CHAPTER 11

ROAD NETWORK DEVELOPMENT MASTER PLAN

11.1 FINANCIAL FRAMEWORK

Proposed future road network consists of various road projects which are required to be systematically implemented in accordance with priority and within the financial framework. At present, the Philippine Government is suffering the severe financial constraints. In this section, possible amount for road investment to the Study Area is discussed for the following terms:

Short Term	:	2005 - 2010	(6 years)
Medium Term	:	2011 - 2016	(6 years)
Long Term	:	2017 - 2022	(6 years)

11.1.1 National Road

1) Procedure to Estimate Possible Investment Amount for Road Development

The procedure to estimate possible investment amount for road development is shown in Figure 11.1-1.

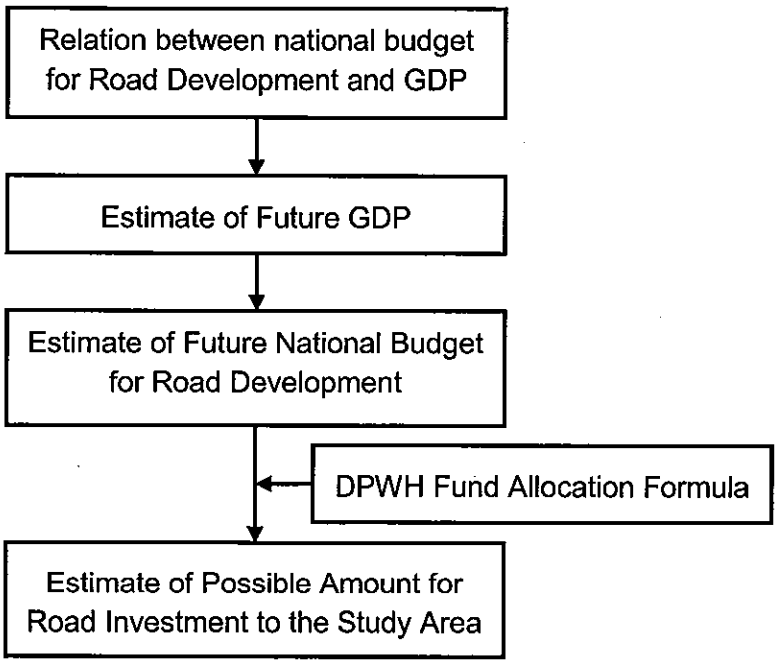

FIGURE 11.1-1 PROCEDURE TO ESTIMATE POSSIBLE INVESTMENT AMOUNT

2) Estimate of Possible Investment Amount for Road Development

a) Relation between National Budget and GDP

Past capital outlay for road development in relation with GDP is shown in Table 11.1-1. Past trend was as follows:

% share of road investment to GDP		
Max.	1.12%	(year 1998)
Min.	0.40%	(year 2002)

b) Future GDP

GDP growth rate was estimated as follows:

Years 2003 and 2004	:	Philippine Medium - Term Development Plan 2001-2004
2005 - 2010	:	5% per annum by the Study Team and accepted by NEDA.
2011 - 2022	:	4.5% per annum by the Study Team and accepted by NEDA.

c) Future % share of Capital Outlay to GDP

Amount of capital outlay for year 2004 was given by DPWH. It is also informed that year 2004 budget level will continue at least for the next 5 years.

From year 2009 to 2022, it was assumed that % share of capital outlay to GDP will increase from 0.45% in 2009 to 0.65% in 2022.

d) DPWH Fund Allocation to the Study Area

DPWH has developed the Fund Allocation Formula to each congressional district. According to the formula, budget allocation to the Study Area will be as follows:

Metro Iloilo	:	0.60 ~ 0.70% of national capital outlay for road development

e) Estimated Possible Amount for Road Development

Possible amount for road development to Metro Iloilo was estimated as shown in Table 11.1-2, and summarized as follows:

Term	Possible Investment Amount (Million ₱)
Short Term (2005 ~ 2010)	830 ~ 970
Medium Term(2011-2016)	1,490 ~ 1,740
Long Term (2019-2022)	2,190 ~ 2,550
Total (2005 ~ 2022)	**4,510 ~ 5,260**

TABLE 11.1-1 GDP AND CAPITAL OUTLAY FOR ROAD DEVELOPMENT

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
GDP (Current Price, Million P)	1,474,457	1,692,932	1,905,951	2,171,922	2,426,743	2,665,060	2,976,905	3,308,318	3,639,980	3,977,380	–
GDP Nominal Growth Rate (% per annum)	9.09	14.82	12.58	13.95	11.73	9.82	11.70	11.13	10.03	9.27	–
GDP Growth Rate in real term (% per annum)	2.12	4.39	4.68	5.85	5.19	-0.58	3.40	4.38	3.22	4.56	5.20
Capital Outlay for Highway Development (Current Price, Million P)	10,436	10,925	11,789	15,428	22,723	29,733	24,220	21,469	21,469	15,980	21,014
% share of Capital Outlay to GDP	0.71	0.65	0.62	0.71	0.94	1.12	0.81	0.65	0.59	0.40	–

