

## 9.2 Financial Analysis

In this Sub-Chapter, (1) bus terminal, (2) bus company, and (3) railroad will be subjected to rough financial analysis, which will help in determining a basic policy concerning the degree of public participation and the degree to which the potentials of the private sector may be utilized in or for these public transport projects.

### 9.2.1 Bus Terminal

Some bus terminals consist of only the necessary minimum of facilities: berths, a booking office, and a waiting room. Whereas, some bus terminals have, established together with the terminal building itself, certain commercial/service facilities on the terminal premises. The latter type, which may be referred to as "bus terminal complex", are more advantageous than the former type in that:

- The establishment of commercial/service facilities on the bus terminal premises will result in an increased revenue—an increase much greater than the resultant increase in the construction cost.
- Such increased revenue from commercial facilities is supported by the fact that the terminal's power of gathering people is available to the locating commercial enterprises.

Generally, the operation of a bus terminal relying only on the terminal revenue is difficult, as such revenue is insufficient to cover the amortization of the construction cost and interest thereon. Therefore, for the purpose of the financial analysis hereby, it is assumed that all of the bus terminals to be established in Davao City will have commercial facilities on the same premises and that the revenue from the commercial facilities will be sufficient to pay for the terminal (and the commercial facilities) construction costs. (Needless to say, the establishment of such commercial facilities together with bus terminal with few berths—such as those in Cabantian and Ma-a—will be unrealistic, but it is assumed that the bus terminal complex scheme is applicable to the terminals to be established in Davao City as a whole.) Under this assumption, the terminal operation will break even if terminal revenue will cover the terminal operation cost.

Bus terminal operation cost is estimated for years 1985 through 2000 and shown in Table 9.4, together with average amounts of operation cost per vehicle (bus units) per month, per berth per month, per vehicle-kilometer, and per passenger-kilometer. All of these average costs but per berth/month cost are large in the year of operation commencement (1985) when the utilization rate of the bus terminal is still low, decline rapidly thereafter as the business enlarges to enjoy the economy of scale, and finally reach the one-fourth or one-fifth of the 1985 level in the year 2000.

Average operation cost per vehicle-kilometer is estimated at 0.358 pesos in 1985 and 0.084 pesos in 2000, which amount to 16% and 4%, respectively, of the bus operating cost of 2.226 pesos per unit per kilometer, assuming the operation speed of 26.6 kilometers per hour (per the Masterplan). Average operation cost per passenger-kilometer is 0.016 pesos in 1985 and 0.004 pesos in 2000, which correspond to 12% to 3%, respectively, of the present basic bus/PUJ fare rate of 0.13 pesos per passenger

per kilometer. Thus, terminal operation cost in terms of average per vehicle-kilometer and average per passenger-kilometer is a fair burden on the terminal business operation in the initial year, but it subsequently dwindles and averages out to only about 5% of the vehicle operating cost and about 4% of bus fares throughout the entire 16 years under review. Then, it may be concluded that the operation cost will only be a small burden on the operation of bus terminal business.

Bus terminal revenue comprises berth use charge and booking office use charge both received from bus company(ies). Instead of estimating these charges by certain average unit value, such as per berth or per each bus departure and arrival, the terminal revenue is assumed to be the amount equal to 110% of the terminal operation cost (that is, the cost plus 10% profit to the terminal company) for the purpose of this analysis. The effect of this assumption on the bus company will be discussed through the analysis of cash flow under the next title of bus company financial analysis.

**Table 9.4 Bus Terminal Operating Cost (at 1980 Prices)**

Year	1985	1986	1987	1988	1989	1990
<b>Manpower Cost (P'000)</b>						
• Management Staff (P'96,000/head/year)	(5) 480	480	480	480	480	480
• Clerical & Technical (P'18,000/head/year)	(26) 468	468	468	(32) 576	(42) 756	756
• Building Care, Security and Other Janitorial (P'4,800/head/year)	(14) 67	67	67	(19) 91	(31) 149	149
• Sub-Total	1,015	1,015	1,015	1,147	1,385	1,385
<b>Utilities Cost (P'000)</b> (P'2.00/m/month)						
	600	600	600	1,176	1,536	1,536
<b>Maintenance Cost (P'000)</b> (1% yearly of const. cost)						
	120	120	120	228	306	306
<b>TOTAL OPERATING COST (P'000)</b>	<b>1,735</b>	<b>1,735</b>	<b>1,735</b>	<b>2,551</b>	<b>3,227</b>	<b>3,227</b>
No. of Bus Units Operating <sup>1/</sup>	45	72	99	126	153	180
No. of Berths of Bus Terminals	49	49	49	100	124	124
Annual Vehicle-Kms. of Bus (000)	4,853	7,821	10,831	13,884	16,980	20,118
Annual Passenger-Kms. of Bus (000)	106,765	172,065	238,288	305,456	373,568	442,694
<b>Terminal Operating Cost (P)</b>						
per:						
Bus Unit per Month	3,213	2,008	1,460	1,687	1,758	1,494
Bus Berth per Month	2,951	2,951	2,951	2,126	2,169	2,169
Vehicle-Km.	0.358	0.222	0.160	0.184	0.190	0.160
Passenger-Km.	0.016	0.010	0.007	0.008	0.009	0.007

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
<b>Manpower Cost (P'000)</b>										
• Management Staff (P'96,000/head/year)	480	480	480	480	480	480	480	480	480	480
• Clerical & Technical (P'18,000/head/year)	(44) 792	471 846	846	(49) 882	882	(59) 1,052	(61) 1,098	1,098	1,098	1,098
• Building Care, Security and Other Janitorial (P'4,800/head/year)	(32) 154	(33) 158	158	158	158	(38) 182	182	182	182	182
• Sub-Total	1,426	1,484	1,484	1,520	1,520	1,724	1,760	1,760	1,760	1,760
<b>Utilities Cost (P'000)</b> (P'2.00/m/month)										
	1,656	1,704	1,704	1,752	1,752	2,232	2,304	2,304	2,304	2,304
<b>Maintenance Cost (P'000)</b> (1% yearly of const. cost)										
	330	344	344	355	355	459	478	478	478	478
<b>TOTAL OPERATING COST (P'000)</b>	<b>3,412</b>	<b>3,532</b>	<b>3,532</b>	<b>3,627</b>	<b>3,627</b>	<b>4,415</b>	<b>4,542</b>	<b>4,542</b>	<b>4,542</b>	<b>4,542</b>
No. of Bus Units Operating <sup>1/</sup>	207	234	261	288	315	342	396	396	423	450
No. of Berths of Bus Terminals	130	134	134	137	137	170	177	177	117	177
Annual Vehicle-Kms. of Bus (000)	23,298	26,521	29,787	33,095	36,445	39,838	43,273	46,751	50,272	53,834
Annual Passenger-Kms. of Bus (000)	512,566	583,472	655,312	728,086	801,795	876,438	952,015	1,028,527	1,105,973	1,184,353
<b>Terminal Operating Cost (P)</b>										
per:										
Bus Unit per Month	1,374	1,258	1,128	1,049	960	1,076	1,028	956	885	841
Bus Berth per Month	2,187	2,197	2,197	2,206	2,206	2,164	2,138	2,138	2,138	2,138
Vehicle-Km.	0.146	0.133	0.119	0.110	0.100	0.111	0.105	0.097	0.090	0.084
Passenger-Km.	0.007	0.006	0.005	0.005	0.005	0.005	0.005	0.004	0.004	0.004

<sup>1/</sup> 90% of Fleet

## 9.2.2 Bus Company

The financial feasibility of the proposed bus company is assessed through a cash flow analysis. This analysis assumes the following, and the assumed values are presented in Table 9.5.

- Revenue

The revenue of the bus company solely depends on bus fares received from passengers. The same tariff system as that of bus/PUJ in 1980 is assumed applicable up to the year 2000: that is, 0.65 pesos for the first five kilometers and 0.13 pesos for each additional kilometer. The passenger demand on bus service is estimated at the average trip length of 11.4 kilometers and 10.6 kilometers in 1990 and 2000, respectively. Based on the distribution of trip lengths, the bus fare (revenue of bus company) per passenger-kilometer is estimated at 0.136 pesos and 0.138 pesos, respectively for these years. These estimates are extrapolated or interpolated to obtain average fare per passenger-kilometer for each of the years from 1985 through 2000. Then, the average fare per passenger-kilometer is multiplied by the total passenger-kilometer values to arrive at the amount of revenue estimated for each year.

- Capital Cost

The capital cost of the bus company consists of the procurement cost of buses and the construction cost of ancillary facilities (the north and south bus depots, office, bus stops, etc.) In other than the year of commencement (1984-1985), the bus fleet is to be augmented by an increment of 30 units of buses each year, according to the plan. Due to the useful life of eight years of buses, however, the replacement of obsolete buses must be started in 1993. The north and south bus depots are to be expanded in 1995 and 1998, respectively, in response to the expansion of bus operation. The office is to be established in 1992 to unify the previously geographically dispersed functions. Bus stops are to be installed at the average intervals of about 500 meters.

- Operation Expense

Operation cost of the bus company consists of vehicle operating cost, terminal expense, and other operational expenses. Vehicle operating cost is calculated based on the unit values arrived at by deducting bus depreciation expense and the opportunity cost of capital from those shown in Tables 5.9 and 5.10 of Chapter Five, because the procurement cost of buses have already been accounted for as a part of the capital cost. Terminal expense to the bus company is a total of the terminal operation cost and a 10% of this cost as profit to terminal company, as discussed in the above. Other operational expenses are personnel expense and building maintenance/administration expense, the former being calculated excluding drivers, conductors, and repair shop workers (which are all included in the vehicle operating cost), and the latter being assumed to be 1% of construction cost.

