. 2-6-2-15-(1) PENGGILINGAN EXCHANGE OFFICE SERVICE AREA

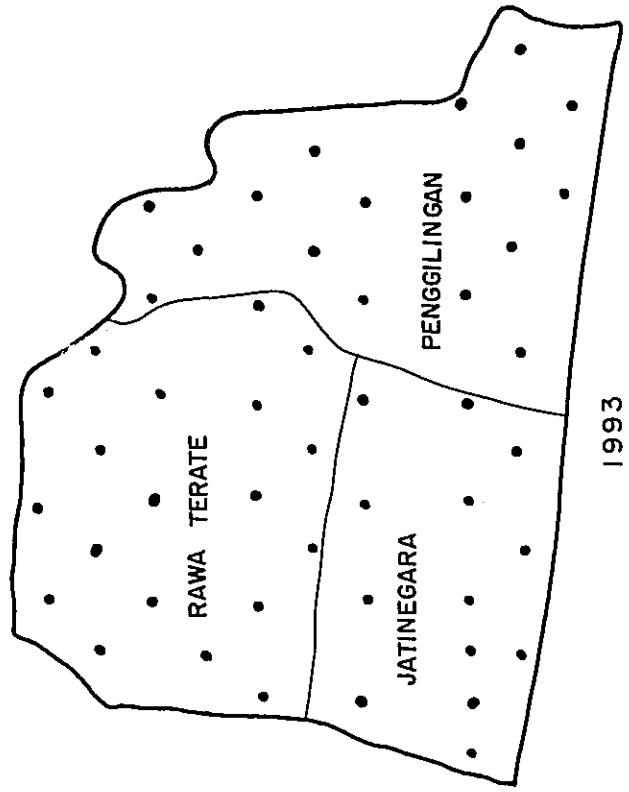
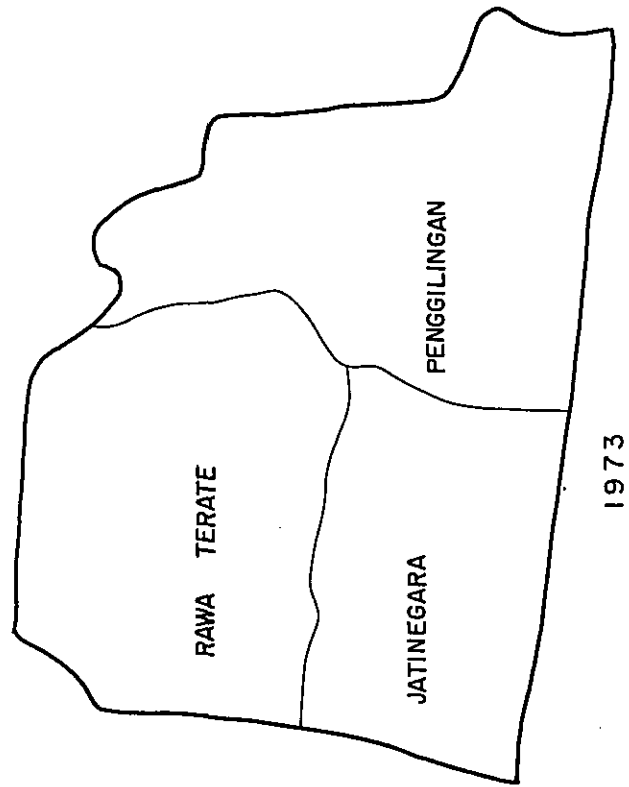
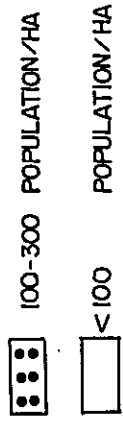


FIG. 2-6-15-(2) POPULATION DENSITY
(PENGGILINGAN)

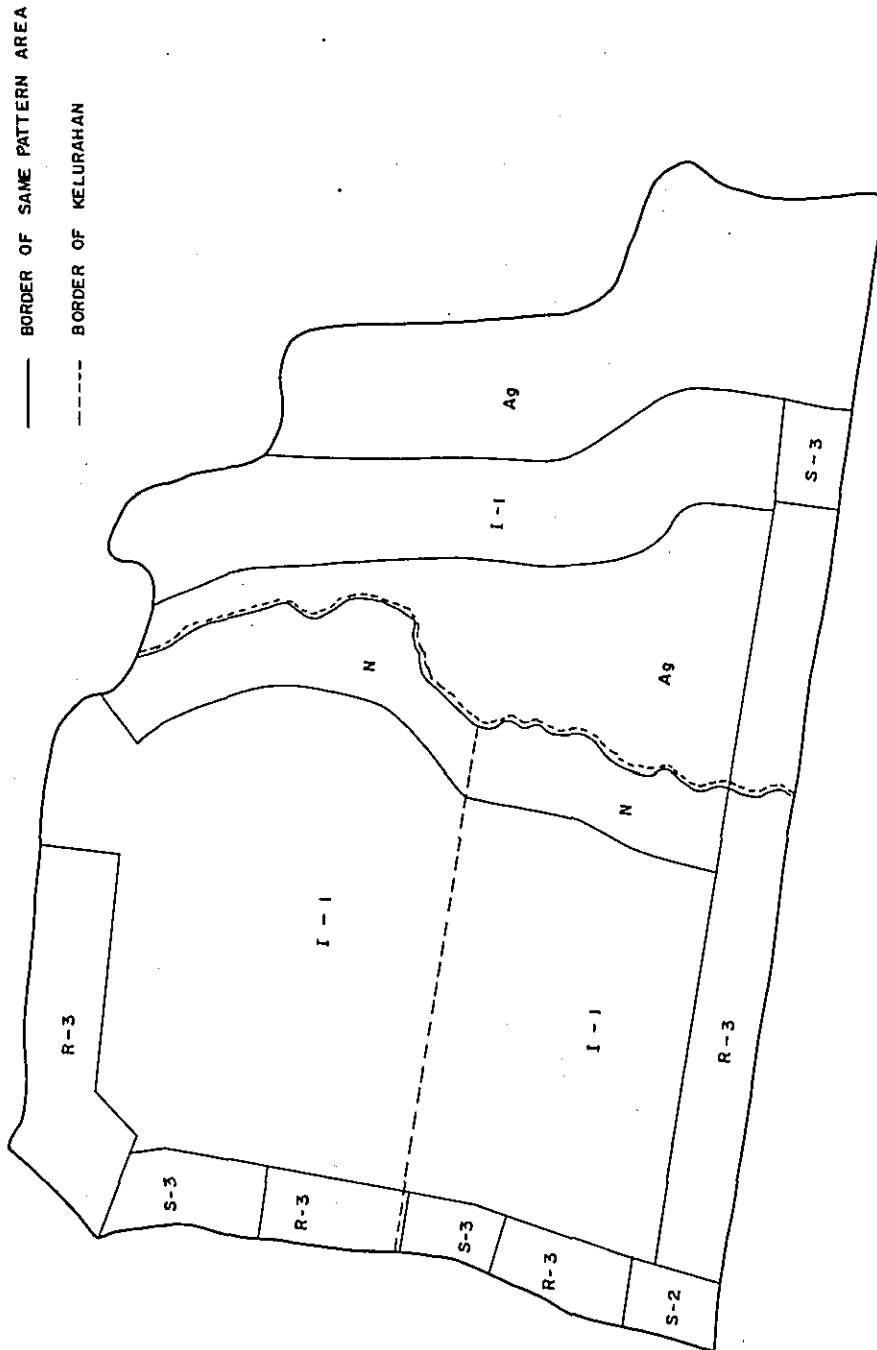


FIG. 2-6-2-15-(3) AREA PATTERN MAP
(PENGGILINGAN)

TABLE 2-6-2-15 - (4) 1/2 PENGGILINGAN EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (1)

Survey time: September 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
PULO - GADUNG	Rawa - Terate (1)	S - 3	20	45	2.3	800	40.0		
		R - 3	64	90	1.4	640	10.0		
		I - 1	300	240	0.8	1,500	5.0		
		N	66						
		Sub Total	450	375	0.8	2,940	6.5		
		Miscellaneous			20		110		
	TOTAL			450	395		3,050		
	Jatinegara (2)	S - 2	10	35	3.5	500	50.0		
		S - 3	13	30	2.3	520	40.0		
		R - 3	63	90	1.4	630	10.0		
I - 1		309	240	0.8	1,545	5.0			
N		80							
	Sub Total	475	395	0.8	3,195	6.9			
	Miscellaneous		20		115				
TOTAL			475	415		3,310			

TABLE 2-6-2-15-(4) 2/2 PENGGIANGAN EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (2)

Survey Time: September 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks
				Demand	Demand density	Demand	Demand density	
PULO - GADUNG	Penggilingan (3)	S - 3	10	25	2.5	400	40.0	
		R - 3	39	55	1.4	390	10.0	
		I - 1	205	165	0.8	1,025	5.0	
		Ag	350	135	0.4	350	1.0	
		Sub Total	604	380	0.6	2,165	3.6	
	Miscellaneous		10		75			
	TOTAL			604	390		2,240	

TABLE 2-6-2-15-(5) PENGGILINGAN EXCHANGE OFFICE TELEPHONE DEMAND

Survey time: September 1974

Item Classification	Area (ha)	1983			1993			Remarks
		Demand	Demand density	Demand	Demand density	Demand (%)		
S - 1								
S - 2	10	35	3.5	500	50.0	6		
S - 3	43	100	2.3	1,720	40.0	21		
Total	53	135	2.6	2,220	41.9	27		
O - 1								
O - 2								
Total								
R - 1								
R - 2								
R - 3	166	235	1.4	1,660	10.0	20		
Total	166	235	1.4	1,660	10.0	20		
I - 1	814	645	0.8	4,070	5.0	49		
I - 2								
Total	814	645	0.8	4,070	5.0	49		
Agriculture	350	135	0.4	350	1.0	4		
Others								
Non - demand	146							
Sub - Total	1,529	1,150	0.8	8,300	5.4	100		
Miscellaneous		50		300				
TOTAL	1,529	1,200	0.8	8,600	5.6			

TABLE 2-6-2-15-(6) FUTURE PENGGILINGAN EXCHANGE
AREA AND TELEPHONE DEMAND

(Excluding miscellaneous)

Kecamatan	Kelurahan	Area (ha)	Telephone Demand in 1993	
PULO GADUNG	Rawa Terate	450	2,940	
	Jatinegara	475	3,195	
	Penggilingan	604	2,165	
	TOTAL		1,529	8,300

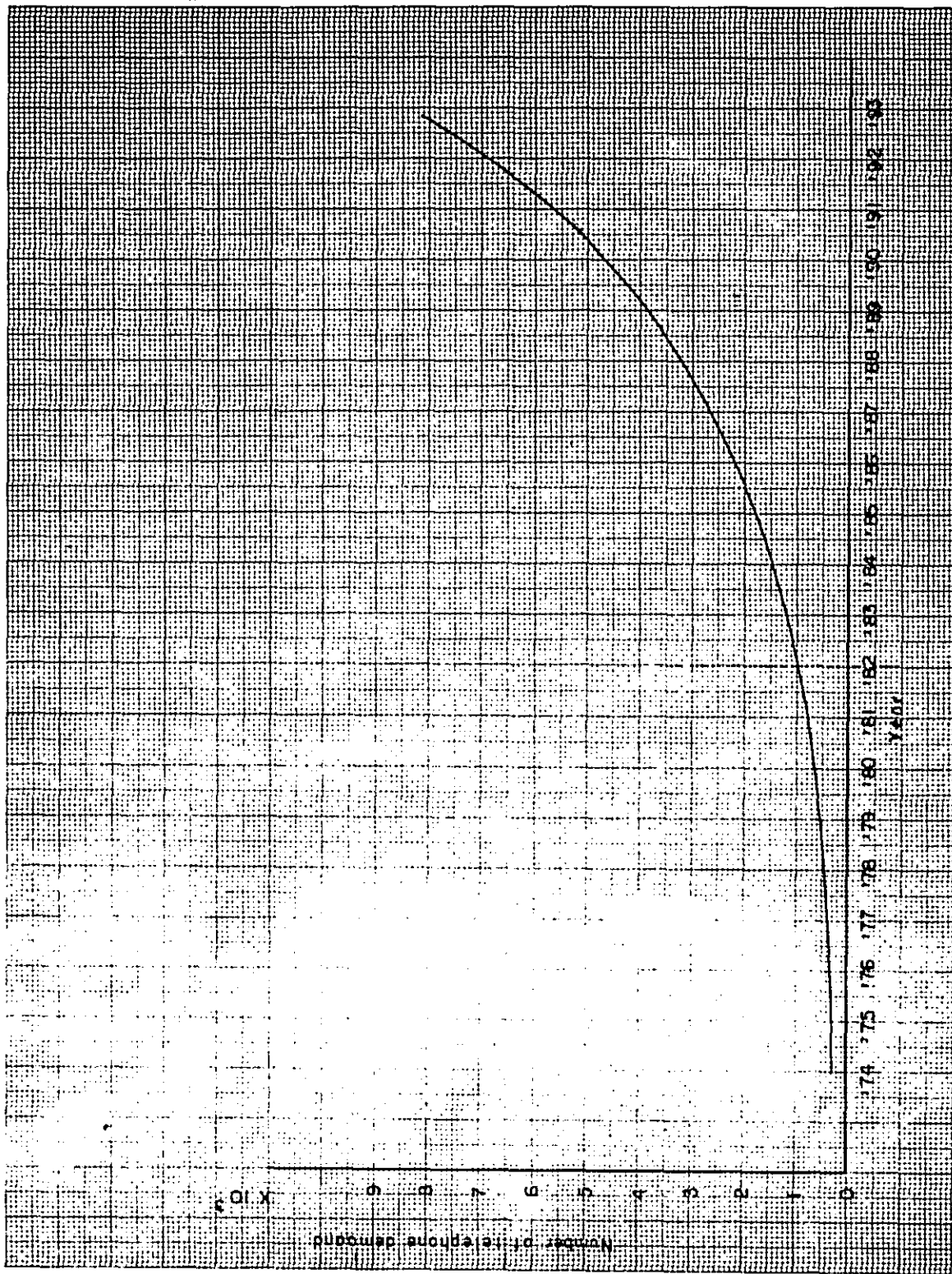


FIG 2-6-2-15-(7) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)

(PENGGILINGAN FXCHANG EXCHANGE OFFICE)

TABLE 2-6-2-15 - (8)
 TELEPHONE DEMAND , POPULATION AND
 DIFFUSION RATIO IN 1993
 PENGGILINGAN EXCHANGE AREA

(Excluding miscellaneous)

Area	(ha)	1,529
Telephone demand		8,300
Population		222,000
Household		44,400
Population density (Population/ha)		145
Diffusion ratio (Demand/100 inhabitants)		3.7
Diffusion ratio (Demand/100 households)		18.7

2.6.2.16 TANJUNG PRIOK

(1) General Description

The future service area of Tanjung Priok Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. From the viewpoint of the future telephone network in Jakarta, it is also suitable and we forecasted the demand in this area.

Tanjung Priok is a large port town located in the north-eastern part of Jakarta.

In Tanjung Priok there exists a telephone exchange office having 2,000 line units. The existing subscriber lines number approximately 1,890. Among them approximately 1,530 is in the future service area of Tanjung Priok Exchange Office.

(2) Existing Service Area and Future Service Area

The existing service area of Tanjung Priok Exchange Office includes a part of the future Cilincing, Ancol and Pulogadung Exchange Office service areas, besides the future service area of Tanjung Priok itself. The existing and the future service areas are shown in Fig. 2.6.2.16.(1).

(3) Telephone Demand Forecast

1) Area Development Estimation

In our area development estimation we used as major reference the City Plan, the city map and the aerial photograph of Jakarta. The field survey was carried out by referring to these data.

Tanjung Priok is a port town in Jakarta. There are several wharves where oil tanks and warehouses for lumber and agricultural products are found standing side by side.

Along the main street are found a number of offices, shops and factories, and behind them extends a residential area.

The southern part of Tanjung Priok is at present a farm area, which will develop into a residential area in the future.

The population density forecast is given in Fig. 2.6.2.16.(2).

2) Area Pattern

Fig. 2.6.2.16.(3) presents the area pattern map as of 1993 prepared based on the Area Pattern Standard described in Section 2.6.1.(6).

3) Result of Demand Forecast

The telephone demand as of 1993 in each kelurahan based on the area pattern map mentioned in the preceding paragraph 2) is given in Table 2.6.2.16.(4), together with the demand as of 1983 calculated based on the demand as of 1993. Table 2.6.2.16.(5) presents the demand in each area pattern summed up by the demand of Table 2.6.2.16.(4). As seen in the table, the demand as of 1993 in the S area accounts for 13%, in the O area 29%, in the R area 48%, and in the I area 10%. The ratio of demand in the O area of the Tanjung Priok Exchange Office ser-

vice area is rather high as compared with other exchange office service areas in Jakarta. The telephone demand density per hectare is 25.2.

The area size and the telephone demand as of 1993 in each kelurahan are given in Table 2.6.2.16.(6)

At present the subscriber lines in the future service area of Tanjung Priok Exchange Office number approximately 1,530, while the telephone demand as of 1974 is estimated to be 4,100 including the potential demand.

Fig. 2.6.2.16.(7) shows the telephone demand forecast for the period from 1974 through 1993.

(4) Conclusion

Table 2.6.2.16.(8) presents the telephone demand, population, number of households, population density and telephone diffusion rate as of 1993.

The demand as of 1993 is estimated to be 61,500, which is approximately 40 times the number of the existing subscriber lines.

The population as of 1993 is estimated to be 833,000, which is 2.4 times the population in 1973.

The telephone diffusion rate per 100 inhabitants is 0.4 at present and will be improved to 7.4 in 1993.

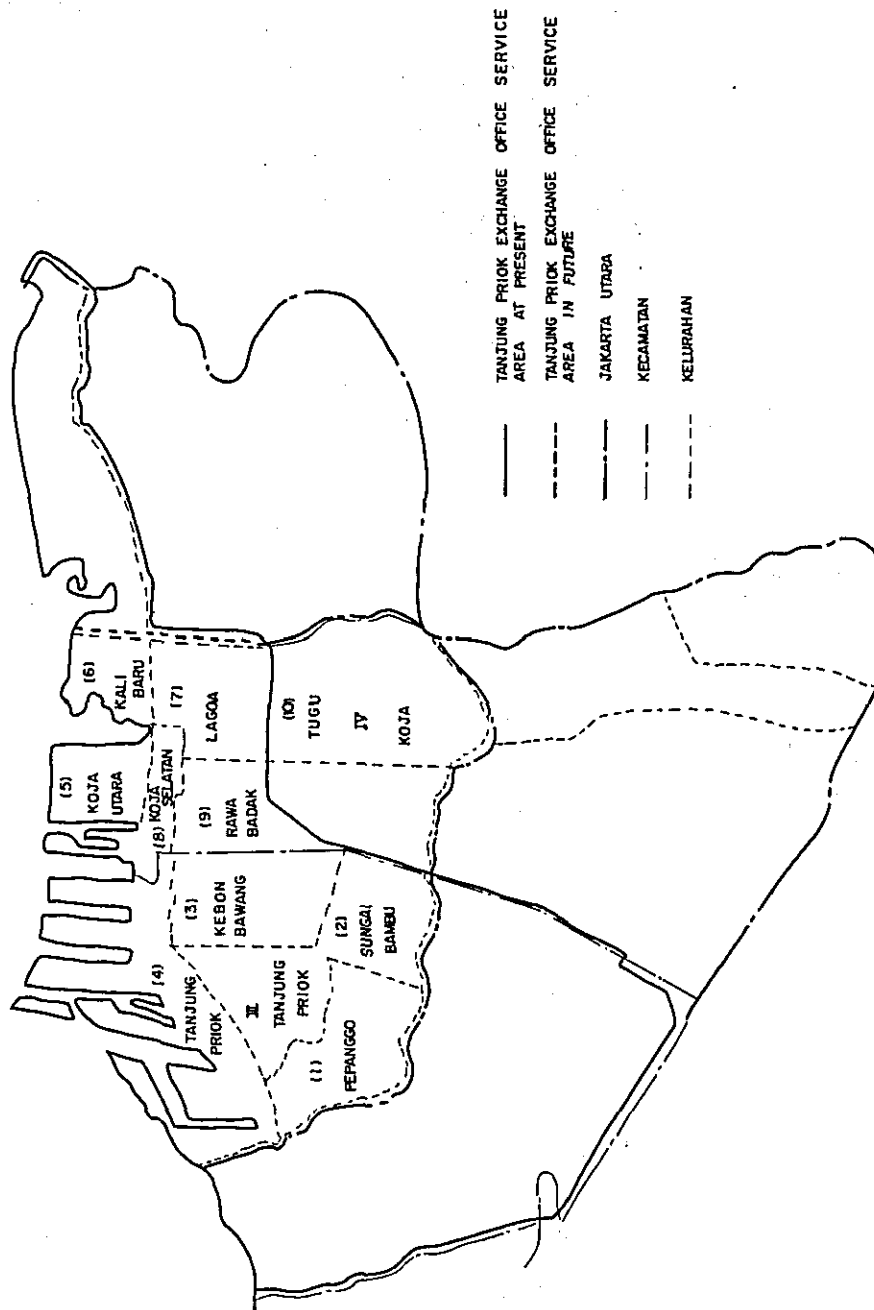


FIG. 2 - 6 - 16 - (1) TANJUNG PRIOK EXCHANGE OFFICE SERVICE AREA

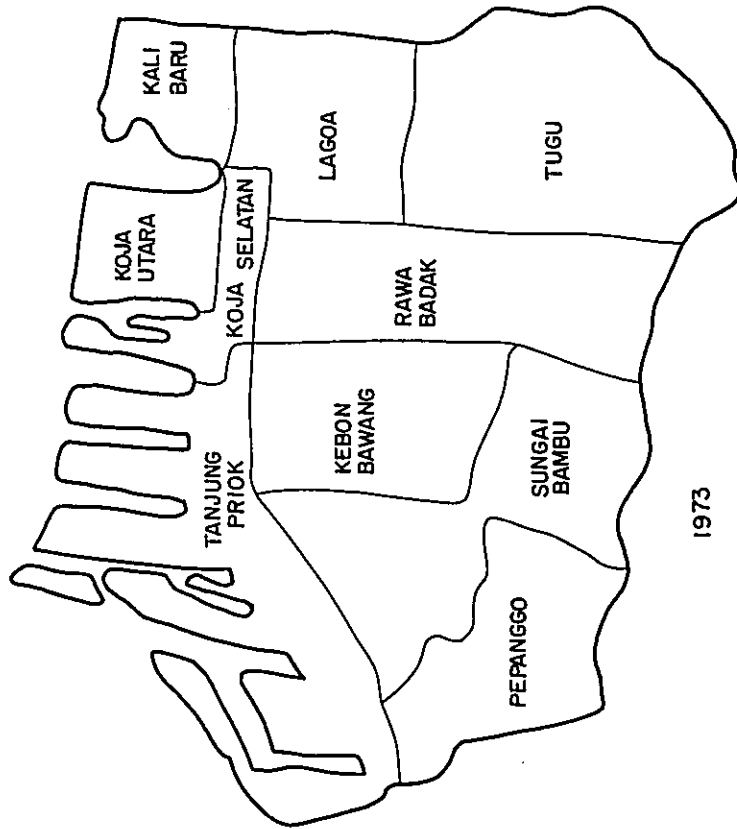
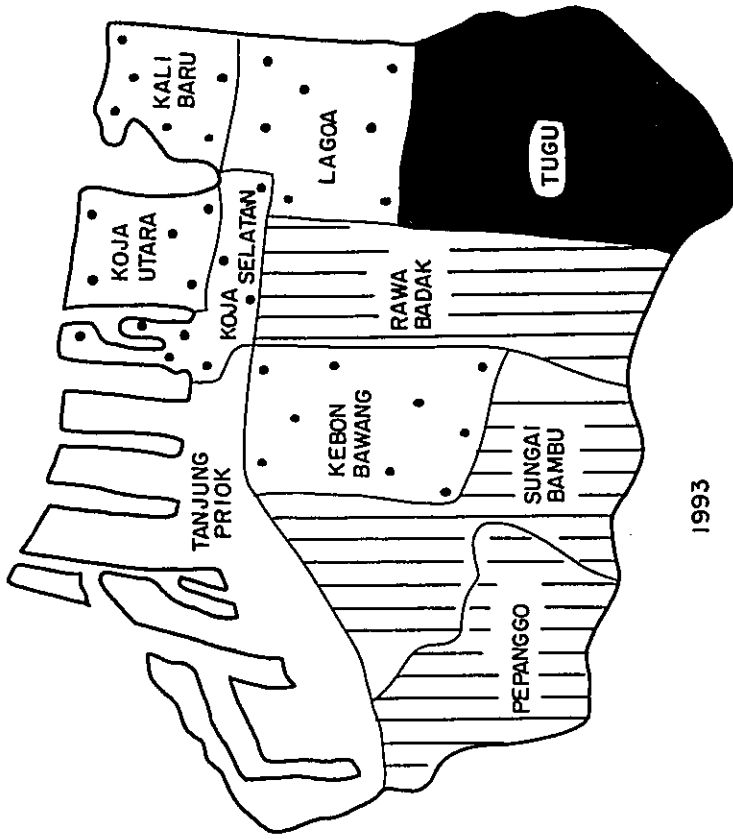
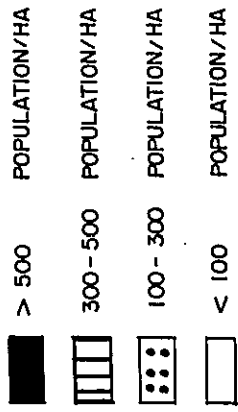


FIG. 2-6-2-16-(2) POPULATION DENSITY
(TANJUNG PRIOK)

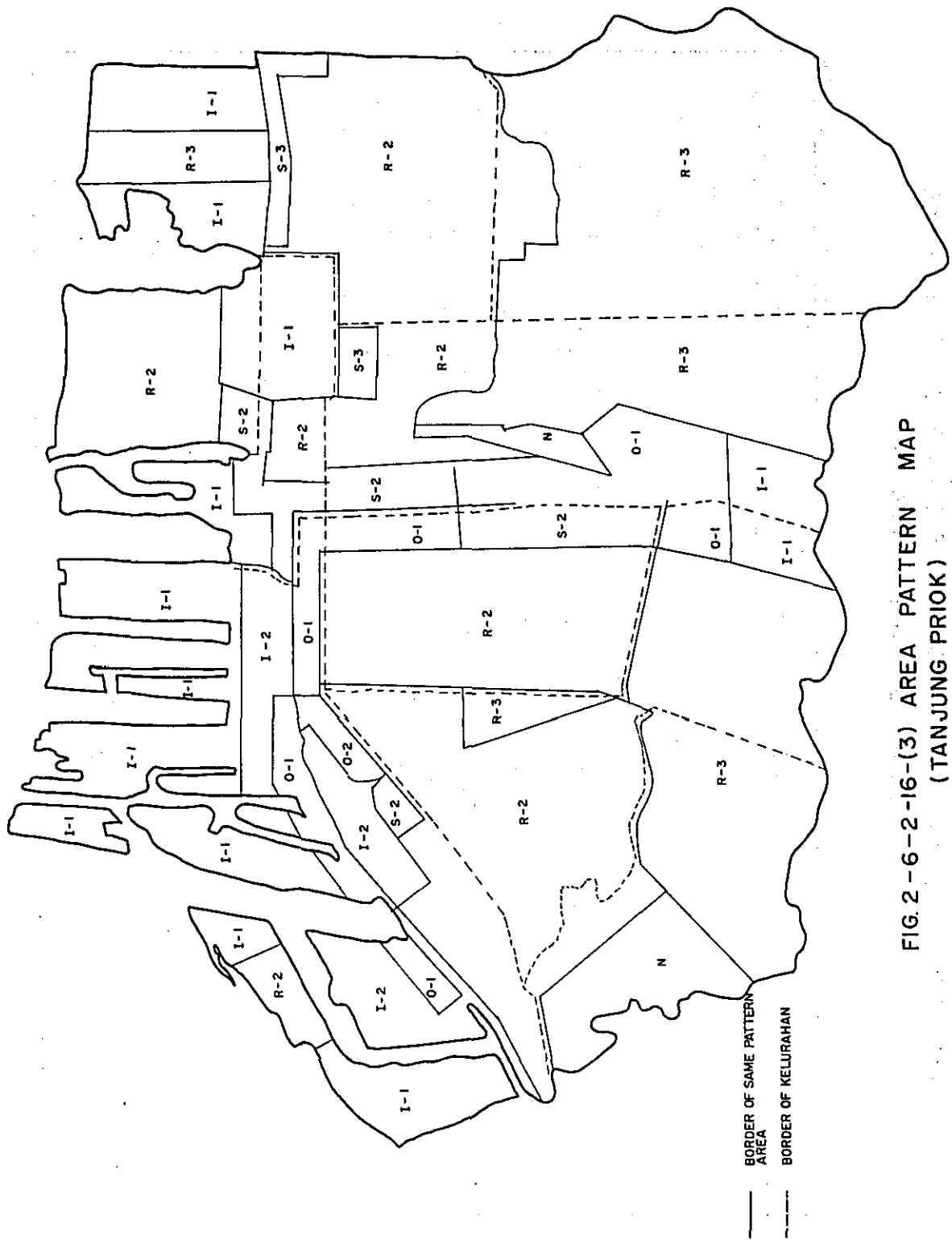


FIG. 2 - 6 - 2 - 16 - (3) AREA PATTERN MAP
(TANJUNG PRIOK)

TABLE 2-6-2-16-(4)1/4 TANJUNG-PRIOK EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (1)

Survey time : September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
TANJUNG-PRIOK	Pepanggo (1)	R - 2	46	310	6.7	1,150	25.0		
		R - 3	97	440	4.5	1,455	15.0		
		N	50						
		Sub Total		193	750	3.9	2,605	13.5	
		Miscellaneous			10		25		
		TOTAL		193	760		2,630		
	Sungai-Bambu (2)	O - 1		20	360	18.0	2,400	120.0	
		R - 2		129	980	7.6	3,225	25.0	
		R - 3		130	560	4.3	1,950	15.0	
		I - 1		20	70	3.5	200	10.0	
	Sub Total		299	1,970	6.6	7,775	26.0		
	Miscellaneous			50		240			
	TOTAL		299	2,020		8,015			
Kebon - Bawang (3)	S - 2		21	285	14.3	1,680	80.0		
	O - 1		15	270	18.0	1,800	120.0		
	R - 2		154	1,200	7.7	3,850	25.0		
	Sub Total		190	1,755	9.2	7,330	38.6		
	Miscellaneous			40		220			
	TOTAL		190	1,795		7,550			

TABLE 2-6-2-16-(4)2/4 TANJUNG-PRIOK EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (2)

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
TANJUNG- PRIOK	Tanjung - Priok (4)	S - 2	14	215	15.4	1,120	80.0		
		O - 1	60	1,070	17.8	7,200	120.0		
		O - 2	21	250	12.5	1,470	70.0		
		R - 2	40	310	7.8	1,000	25.0		
		I - 1	247	930	3.8	2,470	10.0		
		I - 2	150	650	4.3	1,500	10.0		
		Sub Total	532	3,425	6.4	14,760	27.7		
		Miscella- neous		200		915			
		TOTAL		532	3,625		15,675		
		K O J A	Koja - Utara (5)	S - 2	10	110	11.0	800	80.0
R - 2	122			725	5.9	3,050	25.0		
I - 1	20			75	3.8	200	10.0		
Sub Total	152			910	6.0	4,050	26.6		
Miscella- neous				20		65			
TOTAL				152	930		4,115		
Kali Baru (6)	R - 3			50	225	4.5	750	15.0	
	I - 1			102	380	4.7	1,020	10.0	
	Sub Total			152	605	4.0	1,770	11.6	
	Miscella- neous				30		60		
TOTAL		152	635		1,830				

Survey time: September 1974

TABLE 2-6-2-16 - (4)3/4 TANJUNG-PRIOK EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (3)

Survey time: September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
K O J A	Lagoa (7)	S - 3	20	165	8.3	1,000	50.0		
		R - 2	124	735	5.9	3,100	25.0		
		Sub Total	144	900	6.3	4,100	28.4		
		Miscellaneous		20		60			
	TOTAL		144	920		4,160			
	Koja - Selatan (8)	S - 2		20	200	10.0	1,600	80.0	
		R - 2		20	120	6.0	500	25.0	
		I - 1		30	110	3.7	300	10.0	
		Sub Total		70	430	6.1	2,400	24.3	
		Miscellaneous			20		70		
	TOTAL			70	450		2,470		
	Rawo - Badak (9)	S - 2		20	200	10.0	1,600	80.0	
		S - 3		10	85	8.5	500	50.0	
		O - 1		40	510	12.8	4,800	120.0	
R - 2			36	240	6.7	900	25.0		
R - 3			150	675	4.5	2,250	15.0		
I - 1			19	65	3.4	190	10.0		
N			22						
TOTAL			297	1,775	6.0	10,240	34.4		
	Miscellaneous			80		480			
TOTAL			297	1,855		10,720			

TABLE 2-6-2-16-(4)4/4 TANJUNG-PRIOK EXCHANGE OFFICE TELEPHONE DEMAND
OF EACH KELURAHAN (4)

Survey time : September 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks
				Demand	Demand density	Demand	Demand density	
KOJA	Tugu	R - 2	30	180	6.0	750	25.0	
		R - 3	382	1,700	4.5	5,730	15.0	
	Sub Total	412	1,880	4.6	6,480	15.7		
	Miscellaneous		30		65			
	TOTAL		412	1,910		6,545		

TABLE 2-6-2-16-(5) TANJUNG-PRIOK EXCHANGE OFFICE TELEPHONE DEMAND

Survey time: September 1974

Item Classification	Area (ha)	1983		1993		Remarks
		Demand	Demand density	Demand	Demand density (%)	
S - 1						
S - 2	85	1,010	11.9	6,800	80.0	11
S - 3	30	250	8.3	1,500	50.0	2
Total	115	1,260	11.0	8,300	72.2	13
O - 1	135	2,210	16.4	16,200	120.0	26
O - 2	21	250	12.5	1,470	70.0	2
Total	156	2,460	15.9	17,670	113.5	29
R - 1						
R - 2	701	4,800	6.8	17,525	25.0	28
R - 3	809	3,600	4.4	12,135	15.0	20
Total	1,510	8,400	5.6	29,660	19.6	48
I - 1	438	1,630	3.7	4,380	10.0	8
I - 2	150	650	4.3	1,500	10.0	2
Total	588	2,280	3.9	5,880	10.0	10
Agriculture						
Others						
Non - Demand	72					
Sub - Total	2,441	14,400	5.9	61,510	25.2	100
Miscellaneous		500		2,200		
TOTAL	2,441	14,900	6.1	63,710	26.1	

TABLE 2-6-2-16-(6) FUTURE TANJUNG PRIOK EXCHANGE
AREA AND TELEPHONE DEMAND

(Excluding miscellaneous)

Kecamatan	Kelurahan	Area (ha)	Telephone Demand in 1993
TANJUNG PRIOK	Pepango	193	2,605
	Sungai Bambu	299	7,775
	Kebon Bawang	190	7,330
	Tanjung Priok	532	14,760
KOJA	Koja Utara	152	4,050
	Kali Baru	152	1,770
	Lagoo	144	4,100
	Koja Selatan	70	2,400
	Rawa Badak	297	10,240
	Tugu	412	6,480
TOTAL		2,441	61,510

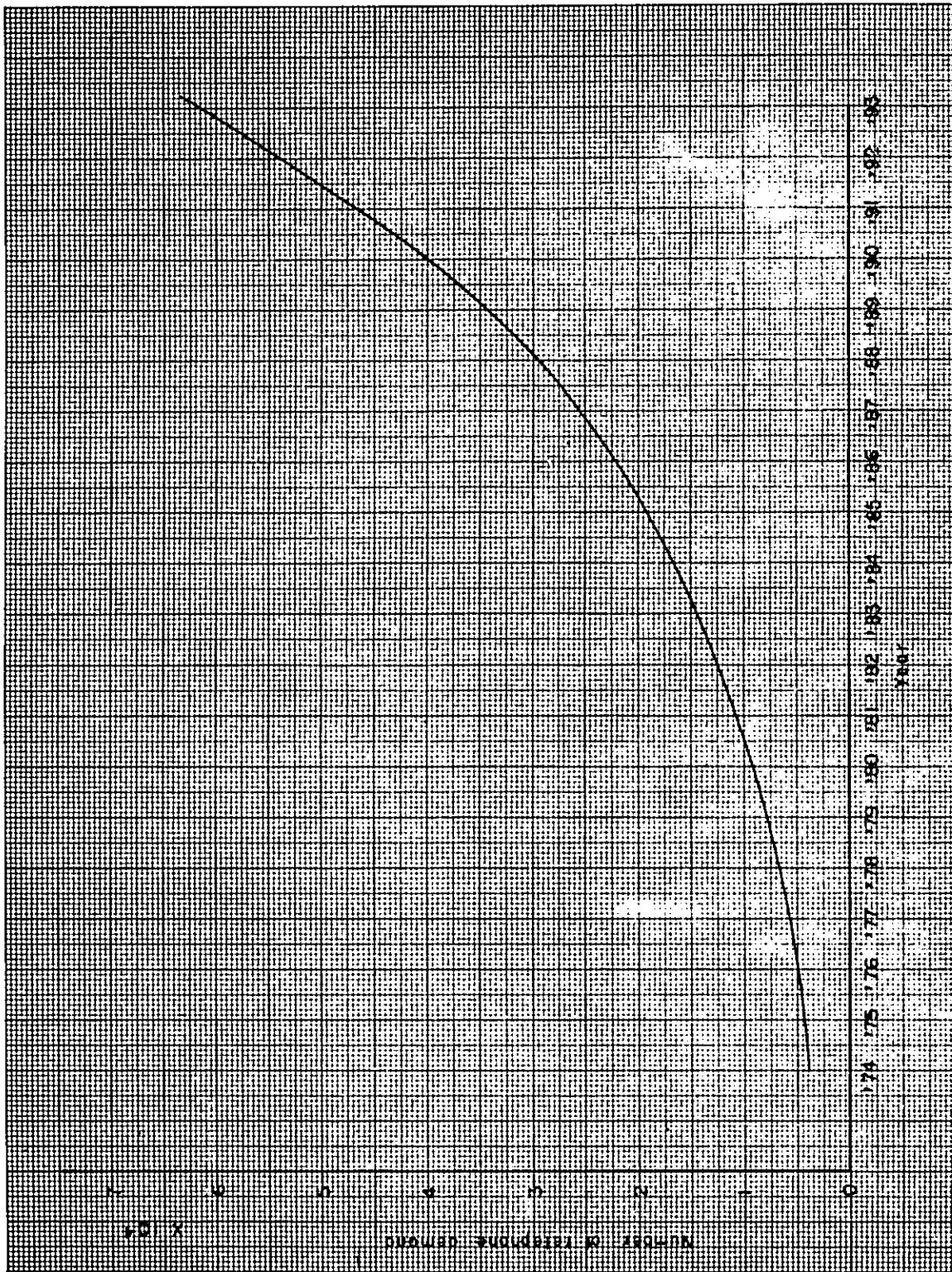


FIG. 2-6-2-16-(7) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
 (TANJUNG PRIOK EXCHANGE OFFICE)

TABLE 2-6-2-16-(8)
 TELEPHONE DEMAND, POPULATION AND
 DIFFUSION RATIO IN 1993
 TANJUNG PRIOK EXCHANGE AREA

(Excluding miscellaneous)

A r e a	(ha)	2,441
Telephone demand		61,500
population		833,000
Household		166,600
Populatioa density (Population/ha)		341
Diffusion ratio (Demand/100 inhabitants)		7.4
Diffusion ratio (Demand/100 households)		36.9

2.6.2.17 CILINCING

(1) General Description

The future service area of Cilincing Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. From the viewpoint of the future telephone network in Jakarta, it is also suitable and we forecasted the demand in this area.

Cilincing is located at the north-eastern outskirts of Jakarta, with its north side facing the sea.

According to statistics of 1973 compiled by D.K.I. the future service area of Cilincing Exchange Office is 1,759 hectare in size and has 8,053 households with a population of 39,306.

(2) Existing Service Area and Future Service Area

At present one third of the area is included in the service area of Tanjung Priok Exchange Office. The area thus covered by Tanjung Priok Exchange Office and the future service area are shown in Fig. 2.6.2.17.(1).

(3) Telephone Demand Forecast

1) Area Development Estimation

In our area development estimation we used as major reference the City Plan, the city map and the aerial photograph of Jakarta. The field survey was carried out by referring to these data.

The western part of Cilincing adjoins a residential area of Tanjung Priok. This residential area stretches to the center of Cilincing. In the north-western part of Cilincing is found a port town where a small scale shopping area exists. In the east facing the sea lies a low class residential area.

Other areas, i.e., the eastern and southern parts (approximately two thirds of the whole area) are farm villages and green area.

In the City Plan Cilincing is earmarked for an industrial area. In the future the farm area and a part of green area will develop into an industrial area.

The population density forecast is given in Fig. 2.6.2.17.(2).

2) Area Pattern

Fig. 2.6.2.17.(3) presents the area pattern map as of 1993 prepared based on the Area Pattern Standard described in Section 2.6.1.(6).

