APPENDIX

THE FEASIBILITY STUDY ON THE URBAN DEVELOPMENT OF THE CENTRAL DISTRICT OF BARRANQUILLA

APPENDIX

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LIST OF MEMBERS FOR THE STUDY

APPENDIX A: DEVELOPMENT FRAMEWORK

A-1 Land Area

In the Masterplan Study, 10 areas have been selected as the "Strategic Project Areas", of which five areas (from No. 1 to No. 5) are "Sub-study Area" and the others (from No. 6 to No. 10) comprise "Main Study Area" in this Study.

The Land Area of those 10 areas is measured in this Study on the basis of new 1:1,000 scale maps of the central district prepared by IGAC in 1985. On the otherhand, the information of the lot area in each strategic project area is compiled from the cadastral data arranged also by IGAC. The result is summarized in TABLE A-1.

The settled coverage of "Main Study Area" of this Study is a little wider than the assumed area of the strategic project areas (from No. 6 to No. 10) because of the inclusion of the fringes as shown in FIG. 14-2 and TABLE 14-4.

A-2 Population and Employment

The assumed total population and employment for the Main Study Area are broken down to each block in accordance with the proposed configuration of urban functions. TABLE A-2 shows the allotment of the population and the workers by block with their semi-gross density.

TABLE A-1 PROJECT AREAS

			*		-
No.	Total Area	Canal Area	Area without Canal	Land Area	Public Area
1	128,497		128,497	95,223	33,274
2	50,086	•	50,086	35,084	15,002
3	102,380		102,380	61,989	40,391
4	60,788		60,788	44,623	16,165
5	197,885		197,885	120,987	76,898
6	80,434	•	80,434	43,813	36,621
7	306,740	21,507	285,233	194,215	112,525
8	306,630	16,207	290,423	214,597	92,033
9	233,859	13,583	220,276	174,912	58,947
10	312,732		312,732	259,552	53,180
lotal	1,780,031	51,297	1,728,734	1,244,995	535,036

TABLE A-2 POPULATION AND EMPLOYMENT

No. 1 2 3 4 5 6 7 8 9 10 11 12	Population O O O O O O O 1,500 O 2,160 O O			0 0 0 0 0 0 0 0		0 0 0 200 750 1,160 1,045
4 5 6 7 8 9 10 11 12	0 0 0 0 0 1,500 0 0 2,160			0 0 0 0 0 0		0 0 200 750 1,160 1,045
4 5 6 7 8 9 10 11 12	0 0 0 0 1,500 0 0 2,160			0 0 0 0 0		0 200 750 1,160 1,045
4 5 6 7 8 9 10 11 12	0 0 0 1,500 0 0 2,160			0 0 0 0		200 750 1,160 1,045
5 6 7 8 9 10 11 12	0 0 1,500 0 0 2,160			0 0 0		750 1,160 1,045
7 8 9 10 11 12	1,500 0 0 2,160			0 0 0		750 1,160 1,045
7 8 9 10 11 12	1,500 0 0 2,160			0 0 0		1,160 1,045
8 9 10 11 12	1,500 0 0 2,160			0 0		1,045
9 10 11 12	0 0 2,160 0			Ö		1.045
10 11 12	0 2,160 0	•				
11 12	2,160 0					1,800
12	0					0
				0		
	0			0	•	740
13				0	•	1,185
14	2,320			0		0
-15	500			0		510
16	1,000	•		0		770
17	0			0		0
18	. 0			0		3,210
19	0			.0		400
20	0			0		890
21	ŏ	•		ő		2,650
21.	0			ő		570
22	. 0			0		1,450
23						0
24	0	-	٠,	0		
25	0			0		0
- 26	. 0			0		1,000
27	0			. 0		250
. 28	0			0		715
29	0			0		0
30	0			0		875
31	0			0		0
32	0			0		0
33	0			200		0
34				200		. 0
35	4,000			0	•	0
	0			Ö		0
. 36	0			655		Ŏ
37	0	•		655		ň
38			•	055	4	0
39 40	0	-				
40	0			0		1,200
41	0			0		1,200
42	0			0		0
43.	0			0		0
44	0			0		0
45	0			0		0
46	0			. 0		0
47	0	•		0.0		0
48	. 0	4		0		0
49	Ö			Ō	•	. 0
<u>50</u>	Ö			0		. 0
Tota				1,710		23,615

APPENDIX B: GENERATION/ATTRACTION BY ZONE IN 2000

TABLE B-1 GENERATION/ATTRACTION BY ZONE IN 2000 (Person Trip/Day)

Zone		Generat	ion			Attraction				
No.	Walk	Bus	Car	Total	Walk	Bus	Car	Total		
9	4,785 11.5%	29,083 70,2%	7,564 18.3%	41,432	4,825 11.2%	29,736 68.8%	8,678 20.1%	43,239		
10	2,088 5.5%		11,117 29.5%		2,256 5.7%		11,989 30.5%	39,273		
11	868 8.5%		2,443 24.0%	10,186	869 8.5%	6,867 67.6%	2,428 23.9%	10,164		
89	2,406 12.3%			19,619	2,417 11.9%	13,899 68.5%		20,288		
90	929 6.9%	8,616 63,9%	3,930 29.2%	13,475	. 983 7.0%	8,769 62.9%	4,192 30.1%	13,944		
91	497 17.5%	1,766 62,2%	576 20,3%	2,839	493 16 . 7%		649 22,0%	2,949		
92	829 12,7%	4,095 62.6%	1,622 24.8%	6,546		4,045 63.0%		6,418		
93	1,138 10.1%	7,454 66.1%	2,678 23.8%	11,270	1,133 10.1%	7,411 66.2%		11,199		
94	2,449 13.4%	11,559 63,3%	4,255 23.3%	18,263		11,855 62.0%		19,124		
	15,989 9.9%	107,580 66.7%	37,744 23.4%	161,313		109,417 65.7%		166,598		

APPENDIX C: REFERENCE PLAN OF RIVERSIDE BYPASS ROUTE

The section II has a reference plan for the horizontal alignment. This route passes through Zona Franca and the entrance of the Port as shown in FIG. C-1.

The idea of this alignment is to give direct access to those two facilities for their activities, and from the view point of engineering, the straight alignment is more preferable.

However, because of the characteristics of Zona Franca, the route has to be elevated to keep access control to Zona Franca. The cost of construction is comparatively high on accout of the soil conditions and there are some institutional problems to pass through Zona Franca even with a viaduct.

Thus, although there is some possibility to realize this alignment in the future, this is for now no more than an idea for future reference.

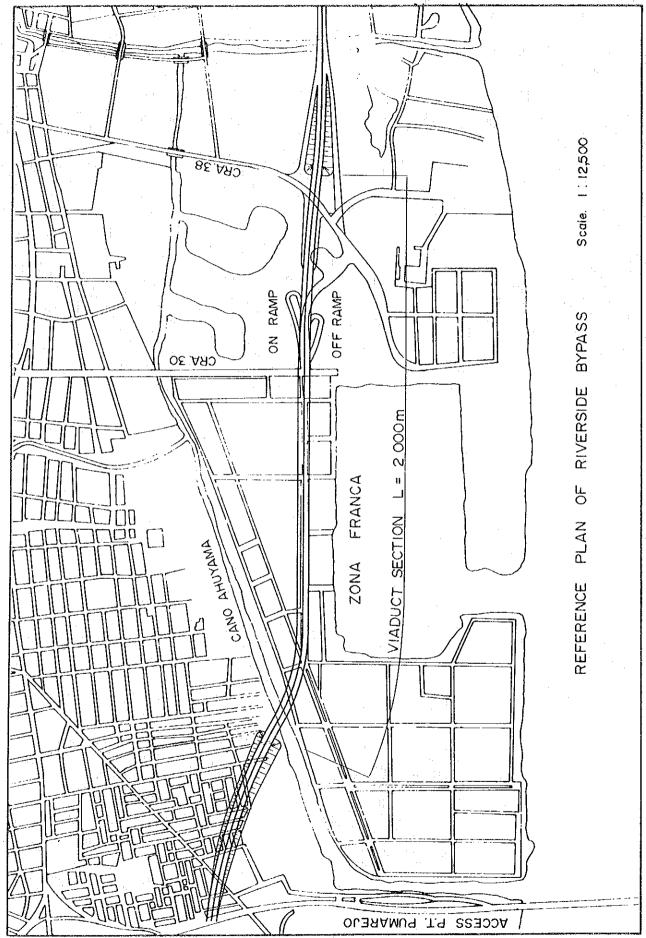


FIG. C-1 REFERENCE PLAN OF RIVERSIDE BYPASS

APPENDIX D: COST COMPARISON OF COMPAÑIA-C BRIDGE

MOPT requires 13.0 m of clearance for the compania-C bridge of the Riverside Bypass to maintain port function using this canal. However, if this function can be removed in the future, the clearance might possibly be reduced to 5.0 m.