The above discussed data (see Table 9.5) are used for the cash flow analysis. The following are assumed:

- Capital: While a commencement cost is required at the time of starting a business in the amount equal to usually about 5% of the amount of initial investment, the amount of capital is assumed equal to the amount of this initial expense, estimated at one million pesos.
- Inflation rate: The rate of price increase is assumed to be 12% per year.
- Long Term Loan: Long term loan for 20 years, with a grace period of 5 years, and the interest rate of 15% per annum, is assumed to meet only the capital expenses.
- Short Term Loan: Short term loan is assumed to be obtained only for the purpose of meeting fund shortages from time to time; interest rate, 20% per annum.
- Tax and Dividend: Disregarded

The result of the cash flow analysis is shown in Table 9.6, from which the profitability of the bus company can be judged as follows:

- Generally, the profitability is extremely good. Although fund shortage (maximum being under 10 million pesos) might be experienced in the initial two years of the business, the shortage is quickly recoverable.
- Ignoring tax and dividend, profit will be carried forward each year and will accumulate to a great amount; in the year 2000, profit carried forward from the previous year will nearly equal the year's total revenue. Considering tax and dividend, the continuation of sound business is still predicted.
- The redemption of the long term loan will be accomplished without difficulty.

Inasmuch as said excellent result has been indicated through the cashflow analysis assuming a small amount of capital and a commercial interest rate—a stern situation, the financial feasibility of the bus company must be said very high. This is chiefly because bus company requires a relatively small amount of initial investment and loan interest constitutes a light burden due to the yearly expansion of business, as it will be clearly understood in contrast with the result of financial analysis of railroad hereunder.

Lastly, factors which can deteriorate the financial condition of the bus company, and, therefore, care should be used against, are as follows:

- Discount Fare System: While up to about 15% fare discount will be tolerable, judging from the result of the above cash flow analysis, an excessive discount can impair the company's profitability.
- Operation Rate: The above analysis assumed 90% operation of all buses, and, therefore, inadequate maintenance and a consequential greater down time of buses will result in a lower operation rate to impair the profitability from what was indicated by the analysis.
- Road Congestion: If the average bus operating speed of 26.6 kilometers per hour, assumed in this analysis, cannot be maintained due to road congestion, the operation rate of buses will drop and bus operating cost per vehicle-kilometer will rise with no increase in fare intake, thereby derogating the profitability.

**Table 9.5 Estimated Revenue, Capital Expenditure and Operating Cost of Bus Company (at 1980 Prices)**

	(P Million)									
Year	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
<b>REVENUE</b>	--	--	--	--	14.4	23.3	32.3	41.5	50.8	60.3
<b>CAPITAL EXPENDITURE</b>				(50)		(30)	(30)	(30)	(30)	(30)
● Purchase of Bus Units	--	--	--	10.7	--	6.4	6.4	6.4	6.4	6.4
● Supporting Facilities										
-- Northern Depot	--	--	--	1.9	--	--	--	--	--	--
-- Southern Depot	--	--	--	--	--	--	--	5.4	--	--
-- Office	--	--	--	--	--	--	--	--	--	--
-- Miscellaneous	--	--	--	0.1	--	--	--	--	--	--
● Total Capital Expenditure	--	--	--	12.7	--	6.4	6.4	11.8	6.4	6.4
<b>OPERATING COST</b>										
● Vehicle Operating Cost excluding Depreciation and Capital Opp. Cost	--	--	--	--	8.3	13.3	18.6	23.7	28.9	34.3
● Terminal Cost	--	--	--	--	1.9	1.9	1.9	2.8	3.5	3.5
● Miscellaneous										
-- Manpower Cost excluding Drivers, Conductors & Mechanics	--	--	--	2.6	3.6	3.6	3.9	4.2	4.5	5.8
-- Building Maintenance	--	--	--	0.0	0.0	0.0	0.0	0.0	0.0	0.0
● Total Operating Cost	--	--	--	2.6	13.8	16.8	24.3	30.7	36.9	43.6

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
<b>REVENUE</b>	69.9	79.7	89.7	99.8	110.0	120.5	131.0	141.8	152.6	163.7
<b>CAPITAL EXPENDITURE</b>	(30)	(30)	(80)	(60)	(60)	(60)	(60)	(60)	(60)	(60)
● Purchase of Bus Units	6.4	6.4	17.1	12.8	12.8	12.8	12.8	12.8	12.8	12.8
● Supporting Facilities										
-- Northern Depot	--	--	--	--	7.1	--	--	--	--	--
-- Southern Depot	--	--	--	--	--	--	--	3.6	--	--
-- Office	--	1.8	--	--	--	--	--	--	--	--
-- Miscellaneous	0.0	8.0	--	0.0	--	--	--	--	--	--
● Total Capital Expenditure	6.4	8.2	17.1	12.8	19.9	12.8	12.8	16.4	12.8	12.8
<b>OPERATING COST</b>										
● Vehicle Operating Cost excluding Depreciation and Capital Opp. Cost	39.7	45.2	50.8	56.4	62.1	67.9	73.8	79.7	85.7	97.8
● Terminal Cost	3.8	3.9	3.9	4.0	4.0	4.9	5.0	5.0	5.0	5.0
● Miscellaneous										
-- Manpower Cost excluding Drivers, Conductors & Mechanics	6.1	6.4	6.7	7.0	8.2	8.3	8.6	8.8	9.1	10.3
-- Building Maintenance	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
● Total Operating Cost	49.6	55.5	61.4	67.4	74.4	81.2	87.5	93.6	99.9	107.2

**Table 9.6 Pro Form a Cash Flow of the Proposed Bus Company**

	(P Million)									
	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
1. Revenue	—	—	—	—	25.4	46.0	71.4	102.9	140.9	187.3
2. Operating Cost										
a. Vehicle Operating Cost excluding Depreciation and Capital Opp. Cost	—	—	—	—	14.6	26.3	40.8	58.6	80.3	106.5
b. Terminal Cost	—	—	—	—	3.4	3.8	4.2	6.9	9.8	11.0
c. Miscellaneous	—	—	—	4.2	4.2	7.1	8.6	10.5	12.6	18.0
3. Net Income before Depreciation	—	—	—	4.2	3.2	8.8	17.8	26.8	39.2	51.8
4. Balance Brought Forward	—	—	—	—	—	—	—	3.4	18.8	41.8
5. Sub-Total (3 + 4)	—	—	—	4.2	3.2	8.8	17.8	30.2	57.0	93.6
6. Interest										
a. on Short-Term Loan (20%)	—	—	—	—	1.4	1.7	1.2	—	—	—
b. on Long-Term Loan (15%)	—	—	—	3.0	3.0	4.9	7.0	11.4	13.9	16.6
7. Loan Repayment										
a. of Short-Term Loan	—	—	—	—	—	2.2	6.2	—	—	—
b. of Long-Term Loan	—	—	—	—	—	—	—	—	1.3	1.3
8. Balance Carried Forward	—	—	—	—	—	—	3.4	18.8	41.8	75.7
9. Loan Account										
a. of Short-Term Loan	—	—	—	7.2	8.4	6.2	—	—	—	—
b. of Long-Term Loan	—	—	—	19.9	19.9	32.5	46.7	75.9	92.4	111.0

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1. Revenue	243.1	310.5	391.4	487.7	602.1	738.7	899.4	1,090.4	1,314.3	1,579.1
2. Operating Cost										
a. Vehicle Operating Cost excluding Depreciation and Capital Opp. Cost	138.1	176.1	221.5	275.7	340.0	416.2	506.4	612.7	737.9	885.0
b. Terminal Cost	13.1	15.1	17.0	19.5	21.8	29.8	34.3	39.4	43.0	48.2
c. Miscellaneous	21.2	24.9	29.3	34.2	45.4	51.6	59.5	68.1	78.5	100.4
3. Net Income before Depreciation	70.7	94.4	123.6	158.3	194.9	241.1	298.9	371.2	454.6	545.5
4. Balance Brought Forward	75.7	124.5	191.8	275.9	385.1	514.2	677.6	885.2	1,143.6	1,467.7
5. Sub-Total (3 + 4)	146.4	218.9	315.4	434.2	580.0	755.3	978.5	1,266.4	1,398.2	2,013.2
6. Interest										
a. on Short-Term Loan (20%)	—	—	—	—	—	—	—	—	—	—
b. on Long-Term Loan (15%)	19.7	24.0	34.4	42.9	58.2	68.6	80.1	95.6	110.1	124.5
7. Loan Repayment										
a. of Short-Term Loan	—	—	—	—	—	—	—	—	—	—
b. of Long-Term Loan	2.2	3.1	5.1	6.2	7.6	9.1	11.2	16.2	22.4	27.6
8. Balance Carried Forward	124.5	191.8	275.9	385.1	574.2	677.6	885.2	1,143.6	1,457.7	1,861.1
9. Loan Account										
a. of Short-Term Loan	—	—	—	—	—	—	—	—	—	—
b. of Long-Term Loan	131.2	160.2	229.6	286.2	387.7	457.1	533.9	643.9	733.8	829.8

NOTE: 1) Inflation Rate is assumed at 12% p.a.

2) Loan Terms: Long-term loan payable in 20 years including 5-year grace period with an interest rate of 15% p.a. Short-term loan with an interest rate of 20% p.a.

3) Capital is assumed at P1.0 million, which is considered as a commencement cost.