TABLE 11.1-2 ESTIMATED POSSIBLE INVESTMENT AMOUNT

Year	GDP Growth Rate (%)	Estimated GDP at 2003 Constant Prices (Million Pesos)	% share of Capital Outlay for Highway Development (%)	Estimated Capital Outlay to Highway Development (Million Pesos)	6 Year Total (Million Pesos)	Possible Investment Amount to Metro Iloilo (0.60%~0.70%) (Million Pesos)
2002	-	3,977,380	0.40	15,980		
2003	(5.20)	4,335,300	0.48	21,014		
2004	5.50	4,573,742	0.45	20,400		
2005	5.00	4,802,429	0.42	20,400		
2006	5.00	5,042,550	0.40	20,400		
2007	5.00	5,294,678	0.39	20,400		
2008	5.00	5,559,412	0.37	20,400		
2009	5.00	5,837,383	0.45	26,268		
2010	5.00	6,129,252	0.50	30,646	138,514	830~970
2011	4.50	6,405,068	0.50	32,025		
2012	4.50	6,693,296	0.55	36,813		
2013	4.50	6,994,494	0.55	38,470		
2014	4.50	7,309,246	0.60	43,855		
2015	4.50	7,638,162	0.60	45,829		
2016	4.50	7,981,879	0.65	51,882	248,874	1,490~1,740
2017	4.50	8,341,064	0.65	54,217		
2018	4.50	8,716,412	0.65	56,657		
2019	4.50	9,108,651	0.65	59,206		
2020	4.50	9,518,540	0.65	61,871		
2021	4.50	9,946,874	0.65	64,655		
2022	4.50	10,394,483	0.65	67,564	364,170	2,190~2,550
				Total	**751,558**	**4,510~5,260**

11.1.2 Investment Capacity of LGUs

Investment capacity of LGUs for local road development was estimated for the following two (2) cases:

Case - 1 : Development Fund = 20% of Internal Revenue Allotment (IRA)
Investment for local road development = 30% of Development Fund
Case - 2 : Investment for local road development = 25% of Borrowing Capacity
Loan term = 12 years. After initial borrowing, one half of above is borrowed at every 6 years.

Table 11.1-3 shows IRA and borrowing capacity of the Province of Iloilo and Iloilo City.

TABLE 11.1-3 IRA AND BORROWING CAPACIT

(Unit: Million Pesos)

		Province of Iloilo	Iloilo City
Revenues	Local Income	57.9	250.5
	IRA (2003)	687.4	309.7
	Total	745.3	560.2
Debt Service Ceiling		149.1	112.0
Net Debt Service Capacity		149.1	87.3
Borrowing Capacity		923.3	540.7

Investment capacity of LGUs for local road development was estimated as shown in Table 11.1-4.

TABLE 11.1-4 INVESTMENT CAPACITY OF LGUS

		IRA or Borrowing Capacity	2005-2010 (6 years)	2011-2016 (6 years)	2017-2022 (6 years)	Total (2005-2022)
Province of Iloilo	Case-1 (50% to Study Area)	(687.4) 343.7	123.7	123.7	123.7	371.1
	Case-2	923.3	230.8	115.4	115.4	461.6
Iloilo City	Case-1	309.7	111.5	111.5	111.5	334.5
	Case-2	540.7	135.2	67.6	67.6	270.4

Investment capacity of LGUs was estimated as follows:

		Province of Iloilo (Million Pesos)	Iloilo city (Million Pesos)
Short Term (2005-2010)	:	123.7~230.8	111.5~135.2
Medium Tem (2011-2016)	:	115.4~123.7	67.6~111.5
Long Term (2017-2022)	:	115.4~123.7	67.6~111.5

11.2 PRIORITY OF ROAD PROJECTS

Alternative-2(B) was selected as the most appropriate and preferable future road network for Metro Iloilo. Based on the selected future road network, road projects were identified. Implementation priority order of the road projects is determined in this section.

11.2.1 Basic Policy and Prioritization Procedure

The following prioritization factors for the road projects were set up in line with the objectives of the road network development;

a) **Reduction of traffic congestion** in the city proper area
b) Road project will **guide and support the planned urban development**
c) Formation of **flexible road network** which will provide alternative routes to road users
d) Road project which will **contribute to the economic development**
e) Road project which will **enhance international and domestic investment**
f) Road project which will **realize expected investment effects of related projects**
g) Road project with **environmental and social considerations**

In addition, the following three (3) more factors were selected:

h) Upgrade of **traffic efficiency**
i) **Traffic safety considerations**
j) **Urgency for road improvement**

The procedure for prioritization of the road projects is shown in Figure 11.2-1.

The indicators of each factor were selected. Indicators for individual road project were measured and scored following the procedure illustrated in Figure 11.2-1.