The comparative study of the cost of construction with various clearance heights shows that the factor which affects the total cost is embankment as shown in TABLE D-1. FIG. D-1 illustrates a proportional relation between the clearance height and the total construction cost.

TABLE D-1 QUANTITY AND COST BETWEEN STA5+300 AND STA6+925 (Compañia-C Bridge) FOR DIFFERENT VERTICAL HEIGHT

THE CASE OF H=13.0m

(Direct Cost)

Item	Unit	Quantity	Unit Cost	Cost	Remarks
Embankment	m³	328,054.80	1,034.86	339,490,790.30	
Slope Protection	m²	27,514.13	83.11	2,286,699.34	
Land Acquisition	m²	80,330.90	1,500.00	120,496,350.00	
Bridge	IJ	1		300,348,000.00	
Total				762,621,839.60	

THE CASE OF H=12.0m

Item	Unit	Quantity	Unit Cost	Cost	Remarks
Embankment	m³	277,720.11	1,034.87	287,404,210.20	
Slope Protection	m²	23,770.13	83.11	1,975,535.50	
Land Acquisition	m²	77,210.90	1,500.00	115,816,350.00	
Bridge	m²	1		297.733,000.00	•
Total				702,929,095.70	

THE CASE OF H=5.0m

Item	Unit	Quantity	Unit Cost	Cost	Remarks
Embankment	m³	128,704.73	1,034.87	133,192,663.90	
Slope Protection	m²	17,224.35	83.11	1,431,515.73	
Land Acquisition	III ²	63,779.25	1,500.00	95,668,875.00	•
Bridge	m²	•		177,249,000.00	1
Total				407,542,054.60	

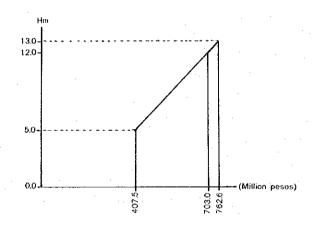


FIG. D-1 THE COMPANIA-C BRIDGE COMPARISON BETWEEN BRIDGE HEIGHT AND COST

APPENDIX E: MATERIAL VOLUME FOR STRUCTURES OF RIVERSIDE BYPASS

The required material volumes for culverts, super structures and substructures of the bridges in the Riverside Bypass are summarized in the following tables.

TABLE E-1 MATERIAL VOLUME OF CULVERT

Sect.	Place	Concrete (m³)	Form (m²)	R.Bar (t)	Ex. (m³)	Fill. (m³)	Pump (m³)	Pile (m)	Support (m³)
	La Chinita	251.5	863,3	22,64	401.0	<u>-</u>	401.0	· -	679.0
	Las Nieves	136.7	511.5	12.30	162.0		162.0		274.0
I	Cra 17B	129.5	484.6	11.66	160.0	· -	160.0		257.0
	Cra 20	129.5	484.6	11.66	160.0		160.0	· ÷	257.0
	Cra 30	144.7	717.9	13.02	193.0		193.0	<u>.</u>	333.0
	Cra 32	138.8	713.4	12.49	174.0		174.0	· <u> </u>	298.0
	Sub-total	930.7	3,775.3	83.77	1,250.0	_	1,250.0	-	2,098.0
III	Radio Olimpica	236.3	808.8	21.27	373.0		373.0	**** . *	631.0
Total		1,167.0	4,584.1	105.04	1,623.0	-	1,623.0	<u>-</u>	2,729.0

TABLE E-2 MATERIAL VOLUME OF SUPER STRUCTURE

Sect.	Place	Conc.(A) (m³)	Conc.(B) (m³)	Form (m²)	R.Bar (t)	PC Cable (t)	Support (m³)	Remark
	Arroyo Rebolo	_	208.6	1,208.9	46.92	_	1,344.0	1=21 RC
İ	Caño Ahuyama	970.2	62.4	5,883,3	89,52	47.73	.	1=30*3 PC
:	Sub-total	970.2	271.0	7,092.2	136.44	47.73	1,344.0	
ΙΊ	Caño Arriba	285.8	20.8	1,741.4	26.32	12.80	-	1=27 PC
Total		1,256.0	291.8	8,833.6	162.76	60,53	1,344.0	
:			468.9	2,617.6	105.50		4,655.0	1=21*2 RC
III	Caño Tramposos	417.4	23.7	2,596.6	38.56	22.16	_= _= .	1=35 PC
	·		468.9	2,617.6	105.50		4,655.0	1=21*2 RC
	Sub-total	417.4	961.5	7,831.8	249.56	22.16	9,310.0	
			703.2	3,926.4	158.25	<u></u>	17,150.0	1=21*3 RC
	Caño Companias	528.4	27.1	3,334.4	48.95	25.31	·	1=40 PC
	(A)	. –	703.2	3,926.4	158.25		17,150.0	1=21*3 RC
	Sub-total	528.4	1,433.5	11,187.2	365.45	25.31	34,300.0	
	Caño Companias		750.8	4,061.4	168.93	·	4,725.0	1=22*3 RC
	(B)						:	
Total		945.8	3,145.8	23,080.4	783.94	47.47	48,335.0	

TABLE E-3 MATERIAL VOLUME OF SUB STRUCTURE

	- A +		<u> </u>	•						
Sect	t. Place		Conc.(B) (m³)	Form (m²)	R.Bar (t)	Ex.	Fill. (m ³)	Pump (m³)	Pile (m)	Suppor (m³)
	Arroyyo Rebolo	A1	225.1	348.5	7.88	337.0	204.0	133.0	192.0	
		A2	225.1	348.5		337.0	204.0			
		A1	299.4	512.0	10.48	408.0	256.0	152.0	256.0	
	Caño Ahuyama	P1	100.7	129.1		_	250.0	132.0	256.0	
		P2	. 100.7	129.1				_	256.0	77.
		A2	299.4	512.0		408.0		152.0	256.0	77.
	Sub-total		1,250.4	1,979.2	48.80	1,490.0	920.0	570.0	1,408.0	154.
I	Caño Arriba	A1	242.5	372.4	8,49	262.0	210.0			
		A2	242.5			362.0	218.0		256.0	_
			272.5	3/2.4	0.49	362.0	218.0	144.0	256.0	·
	Sub-total		485.0	744.8	16.98	724.0	436.0	288.0	512.0	0.0
ota	1		1,735,4	2,724.0	65,80	2,214.0	1,356.0	858.0	1,920.0	154.0
		Al.		411.7		343.0	207.0	136.0	352.0	
	A * B	P1	101.8	209.6	6.11	253.0	164.0	89.0	264.0	69,0
	Caño Tranposos	P2	188.2	320.9	14.11			·	352.0	127.0
		Р3	188.2	320.9	14.11	-		· ~ .	352.0	127.0
		P4	101.8	209.6	6.11	253.0	164.0	89.0	264.0	69.0
		A2	260.4	411.7	9.11	343.0	207.0	136.0	352.0	-
	Sub-total		1,100.8	1,884.4	58.66	1,192.0	742.0	450.0	1,936.0	392.0
		A1	862,5	2,093.6	86,25	586.6	355.1	231.5	672.0	
Ι		P1	230.3	394.9	14.97	224.0	153.5	70.5	672.0 336.0	216.0
		P2	235.1	406.0	15.28	224.0	153.5	70.5		216.0
	Caño Companias	P3	285.1	425.3	18.53	864.0	864.0	864.0	336.0	225.0
	(A)	P4	285.1	425.3	18.53	864.0	864.0		420.0	231.0
		P5 ·	235.1	406.0	15.28	224.0	153.5	864.0	420.0	231.0
		P6	230.3	394.9	14.97	224.0	153.5	70.5		225.0
		A2		2,093.6	86.25	586.6	355.1	70.5 231.5	336.0 672.0	216.0
	Sub-total		3,226.0	5,639,6	270.06	3,797.2				.344.0
		Al	255.8	406.0	8.95					
1.1	Caño Companias	P1	188.6	256.1	6,60	337.0	204.0	133.0	384.0	-
	(B)	P2	188.6	256.1		·	_		240.0	
	41 177	A2	251.9	399.8	6.60 8.82	332.0	201.0	131.0	240.0 384.0	
	Sub-total		884.9]		30.97	669.0	405.0	264.0		
			5,211,7 9							

APPENDIX F: FLOOR AREA RATIO BY BLOCK

The floor area ratio is an important instrument to control the spatial formation of a project area. Due consideration is given to set up floor area ratio for each block in the Main Study Area to meet the future allotment of urban functions and to secure active urban scenes.