3) Result of Demand Forecast

The telephone demand as of 1993 in each kelurahan based on the area pattern map mentioned in the preceding paragraph 2) is given in Table 2.6.2.17.(4), together with the demand as of 1983 calculated based on the demand as of 1993. Table 2.6.2.17.(5) presents the demand in each area pattern summed up by the demand of Table 2.6.2.17.(4). As seen in the table, the demand as of 1993 in the S area accounts for 14%, in the R area 50%, and in the I area 36%. The ratio of

demand in the I area of Cilincing Exchange Office is rather high as compared with other exchange office service areas in Jakarta.

The area size and the telephone demand as of 1993 in each kelurahan are shown in Table 2.6.2.17.(6).

At present the subscriber lines in the future service area of Cilincing Exchange Office number 75, while the demand as of 1974 is estimated to be 350 including the potential demand. Fig. 2.6.2.17.(7) shows the telephone demand forecast for the period from 1974 through 1993.

(4) Conclusion

Table 2.6.2.17.(8) presents the telephone demand, population, number of households, population density and telephone diffusion rate as of 1993.

The telephone demand as of 1993 is estimated to be 11,700, which is 156 times the number of the existing subscriber lines.

The population as of 1993 is estimated to be 327,000, which is 8.3 times the population in 1973.

The telephone diffusion rate per 100 inhabitants is 0.2 at present, which will be improved to 3.6 in 1993.

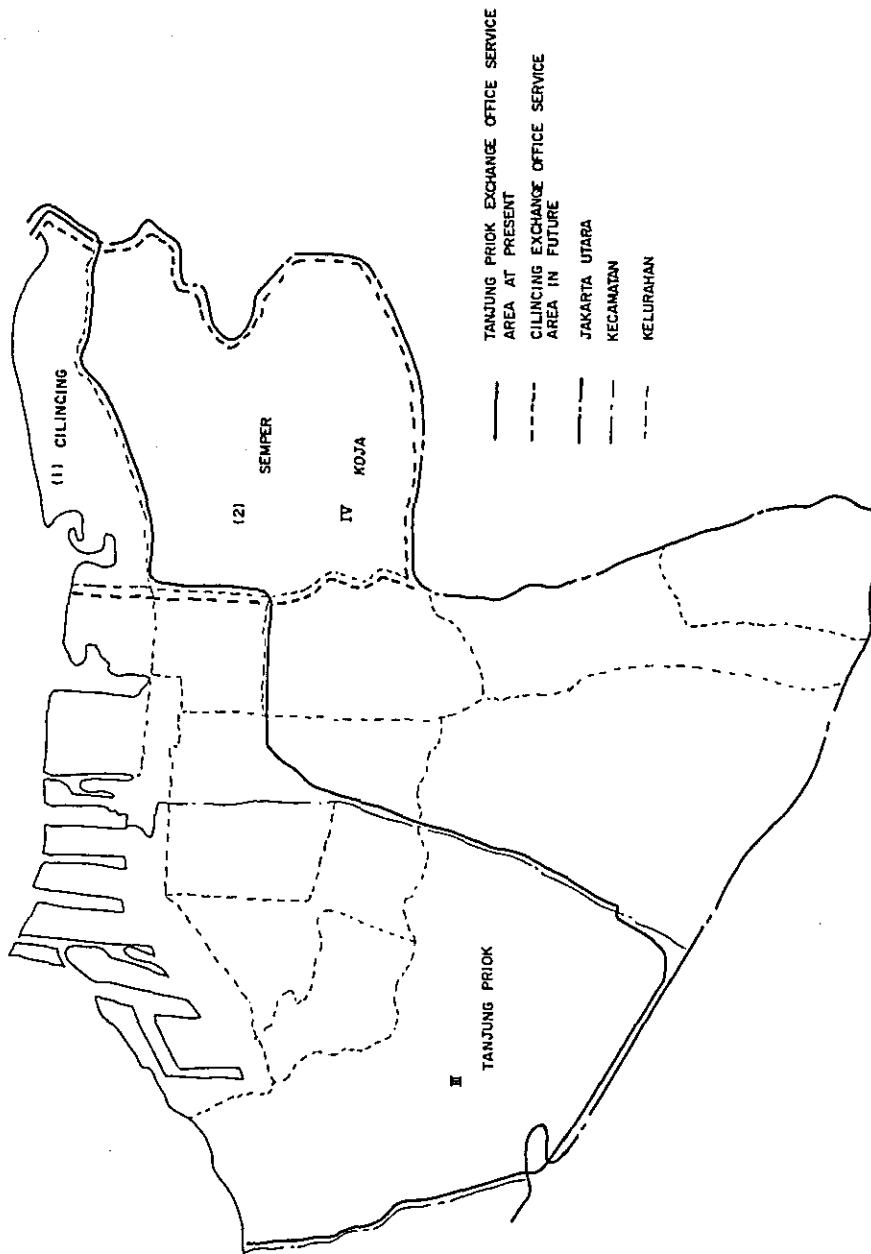


FIG. 2-6-2-17-(1) CILINCING EXCHANGE OFFICE SERVICE AREA

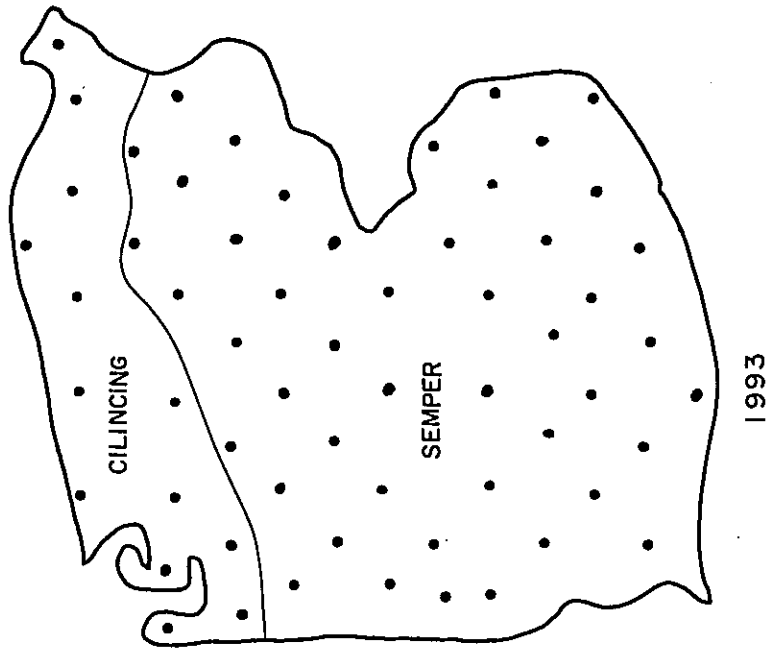
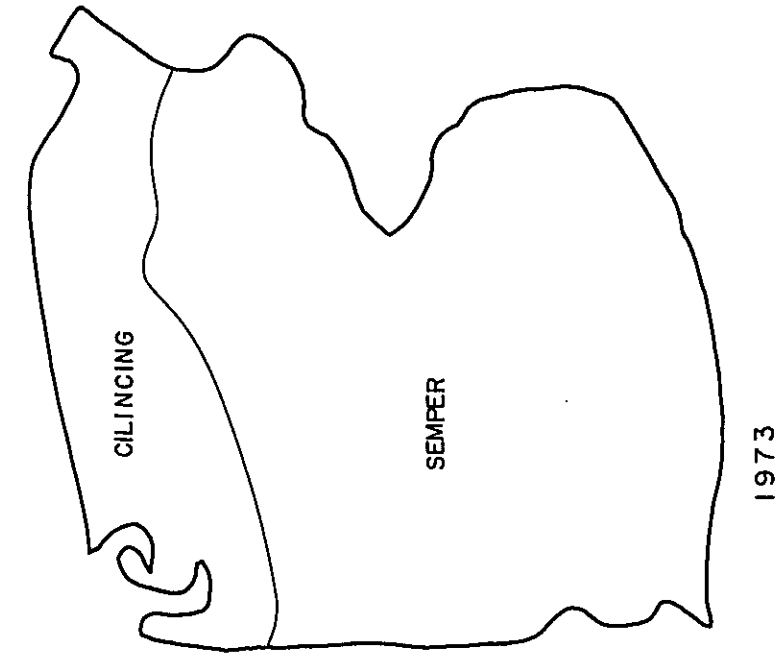
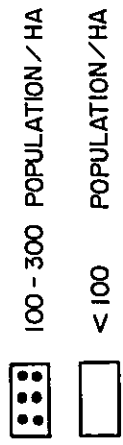


FIG. 2-6-2-17-(2) POPULATION DENSITY
 (CILINCING)

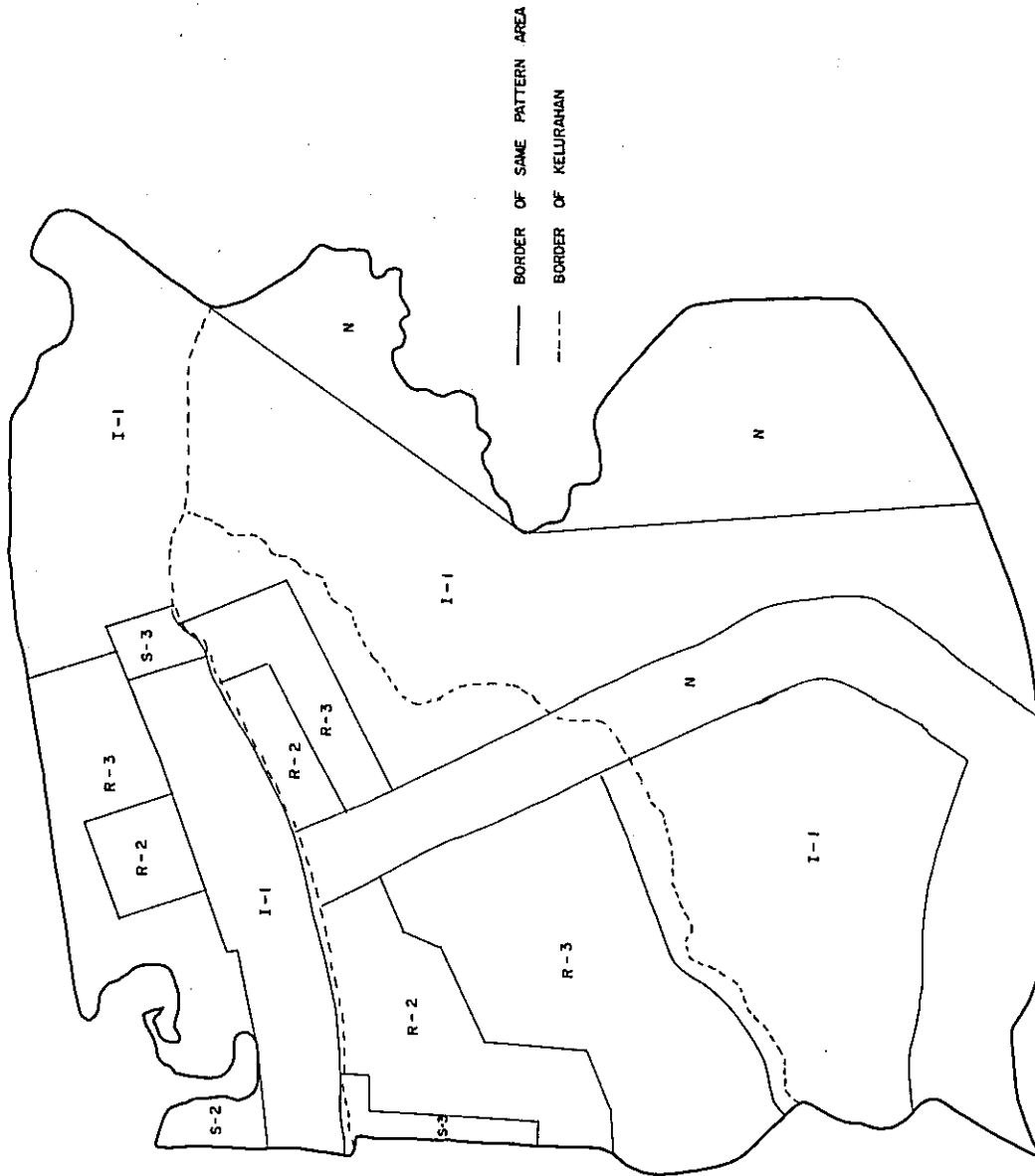


FIG. 2-6-2-17-(3) AREA PATTERN MAP (CILINCING)

TABLE 2-6-2-17-(4) CILINCING EXCHANGE OFFICE TELEPHONE DEMAND
OF EACH KELURAHAN

Survey Time : September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
K O J A	Cilincing (1)	S - 2	14	55	3.9	840	60.0		
		S - 3	10	30	3.0	400	40.0		
		R - 2	20	85	4.3	400	20.0		
		R - 3	80	120	1.5	800	10.0		
		I - 1	299	245	0.8	1,495	5.0		
		Sub Total		423	535	1.3	3,935	9.3	
		Miscellaneous			40		150		
		TOTAL		423	575		4,085		
		Semper (2)	S - 3	10	30	3.0	400	40.0	
			R - 2	80	335	4.2	1,600	20.0	
	R - 3		300	450	1.5	3,000	10.0		
	I - 1		551	450	0.8	2,755	5.0		
		N	395						
		Sub Total	1,336	1,265	0.9	7,755	5.8		
		Miscellaneous		60		250			
	TOTAL		1,336	1,325		8,005			

TABLE2-6-2-17-(5) CILINCING EXCHANGE OFFICE TELEPHONE DEMAND

Survey time: September 1974

Item Classification	Area (ha)	1983		1993		Remarks
		Demand	Demand density	Demand	Demand density (%)	
S						
S - 1						
S - 2	14	55	3.9	840	60.0	7
S - 3	20	60	3.0	800	40.0	7
Total	34	115	3.4	1,640	48.2	14
O						
O - 1						
O - 2						
Total						
R						
R - 1						
R - 2	100	420	4.2	2,000	20.0	17
R - 3	380	570	1.5	3,800	10.0	33
Total	480	990	2.1	5,800	12.1	50
I						
I - 1	850	695	0.8	4,250	5.0	36
I - 2						
Total	850	695	0.8	4,250	5.0	36
Agriculture						
Others						
Non - Demand	395					
Sub - Total	1,759	1,800	1.0	11,690	6.6	100
Miscellaneous		100		400		
TOTAL	1,759	1,900	1.1	12,090	6.9	

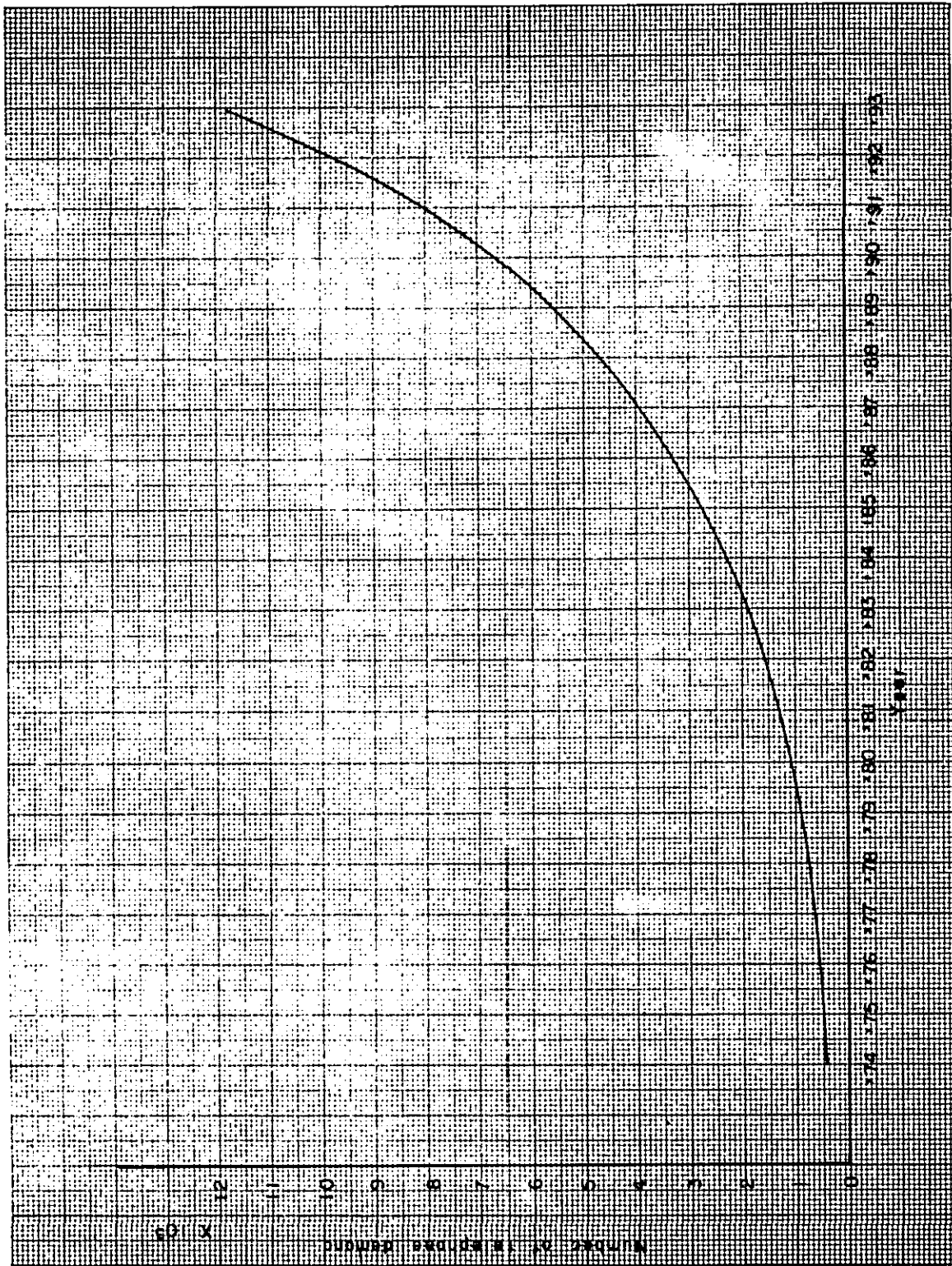


FIG. 2-6-2-17-(7) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
(CILINCING EXCHANGE OFFICE)

TABLE 2-6-2-17-(8)
 TELEPHONE DEMAND, POPULATION AND
 DIFFUSION RATIO IN 1993
 CILINCING EXCHANGE AREA

(Excluding miscellaneous)

Area	(ha)	1,759
Telephone demand		11,700
Population		327,000
Household		65,400
Population density (Population/ha)		186
Diffusion ratio (Demand/100 inhabitants)		3.6
Diffusion ratio (Demand/100 households)		17.9

2.6.2.18 KEBAYORAN

(1) General Description

The future service area of Kebayoran Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. As shown in Fig. 2.6.2.18.(1) and Table 2.6.2.18.(2), the area comprises 12 kelurahans.

The area is located in the southern part of Jakarta but not far away from the city center. The urban development is well in progress as compared with other areas and there exist many high class residence houses.

The area size is 2,070 hectares. As shown in Table 2.6.2.18.(3), the population as of 1972 is 244,100, with the increase ratio of 2.8% for the past 3 years.

The subscriber lines and the waiting applicants as of November 1974 number 5,703 and 1,500, respectively. Table 2.6.2.18.(4) presents the number of the subscriber lines and the waiting applicants as of 1973 in each kecamatan. Both the existing subscribers and the waiting applicants are concentrated in Kebayoran Baru.

(2) Existing Service Area and Future Service Area

As shown in Fig. 2.6.2.18.(1), the existing service area of Kebayoran Exchange Office includes part of the future service areas of Cipete and Pasar Minggu exchange office.

The future office service area is determined by the 2nd Five-Year Plan of PERUMTEL as shown in Fig. 2.6.2.18.(1).

(3) Telephone Demand Forecast

1) Area Development Estimation

In order to estimate the future area development based on the area pattern, the field survey was carried out by referring to the City Plan, the aerial photograph and the topographic map of Jakarta as previously mentioned. Kebayoran Baru on the east side of the Kali Grogol River has developed as a high class residential area and the number of foreign residents in this area is largest among the service areas of Jakarta, or comparable with that in the Menteng area.

Statistics compiled by D.K.I. also show that there exist many permanent buildings. Ratio of such buildings is 32.5%, which ranks second in Jakarta following the ratio of 53.4% for the Gambir area and well proves the urbanization in this area.

As for the trend in population, Table 2.6.2.18.(3) shows the low increase ratio of 1%.

In Kebayoran Lama on the west side of the Kali Grogol River, traditional-form villages remain unchanged. In this area both telephone diffusion rate and population density are extremely low. Although farms are scattered here and there an influx of people into this area is obvious as seen in Table 2.6.2.18.(3). It

can be said that this area will develop into a modern urban city.

Fig. 2.6.2.18.(5) presents the trend in population increase and Fig. 2.6.2.18.(6) presents the population density per hectare.

2) Area Pattern

The area pattern map based on the field survey results is given in Fig. 2.6.2.18.(7). The area size and the demand by area pattern are given in Table 2.6.2.18.(8).

The area pattern and the forecasted demand in each kelurahan as of 1977, 1982 and 1992 are given in Table 2.6.2.18.(9).

3) Result of Demand Forecast

As shown in Table 2.6.2.18.(10), the demand in the future service area of Kebayoran Exchange Office is forecasted to be 41,560, of which the demand for residential telephones accounts for 77% and that for business telephones 23%.

As a whole the demand will increase gradually as shown in Fig. 2.6.2.18.(11). In the areas where urbanization has been attained, such as Kebayoran Baru, a sharp increase will be seen in the former half of the period, while in the traditional-form villages, such as Kebayoran Lama, the demand will increase gradually keeping pace with the progress of urbanization and, at the final stage of urbanization, increase sharply.

4) Conclusion

Table 2.6.2.18.(12) presents the telephone demand, population, number of households, population density, and telephone diffusion rate forecasted for 1973, 1977, 1982, 1992 and 1993. The questionnaire survey by JTP proves that there exists a large potential demand.

Existing Kebayoran Exchange Office is located in the north east of the service area. In order to cover the whole service area by the existing exchange office, cables of large conductor diameter have to be installed on account of the limitation on transmission loss. This means an uneconomical investment.

In consideration of the demand increase, it is recommended to divide the service area of Kebayoran Exchange Office into two in the future. Geographically preferable boundary is the Kali Grogol River, which divides the area into two administrative blocs, i.e., Kebayoran Baru and Kebayoran Lama.

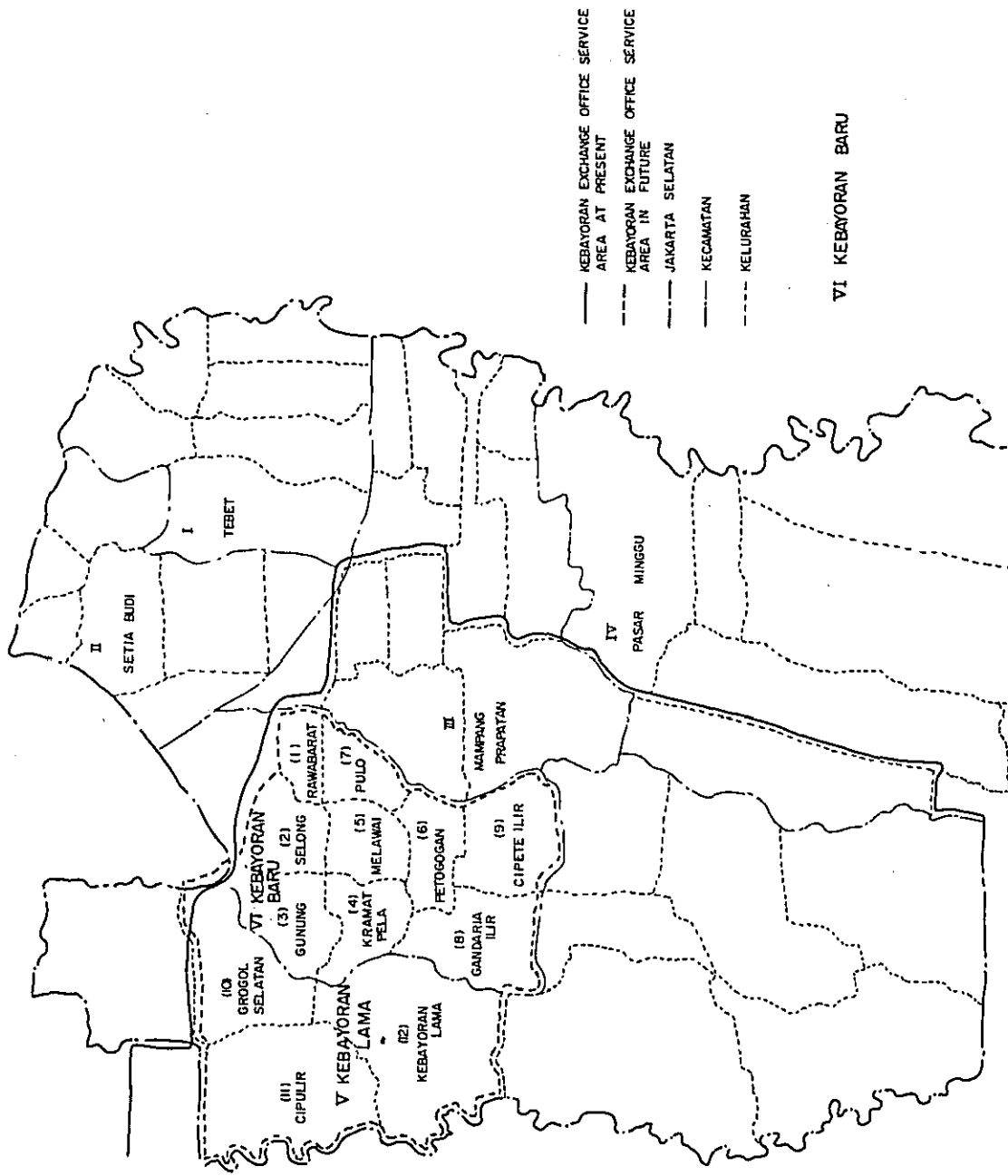


FIG.2 - 6 - 2 - 18 - (1) KEBAYORAN EXCHANGE OFFICE SERVICE AREA

TABLE 2-6-2-18-(2) FUTURE KEBAYORAN EXCHANGE
AREA AND TELEPHONE DEMAND

Kecamatan	Kelurahan	Area (ha)	Telephone demand in 1993
KEBAYORAN BARU	Rawa Barat	67	1,300
	Selong	126	3,340
	Gunung	146	3,760
	Kramat Pela	120	2,760
	Melawai	104	3,010
	Petogogan	83	2,390
	Pulo	117	2,180
	Gandaria Ilir	174	3,680
	Cipete Ilir	170	3,580
KEBAYORAN LAMA	Grogol Selatan	170	3,370
	Cipulir	390	5,990
	Kebayoran Lama	403	6,200
TOTAL		2,070	41,560

TABLE 2-6-2-18-(3) NUMBER OF POPULATION AND POPULATION DENSITY

Kecamatan	1970		1971		1972		Growth ratio (%)
	Population (x103)	Density	Population (x103)	Density	Population (x103)	Density	
Kebayoran Baru	151.8	137	153.0	138	154.1	139	1.0
Kebayoran Lama	79.1	82	86.3	90	90.0	93	6.7
Total	230.9	112	239.3	116	244.1	118	2.8

TABLE 2-6-2-18-(4) NUMBER OF TELEPHONE SUBSCRIBERS, WAITING-LISTS, DEMAND, DIFFUSION RATIO IN 1973

Kecamatan	Subscriber	Waiting list	Demand	Diffusion ratio Per 100 inhabitants
Kebayoran Baru	5,153	907	6,060	3.3
Kebayoran Lama	262	185	447	0.3
Total	5,415	1,092	6,507	2.2

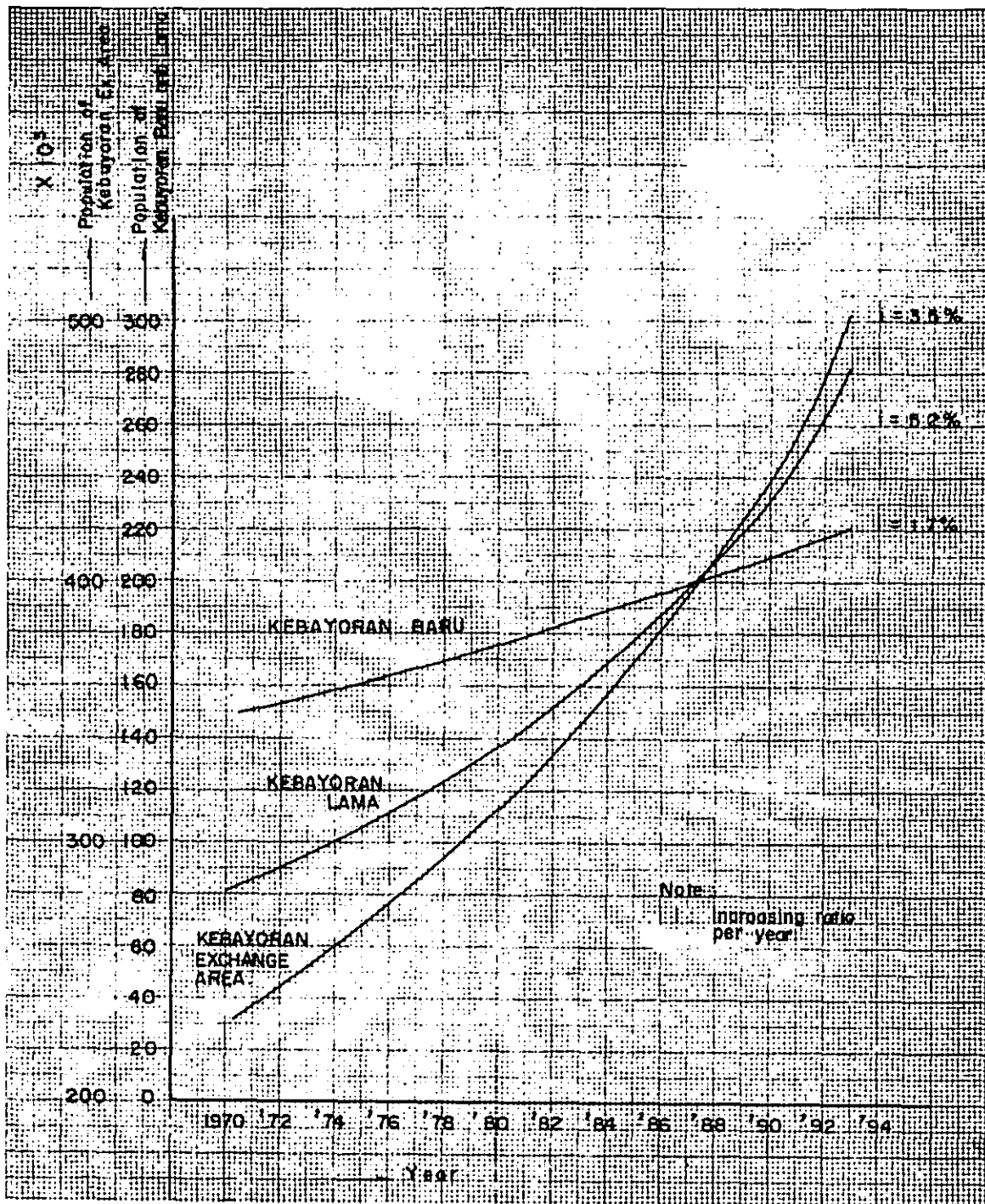


FIG. 2-6-2-18-(5) POPULATION (KEBAYORAN EXCHANGE OFFICE)

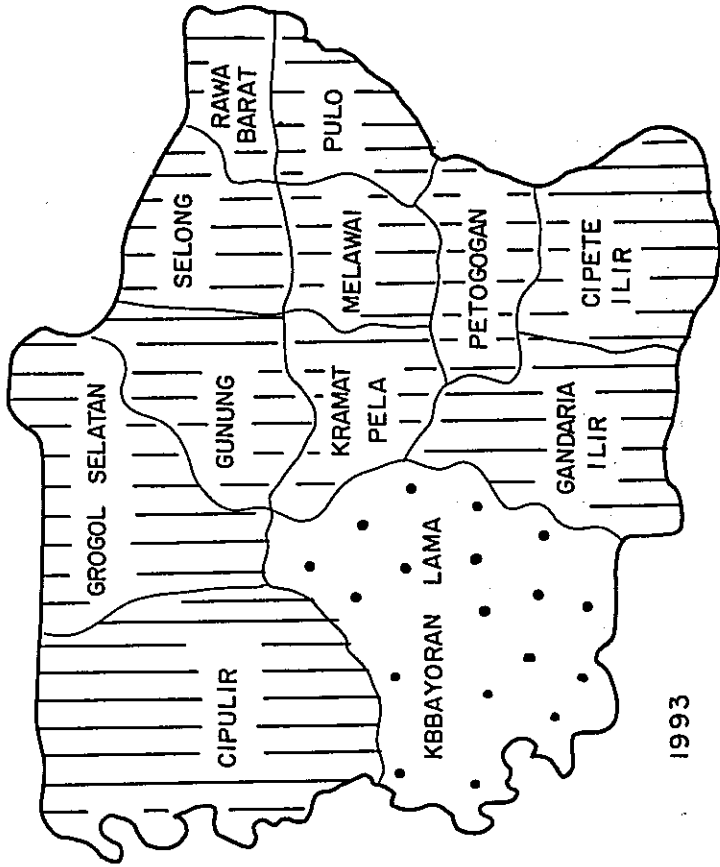
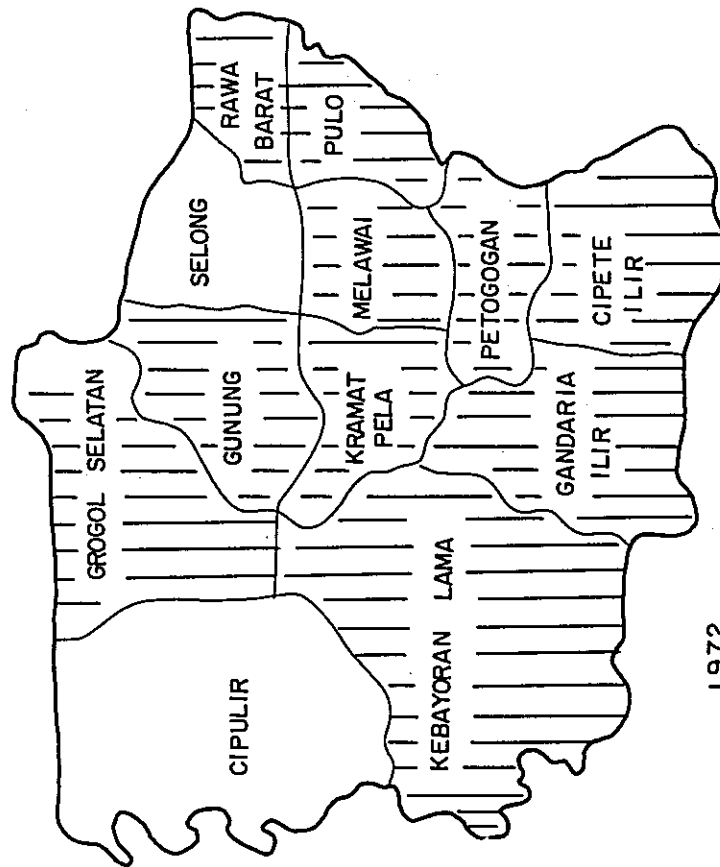
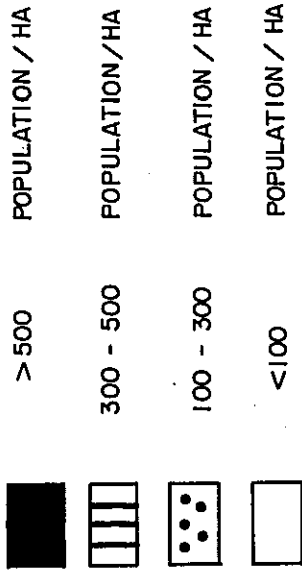


FIG.2 - 6 - 2 - 18 (6) POPULATION DENSITY (KEBAYORAN)

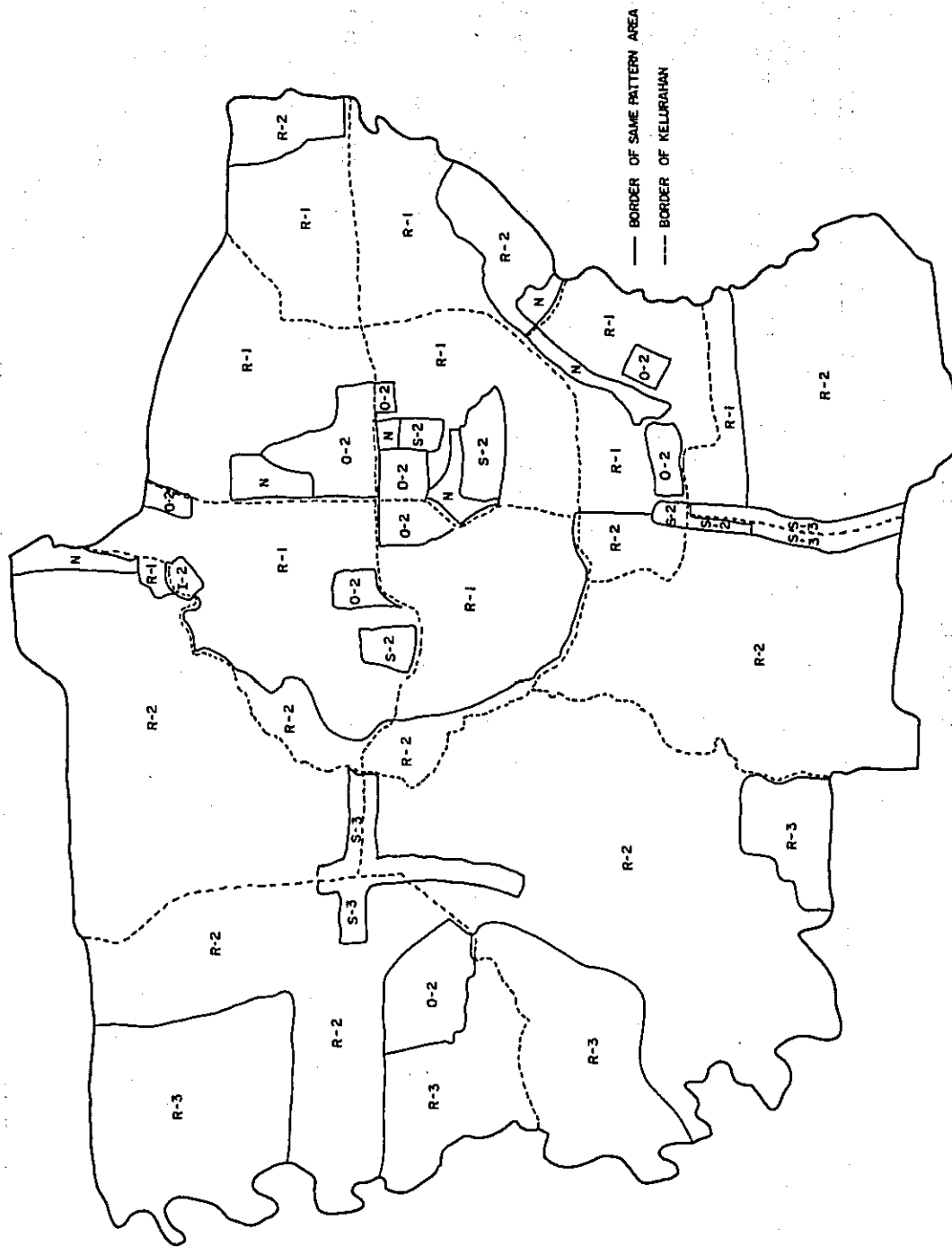


FIG.2 - 6 - 2 - 18 (7) AREA PATTERN MAP (KEBAYORAN)

TABLE 2-6-2-18-(8) TELEPHONE DEMAND OF KEBAYORAN TELEPHONE EXCHANGE OFFICE

Survey time : January, 1974

Telephone exchange office	Pattern	Area (ha)	1971		1982		1992	
			Demand	Demand density	Demand	Demand density	Demand	Demand density
KEBAYORAN	S - 1							
	S - 2	25	715	28.6	945	37.8	1,600	66.4
	S - 3	33	405	12.3	625	18.9	1,505	45.6
	O - 1							
	O - 2	102	1,805	17.7	2,490	24.4	5,260	51.6
	R - 1	558.5	6,510	11.6	7,750	13.9	10,830	19.4
	R - 2	950.3	4,700	5.0	7,090	7.5	17,460	18.4
	R - 3	367	185	0.5	370	1.0	1,580	4.3
	I - 1							
	I - 2	3	15	5.0	20	6.7	30	10.0
	Agriculture							
	N	31.2						
Sub total		2,070	14,335	6.9	19,290	9.3	38,325	18.5
Miscellaneous			260		355		745	
TOTAL		2,070	14,595		19,645		39,070	

TABLE 2-6-2-18-(9)1/5 KEBAYORAN TELEPHONE EXCHANGE OFFICE (1)