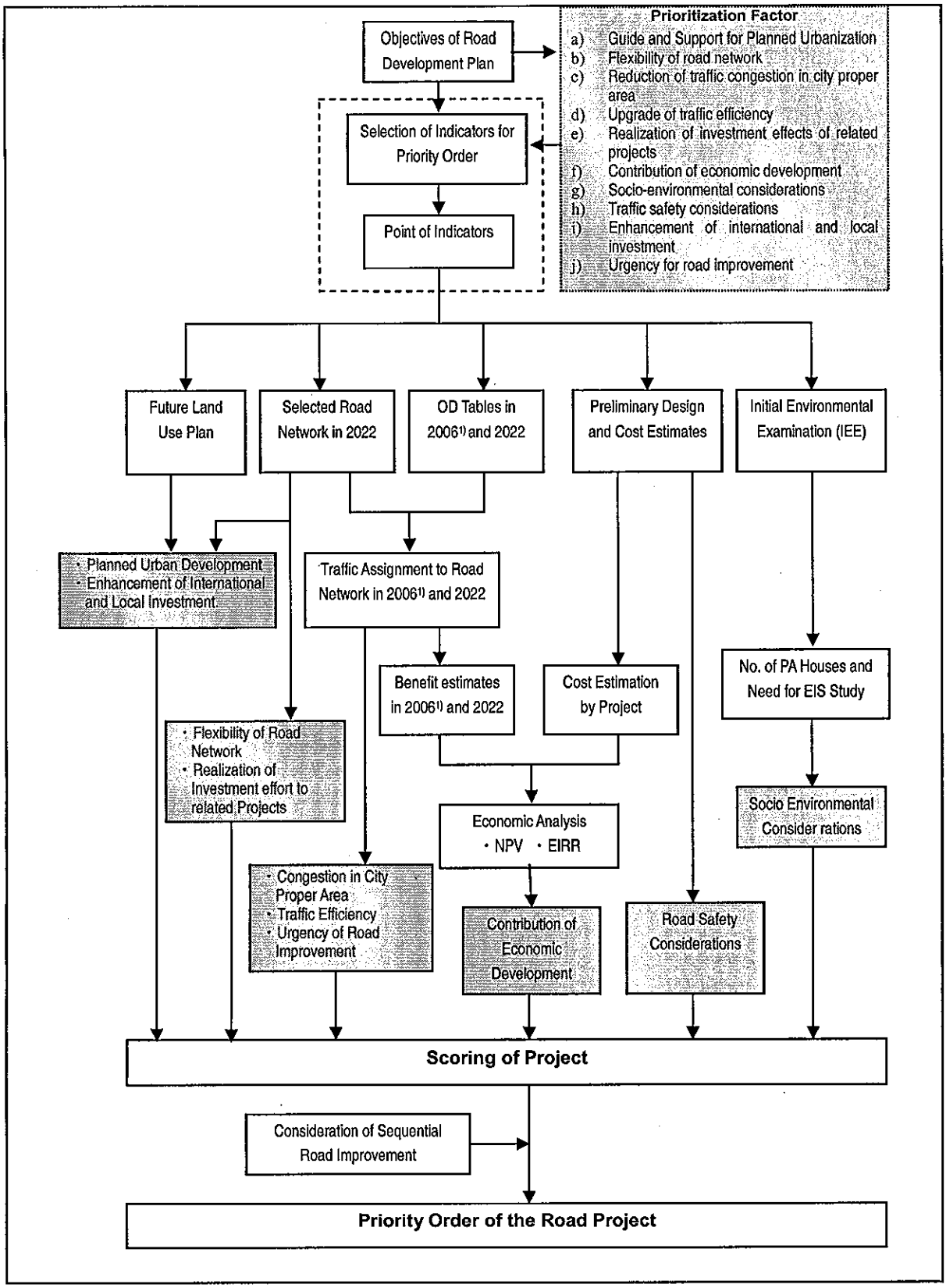

FIGURE 11.2-1 PROCEDURE FOR PRIORITIZATION OF ROAD PROJECT

[1] Opening year of the road project is assumed to be 2006.

11.2.2 Prioritization Criteria

1) Selection of Prioritization Factors

In order to prioritize the road projects, the following prioritization factors which consist of ten (10) factors and fourteen (14) indicators were selected as shown in Table 11.2.-1.