### 9.2.3 Railroad

The financial feasibility of railroad will be assessed through a cash flow analysis, as in the case of bus company. For the sake of this analysis, the year 2000 is used as the year of the commencement of railroad service. Other assumptions, listed in Table 9.7, are calculated as follows:

- Revenue

It is assumed that passenger demand on railroad will increase by an average of 3% per year in terms of passenger-kilometers, of which value in 2000 is discussed in Chapter 7. The same fare rate as that of bus in the year 2000 (0.138 pesos per passenger-kilometer) is used for railroad in order to be comparable.

- Capital Cost

Capital cost comprises land acquisition/compensation expense, construction expense, purchase cost of rolling stocks, and equipment and parts expenses, which are estimated in Chapter 5 and enumerated in Volume IV 3.8. In view that additional rolling stocks will be purchased as demand will increase, the purchase cost of rolling stocks has been estimated assuming that, when the ratio between the number of passengers and the passenger capacity in certain section has exceeded 1.2, based on the estimated demand for that section, the quantity of rolling stocks to bring the ratio down to 1.0 will be purchased. In this regard, it is assumed that the train service frequency will be held constant, but the train will be shifted from one-car train to two-car train as demand will increase.

- Operating Cost

Operating cost is divided into fixed costs which are interrelated with capital cost, and variable costs which are interrelated with the value of train-kilometers.

Fixed Cost:

- i. Maintenance Cost: Assumed to be one percent per year of the capital cost less land acquisition/compensation cost
- ii. Personnel Expense: Assumed to be 11.7 million pesos per year (16,000 pesos per year x 730 persons), with the estimate of Light Rail Transit System for Metro Manila in reference
- iii. Electric Power Cost: Assumed to be 0.9 million pesos per year, estimated from the Manila LRT's estimate (1.32 million pesos per year) at the proportion of employees (1,030 vs. 730).

Variable Cost:

- i. Material Cost: The estimate of 3.26 pesos per train-kilometer (2-car train) for Manila LRT is used for 2-car trains and 70% of same is used for 1-car trains.
- ii. Personnel Expense: Assumed at 90% of 0.75 pesos for train-kilometer for Manila LRT

- iii. Electric Power Cost: The estimate of 4.24 pesos per train-kilometer (2-car train) for Manila LRT is used for 2-car trains and 70% of same is used for 1-car trains.

The data of Table 9.7, established under the above conditions, were used for the cash flow analysis. The same analysis conditions as bus company were used, except for the amount of capital which was estimated at 338.7 million pesos, or equivalent to the total of land acquisition/compensation cost plus one-half of the construction cost. The result of this analysis is presented in Table 9.8. From this result, the profitability of the railroad can be summarized as follows:

- The profitability is generally poor. Long term loan interest is a substantial burden in the initial years of operation.
- The utilization of short term loans will become inevitable in order to pay the long term loan interests, but the redemption of the short term loans will be difficult and their interests will accumulate to the extent that additional short term loans will become necessary— a vicious cycle.

It is evident from the above analysis that the operation of railroad, on commercial basis, will be extremely difficult. Particularly, interest on the long term loan, necessary to fund the huge amount of initial investment, is the chief cause of unfavorable profitability. It is not exaggeration to say that the railroad operation will be impossible as long as the necessary long term loan has to depend on private sources. Table 9.9 shows the result of cash flow analysis assuming a long term loan interest rate of 3% per annum (with everything else constant), and, in this case, the financial condition of railroad is indicated as being very good.



**Table 9.7 Estimate of Revenue, Capital Expenditure and Operating Cost of Railroad (at 1980 Prices)**

	1999	2000	01	02	03	04	05	06	07	08	09	10
Passenger Demand (Million Passenger-Kms. p. a.)	—	848	875	899	926	957	984	1,014	1,044	1,075	1,105	1,139
No. of Rolling Stock Required	—	60	60	60	71	71	71	71	71	71	71	81
Train-Kms. (Million p.a.)												
— One-Car Train	—	5.63	5.63	5.63	4.57	4.57	4.57	4.57	4.57	4.57	4.57	3.52
— Two-Car Train	—	—	—	—	1.06	1.06	1.06	1.06	1.06	1.06	1.06	2.11
<b>REVENUE (₹ Million p.a.)</b>	—	117.0	120.8	124.1	127.8	132.1	135.8	139.9	144.1	148.4	152.5	157.2
<b>CAPITAL EXPENDITURES (₹ Million p.a.)</b>												
• Initial Cost for Land Land Acquisition, Civil Works, Rolling Stock and Other Equipment	1,380.6	—	—	—	—	—	—	—	—	—	—	—
• Cost for Additional Rolling Stock	—	—	—	—	84.2	—	—	—	—	—	—	76.5
<b>OPERATING COST (₹ Million p.a.)</b>												
• Fixed Cost												
— Maintenance	—	13.2	13.2	13.2	14.1	14.1	14.1	14.1	14.1	14.1	14.1	14.8
— Manpower	—	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7
— Electricity	—	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
• Variable Cost												
— Material/Equipment	—	12.8	12.8	12.8	13.9	13.9	13.9	13.9	13.9	13.9	13.9	14.9
— Manpower	—	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
— Electricity	—	16.7	16.7	16.7	18.1	18.1	18.1	18.1	18.1	18.1	18.1	19.4
• Overhead (10% of the above)	—	5.9	5.9	5.9	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.6
• Sub-Total	—	65.0	65.0	65.0	68.8	68.8	68.8	68.8	68.8	68.8	68.8	72.1

	11	12	13	14	15	16	17	18	19
Passenger Demand (Million Passenger-Kms. p.a.)	1,133	1,210	1,247	1,284	1,322	1,362	1,403	1,443	1,487
No. of Rolling Stock Required	81	81	81	81	81	97	97	97	97
Train-Kms. (Million p.a.)									
— One-Car Train	3.52	3.52	3.52	3.52	3.52	1.76	1.76	1.76	1.76
— Two-Car Train	2.11	2.11	2.11	2.11	2.11	3.87	3.87	3.87	3.87
<b>REVENUE (₹ Million p.a.)</b>	161.9	167.0	172.1	177.2	182.4	188.0	193.6	199.1	205.2
<b>CAPITAL EXPENDITURES (₹ Million p.a.)</b>									
• Initial Cost for Land Land Acquisition, Civil Works, Rolling Stock and Other Equipment	—	—	—	—	—	—	—	—	—
• Cost for Additional Rolling Stock	—	—	—	—	—	122.5	—	—	—
<b>OPERATING COST (₹ Million p.a.)</b>									
• Fixed Cost									
— Maintenance	14.8	14.8	14.8	14.8	14.8	16.1	16.1	16.1	16.1
— Manpower	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7
— Electricity	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
• Variable Cost									
— Material/Equipment	14.9	14.9	14.9	14.9	14.9	16.6	16.6	16.6	16.6
— Manpower	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
— Electricity	19.4	19.4	19.4	19.4	19.4	21.6	21.6	21.6	21.6
• Overhead (10% of the above)	6.6	6.6	6.6	6.6	6.6	7.1	7.1	7.1	7.1
• Sub-Total	72.1	72.1	72.1	72.1	72.1	77.8	77.8	77.8	77.8

Note: Prices are indicated in 1980 prices.

**Table 9.8 Pro Forma Cash Flow of the Proposed Railroad**

(₱ Million)

Year	2000	1	2	3	4	5	6	7	8	9	10
1. Revenue	--	131.0	151.5	174.3	201.1	232.8	268.0	309.3	356.8	411.5	473.6
2. Operating Cost	--	72.8	81.5	91.3	108.3	121.2	135.8	152.1	170.3	190.8	213.7
3. Net Income before Depreciation	--	58.2	70.0	83.0	92.8	111.6	132.2	157.2	186.5	220.7	259.9
4. Balance Brought Forward	--	--	--	--	--	--	--	--	--	--	--
5. Sub-Total (3 + 4)	--	58.2	70.0	83.0	92.8	111.6	132.2	157.2	186.5	220.7	259.9
6. Interest											
a. on Short-Term Loan	--	33.3	61.7	93.3	128.7	173.2	235.4	303.7	378.5	460.1	550.5
b. on Long-Term Loan	166.6	166.6	166.6	166.6	166.5	175.4	164.3	153.2	142.1	129.6	117.2
7. Loan Repayment											
a. of Short-Term Loan	--	--	--	--	--	--	--	--	--	--	--
b. of Long-Term Loan	--	--	--	--	--	74.1	74.1	74.1	74.1	82.9	82.9
8. Balance Carried Forward	--	--	--	--	--	--	--	--	--	--	--
9. Loan Account											
a. of Short-Term Loan	166.6	308.3	466.6	643.5	865.5	1,177.0	1,518.6	1,892.4	2,300.6	2,752.5	3,243.2
b. of Long-Term Loan	1,110.9	1,110.9	1,110.9	1,110.9	1,243.4	1,169.3	1,095.2	1,021.1	947.0	864.1	781.2

Year	11	12	13	14	15	16	17	18	19	20
1. Revenue	546.8	630.8	728.7	841.1	969.9	1,113.2	1,290.8	1,488.8	1,714.8	1,979.4
2. Operating Cost	250.8	280.9	314.6	352.4	394.6	442.0	534.2	598.3	670.1	750.5
3. Net Income before Depreciation	296.0	349.9	414.1	488.7	575.3	676.2	756.6	890.5	1,044.7	1,228.9
4. Balance Brought Forward	--	--	--	--	--	--	--	--	--	--
5. Sub-Total (3 + 4)	296.0	349.9	414.1	488.7	575.3	676.2	756.6	890.5	1,044.7	1,228.9
6. Interest										
a. on Short-Term Loan	648.6	764.7	890.7	1,026.5	1,172.1	1,327.1	1,493.3	1,699.0	1,915.9	2,142.4
b. on Long-Term Loan	144.7	132.2	119.8	107.4	94.9	79.8	190.9	175.8	160.7	145.6
7. Loan Repayment										
a. of Short-Term Loan	--	--	--	--	--	--	--	--	--	--
b. of Long-Term Loan	82.9	82.9	82.9	82.9	82.9	100.6	100.6	100.6	100.6	100.6
8. Balance Carried Forward	--	--	--	--	--	--	--	--	--	--
9. Loan Account										
a. of Short-Term Loan	3,823.4	4,453.3	5,132.6	5,860.7	6,635.3	7,466.6	8,494.8	9,579.7	10,712.2	11,871.9
b. of Long-Term Loan	964.4	881.5	798.6	715.7	632.8	532.2	1,272.7	1,172.1	1,071.5	970.9

Note: 1) Inflation rate is assumed at 12% p.a.