Survey Time : January 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1977		1982		1992		
				Demand	Demand density	Demand	Demand density	Demand	Demand density	
KEBAYORAN BARU	Rawe Barat (1)	1 R-1	50	580	11.6	690	13.8	960	19.2	
		2 R-2	15	100	6.7	140	8.3	280	18.7	
		3 N	2							
		Sub Total		67	680	10.2	830	12.4	1,240	18.5
		Miscellaneous			5		10		15	
		TOTAL			685		840		1,255	
	Selong (2)	1 R-1		97.5	960	9.9	1,200	12.3	1,800	18.5
		2 O-2		24	480	20.0	660	27.5	1,240	51.7
		3 N		4.5						
			Sub Total		126	1,440	11.4	1,860	14.8	3,040
		Miscellaneous			45		60		105	
		TOTAL			1,485		1,920		3,145	
	Gunung (3)	1 R-1		101	1,140	11.3	1,370	13.6	1,980	19.6
		2 R-2		19	150	7.9	200	10.5	360	19.0
3 S-2			7	170	24.3	240	24.3	460	65.7	
4 O-2			14	350	25.0	460	32.9	790	56.4	
5 I-2			3	15	5.0	20	6.7	30	10.0	
6 N			2							
	Sub Total		146	1,825	12.5	2,290	15.7	3,620	24.8	
	Miscellaneous			45		55		95		
	TOTAL			1,870		2,345		3,715		

TABLE 2-6-2-18-(9) 2/5 KEBAYORAN TELEPHONE EXCHANGE OFFICE (2)

Survey Time : January 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1977		1982		1992		
				Demand	Demand density	Demand	Demand density	Demand	Demand density	
KEBAYORAN BARU	Kramat Pela (4)	1 R-1	93	1,200	12.9	1,390	15.0	1,810	19.5	
		2 R-2	18	135	7.5	185	10.3	340	18.9	
		3 O-2	9	235	26.1	300	33.3	510	56.7	
		Sub Total	120	1,570	13.1	1,875	15.6	2,660	22.2	
		Miscellaneous		30		35		55		
		TOTAL		1,600		1,910		2,715		
		Melawai (5)	1 R-1	75	880	11.7	1,030	13.7	1,400	18.7
	2 S-2		15	430	28.7	570	38.0	1,000	66.7	
	3 O-2		9	330	36.7	380	42.2	450	50.0	
	4 N		5							
	Sub Total	104	1,640	15.8	1,980	19.0	2,850	27.4		
	Miscellaneous		35		40		55			
	TOTAL		1,675		2,020		2,905			
	Petogogan (6)	1 R-1	46	680	14.8	780	17.0	1,020	22.2	
2 R-2		17	205	12.1	260	15.3	400	23.5		
3 S-2		2	90	45.0	100	50.0	135	67.5		
4 O-2		13	250	19.2	350	26.9	720	55.4		
5 N		5								
	Sub Total	83	1,225	14.8	1,490	18.0	2,275	27.4		
	Miscellaneous		30		35		70			
	TOTAL		1,255		1,525		2,345			

TABLE 2-6-2-18-(9)3/5 KEBAYORAN TELEPHONE EXCHANGE OFFICE (3)

Survey Time : January, 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1977		1982		1992		
				Demand	Demand density	Demand	Demand density	Demand	Demand density	
KEBAYORAN BARU	Pulo	1 R-1	60	710	11.8	840	14.0	1,170	19.5	
		2 R-2	49	310	6.3	440	9.0	910	18.6	
		3 N	8							
		Sub Total		117	1,020	8.7	1,280	10.9	2,080	17.8
		Miscellaneous			10		15		20	
		TOTAL			1,030		1,295		2,100	
		Gandaria Ilir	1 R-2	49	460	9.4	590	12.0	940	19.2
			2 R-2	86	390	4.5	620	7.2	1,600	18.6
			3 R-2	33	75	2.3	150	4.6	580	17.6
			4 S-2	1	25	25.0	35	35.0	65	65.0
			5 S-3	5	75	15.0	110	22.0	230	46.0
		Sub Total		174	1,025	5.9	1,505	8.7	3,415	19.6
		Miscellaneous			10		15		40	
	TOTAL			1,035		1,520		3,455		
	Cipete Ilir	1 R-1	36	360	10.0	450	12.5	690	19.2	
		2 R-2	58	460	7.9	610	10.5	1,100	19.0	
		3 R-2	40	130	3.3	230	5.8	720	18.0	
		4 R-2	30	45	1.5	105	3.5	510	17.0	
		5 S-3	6	55	9.2	95	15.8	270	45.0	
	Sub Total		170	1,050	6.2	1,490	8.8	3,290	19.4	
	Miscellaneous			10		15		40		
	TOTAL			1,060		1,505		3,330		

TABLE 2-6-2-18-(9) 4/5 KEBAYORAN TELEPHONE EXCHANGE OFFICE (4)

Survey Time : January 1974

Kecamatan	Kefurahan	Pattern	Area (ha)	1977		1982		1992		
				Demand	Demand density	Demand	Demand density	Demand	Demand density	
KEBAYORAN LAMA	Grogol Selatan (10)	1	R-2	12	175	14.6	190	15.8	235	19.6
		2	R-2	8	90	11.3	110	13.8	155	19.4
		3	R-2	12	90	7.5	120	10.0	230	19.2
		4	R-2	49.3	180	3.7	300	6.1	820	16.6
		5	R-2	79	280	3.5	480	6.1	1,420	18.0
		6	S-3	5	95	19.0	130	26.0	240	48.0
		7	N	4.7						
		Sub Total		170	910	5.4	1,330	7.8	3,100	18.2
		Miscellaneous			10		15		35	
	TOTAL				920		1,345		3,135	
	Cipulir (11)	1	R-2	101	420	4.2	700	6.9	2,000	19.8
		2	R-2	35	75	2.1	150	4.3	610	17.4
		3	R-3	135	75	0.6	145	1.1	580	4.3
		4	R-3	82	35	0.4	75	0.9	350	4.3
		5	S-3	4	20	5.0	45	11.3	175	43.8
		6	O-2	33	160	4.9	340	10.3	1,550	47.0
		Sub Total		390	785	2.0	1,455	3.7	5,265	13.5
		Miscellaneous			15		35		150	
	TOTAL				800		1,490		5,415	

TABLE 2-6-2-18-(9) 5/5 KEBAYORAN TELEPHONE EXCHANGE OFFICE (5)

Survey Time : January 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1977		1982		1992	
				Demand	Demand density	Demand	Demand density	Demand	Demand density
KEBAYORAN LAMA	Kebayoran Lama (12)	1 R-2	27	260	9.6	330	12.2	510	18.9
		2 R-2	51	250	4.9	390	7.7	940	18.4
		3 R-2	162	420	2.6	790	4.9	2,800	17.3
		4 R-3	150	75	0.5	150	1.0	650	4.3
		5 S-3	13	160	12.3	245	18.9	590	45.4
		Sub Total	403	1,165	2.9	1,905	4.7	5,490	13.6
	Miscellaneous			15		25		65	
	TOTAL			1,180		1,930		5,555	

TABLE 2-6-2-18-(10) AREA PATTERN IN 1993
(KEBAYORAN)

(Excluding miscellaneous)

Item Classification		Area (ha)	Area (%)	Demand	Demand (%)	D/ha
S	S - 1					
	S - 2	25	1.2	1,750	4.2	70
	S - 3	33	1.6	1,650	4.0	50
	Total	58	2.8	3,400	8.2	58.6
O	O - 1					
	O - 2	102	4.9	6,120	14.7	60
	Total	102	4.9	6,120	14.7	60
R	R - 1	558.5	27.0	11,100	26.9	20
	R - 2	950.3	45.9	19,006	45.7	20
	R - 3	367	17.7	1,835	4.4	5
	Total	1,861	90.6	32,011	77.0	17.2
I	I - 1					
	I - 2	3	0.2	30	0.1	10
	Total	3	0.2	30	0.1	10
Agriculture						
N		31.2	1.5			
TOTAL		2,070	100.0	41,561	100.0	20.1

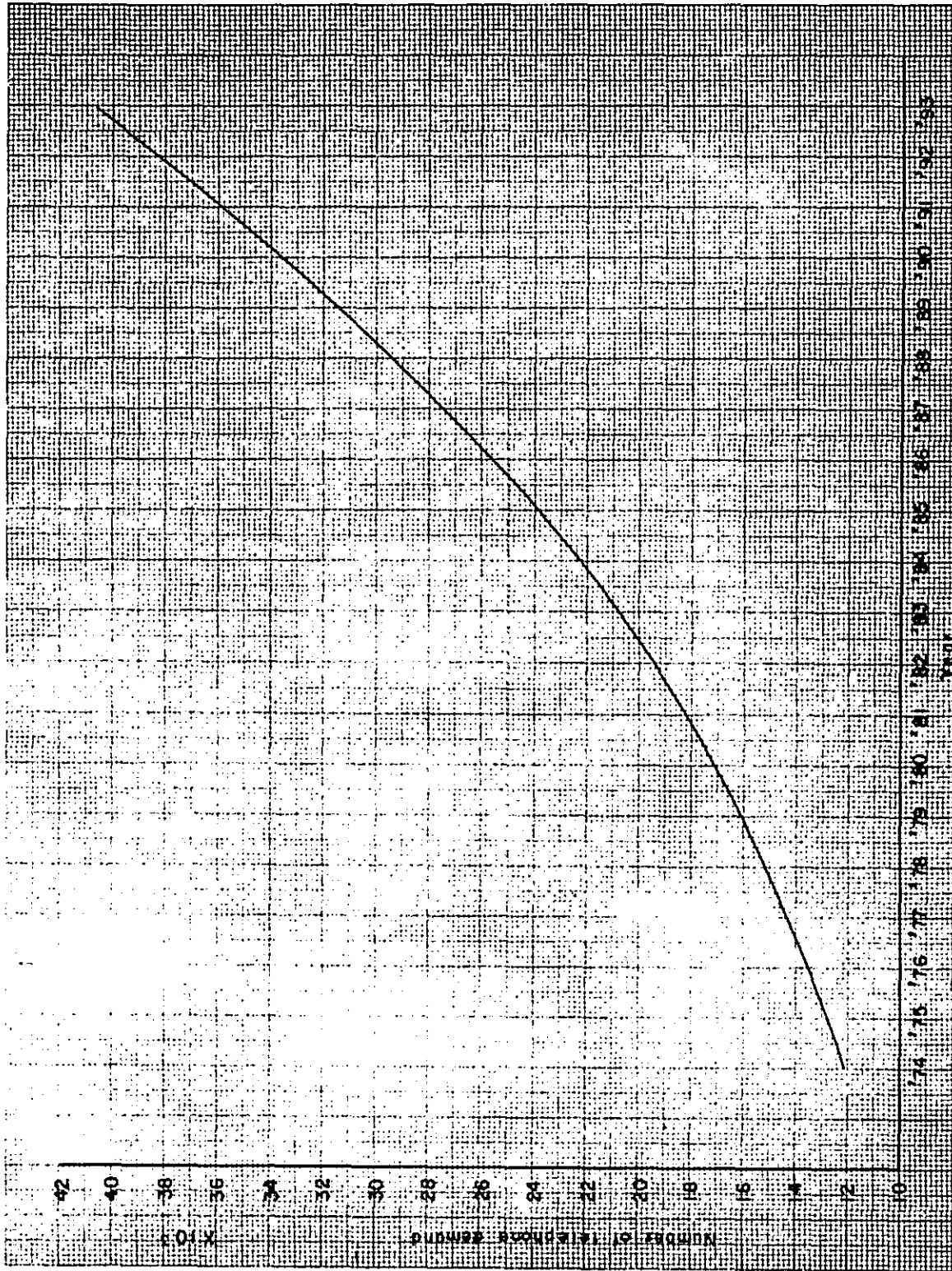


FIG. 2-6-2-18-(11) TELEPHOE DEMAEE (EXCLTUEING MISCELLANEOUS)
 (KEBAYORAN EXCHANGE OFFICE)

TABLE 2-6-2-18-(12) DEMAND, POPULATION AND
DIFFUSION RATIO
(KEBAYORAN)

(Excluding miscellaneous)

Item \ Year	1973	1977	1982	1992	1993
Area (ha)	2,070	2,070	2,070	2,070	2,070
Demand	6,510	14,340	19,290	38,330	41,560
	1.0	2.2	3.0	5.9	6.4
* Population	252,500	289,400	343,200	483,700	500,700
	1.0	1.15	1.36	1.92	1.98
* Household	44,530	57,880	68,640	96,740	100,140
	1.0	1.30	1.54	2.17	2.25
Population density (Population/ha)	122	140	166	234	242
	1.0	1.1	1.4	1.9	2.0
Population demand ratio (Demand/ 100 inhabitants)	2.58	4.95	5.62	7.92	8.30
	1.0	1.92	2.18	3.07	3.22
Household demand ratio (Demand/ 100 households)	14.6	24.8	28.1	39.6	41.5
	1.0	1.70	1.93	2.71	2.84

Note : Down side figure is ratio to 1973

Remarks :

- * The number of Population and house holds which was calculated on the basis of the Statistics of D.K.I. assuming that its increasing ratio is approximately 3.5% per year including new comers from other areas.

2.6.2.19 CIPETE

(1) General Description

The future service area of Cipete Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. The area is located in the southern part of Jakarta. As shown in Fig. 2.6.2.19.(1) and Table 2.6.2.19.(2), the area comprises 6 kelurahans, having a population of 77,600 as of 1973. The area size is 2,450 hectares and the population density is 32.

Through the service area runs a main road leading to Bogor. On both sides of this road are found many shops and residences, and hospitals, golf course and army facilities. In some part away from this road, the residential area development is under way, with modern houses scattered here and there.

Recently a mobile exchange was installed in this service area in order to satisfy the rapidly increasing demand.

The subscriber lines in the future service area of Cipete Exchange Office number 198 as of the end of 1974 and, at present, are accommodated in existing Kebayoran Exchange Office and the mobile exchange.

(2) Existing Service Area and Future Service Area

Fig. 2.6.2.19.(1) shows the future service area of Cipete Exchange Office. The major part of this service area is at present covered by existing Kebayoran Exchange Office, and the boundary between existing Kebayoran and Cipete exchange office service areas is not clear. Table 2.6.2.19.(2) shows the area size and the telephone demand as of 1993 in each kelurahan.

(3) Telephone Demand Forecast

1) Area Development Estimation

The field survey for telephone demand forecast was carried out by referring to the City Plan, the aerial photograph and the topographic map of Jakarta.

At present the urbanization extends from the northern part adjacent to the Kebayoran area to the southern part. Some kelurahans, such as Gandaria Selatan and Cipete Selatan, have already developed into residential areas.

The Bogor Road is lined on both sides with large and small shops which will increase in number and enlarge in scale in the future.

Although a farm land exists in the southern part, an influx of population will bring about a residential area development in the near future.

2) Area Pattern

The area pattern map based on the field survey results is given in Fig. 2.6.2.19.(3). The telephone demand by area pattern as of 1983 and 1993 in each kelurahan is given in Table 2.6.2.19.(4).

3) Result of Telephone Demand Forecast

As given in Table 2.6.2.19.(5), the telephone demand as of 1993 in the future service area of Cipete Exchange Office is estimated at 15,930 (including miscellaneous circuits), of which the demand for residential telephones accounts for 77% and that for business telephones 23% as of 1993.

Fig. 2.6.2.19.(6) presents the forecasted demand trend during the period from 1974 through 1993: a gradual increase in the former half of the period and a sharp increase in the latter half. Fig. 2.6.2.19.(7) presents the population density per one hectare.

4) Conclusion

The telephone demand, population, number of households, population density and telephone diffusion rate are forecasted as shown in Table 2.6.2.19.(8).

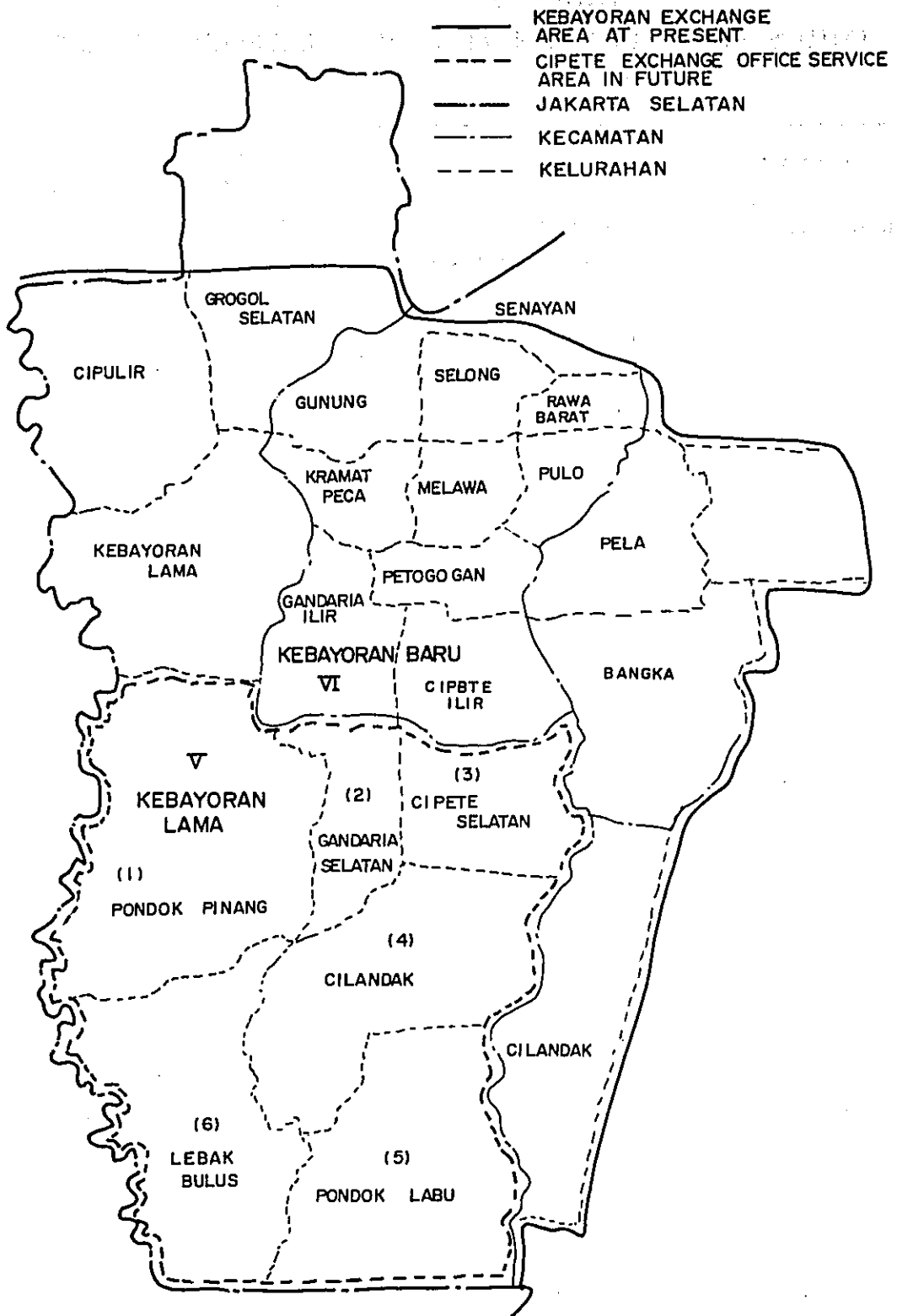


FIG.2-6-2-19-(1) CIPETE EXCHANGE OFFICE SERVICE

TABLE 2-6-2-19-(2)
FUTURE CIPETE EXCHANGE AREA AND TELEPHONE DEMAND

Kecamatan	Kelurahan	Area (ha)	Telephone Demand in 1993	
KEBAYORAN LAMA	Pondok Pinang	638	6,070	
	Gandaria Selatan	194	1,732	
	Cipete Selatan	223	2,365	
	Cilandak	500	3,533	
	Pondok Labu	393	1,199	
	Lebak Bulus	502	801	
	TOTAL		2,450	15,700

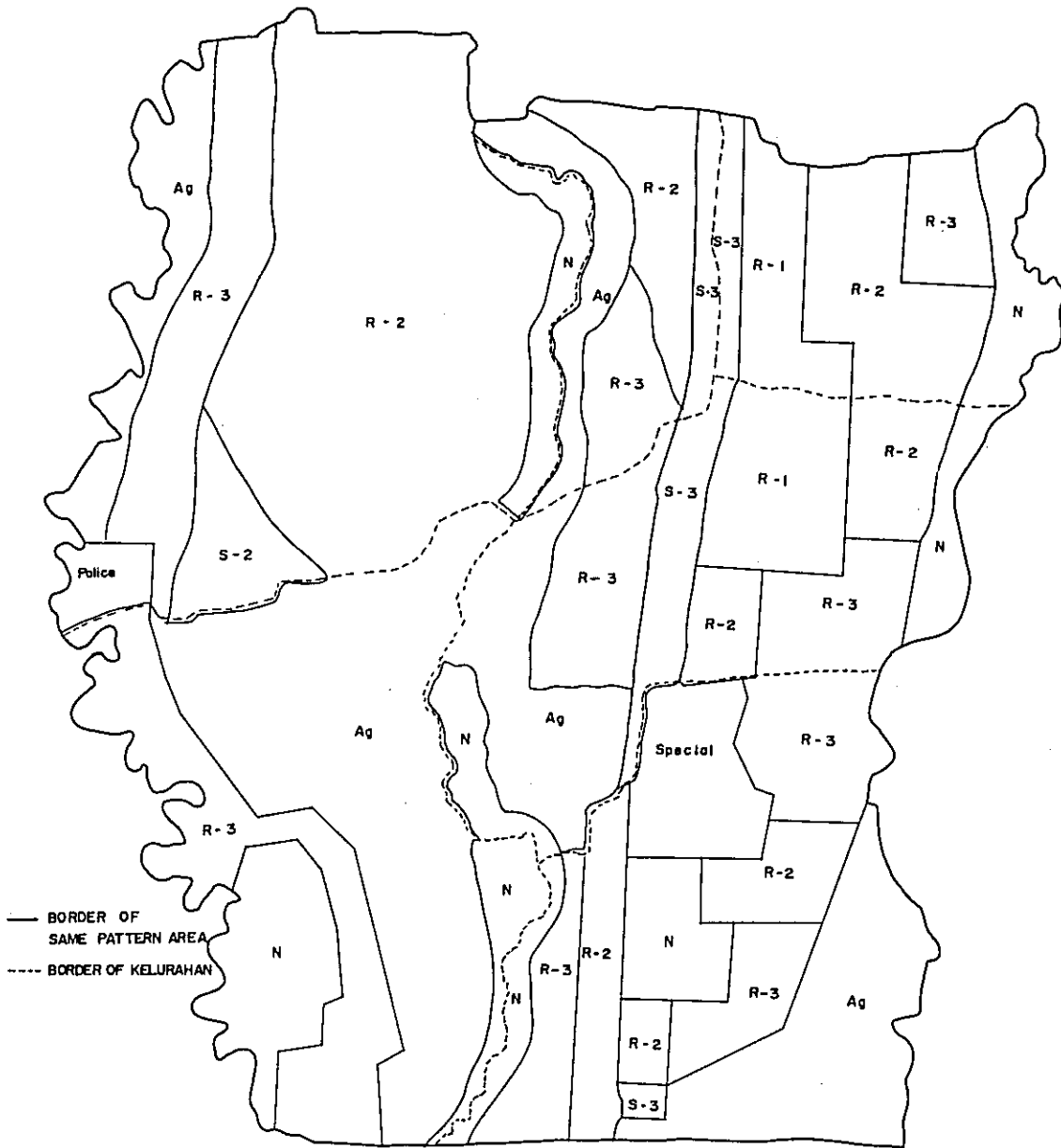


FIG. 2-6-2-19-(3) AREA PATTERN MAP (CIPETE)

TABLE 2-6-2-19-(4) 1/3
 CIPETE EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (1)

Survey time : September 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks
				Demand	Demand density	Demand	Demand density	
KEBAYORAN LAMA	Pondok pinang	R-2	200	900	4.5	3,000	15.0	
		R-3	174	170	1.0	870	5.0	
	(1)	S-2	25	440	17.6	1,250	50.0	
		S-3	30	180	6.0	900	70.0	
	Others	25	10	0.4	50	2.0		
	N	184						
	Sub Total		1,700	2.7	6,070	9.5		
	Miscellaneous		30		100			
	Total		638	1,730		6,170		
	Gandaria Selatan	(2)	R-2	72	320	4.4	1,080	15.0
R-3			60	35	0.6	300	5.0	
A		52	5	0.1	52	1.0		
S-3		10	90	9.0	300	30.0		
Sub Total			450	2.3	1,732	8.9		
Miscellaneous		10		30				
Total		194	460		1,762	8.9		

TABLE 2-6-2-19-(4) 2/3
CIPETE EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (2)

Survey time: September 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
KEBAYORAN LAMA	Cipete Selatan (3)	R-1	51	280	5.5	765	15.0		
		R-2	83	210	2.5	1,245	15.0		
		R-3	29	30	1.0	145	5.0		
		S-3	7	90	12.9	210	30.0		
		N	53						
		Sub Total		610	2.7	2,365	10.6		
		Miscellaneous		10		30			
		Total		223		2,395			
	Cilandak (4)	R-1		86	380	4.4	1,290	15.0	
		R-2		71	300	4.2	1,065	15.0	
R-3			172	90	0.5	860	5.0		
A			78	10	0.1	78	1.0		
S-3			8	120	15.0	240	30.0		
	N		85						
	Sub Total			900	1.8	3,533	7.1		
	Miscellaneous			10		40			
	Total		500	910		3,573			

TABLE 2-6-2-19-(4) 3/3
 CIPETE EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (3)

Survey Time: September 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks
				Demand	Demand density	Demand	Demand density	
KEBAYORAN LAMA	Pondok Labu (5)	R-2	16	100	6.3	240	15.0	
		R-3	150	160	1.1	750	5.0	
		A	124	30	0.2	124	1.0	
		S-3	2	20	10.0	60	30.0	
		Others	50	10	0.2	25	0.5	
		N	51					
		Sub Total		320	0.8	1,199	3.1	
		Miscellaneous		5		20		
		Total		393		1,219		
	(6)	Lebak Bulus	R-3	96	75	0.8	480	5.0
A			321	45	0.1	321	1.0	
N		85						
		Sub Total		502	0.2	801	1.6	
	Miscellaneous			5	10			
	Total		502		811			

TABLE 2-6-2-19-(5) CIPETE EXCHANGE OFFICE TELEPHONE DEMAND

Survey Time: September 1974

Classification	Item	Area (ha)	1983		1993			Remarks
			Demand	Demand density	Demand	Demand density	Demand (%)	
S	S - 1							
	S - 2	25	440	17.6	1,250	50		
	S - 3	57	500	8.8	1,710	30		
	Total	82	940	11.5	2,960	36.1	18.9	
O	O - 1							
	O - 2							
	Total							
R	R - 1	137	660	4.8	2,055	15		
	R - 2	442	1,830	4.1	6,630	15		
	R - 3	681	560	0.8	3,405	5		
	Total	1,260	3,050	2.4	12,090	9.6	77.0	
I	I - 1							
	I - 2							
	Total							
Agriculture		575	90	0.2	575	1.0	3.6	
Others		75	20	0.3	75	1.0	0.5	
Non - demand		458						
Sub - Total		2,450	4,100	1.7	15,700	6.4	100.0	
Miscellaneous			70		230			
TOTAL		2,450	4,170		15,930			

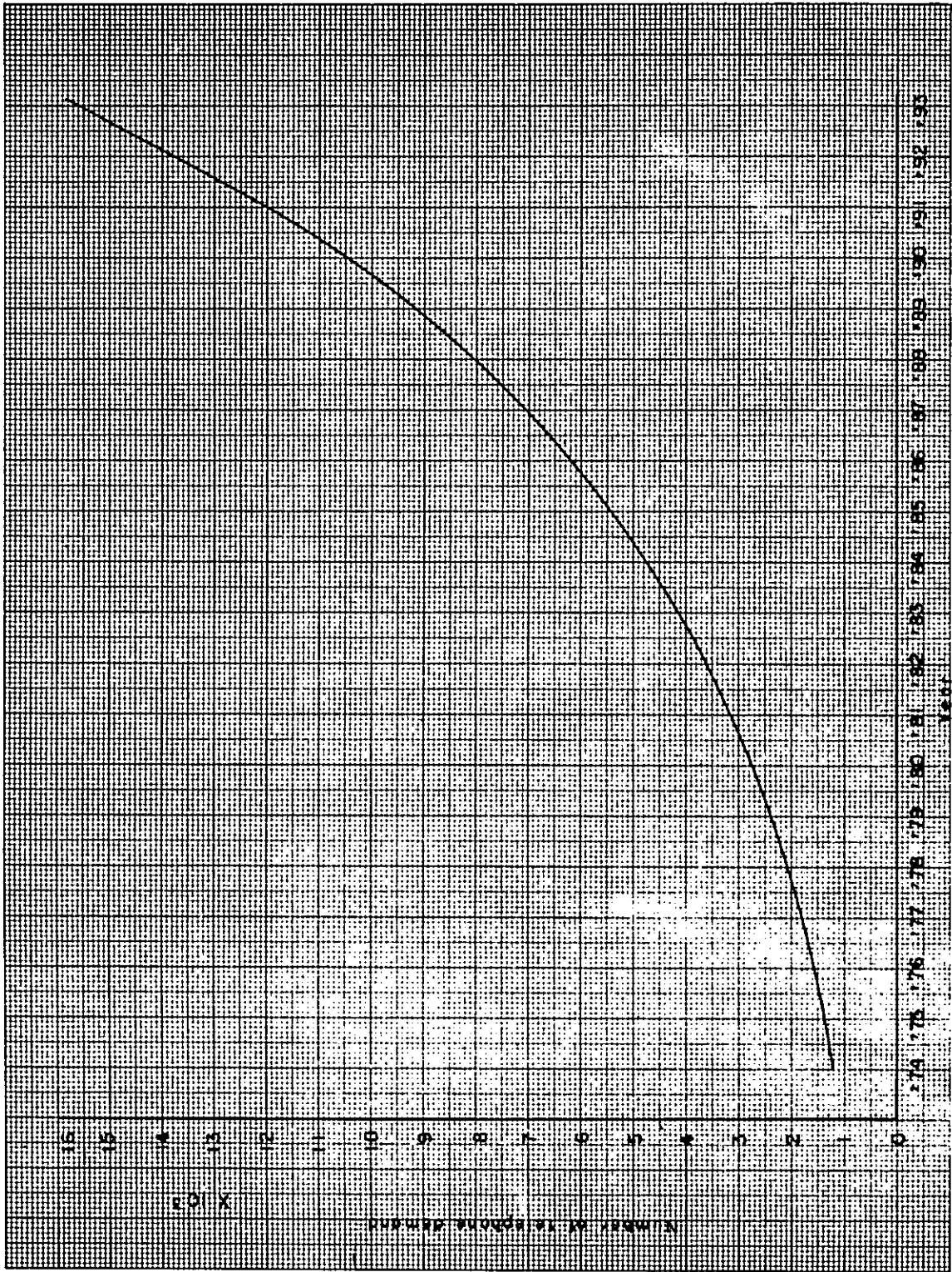


FIG. 2-6-2-19-(6)
 TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS) (CIPETE EXCHANGE OFFICE)

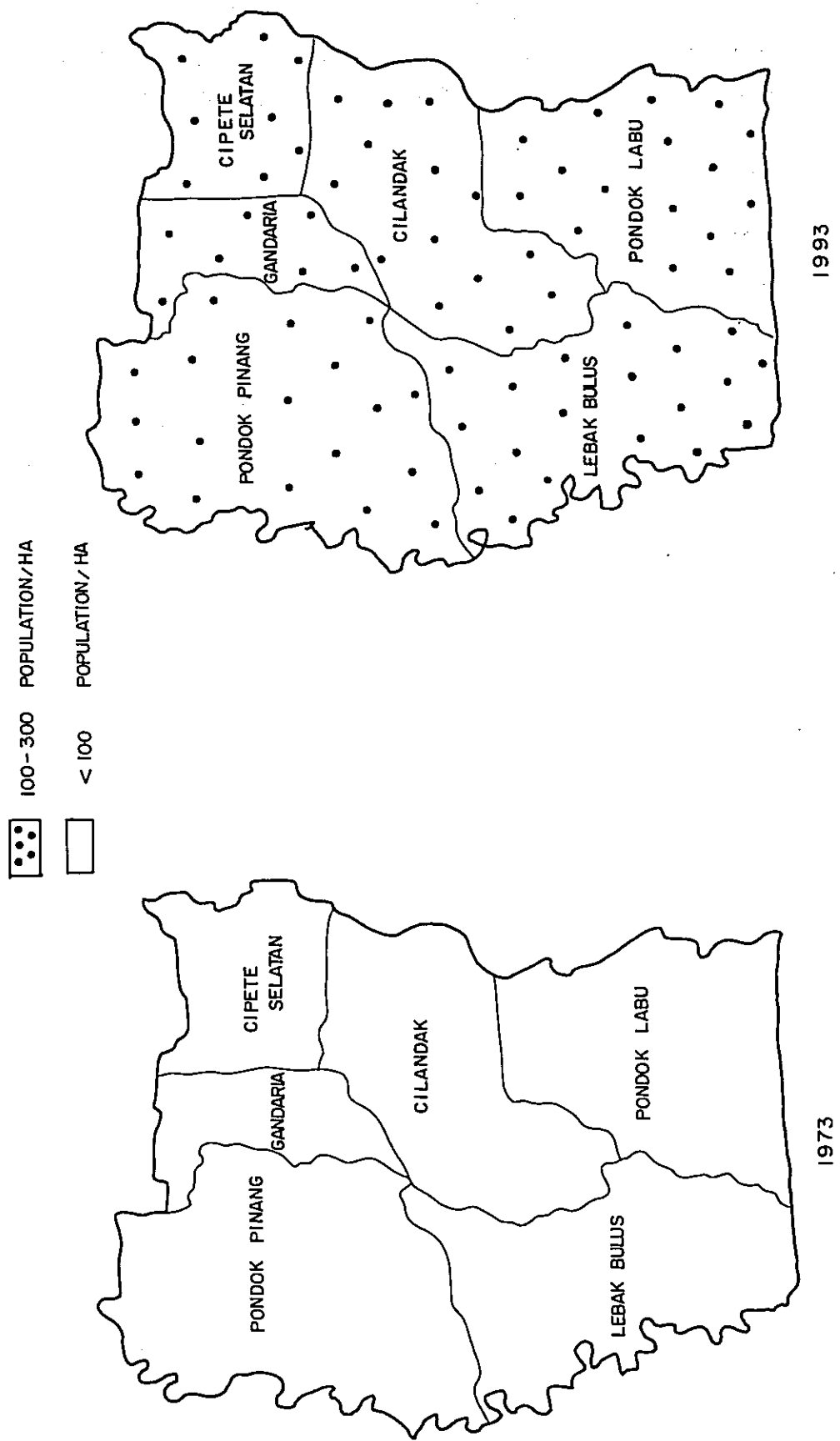


FIG. 2-6-2-19(7) POPULATION DENSITY (CIPETE)

TABLE 2-6-2-19-(8)
 TELEPHONE DEMAND, POPULATION AND DIFFUSION
 RATIO IN 1993 CIPETE EXCHANGE AREA

(Excluding miscellaneous)

Area	(ha)	2,450
Telephone demnd		15,700
Population		432,300
Household		86,460
Population density (Population/ha)		176
Diffusion ratio (Demand/100 inhabitants)		3.6
Diffusion ratio (Demand/100 households)		18.2

2.6.2.20 KALIBATA

(1) General Description

The future service area of Kalibata Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. As shown in Fig. 2.6.2.20.(1), the area comprises 11 kelurahans. It is located in the northern part of the southern district of Jakarta. The area size is 2,289 hectares and the population as of 1973 is approximately 140,000, with the density of 61 per hectare. In the City Plan of D.K.I., this area is designed to be a residential area excepting the area along a main road. Accordingly, a large increase of population is expected.

The existing subscriber lines in the future service area number 668 and at present are accommodated in existing Kebayoran Exchange Office and Jatinegara Exchange Office.

(2) Future Service Area

As shown in Fig. 2.6.2.20.(1), the existing subscriber lines in the future service area are accommodated in existing Kebayoran Exchange Office and Jatinegara Exchange Office. The area size and the telephone demand as of 1993 in each kelurahan are given in Table 2.6.2.20.(2).

(3) Telephone Demand Forecast

1) Area Development Estimation

The field survey for telephone demand forecast was carried out by referring to the City Plan, the aerial photograph and the geographic map of Jakarta.

As for the area development as of 1993 it is estimated that in part of two kelurahan, Pela adjoining the Kebayoran area and Bangka, high class residence houses will be found. Other areas will be occupied by middle class houses. An agricultural area will remain in Pejaten.

A trend in population is shown in Fig. 2.6.2.20.(3). That is, a large increase will be seen during the period from 1973 through 1993 in each kelurahan.

2) Area Pattern

The area pattern map based on the field survey results is given in Fig. 2.6.2.20.(4). The telephone demand by area pattern as of 1983 and 1993 in each kelurahan is given in Table 2.6.2.20.(5).

3) Result of Telephone Demand Forecast

As given in Table 2.6.2.20.(6), the telephone demand as of 1993 in the future Kalibata Exchange Office service area is estimated to be 29,870. During the period from 1974 through 1993, the demand will increase gradually at the initial stage and sharply at the final stage.

The telephone demand by area pattern as of 1993 is: 68.7% in the residential area, 12.1% in the shopping area, 0.8% in the industrial area, 16.7% in the office

area and 1.7% in the agricultural area. The telephone density per hectare is 0.5 at present and will increase to 13 by 1993.

(4) Conclusion

Table 2.6.2.20.(8) presents the telephone demand, population, number of households, population density and telephone diffusion rate as of 1993. As seen in the Table, the demand estimated for 1993 is 29,200, 12 times the demand as of 1974. The population will increase to 566,700 in 1993, 4 times the population in 1974. The telephone diffusion rate will be 5.2 per 100 inhabitants, 10 times the rate of 0.5 as of 1974.