TABLE F-1 shows the relation between floor area ratio and land use of each block.

TABLE F-1 FLOOR AREA RATIO

Zone No.	Block Area	Floor Area (2000)	Ratio	Total Floor Area by Block	Remarks
5	17,352	300		50,490	Business
6	5,947	300		17,904	Business
7	9,568	300		28,040	Business
. 8 ,	28,292	200	÷	56,140	Mixed
9	9,628	300	4 4	26,460	Business
10	15,360	300.		43,648	Business
11	26,729	200	•	50,780	Housing
12	8,894	300	:	26,268	Business
13	14,276	300		41,719	Business
14	29,019	200		54,500	Housing
15	9,674	300		28,360	Mixed
16	15,516	300		47,213	Mixed
18	15,072	200		30,036	Commercial
19	4,912	200		9,600	Commercial
20	7,910	300		21,728	Commercial
22	8,052	200		14,120	Commercial
23	18,932	200		36,561	Commercial
26	25,212	100		23,788	Commercial
32	197,878	60		113,640	Housing
35	64.552	200	100	109,088	Housing
40	15,928	200		30,060	Commercial

APPENDIX G: ESTIMATION OF WATER CONSUMPTION AND SEWAGE DISCHARGE

The future demand of water consumption and sewage discharge is estimated on the basis of unit water consumption by type of land use. TABLE G-1 summarizes unit water consumption based on the data of EPM, and TABLE G-2 shows the relation between those demands and the proposed water supply and sewage systems. FIG. G-1 is the illustration of the estimated demands by block.

TABLE G-1 UNIT CONSUMPTION OF WATER

Land Use	Unit Consumption	Remarks		
Residential	0.35m³/person/day	*1)		
Industrial	63m³/ha/day	*1) ha: Land Area		
Park & Green	15m³/ha/day	*2) ha: Land Area		
Bus Terminal	70m³/ha/day	*1) ha: Land Area		
Market	110m³/ha/day	*1) ha: Floor Area		
Commercial	70m³/ha/day	*1) ha: Floor Area		
Business	80m³/ha/day	*1) ha: Floor Area		

The above unit consumption of water is based on

^{* 1)} The water consumption data of EPM and

st 2) Water supply and sewer design by Luis Felipe Silva Garavito

TABLE G-2 WATER CONSUMPTION AND SEWAGE DISCHARGE

Block		Area or	Unit	Consumption	Coverage	of New System
No.	Use	Population	Consumption (m³/day/ha or prs)	(m³/day)	Water Supply	Sewer
Α	CO	f-4.7 ha	70	:330	*	*
	MA	f-2.9 ha	110	320	*	*
В	CO -	f-1.5 ha	70	110	0	0 (II)
_	MA	f-1.6 ha	110	180	0	0 (I)
C	PG	2.0 ha	15	30	0	-
	CO	f-2.6 ha	70	180	0	0 (II)
D	PG	2.5 há	15	40	0	_
	BU	f-4.7 ha	80	380	0	0 (III)
E	PG	2.2 ha	15	30	О	- -
	BU	f~5.2 ha	80	420	0	(11) 0
F	PG	1.3 ha	15	20	0	_ '
	MA	f-1.9 ha	110	210	0	0 (I)
G	CO	f-5.4 ha	70.	380	0	0 (II)
Н	BU	f-7.5 ha	80	600	0 .	0 (III)
1	CO	f-1.7 ha	70	120	0 -	0 (II)
	RE	1,500 prs	0.35	530	0	0 (II)
J	PG	1.8 ha	15	30	0	-
K	PG ·	0.8 ha	15	10	0	-
	MΛ	f-1.3 ha	110	140	. 0	0 <u>(</u> I)
L	BT	5.4 ha	70	380	0	0 (I)
M	RE -	1,500 prs	0.35	530	0	0 (111)
	BU	f-9.2 ha	80	740	0	0 (IV)
N	RE	6,000 prs	0.35	2,100	0	0 (II)
- 0	IN	10.3 ha	65	670	0	0 (1)
P	IN	9.4 ha	65	610	. 0	0 (17)
Q	RE	6,000 prs	0.35	2,100	0	(VI) 0
R	IN	3.8 ha	65	250	0	(VI) O
	Philips	Existing Cons	umption	. 80	0	0 (IV)
S	RE	5,000 prs	0.35	1,750	0	0 (III)
T	PG	5.4 ha	15	80	0	
U	El Rio	4			-	
	Sub-stat	ion Existing (Consumption	750	0	*
		20,000 prs		1 1	· · · · · · · · · · · · · · · · · · ·	
Total		f-50.2 ha		$14,100 \text{ m}^3/\text{d}$	ay	
		44.9 ha		• •	4 4	

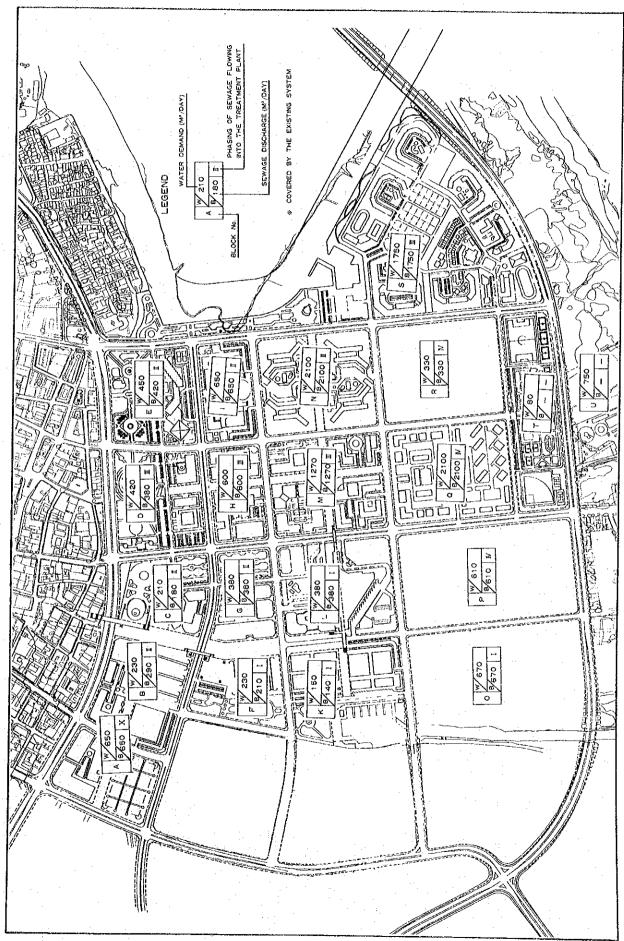


FIG. G-1 MAP OF WATER DEMAND AND SEWAGE DISCHARGE

APPENDIX H: EVALUATION OF PROJECTS

H-l Foreign/Local Portion of Direct Construction Cost

TABLE H-1 FOREIGN/LOCAL PORTION OF DIRECT CONSTRUCTION COST

(in million pesos)

Project	Foreign Portion	Local Portion	Tax	Total Construc- tion Cost	
Bus Terminal	98.2	215.4	32,2	381.8	
Public Market	87.5	366.7	41.8	496.0	
Open Market	72.0	312.5	34.5	419.0	
Urban Park	52.0	265.1	28.7	345.8	
Recreation Park	24.6	126.2	13.6	164.4	
Calle 30	98.3	224.6	66.7	389.6	
Riverside Bypass	531.5	1,040.6	318.9	1,891.0	
Land Preparation	258.8	301.0	178.9	738.7	
Drainage	100.4	460.5	70.8	631.7	
Water Supply	11.0	62.8	7.4	81.2	
Sewers	66.9	125.0	27.8	219.7	
Sewage Treatment Plan	346.5	208.3	93.0	647.8	
Electricity	963.0	168.0	304.2	1,435.2	
Telephone	446.1	98.2	191.7	736.0	
Street Pavement	125.9	280.5	79.4	485.8	
Urban Bus Plaza	9.2	33.3	4.4	46.9	
Pedestrian Streets	29.9	118.5	14.3	162.7	
Pedestrian Bridge	15.5	82.3	10.7	108.5	
Total	3,337.3	4,525.5	1,519.0	9,381.8	
Percentage	35.6	48.2	16.2	100.0	