TABLE 11.2-1 PRIORITIZATION FACTORS AND INDICATORS

	Factors	Indicators	How to Measure
1	Guide and Support Planned Urban Development	Planned Urban Road Section Ratio (year 2022)	Section Length along the planned urban area per Total Length RUA = RLu / RLw Where : RUA = Section ratio of planned urban area RLu = Section length in planned urban area RLw = Whole road length
2	Flexibility of Road Network	Function as an Alternative Road	·The road functions as an alternative route or not.
3	Reduction of Traffic Congestion in City Proper	Averge VCR within C-1 in 2022	·VCR of road link within C-1 in 2022 based on traffic assignment.
4	Traffic Efficiency	PCU-Hour in 2022	·PCU-Hour in 2022 with and without project based on traffic assignment
5	Accessibility Improvement for Related Projects	Function as an Access Road to related Projects	·The road functions as an Access Road to New Airport and Marine Port directly or indirectly
6	Contribution to Economic Development	Net Present Value	·Economic analysis of each road project.
		EIRR	·Economic analysis of each road project.
7	Social-Environmental Impact	·No. of Project Affected Houses	·No. of Houses affected by the Project
		·Necessity of EIS Study	·Need of EIS Study or Initial Environmental Examination(IEE)
8	Traffic Safety Considerations	Provision of Sidewalk	·Length of Sidewalk provided in the design In case of partially sidewalk provided, computation is made as follows: SSW = SWL w / TRL x 5 Where: SSW = Score of side walk SWLw = Length with sidewalk TRL = Total road length
9	Enhancement of International / Local Investment	Accessibility to Industrial, Commercial and Housing Developments	·Judgment wheather direct access road or indirect access road to industrial, commercial and housing development sites
10	Urgency for Road Construction, Widening and Improvement	For widening project, year when VCR of existing road becomes 0.9.	·Identify year when VCR of existing road becomes 0.9
		For improvement project, year when traffic volume exceeds 1,000 pcu/day	- Identify year when traffic volume exceeds 1,000 pcu/day.
		For new construction road, year when it will attract more than 10,000 pcu/day	- Identify year when a new road attract more than 10,000 pcu/day.

2) Weight of Factor and Score

Weight of factors and scores was established as shown in Table 11.2-2.

TABLE 11.2-2 POINTS OF EACH INDICATOR

No.	Factor	Range of Indicator	Weight of Factors	Score
1	Guide and Support Planned Urban Development	Planned urban section ratio (RUA) ・80% < RUA <100% ・60 % < RUA < 80% ・40 % < RUA < 60 % ・20 % < RUA < 40 % ・ 0 % < RUA < 20 %	15	 15 12 9 6 3
2	Flexibility of Road Network	Function as an alternative road ・Yes ・Yes, but indirectly - No	10	 10 6 3
3	Reduction of Traffic Congestion in City Proper	Average volume-capacity ratio (VCR) within C-1 ・VCR < 0.5 ・0.5 < VCR < 0.75 ・0.75 < VCR <1.00 ・1.00 < VCR <1.25 ・1.25 < VCR	10	 10 8 6 4 2
4	Traffic Efficiency	Reduction of vehicle hours ・100,000 < PCU Hr ・ 10,000 < PCU Hr < 100,000 ・ 5,000 < PCU Hr < 10,000 ・ 2,500 < PCU Hr < 5,000 ・ PCU Hr < 2,500	10	 10 8 6 4 2
5	Accessibility Improvement for Related Projects	・Direct access ・Indirect access ・No Access・	15	15 9 3
6	Contribution to Economic Development	Amount of NPV computed is classified as ・ 10,000 < NPV ・ 1,000 < NPV < 10,000 ・ 500 < NPV Hr < 1,000 ・ 250 < NPV Hr < 500 ・ NPV Hr < 250	5	 5 4 3 2 1
		EIRR ・50 % < EIRR ・15 % < EIRR < 50 % ・ EIRR < 15 %・	5	 5 (EIRR-15)/7 1
7	Social-Environmental Impact	No. of project affected houses: ・ No PAH ・ 0 < PAH < 50 ・ 50 < PAH < 100 ・ 100 < PAH <200 ・ 200 < PAH < 300	2.5	 2.5 2.0 1.5 1.0 1.5
		Needs for EIS study ・ No EIS or IEE ・ IEE Check List ・ IEE ・ EIS Regional ・ EIS National	2.5	 2.5 2.0 1.5 1.0 0.5
8	Traffic Safety Considerations	Provision of sidewalk ・ Both side sidewalk ・ Partial sidewalk ・ No sidewalk	5	 5 5 x (L w / Lt) 1
9	Enhancement of International / Local Investment	・ Direct access to development area ・ Indirect access to development area ・ No direct access	5	5 3 1
10	Urgency for Road Construction, Widening and Improvement	For widening project, year of VCR becomes 0.9 ・ Year < 2006 ・ 2006 < Year < 2010 ・ 2010 < Year < 2016 ・ 2016 < Year < 2022 ・ 2022 < Year	15	 15 12 9 6 3
		For improvement project, year of traffic volume exceeds, 1,000 pcu/day ・ Year < 2006 ・ 2006 < Year < 2010 ・ 2010 < Year < 2016 ・ 2016 < Year < 2022 ・ 2022 < Year		 15 12 9 6 3
		Year exceeded more than 10,000 ADT is classified as ・ Year < 2006 ・ 2006 < Year < 2010 ・ 2010 < Year < 2016 ・ 2016 < Year < 2022 ・ 2022 < Year		 15 12 9 6 3
		TOTAL	100	

11.2.3 Priority Ranking of Road Projects

In accordance with the prioritization criteria, all road projects were evaluated their implementation priority as shown in Table 11.2-3 and supporting data for evaluation are presented in Table 11.2-4.