- JATINEGARA KEBAYORAN AND SEMANGGI EXCHANGE OFFICE SERVICE AREA AT PRESENT
- KALIBATA EXCHANGE OFFICE SERVICE AREA IN FUTURE
- JAKARTA PUSAT SELATAN
- KECAMATAN
- KELURAHAN

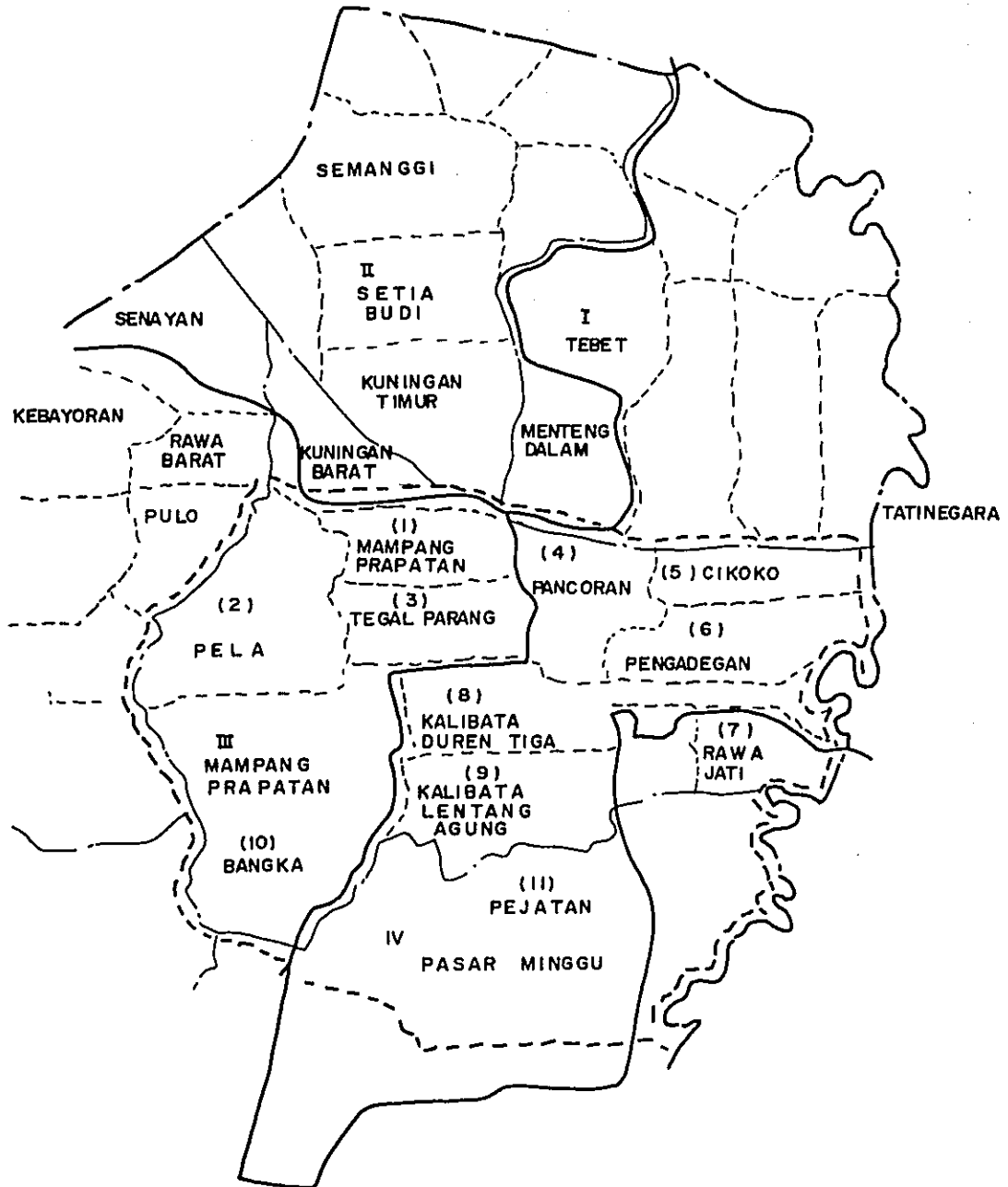
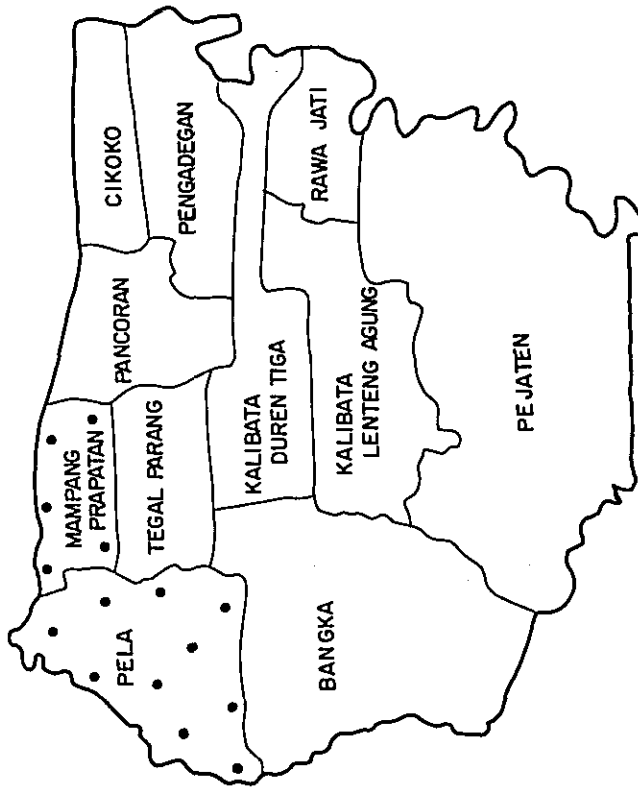
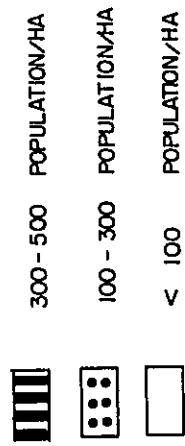


FIG. 2-6-2-20-(1) KALIBATA EXCHANGE OFFICE SERVICE AREA

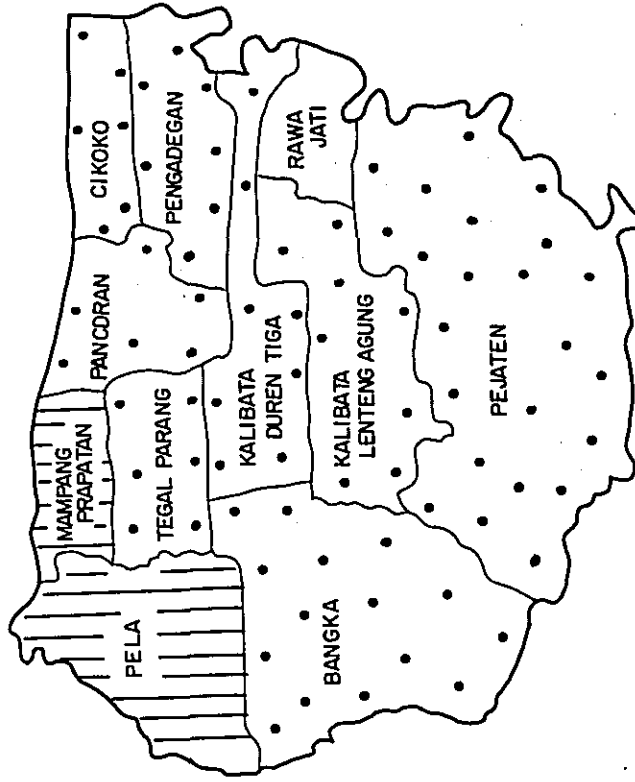
TABLE 2-6-2-20-(2)
 FUTURE KALIBATA EXCHANGE AREA AND TELEPHONE DEMAND

(Excluding miscellaneous)

Kecamatan	Kelurahan	Area (ha)	Telephone Demand in 1993	
MAMPANG PRAPATAN	Mampang Prapatan	79	2,120	
	Pela	204	2,415	
	Tegal Parang	114	2,640	
	Pancoran	104	3,105	
	Cikoko	76	2,525	
	Pengadegan	89	634	
	Rawajati	93	392	
	Kalibata Lenteng Agung	299	3,725	
	Pejaten	704	3,309	
	Bangka	299	4,280	
	Kalibata Duren Tiga	228	4,085	
TOTAL		2,289	29,230	



1973



1993

FIG. 2 - 6 - 2 - 20 - (3) POPULATION DENSITY (KALIBATA)

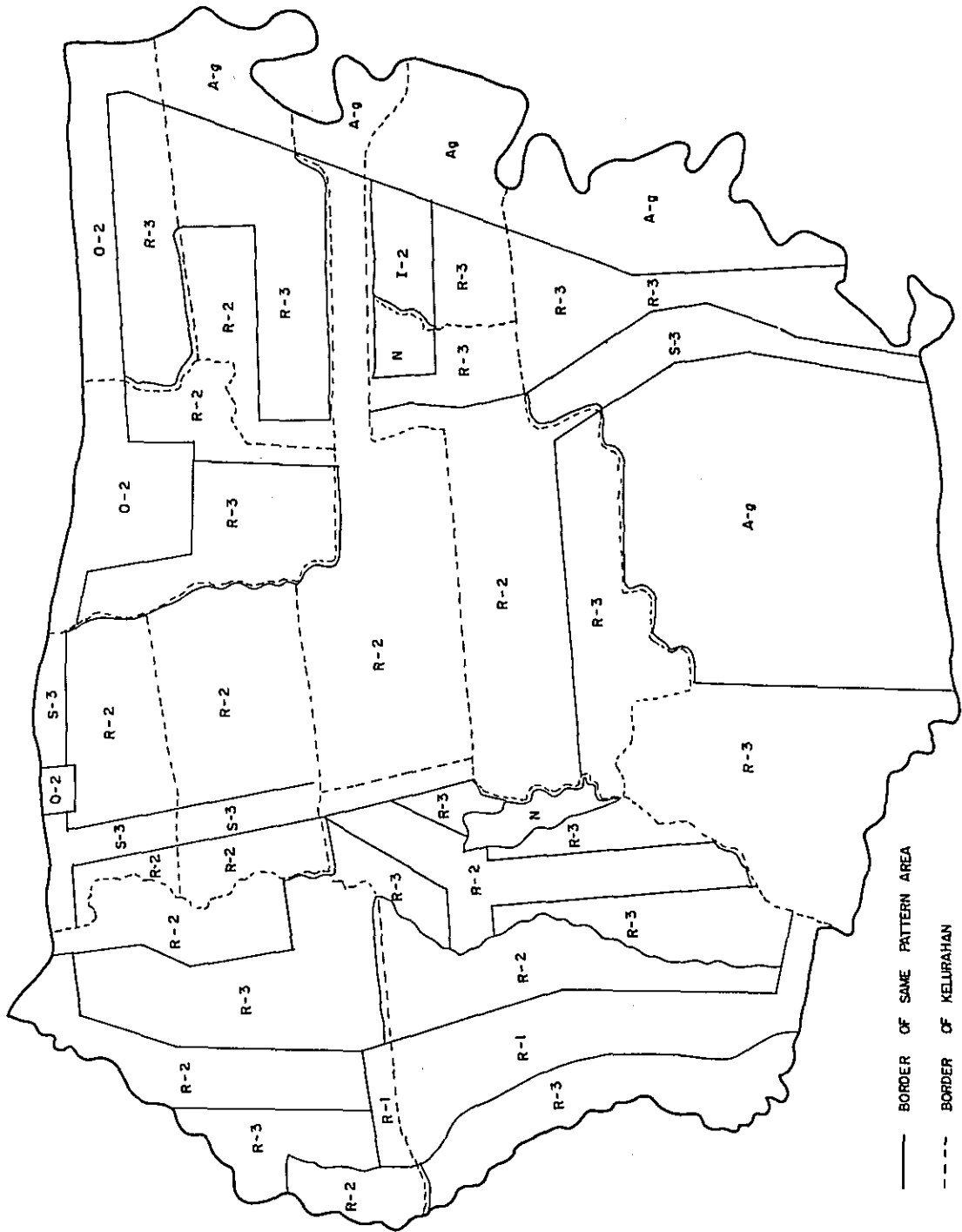


FIG. 2-6-2-20 -(4) AREA PATTERN MAP
(KALIBATA)

TABLE 2-6-2-20-(5) 1/3
KALIBATA EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (1)

Survey time : September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks
				Demand	Demand density	Demand	Demand density	
MAMPANG PRAPATAN	Mampang Prapatan (1)	R - 2	54	360	6.7	1,080	20	
		S - 3	23	190	8.3	920	40	
		O - 2	2	35	17.5	120	60	
		Sub Total		585	7.4	2,120	26.8	
		Miscellaneous		10		45		
		TOTAL		79	595		2,165	
	Pela (2)	R - 1	7	110	15.7	140	20	
		R - 2	86	630	7.3	1,720	20	
		R - 3	111	180	1.6	555	5	
			Sub Total		920	4.5	2,415	11.8
	Miscellaneous		10		25			
	TOTAL		204	930		2,440		
Tegal-Parang (3)	R - 2	96	460	4.8	1,920	20		
	S - 3	18	145	8.1	720	40		
		Sub Total		605	5.3	2,640	23.2	
		Miscellaneous		10		40		
	TOTAL		114	615		2,680		
Pancoran (4)	R - 2	22	120	5.5	440	20		
	R - 3	41	50	1.2	205	5		
		O - 2	41	705	17.2	2,460	60	
		Sub Total		875	8.4	3,105	29.7	
	Miscellaneous		50		160			
	TOTAL		104	925		3,265		

TABLE 2-6-2-20-(5) 2/3
 KALIBATA EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (2)

Survey time : September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks
				Demand	Demand density	Demand	Demand density	
Cikoko (5)	R - 3		37	40	1.1	185	5	
	O - 2		39	670	17.2	2,340	60	
	Sub Total			710	9.3	2,525	33.1	
	Miscellaneous			45		155		
TOTAL			76	755		2,680		
Pengodegan (6)	R - 2		19	120	6.3	380	20	
	R - 3		46	70	1.5	230	5	
	Ag		24	10	0.4	24	1	
	Sub Total			200	2.3	634	7.1	
TOTAL			89	5		10		
Rawajati (7)	R - 3		23	25	1.1	115	5	
	Ag		47	10	0.2	47	1	
	I - 2		23	70	3.0	230	10	
	Sub Total			105	1.1	392	4.2	
TOTAL			93	5		15		
Kalibata Duren Tiga (8)	R - 2		203	780	3.8	4,060	20	
	Ag		25	5	0.2	25	1	
	Sub Total			785	3.4	4,085	17.9	
	Miscellaneous			10		40		
TOTAL			228	795		4,125		

TABLE 2-6-2 - 20 - (5) 3/3
 KALIBATA EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (3)

Survey time: September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
	Kalibata Lenteng - Agung (9)	R - 2	155	580	3.7	3,100	20		
		R - 3	125	105	0.8	625	5		
		N	19						
		Sub Total		685	2.3	3,725	12.5		
		Miscellaneous		5		35			
		TOTAL		299		3,760			
	Bangka 10		R - 1	69	540	7.8	1,380	20	
			R - 2	102	650	6.4	2,040	20	
			R - 3	108	160	1.5	540	5	
			S - 3	8	65	8.1	320	40	
		N	12						
	Sub Total			1,415	4.7	4,280	14.3		
	Miscellaneous			15		50			
	TOTAL		299	1,430		4,330			
Pejaten (11)		R - 3	271	220	0.8	1,355	5		
		Ag	394	75	0.2	394	1		
		S - 3	39	320	8.2	1,560	40		
		Sub Total		615	0.9	3,309	4.7		
		Miscellaneous		15		65			
	TOTAL		704	630		3,374			

TABLE 2-6-2-20 - (6)

KALIBATA EXCHANGE OFFICE TELEPHONE DEMAND

Survey Time : September 1974

Classification	Item	Area (ha)	1983		1993			Remarks
			Demand	Demand density	Demand	Demand density	Demand (%)	
S	S - 1							
	S - 2							
	S - 3	88	700	8.0	3,520	40	12.1	
	Total	88	700	8.0	3,520	40	12.1	
O	O - 1							
	O - 2	82	1,400	17.1	4,920	60	16.7	
	Total	82	1,400	17.1	4,920	60	16.7	
	R - 1	76	640	8.4	1,520	20	5.2	
R	R - 2	737	3,760	5.1	14,740	20	50.5	
	R - 3	762	840	1.1	3,810	5	13.0	
	Total	1,575	5,240	3.3	20,070	12.7	68.7	
	I - 1							
I	I - 2	23	60	2.6	230	10	0.8	
	Total	23	60	2.6	230	10	0.8	
	Agriculture	490	100	0.2	490	1	1.7	
Others								
Non - Demand		31						
Sub - Total		2,289	7,500	3.3	29,230	12.8	100.0	
Miscellaneous			180		640			
TOTAL		2,289	7,680		29,870			

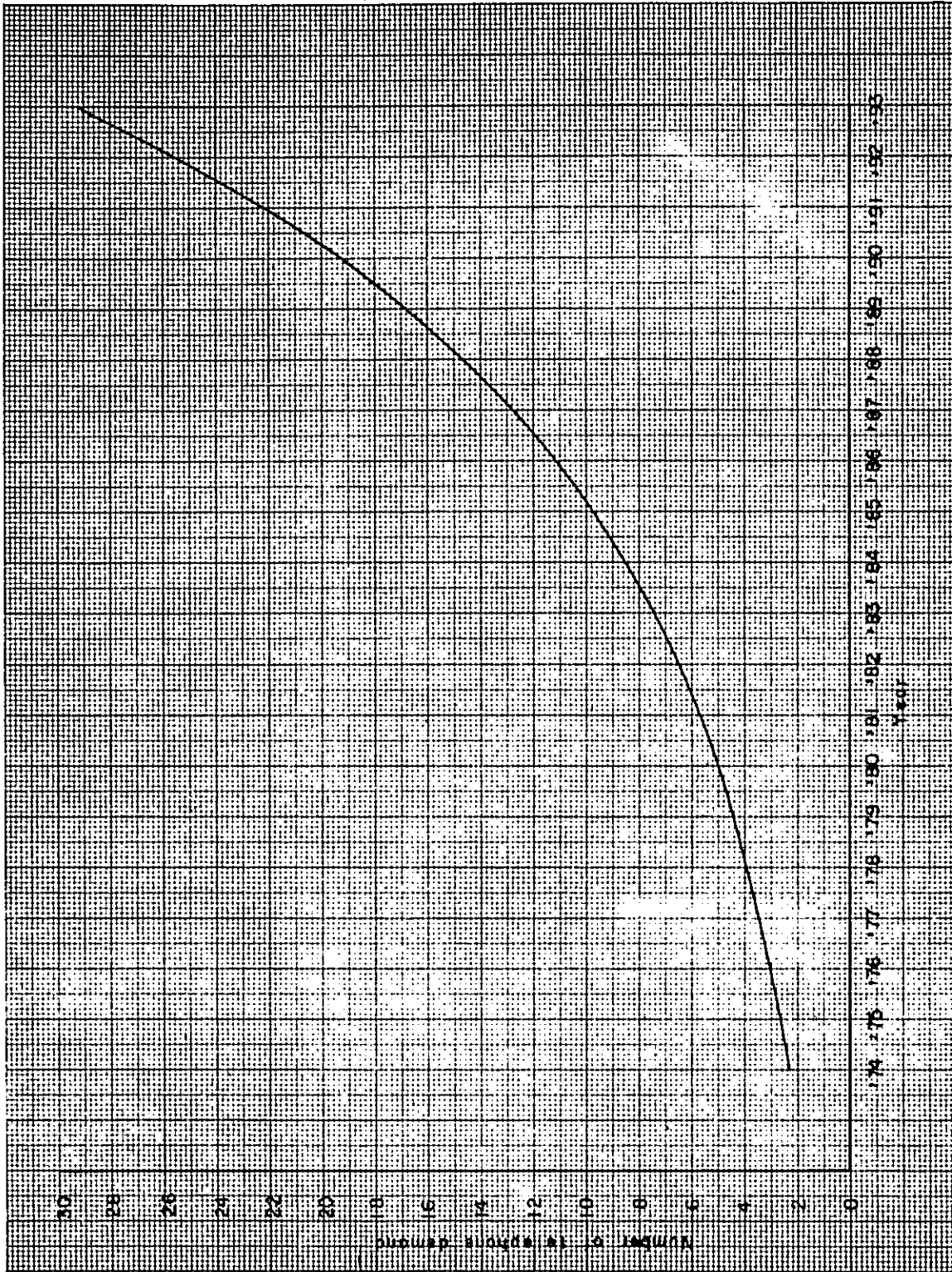


FIG.2-6-2-20-(7) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
 (KALIBATA EXCHANGE OFFICE)

TABLE 2-6-2-20-(8)
TELEPHONE DEMAND, POPULATION AND DIFFUSION
RATIO IN 1993 KALIBATA EXCHANGE AREA

(Excluding miscellaneous)

Area	(ha)	2,289
Telephone demand		29,200
Population		566,700
Household		113,340
Population density (Population/ha)		248
Diffusion ratio (Demand/100 inhabitants)		5.2
Diffusion ratio (Demand/100 households)		25.8

2.6.2.21 PASAR MINGGU

(1) General Description

The future service area of Pasar Minggu Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. As shown in Fig. 2.6.2.20.(1) and Table 2.6.2.21.(2), the area comprises 5 kelurahans.

The area size is 2,194 hectares and the population as of 1973 is approximately 63,600. It is located in the southern part of Jakarta. A large zoological garden and a sports center lie in the area. Excepting the northern part, almost all part of this area is a farm land.

In the vicinity of a bus terminal and a railway station in the northern district, many shops exist and a new residential area is developing.

The subscriber lines number 219 as of 1974 and, at present, are accommodated in existing Kebayoran Exchange Office and Jatinegara Exchange Office.

(2) Existing Service Area and Future Service Area

Fig. 2.6.2.21.(1) shows the future service area determined by the 2nd Five-Year Plan of PERUMTEL and the areas covered by existing Kebayoran Exchange Office and Jatinegara Exchange Office.

(3) Telephone Demand Forecast

1) Area Development Estimation

The field survey for telephone demand forecast was carried out by referring to the City Plan, the aerial photograph and the topographic map of Jakarta.

Through the field survey it was confirmed that a bus terminal and a railway station exist in kelurahan Pasar Minggu where a rapid pattern change is likely to take place along with the advancement of the urban development. Other kelurahans will remain to be an agricultural area though in some part small houses will be built.

2) Area Pattern

The area pattern map based on the field survey results is given in Fig. 2.6.2.21.(3). The telephone demand by area pattern as of 1983 and 1993 in each kelurahan is given in Table 2.6.2.21.(4).

3) Result of Telephone Demand Forecast

As given in Table 2.5.2.21.(5), the telephone demand as of 1993 in the future office service area is estimated to be 11,600 (including miscellaneous circuits), of which the demand for residential telephones accounts for 76% and that for business telephones 24%.

Fig. 2.6.2.21.(6) shows the demand trend forecasted for the period from 1974 through 1993. As seen in the Figure, the demand will increase gradually

until around 1983, and after that rather rapidly keeping pace with the urban development.

Fig. 2.6.2.21.(7) presents the population density per hectare.

(4) Conclusion

As shown in Table 2.6.2.21.(5), the telephone demand (including miscellaneous circuits) as of 1993 is forecasted to be 11,600, 14 times the demand as of 1974. The population as of 1993 will reach 367,500, approximately 6 times the population as of 1973. The telephone diffusion rate as of 1974 is 0.3 per 100 inhabitants, while the rate as of 1993 will be improved to 3.0, 10 times the rate as of 1974.

- PRESENT JATINEGARA AND KEBAYORAN EXCHANGE OFFICE SERVICE AREA
- - - PASAR MINGGU EXCHANGE OFFICE SERVICE AREA IN FUTURE
- · - · - JAKARTA SELATAN
- · - · - KECAMATAN
- - - - - KELURAHAN

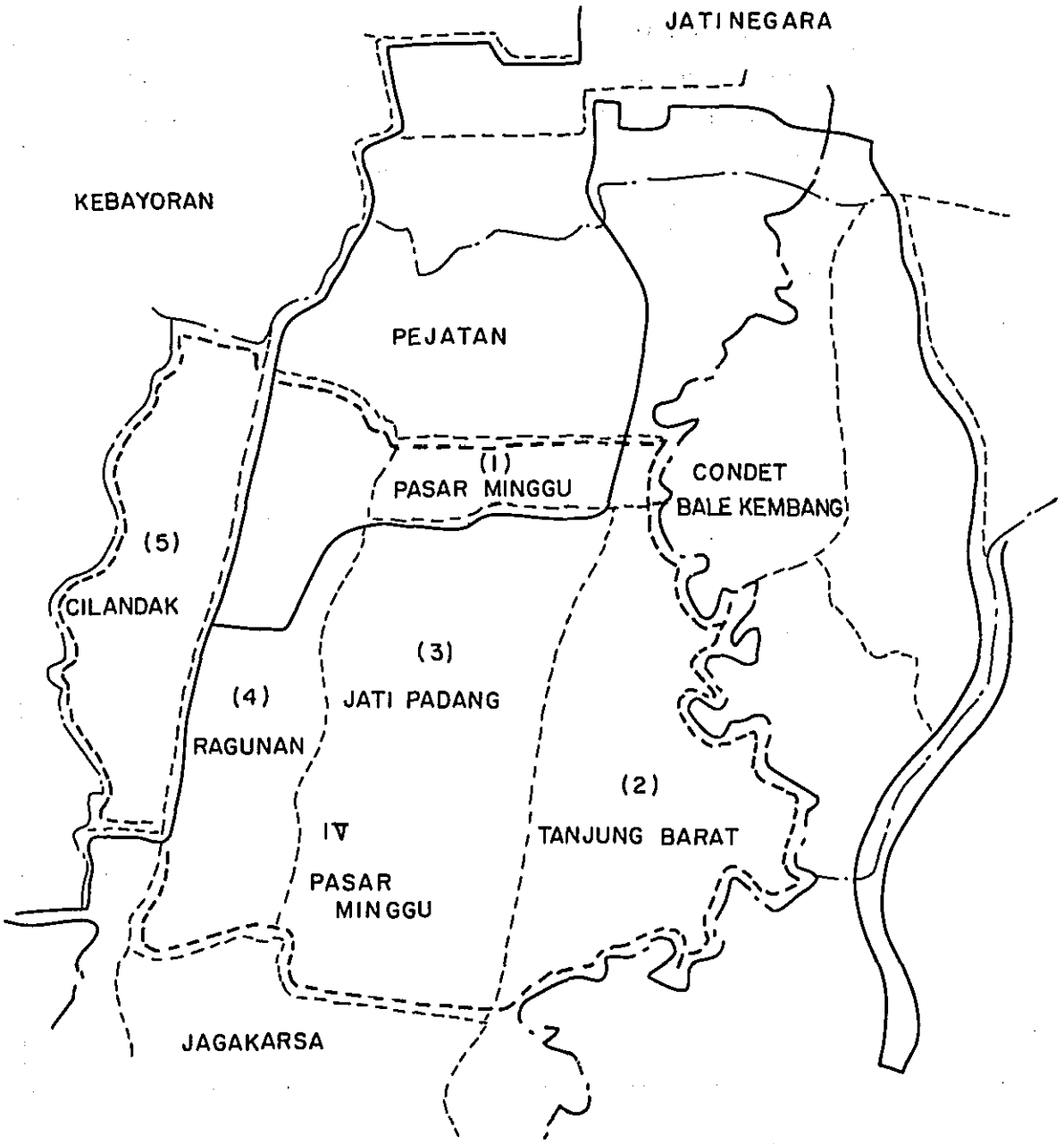


FIG. 2-6-2-21-(1) PASAR MINGGU EXCHANGE AREA

TABLE 2-6-2-21-(2) FUTURE PASAR MINGGU EXCHANGE
AREA AND TELEPHONE DEMAND

(Excluding miscellaneous)

Kecamatan	Kelurahan	Area (ha)	Telephone Demand in 1993	
PASAR MINGGU	Pasar Minggu	133	1,230	
	Tanjung Barat	524	1,722	
	Jati Padang	718	3,339	
	Cilandak	375	2,494	
	Ragunan	444	2,628	
	TOTAL		2,194	11,413

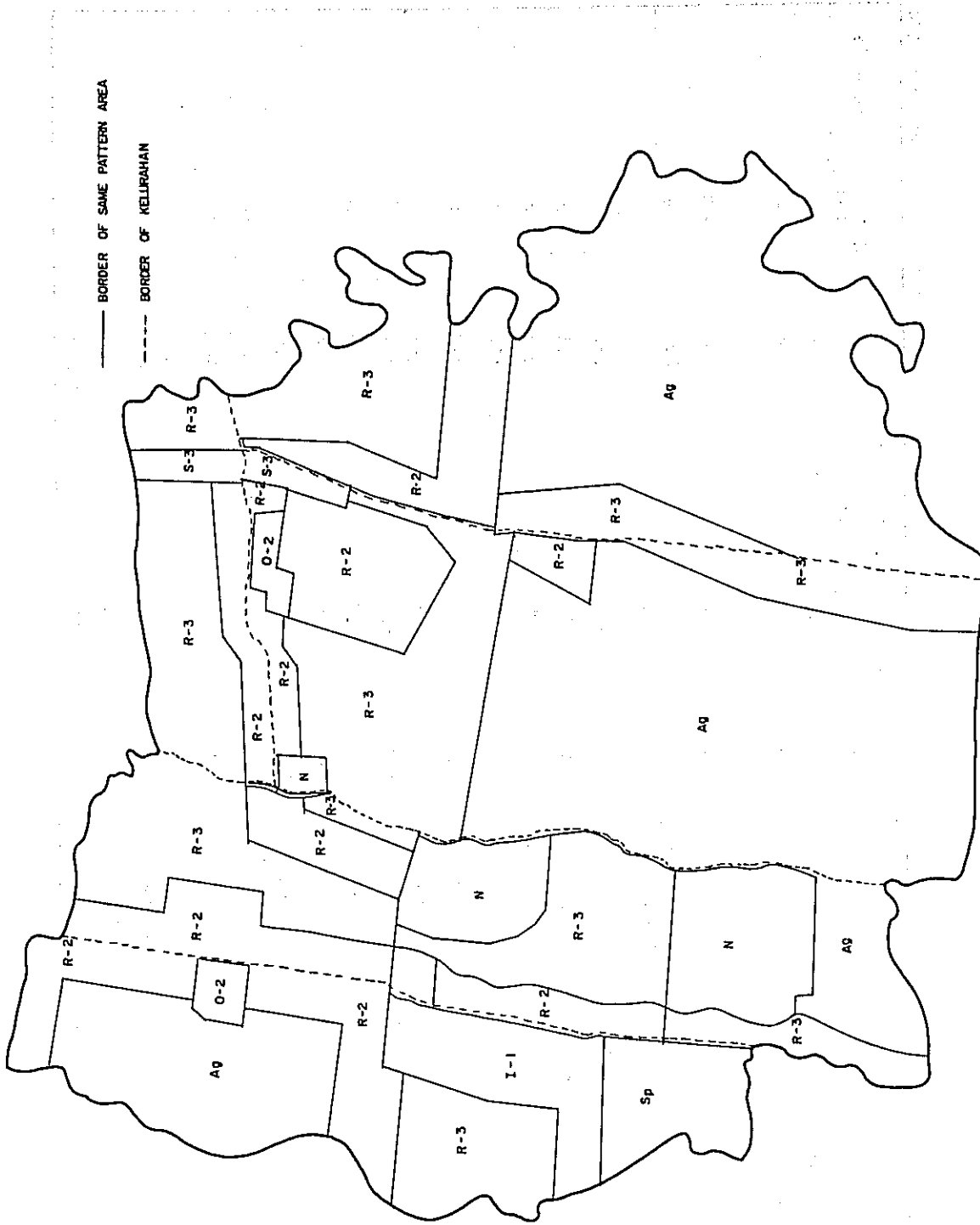


FIG. 2-6-2-21(3) AREA PATTERN MAP (PASAR MINGGU)

TABLE 2-6-2-21-(4)1/2 PASAR MINGU EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (1)

Survey Time : September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
PASAR MINGGU	Pasar Minggu (1)	R - 2	29	170	5.9	435	15		
		R - 3	85	145	1.7	425	5		
		Ag	10	5	0.5	10	1		
		S - 3	9	95	0.6	360	40		
		Sub Total		415	3.1	1,230	9.2		
	TOTAL		133	5	20				
	Tanjung Barat (2)	R - 2		55	170	3.1	825	15	
		R - 3		107	100	0.9	535	5	
		Ag		362	55	0.2	362	1	
		Sub Total			325	0.6	1,722	3.3	
Miscellaneous				5		20			
TOTAL			524	330		1,744			
Jati Padang (3)	R - 2		85	190	2.2	1,275	15		
	R - 3		193	125	0.6	965	5		
	Ag		419	40	0.1	419	1		
	S - 3		6	65	10.8	240	40		
	O - 2		11	185	16.8	440	40		
TOTAL			4						
		Sub Total		605	0.8	3,339	4.6		
		Miscellaneous		20		65			
	TOTAL		718	625		3,404			

TABLE 2-6-2-21-(4) 2/2 PASAR MINGGU EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (2)

Survey Time : September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
PASAR MINGGU	Ragunan (4)	R - 2	107	430	4.0	1,605	15		
		R - 3	196	185	0.9	980	5		
		Ag	43	10	0.2	43	1		
		N	98						
		Sub Total		625	1.4	2,628	5.9		
		Miscella - neous		5		25			
		TOTAL		444		2,653			
		Cilandak (5)	R - 2	82	340	4.1	1,230	15	
			R - 3	40	55	1.4	200	5	
			Ag	129	20	0.2	129	1	
			O - 2	9	155	17.2	360	40	
			I - 1	68	210	1.8	340	5	
			Sp	47			235		
		Sub Total		780	2.1	2,494	6.0		
	Miscella - neous		25		70				
	TOTAL		375		2,564				

TABLE 2-6-2-21-(5) PASAR MINGGU EXCHANGE OFFICE
TELEPHONE DEMAND

Survey Time : September 1974

Classification	Item	Area (ha)	1983		1993		Remarks
			Demand	Demand density	Demand	Demand density (%)	
S	S - 1						
	S - 2						
	S - 3	15	155	10.3	600	40	5.3
	Total	15	155	10.3	600	40	5.3
O	O - 1						
	O - 2	20	340	17.0	800	40	7.0
	Total	20	340	17.0	800	40	7.0
R	R - 1						
	R - 2	358	1,330	3.7	5,370	15	47.0
	R - 3	621	580	0.9	3,105	5	27.2
	Total	979	1,910	2.0	8,475	8.6	74.2
I	I - 1	68	125	1.8	340	5	5.0
	I - 2						
	Total	68	125	1.8	340	5	5.0
Agriculture		963	140	0.2	963	1.0	8.5
Others		47	80	1.7	235	5.0	2.1
Non - Demand		102					
Sub - Total		2,194	2,750	1.3	11,413	5.2	100.0
Miscellaneous			60		187		
TOTAL		2,194	2,810		11,600		

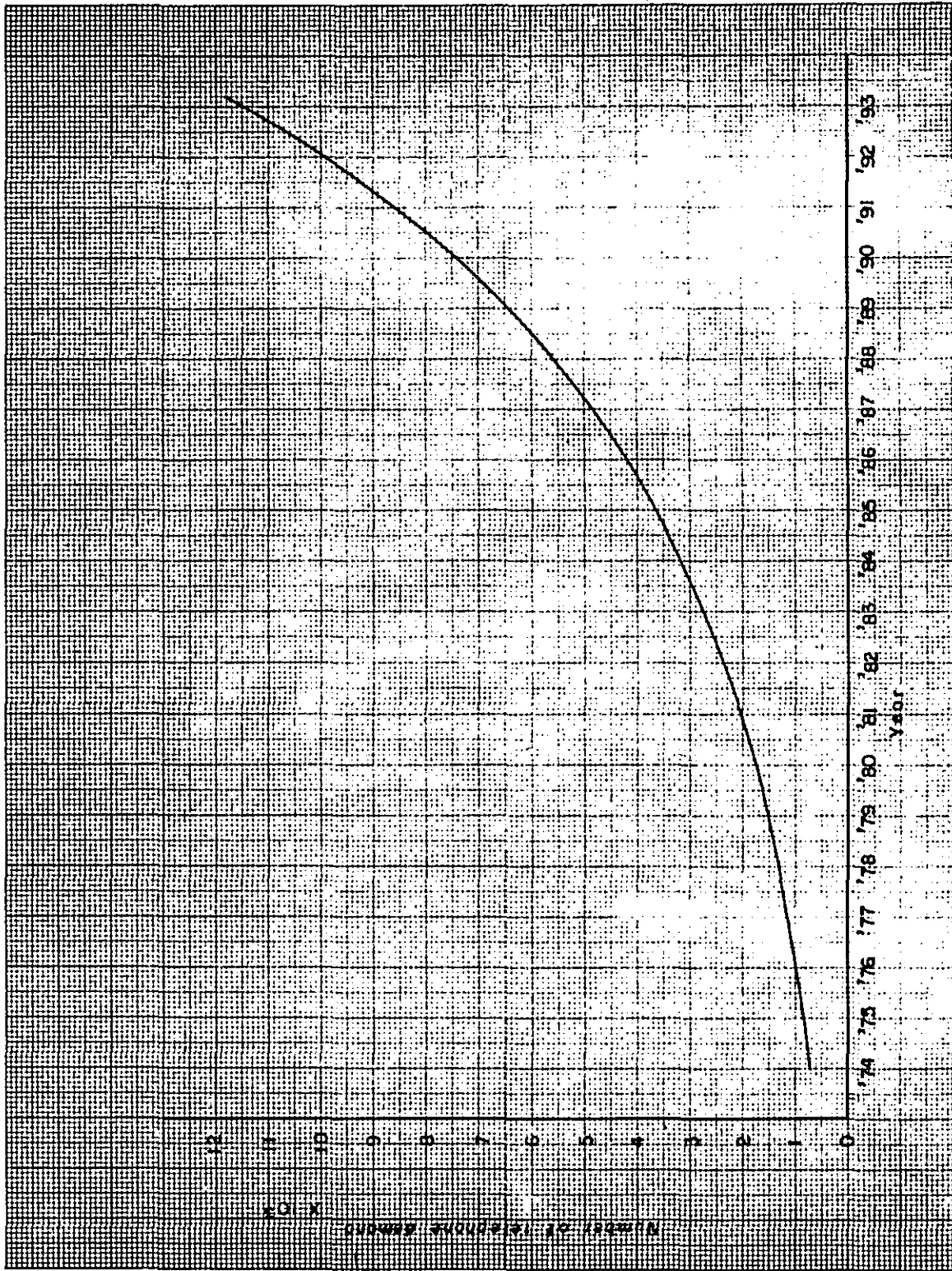


FIG. 2-6-2-21-(6) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
(PASAR MINGU EXCHANGE OFFICE)

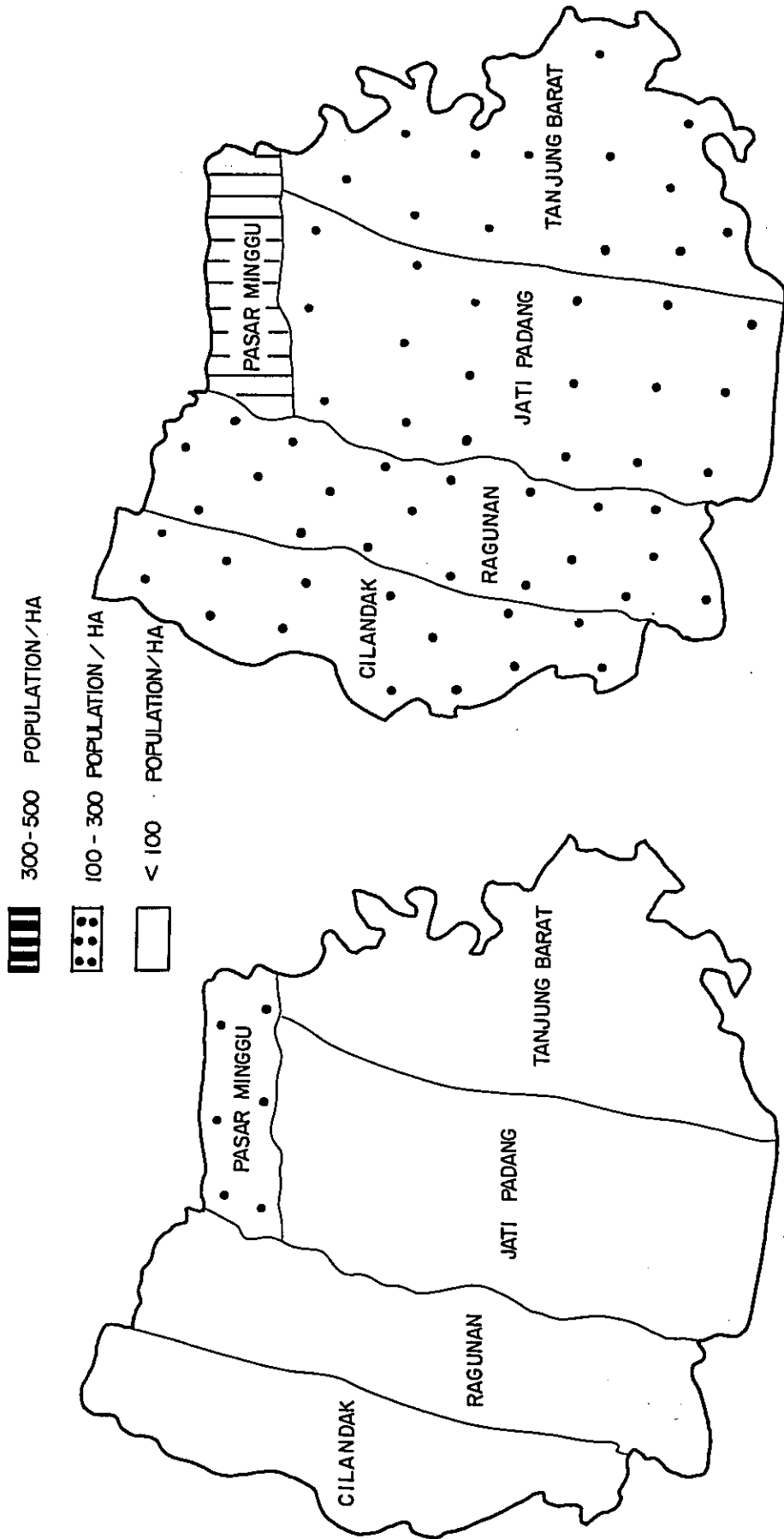


FIG . 2-6-2-21-(7) POPULATION DENSITY
(PASAR MINGGU)

TABLE 2-6-2-21-(8)

ANNUAL REPORT

1993

TELEPHONE DEMAND, POPULATION AND DIFFUSION RATIO IN 1993

PASAR MINGU EXCHANGE AREA

(Excluding miscellaneous)

Area	(ha)	2,194
Telephone demand		11,400
Population		367,500
Household		75,300
Population density (Population/ha)		172
Diffusion ratio (Demand/100 inhabitants)		3.0
Diffusion ratio (Demand/100 households)		15.1

2.6.2.22 JAGAKARSA

(1) General Description

The future service area of Jagakarsa Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. As shown in Fig. 2.6.2.22.(1) and Table 2.6.2.22.(2), the area comprises 4 kelurahans.

This service area located in the southern part of Jakarta is 2,064 hectares in size and, as of 1973, has a population of 34,000, with the population density of 16.6. Almost all parts of this area are agricultural areas.

Except the buildings of army in kelurahan Lenteng Agung, there scarcely exist any buildings and the road condition is not good as compared with other areas.

In the City Plan, many parts of this area are earmarked for green areas. They will remain to be agricultural areas even in the future.

At present no subscriber lines exist in this area.

(2) Future Service Area

The future Jagakarsa Exchange Office service area is shown in Fig. 2.6.2.22.(1). The area size and the telephone demand as of 1993 in each kelurahan is shown in Table 2.6.2.22.(2).

(3) Telephone Demand Forecast

1) Area Development Estimation

The field survey for telephone demand forecast was carried out by referring to the City Plan, the aerial photograph and the topographic map of Jakarta.