2) Capital is assumed at ₱338.7 million, which is a total of land acquisition/compensation cost and a half of Civil Works cost. Total Initial Cost is ₱1,449.6 million, including 5% of commencement cost.

3) Loan Terms: Long-Term loan is payable in 20 years including 5-year grace period with an interest rate of 15% p.a. Short-Term loan with an interest rate of 20% p.a.

**Table 9.9 Pro Forma Cash Flow of the Proposed Railroad**

(P Million)

Year	2000	1	2	3	4	5	6	7	8	9	10
1. Revenue	—	131.0	161.5	174.3	201.1	232.8	268.0	309.3	356.8	411.5	473.6
2. Operating Cost	—	72.8	81.5	91.3	108.3	121.2	135.8	152.1	170.3	190.8	213.7
3. Net Income before Depreciation	—	58.2	70.0	83.0	92.8	111.6	132.2	157.2	186.5	220.7	259.9
4. Balance brought forward	—	—	—	—	41.9	91.2	87.8	107.6	155.0	234.3	341.9
5. Sub-Total (3 + 4)	—	58.2	70.0	83.0	134.7	202.8	220.0	264.8	341.5	455.0	601.8
6. Interest											
a. on Short-Term Loan	—	7.8	5.5	0.4	—	—	—	—	—	—	—
b. on Long-Term Loan	38.9	38.9	38.9	38.9	43.5	40.9	38.3	35.7	33.1	30.2	27.3
7. Loan repayment											
a. of Short-Term Loan	—	11.5	25.6	1.8	—	—	—	—	—	—	—
b. of Long-Term Loan	—	—	—	—	—	74.1	74.1	74.1	74.1	82.9	82.9
8. Balance carried forward	—	—	—	41.9	91.2	87.8	107.6	155.0	234.3	341.9	491.6
9. Loan Account											
a. of Short-Term Loan	38.9	27.4	1.8	—	—	—	—	—	—	—	—
b. of Long-Term Loan	1,110.9	1,110.9	1,110.9	1,110.9	1,243.4	1,169.3	1,095.2	1,021.1	947.0	864.1	781.2

Year	11	12	13	14	15	16	17	18	19	20
1. Revenue	546.8	630.8	728.7	841.1	969.9	1,118.2	1,290.8	1,488.8	1,724.8	1,979.4
2. Operating Cost	250.8	280.9	314.6	352.4	394.6	442.0	534.2	598.3	672.1	750.5
3. Net Income before Depreciation	296.0	349.9	414.1	488.7	575.3	676.2	756.6	890.5	1,044.7	1,228.9
4. Balance brought forward	491.6	670.9	907.0	1,210.2	1,591.0	2,061.3	2,618.3	3,229.8	3,978.7	4,885.3
5. Sub-Total (3 + 4)	787.6	1,020.8	1,321.1	1,698.9	2,166.3	2,737.5	3,374.9	4,120.3	5,023.4	6,114.2
6. Interest										
a. on Short-Term Loan	—	—	—	—	—	—	—	—	—	—
b. on Long-Term Loan	33.8	30.9	28.0	25.0	22.1	18.6	44.5	41.0	37.5	34.0
7. Loan repayment										
a. of Short-Term Loan	—	—	—	—	—	—	—	—	—	—
b. of Long-Term Loan	82.9	82.9	82.9	82.9	82.9	100.6	100.6	100.6	100.6	100.6
8. Balance carried forward	670.9	907.0	1,210.2	1,591.0	2,061.3	2,616.3	3,229.8	3,978.7	4,885.3	5,979.6
9. Loan Account										
a. of Short-Term Loan	—	—	—	—	—	—	—	—	—	—
b. of Long-Term Loan	1,964.4	881.5	798.8	715.7	632.8	532.2	1,272.7	1,172.1	1,071.5	970.9

Note: 1) Inflation rate is assumed at 12% p.a.  
2) Capital is assumed at P338.7 million, which is a total of land acquisition/compensation cost and a half of Civil Works cost. Total Initial Cost is P 1,449.6 million, including 5% of commencement cost.  
3) Loan Terms: Long-Term loan is payable in 20 years including 5-year grace period with an interest rate of 3.5% p.a. Short-Term loan with an interest rate of 20% p.a.

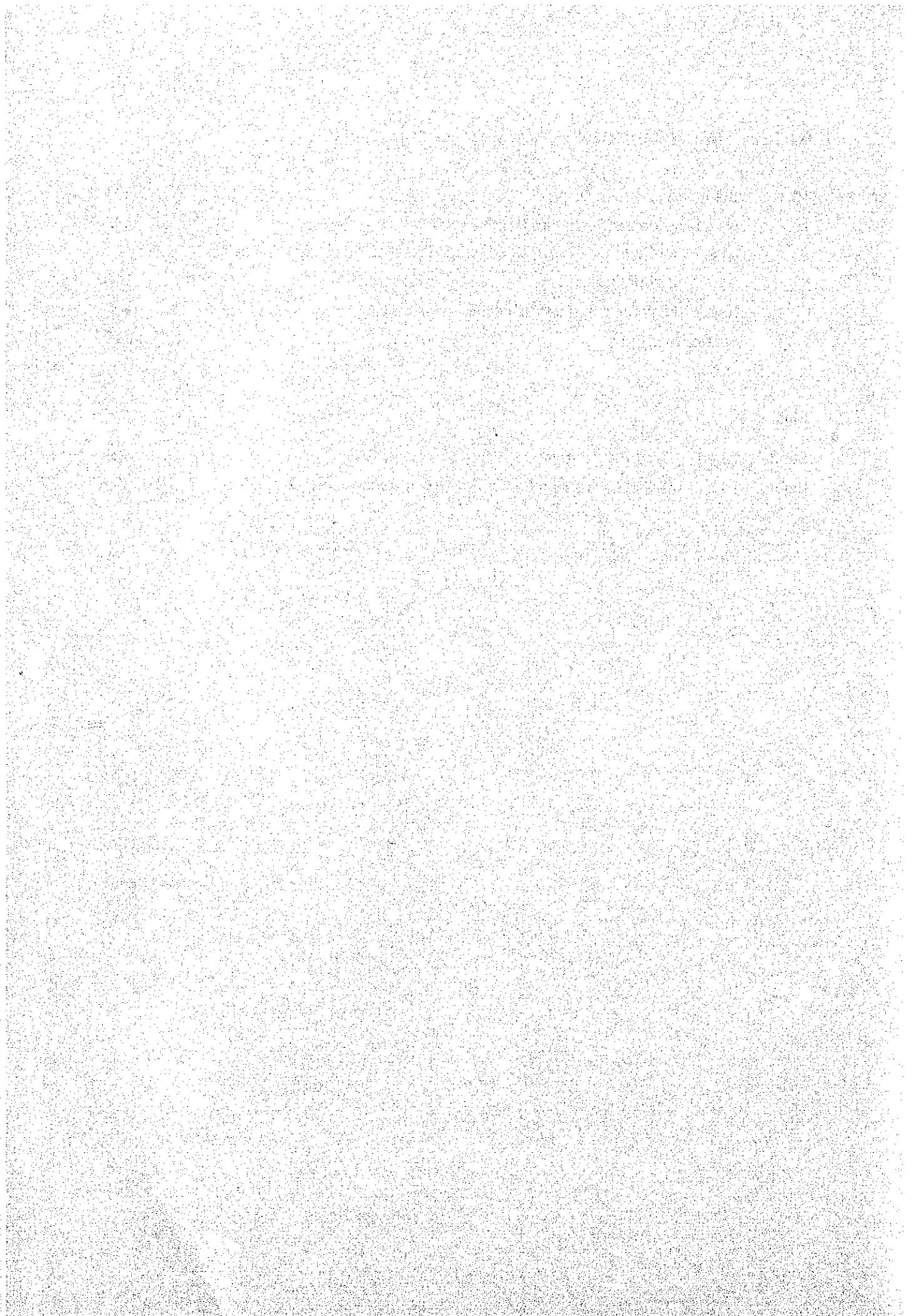


## CHAPTER 10 RECOMMENDATIONS TO AUTHORITIES

10.1	Institutional .....	301
10.2	New Development Schemes Recommended .....	305
	10.2.1 Methods of Execution of Public Projects Currently Used in the Philippines .....	305
	10.2.2 New Development Schemes .....	306
10.3	Feasibility Study .....	310

### Figures

Figure 10.1	Land Readjustment .....	308
Figure 10.2	Rights Conversion System of Urban Redevelopment .....	309



## CHAPTER 10

### RECOMMENDATIONS TO AUTHORITIES

#### 10.1 Institutional

##### 1) Enforcement

It is recommended that the authorities enforce strict controls over traffic violations and PUJ operator violations, which, incidentally, will stimulate the fosteration of law abiding citizens. Land developers should be severely punished for the violations of building and land development standards provided for by laws and regulations.