H-2 Material, Equipment and Labor Cost

TABLE H-2 MATERIAL, EQUIPMENT AND LABOR COST

(in million pesos)

				,	
Project	Material Cost	Equipment Cost	Labo Skilled	r Cost Unskilled	Total Con- struction Cost
Bus Terminal	305.6	22.9	22.8	30.5	381.8
Public Market	380.5	34.7	34.6	46.2	496.0
Open Market	313.3	31.7	31.7	42.3	419.0
Urban Park	259.4	26.1	25.9	34.4	345.8
Recreation Park	123.3	12.3	12.3	16.5	164.4
Calle 30	310.4	45.3	21.4	12.5	389.6
Riverside Bypass	1,298.5	347.4	170.6	74.5	1,891.0
Land Preparation	401.0	276.4	54.8	6.5	738.7
Drainage	473.1	48.0	61.9	48.7	631.7
Water Supply	69.1	3.6	0.9	7.6	81.2
Sewers	138.9	30.1	31.0	19.7	219.7
Sewage Treatment					
Plant	503.3	54.4	79.7	10.4	647.8
Electricity	1,296.0	58.8	50.2	30.2	1,435.0
Telephone	627.8	30.9	61.8	15.5	736.0
Street Pavement	406.2	41.5	22.7	15.4	485.8
Urban Bus Plaza	40.2	2.0	2.0	2.7	46.9
Pedestrian Streets	130.2	9.8	9.7	13.0	162.7
Pedestrian Bridge	79.3	4.1	15.2	9.9	108.5
Tota1	7,156.1	1,080.0	709.2	436.5	9,381.8
Percentage	76.3	11.5	7.6	4.6	100.0

H-3 Change of Public Lands and Lots by Development

TABLE H-3 PUBLIC LANDS AND LOTS (BEFORE AND AFTER DEVELOPMENT)

(m²)

Before	After	Phase I	Phase II	Phase III	Phase IV	Total
Lots	Public Lands	51,622	84,530	60,596	2,357	199,105
Lots Public	Lots	211,021	255,823	119,150	181,824	767,818
Lands Public	Lots	22,691	76,384	55,727	44,143	198,945
Lands	Public Lands	94,394	201,994	16,001	11,587	323,976
Total		379.728	618.731	251.474	239,911	1,489,844

Note: Excluding areas of Calle 30 and Riverside Bypass.

TABLE H-4 SALEABLE LOTS CLASSIFIED BY USE BEFORE DEVELOPMENT

Use Before Development	Phase I	Phase II	Phase III	Phase IV	Total
Lots	176,042	255,823	119,150	150,464	701,479
Public Lands	22,691	76,384	55,727	40,634	195,436
Total	198,733	332,207	174,877	191,098	896,915
% of Public Lands	11.4	23.0	31.4	21.3	21.8

Note: Excluding the lot for sewage treatment plant (Phase I) and Block 33 (Phillips factory and its adjacent lot, Phase IV).

H-4 Land and Building Acquisition Cost

TABLE H-5 LAND AND BUILDING ACQUISITION COST

(in million pesos, 1987 market price #1)

		For Lots		Fo	r Public La	ınds		Total	
	Land E	uilding #2		Land B	uilding #2	Total	Land B	Building #2	Total
Phase I	307.9	167.5	475.4	102.8	56.5	159.3	410.7	224.0	634.7
Phase II	960,5	1,034.6	1,995.1	330.8	353.9	684.7	1,291.3	1,388.5	2,679.8
Phase III	123.3	85,5	208.8	56.9	36.5	93.4	180.2	122.0	302.2
Phase IV	138.9	86.5	225.4	4.5	4.9	9.4	143.4	91.4	234.8
Total	1,530.6	1,374.1	2,904.7	495.0	451.8	946.8	2,025.6	1,825.9	3,851.5

Note: *1 1.66 times of assessed value by IGAC

*2 Including 1% of estimated prices for demolition of the building

TABLE H-6 LAND AND BUILDING ACQUISITION COST FOR PUBLIC LAND

(in million pesos, 1987 market price #1)

	Ph	ase I	Ph	ase II	Phas	se III	Pha	se IV		Total
	Land	Building	Land	Building	Land	Building	Land	Building	Land	Building
Parks	26.6	13.4	136.7	126.9	46.0	32.8	***	-	209,3	173.1
Water Area	11.0	-	-		-		-	-	11.0	0.0
Terminal Plaza	38.8	31.0	-	_	_		-	-	38.8	31.0
Streets	26.4	12.1	194.1	227.0	10.9	3.7	4.5	4.9	235.9	247.7
Total	102.8	56.5	330.8	353.9	56.9	36.9	4.5	4.9	495.0	451.8

H-5 Conditions of Financial Models of Executive Body

Assumption for some items of financial models are summarized as follows:

1) Wage/Salary

The total number of the employees of the executive body of the project is estimated to be 22. The salary and social security by position are assumed as shown in TABLE H-7.

TABLE H-7 MONTHLY WAGE OF EXECUTIVE BODY

(in thousand pesos)

Charge	Number of Personnel	Monthly Salary per Person	Total Monthly Security	Social Security	Total Monthly Wage	
Director	1	180	180	77.4	257.4	
Division Chief	3	118	354	152.2	506.2	
Section Chief	5	98	490	210.7	700.7	
Subdirector	· 1	90	90	38.7	128.7	
Admin. Chief	1	60	60	25.8	85.8	
Subchief	4	40	160	68.8	228.8	
Secretary	6	30	180	77.4	257.4	
Messenger Boy	<u> </u>	21	21	9.0	30.0	
Total	22		1,535	660.0	2,195.0	

2) Other Current Expenditures

Other current expenditures are assumed to be a certain percentage of the amounts of some items as shown in TABLE H-8.

TABLE H-8 ASSUMPTION OF CURRENT EXPENDITURES

Items	Description
Publicity	This is an expenditures for various efforts to sell prepared lots according to the land sale schedule.
	0.7% of the total prices of unsold lots.
Property Maintenance	Cost 1% of the accumulated construction cost.
Other Administration	Cost 20% of the wages and salaries.

3) Depreciation

Depreciation is applied to sewers, drainages, water supply facilities and sewage treatment plant. The period of depreciation is assumed to be uniformly 10 years, remaining the residual value of 5%.

4) Amortizing of Interest

Interests for loans during the construction period are amortized in $\,5\,$ years.

5) Income Tax

When the executive body conducts the development by the total purchase system or by the land trust system as a profit making business, 30% of the profit after depreciation and amortization is paid as the corporation income tax.

H-6 Profit/Loss Statements and Cash Flows of Land Owners and Executive Body by Proposed Development

Financial statements of land owners are made as if one land owner of the whole project area entrusted his land to the executive body for selling it at a higher price after urban development is completed. It is a little difficult to understand the financial statements of land owner.

1) Revenue

The prepared lots by urban development, or the total sales amount of land, is divided into two portions: one is for land owners and the other is for the executive body. The ratio of division is assumed to be proportional to the area by land use before development. TABLE H-4 of the appendix shows the percentage of public lands before development for salable lots by development phase. According to the table, 11.4% for Phase I, 23.0% for Phase II, 31.9% for Phase III and 21.3% for Phase IV of the sales amount of land belong to the executive body.

Land sales for the land owner are determined by deducting the amount for the executive body from the total amount of land sales of each half year according to the sale schedule.

Interest received is a revenue from financial operations of cash flow surplus, for example putting it into a time deposit. In this case, the interest rate is assumed to be 30% per annum.

2) Expenditures

Publicity cost is charged on land owners proportinally to their portion of land sales.

Trust fee is set at 5% of the land owners portion of land sales amount.

Payment of valorizacion means the amount of valorizacion contribution paid by land owners for recuperation of construction costs of streets and parks. The influence zone of valorizacion is extended to the whole Metropolitan Area, and it is assumed that the land owner in the Project Area pay 50% of the total amount of valorizacion contribution.

3) Return of Equity Capital

When the executive body decides to invest, the necessary total amount of own capital is prepared by themselves. Land owner does not pay his own capital. As seen in TALBE H-10 CASH FLOW (LAND OWNER), the executive body pays its own capital into the account of land owner. It is only the convenience of cashculation. Land owner has to pay back this.

4) Interest paid (BCH and other Bank)

These are transferred from the executive body to land owner.