As for the area development as of 1993, it is estimated that the northern part of Ciganjur and part of Lenteng Agung and Serengseng Sawah will become middle or low class residential areas and all the other areas will be agricultural and marshy areas with no telephone demand at all.

2) Area Pattern

Table 2.6.2.22.(3) presents the area size and the telephone demand by area pattern, while Table 2.6.2.22.(4) presents the estimated area pattern map, both being based on the survey results.

3) Result of Telephone Demand Forecast

As shown in Table 2.6.2.22.(3), the telephone demand as of 1993 in the future Jagakarsa Exchange Office service area is estimated to be 5,880 (including miscellaneous circuits), of which demand for residential telephones accounts for 90% and that for business telephones 10%. Table 2.6.2.22.(5) presents the demand by area pattern as of 1983 and 1993 in each kelurahan.

Fig. 2.6.2.22.(6) shows the demand increase during the period from 1974 through 1993. As seen in the Figure, the demand as a whole is estimated to in-

crease gradually, with a rather sharp increase after 1984 keeping pace with the urban development.

Fig. 2.6.2.22.(7) shows the population density per hectare.

(4) Conclusion

Table 2.6.2.22.(8) gives the telephone demand density, population, number of households, population density and telephone diffusion rate as of 1993 in the future Jagakarsa Exchange Office service area.

At present no telephone lines exist in this area. At least the public telephones should be installed there urgently.

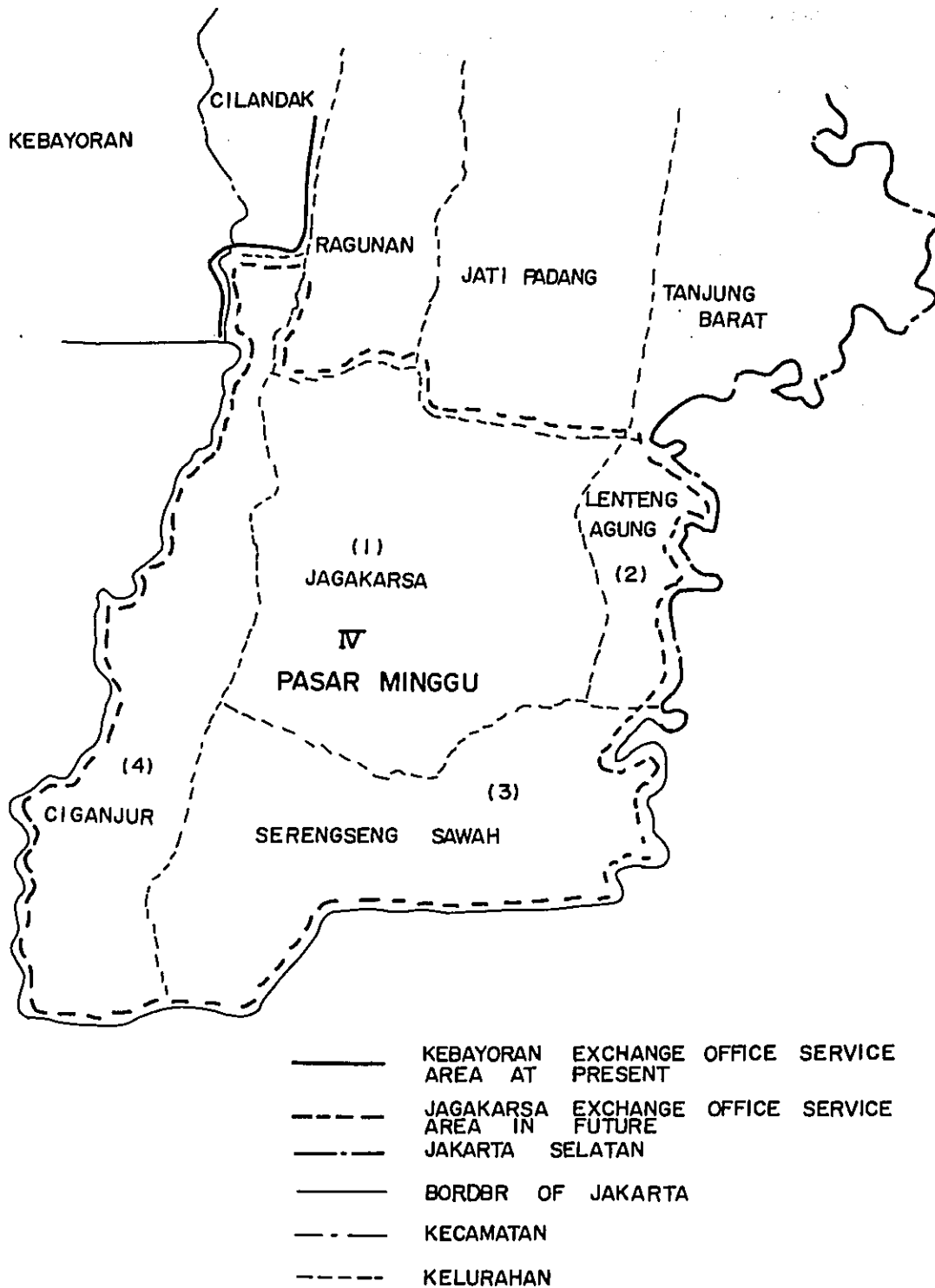


FIG. 2-6-2-22-(1) JAGAKARSA EXCHANGE OFFICE SERVICE AREA

TABLE 2-6-2-22-(2)
FUTURE JAGAKARSA EXCHANGE AREA AND TELEPHONE DEMAND

(Excluding miscellaneous)

Kecamatan	Kelurahan	Area (ha)	Telephone Demand In 1993	
PASAR MINGGU	Jagakarsa	735	2,163	
	Lenteng Agung	159	501	
	Srengseng Sawah	604	2,128	
	Ciganjur	566	1,008	
	TOTAL		2,064	5,800

TABLE 2-6-2-22-(3)
JAGAKARSA EXCHANGE OFFICE TELEPHONE DEMAND

Survey Time : September 1974

Classification	Item	Area (ha)	1983		1993		Remarks
			Demand	Demand density	Demand	Demand density (%)	
S	S - 1						
	S - 2						
	S - 3	9	80	8.9	360	40	6.2
	Total	9	80	8.9	360	40	6.2
O	O - 1						
	O - 2	5	40	8.0	200	40	3.5
	Total	5	40	8.0	200	40	3.5
R	R - 1						
	R - 2	81	280	3.5	1,215	15	20.9
	R - 3	558	470	0.8	2,790	5	48.1
	Total	639	750	1.2	4,005	6.3	69.0
I	I - 1						
	I - 2						
	Total						
Agriculture		1,235	180	0.15	1,235	1	21.3
Others							
Non - Demand		176					
Sub - Total		2,064	1,050	0.5	5,800	2.8	100.0
Miscellaneous			20		80		
TOTAL		2,064	1,070		5,880		

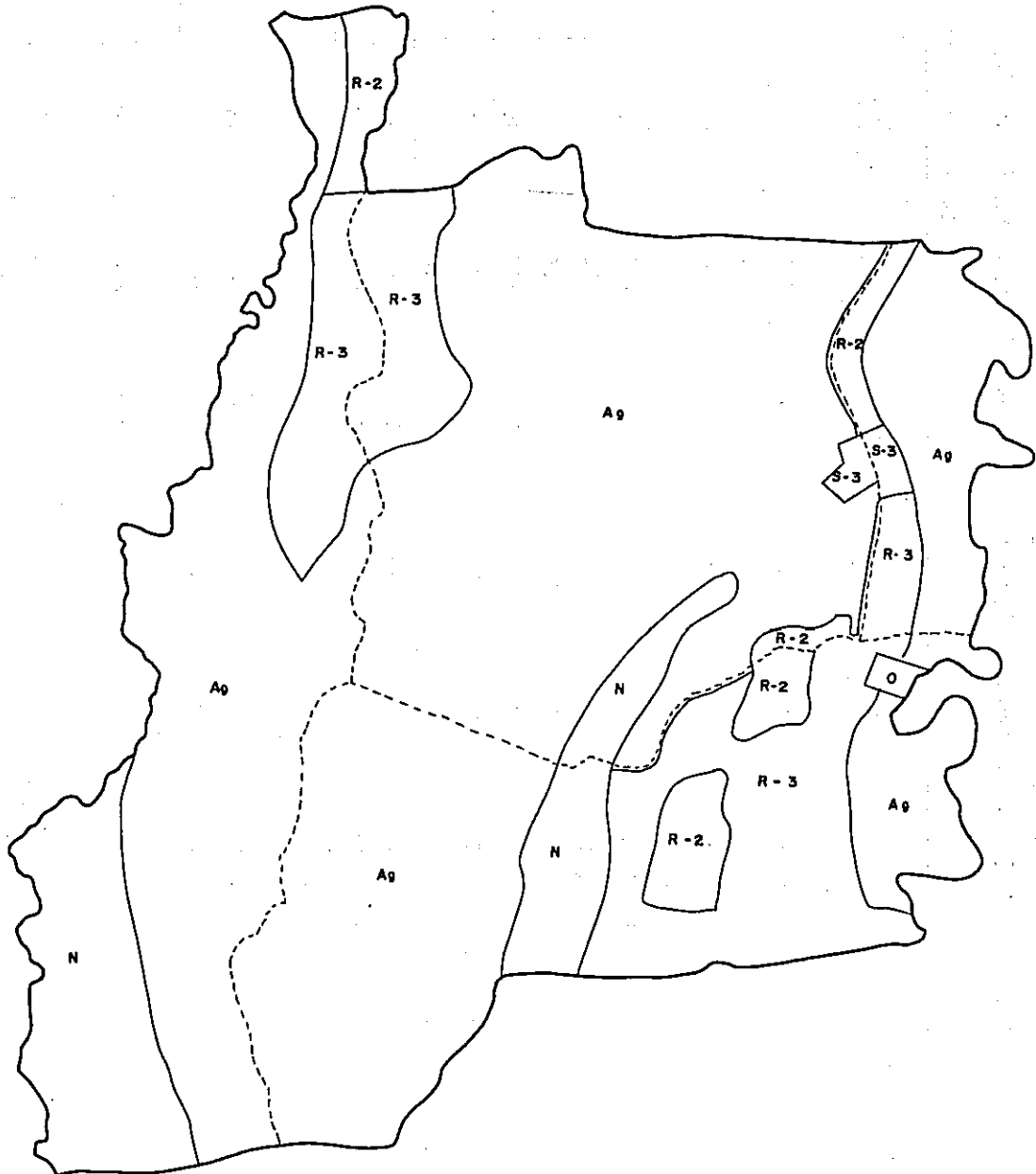


FIG. 2-6-2-22 - (4) AREA PATTERN MAP
(JAGAKARSA)

TABLE 2-6-2-22-(5)1/2
JAGAKARSA EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (1)

Survey Time: September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
PASAR MINGGU	Jagakarsa (1)	R-2	8	20	2.5	120	15		
		R-3	286	200	0.7	1,430	5		
		Ag	413	50	0.1	413	1		
		S-3	5	45	9.0	200	40		
		N	23						
		Sub Total		315	0.4	2,163	2.9		
	TOTAL	Miscellaneous			5		25		
			735	320		2,188			
		Lenteng Agung (2)	R-2	9	30	3.3	135	15	
			R-3	15	15	1.0	75	5	
			Ag	131	20	0.2	131	1	
			S-3	4	35	8.8	160	40	
Sub Total		100	0.6	501	3.1				
Miscellaneous		5		10					
Srengseng Sawah (3)	TOTAL		159	105		511			
	R-2	44	170	3.9	660	15			
	R-3	188	200	1.1	940	5			
	Ag	328	60	0.2	328	1			
	O-2	5	40	8.0	200	40			
	N	39							
TOTAL	Sub Total		470	0.8	2,128	3.5			
	Miscellaneous			5	35				
			604	475		2,163			

TABLE 2-6-2-22-(5) 2/2
 JAGAKARSA EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (2)

Survey Time: September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks
				Demand	Demand density	Demand	Demand density	
Ciganjur (4)	R-2		20	60	3.0	300	15	
	R-3		69	55	0.8	345	5	
	Ag		363	50	0.1	363	1	
	N		114	-	-	-	-	
	Sub Total			165	0.3	1,008	1.8	
	Miscellaneous			5		10		
	TOTAL		566	170		1,018		

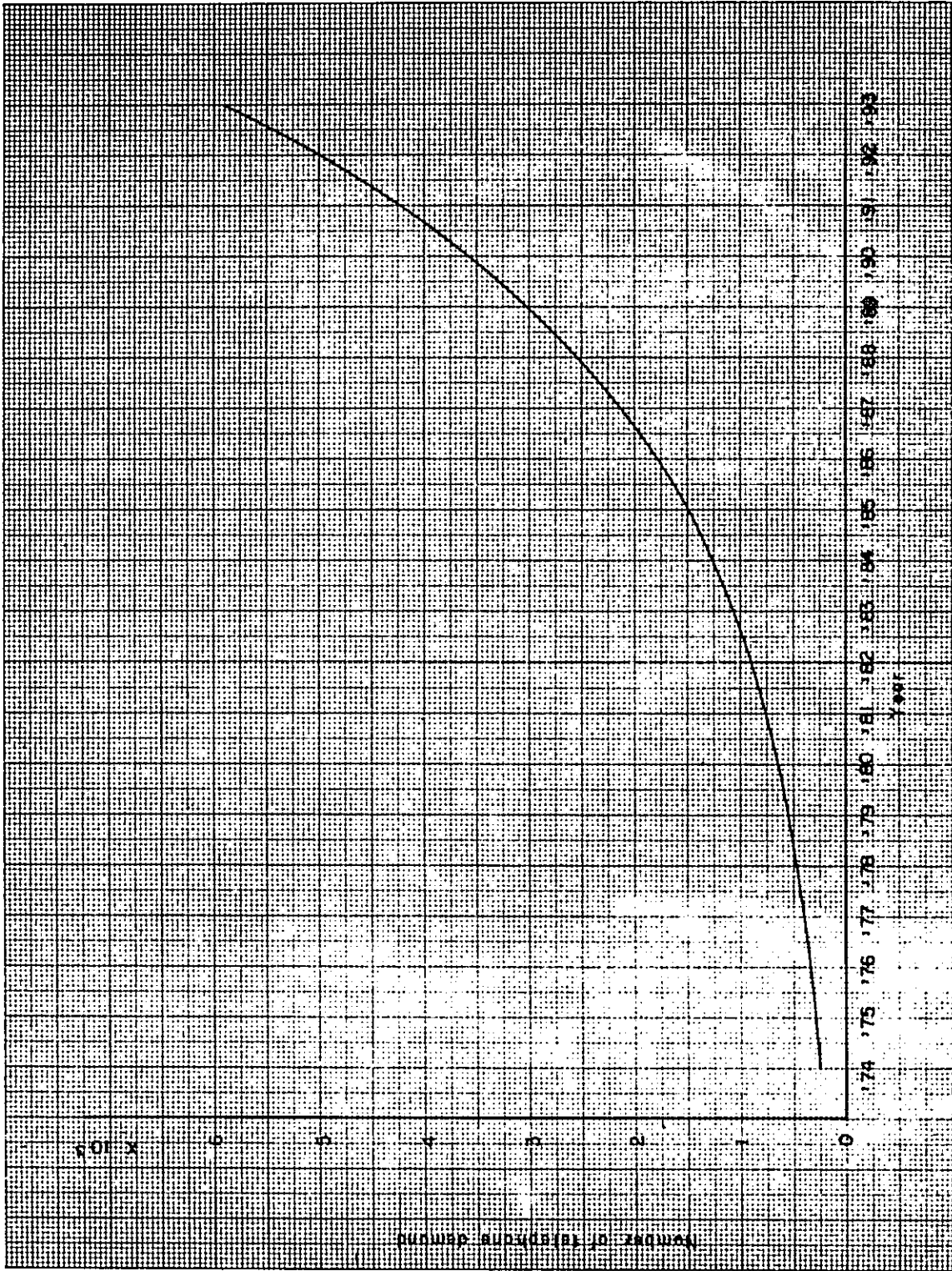


FIG. 2-6-2-22 - (6) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
 (JAGAKARSA EXCHANGE OFFICE)

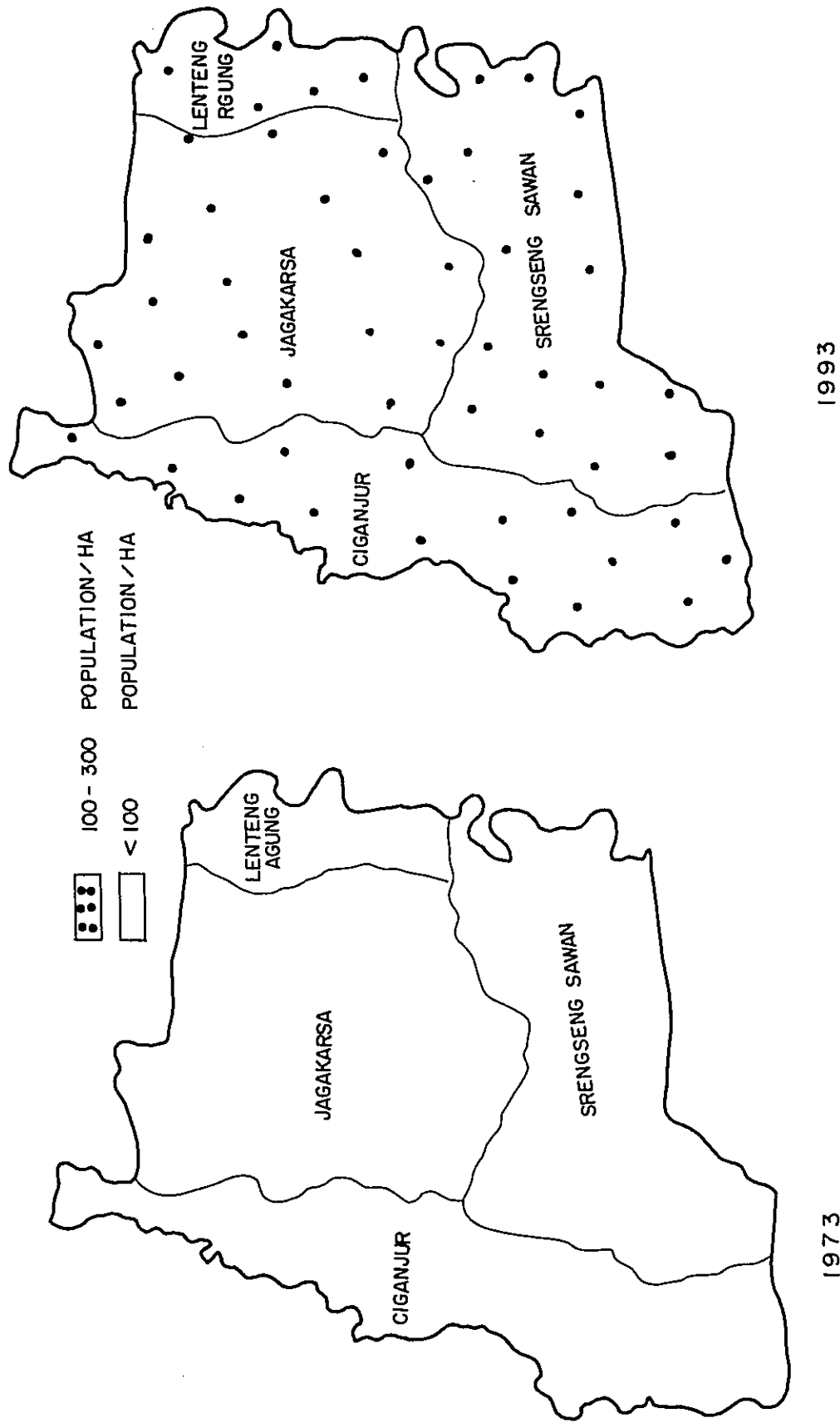


FIG. 2-6-2-22-(7) POPULATION DENSITY
(JAGAKARSA)

TABLE 2-6-2-22-(8)
TELEPHONE DEMAND, POPULATION AND DIFFUSION
RATIO IN 1993 JAGAKARSA EXCHANGE AREA

(Excluding miscellaneous)

Area	(ha)	2,064
Telephone demand		5,800
Population		321,400
Household		64,280
Population density (Population/ha)		156
Diffusion ratio (Demand/100 inhabitants)		1.8
Diffusion ratio (Demand/100 households)		9.0

2.6.2.23 JATINEGARA

(1) General Description

The future service area of Jatinegara Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. From the viewpoint of the future telephone network of Jakarta, it is also suitable and we forecasted the demand in this area.

Jatinegara is located a little to the east of the center of Jakarta. In and around this area run a number of main streets. At the center of this area lies the Jatinegara Station, one of the main railway stations in Jakarta. In addition, Jatinegara has a number of shopping areas, middle and small scale business areas and residential areas. In its prosperity, Jatinegara follows Gambir and Kota.

According to statistics of 1972 compiled by D.K.I., the future service area is 1,802 hectares in size and has 70,615 households with a population of 368,783.

(2) Existing Service Area and Future Service Area

The existing service area of Jatinegara Exchange Office includes major part of the future service areas of Jatinegara, Rawamangun, Tebet and Cawang exchange offices, in addition part of Kalibata, Penggilingan, Klender, Pasar Pebo, Pasar Minggu, Gabmir and Cempaka Putih Exchange Office service areas.

Fig. 2.6.2.23.(1) shows the existing and the future service areas of Jatinegara Exchange Office.

(3) Telephone Demand Forecast

1) Area Development Estimation

In our telephone demand forecast, we used as major reference the City Plan, the city map and the aerial photograph. The field survey was carried out by referring to these data.

In Kebon Manggis and Palmeriam a number of high buildings are observed. The shopping areas along the Raya Jatinegara Barat and the Raya Jatinegara Timur are flourishing. In the future these areas will develop as a business office and shopping area, together with Kampung Meleyu, Bali Mester, Raya Matraman and Otto Iskandardinata.

Many middle class and high class residential areas are found in Cip. Cempedak.

In the eastern part of Jatinegara the agricultural area remains but will develop as a residential area in the future.

Fig. 2.6.2.23.(2) presents the telephone density forecast.

2) Area Pattern

In accordance with the Area Pattern Standard described in Section 2.6.1.(6), the area pattern map as of 1992 is drawn up as shown in Fig. 2.6.2.23.(3).

3) Results of Demand Forecast

The telephone demand as of 1993 in each kelurahan based on the area pattern map mentioned in the preceding paragraph 2) is given in Table 2.6.2.23-(4), together with the demand as of 1977 and 1982 calculated based on the demand as of 1992.

Table 2.6.2.23.(5) presents the demand in each area pattern summed up by the demand of Table 2.6.2.23.(4). As seen in the table, the demand as of 1992 in the S area accounts for 10%, in the O area 22%, in the R area 67% and in the I area 1%.

Table 2.6.2.23.(6) presents the demand by area pattern as of 1993.

Table 2.6.2.23-(7) presents the area size and the telephone demand as of 1993 in each kelurahan.

The existing subscriber lines in the future Jatinegara Exchange Office service area number 1,417. The telephone demand as of 1973 is estimated to be 4,500, including the potential demand. Fig. 2.6.2.23.(8) shows the telephone demand during the period from 1974 through 1993.

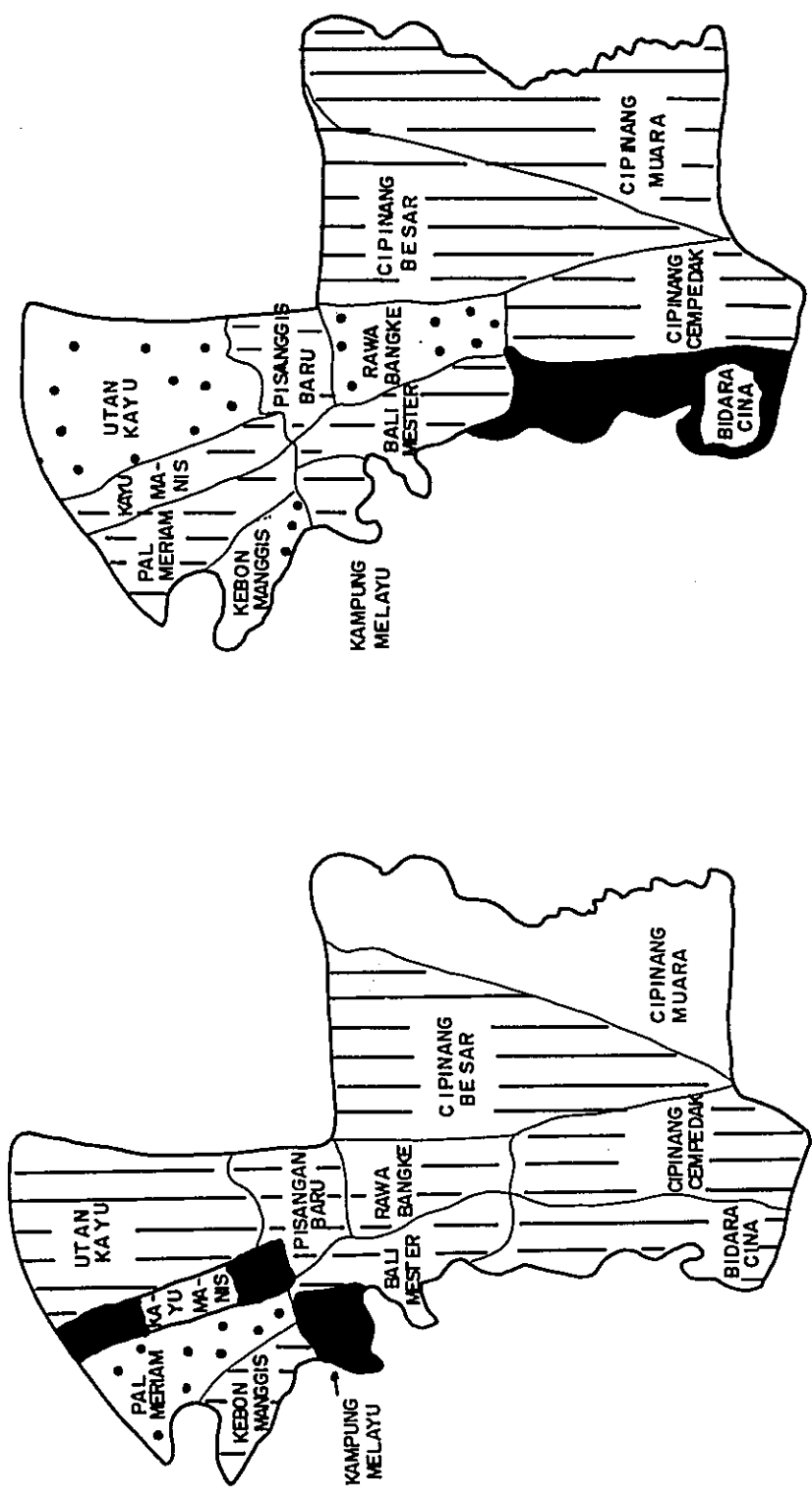
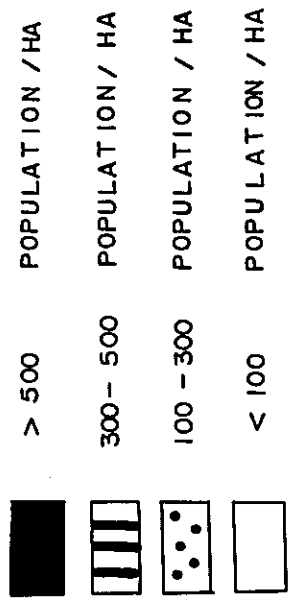
(4) Conclusion

Table 2.6.2.23.(9) shows the telephone demand, population, number of households, population density and telephone diffusion rate as of 1973, 1977, 1992 and 1993.

The telephone demand as of 1993 is estimated to be 37,680, which is 27 times the number of the existing subscriber lines.

The population as of 1993 is estimated at 571,520, which is 1.5 times the population in 1973.

The telephone diffusion rate per 100 inhabitants is 0.38 at present and will be 6.59 times as much in 1993.



1972
1993
FIG. 2-6-2-23-(2) POPULATION DENSITY (JATINEGARA)

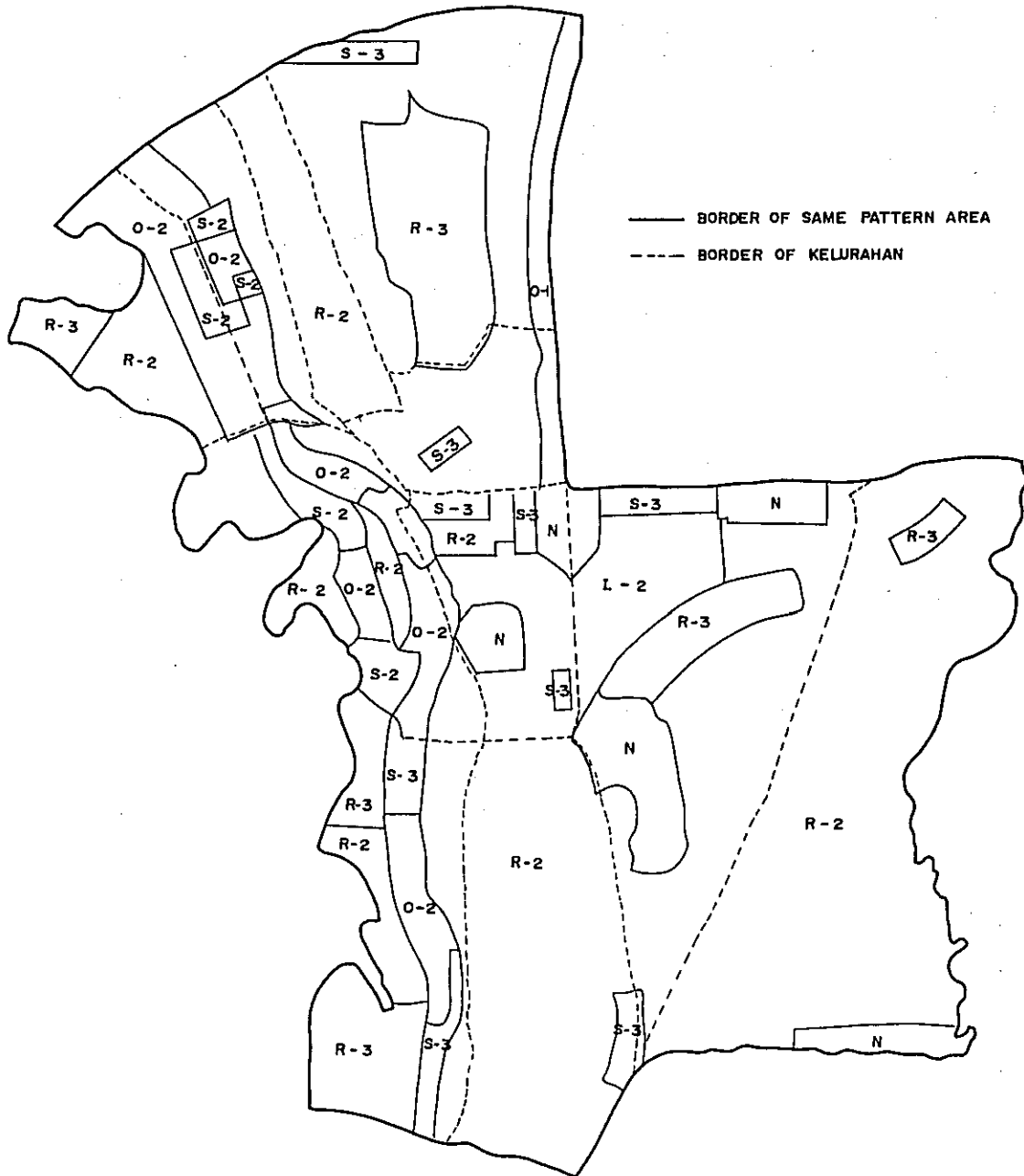


FIG. 2-6-2-23-(3) AREA PATTERN MAP
(JATINEGARA)

TABLE 2-6-2-23-(4) 1/4 JATINEGARA TELEPHONE EXCHANGE OFFICE (1)

Survey Time : January 1974

Kecamatan	Kelurahan	Pat tern	Area (ha)	1 9 7 7		1 9 8 2		1 9 9 2		
				Demand	Demand density	Demand	Demand density	Demand	Demand density	
MATRAMAN	Kebon Manggis (1)	1 R - 2	32	220	6.9	350	11.0	620	19.4	
		2 R - 3	17	30	1.8	90	5.3	110	6.5	
		3 S - 2	9	160	17.8	280	31.1	520	57.8	
		4 O - 2	22	230	10.5	560	25.5	1,050	47.7	
		Sub Total	80	640	8.0	1,280	16.0	2,300	28.8	
		Miscellaneous		25		50		95		
		T O T A L		80	665		1,330	2,395		
		Pal Meriam (2)	1 R - 2	32	160	5.0	310	9.7	610	19.1
	2 S - 2		6	80	13.3	170	28.3	340	56.7	
	3 O - 2		44	470	10.7	1,100	25.0	2,100	47.7	
		Sub Total	82	710	8.6	1,580	19.3	3,050	37.2	
		Miscellaneous			35	85		165		
	T O T A L		82	745		1,665	3,215			
	Kayu Manis (3)	1 R - 2	48	240	5.0	460	9.6	910	19.0	
Sub Total		48	240	5.0	460	9.6	910	19.0		
Miscellaneous			5	5		10				
	T O T A L		48	245		465	920			

TABLE 2-6-2-23-(4) 2/4 JATINEGARA TELEPHONE EXCHANGE OFFICE (2)

Survey Time: January 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1977		1982		1992		
				Demand	Demand density	Demand	Demand density	Demand	Demand density	
MATRAMAN	Utian Kayu (4)	1 R-2	92	300	3.3	530	5.8	1,700	18.5	
		2 R-3	100	60	0.6	180	1.8	840	8.4	
		3 S-3	5	15	3.0	35	7.0	170	34.0	
		4 0-1	17	75	4.4	200	11.8	1,400	82.4	
	Sub Total		214	450	2.1	945	4.4	4,110	19.2	
	Miscellaneous			10		20		130		
	TOTAL			214	460		965		4,240	
	Pisangan Baru (5)	1 R-2		225	350	1.6	770	3.4	3,700	16.4
		2 S-3		7	10	1.4	30	4.3	230	32.9
		3 0-1		16	85	5.3	200	12.5	1,200	75.0
Sub Total			248	445	1.8	1,000	4.0	5,130	20.7	
Miscellaneous				10		25		130		
TOTAL			248	455		1,025		5,260		
JATINEGARA	Kampung Melayu (6)	1 R-2	20	230	11.5	290	14.5	390	19.5	
		2 R-3	17	60	3.5	100	5.9	160	9.4	
		3 S-2	8	150	18.8	250	31.3	460	57.5	
		Sub Total	45	440	9.8	640	14.2	1,010	22.4	
	Miscellaneous			10		10		20		
TOTAL			45	450		650		1,030		

TABLE 2-6-2-23-(4) 3/4 JATINEGARA TELEPHONE EXCHANGE OFFICE (3)

Survey Time: January 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1977		1982		1992		
				Demand	Demand density	Demand	Demand density	Demand	Demand density	
JATINEGARA	Bali Mester (7)	1	44	490	11.1	840	19.1	1,210	27.5	
		2	6	160	26.7	230	38.3	350	58.3	
		3	25	640	25.6	830	33.2	1,210	48.4	
		Sub Total	75	1,290	17.2	1,900	25.3	2,770	36.9	
	Miscellaneous			55		75		110		
	TOTAL			75		1,975		2,880		
	Bidara Cina (8)	1	R - 2	82	170	2.1	340	4.1	1,400	17.1
		2	R - 3	111	180	1.6	320	2.9	980	8.2
		3	S - 3	15	150	10.0	240	16.0	550	36.7
		4	O - 2	10	110	11.0	170	17.0	410	41.0
Sub Total			28	610	2.8	1,070	4.9	3,340	15.3	
Miscellaneous				15		25		70		
TOTAL			218	625		1,095		3,410		
Cipinang - Cempedak (9)	1	R - 2	159	1,210	7.6	1,830	11.5	3,070	19.3	
	2	S - 3	10	160	16.0	240	24.0	380	38.0	
	Sub Total		169	1,370	8.1	2,070	12.2	3,450	20.4	
	Miscellaneous			15		25		40		
TOTAL			169	1,385		2,095		3,490		

TABLE.2-6-2-23-(4) 4/4 JATINEGARA TELEPHONE EXCHANGE OFFICE (4)

Survey Time: January 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1977		1982		1992		
				Demand	Demand density	Demand	Demand density	Demand	Demand density	
JATINEGARA	Rawa Bangke (10)	1 R-2	15	240	16.0	260	17.3	420	28.0	
		2 R-3	44	160	3.6	250	5.7	430	9.8	
		3 S-3	8	150	18.8	210	26.3	310	38.8	
		4 N	20							
		Sub Total		87	550	6.3	720	8.2	1,160	13.3
		Miscellaneous			10		10		20	
		TOTAL		87	560		730		1,180	
		Cipinang - Besar (11)	1 R-2	80	430	5.4	800	10.0	1,520	19.0
	2 R-3		45	130	2.9	220	4.9	430	9.6	
	3 S-3		6	60	10.0	120	20.0	230	38.3	
	4 I-2		34	120	3.5	200	5.9	330	9.7	
	5 N		71							
	Sub Total		236	740	3.1	1,340	5.7	2,510	10.6	
	Miscellaneous			15		25		45		
	TOTAL		236	755		1,365		2,555		
	Cipinang - Muara (12)	1 R-2	253	95	0.4	330	1.3	3,900	15.4	
2 R-3		23	5	0.2	20	0.9	190	8.3		
3 N		24								
	Sub Total		300	100	0.3	350	1.2	4,090	13.6	
	Miscellaneous			0		5		40		
	TOTAL		300	100		355		4,130		

TABLE 2-6-2-23-(6) AREA PATTERN IN 1993

(JATINEGARA)

(Excluding miscellaneous)

Classification	Item	Area (ha)	Area (%)	Demand	Demand (%)	D/ha
S	S - 1					
	S - 2	29	1.6	1,740	4.6	60
	S - 3	51	2.8	2,040	5.4	40
	Total	80	4.4	3,780	10.0	47
O	O - 1	33	1.8	3,300	8.8	100
	O - 2	101	5.6	5,050	13.4	50
	Total	134	7.4	8,350	22.2	62
R	R - 1					
	R - 2	1,082	60.1	21,640	57.4	20
	R - 3	357	19.8	3,570	9.5	10
	Total	1,439	79.9	25,210	66.9	18
I	I - 1					
	I - 2	34	1.9	340	0.9	10
	Total	34	1.9	340	0.9	10
Agriculture						
N		115	6.4			
TOTAL		1,802	100.0	37,680	100.0	21

TABLE 2-6-2-23-(7) FUTURE JATINEGARA EXCHANGE
AREA AND TELEPHONE DEMAND

(Excluding miscellaneous)

Kecamatan	Kelurahan	Area size (ha)	Telephone Demana in 1993
Matraman	Kebon Manggis	80.0	2,450
	Pal Meriam	82.0	3,200
	Kayu Manis	48.0	960
	Utan Kayu	214.0	4,740
	Pisangan Baru	248.0	6,380
Jatinegara	Kampung Melayu	45.0	1,050
	Bali Mester	75.0	2,490
	Bidara Cina	218.0	3,850
	Cip. Cempedak	169.0	3,580
	Rawa Bangke	87.0	1,060
	Cip. Besar	236.0	2,630
	Cip. Muara	300.0	5,290
TOTAL		1.802.0	37,680

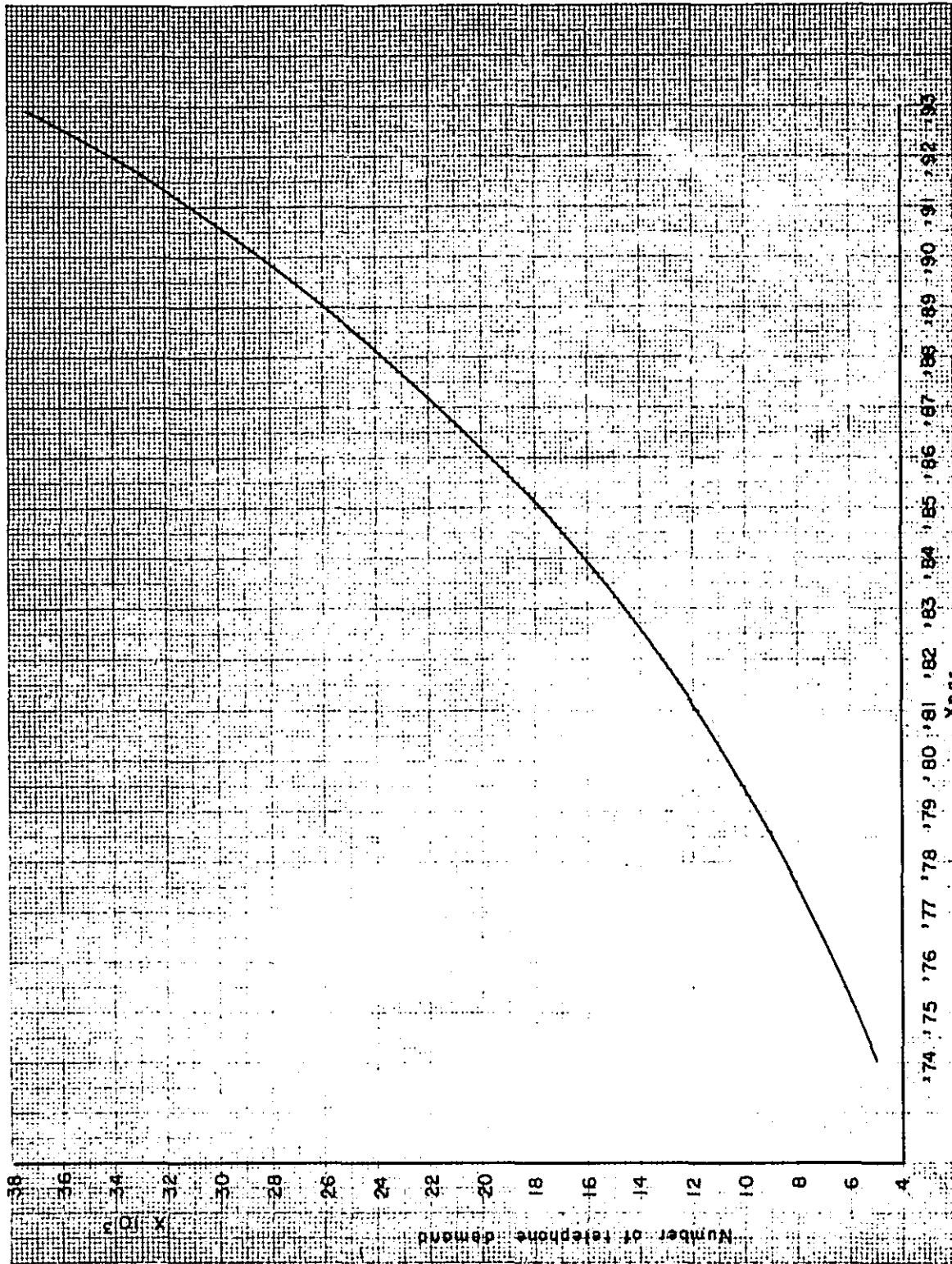


FIG. 2-6-2-23-(8) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
 (JATINEGARA EXCHANGE OFFICE)

TABLE 2-6-2-23-(9) DEMAND, POPULATION AND
DIFFUSION RATIO
(JATINEGARA)

(Excluding miscellaneous)

Year Item	1973	1977	1982	1992	1993
Area (ha)	1,802	1,802	1,802	1,802	1,802
Demand	* 1,420	7,590	13,360	33,830	37,680
	1.0	5.4	9.4	23.9	26.6
** Population	374,000	407,000	450,000	560,000	571,520
	1.0	1.1	1.2	1.5	1.5
** Household	71,600	81,400	90,000	112,000	114.300
	1.0	1.1	1.3	1.6	1.6
Population density (Population/ha)	208	226	250	311	317
	1.0	1.1	1.2	1.5	1.5
Diffusion ratio (Demand/ 100 inhabitants)	0.38	1.86	2.97	6.04	6.59
	1.0	4.9	7.8	15.9	17.3
Diffusion ratio (Demand/ 100 households)	1.98	9.32	14.84	30.21	32.97
	1.0	4.7	7.5	15.3	16.7

Note : Down side figure is ratio to 1973.