##### (1) Traffic Violations

In the interest of safety, the authorities should enforce stricter controls over the violations of speed limits, left-turn restrictions, and stopping requirements, as well as the disregard of traffic signals and operation in the opposit direction on one-way streets. Control against illegal parking will be essential not only for the smooth flow of traffic on the road but also for accelerating the establishment of parking lots. Inevitable for the enforcement of stricter controls over traffic violations will be the strengthening of CHPG and INP enforcement personnel; the size of the present CHPG staff in Davao City is only 27, which is inadequate for the accomplishment of the duties.

##### (2) Enforcement Officer's Ethics

Important, along with the quantitative enlargement of enforcement staff, will be their qualitative up-grading. Unless law enforcement officers punish vilators in strict accordance with laws and regulations, their authorities will be lost and law abiding spirit will not be fostered in the minds of the citizens. Long term education programs will be essential for the education of both traffic policemen and citizens. Some institutional measures for the prosecution of violating traffic policemen should also be considered.

##### (3) PUV Franchise

Illegal PUVs should be prosecuted. However, a majority of PUVs in Davao City are illegal in that their franchise has and are left as expired chiefly due to delay in processing by BOT/BLT of the renewal of expired franchise, and, therefore, the prosecution of PUVs which became illegal automatically by the expiry of their franchise is neither appropriate nor practical. Therefore, the clerical efficiency of BOT/BLT should be first be improved so that an adequate number of franchise be issued. Only after this has been accomplished, stricter controls should be enforced on illegal PUVs (operation without franchise, operation outside the approved routes, trip cuts).

##### (4) Periodical Inspection of Vehicles

The periodical mechanical inspection of vehicles, which is required under the existing laws and regulations, is not actually enforced. Due to the abundance of old vehicles, those stalled with mechanical troubles are numerous enough to be causes for frequent traffic jam. The poor maintenance of vehicles has resulted

in the sudden, unexpected opening of engine hood, obstructing the driver's sight, and loosening off of a wheel, thereby causing traffic accidents. The periodical mechanical inspection particularly of PUVs by publicly certified garages should be made mandatory by law.

(5) Obsolete Laws and Regulations

Certain statutory requirements exist only in name and remain unenforced, as in the case of mechanical vehicle inspection. Some statutory provisions have now become obsolete and not in consistent with the existing situation, while some provisions may not be strictly enforced, though desirable. An example of the former is the prohibition of operation in the Philippines of large vehicles in excess of 15 tons. The rescission or amendment of the provisions of laws and regulations which are obsolete or which may not be enforced will be essential to the development of law abiding spirit.

(6) Building Code and Land Development Standards

The number of housing estates (sub-divisions) is presently large in Davao City and will further increase in the future. Developers are obligated by the City Ordinance to install an access way to a major road and to secure transportation service, but, in some small housing estates in remote locations, the surface condition of access roads is very poor and PUJ service is offered only during few hours each day. It is necessary that improved arrangements be made for giving guidance to and supervising developers so as that they will abide by the Ordinance, in order to realize desirable land use.

The strict enforcement of controls on permanent buildings on the site of planned road will be indispensable to the realization of projects for the upgrading of existing roads, as recommended in the Masterplan.

2) Organization/Jurisdiction

For smoother and more effective accomplishment, it will be desirable that such local matters as the PUJ franchise and the construction and maintenance of barangay roads be transferred to or closely coordinated with local authorities, which, for this purpose, should be strengthened in organization and financial capability. Particularly important to traffic administration in Davao City will be the strengthening of the Davao City Transport and Traffic Management Council.

(1) Davao City Transport and Traffic Management Council

The former Davao City Transport Committee was reorganized in March 1981 into the existing Davao City Transport and Traffic Management Council (DCTTMC), which is an advisory organ on traffic policy matters, consisting of the head of traffic administrative agency and the representatives of academic and economic circles and of mass media. It is essential in the first place that this Council have its own budget and be able to carry out research and surveys and to formulate plans, and that, in the second, working groups be formed under the Council which will compile materials for study by the Council, formulate practical plans based on the result of deliberation by the Council, and evaluate the effectiveness of such plans. The working groups can be established for



individual themes as adhoc groups, such as "PUJ Re-routing Group," "One-Way Traffic Control Introduction Group," and "Bus Terminal Study Group."

(2) Barangay Roads

Barangay roads are presently under the jurisdiction of the regional office of the Ministry of Public Works and Highways (MPWH), but jurisdiction over barangay roads, which are inherently local roads closely connected with secondary major roads, distribution roads, and other municipal roads, should be coordinated more closely with local authorities (city mayor).

(3) Local City Transport Division

It is recommended that a Local City Transport Division be newly established within the MOTC organization which will conduct surveys needed for the review of PUJ routes and for the introduction of bus service, formulate policies and strategies, and promote the improvement of public transport system. This Division will perform the functions of (i) technical service, (ii) project evaluation, (iii) policy formulation, and (iv) project implementation. (See Volume III, Chapter 7.7 for detail.)

(4) PUV Franchise

Under the current system, PUV operators must go through a complicated set of procedures: the franchise which stipulate the terminal points of each route must be obtained from the central BOT, approval of the route must be obtained from the city authority, and the approval of vehicles must be obtained from BLT. This complexity of franchise system is one reason why the renewal of expired franchise is lagging to the extent that a large number of PUJs are inevitably compelled to operate without valid franchise. The rationalization of this system is imperative. Particularly in such large cities as Davao and Cebu, the consolidation of the entire system into one and the transferring of jurisdiction over such system to BOT/BLT regional office should be studied (See Volume III, Chapter 7.7 for detail).

3) Statistical Data

Only insufficient data are presently available for the formulation of rational transport plans and for the effective management of traffic. Minimum essential to the formulation of transport policies will be the reliable statistics on the number of vehicles and on the operational and business conditions of public transport service systems.

(1) Inhabitants Statistics

Data on urban population and its dynamics are most fundamental and important not only to transport management but also to urban administration at large. Population census is taken once every ten years in the Philippines. Therefore, it will be desirable that the census data be supplemented with population data for years other than when census is taken; district population and its dynamics can be accurately comprehended by requiring inhabitants to register and report the change of their residence, thereby maintaining the inhabitants registry. In addition to demographic data, other socio-economic data of a city

should be also developed as much as possible to attain an effective and realistic urban development/management.

(2) Computerization

It will be essential that a system be developed by which data on the number of registered vehicles, the issuance of driver's licenses, and accidents will be compiled in accordance with prescribed formats, gathered to the central government and, after computer processing, fed back to local concerns. Although local transport/traffic information is presently being gathered to the central government to a fair degree, the processing of such information is still inadequate, and the processing results are not fed back and, therefore, not utilized fully for local administration purposes.

(3) PUV Operation Report

The operators of means of public transport such as buses and PUJs are obligated to submit annual report on their business operation performance, and such reports produce important basic information needed for the determination of traffic policies. However, the report is of a very complicated format and requires an excessive amount of information, and, for this reason, the operators would rather pay the fine of 50 pesos for the failure of submission of this report. Therefore, it will be essential that the obligation to submit detailed information be limited to operators with a capital in excess of certain amount or to those with a large number of operational vehicles and that the format of report from local PUJ operators be much simplified while limiting the reported items to the essential minimum, so that information can be gathered from a greater portion of the operators.

(4) Periodical Traffic Counts

In cities with a population in excess of 100,000, it is desirable that traffic count is conducted at the major cross-sections of major roads once each year. Particularly at points where traffic is heavy, traffic counters should be installed for the collection of traffic data throughout the year. Selection of a traffic counter model should be made mainly from the view of economical and easy operation/maintenance.

(5) Goods Distribution Data

One of the most difficult to obtain is data on goods distribution in cities. In case a comprehensive goods traffic study is too costly to carry out, it is recommended that data on the kind and quantity of cargo and its origin and destination be gathered periodically on a prescribed form at the weighing stations where heavy vehicles are weighed.

## 10.2 New Development Schemes Recommended

The development of road network and traffic facilities and the achievement of traffic management and other projects in accordance with the Masterplan recommended hereby will necessitate not only huge sums of investment funds and a substantial length of time, but also the understanding and cooperation of the citizenry at large. New development schemes which will offer solutions to the financial and community issues, thereby enabling the easier and smoother realization of the Masterplan, will be recommended below.

### 10.2.1 Methods of Execution of Public Projects Currently Used in the Philippines

#### 1) Land Acquisition Methods

##### (1) Donation

The donation of land for no counter value is often practiced in public projects for the development of roads, health centers, schools, parks, markets, cemeteries, and so forth in the hinterland of and away from urban areas. The owners of large pieces of land would donate a part of their land so as to enjoy the development benefit—the appreciation of their land in value after the completion of the project.

##### (2) Expropriation

The exercise of expropriation power is limited to public welfare projects (such as road, school, resettlement housing, and the like).

However, the assessment of land value poses a difficult problem in the expropriation of land. In Davao City, 100 hectares of land was expropriated in Mintal in 1975 for the purpose of providing houses to the victims of fire in Salmonan District on M. Quezon Boulevard. Also, land expropriation was exercised when 64 hectares of land was developed in Matina in 1977 for the purpose of resettling squatters in conjunction with the road construction project of S.I.R. in Piapi.