11.2.4 Specific Consideration in Implementation Sequence

1) Opening of New Iloilo Airport

New Iloilo airport is scheduled to open in 2007. R-3 Iloilo - Sta. Barbara - Kalibo Road will function as a primary access road to new airport, therefore, it preferably be widened before or soon after the opening of new airport.

2) Progress of Urban Development

C-1, C-2 and C-3 will be constructed as circumferential roads and the roads will guide and orient expansion of urban area into the suburban area of Iloilo City. Order of the implementation is C-1,C-2, and C-3. Construction of C-2 can start after completion of C-1, and C-3 after C-2.

3) Construction Sequence

B-1: R-1 Bypass and B-2: R-4 Bypass are connected to C-1, therefore, these must be constructed after the completion of C-1.

11.2.5 Order of Implementation

Table 11.2-6 summarizes the order of implementation, in due consideration of priority order and construction sequence.

TABLE 11.2-6 PRIORITY ORDERS OF THE ROAD PROJECTS

	Code	Project Name	Ranking	Sequence
First Priority	C-1	Circumferential Road No. 1	1	
	R-3	Iloilo-Sta.Barbara Road	2	
Second Priority	B-2	R-4 Bypass Road	3	After C-1
	C-2	Circumferential Road No. 2	4	After C-1
	R-4	Iloilo-Roxas Road	4	
	S-2	Jaro-Sta. Barbara Road	6	
	R-5	Iloilo-Coastal Road	6	
Third Priority	R-2	Iloilo-San Miguel Road	8	
	B-1	R-1 Bypass Road	9	After C-1
	R-1	Iloilo-Antique Road	10	
	C-3	Circumferential Road No. 3	11	After C-2
Fourth Priority	B-3	Cabatuan Bypass Road	12	
	S-1	Oton Bangcal Road	13	

TABLE 11.2-3 PRIORITY SCORES FOR EACH INDICATOR BY PROJECTS IN METRO ILOILO

Objectives		Indicators & Weighted Score		C-1	C-2	C-3	R-1	R-2	R-3	R-4	R-5	B-1	B-2	B-3	S-1	S-2
				Circum-ferential Road No. 1	Circum-ferential Road No. 2	Circum-ferential Road No. 3	Iloilo-Antique Road	Iloilo-San Miguel Road	Iloilo-Sta.Barbara-Kalibo Road	Iloilo-Roxas Road	Iloilo Coastal Road	R-1 Bypass Road	R-4 Bypass Road	Cabatuan Bypass Road	Oton-Bangcal Road	Jaro-Sta.Barbara Road
Profile of Road		Road Length		12.8	27.1	25.5	22.2	14	41.3	20.5	20	8.6	11.5	2.1	12	10.6
		Administrative Classification		-	NR & PR	PR	NR	NR	NR	NR	NR	-	-	-	NR	PR
		Function of Road		Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road
		No. of Lanes		4	2	2	2	2	2	2	2	2	2	2	2	2
		Type of Improvement		New	Improve /New	New/Improve	Rehabilitation	Rehabilitation	Widening	Widening	Widening	New	New	New	Improvement	Improvement
		Project Cost		1606.2	811.5	654.5	176.5	145.9	461.3	327	160.7	372	504.4	62.5	193.2	123.2
1	Guide and Support for Planned Urban Development	Planned Urban Road Section Ratio	15	15	5	5	7.5	10	12.5	10	7.5	10	10	5	5	10
2	Flexibility of Road Network	Funciton as Alternative Road	10	10	8	6	4	2	4	4	6	8	10	6	2	6
3	Reduction of Traffic Congestion in City Proper	Average VCR in CBD in 2022	10	8	4	2	2	2	2	2	2	2	2	2	2	2
4	Traffic Efficiency	PCU-Hour in 2022	10	10	10	6	6	6	6	6	6	6	8	6	4	6
5	Accessibility Improvement for Related Projects	Provision of Accessible Road	15	10	7.5	5	5	10	15	10	15	5	10	5	2.5	10
6	Contribution of Economic Developmenty	Net Present Value	5	5	5	3	3	3	3	3	3	3	3	0	3	3
		EIRR	5	5	5	4	5	4	4	5	5	4	4	1	4	5
7	Social-Environmental Impacts	No. of PA Houses	2.5	1	1.5	1	2.5	1	0.5	2	1.5	2	2	2	2.5	2.5
		Type of EIA	2.5	1	1.5	1	2.5	1.5	1.5	2	2	1	1	1	2.5	1.5
8	Traffic Safety Considerations	Provision of Sidewalk / Paved Shoulder	5	5	3	1	3	3	3	3	3	3	3	3	1	1
9	Enhancement of International / Local Investment	Accessibility to Industrial, Commercial and Housing Development	5	3	5	3	1	3	5	3	1	1	3	3	1	5
10	Construction, Widening and Improvement	Order of Year	15	15	9	9	9	12	15	15	9	12	15	6	9	9
Score Total			**100**	**88**	**65**	**46**	**51**	**58**	**72**	**65**	**61**	**57**	**71**	**40**	**39**	**61**
Ranking				**1**	**4**	**11**	**10**	**8**	**2**	**4**	**6**	**9**	**3**	**12**	**13**	**6**
Timing				***S+***	***M+***	***L+***	***M-***	***M-***	***S-***	***M+***	***M+***	***M-***	***S-***	***L+***	***L-***	***M+***