Remarks :

* The number of subscribers as of December 1973.

** The number of population and households which was calculated on the basis of the statistics of D.K.I., assuming that its increasing ratio is 2.1% Per year.

2.6.2.24 CAWANG

(1) General Description

The future service area of Cawang Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. This area has the Halim International Airport which was inaugurated on January 10, 1974, with President Soeharto in attendance.

The northern side of this area adjoins the service area of Jatinegara Exchange Office, with the Let. Jen. Haryno M.T. Street as a border line. The southern side adjoins the future Pasarrebo Exchange Office service area, while the western side is bordered by the Kali Ciliwung River.

According to statistics of 1972 compiled by D.K.I., this service area is 2,660 hectares in size, with a population of 120,167 and 22,341 households.

Of the buildings in this area, 22.5% are permanent buildings, and 77.5% are semi-permanent or temporary buildings. The ratio of permanent buildings in this area is almost equal to the average ratio of 21.3 for the whole Jakarta area.

At present, the telephone service in this area is covered by Jatinegara Exchange Office. The existing subscriber lines number 98 as of November 1974.

(2) Existing Service Area and Future Service Area

The future service area of Cawang Exchange Office determined by the 2nd Five-Year Plan of PERUMTEL is the object area of our study.

The existing subscriber lines are accommodated at existing Jatinegara Exchange Office. The future exchange office service area is shown in Table 2.6.2.24.(1) and Fig. 2.6.2.24.(2). The future service area comprises 9 kelurahans (or 1 kecamatan).

(3) Telephone Demand Forecast

1) Area Development Estimation

In our area development estimation we used as major references the City Plan, the aerial photograph and the topographic map of Jakarta.

Our survey results show that the area along the Raya Let. Jen. Haryono M.T. and the Raya Let. Soetoyo Street is a business office area and the Dewi Sartika Street will develop into a business office and shopping area.

Apparently the most part of this area is agricultural area. However, permanent buildings are found in the Cipinang Melayu and Halim Perdana Kusama areas.

In the City Plan the future service area is designated as a green area. Yet it is permitted to construct buildings in this area. Besides, the area is not far away from the center of Jakarta.

The area has a good prospect of development into business office, shopping and residential areas. Particularly, the area along the Bogor Road will prosper as a shopping area.

2) Area Pattern

Table 2.6.2.24.(1), Table 2.6.2.24.(3) and Fig. 2.6.2.24.(4) present the telephone demand and the area pattern as of 1993. The telephone demand and the area pattern in each kelurahan as of 1975, 1980 and 1990 are given in Table 2.6.2.24.(5) and Table 2.6.2.24.(6), respectively.

3) Result of Demand Forecast

The telephone demand forecast for the period from 1974 through 1993 prepared by the microscopic demand forecast method described in Section 2.6.1 is shown in Fig. 2.6.2.24.(7).

Fig. 2.6.2.24.(8) presents the population density per hectare.

According to the result of our survey on the existing subscriber lines of Jatinegara Exchange Office, residential telephones account for 40% and business telephones 60%.

JTP's demand forecast result shows that the demand as of 1993 for residential telephones accounts for 71% (68.6% in residential area plus 2.6% in agricultural area) and that for business telephones 29%. These figures show a rapid increase of demand for residential telephones.

(4) Conclusion

Table 2.6.2.24.(9) shows the telephone demand, population, number of households, population density and telephone diffusion rate as of 1973, 1975, 1980 and 1993.

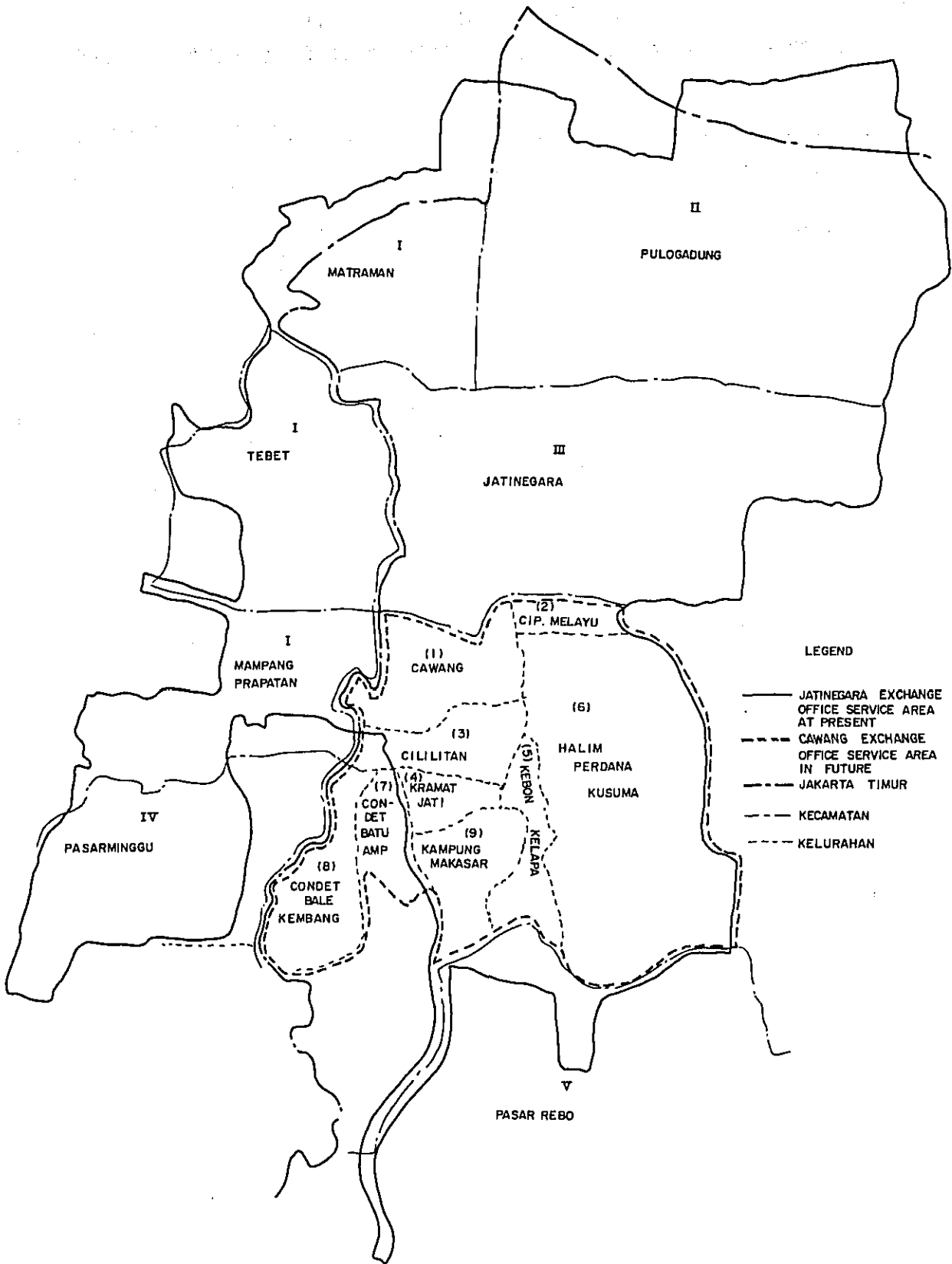


FIG. 2-6-2-24-(2) CAWANG EXCHANGE OFFICE SERVICE AREA

TABLE 2-6-2-24-(3) AREA PATTERN IN 1993 (CAWANG)

(Excluding miscellaneous)

Item Classification		Area (ha)	Area (%)	Demand	Demand (%)	D/ha
S	S - 1					
	S - 2	15	0.6	900	3.7	60.0
	S - 3	34	1.3	1,360	5.5	40.0
	Total	49	1.9	2,260	9.2	46.1
O	O - 1	33	1.2	3,300	13.4	100.0
	O - 2	14	0.5	700	2.8	50.0
	Total	47	1.7	4,000	16.3	85.1
R	R - 1					
	R - 2	667	25.1	13,340	54.2	20.0
	R - 3	354	13.3	3,540	14.4	10.0
	Total	1,021	38.4	16,880	68.6	17.0
I	I - 1					
	I - 2	33	1.2	330	1.3	10.0
	Total	33	1.2	330	1.3	10.0
Agriculture		646	24.3	646	2.6	1.0
Air Port		100	3.8	500	2.0	5.0
N		764	28.7			
TOTAL		2,660	100.0	24,616	100.0	9.3

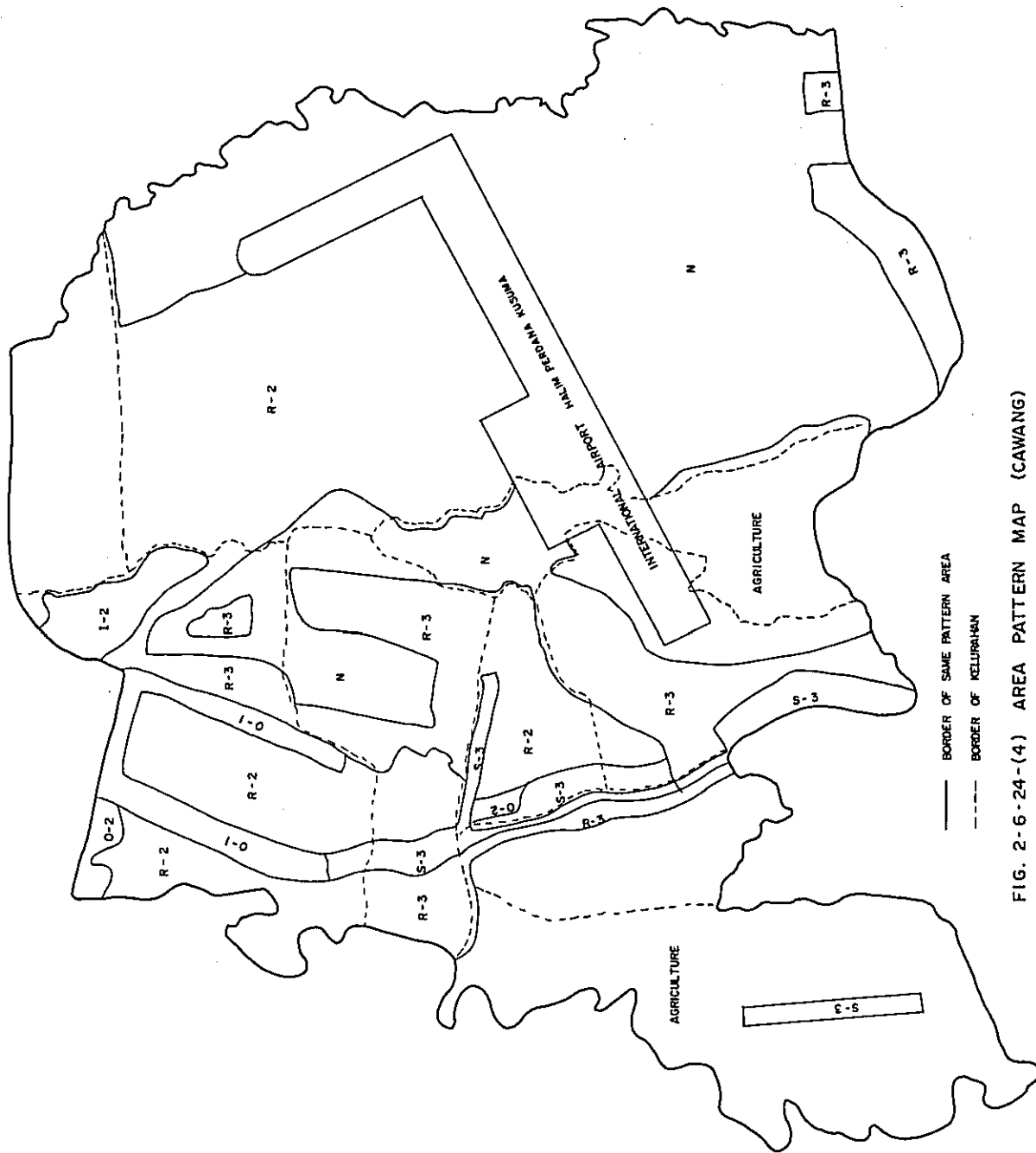


FIG. 2-6-24-(4) AREA PATTERN MAP (CAWANG)

TABLE 2-6-2-24-(5) TELEPHONE DEMAND OF CAWANG TELEPHONE EXCHANGE OFFICE

Survey Time : January, 1974.

Telephone exchange office	Pattern	Area (ha)	1975		1980		1990	
			Demand	Demand density	Demand	Demand density	Demand	Demand density
C A W A N G	S - 1							
	S - 2	15	60	4.0	130	8.7	560	37.3
	S - 3	34	75	2.2	170	5.0	815	14.0
	O - 1	33	175	5.3	395	12.0	2,040	6.9
	O - 2	14	65	4.6	120	8.6	470	33.6
	R - 1							
	R - 2	667	480	0.7	1,125	1.7	7,190	10.8
	R - 3	354	210	0.6	440	1.2	2,120	6.0
	I - 1							
	I - 2	33	10	0.3	30	0.9	190	5.8
	Agriculture	646	35	0.08	90	0.1	400	0.6
	Air Port	100	110	1.1	165	1.7	385	3.9
N	764							
Sub Total	2,660	1,220	0.5	2,665	1.0	14,170	5.4	
Miscellaneous		25		75		340		
TOTAL		2,660	1,245	2,740		14,510		

TABLE 2-6-2-24-(6) 1/4 CAWANG TELEPHONE EXCHANGE OFFICE (1)

Kecamatan	Kelurahan	Pattern	Area (ha)	Survey Time: January 1974						
				1975		1980		1990		
				Demand	Demand density	Demand	Demand density	Demand	Demand density	
KRAMAT JATI	Cawang (1)	1	0-2	9	35	3.9	70	7.8	295	32.8
		2	R-2	42	40	0.9	95	2.3	505	56.1
		3	S-3	3	15	5.0	30	10.0	85	28.3
		4	0-1	33	175	5.3	395	12.0	2,040	6.9
		5	R-2	50	80	1.6	160	3.2	660	13.2
		6	R-2	32			10	0.3	240	7.5
		7	R-3	40	20	0.5	40	1.0	235	5.9
		8	R-3	19	5	0.3	15	0.8	105	5.5
		9	I-2	33	10	0.3	30	0.9	190	5.8
		10	N	23						
		Sub Total		248	380	1.3	845	2.8	4,355	15.3
		Miscellaneous			15		40		195	
		TOTAL		248	395		885		4,550	
	Cipinang - Melayu	1	R-2	30	25	0.8	60	2.0	350	11.7
2		R-2	29	10	0.3	35	1.2	300	10.3	
3		R-2	27			10	0.4	210	7.8	
4		R-2	3	5	1.7	10	3.3	35	11.7	
		Sub Total		89	40	0.4	115	1.3	895	10.7
		Miscellaneous			0		0		10	
		TOTAL		89	40		115		905	

TABLE 2-6-2-24-(6) 2/4 CAWANG TELEPHONE EXCHANGE OFFICE (2)

Survey Time : January 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1975		1980		1990	
				Demand	Demand density	Demand	Demand density	Demand	Demand density
KRAMAT JATI	Cililitan	1 R-3	15	20	1.3	35	2.3	105	7.0
		2 S-3	3	10	3.3	20	6.7	80	26.7
		3 R-2	7	25	3.6	40	5.7	105	15.0
		4 R-2	9	35	3.9	55	6.1	140	15.6
		5 R-3	124	100	0.8	205	1.7	820	6.6
		6 N	48						
		Sub Total	206	190	0.9	355	1.7	1,250	6.1
		Miscellaneous		0		5		10	
		TOTAL	206	190		360		1,260	
	Kramat Jati	1 S-3	4	15	3.8	25	6.3	105	26.3
		2 S-3	8	5	0.6	20	2.5	170	21.3
		3 O-2	5	30	6.0	50	10.0	175	35.0
		4 S-2	11	55	5.0	115	10.5	440	40.0
		5 R-2	32	80	2.5	140	4.3	450	14.1
		6 R-2	35	40	1.1	90	2.8	430	12.3
		Sub Total	95	225	2.4	440	4.6	1,770	18.6
		Miscellaneous		5		10		40	
		TOTAL	95	230		450		1,810	
	Kebon Pala	1 Ag	137	15	0.1	30	0.2	95	0.7
		2 N	23						
		Sub Total	160	15	0.1	30	0.2	95	0.6
		Miscellaneous		0		0		0	
		TOTAL	160	15		30		95	

TABLE 2-6-2-24-(6)3/4 CAWANG TELEPHONE EXCHANGE OFFICE (3)

Kecamatan	Kelurahan	Pattern	Area (ha)	Survey Time: January 1974					
				1975		1980		1990	
				Demand	Demand density	Demand	Demand density	Demand	Demand density
KRAMAT JATI	Halim Perdana Kusuma (6)	1 R - 2	92	55	0.6	145	1.6	1,020	11.1
		2 R - 2	196	55	0.3	185	0.9	1,910	9.7
		3 R - 2	74	20	0.3	65	0.9	720	9.7
		4 Air Port	100	110	1.1	165	1.7	385	3.9
		5 Ag	9			5	0.6	5	0.6
		6 R - 3	14	5	0.4	15	1.1	80	5.1
		7 R - 3	27	15	0.6	35	1.3	170	6.3
		8 N	661						
		Sub Total	1,173	260	0.2	615	0.5	4,290	3.7
		Miscellaneous		5		15		60	
	TOTAL		1,173	265		630		4,350	
Condet Batu Ampar (7)		1 S - 3	3	15	5.0	30	10.0	85	28.3
		2 R - 3	25	25	1.0	50	2.0	175	7.0
		3 Ag	109	5	0.1	10	0.1	60	0.6
		Sub Total	137	45	0.3	90	0.7	320	2.3
		Miscellaneous		0		0		5	
	TOTAL		137	45		90		325	
Condet Bale Kembang (8)		1 Ag	343	15	0.04	40	0.1	210	0.6
		2 S - 3	5	5	1.0	15	3.0	110	22.0
		Sub Total	348	20	0.06	55	0.2	320	0.9
		Miscellaneous		0		5		5	
	TOTAL		348	20		60		325	

TABLE 2-6-2-24-(6) 4/4 CAWANG TELEPHONE EXCHANGE OFFICE (4)

Survey Time: January 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1975		1980		1990	
				Demand	Demand density	Demand	Demand density	Demand	Demand density
KRAMAT JATI	Kampung Makasar (9)	1 S - 2	4	5	1.2	15	3.8	120	30.0
		2 R - 2	9	10	1.1	25	2.8	115	12.7
		3 R - 3	8	10	1.3	15	1.9	55	6.9
		4 R - 3	82	10	0.1	30	0.4	375	4.6
		5 S - 3	8	10	1.3	30	3.8	180	22.6
		6 Ag	48			5	0.1	30	0.6
		7 N	9						
		Sub Total	168	45	0.3	120	0.7	875	5.2
		Miscellaneous		0		0		15	
	TOTAL		168	45		120		890	

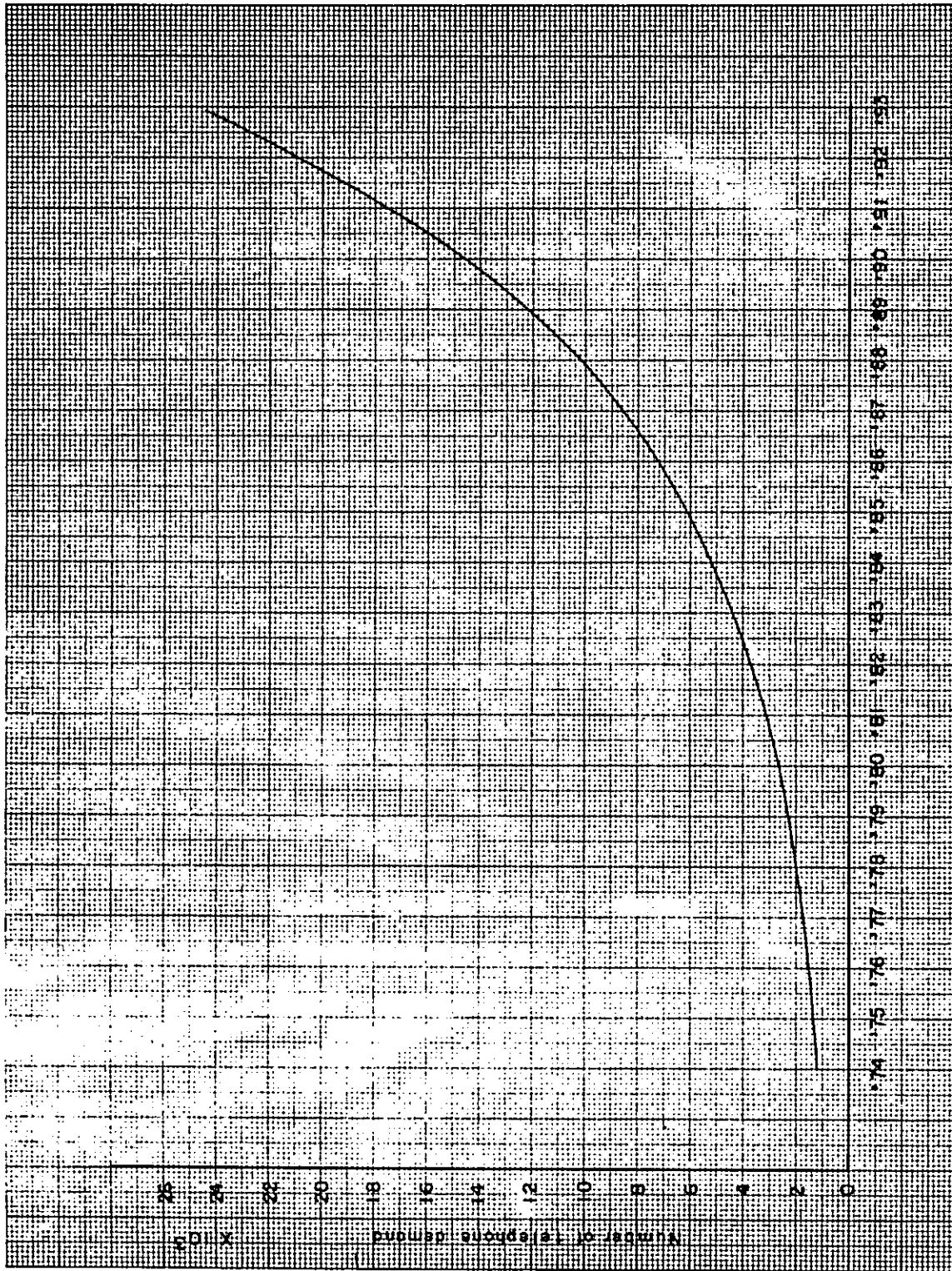


FIG. 2-6-2-24-(7)
 TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS) (CAWANG EXCHANGE OFFICE)

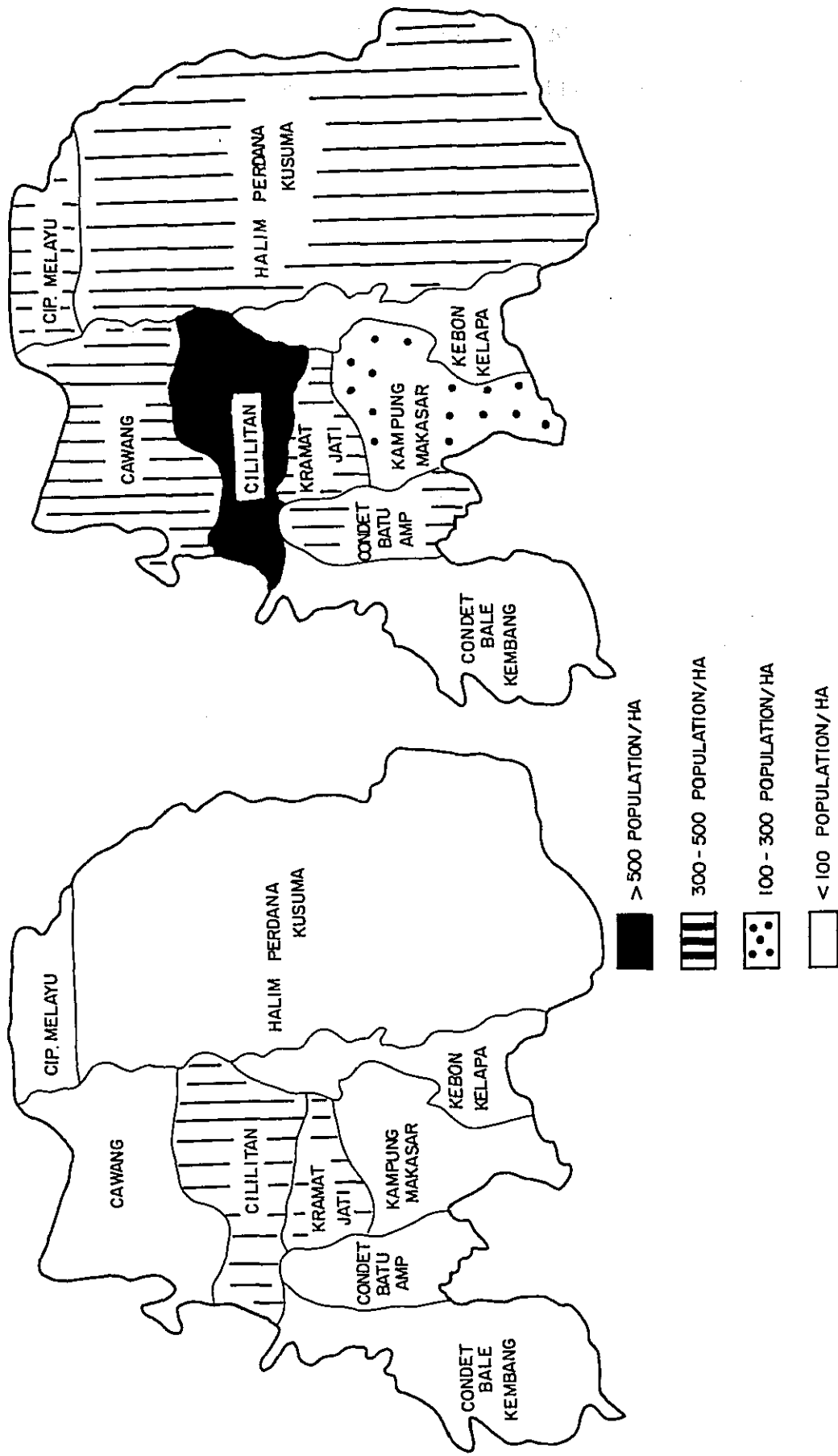


FIG. 2-6-2-24-(8) POPULATION DENSITY (CAWANG)

TABLE 2-6-2-24-(9)
DEMAND, POPULATION AND DIFFUSION RATIO (CAWANG)

(Excluding miscellaneous)

Item \ Year	1973	1975	1980	1990	1993
Area (ha)	2,660	2,660	2,660	2,660	2,660
Demand	120	1,220	2,665	14,515	24,620
	1.0	10.2	22.2	121.0	205.2
Population	127,000	146,000	206,000	410,000	501,500
	1.0	1.2	1.6	3.2	3.9
Household	23,600	29,200	41,200	82,000	100,300
	1.0	1.2	1.7	3.5	4.3
Population density (Population / ha)	48	55	77	154	189
	1.0	1.1	1.6	3.2	3.9
Population demand ratio --- (Demand/ 100 inhabitants)	0.09	0.84	1.29	3.54	4.91
	1.0	9.3	14.3	39.3	54.6
Household demand ratio -- (Demand/ 100 households)	0.51	4.18	6.47	17.70	24.55
	1.0	8.2	12.7	34.7	48.1

Note : Down side figure is ratio to 1973

Remarks :

The number of population and households which was calculated on the basis of the Statistics of D.K.I assuming that its increasing ratio is approximately 7.0% per year including new incomers from other areas

2.6.2.25 PASAR REBO

(1) General Description

The future service area of Pasar Rebo Exchange Office is located in the southeast of Jakarta. The north side adjoins the future Cawang Exchange Office service area which includes a new international airport. The south side adjoins the service area of Gandaria Exchange Office having industrial areas, while the west side is bordered by Kali Ciliwung River.

According to statistics of 1972 compiled by D.K.I., the future service area is 3,630 hectares in size and has 12,278 households with a population of 65,024.

The area is not flourishing now. It may be proved by the fact that permanent buildings account for only 14.1% and the remaining are semi-permanent and temporary buildings. The rate of 14.1% is far lower than the average rate of 21.3% for the whole Jakarta area.

At present, this service area is included in the service areas of Jatinegara and Gandaria exchange offices.

The number of subscriber lines as of 1973 in the area is only 32. (Jumlah Sambungan Telepon (L.U.) Yang Direncanakan, 3 Januari 1974, Kepala Kantor Telepon Jatinegara/Bekasi)

The above data shows that the telephone diffusion rate per 100 inhabitants is only 0.049, a low rate as compared with the rate of 0.9 per 100 inhabitants for the whole Jakarta area.

Excluding Susukan and Kampung Dukuh which are expected to develop into industrial areas, the major part of the service area will remain to be an agricultural area. In the City Plan, part of Cijantung and Kampung Baru are designed to be residential areas.

(2) Existing Service Area and Future Service Area

The future Pasar Rebo Exchange Office service area determined by the 2nd Five-Year Plan of PERUMTEL is the object area of our study.

The existing subscriber lines are covered by Jatinegara Exchange Office. The future service area is shown in Table 2.6.2.25.(1) and Fig. 2.6.2.25.(2). The future service area comprises 12 kelurahans (or 2 kecamatans).

(3) Telephone Demand Forecast

1) Area Development Estimation

In our area development estimation we used as major references the City Plan, the aerial photograph and the topographic map of Jakarta.

Our field survey result shows that the major part of this area is an agricultural area as previously mentioned.

On the other hand, a new vegetable market (Pasar Sayur) has been established in Kampung Tengah, while part of Kampung Dukuh and Susukan are expected

to become industrial areas, with some factories already established, such as Gold Bond Tabaco Factory and Friesche Vlag Milk Factory, etc. In addition a number of permanent buildings are found in Cijantung and Kampung Baru. These areas will develop into residential areas. The major part of the service area other than those mentioned above is planned to be a green area in the City Plan, and expected to remain as an agricultural area.

At the center of the service area lies Project Miniature Indonesia Indah opened on April 20, 1975.

2) Area Pattern

The telephone demand and the area pattern as of 1993 are given in Table 2.6.2.25.(1), Table 2.6.2.25.(3), and Fig. 2.6.2.25.(4), respectively.

Table 2.6.2.25.(5) and Table 2.6.2.25.(6) show the telephone demand and the area pattern as of 1975, 1980 and 1990, in each kelurahan.

3) Result of Demand Forecast

The telephone demand forecast for the period from 1974 through 1993 prepared by the microscopic demand forecast method described in Section 2.6.1 is shown in Fig. 2.6.2.25.(7).

Fig. 2.6.2.25.(8) shows the population density per hectare.

(4) Conclusion

Table 2.6.2.25.(9) presents the telephone demand, population, number of households, population density and telephone diffusion rate as of 1973, 1975, 1980, 1990 and 1993.

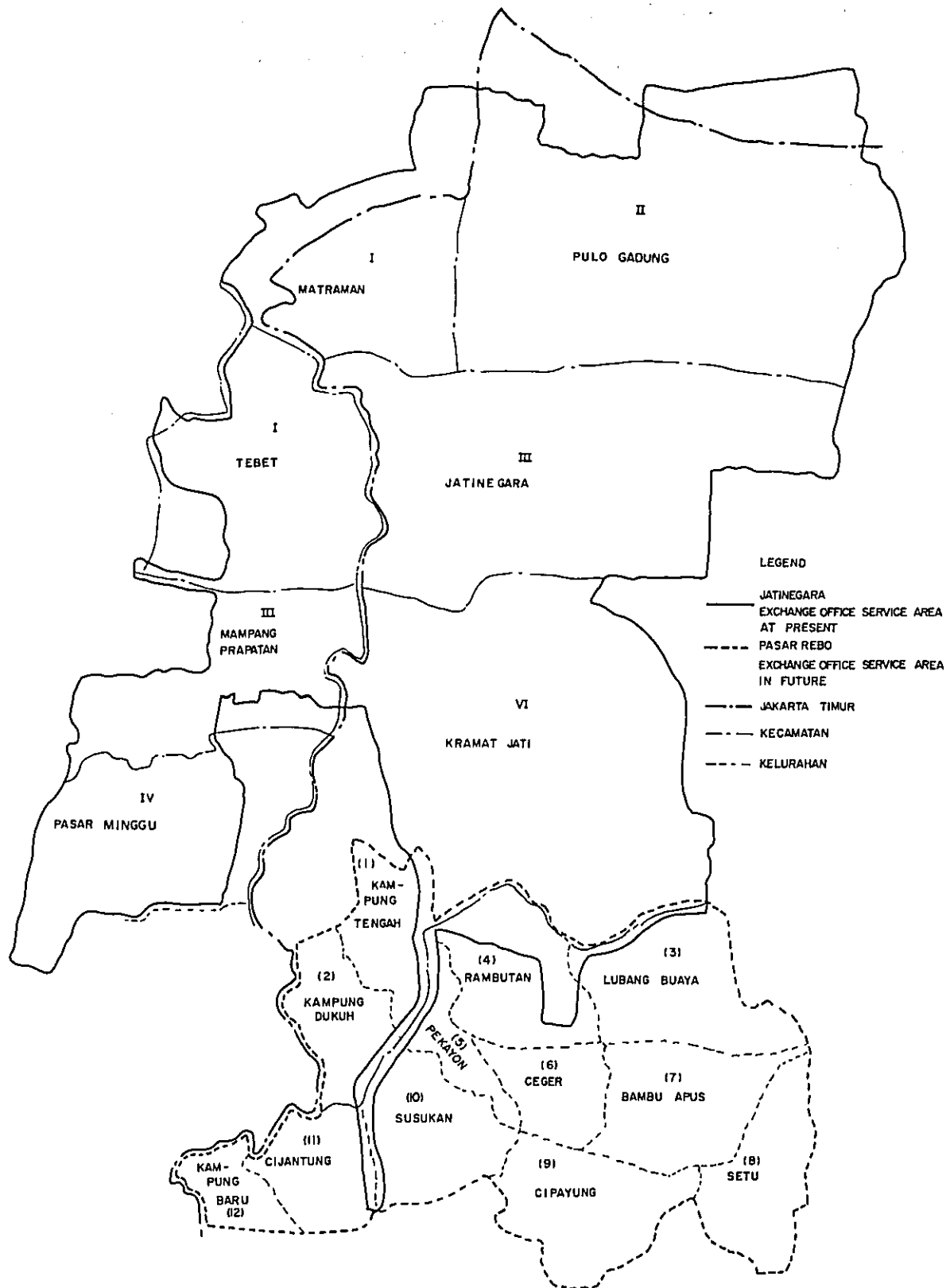
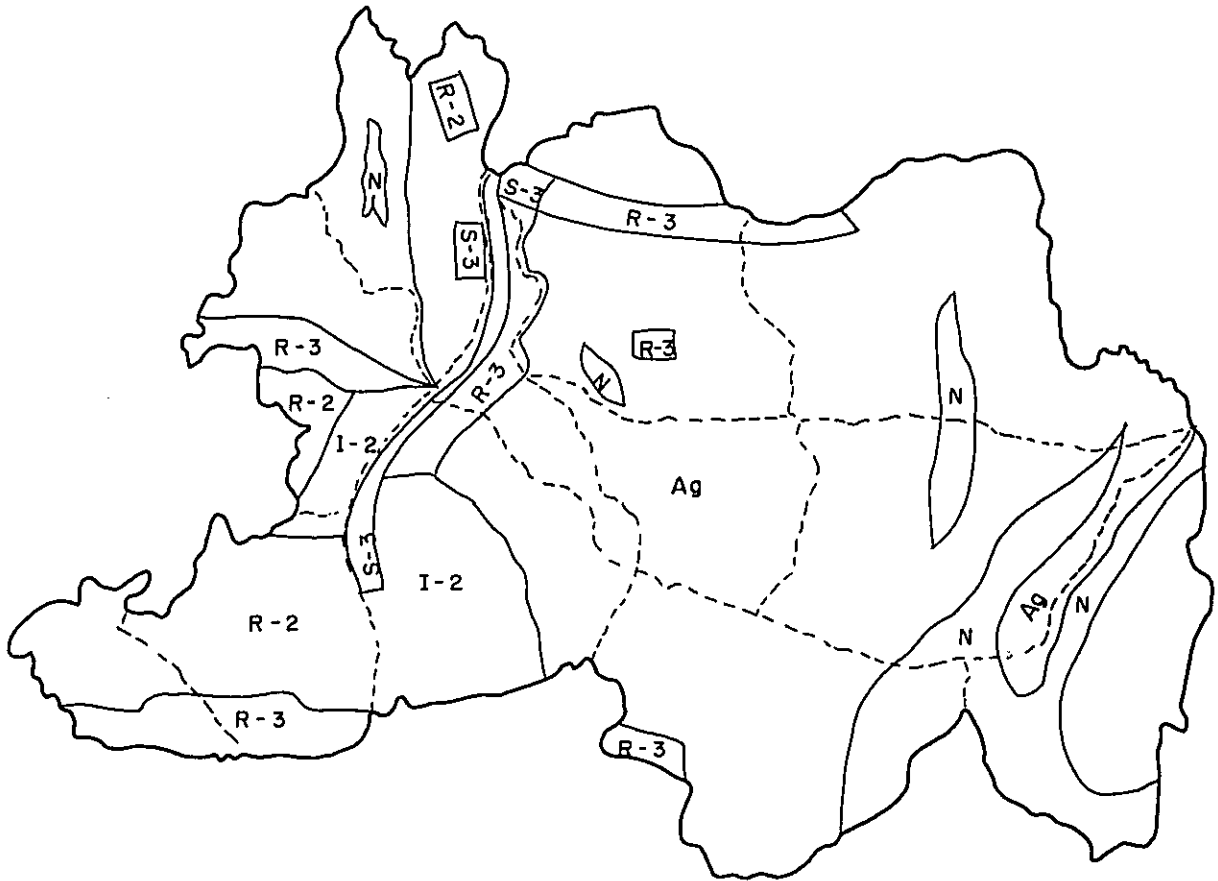