##### (3) Negotiation

Negotiation with the land owner is always most preferred of all methods of land acquisition for public project purposes, but, in this case, too, the assessment of land value (acquisition price) is a difficult problem. Usually, acquisition through negotiation results in an acquisition price higher than that through expropriation. In order to facilitate negotiation with the land owner, favorable method of land price payment, reduction/waiver of tax on capital gain from the sale of land, and/or the joint and concurrent development of unacquired adjacent land are sometimes offered.

#### 2) Development Guidance and Control

##### (1) Development Permission

The development by a private enterprise (developer) of a housing area in excess of the stipulated size in urban planning area is subject to permission, and the permission is granted on the condition that roads, parks, sewer system, and other public facilities which satisfy certain standards are installed by the develop-

er. In practice, therefore, the developer submits to the relevant authority his development plans for pre-consultation. The permission is granted when the authority is satisfied that the planned public facilities meet the stipulated technical standards. The roads, parks, sewer system, and so forth, thus installed, are donated to the jurisdictional authority for no counter value. In Davao City, the technical standards are established and permissions have been granted to private developers under this scheme.

(2) Restrictions Under Urban Planning

The construction of reinforced concrete and other permanent type buildings is prohibited and the construction of only wooden, steel frame, or concrete block buildings is allowed in the areas designated for the future development of roads, parks, sewer facilities, station plaza, and other public facilities, as well as motor vehicle terminals, schools, nurseries, and other public welfare facilities, under urban planning. A system similar to this urban planning scheme exists in the Philippines (and in Davao City), in regard to the land acquired for the construction of roads, under which the right-of-way is established for roads. For the purpose of developing the major roads recommended by the Masterplan, particularly the 6-lane road, such restriction should be applied to the plan widths of the right-of-way of the road, prior to the start of their widening to 4-lane.

### 10.2.2 New Development Schemes

The most important tasks that must be performed in the implementation of each development project are the procurement of necessary funds and the acquisition of necessary land. For the former, the fundamental is to strengthen the financial capability of central government so as that greater development funds can be obtained, while it is also necessary that active efforts be made for the introduction of international cooperation funds and for the issuance of local bonds under central government guarantee. For the latter, methods currently used include the donation of, the negotiated acquisition of, and the compulsory purchase of land, while worth considering in the future will be methods for mitigating the burden of development funds on public finance by paying for the necessary project expenses from development benefits, such as "land readjustment" and "urban renewal" schemes. The former scheme is particularly useful in creating, with little public investment, land for roads, parks, and other public facilities, and land readjustment accomplished in China (Taiwan) and Korea as well as in Japan will be good examples.

1) Land Readjustment Scheme

(1) Purpose and Feature

Through land readjustment projects, areas with inadequate public facilities are reshaped into a desirable shape of land blocks equipped with adequate roads, parks, sewer facilities, and other necessary public facilities in order that the inhabitants be protected in fire, earthquake, and other emergency situations. The features of this scheme are that the original land and building owners retain their ownership rights after the completion of the project, that both public facilities and housing areas can be developed simultaneously, and that subsidy, tax incentives, long term public fund loans, and other preferential arrangements are available.

(2) The Subject of Land Readjustment Projects

Land readjustment projects are implemented by individuals, land readjustment cooperatives, and/or public organizations.

(3) Land Substitution Plan

The original land/house owners are prone to agree to land readjustment projects, inasmuch as their rights are preserved after the project accomplishment and their financial burden of the projects is small as the majority cost is paid for with proceeds from the sale of a part of readjusted land.

The system by which the original land/house ownership is exchanged for the ownership of a part of the readjusted land is accomplished by the land substitution plan. In land readjustment projects, certain quantity of land is used for public facilities (roads, parks, rivers) and for sale to produce the project fund; therefore, the total areal size of land after land substitution is smaller than such total before land substitution. The difference (reduction in land size) is "distributed" to the original owners. However, because the asset values rise as a result of the project, the ownership of a smaller property often can be greater in value than the original ownership.

(4) Compensations

Land readjustment projects require a long period of time for completion. Compensations are paid out of the project fund to the area inhabitants for their temporary dwellings, reduction in income, and so forth. The land readjustment scheme is secured in detail by the relevant laws, regulations, circulars, and other instruments.

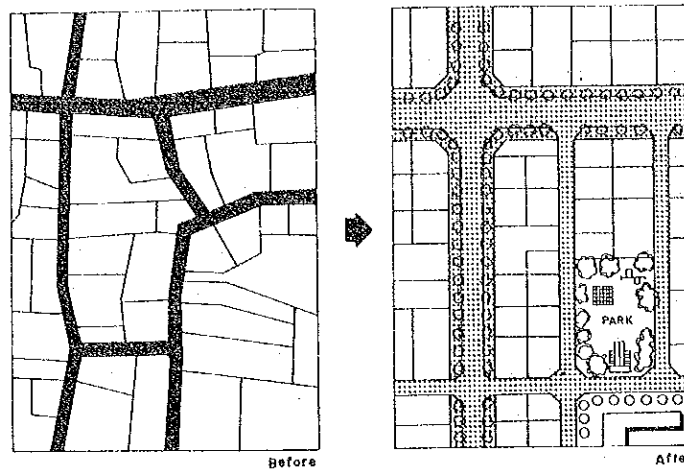
(5) Adaptability to Davao City

The land swapping system practiced in the Philippines can be developed to a system whereby the acquisition of agricultural, forestry, and open land. For the construction of major roads, sewer system, parks, and so forth in Davao City may be accomplished, not through land acquisition, but through land substitution in a manner so as that public facilities and the housing area for the original land owners are developed concurrently. It will be most desirable that a Land Readjustment Law be enacted, together with appropriate revisions in the Registration Law, Tax Law, and other statutes, as well as the establishment of a subsidy system.

2) Urban Redevelopment Scheme

(1) Purpose and Features

This scheme provides for projects aimed at the renewal of urban areas crowded with wooden houses with inadequate public facilities into a modern urban area with fire-proof and aseismic buildings in order that the inhabitants will be protected in fire, earthquake, and other emergency situations. The features of this scheme are that the original rights of land/building owners and lease right holders are protected after the project, that the land area, facilities, and buildings can be developed simultaneously, the cost of project is subsidized in consideration of the public nature of the project, and that tax, financial and other incentives



**Figure 10.1 Land Readjustment**

are available to the original owners/ holders.

**(2) Application and Subject**

Urban redevelopment scheme is applicable only to areas designated as high efficiency utilization area under urban planning, where about two-thirds or more of buildings are non-fire proof or low buildings with two or less surface floors, where public facilities are inadequate, and where the land is divided into very small sizes of lots and, therefore, the state of land use is very unhealthy. Urban redevelopment projects are implemented by individuals, urban redevelopment cooperatives, public corporations, and/or local governments.

**(3) Right Substitution**

The rights of the original land/house owners and lease holders are protected after the project completion. After redevelopment, the total floor space of the new building(s) is divided into the owners' floors and reserved floors, the reserved floors are sold to third parties in order to raise a part of the project cost, and the owners' floors are distributed to the original owners/holders. Therefore, the original owners/holders are prone to agree to the project without much opposition.

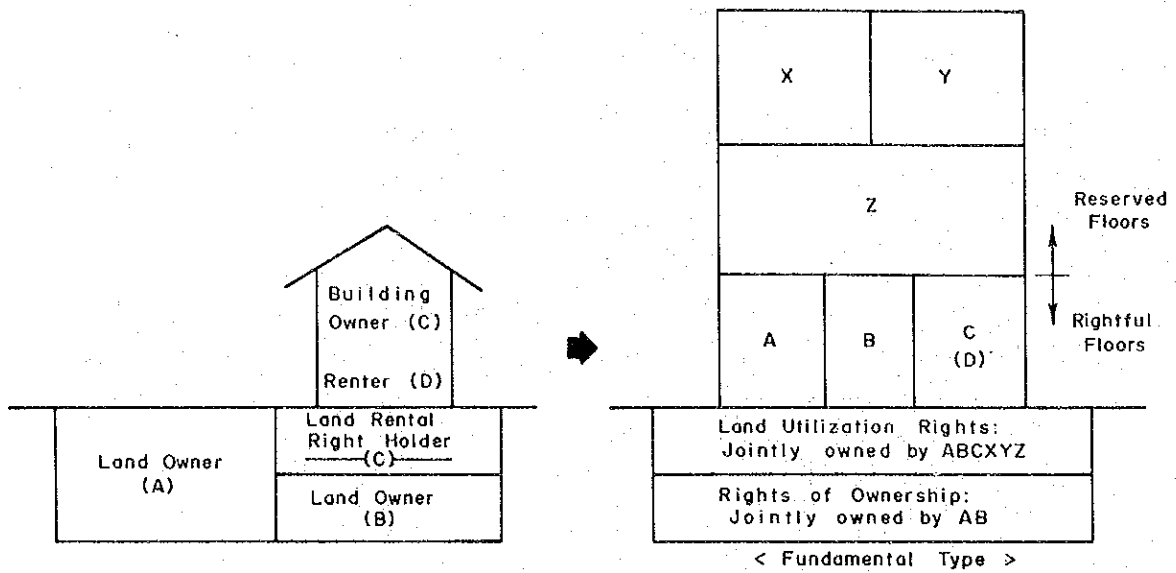
**(4) Compensations**

The implementation of urban redevelopment projects requires a long period of time. The original owners/holders are compensated for the cost of temporary dwellings, temporary stores, reduction in rental income and/or business income, and so forth. Urban redevelopment projects are secured against various problems by the relevant laws, regulations, circulars, and other instruments.