H-7 Discount Cash Flow of Bus Terminal

TABLE H-13 shows the result of discount cash flow analysis at the case in which the bus charge is 40% of passenger fares and the passenger charge is not included.

TABLE H-14 is the case in which the bus charge is 100% of passenger fare and the passenger charge is included.

H-8 Discount Cash Flow of Markets

TABLE H-15 shows the result of cash flow analysis of the public market.

TABLE H-16 is the case of the open market.

ND OWNER)
(LAND)
STATEMENT
PROFIT/LOSS
TARLE H-9

	-			TADI		77	OF 11/)))	7 6 7 0 .	7			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1 1 1 1 1 1 1		1111111	***************************************	-	****	
		1987 I		1988 I	11	1989 1	II	1990	=	1991 I	Ħ	1992 I	Ħ	1993 I	Ħ	1996 1	H	\$\$ 1	н	1396
tevenue Land Sales.	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,321.9	824.8 812.9 11.9	920.5 1, 869.0 1, 51.5	,156.9 ,068.3 88.6	993.1 1, 96.5 96.5	588.8 1.594.8 93.9	,720.8 2, ,582.9 2, 157.9	289.5 223.5 166.0	.975.2 5, 1715.4 2, 259.7	.281.5 .883.7 .397.9	3,754,4 4,1 3,449,6 4, 304,8	4,957.3 4,613.5 343.8
דוונפן פאר עפרפונית					9.94	9.6	151.3		1.757	414 6	7.764	4.566	928.7	1. 9.76	-		1.13	.,	•	918.6
Publicity Cost		0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.0 66.1	9.04 10.09	43.5	4.4. 4.4.	7.67	같은		11.2	135.k	14.2	172.5	230.7
Payment of Valorization	ě	0.0	200	0.0	0.0	0.0	0.0	0.0	0 0	0,0 7	0.0 7.0 7.0	2,72 2,75 2,75	285.0	142.5 43.8			4			26.9
Return of Equity Cas Interest Paid (BCH)	oital	0.0		0.0	စ္ ဝ ဂ္ဂ ဝ	9 0 P	0	5 - 5	, o	9 2	156.8	165.1	\$ 55 \$ 25 \$ 25 \$ 25 \$ 25 \$ 25 \$ 25 \$ 25	357.8						25.7 25.7 25.7
Interest Paid (Other Bank) Interest Paid (Short-term)	Bank)	0.0	0.0	0.0	0.0 0.0	9.3	4.69 27.8	58.3 58.1	105.7	<u>န</u> ် တ	0.0	0.0	0.0	0.0						0.0
Profit/Loss before Amortization.	ortization.		0.0	0.0	9.9%-	-92.6	-151.3	-27.5	8.798	410.2	8.22,	163.5	6.091	691.1	635.4	1.338.8 1	1,886.3	-109.5	1,059.6 3	3,038.7
Amortization of Toterest			9,0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.0	53.0	53.0	53.0	53.0	53.0	398.9	398.9	398.9
Deckit / non stran Dan & Bront	S. Amorr		0.0	0.0	-46.6	-92.6	-151.3	-237.9	8.7.9	410.2	8.22,	110.6	6 701	638.2	582.4	1,265.8	1,833.3	-508.4	9,099	2,639.8
Toronto Tax		0.0	0.0	0.0	0.0	0.0	0.0	0.0	260.3	123.1	126.8	33.2	32.4	191.5	174.7	379.7	550.0	0.0	198.2	9.197
Mat Trooms		0.0	0.0	0.0	-46.6	-92.6	-151.3	9.752-	607.5	287.1	295.9	7 11	75.5	7.971	7.504	1.988	1,283.3	-508.4	. 5.294	1,847.9
The Library and the Topone			- C		9.94-	-139.2	7.062-	-528.3	1.67	366.3	662.2	5.62	815.2	1,261.9	1,669.6	2,555.7	3,839,0	3,530.6	3,793.0	5.640.9
Accumulated Net Anth	2											un)	t : Millie	on\$)						
1691		1998	I	6661	Ħ	2000 I	Ħ	2001 I	H	2002	Ħ	2003 1	11	2004 1	Total	٠		٠		
4,446.2 5,165.0 3,863.6 4,375.9 582.4 780.1	1	. 1	8,445.3	8,346,9 6,131.6 2,215.3	6,468.6 3,597.0 2,871.6	6,578.8 6 3,194.2 2 3,384.6 3	2,659.1 4.3.929.0 4	,485.7 4: 0.0 1.65.7 4	.855,1 . 5, 0.0 .855,1 . 5,	5,301.7 5.0 0.0 5,301.7 5,	5.799.3 6.3 0.0 5.799.3 6.3	354.1 64 0.0 0.354.1 64	6,988.0 7, 0.0 6,988.0 7,	7,717.2 12 6.0 6 7,717.2 6	124.554.0 63.511.3 61.042.7					
2,335.7			1.894.3	1,538.7	17.6	772.7	632.5	420.3	202.4	0.0	108.4 0.0	33.2	0.0	000	30,584.4 481.1 3,175.6					
218.8			3,77	306.6	207.2	207.2	178.6	0.0 178.6	0.0	0, 85 6, 6 6, 6	28.6	0.0	0.0	900	1.842.1 879.2	٠			•	-
32.2 44.9 486.0 521.2 272.0 259.9	7.7 592.4 257.0	25.0	0.0 472.5 190.7	2.09 4.06.4 9.09.0	369.1 132.7 0.0	283 9.50 4.40 0.0	242.3 78.6 0.0	54.42 0.0	35.0 0.0 0.0	2.0 2.0	67.0 12.9 0.0	27.9 5.3 0.0	3,3 0,0	0.0	8.624.7 5.380.8 200.9					
,	, ,		0.551.0	6,808.2	5,582.1			4,065.5	4,652.7 5	5,146.1 5,	5,690.9 6	320.9	6,984.0 7	7,717.2	93,969.6					
			563.0	563.0	217.1	217.1	217.1	217.1	9'201	.6 201	6 201	0.0	0.0	0.0	5,543.8					
¢	2.184.1	8.161.8	5,987,9	6,245.1	5,365.1	5,589.0	5.738.6	3.848.4	4.544.7	3.038.2 5	5,583.0 6	6.320.9	5,984.0 7	7,717.2	88.425.8				÷	
7'415'7 1'0#C'7	655.2	1,218.5	1,796.4	1,873.5	1,609,5	1.676.7	1,721.6	1,154.5	1.363.4	1,511.5	1 6.479.1	1,896.3 2	2,095.2 2	2,315.2	26,838.8					
-	1,528.9	2,843.3	4.191.6	4,371.6	3,755.6	3,912.3	0.710.2	2,693,9	3,181.3	3.526.7 3	3,908.1 4	4,424.6 4	4.888.8 5		61,587.0					
			17,505.1	21,876.7	25,632.2	29,544.5	33,561.5 3	36.255.4 3	39,436.7 4	42,963.5 46	15 51.12 51	51,296.2 56	56,185.0 61	,387.0	526,468.3					
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TABLE H-10 CASH FLOW (LAND OWNER)