TABLE 11.2-4 BASIC DATA FOR EACH INDICATOR BY PROJECT IN METRO ILOILO

Effects / Impact	Indicators	Unit	C-1	C-2	C-3	R-1	R-2	R-3	R-4	R-5	B-1	B-2	B-3	S-1	S-2
			Circum-ferential Road No. 1	Circum-ferential Road No. 2	Circum-ferential Road No. 3	Iloilo-Antique Road	Iloilo-San Miguel Road	Iloilo-Sta.Barbara -Kalibo Road	Iloilo-Roxas Road	Iloilo Coastal Road	R-1 Bypass Road	R-4 Bypass Road	Cabatuan Bypass Road	Oton-Bangcal Road	Jaro-Sta.Barbara Road
Profile of Road	Road Length	km	12.8	27.1	25.5	22.2	14.0	41.3	20.5	20.0	8.6	11.5	2.1	12.0	10.6
	Administrative Classification	-	-	NR & PR	PR	NR	NR	NR	NR	NR	-	-	-	NR	PR
	Function of Road	-	Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road	Arterial Road
	No. of Lanes	Lanes	4	2	2	2	2	2	2	2	2	2	2	2	2
	Type of Improvement	-	New	Improve /New	New/Improve	Rehabil	Rehabil	Widening	Widening	Widening	New	New	New	Improvement	Improvement
	Project Cost	M Pesos	1,606.2	811.5	654.5	176.5	145.9	461.3	327.0	160.7	372.0	504.4	62.5	193.2	123.2
Traffic Demand	Traffic Volume in 2022	ADT	49,600	13,000	11,900	26,100	23,600	35,300	22,000	31,400	19,300	20,500	8,000	1,100	12,800
	Traffic Volume in 2006	ADT	-15,600	2,200	2,200	10,400	15,000	29,400	20,200	12,000	-7,300	-19,000	4,900	500	4,900
	Trip Length in 2022	km / trip	20.3	42.5	42.0	26.2	17.4	26.2	9.5	34.8	36.2	37.6	46.0	23.2	28.6
	Pcu-Hour Saving in 2022	pcu-hr	127,700	132,900	5,800	4,100	3,800	7,600	6,300	9,000	4,800	28,200	2,900	400	4,800
Traffic Efficiency	Congestion Degree in 2022	VCR	0.56	0.47	0.68	0.68	0.68	0.68	0.66	0.67	0.69	0.63	0.67	0.69	0.68
	Congestion Degree in CBD in 2022	VCR	0.74	0.74	1.05	1.06	1.04	1.04	1.06	1.05	1.07	1.01	1.05	1.07	1.06
Economic Feasibility	Net Present Value	M Pesos	11,354	12,339	411	312	199	550	740	1,044	368	457	-15	165	723
	EIRR	%	56.4	76.5	25.1	36.4	30.7	32.4	44.8	81.6	32.9	27.8	9.9	26.7	57.2
Traffic Safety	Sidewalk	-	Both side	NO	NO	Yes	NO	Yes	Yes	Yes	NO	NO	NO	NO	NO
		km	12.8	-	-	5.9	-	9.4	5.7	3.3	-	-	-	-	-
Environmental Impact	No. of PA Houses	No.	103	74	179	-	101	272	27	99	31	48	20	-	-
	Type of EIA	-	EIS Regional	IEE Checklist EIS Regional	EIS Regional	No Need	IEE	IEE	IEE Checklist	IEE Checklist	EIS Regional	EIS Regional	EIS Regional	No Need	IEE
Urgncy for Road Improvement	More than 0.9 of VCR in case of widening	Year	-	-	-	2016	2012	2006	2006	2017	-	-	-	-	2017
	More than 1,000 ADT in case of gravel road		-	-	-	-	-	-	-	-	-	-	-	2020	-
	More than 10,000 ADT in case of new construction road		2006	2021	2020	-	-	-	-	-	2015	2006	2025	-	-

Part-B (Metro Iloilo)

11.3 ROAD NETWORK MASTER PLAN

The Master Plan was formulated for the following three terms:

Short-Term	:	2005	to	2010
Medium-Term	:	2011	to	2016
Long-Term	:	2017	to	2022

Financial framework (or possible investment amount) for each term is summarized as follows:

Financial Framework

Million ₱

Terms	National Road	Provincial Road	City Road
Short Term	830~970	123.7~230.8	111.5~135.2
Medium Term	1,470~1,740	115.4~123.7	67.6~111.5
Long Term	2,190~2,550	115.4~123.7	67.6~111.5
Total	4,510~5,260	371.1~461.6	270.4~334.5

In due consideration of above financial framework and priority of road projects, the implementation schedule was established as shown in Table 11.3-1. Due to financial constraint of the period of Short-Term, the scale of the project is limited.