**(5) Adaptability to Davao City**

When roads and terminals are to be constructed in parts of Davao City crowded with buildings, the application of urban redevelopment scheme will alleviate the need of land acquisition in accomplishing the concurrent develop-

ment of both public facilities and the land/buildings for the original owners/holders. Needless to say, in order to legalize this scheme, it will be necessary that an Urban Redevelopment Law be enacted, necessary and appropriate amendment made to the Registration Law, Tax Law, and other applicable statutes, and the required subsidy system established.



**Figure 10.2 Rights Conversion System of Urban Redevelopment**

### 10.3 Feasibility Study

A feasibility study is essential prior to the implementation of all projects which require a large amount of investment fund and which are expected to have substantial impacts, particularly the following:

#### 1) Davao-Agusan/Davao-Cotabato Road Upgrading Project

The Road, which traverses the entire Project Area in North-South direction, is the most important route as a "shaft" of the ladder shape road network in the Project Area, attracting a highest traffic concentration in the Area. The entire extension of the road will be upgraded to a 4-lane road, of this, the section between R. Castillo street and McArthur Highway for a total length of about 10.5 kilometers will be further expanded to a 6-lane road. To be studied are, among others,

- (1) Route location and road right-of-way to minimize land acquisition cost and property compensation cost.
- (2) Method of project execution to facilitate land and property acquisition.
- (3) Priority and the most appropriate timing of implementation of each section of road
- (4) The rational way of roadway utilization and traffic management including introduction of exclusive bus lanes
- (5) Provisional space for future rail-transit system.

#### 2) Davao Ring Road Package

The package of projects for the development of a ring road surrounding Poblacion and Ecoland, as well as of the major trunk roads inside the ring road. Of the project components, particularly important are:

- (1) J.P. Laurel Extension, New Ma-a Bridge, relocation of Ma-a Road
- (2) The upgrading/improvement of Lapu-lapu Street, Sta. Ana Street, E. Quirino Avenue, Bankerohan Bridge, and McArthur Highway
- (3) Construction of coastal road and a new estuary bridge

#### 3) Bus Introduction Plan Study

Study of the city bus service system, the required number of bus units, bus terminal development, bus business profitability, and the adjustment of bus-PUJ competition with the target of introducing on trial basis a city bus service system in 1985, and of the start of full operation in 1990.

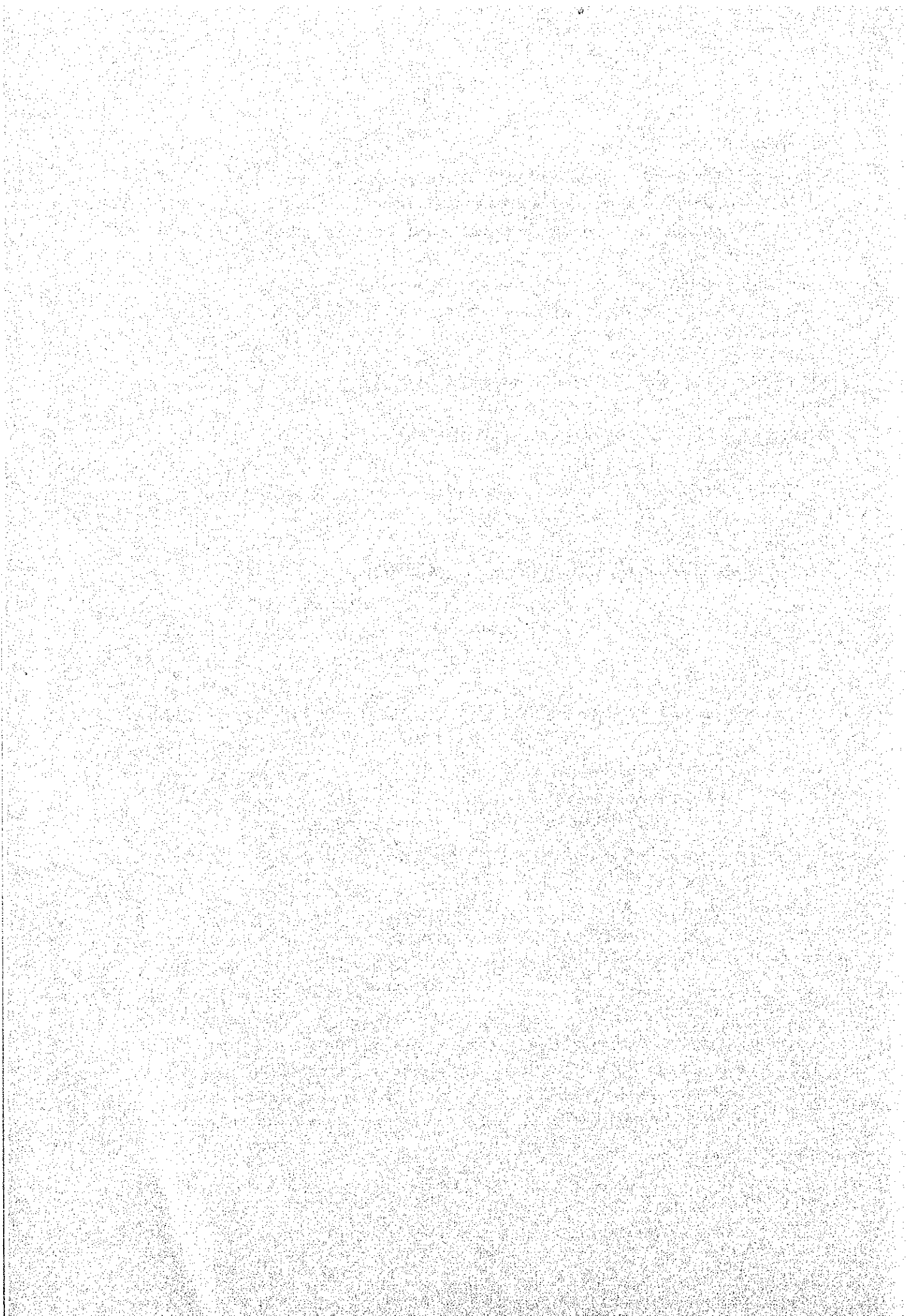
#### 4) Industrial Estate Development Study

The promotion of industrialization is the most important and strategic project in the accomplishment of land use plan of DCUTCLUS. Particularly important will be a comprehensive industrial development study to include the development of an industrial estate in Panacan, the selection of kinds of industries to be located, and development schedule.