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7 n f 5 cm	0.0	0.0	0.0	232.8	295.4	439.9	1	1,245.1	915.6	630.6		1,296.5	1,446.6	,087.9	,858.5 2	3,034.7	1,699.2	979.6	2,413.9
boll toestaevol	9 9	0.0	0.0	7.67	388.0	591.2		637.6	628.5	0.X		1,168.0					2 2 2		
Fouity Capital	0.0	0.0	0.0	9.94	8.64	54.1		8	58.3	53.3		29.75					3. S		9 6
Additional Capital	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		1.0					0.020		5 5
SCH Loan	0.0	0.0	0.0	0.0	0.0	30.3		358.5	337.2	88 5.3		99.0					5 5 5 7		107.7
Other Bank Loan	0.0	0.0	0.0	186.2	139	216.3	268.6	23.3	233.0	 	686	200.8					0.70 0.0		0.0
Short-term Loan	0.0	0.0	0.0	3	139.2	2. 8.			0.00	⊃ 0 ⊃ 2		128.5					-109.5		2,246.8
Net Income, Sepr. & Amort.	0,0	0.0	0.0	9.04	-52.0	5.151				6.023		2.03			-		!		
	,			0.020	Š	0 02)		0 575	8 157	80		1,296.5	1,153.2	9,006	433.8	1,113.8	1,699.2	719.5	27.5
Duttlos	0.0 0.0))) (0.70	£ 67.0	7.7.7		7 227	200	4 722		1.151.1	6.9%	627.3			1,188.1	118.2	167.1
Investment	0.0) () (0.75	6.042	7 2		404.6	281 6	7		1.083.8	875.0	550.4		_	1,077.5	0.0	9
Construction Cost	D. 0) ())		9 6			9 0		=		0.0	0.0	0.0		_	0.0	0.0	0.0
Land Acquisition Cost	0.0))	0	2		2) c	2 2 2	0 276		7 27	5	76.9			110.6	118.2	126.4
Building Acquisition Cost	0.0	0.0	O .	257.8	7.	9		2,5		60,0		, r,	204.7	7 77.			211.1	601.2	7.759
Repayment of Loan	0.0	0.0	0.0	0.0	0.0	7.45		2.020	3 .	4 6		7.72	7 07	107.5			277.2	370.3	453.7
BCH Loan	0.0	0.0	o. ⊙	0.0	0.0	0:0		<u> </u>	3 ;	ے د خ		2 5	2,42	7 17			223	230 0	2
Other Bank Loan	0.0	0.0	0.0	0.0	0.0	0.0		0.0		7.84	7.6	0,00	2 6	9.0			ì	; ;	
Short-term Loan	0.0	0.0	0.0	0.0	46.6	139.2	20 7	28.3	0.0	n .0))	0.0	9	_	,	•	;	
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Comment of the Comment	-	c	0.0	0.0	0.0	0.0	0.0	1.62	343.0	590.8	643.2	626.2	9.616	1,106.9	1,731.5	2,652.4	2,031.8	2,292.0	3,884.3
במווחרפו אם פחו אחרפ		;									1		11111111111						
											<u></u>	unit : Mil	lion\$)						
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		į	2		60	23	0 677			717 3	198.7	27.1	0.0	22,426.1					
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608.4 626.1 686.5		3	0.75	7.70	200.0	2.770	2 2	0.776	0 140	77.7	2 621	8	0.0	6,763.6					
436.9		ş :	3.	1,0%	200.0	0.121	10.	7 1.5	3 K	2 5	<u> </u>	M.	0 0	3,516.9					
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1,376.0 1,490.9 1,297.7	2,596.8	4,123.0	4,375.1	3,420.5	3,628.9	3,711.8	2,462.0	2,977.6	3,317.3	3,698.7	4,226.0	4.861,7	5,402.1	57,487,9					
													6	2 100 277					
5,260.4 6,751.3 8,048.9	10,645.7	14,768.8	19,143.8	22,564.3	26,193.2	29,905.0	32,367.0	35,344.6	58:661.9	42.56U.a	50,000.0	01:440.0	2010201.2	4001001.3					

TABLE H-11 PROFIT/LOSS STATEMENT (EXECUTIVE BODY)

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1990 19	24.82 1.91 20.51 2.40 17.05 0.00 0.00 4.69	24.28 0.00 0.00 8.48 1.31 7.25 1.35 1.70	30.54	2000 Exp	8=====================================	20.91 20.91 20.91 20.51 20.51 20.00 00.00 00.00	24.28 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	36.63	15.95	23
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19 19	116.72 1.86 20.51 8.26 2.40 16.48 28.41 34.11	24.28 0.00 0.00 8.48 1.31 7.26 3.14 2.39	92.44	2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	20 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	20.26 20.25 20.26 20.26 20.26 20.00 0.00	24, 48, 60, 60, 60, 60, 60, 60, 60, 60, 60, 60	35.75	17.66	21
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1991 2	888888888	153.50 153.50 0.00 0.00 0.00 0.00 0.00 0.00	0.00	# # # 100 co	1999 2	26.72 20.51 20.52 20.32 20.32 20.00 20.00	24,28 0.00 0.00 0.00 8,48 1.31 7.26 1.36 1.39	34.12	20.46 8.51	
199	888888888	153.50 0.00 0.00 0.00 0.00 0.00	0.00		1998 2 1998	58.39 20.22 20.31 20.31 20.31 0.00	24,28 0.00 0.00 8,48 1.31 7.26 3,14 1.70	34.11	21.68	17
1990 2	8888888888	234.52 153.50 0.00 0.00 0.00 0.00 0.00	-234.52	10:40 10:40	1998 2	27.63 27.63 20.51 8.26 2.60 19.61 0.00 0.00	24.28 0.00 0.00 1.31 1.31 7.26 1.70	33,35	9.56	16
19	ح			***************************************		27.63 27.63 20.26 20.40 19.61 0.00	24.28 0.00 0.00 1.31 1.31 7.26 1.39	33,35	24.05	
	steria Station Station ess Section Charges	ttion Cost quistition Salaries ce services ince and Repair ancy Expenditures	Venue		1997	20.09 20.09 8.251 20.09 60.00 60.00	24.28 0.00 0.00 0.00 1.31 1.31 2.35 1.36 1.37	32.60	25.16	77
	I. RETENDES. Bus Charge Rental of Cafeteria Rental of Cafeteria Rental of Fuel Station Baggage Fees Sales of Shops Sales of Business Sect Advertisement, Charges	II. COSTS Construction Cost Land Acquisition Wages / Salaries Insurance Public Services Maintenance and R Contingency General Expenditu	Discounted Revenue		1997	20.00 20.00	24.28 0.00 0.00 0.00 1.31 1.31 2.34 1.70	32,60	26.67	2 13

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	1		24.50 0.00 0.00 0.00 0.00 0.00 0.00 0.00	52, 79	40.72	11 11	** (0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	
4.L	1995		2,450 88,000 88,488 11,13,488 41,12,13,148	51.39	42.38	10	.**		56
ERMIN			2.20 2.20 2.20 2.20 2.20 2.20 2.20 2.20	51.38	14.91) ()	3003	88.79 6.04 8.05.51 8.26.51 23.45 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	25
v BUS	1994	E 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	24.50 0 0.00 0 0.00 1 1.31 8 8 4.8 8 4.8 8 7.48 8 7.48 9 1.39	4 50.04	7 46.77 9 15.37	,	2. 2.	86.97 85.87 85.87 20.51 826.2 22.62 0.00 0.00 0.00 0.00 0.00 0.00	24
AL FLOW	7	77. 74.54 44. 4.58 26. 2.51 20.25 40. 2.40 47 17.05 44. 0.00 69 4.60 17.05	i Na sangan sa sa sa sa	72 50.04	71 49.57 27 16:29	6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	72	86.95 2.87 3.26 3.26 3.26 2.26 0.00 0.00 0.00 0.00 0.00 0.00 0	53
EU CAX	1993	26 8.26 445 2.40 26 8.26 240 440 16.47 411 28.40 411 34.12 48 16.48 48 16.48		29 111.27	47 95.71 31 17.27	S	001 2	855.16 8.05 8.05 8.05 8.05 9.05 9.00 9.00 9.00 9.00 9.00 9.00 9	7.7
LOOON	. 2	25.61 135.79 4.34 20.51 20.51 20.51 8.26 8.26 24.00 16.48 24.35 28.41 29.24 34.11 29.24 34.11 29.24 34.11 29.24 34.11		11 111,29	49 101.47 41 18.33	7	**************************************	85.17 8.58 8.26 2.40 2.40 0.00	17
	1992	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0		.50 101.11	.00 99.49 .88 19.41	3	2000 2	83.47 8.851 8.265 8.	77
ADLE A	ra	888888888888888888888888888888888888888	11.50 0.00 0.00 0.00 0.00 0.00 0.00 0.00	53.50 -153.50	0.00 0.00 36.61 128.88	2		83.47 8.165 8.26 8.26 8.26 9.00	h +
	1991	000000000000000000000000000000000000000	155.50 153.50 0.00 0.00 0.00 0.00 0.00 0.00	7			1999	91.94 91.94 91.94 92.25 93.25 93.26 93.26 93.26 93.27 93.28 93	?
	2	8888888888	234.52 153.56 10.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	•	0.00 0.00 234.52 144.81	0,		91.83 20.34 20.34 20.34 20.34 20.33 30.33	:
	2661		23.4 81.53.4 0.00000	-234.52	234		1998	80.25 20.27 20.21 20.21 20.21 19.61	1
	:	ia ation s Section rges	st Repair ure		o o		Ţ	80.25 20.25 20.17 20.21 20.40 0.00 0.00 0.00 0.00 0.00 0.00 0.0	;
		REVENUES Bus Charge Rental of Shops Rental of Cafeteria Rental of tol Station Rental of tol Station Sales of shops Sales of shops Sales of Bussiness Section Advertisement Charges	COSTS Construction Cost Land Acquisition Wages / Salartes Linsurance Public Services Maintenance and Rep Contingency Ceneral Expenditure	•	Discounted Revenue Discounted Cost		1997	26.73 26.75 26.75 26.75 26.75 26.75 26.75 26.75 26.75 26.75 27.75	
		I. REVENUES Bus Charge Rental of Shops Rental of Cafeteria Rental of the Station Baggage Fees Sales of Shops Sales of Shops Sales of Shops Sales of Shops Sales of Cassiness Setti Advertissment Charges	II. COSTS Constru Land Ac Wages / Insuran Public Mainten Conting General	i	Discoun	1 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	I	20.511 20.511 20.511 20.512 20.503 20	