FIG. 2-6-2-25-(2) PASAR REBO EXCHANGE OFFICE SERVICE AREA

TABLE 2-6-2-25-(3) AREA PATTERN IN 1993
(PASAR REBO)

(Excluding miscellaneous)

Item Classification		Area (ha)	Area (%)	Demand	Demand (%)	D/ha
S	S - 1					
	S - 2					
	S - 3	30	0.8	1,200	7.8	40.0
	Total	30	0.8	1,200	7.8	40.0
O	O - 1					
	O - 2					
	Total					
R	R - 1					
	R - 2	313	8.6	6,260	40.7	20.0
	R - 3	327	9.0	3,270	21.2	10.0
	Total	640	17.6	9,530	61.9	14.9
I	I - 1					
	I - 2	242	6.7	2,420	15.7	10.0
	Total	242	6.7	2,420	15.7	10.0
Agriculture		2,248	61.9	2,248	14.6	1.0
N		470	13.0			
TOTAL		3,630	100.0	15,398	100.0	4.2



——— BORDER OF SAME AREA PATTERN
 - - - - - BORDER OF KELURAHAN

FIG. 2-6-2-25-(4) AREA PATTERN MAP
 (PASAR REBO)

TABLE 2-6-2-25-(6) 1/4 PASAR REBO TELEPHONE EXCHANGE OFFICE (1)

Survey Time : January 1974

Kecamatan	kelurahan	Pattern	Area (ha)	1975		1980		1990	
				Demand	Demand density	Demand	Demand density	Demand	Demand density
KRAMAT JATI	Kampung Tengah (1)	1 R-2	10	25	2.5	45	4.5	140	14.0
		2 R-3	48	15	0.3	40	0.8	275	5.3
		3 S-3	7	105	15.0	140	20.0	235	33.6
		4 Ag	81	5	0.1	10	0.1	50	0.6
		5 N	16						
		Sub Total	162	150	0.9	235	1.5	700	43.0
		Miscellaneous		5		5		10	
		TOTAL		162		240		710	
	Kampung Dukuh (2)	1 Ag	151	5	0.03	15	0.1	85	0.6
		2 R-3	33	5	0.2	15	0.5	155	4.7
3 1-2		31	40	1.3	70	2.3	220	7.1	
4 R-2		31	30	0.9	75	2.4	350	11.3	
5 N		16							
	Sub Total	262	80	0.3	175	0.7	810	3.1	
	Miscellaneous		5		5		20		
	TOTAL		262		180		830		
Lubang Buaya (3)	1 R-3	25	5	0.2	20	0.8	140	5.6	
	2 Ag	492	25	0.05	60	0.1	300	0.6	
	3 N	55							
		Sub Total	572	30	0.05	80	0.1	440	0.8
		Miscellaneous		5		5		5	
	TOTAL		572		85		445		

TABLE 2-6-2-25-(6) 2/4 PASAR REBO TELEPHONE EXCHANGE OFFICE (2)

Kecamatan	Kelurahan	Pattern	Area (ha)	1975		1980		1990		
				Demand	Demand density	Demand	Demand density	Demand	Demand density	
PASAR REBO	Rambutan (4)	1 Ag	290	35	0.1	50	0.2	200	0.7	
		2 S-3	8	5	0.6	15	1.9	150	18.8	
		3 R-3	19	5	0.3	10	0.5	95	5.0	
		4 N	5							
		Sub Total		322	45	0.1	75	0.2	445	1.4
		Miscellaneous			5		5		10	
		TOTAL		322	50		80		455	
		Pekayon (5)	1 S-3	7			5	0.7	115	16.4
			2 R-3	45	10	0.2	25	0.6	230	5.1
			3 Ag	98	10	0.1	20	0.2	65	0.7
			Sub Total		150	20	0.1	50	0.3	410
		Miscellaneous			0		0		5	
	TOTAL		150	20		50		415		
	Ceger (6)	1 Ag	204	10	0.05	20	0.1	120	0.6	
		2 N	5							
		Sub Total		209	10	0.05	20	0.1	120	0.6
		Miscellaneous			0		0		0	
	TOTAL		209	10		20		120		
	Bambu Apus (7)	1 Ag	272	5	0.01	20	0.07	150	0.6	
		2 N	120							
		Sub Total		392	5	0.01	20	0.05	150	0.4
		Miscellaneous			0		0		0	
	TOTAL		392	5		20		150		

TABLE 2-6-2-25-(6) 3/4 PASAR REBO TELEPHONE EXCHANGE OFFICE (3)

Survey Time: January 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1975		1980		1990		
				Demand	Demand density	Demand	Demand density	Demand	Demand density	
PASAR REBO	Setu	1 Ag	235	10	0.04	20	0.09	130	0.6	
		2 N	111							
	(8)	Sub Total	346	10	0.03	20	0.06	130	0.4	
		Miscellaneous		0		0		0		
	TOTAL		346	10		20		130		
	Cipayung	1 R-3	9				5	0.6	45	5.0
		2 Ag	281	5	0.02	20	0.07	150	0.5	
		3 N	142							
		Sub Total	432	5	0.01	25	0.06	195	0.5	
	TOTAL		432	10		30		200		
Susukan	1 R-3	12				10	0.8	70	5.8	
	2 S-3	8	5	0.6	10	1.3	150	18.8		
	3 Ag	144	5	0.03	15	0.1	85	0.6		
	4 I-2	204	50	0.2	140	0.7	1,100	5.4		
	Sub Total	368	65	0.2	175	0.5	1,405	3.8		
	Miscellaneous		0		0		5			
TOTAL		368	65		175		1,410			

TABLE 2-6-2-25-(6)4/4 PASAR REBO TELEPHONE EXCHANGE OFFICE (4)

Kecamatan	Kelurahan	Pattern	Area (ha)	1975		1980		1990		
				Demand	Demand density	Demand	Demand density	Demand	Demand density	
										Demand
PASAR REBO	Cijantung	1 I - 2	7	15	2.1	25	3.6	55	7.9	
		2 R - 2	180	20	0.1	75	0.4	1,500	8.3	
		3 R - 3	70	5	0.07	25	0.4	330	4.7	
		Sub Total		257	40	0.2	125	0.5	1,885	7.3
		Miscellaneous			0		0		20	
		TOTAL		257	40		125		1,905	
		Kampung Baru	1 R - 2	92	5	0.05	30	0.3	590	6.4
	2 R - 3		66	10	0.2	35	0.5	340	5.2	
	Sub Total		158	15	0.09	65	0.4	930	5.9	
		Miscellaneous			0		0		10	
	TOTAL		158	15		65		940		

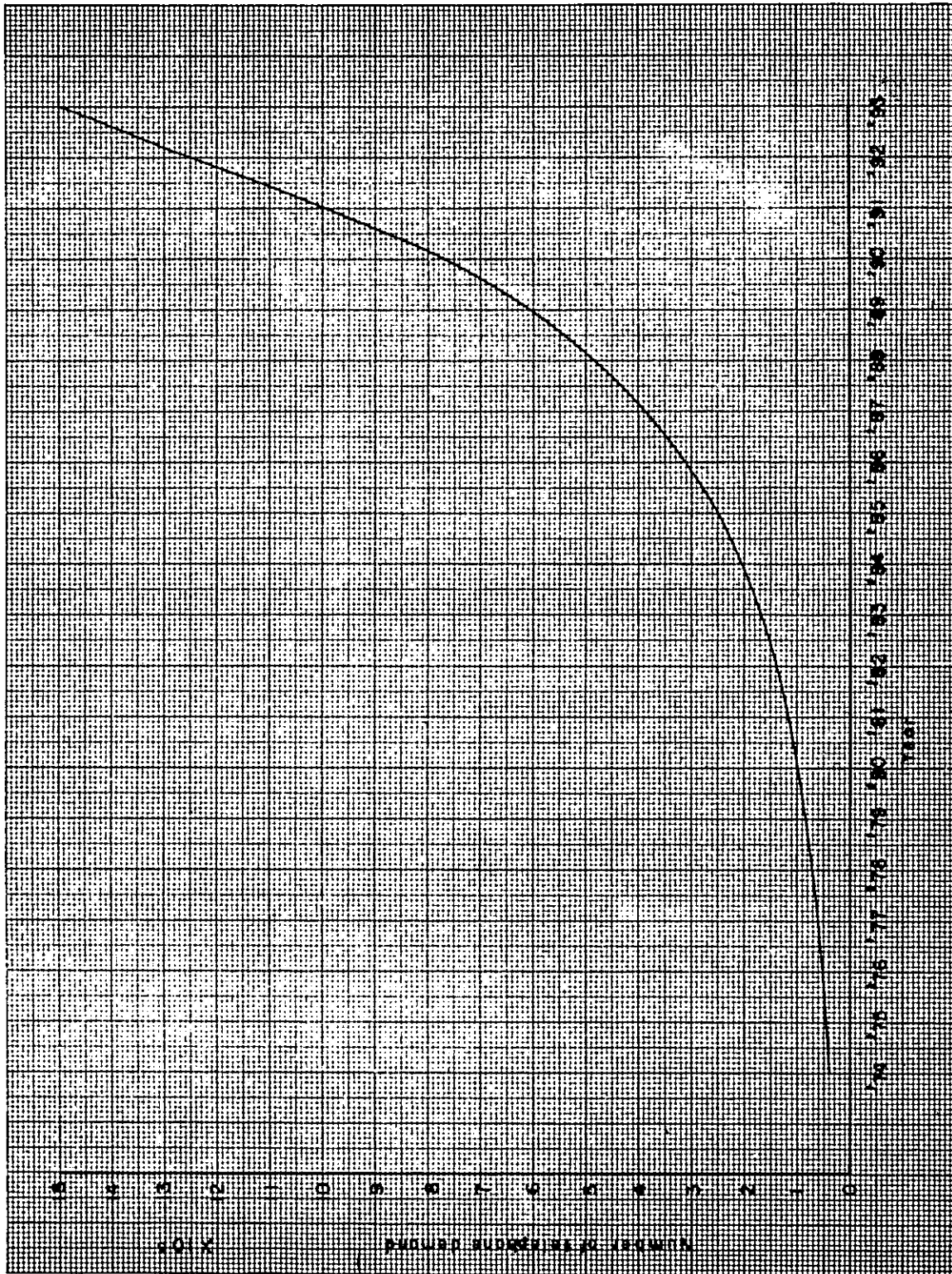
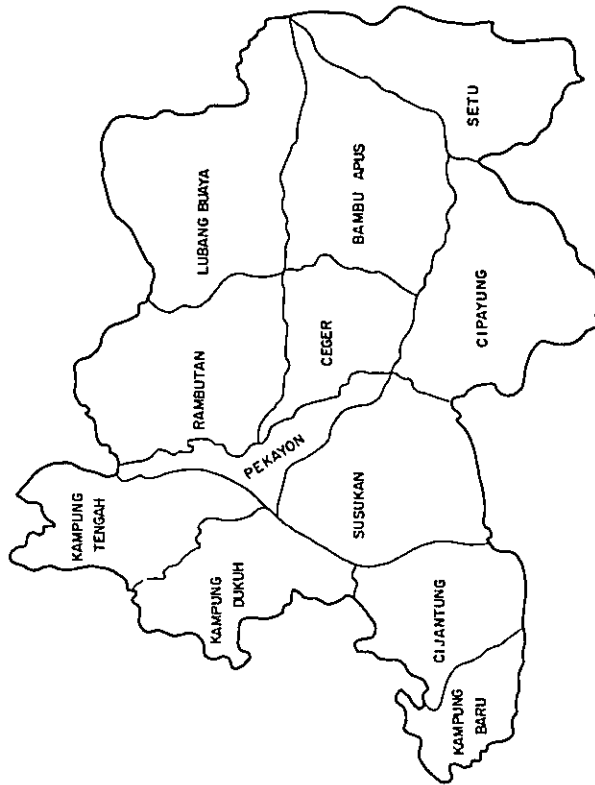
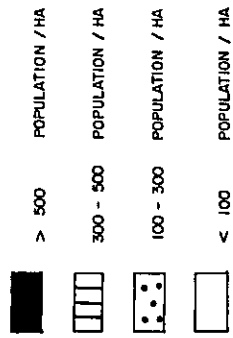
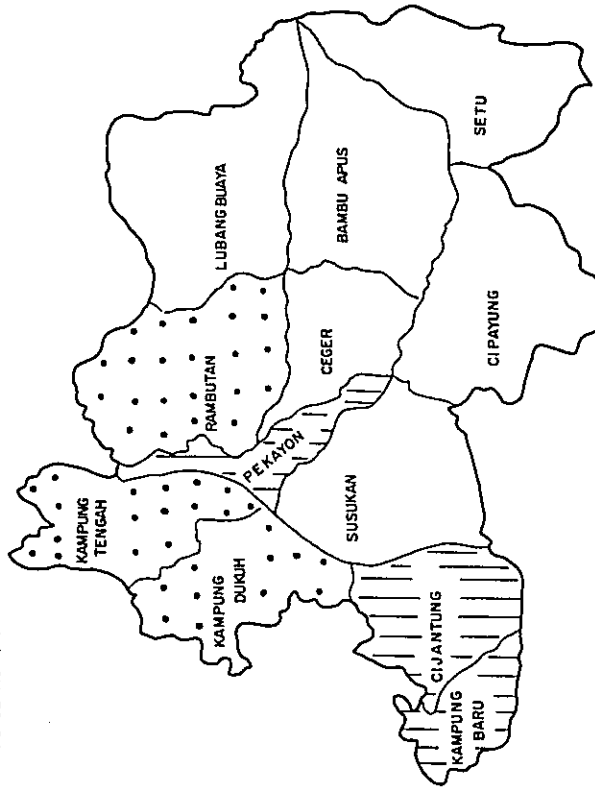


FIG. 2-6-2-25-(7) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
(PASAR REBO EXCHANG OFFICE)



1972



1993

FIG. 2-6-2-25-(8) POPULATION DENSITY
(PASAR REBO)

TABLE 2-6-2-25 - (9)
 DEMAND, POPULATION AND DIFFUSION RATIO
 (PASAR REBO)

(Excluding miscellaneous)

Item \ Year	1973	1970	1980	1990	1993
Area (ha)	3,630	3,630	3,630	3,630	3,630
Demand	* 32	475	1,065	7,620	15,400
	1.0	14.8	33.3	238.1	481.2
** Population	72,000	89,000	153,000	440,000	507,185
	1.0	1.2	2.1	6.1	7.0
** Household	13,600	17,800	30,600	88,000	101,400
	1.0	1.3	2.3	6.5	7.5
Population density (Population/ha)	20	25	42	121	140
	1.0	1.3	2.1	6.1	7.0
Population demand ratio (Demand/ 100 inhabitants)	0,044	0,53	0,70	1,73	3,04
	1.0	12.0	15.9	39.3	69.1
Household demand ratio (Demand/ 100 households)	0.24	2.67	3.48	8.66	15.19
	1.0	11.1	14.5	36.1	63.3

Note : Down side figure is ratio to 1973

Remarks :

* The number of subscribers as of December 1973.

** The number of population and households which was calculated on the basis of the Statistics of D.K.I assuming that its increasing ratio is approximately 11.3% per year including new comers from other areas

2.6.2.26 KLENDER

(1) General Description

The future service area of Klender Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. From the viewpoint of the future telephone network in Jakarta, it is also suitable and we forecasted the demand in this area.

Klender is located in the eastern part of Jakarta. The major part of this area is an agricultural area.

According to statistics of 1973, the service area is 1,892 hectares in size and has 7,932 households with a population of 35,733.

(2) Existing Service Area and Future Service Area

At present part of the Klender Exchange Office service area is covered by Jatinegara Exchange Office. Fig. 2.6.2.26.(1) shows the existing and future service areas of Klender Exchange Office.

(3) Telephone Demand Forecast

1) Area Development Estimation

In our area development estimation we used as major reference the City Plan, the city map and the aerial photograph. The field survey was carried out by referring to these data.

A road in the western part is the only one main street in the Klender Exchange Office service area. A factory area is found in the northern part of the main street. In the southern part, construction of new houses is under way. However, all the other areas are agricultural areas.

In the City Plan, the most part of Klender is designed to be a residential area. In the future Klender will develop into a large-scale residential area.

The population density is forecasted as shown in Fig. 2.6.2.26.(2).

2) Area Pattern

In accordance with Area Pattern Standard described in Section 2.6.1.(6), the area pattern map as of 1993 is drawn up as shown in Fig. 2.6.2.26.(3).

3) Result of Demand Forecast

The telephone demand as of 1993 in each kelurahan based on the area pattern map mentioned in the preceding paragraph 2) is given in Table 2.6.2.26.(4), together with the demand as of 1983 calculated based on the demand as of 1993. Table 2.6.2.26.(5) presents the demand in each area pattern summed up by the demand of Table 2.6.2.26.(4). As seen in the table, the demand as of 1993 in the S area accounts for 8%, in the R area 91% and in the agricultural area 1%. The rate in the R area of this service area is large as compared with other service areas of Jakarta.

The area size and the telephone demand by area pattern as of 1993 in each kelurahan are given in Table 2.6.2.26.(6).

The number of the existing subscriber lines in the future Klender Exchange Office service area is 39, while the telephone demand as of 1974 is estimated to be 210 including the potential demand. Fig. 2.6.2.26.(7) shows the telephone demand forecasted for the period from 1974 through 1993.

(4) Conclusion

Table 2.6.2.26.(8) presents the telephone demand, population, number of households, population density and telephone diffusion rate as of 1993.

The telephone demand as of 1993 is 20,300, which is 521 times the number of the existing subscriber lines.

The population as of 1993 is 551,500, which is 15.4 times the population in 1973.

The telephone diffusion rate is 0.1 at present and will be 3.7 in 1993.

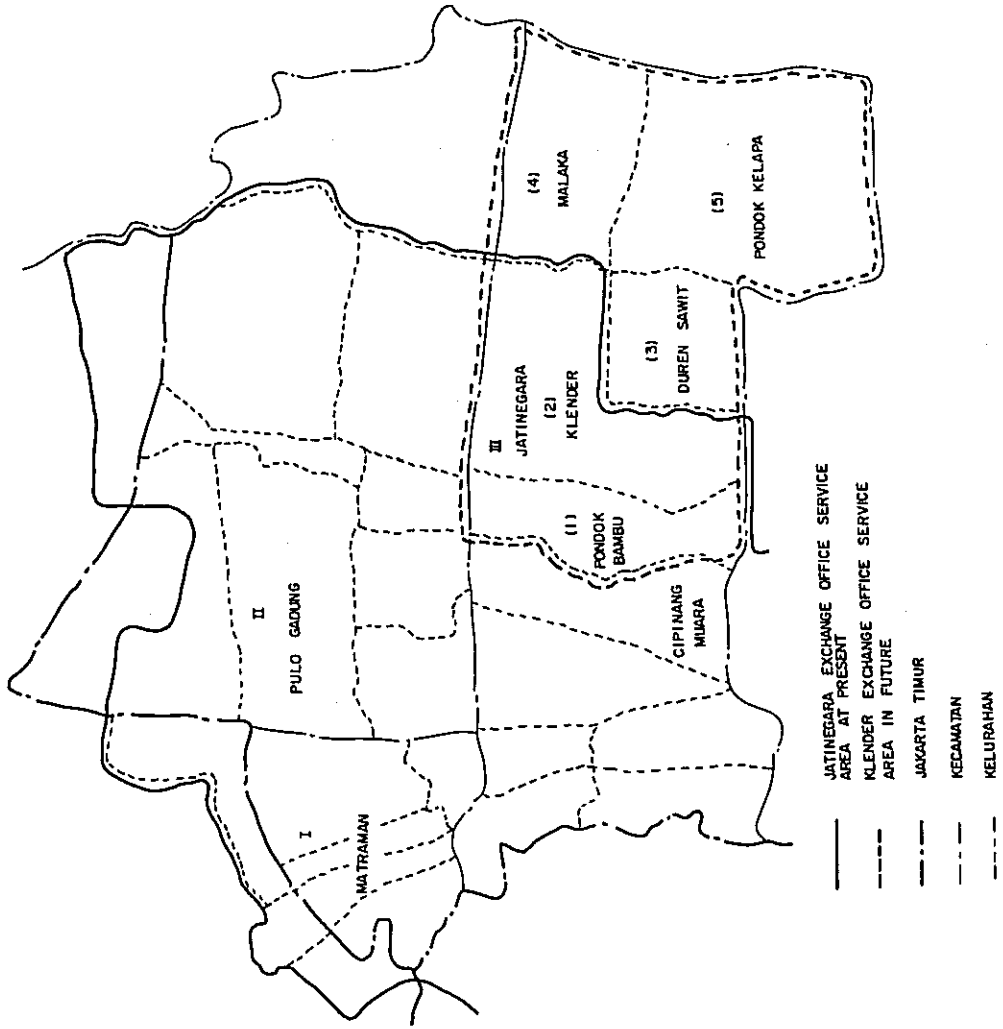


FIG. 2-6-2-26-(1) KLENDER EXCHANGE OFFICE SERVICE AREA

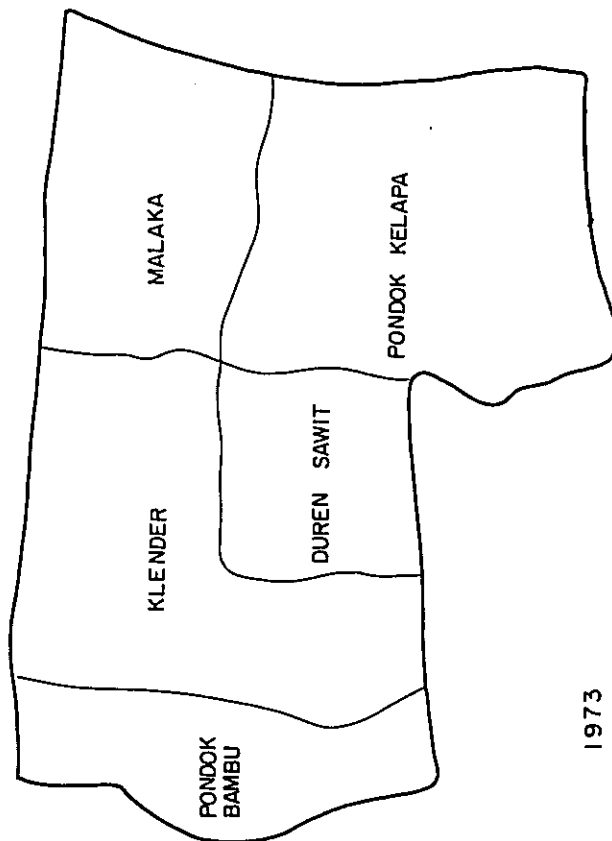
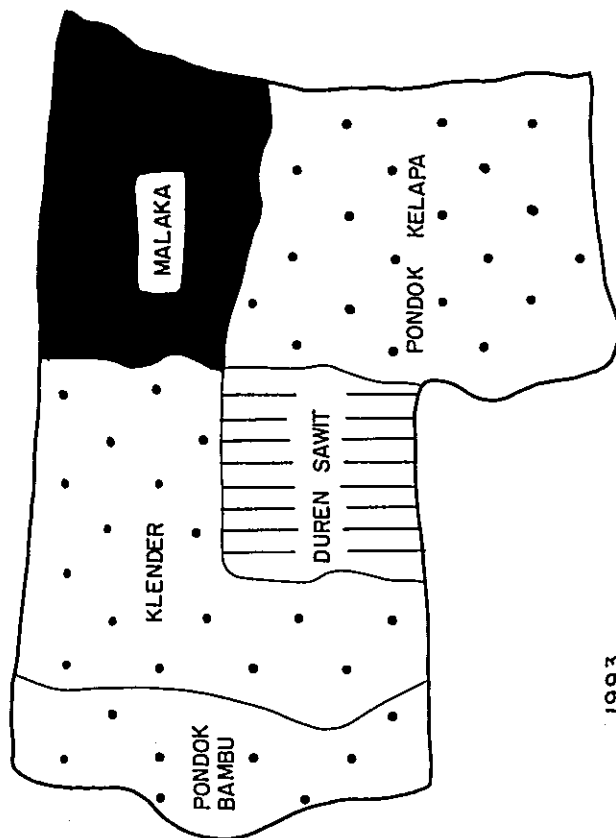
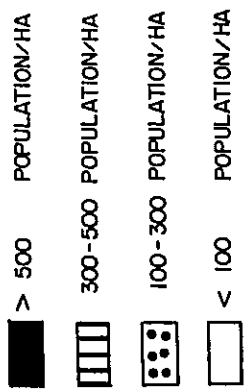


FIG . 2 - 6 - 2 - 26 - (2) POPULATION DENSITY
(KLENDER)

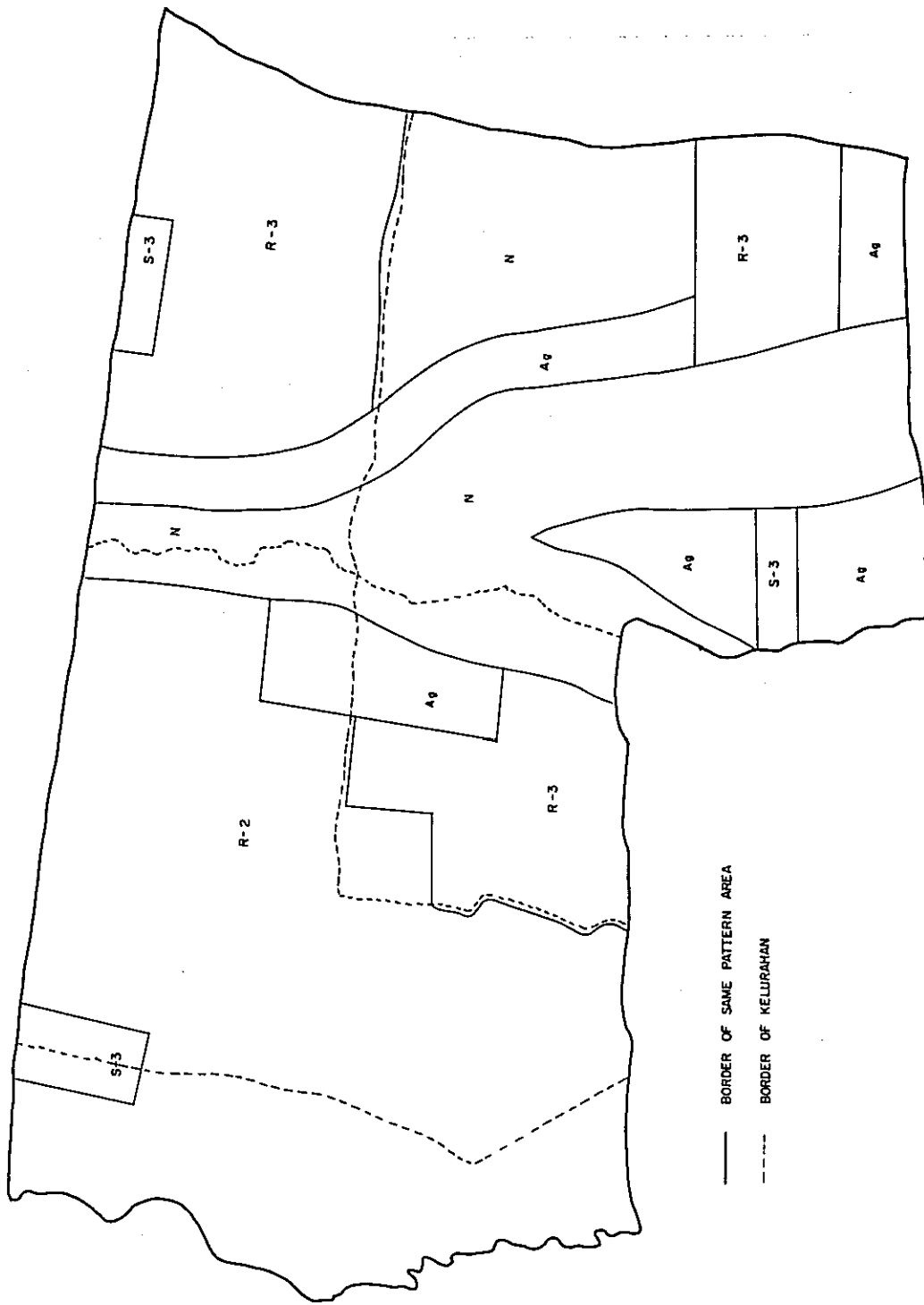


FIG. 2 - 6 - 2 - 26 - (3) AREA PATTERN MAP
(KLENDER)

TABLE 2-6-2-26-(4) 1/2 KLENDER EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (1)

Survey time : September 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks
				Demand	Demand density	Demand	Demand density	
JATINEGARA	Pondok - Bambu (1)	S - 3	11	30	2.7	440	40.0	
		R - 2	338	515	1.5	6,760	20.0	
		Sub Total	349	545	1.6	7,200	20.6	
		Miscellaneous		30		105		
	TOTAL		349	575		7,305		
	Klender (2)	S - 3	10	25	2.5	400	40.0	
		R - 2	327	500	1.5	6,540	20.0	
		Ag	20	5	0.2	20	1.0	
		N		19				
	Sub Total		376	530	1.4	6,960	18.5	
	TOTAL			376	30		100	
	Duren - Sawit (3)	R - 2	24	35	1.5	480	20.0	
		R - 3	145	175	1.2	1,450	10.0	
		Ag	25	10	0.4	25	1.0	
N			46					
Sub Total		240	220	0.9	1,955	8.2		
TOTAL			240	230		1,980		

TABLE 2-6-2-26-(4) 2/2 KLENDER EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (2)

Survey time : September 1974.

Kecamatan	Keturahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
JATINEGARA	Malaka (4)	S - 3	11	30	2.7	440	40.0		
		R - 3	232	280	1.2	2,320	10.0		
		Ag	35	15	0.4	35	1.0		
		N	39						
		Sub Total		317	325	1.0	2,795	8.8	
		Miscellaneous			20		45		
		TOTAL		317	345		2,840		
		Pondok - Kelapa (5)	S - 3	11	30	2.7	440	40.0	
	R - 3		81	95	1.2	810	10.0		
	Ag		140	55	0.4	140	1.0		
	N	378							
	Sub Total		610	180	0.3	1,390	2.3		
	Miscellaneous			10		25			
	TOTAL		610	190		1,415			

TABLE 2-6-2-26-(5) KLENDER EXCHANGE OFFICE TELEPHONE DEMAND

Survey time : September 1974.

Classification	Item	Area (ha)	1983		1993			Remarks
			Demand	Demand density	Demand	Demand density	Demand (%)	
S	S - 1							
	S - 2							
	S - 3	43	115	2.7	1,720	40.0	8	
	Total	43	115	2.7	1,720	40.0	8	
O	O - 1							
	O - 2							
	Total							
R	R - 1							
	R - 2	689	1,050	1.5	13,780	20.0	68	
	R - 3	458	550	1.2	4,580	10.0	22	
	Total	1,147	1,600	1.4	18,360	16.0	91	
I	I - 1							
	I - 2							
	Total							
Agriculture								
Others								
Non - Demand		482						
Sub - Total		1,892	1,800	0.9	20,300	10.7	100	
Miscellaneous			100		300			
TOTAL		1,892	1,900	1.0	20,600	10.8		

TABLE 2-6-2-26-(6) FUTURE KLENDER EXCHANGE
AREA AND TELEPHONE DEMAND

(Excluding miscellaneous)

Kecamatan	Kelurahan	Area (ha)	Telephone Demand in 1993	
JATINEGARA	Pondok Bambu	349	7,200	
	Klender	376	6,960	
	Duren Sawit	240	1,955	
	Malaka	317	2,795	
	Pondok Kelapa	610	1,390	
	TOTAL		1,892	20,300

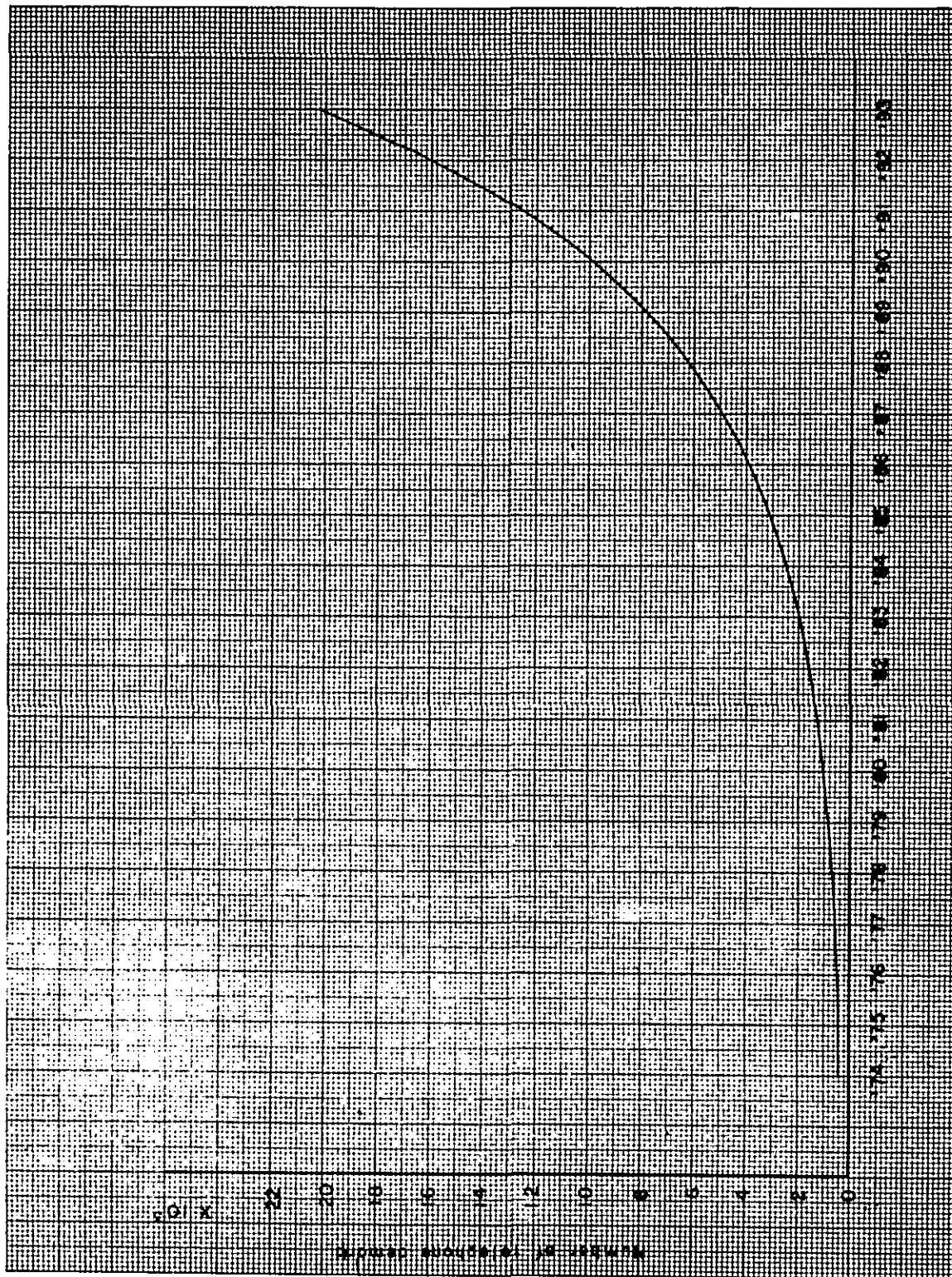


FIG. 2-6-2-26-(7) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
 (KLENDER EXCHANGE OFFICE)

TABLE 2-6-2-26-(8)
 TELEPHONE DEMAND, POPULATION AND
 DIFFUSION RATIO IN 1993
 KLENDER EXCHANGE AREA

(Excluding miscellaneons)

Area	(ha)	1,892
Telephone demand		20,300
Population		551,500
Household		110,300
Population density (Population/ha)		291
Diffusion ratio (Demand/100 inhabitants)		3.7
Diffusion ratio (Demand/100 households)		18.4

2.6.2.27 TEBET

(1) General Description

The future service area of Tebet Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. As shown in Fig. 2.6.2.27.(1) and Table 2.6.2.27.(2), the area comprises 10 kelurahans.

The service area which lies in the central part of Jakarta is 1,167 hectares in size and, as of 1973, has a population of 315,000, with the population density of 270, i.e., one of the high density areas in Jakarta. There are many areas where middle and low class houses are standing in jumble. Differing from other service areas in the central part, this service area has many residential areas.

At present the telephone service in this area is covered by existing Gambir, Semanggi and Jatinegara exchange offices. As of 1974, the subscriber lines number 1,330.

(2) Existing Service Area and Future Service Area

The future service area of Tebet Exchange Office determined by the 2nd Five-Year Plan of PERUMTEL is given in Fig. 2.6.2.27.(1). The existing subscriber lines are covered by Gambir, Semanggi and Jatinegara exchange offices. The area size and the telephone demand as of 1993 in each kelurahan are shown in Table 2.6.2.27.(2).

(3) Telephone Demand Forecast

1) Area Development Estimation

The field survey for telephone demand forecast was carried out by referring to the City Plan, the aerial photograph, and the topographic map of Jakarta.

The northern part of the service area is densely populated, with middle and small scale houses standing roof by roof. Since the area is located in the central part, such tendency will further grow keeping pace with the advancement of urbanization.

2) Area Pattern

The area pattern map as of 1993 drawn up based on the field survey is given in Fig. 2.6.2.27.(3). The telephone demand by area pattern as of 1983 and 1993 in each kelurahan is given in Table 2.6.2.27.(4) and Table 2.6.2.27.(5).

3) Result of Demand Forecast

As shown in Table 2.6.2.27.(4), the telephone demand as of 1993 is forecasted to be 28,260 (including miscellaneous circuits), of which demand for residential telephones accounts for 81.6% and that for business telephones 18.4%.

During the period from 1974 through 1993, the demand will increase rapidly as shown in Fig. 2.6.2.27.(6). Fig. 2.6.2.27.(7) shows the population density per hectare.

(4) Conclusion

Table 2.6.2.27.(8) presents the telephone demand, population, number of households, population density and telephone diffusion rate as of 1993 in the future service area of Tebet.