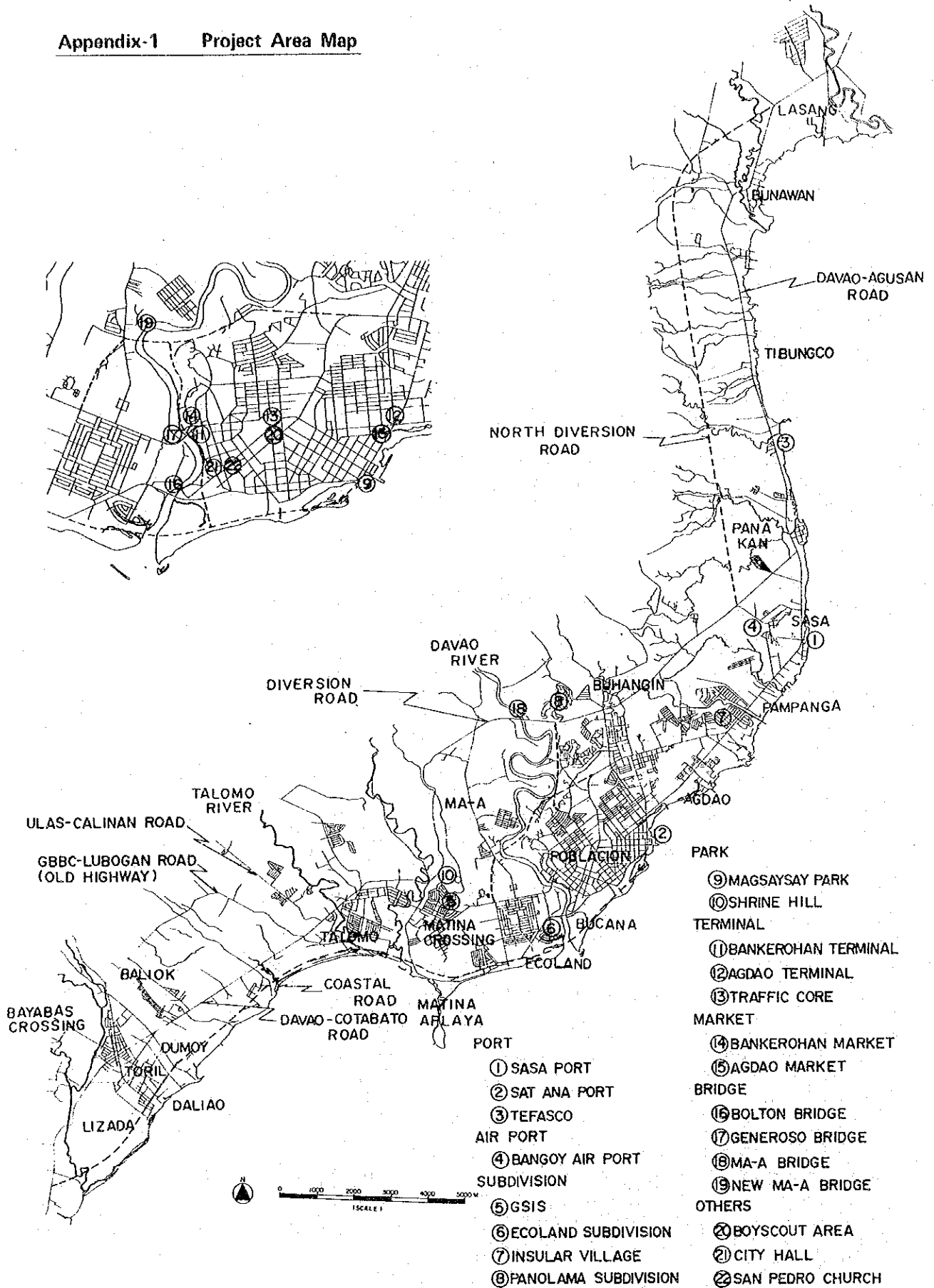


**APPENDICES**

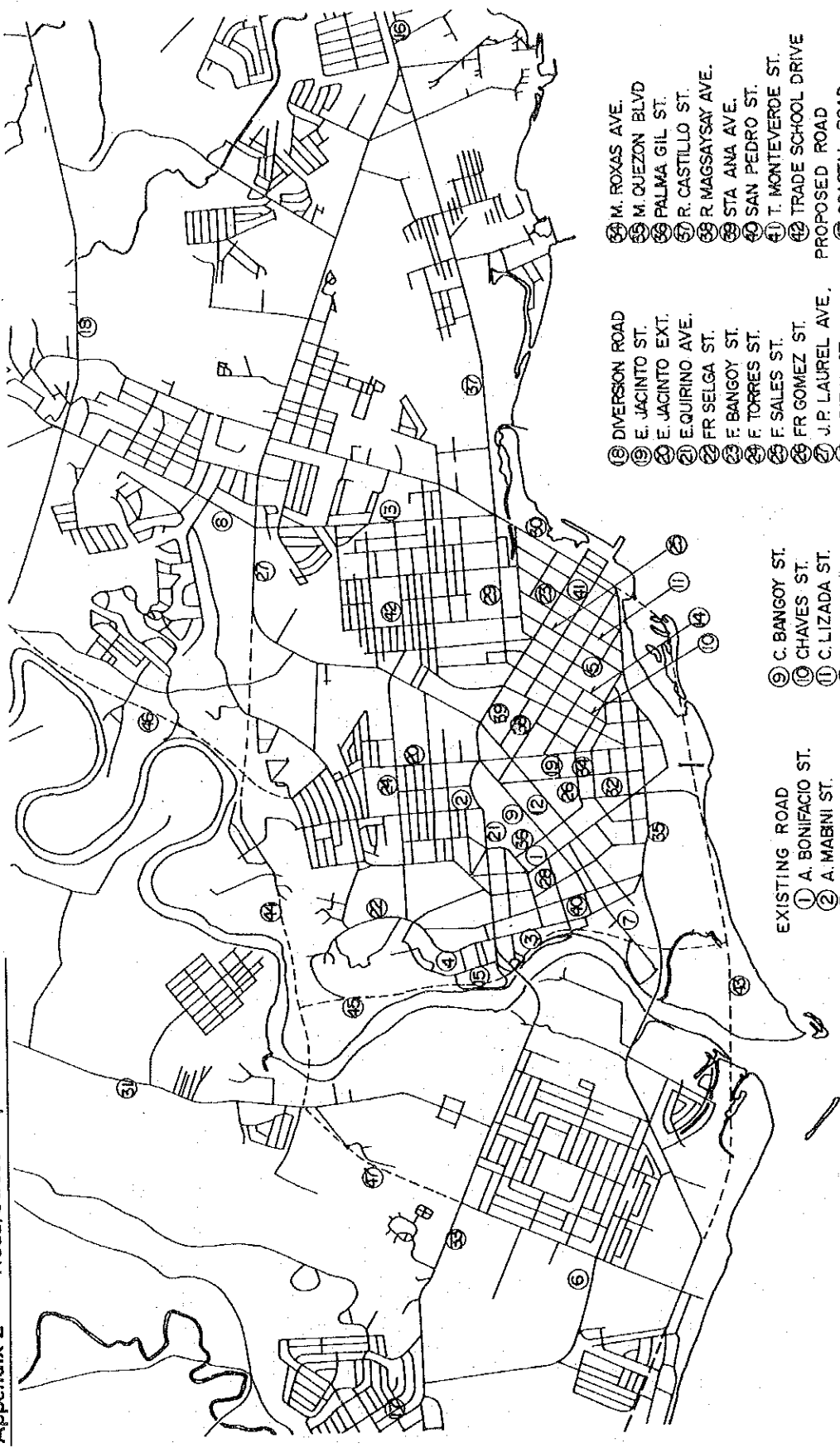
Appendix–1	Project Area Map .....	311
Appendix–2	Road/Street Map in Poblacion .....	312
Appendix–3	Acronyms and Abbreviations .....	313



**Appendix-1 Project Area Map**



Appendix-2 Road/Street Map in Poblacion



- |   |   |   |  |
|---|---|---|--|
| <p>EXISTING ROAD</p> <ul style="list-style-type: none"> <li>① A. BONIFACIO ST.</li> <li>② A. MABINI ST.</li> <li>③ A. PICHON ST.</li> <li>④ A. PICHON EXT.</li> <li>⑤ B. GEMPESAW ST.</li> <li>⑥ BOLTON DIVERSION ROAD</li> <li>⑦ BOLTON ST</li> <li>⑧ BUHANGIN ROAD</li> </ul> | <ul style="list-style-type: none"> <li>⑨ C. BANGGOY ST.</li> <li>⑩ CHAVES ST.</li> <li>⑪ C. LIZADA ST.</li> <li>⑫ C.M. RECTO AVE.</li> <li>⑬ DACUDAO AVE.</li> <li>⑭ D. SUAZO ST.</li> <li>⑮ DATU BAGO ST.</li> <li>⑯ DAVAO-AGUSAN ROAD</li> <li>⑰ DAVAO-COTABATO ROAD</li> </ul> | <ul style="list-style-type: none"> <li>⑱ DIVERSION ROAD</li> <li>⑲ E. JACINTO ST.</li> <li>⑳ E. JACINTO EXT.</li> <li>㉑ E. QUIRINO AVE.</li> <li>㉒ FR SELGA ST.</li> <li>㉓ F. BANGGOY ST.</li> <li>㉔ F. TORRES ST.</li> <li>㉕ F. SALES ST.</li> <li>㉖ FR GOMEZ ST.</li> <li>㉗ J.P. LAUREL AVE.</li> <li>㉘ J. RIZAL ST.</li> <li>㉙ LAPU-LAPU ST.</li> <li>㉚ L. GARCIA ST.</li> <li>㉛ MA-A ROAD</li> <li>㉜ MABINI EXT.</li> <li>㉝ MCARTHUR HIGHWAY</li> </ul> | <ul style="list-style-type: none"> <li>㉞ M. ROXAS AVE.</li> <li>㉟ M. QUEZON BLVD</li> <li>㊱ PALMA GIL ST.</li> <li>㊲ R. CASTILLO ST.</li> <li>㊳ R. MAGSAYSAY AVE.</li> <li>㊴ STA ANA AVE.</li> <li>㊵ SAN PEDRO ST.</li> <li>㊶ T. MONTEVERDE ST.</li> <li>㊷ TRADE SCHOOL DRIVE</li> <li>PROPOSED ROAD</li> <li>㊸ COASTAL ROAD</li> <li>㊹ J.P. LAUREL EXT.</li> <li>㊺ RIVERSIDE ROAD</li> <li>㊻ ROLLING HILLS ROAD</li> <li>㊼ NEW MA-A ROAD</li> </ul> |
|---|---|---|--|

### Appendix-3 Acronyms and Abbreviations

<b>A</b>	AC;	Auto Calesa
<b>B</b>	BCR;	Benefit/Cost Ratio
	BLT;	Bureau of Land Transportation
	BOT;	Board of Transportation
<b>C</b>	CBD;	Central Business District
	CHPG;	Constabulary Highway Patrol Group
<b>D</b>	DCTTMC;	Davao City Transport and Traffic Management Council
	DCUTCLUS;	Davao City Urban Transport Cum Land Use Study
<b>E</b>	EMK System;	Equivalent Maintenance Kilometer System
<b>G</b>	GDP;	Gross Domestic Products
	GNP;	Gross National Products
	GRDP;	Gross Regional Domestic Products
<b>I</b>	IBRD;	International Bank for Reconstruction and Development
	IRR;	Internal Rate of Return
	INP;	Integrated National Police
<b>J</b>	JICA;	Japan International Cooperation Agency
<b>L</b>	LRT;	Light Railway Transit
<b>M</b>	MHS;	Ministry of Human Settlement
	MPH;	Ministry of Public Highways
	MPWH;	Ministry of Public Works and Highways
	MOTC;	Ministry of Transportation and Communication
	MND;	Ministry of National Defense

N	NCSO;	National Census and Statistics Office
	NEDA;	National Economic and Development Authority
	NPV;	Net Present Value
	NTSS;	National Transportation System's Study
P	PCU;	Passenger Car Units
	PUJ;	Public Utility Jeepney
	PPA;	Philippine Ports Authority
	PUV;	Public Utility Vehicle
	PPDO;	Planning and Project Development Office
	PNR;	Philippine National Railways
	PU;	Public Utility
R	RCDP;	Regional Cities Development Project
S	SIR;	Slum Improvement and Resettlement Office
	SPDA;	Southern Philippines Development Authority
T	TTC;	Traffic Training Center









JICA