C-1 should be ideally constructed as a 4-lane divided road, however, it needs to be constructed by stages, i.e., a 2-lane road at the initial stage, then widened to a 4-lane divided road in the ultimate stage due to fund availability.

Figure 11.3-1 shows progress of road network development by each tem.

TABLE 11.3-1 IMPLEMENTATION PROGRAM FOR METRO ILOILO FUTURE ROAD NETWORK PLAN

Detailed Design | Bidding | ROW Acquisition/Resettlement | Construction/Const. Supervision

Code	Road Name	Road Class	Length (km)	Type of Work	Project Cost (Million Peso) D/D	C/S	Civil Cost	ROW Resettle	Total Cost	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023-
												Short-Term						Medium-Term						Long-Term						
C-1	Circumferential Road No. 1	NR	14.3	New construction	58.1	52.9	861.3	222.4	1,022.5																					
				(2-lane)				27.8						58.1	125.1	125.1	238.0	238.0	238.2											
		NR	14.3	Widening to 4-lane	-	63.3	791.8	0.0	855.1																					
				divided				0.0																			285.0	285.0	285.1	
C-2	Circumferential Road No. 2	NR	7.8	Improvement	24.1	48.1	601.8	79.7	781.1																					
			11.5	New construction				7.4												24.1	43.5	43.6	218.8	216.6	216.7					
		Prov.	7.8	Improvement	5.0	10.0	125.2	0.0	144.1																					
								3.9												5.0	3.9	67.6	67.6							
C-3	Circumferential Road No. 3	Prov.	10.6	New construction	25.5	51.0	637.4	16.3	748.1																					
			14.9	Improvement				17.9																		25.5	17.1	17.1	160.0	528.4
R-1	Iloilo-Antique Road	NR	10.2	Rehabilitation	7.1	14.1	176.4	0.0	197.6																					
								0.0																			7.1		190.5	
R-2	Iloilo-San Miguel Road	NR	12.1	Rehabilitation	5.9	11.7	146.3	0.0	174.0																					
				& shoulder widening				10.1																			5.9	10.1	158.0	
R-3	Iloilo-Sta.Barbara-Kalibo Road	NR	13.1	Minor improvement &	17.7	35.4	441.9	0.0	568.2																					
	(Iloilo-Sta.Barbara Section)			widening				73.2						17.7	36.8	36.6	238.6	238.7												
R-4	Iloilo-Roxas Road	NR	10.4	Widening	9.5	19.0	237.0	2.7	268.2																					
				Widening within C-1	3.8	7.2	90.0	0.0	100.8									3.6		97.2				9.5	2.7	128.0	128.0			
R-5	Iloilo Coastal Road	NR	11.8	Widening from International	6.4	12.9	160.8	0.0	190.0																					
				Port to C-1				9.9										6.4	9.9	86.8	86.9									
B-1	R-1 Bypass Road	NR	8.6	New construction	12.9	25.8	323.1	48.6	413.5																					
				(2-lane)				3.1																12.9	25.8	25.9	174.4	174.5		
B-2	R-4 Bypass Road	NR	11.9	New construction	20.9	41.9	523.5	118.7	713.2																					
				(2-lane)				8.2										20.9	63.4	63.5	188.4	188.4	188.6							
B-3	Cabatuan Bypass Road	NR	2.1	New construction	2.4	4.8	60.2	2.2	71.6																					
				(2-lane)				2.0																						71.6
S-1	Oton-Bangcal Road	NR	12.0	Improvement	7.7	15.4	192.6	0.0	215.7																					
								0.0																						215.7
S-2	Jaro-Sta.Barbara Road	PR	7.7	Improvement	4.9	9.9	123.2	0.0	138.0																					
								0.0										4.9		66.5	66.6									
Total			181.1		211.7	423.4	5292.5	654.1	6581.7	0.0	0.0	0.0	0.0	75.8	161.7	161.7	476.6	512.5	311.5	343.1	389.3	299.6	472.8	239.0	245.2	179.4	617.5	486.7	793.6	815.7
Funding Demarkation				DPWH				Total		0.0	0.0	0.0	0.0	75.8	161.7	161.7	476.6	507.6	311.5	271.6	318.8	232.0	405.2	239.0	245.2	153.9	600.4	469.6	633.6	287.3
								Total for Term			0.0						875.8						2046.7						2341.7	287.3
				Provincial Goverment				Total		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	71.5	70.5	67.6	67.6	0.0	0.0	25.5	17.1	17.1	160.0	528.4
								Total for Term			0.0						0.0						282.1						219.7	528.4
								Grand Total	6581.7		0.0						875.8						2,328.8						2,561.4	815.7