TABLE H-15 DISOCOUNTED CASH FLOW (PUBLIC MARKET)

	1990	1: 1991	91 2	1992	32 2.	1,	93 2.	1.	1994	1995	95 2.	1.	1996
REVENUES	0.00	9.0	0.00	0.00	100.65	100,65	100.65	100.65	100.65	100.65	100.65	100.65	100.65
Rental of Stalls	00.0	0.0	00.00	0.0	39.83	39.83	39.83	39.83	39,83	39.83	39,83	39.83	39.83
Premium	0.00	0.0	0.00	0.00	1.94	1.94	1.94	1.94	1.94	76.1	1.94	1.94	1.94
Rental of Warehouse	00.0	0.00	0.00	0.00	55.03	55.03	55.03	55,03	55.03	55.03	55.03	55.03	55.03
Rental of Cold Storage	00.00	0.0	00.0	0.00	2.83	3,85	3.85	3.85	3.85	3.85	3.85	3.85	3.85
COST	304,08	199.39	199,39	199.39	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80
Construction Cost	199.39	199.39	199.39	199,39	00.0	0.0	0.00	0.00	00.00	0.00	0.00	0.00	9.0
Land Acquisition	104,69	0.00	0.00	00.00	0.0	00.0	0.00	0.00	0.0	8.0	0.00	0.00	0.00
Wages/Salaries	00.0	0.00	0 8	00.0	13.30	13.30	13,30	13.30	13,30	13.30	13.30	13.30	13,30
insurance	0.00	0.00	00.0	00 0	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
Public Services	0.00	0.0	0.00	0.00	7.60	7.60	7.60	4.60	. 09.4	09.4	7.60	4.60	7,60
Maintenance and Repair	00.0	0.0	0.00	00.0	3.98	3,98	3.98	3.98	3,98	3.98	3.98	3.98	3.98
Contingency	00.0	0.00	0.00	00.00	3,17	3.17	3.17	3.17	3.17	3.17	3.17	3.17	3.17
General Expenditure	00,00	8	0.00	00.0	2.66	2.56	2.66	2.66	2.66	2.66	2.66	2.66	2.66
	-304,08	-199,39 -199,39		-199.39	71.85	71.85	71.85	71.85	71.85	71.85	71.85	71.85	71.85
Discounted Revenue	0.00	0.00	0.00 0.00	0.00	79.72	.75.21	70.95	66.99	63.15	59.57	56.20	53.02	50,02
Discounted Cost	304.08	188.10	177.46	167.41	22.81	21.52	20,30	19.15	18.07	17,05	16.08	15.17	14.3

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	10:	2,487.15	995.75	19.40	1,375.75	96.25	1,150.66	430.66	430.66	332.50	27.25	115.00	99.50	79.25	66.50	1.336.49	1,071,46	1,059.18
1	07	0.00	0.0	00.0	0.0	0.00	-471.59	-366.90	-104,69	0.0	0.00	8.0	0.00	0.00	00.0	65 127	8.0	-87.04
1.	.;	98.71	39.83	0.00	55.03	3.85	28.80	0.0	0.0	13.30	1.09	7.60	3.98	3.17	2.66	16.69	16.91	5.63
2007	4	98.71	39.83	0,00	55.03	3.85	28.80	00.0	0.00	13.30	1.09	7.60	3.98	3.17	2,66	(6,9)	20.47	5.97
,	2.	98.71	39,83	0.0	55.03	3.85	28.80	0.00	0.00	13.30	1.09	09.7	3.98	3.17	2.66	69.91	21,70	6.33
2003	.;	98.71	39.83	0.00	55.03	3.65	28.80	0.00	0.00	13.30	1.09	7.60	3.98	3.17	2.66	59.93	23.00	6.71
02	ci .	98.71	39.83	00.0	55.03	3.85	28.80	0.00	00.0	13.30	1.09	7 . 60	3.98	3.17	2,66	66.91	24.38	7.11
2002	. :	98.71	39.63	0.00	55.03	3.85	28.80	0.00	00.0	13.30	1.09	09.7	3.98	3.17	2.66	69,91	25.84	7.54
2001	5	98.71	39.83	0.00	55.03	3.85	28.80	0.00	00.0	13.30	1.09	4.60	3 98	3.17	3.66	69.69	27, 39	7.99
50	<u>.</u>	98.71	39.83	0.00	55.03	3.85	28.80	00.00	00.00	13.30	1.09	4.60	3.98	3.17	2,66	69.91	29.07	8.47
2000	લં	98.71	39.83	0.00	55.03	3.85	28.80	0.00	0.00	13:30	1.09	7.60	3.98	3.17	2.66	6 69	30.78	8.98
		98.71	39.83	0.0	55.03	3,85	28,80	0.0	0.0	13,30	1.09	4.60	3.98	3.17	2.66	66, 91	32.62	9.52
666	2.	17.86	39.83	0.0	55.03	3.85		8.0	9.0	-	5.09	4.60	3,98	3.17	2.66	16.69	34,58	10.09
61	1.	98.71		00.0				00.0							2.66	69.91	36.66	10.70
98	2.	98.71	39.83	0.0	55.03	3,85		0.0								(6	38.86	11.34
19	1,	98,71	39.83	0.00	55.03	3.85	28.80	0.00	0.0	13,30	1.09	7.60	3.98	3.17	2.66	69.93	41.19	12.02
1997	ci	98,71	39.83	0.8	55.03	3.85		0.00								. [6.99	43.66	12.74
15	;	100.65	39,83	1.94	\$5.03	3.85	28.80	0.00	0.00	13.30	1.09	7.60	3.98	3.17	2.66	9.	47.19	13.50

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17.2% 12.0% 170.18 1.23

H-9 Graphical Explanation of Development System

As the development systems studied in Chapter 15 are new ones except for the total purchase system and the valorizacion system, there might be some difficulties in understanding the new system. Therefor, an additional explanation using diagrams and equations is considered to be necessary.

FIG diagrammatically shows change in land use in the project area before after development. The development benefit (B) and cost (C) of the project could be defined as follows:

$$B = u'A' - uA + (v' - v)Ao$$

$$= u'(Ae+Ae'+Af+Af') - u(Ab+Ad+Af+Af') + (v'-v)Ao$$

$$C = C_1 + C_2 + C_3$$

$$= (Ca+Cb+Cc+Ca) + (Ce+Ce') + (Cf+Cf')$$

where,

A : Area of total lots before development in project area

A' : Area of total lots after development in project area

Ao : Area of total lots outside project area

Ab - Af : Area of each section

f u : Average unit land value before development in project area

 \mathbf{u}^{\prime} : Average unit land value after development in project area

v : Average unti land value before development outside project area

v': Average unit land value after development outside project area

 \mathbf{C}_1 : Construction cost for streets and parks

 \mathbf{C}_2 : Construction cost for lots developed from existing streets

 ${
m C}_3$: Construction cost for lots developed from existing lots

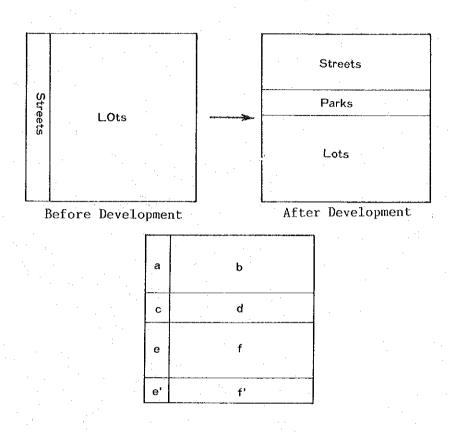
 Ca - Cf' : Construction cost for each section

Whichever develoment system is adopted, the total benefit and cost are the same. What is different is who gains the benefit and pays the cost.

Landowner (or receiver of sales) of developed lots is different according to development system as shown in FIG H-2.