- PRESENT BORDER OF GAMBIR,
JATINEGARA AND SEMANGGI
EXCHANGE OFFICE SERVICE AREA
- - - - - TEBET EXCHANGE OFFICE SERVICE AREA
IN FUTURE
- · - · - JAKARTA PUSAT, SELATAN
- - - - - KECAMATAN
- - - - - KELURAHAN

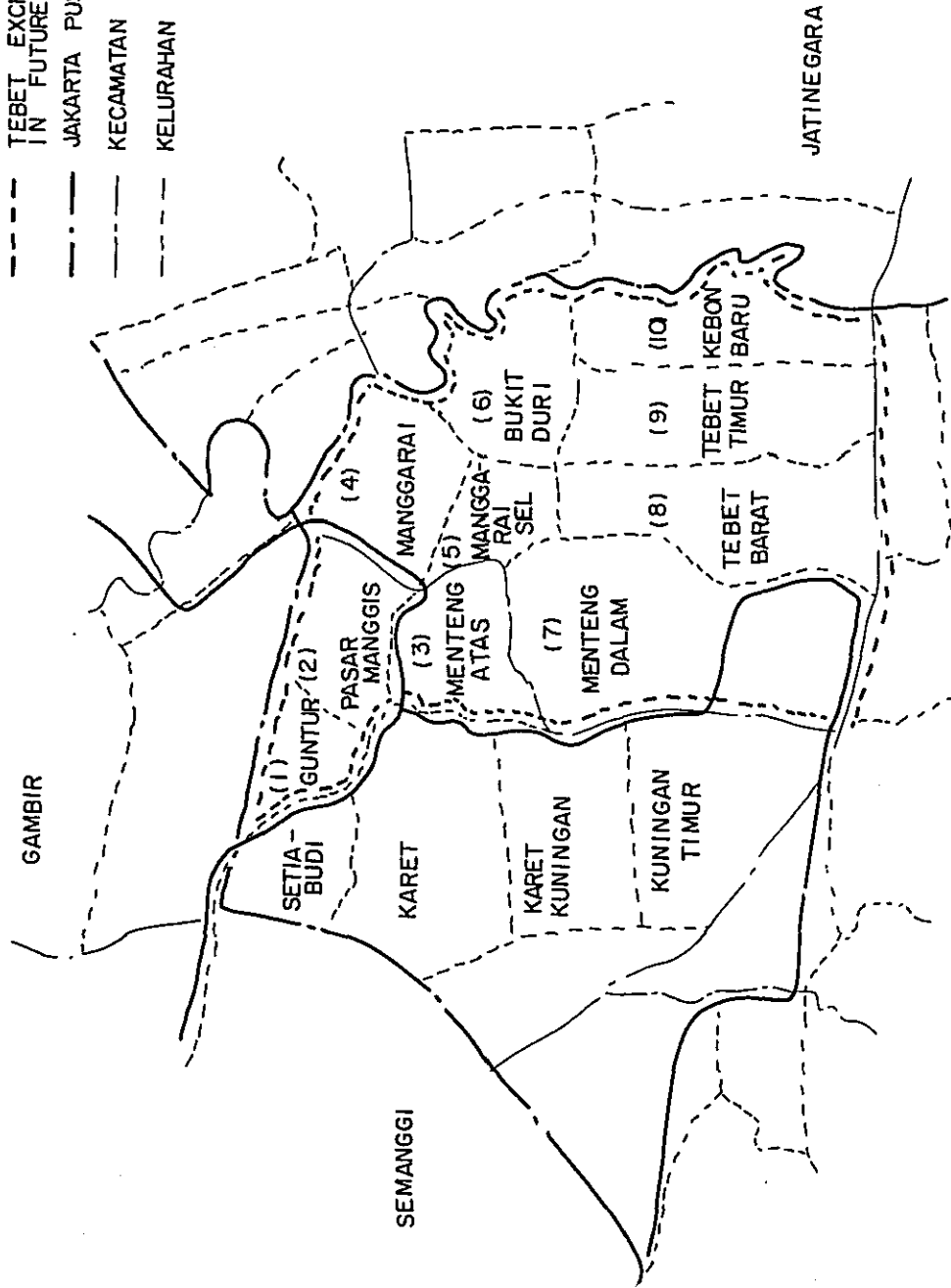


FIG. 2-6-2-27-(1) TEBET EXCHANGE OFFICE SERVICE AREA

TABLE 2-6-2-27-(2) FUTURE TEBET EXCHANGE AREA
AND TELEPHONE DEMAND

(Excluding miscellaneous)

Kecamatan	Kelurahan	Area (ha)	Telephone Demand in 1993
SETIA BUDI	Guntur	62	1,325
	Pasar Manggis	98	2,605
	Menteng Atas	93	1,845
TEBET	Manggarai	80	1,480
	Manggarai Selatan	49	1,225
	Bukit Duri	126	2,180
	Menteng Dalam	250	6,225
	Tebet Barat	158	4,595
	Tebet Timur	127	3,625
	Kebon Baru	124	2,595
TOTAL		1,167	27,700

AREA PATTERN MAP (Tebet)

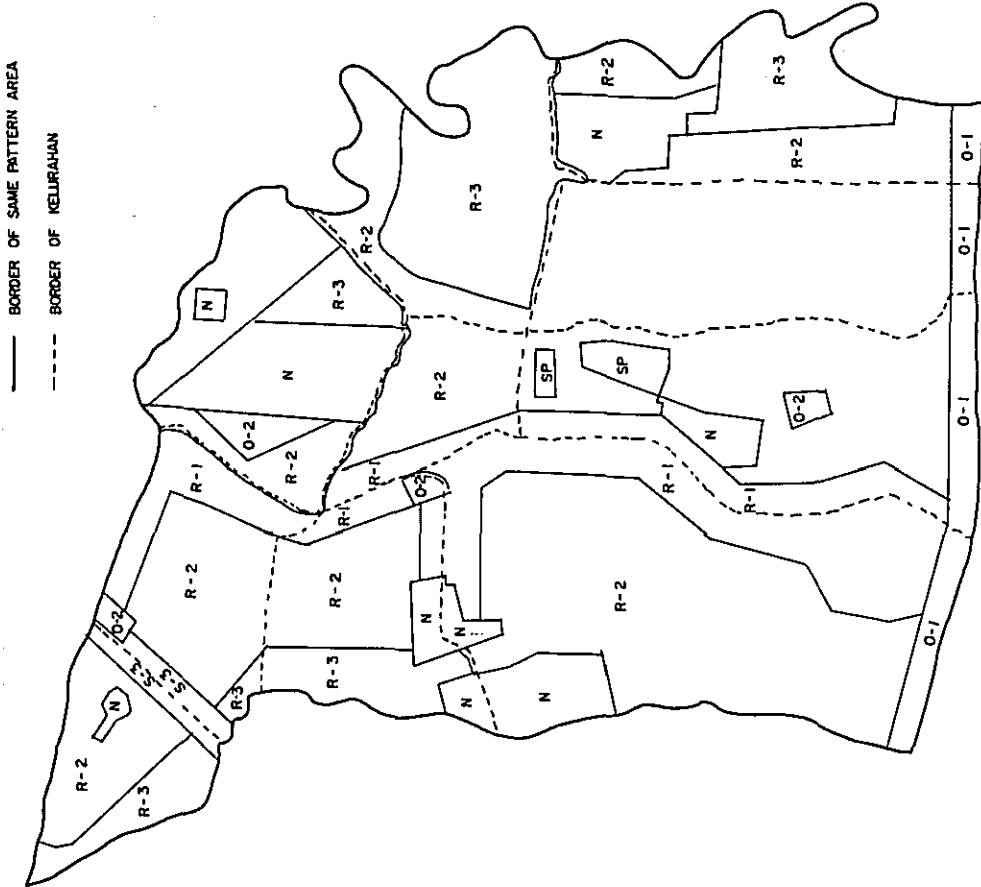


FIG.2-6-2-27-(3) AREA PATTERN MAP (TEBET)

TABLE 2-6-2-27-(4) TEBET EXCHANGE OFFICE TELEPHONE DEMAND

Survey Time : September 1974

Classification	Item	Area (ha)	1983		1993		Remarks
			Demand	Demand density	Demand	Demand density (%)	
S	S - 1						
	S - 2						
	S - 3	12	150	12.5	480	40	1.7
	Total	12	150	12.5	480	40	1.7
O	O - 1	35	1,600	45.7	3,500	100	12.6
	O - 2	17	420	24.7	1,020	60	3.7
	Total	52	2,020	38.9	4,520	86.9	16.3
R	R - 1	156	1,400	9.0	3,900	25	14.1
	R - 2	629.2	3,700	5.9	15,730	25	56.9
	R - 3	198	600	3.1	2,970	15	10.6
	Total	983.2	5,700	5.8	22,600	23	81.6
I	I - 1						
	I - 2	10	30	3.0	100	10	0.4
	Total	10	30	3.0	100	10	0.4
Agriculture							
Others							
Non - Demand		109.8					
Sub - Total		1,167	7,900	6.8	27,700	23.7	100.0
Miscellaneous			200		560		
TOTAL		1,167	8,100		28,260		

TABLE 2-6-2-27-(5) 1/4 TEBET EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (1)

Survey Time : September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks	
				Demand	Demand density	Demand	Demand density		
SETIABUDI	Guntur (1)	R - 2	28	245	8.8	700	25		
		R - 3	23	100	4.4	345	15		
		S - 3	7	80	11.4	280	40		
		N	4						
		Sub Total			425	6.9	1,325	21.4	
		Miscellaneous			5		20		
		TOTAL		62	430		1,345		
		Pasar Manggis (2)	R - 1	31	340	11.0	775	25	
			R - 2	52	365	7.0	1,300	25	
			R - 3	6	20	3.3	90	15	
			S - 3	5	60	12.0	200	40	
			O - 2	4	100	25.0	240	60	
			Sub Total		885	9.0	2,605	26.6	
			Miscellaneous		15		45		
	TOTAL		98	900		2,650			
	Menteng Atas (3)	R - 1	14	170	12.1	350	25		
		R - 2	40	300	7.5	1,000	25		
		R - 3	21	75	3.6	315	15		
		O - 2	3	75	25.0	180	60		
		N	15						
		Sub Total		620	6.7	1,845	19.8		
		Miscellaneous		10		30			
	TOTAL		93	630		1,875			

TABLE 2-6-2-27-(5) 2/4 TEBET EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (2)

Survey Time : September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks
				Demand	Demand density	Demand	Demand density	
	Manggarai (4)	R-2	34	280	8.2	850	25	
		R-3	10	40	4.0	150	15	
		O-2	8	200	25.0	480	60	
		N	28					
		Sub Total		520	6.5	1,480	18.5	
	TOTAL	Miscellaneous		15		45		
			80	535		1,525		
		R-1	12	170	14.2	300	25	
		R-2	37	330	8.9	925	25	
		Sub Total		500	10.2	1,225	25	
	Manggarai Selatan (5)	Miscellaneous		5		10		
			49	505		1,235		
		R-2	29	165	5.7	725	25	
		R-3	97	270	2.8	1,455	15	
		Sub Total		435	3.5	2,180	17.3	
	TOTAL	Miscellaneous		5		20		
			126	440		2,200		
		Bukit Duri						
		(6)						
		Sub Total						
	TOTAL							

TABLE 2-6-2-27(5) 3/4 TEBET EXCHANGE OFFICE TELEPHONE
DEMAND OF EACH KELURAHAN (3)

Survey Time : September 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1983		1993		Remarks
				Demand	Demand density	Demand	Demand density	
	Menteng Dalam (7)	R-1	67	445	6.6	1,675	25	
		R-2	138	570	4.1	3,450	25	
		O-1	11	510	46.4	1,100	100	
		N	34					
		Sub Total		1,525	6.1	6,225	24.9	
	TOTAL		250	1,570		6,355		
	Tebet Barat (8)	R-1	32	290	9.1	800	25	
		R-2	91	510	5.6	2,275	25	
		O-1	13	600	46.2	1,300	100	
		O-2	2	50	25.0	120	60	
I-2		10	30	3.0	100	10		
TOTAL		158	1,535		4,730			
Tebet Timur (9)	R-2	121	590	4.9	3,025	25		
	O-1	6	270	45.0	600	100		
	Sub Total		860	6.8	3,625	28.5		
	Miscellaneous		25		70			
	TOTAL		127	885		3,695		

TABLE 2-6-2-27-(5)4/4 TEBET EXCHANGE OFFICE TELEPHONE DEMAND OF EACH KELURAHAN (4)

Kecamatan	Kelurahan	Pattern	Area	1983		1993		Remarks
				Demand	Demand density	Demand	Demand density	
	Kebon- Baru (10)	R - 2	59.2	320	5.4	1,480	25	
		R - 3	41	100	2.4	615	15	
		O - 1	5	230	46.0	500	100	
		N	18.8					
		Sub Total		650	5.2	2,595	20.9	
		Miscellaneous		20		55		
	TOTAL		124	670		2,650		

Survey Time : September 1974

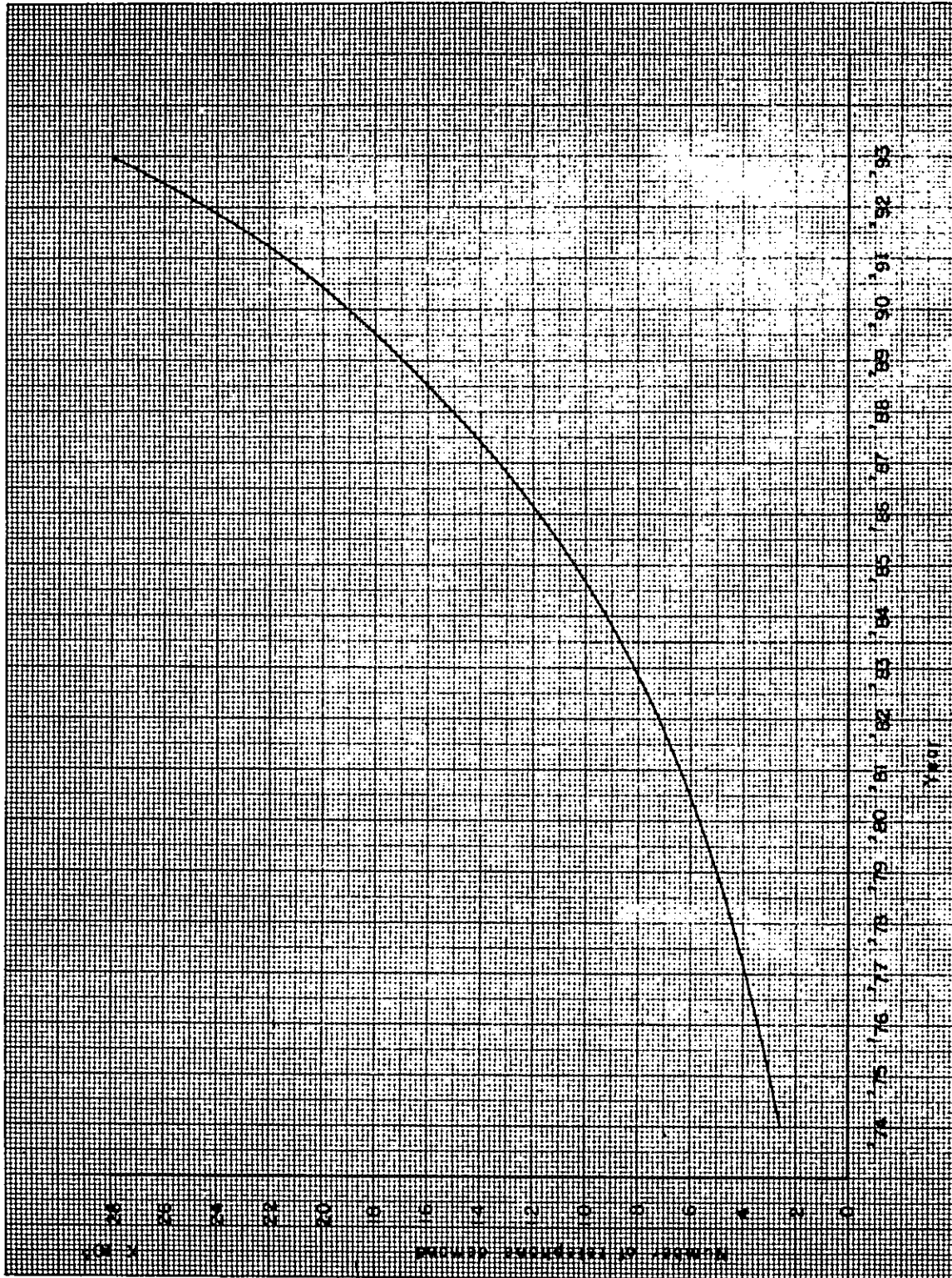
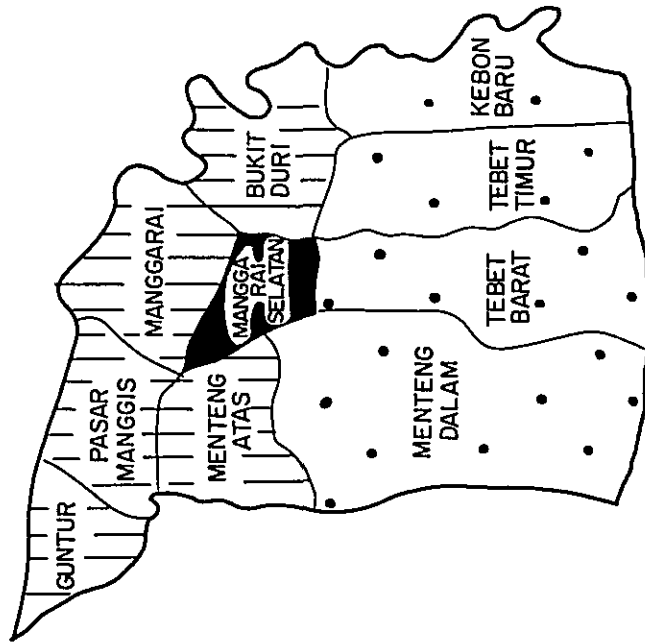
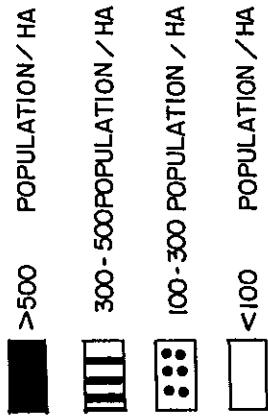
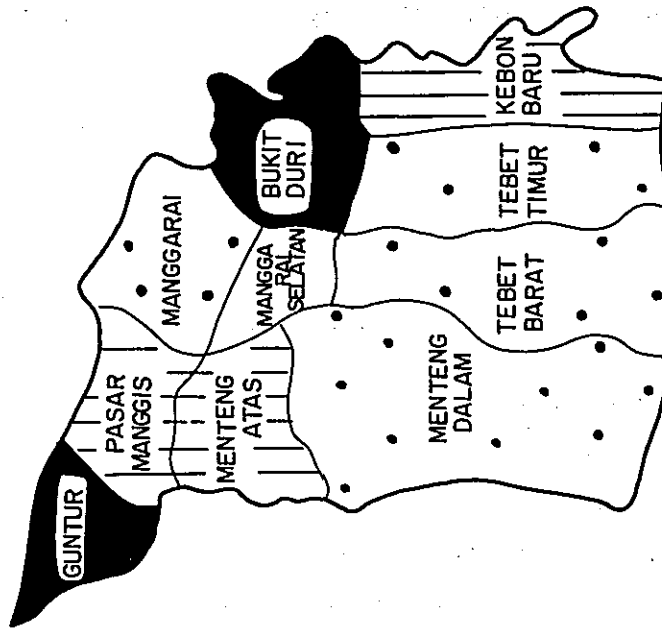


FIG.2-6-2-27-(6) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
 (TEBET EXCHANGE OFFICE)



1973



1993

FIG. 2-6-2-27-(7) POPULATION DENSITY
(TEBET)

TABLE 2-6-2-27 - (8)
 TELEPHONE DEMAND POPULATION AND DIFFUSION
 RATION IN 1993
 TEBET EXCHANGE AREA

(Excluding miscellaneous)

Area	(ha)	1,167
Telephone demand		27,700
Population		451,000
Household		90,200
Population density (Population/ha)		386
Diffusion ratio (Demand/100 inhabitants)		6.1
Diffusion ratio (Demand/100 households)		30.7

2.6.2.28 GANDARIA

(1) General Description

The future service area of Gandaria Exchange Office is determined by the 2nd Five-Year Plan of PERUMTEL. From the viewpoint of the future telecommunications network in Jakarta, it is also suitable. The telephone demand forecast was carried out for this area.

The service area is located in the southernmost part of Jakarta. The north side of the area adjoins the future service area of Pasar Rebo Exchange Office, while the west side is bordered by the Kali Ciliwung River. On the east and west sides the West Java extends.

According to statistics of 1972 compiled by D.K.I., the area is 3,258 hectares in size and has 7,505 households with a population of 37,440. Of the buildings in this area, 14.1% are permanent buildings and 85.9% are semi-permanent and temporary buildings. The rate of 14.1% is very small figure as compared with the rate of 21.3% for the whole Jakarta area. This figure will prove the dull economic activity in this area.

In this area lies Gandaria Exchange Office which opened telephone service on August 4, 1969. Gandaria Exchange Office has 200-line unit subscriber switches. As of November 1974, the existing subscriber lines including those of the future service area of Pasar Rebo Exchange Office and the West Java area number 94. In the future service area of Gandaria Exchange Office the subscriber lines number only 59. The large majority of the subscriber lines are in the industrial areas in Ciracas and Kali Mati.

The major part of the future Gandaria service area will remain to be an agricultural area. Therefore, a sharp increase in telephone demand will not be seen in the near future except for the industrial area, shopping area along the Bogor Road and residential areas proposed in the City Plan, such as Ciracas, Gedong and Kali Mati.

(2) Existing Service Area and Future Service Area

As shown in Fig. 2.6.2.28.(1), the existing service area includes the future service area of Pasar Rebo Exchange Office and the West Java area.

The object area of our study is the service area determined by the 2nd Five-Year Plan of PERUMTEL.

(3) Telephone Demand Forecast

1) Area Development Estimation

In our area development estimation we used as major references the City Plan, the aerial photograph and the topographic map of Jakarta.

At present the major part of this area is considered to be an agricultural area. Actually, however, there are some factories in Ciracas and Kali Mati, such as Ciba

Geigy Indonesia and Indomilk, etc. Part of these two areas are designed to be industrial areas in the City Plan.

On the other hand, Gedong and Kali Mati are scheduled to be residential and industrial areas. The southern part of Gedong is planned for a green area in the City Plan. At present, however, army residences are found in this area.

The areas along Lapangan Tembak Street (Cibubur area) and Prapatan Kedondong Street will grow into low class residential areas.

However, other major part of the service area will remain to be an agricultural area, as designed in the City Plan.

2) Area Pattern

As shown in Table 2.6.2.28.(2), the object area comprises 8 kelurahans.

Table 2.6.2.28.(2), Table 2.6.2.28.(3) and Fig. 2.6.2.28.(4) present the telephone demand and the area pattern as of 1993.

Table 2.6.2.28.(5) and Table 2.6.2.28.(6) present the telephone demand and the area pattern as of 1975, 1980 and 1990 in each kelurahan.

3) Result of Demand Forecast

The telephone demand forecast for the period from 1974 through 1993 prepared by the microscopic demand forecast method described in Section 2.6.1 is shown in Fig. 2.6.2.28.(7). The population density per hectare is given in Fig. 2.6.2.28.(8).

Our field survey result on the subscriber lines of Gandaria Exchange Office shows the ratio of residential telephones is 2% and that of business telephones is 98%. However, Table 2.6.2.28.(3) shows that the demand as of 1993 for residential telephones accounts for 55% (44% in the residential area and 11% in the agricultural area), and that for business telephone 45%.

(4) Conclusion

Table 2.6.2.28.(9) presents the telephone demand, population, number of households, population density and telephone diffusion rate forecasted for 1973, 1975, 1980, 1990 and 1993.

- GANDARIA EXCHANGE OFFICE SERVICE AREA AT PRESENT
- - - GANDARIA EXCHANGE OFFICE SERVICE AREA IN FUTURE
- - - JAKARTA TIMUR
- KECAMATAN
- - - KELURAHAN

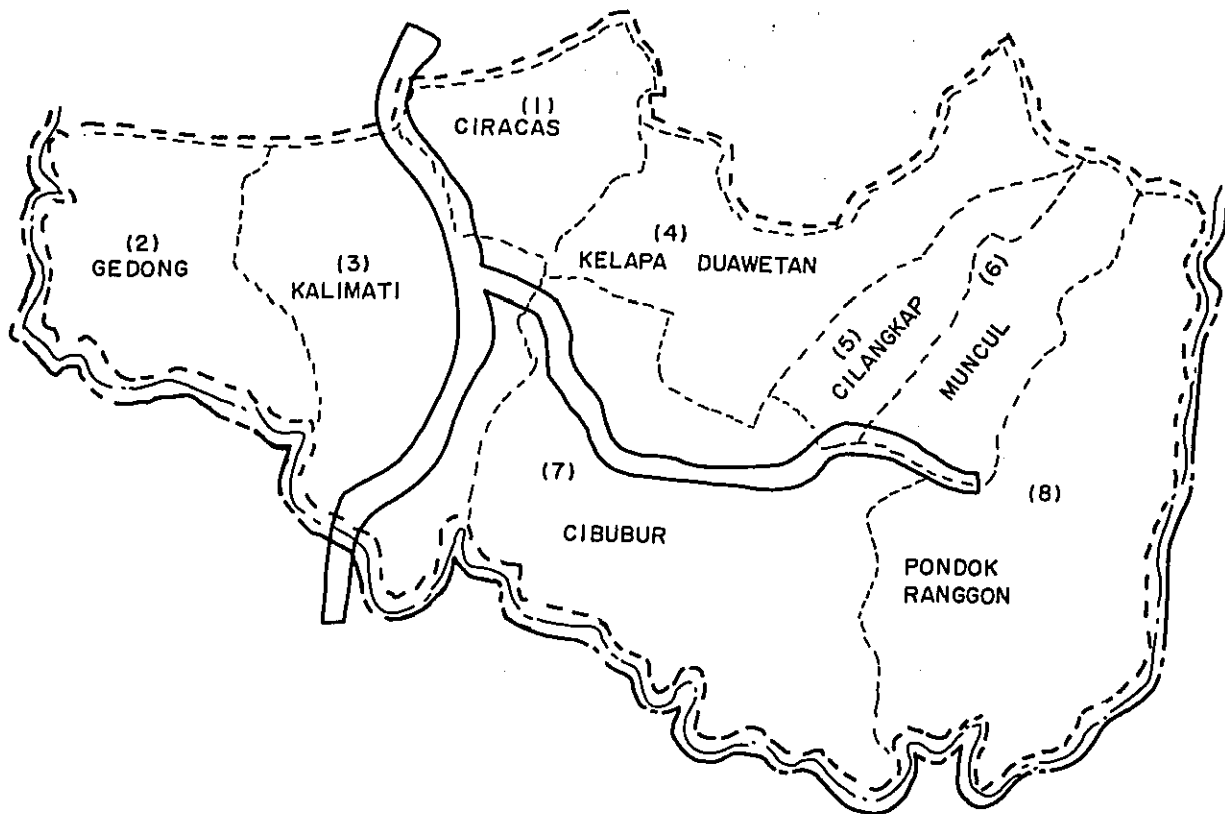


FIG.2-6-2-28-(1) GANDARIA EXCHANGE OFFICE SERVICE AREA

TABLE 2-6-2-28-(2) FUTURE GANDARIA EXCHANGE
AREA AND TELEPHONE DEMAND

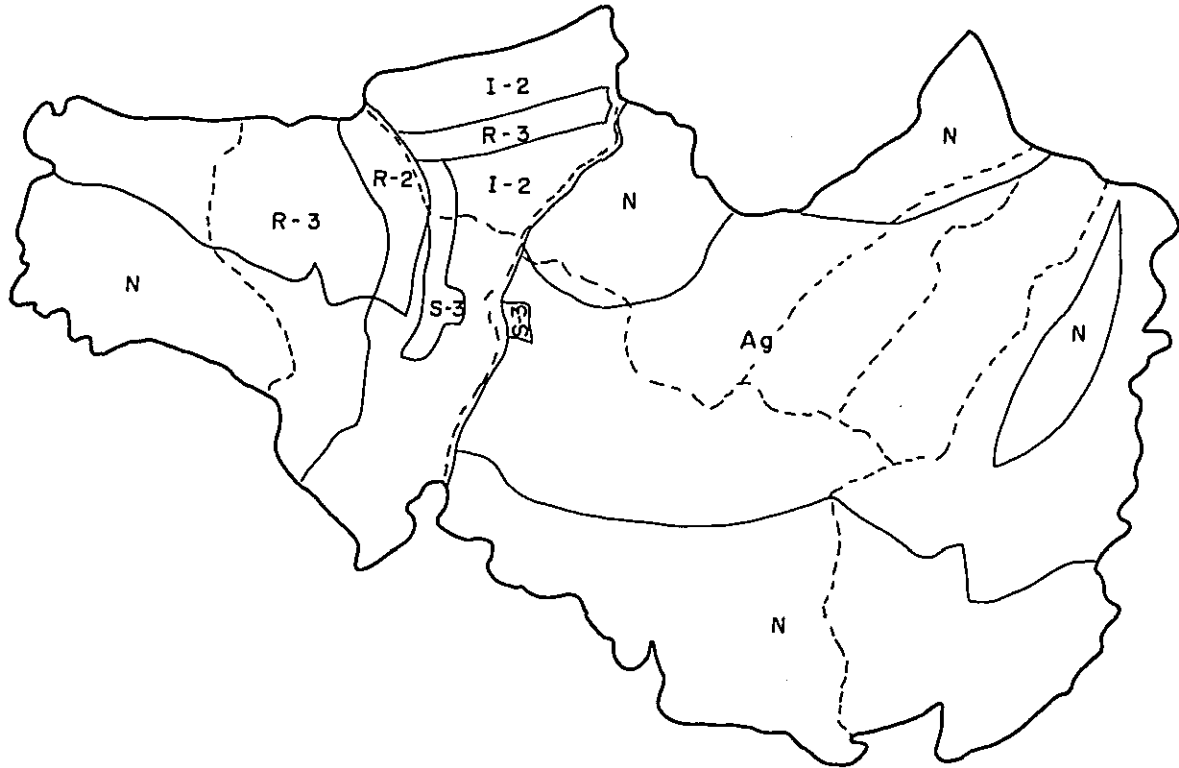
(Excluding miscellaneous)

Kecamatan	Kelurahan	Area (ha)	Telephone Demand in 1993
PASAR REBO	Ciracas	190.0	1,990
	Gedong	445.0	1,480
	Kali Mati	506.0	5,050
	Kelapa Dua Wetan	376.0	150
	Gilangkap	141.0	141
	Muncul	196.0	196
	Cibubur	758.0	538
	Pondok Ronggon	646.0	238
	TOTAL		3,258.0

TABLE 2-6-2-28-(3) AREA PATTERN IN 1993
(GANDARIA)

(Excluding miscellaneous)

Item		Area	Area	Demand	Demand	D/ha
Classification		(ha)	(%)		(%)	
S	S - 1					
	S - 2					
	S - 3	20	0.6	800	8.2	40.0
	Total	20	0.6	800	8.2	40.0
O	O - 1					
	O - 2					
	Total					
R	R - 1					
	R - 2	52	1.6	1,040	10.6	20.0
	R - 3	326	10.0	3,260	33.3	10.0
	Total	378	11.6	4,300	43.9	11.4
I	I - 1					
	I - 2	362	11.1	3,620	37.0	10.0
	Total	362	11.1	3,620	37.0	10.0
Agriculture		1,063	32.6	1,063	10.9	1.0
N		1,435	44.1			
TOTAL		3,258	100.0	9,783	100.0	3.0



———— BORDER OF SAME PATTERN AREA

----- BORDER OF KELURAHAN

FIG. 2-6-2-28-(4) AREA PATTERN MAP
(GANDARIA)

TABLE 2-6-2-28-(5) TELEPHONE DEMAND OF GANDARIA TELEPHONE EXCHANGE OFFICE

Survey Time : January , 1974 .

Telephone exchange office	Pattern	Area (ha)	1975		1980		1990	
			Demand	Demand density	Demand	Demand density	Demand	Demand density
GANDARIA	S - 1							
	S - 2							
	S - 3	20	45	2.3	105	5.3	495	24.8
	O - 1							
	O - 2							
	R - 1							
	R - 2	52	25	0.5	70	1.3	560	10.8
	R - 3	326	40	0.1	120	0.4	1,510	4.6
	I - 1							
	I - 2	362	195	0.5	445	1.2	2,265	6.3
Agriculture	1,063	85	0.08	165	0.2	690	0.6	
Army . R		5		10		35		
N	1,435							
Sub Total	3,258	395	0.1	915	0.3	5,555	1.7	
Miscellaneous		15		30		150		
TOTAL		3,258	410		945		5,705	

TABLE 2-6-2-28-(6) 1/2 GANDARIA TELEPHONE EXCHANGE OFFICE (1)

Survey Time: January 1974

Kecamatan	Kelurahan	Pattern	Area (ha)	1975		1980		1990	
				Demand	Demand density	Demand	Demand density	Demand	Demand density
PASAR REBO	Ciracas (1)	1 I-2	91	30	0.3	75	0.8	510	5.6
		2 R-3	20	10	0.5	25	1.3	120	6.0
		3 S-3	3	5	1.7	15	5.0	70	23.3
		4 I-2	76	35	0.5	85	1.1	460	6.1
	Sub Total	190	80	0.4	200	1.1	1,160	6.1	
	Miscellaneous		0		10		50		
	TOTAL		190	80		210		1,210	
	Gedong (2)	1 R-3	148	20	0.1	55	0.4	730	5.1
		2 N	297						
		Army R		5		10		35	
Sub Total		445	25	0.1	65	0.1	765	1.7	
Miscellaneous		0		0		10			
TOTAL		445	25		65		775		
Kali Mati (3)	1 R-3	158	10	0.1	40	0.3	660	4.2	
	2 R-2	52	25	0.5	70	1.3	560	10.8	
	3 I-2	57	35	0.6	75	1.3	255	6.2	
	4 S-3	12	30	2.5	65	5.4	300	25.0	
	5 I-2	50	45	0.9	95	1.9	390	7.8	
	6 I-2	88	50	0.6	115	1.3	550	6.3	
	7 N	89							
Sub Total	506	195	0.4	460	0.9	2,815	5.6		
Miscellaneous		10		15		85			
TOTAL		506	205		475		2,900		

TABLE 2-6-2-28-(6) 2/2 GANDARIA TELEPHONE EXCHANGE OFFICE (2)

Survey Time: January 1974.

Kecamatan	Kelurahan	Pattern	Area (ha)	1975		1980		1990	
				Demand	Demand density	Demand	Demand density	Demand	Demand density
PASAR REBO	Kelapa Wetan (4)	1 Ag	150	15	0.1	25	0.2	100	0.7
		2 N	225						
		Sub Total	376	15	0.04	25	0.07	100	0.3
		Miscellaneous		0		0		0	
	TOTAL		376	15	0.04	25		100	
	Cilangkap (5)	1 Ag	141	15	0.1	25	0.2	95	0.7
		Sub Total		15		25		95	
		Miscellaneous		0		0		0	
		TOTAL		141	15	0.1	25	0.2	95
	Muncuf (6)	1 Ag	196	15	0.1	30	0.2	125	0.6
Sub Total		196	15	0.1	30	0.2	125	0.6	
Miscellaneous			0		0		0		
TOTAL			196	15	0.1	30	0.2	125	0.6
Gibubur (7)	1 S-3	5	15	0.1	30	0.2	125	0.6	
	2 Ag	338	10	2.0	25	5.0	125	25.0	
	3 N	415	25	0.1	50	0.1	215	0.6	
	Sub Total	758	35	0.1	75	0.1	340	0.4	
	Miscellaneous		5		5		5		
	TOTAL		758	40		80		345	
Pondok Ranggan (8)	1 Ag	238	15	0.1	35	0.1	155	0.6	
	2 N	408							
	Sub Total	646	15	0.02	35	0.05	155	0.2	
	Miscellaneous		0		0		0		
TOTAL		646	30		70		155		

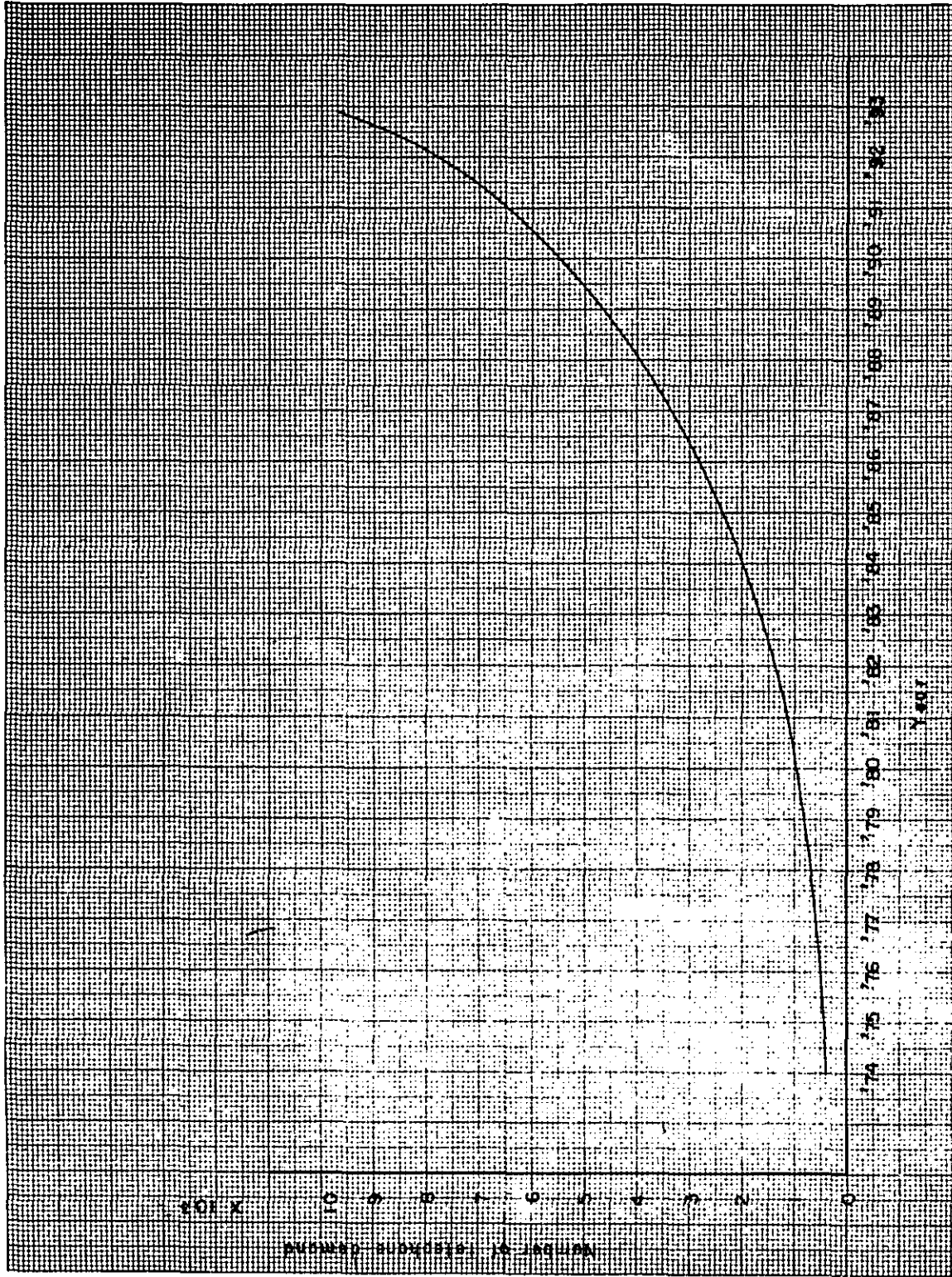


FIG.2-6-2-28-(7) TELEPHONE DEMAND (EXCLUDING MISCELLANEOUS)
 (GANDARIA EXCHANGE OFFICE)

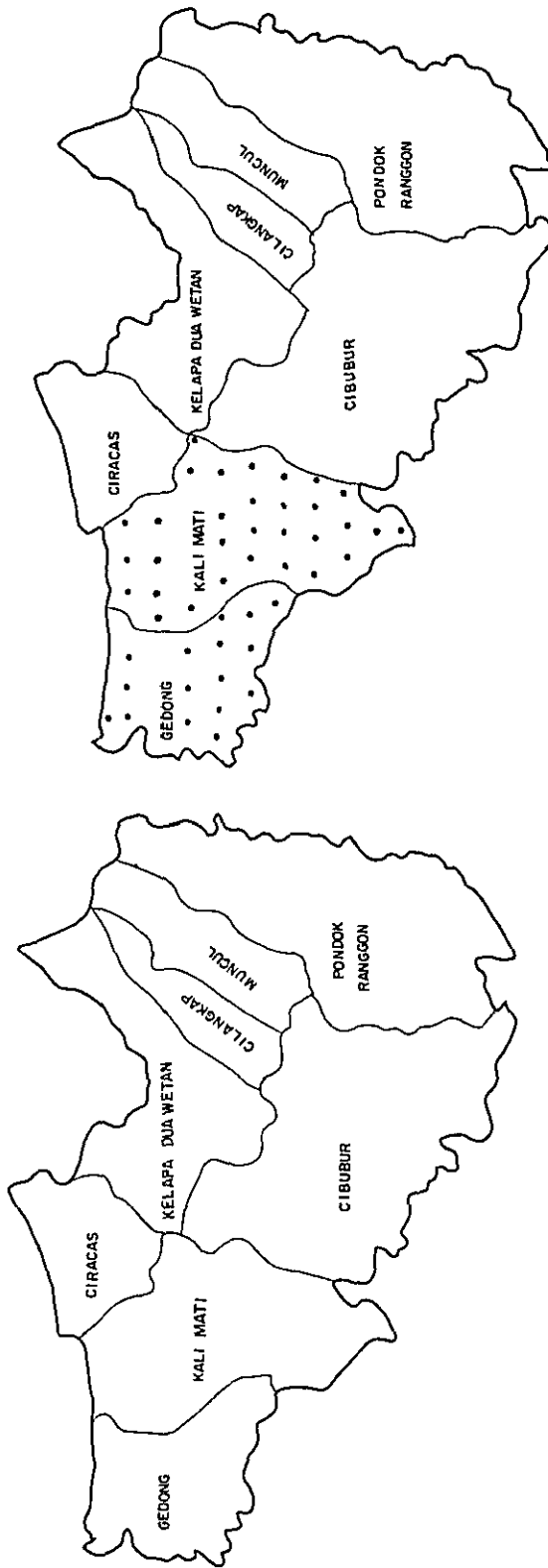
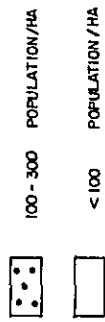


FIG. 2-6-2-28-(B) POPULATION DENSITY
(GANDARIA)

TABLE2-6-2-28-(9)
 DEMAND, POPULATION AND DIFFUSION RATIO
 (GANDARIA)

(Excluding miscellaneous)

Item \ Year	1973	1977	1982	1992	1993
Area (ha)	3,258	3,258	3,258	3,258	3,258
Demand	94	395	915	5,555	9,800
	1.0	4.2	9.7	59.1	104.1
* Population	41,000	51,000	87,000	252,000	348,740
	1.0	1.2	2.1	6.1	8.5
* Household	8,220	10,200	17,400	50,400	69,750
	1.0	1.2	2.1	6.1	8.5
Population density (Population/ha)	13	16	27	77	107
	1.0	1.2	2.1	5.9	8.2
Population demand ratio (Demand/ 100 inhabitants)	0.23	0.77	1.05	2.20	2.81
	1.0	3.3	4.6	9.6	12.2
Household demand ratio (Demand/ 100 households) -	1.14	3.87	5.26	11.02	14.03
	1.0	3.4	4.6	9.7	12.3

Note : Down side figure is ratio to 1973

Remarks :

- * The number of population and households which was calculated on the basis of the statistics of D.K.I assuming that its increasing ratio is approximately 11.2% per year including new comers from other areas.