When development is made by total purchase system, developed lots will totally belong to the executive body. Valorizacion system and proposed system are the same from the standpoint that the executive body will keep lots developed from existing public land. Land readjustment system requires that the executive body will keep reserved land for recovering project cost. In land trust system, the executive body will sell all developed lots in behalf of landowners and will receive a trust fee which is a certain percentage of land sales.

The persons interested in development are the executive body, landowners in the project area and landowners outside the project area. TABLE H-17 shows the receiver of benefit and the payer of cost by development system.



Street 🗻 Street Street Lot ---Park Street -d Park Lot ----Lot Street ---Street --Lot (Reserved Lot in Case of Land Readjustment System) f Lot Lot -Lot (Reserved Lot in Case of Land Readjustment System)

FIG. H-1 DIAGRAMMATIC CHANGE OF LAND USE AFTER DEVELOPMENT

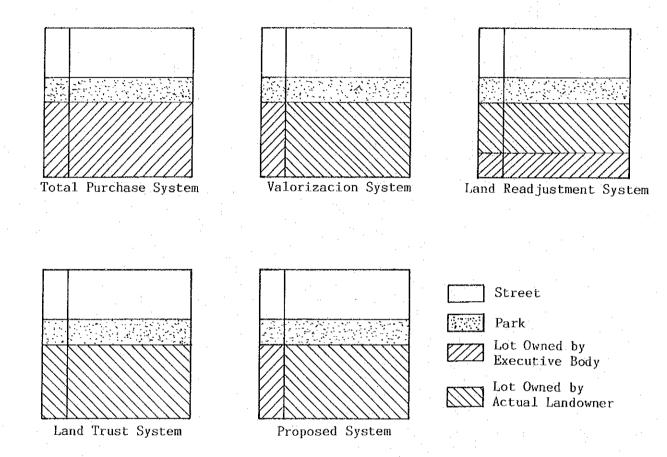


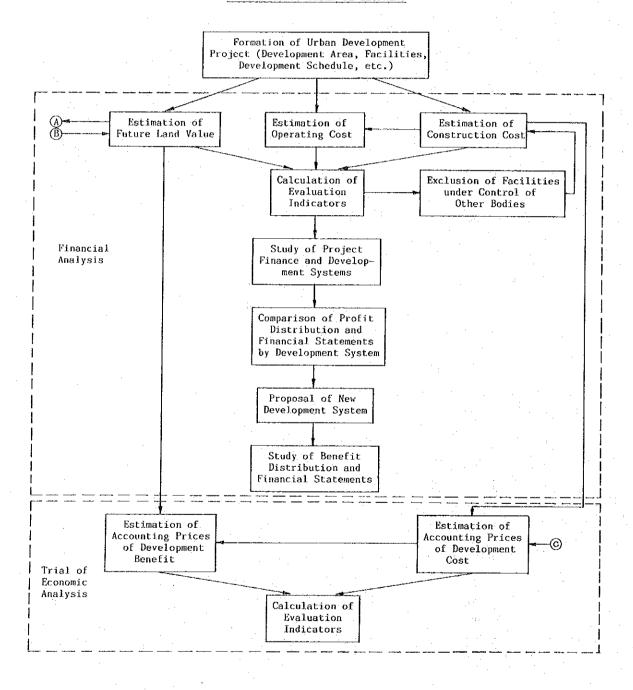
FIG. H-2 DIFFERENCE OF OWNERSHIP OF DEVELOPED LOTS BY SYSTEM

TABLE H-17 RECEIVER OF BENEFIT AND PAYER OF COST BY DEVELOPMENT SYSTEM

Development System	Person Interested	Received Benefit	Paid Cost	Remarks
Total Purchase System	Executive Body	u'(Ae+Ae'+Af'+Af) -u(Ab+Ad+Af'+Af)	Ca+Cd+Cc+Cd+Ce +Ce'+Cf'+Cf	
	Land Owner in Project Area	u(Ab+Ad+Af'+Af) -u(Ab+Ad+Af'+Af)=(0	Exchange land for cash
·	Land owner outside Project Area	(v'-v)Ao	0	
Valorizacion System	Executive Body	Ve-u(Ab+Ad) +u'(Ac+Ae') =u'(Ae+Ae') [ve=u(Ab+Ad)]	Ca+Cb+Cc+Cd+Ce +Ce'+Cf'+Cf-Vc=0	Ve: Supposed Valorizacion contribution for land acquisition
	Land Owner in Project Area	u'(Af'+Af)+u(Ab+Ad -u(Af'+Af)-u(Ab+Ad -Ve) Vc=Ca+Cb+Cc+Cd) +Ce+Ce'+Cf'+Cf	zacion contribution for construction
		-u'(Af'+Af)-u(Ab+A +Af'+Af)	đ	
	Land Owner outside Project Area	(v'-v)Ao	. O	
Land Readjustment System	Executive Body	u'(Ae'+Af')	Ca+Cb+Cc+Cd+Ce+Ce' +Cf'+Cf	u'(Ae'+Af')=Ca+Cb+Cc +Cd+Ce+Ce'+Cf'+Cf
	Land Owner in Project Area	u'(Ae+Af)-u(Ab+Ad +Af'+Af)	0	
	Land Owner outside Project Area	(v'-v)Ao	0	
and Trust System	Executive Body	T	0	T : Trust fee
	Land Owner in Project Area	u'(Ae+Ae'+Af'+Af) ~u(Ab+Ad+Af'+Af) -T	Ca+Cb+Cc+Cd+Ce+Ce' +Cf'+Cf	
	Land Owner outside Project Area	(v'-v) Ao	0	
roposed System	Executive Body	u'(Ae+Ae')+T	Ca+Cb+Cc+Cd+Ce+Ce' - Vc = Ce+Ce'	Vc = Ca+Cb+Cc+Cd
e Tanana		u'(Af'+Af)-u(Ab+Ad +Af'+Af)-T	$\frac{1}{2}Vc = \frac{1}{2}(Ca + Cc + Cc + Cd)$	
	Land Owner outside Project Area	(v'-v)Ao	$\frac{1}{2}Vc = \frac{1}{2}(Ca + Cb + Cc + Cd)$	

FIG. H-3 EVALUATION OF URBAN DEVELOPMENT

EVALUATION OF URBAN DEVELOPMENT



EVALUATION DE LOS PROYECTOS DE CONSTRUCCION DE EDIFICIO

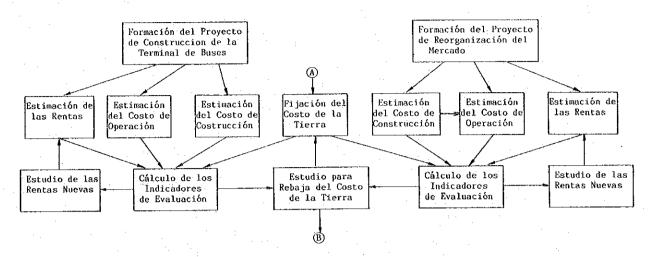


FIG. H-4 EVALUATION OF BUILDING CONSTRUCTION

EVALUACION DE LOS PROYECTOS DE VIA

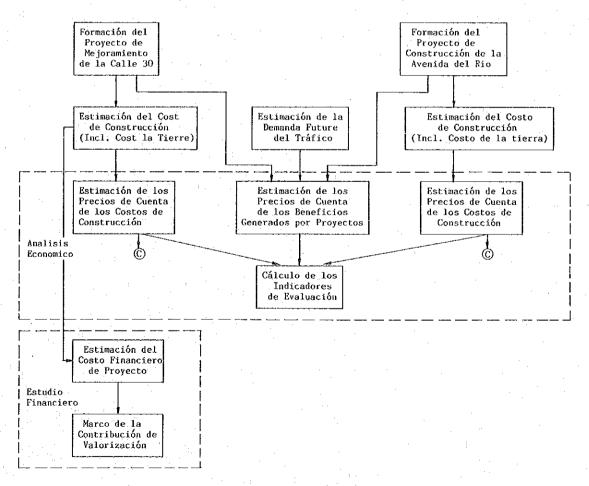


FIG. H-5 EVALUATION OF ROAD PROJECTS

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- (9) Dr. Rafael Stevenson Division de Desarrollo Urbano, BCH
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 Lonja de Propiedad Raiz
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- (9) Mr. Masatomo Watanabe Hydrologist
- (10) Mr. Fumio Fukuda Civil Engineer
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- (12) Mr. Iwane Mizuno Project Economist