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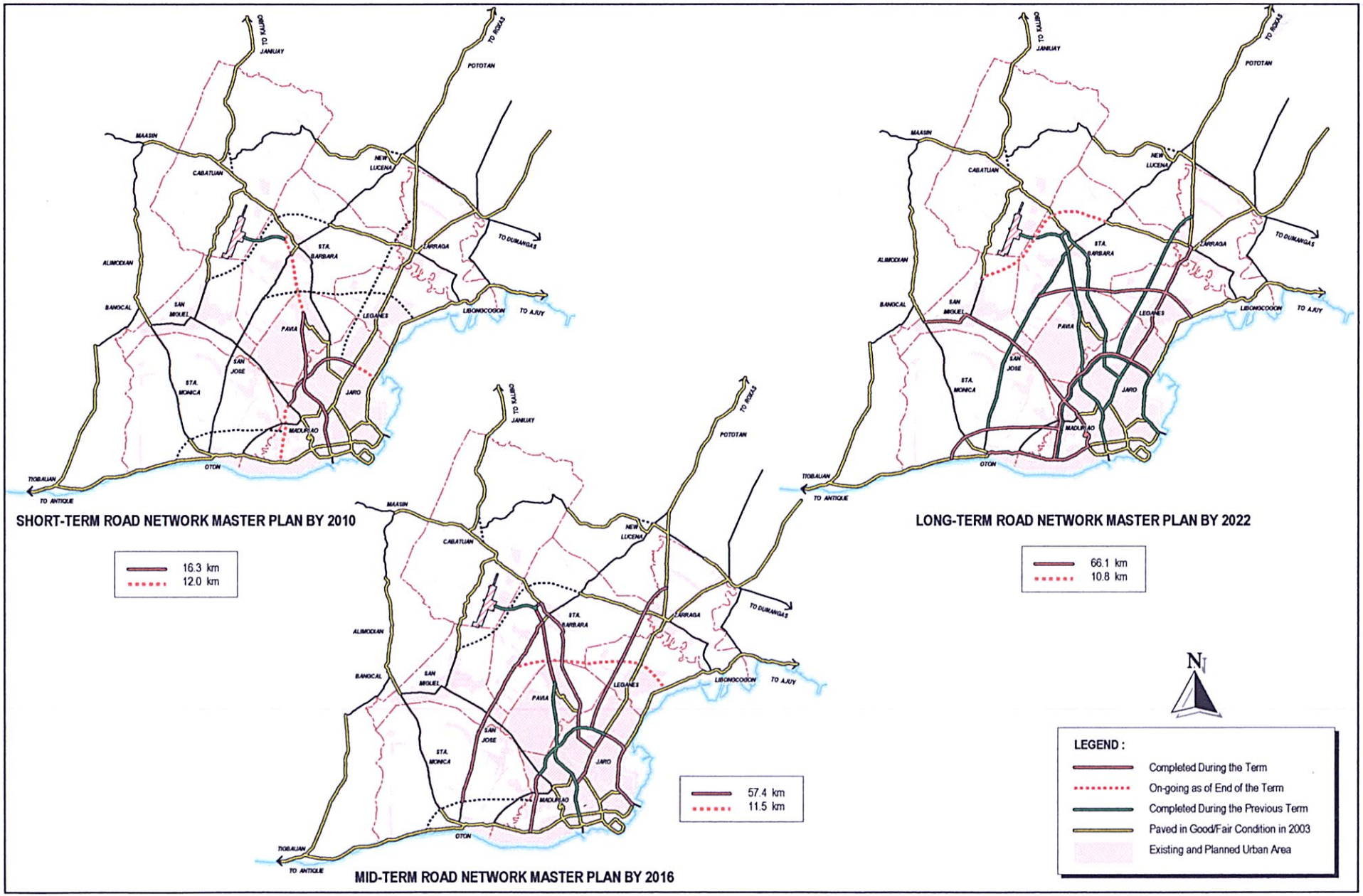

FIGURE 11.3-1 ROAD NETWORK MASTER PLAN : ILOILO

11.4 EVALUATION OF ROAD NETWORK DEVELOPMENT MASTER PLAN

The Master Plan was evaluated from the following factors;

- Improvement of transport efficiency
- Economic viability
- Achievement of road network development objectives by the Master Plan

11.4.1 Improvement of Transport Efficiency By Master Plan

Transport efficiency was evaluated on the following indicators by comparing "Do Nothing" Case with the Master Plan;

- PCU – Km (vehicle travel distance)
- PCU – hour (vehicle travel time)
- Average travel speed
- Congested road section length
- Vehicle operating cost

Traffic assignment was carried out for the final year of each term and shown in Figure 11.4-1 to 11.4-3.

Evaluation results of transport efficiency are shown in Table 11.4-1 and Figure 11.4-4, and concluded as follows:

a) Although reduction in PCU-Km is minimal, pcu-hours will be drastically reduced by about 70 to 75% in 2022, thus time saving is achieved by the Master Plan.

b) Average travel speed will be increased by about 25 to 33% in 2022 by the Master Plan.

c) Congested road section will be reduced by about 80% in 2022 by the Master Plan.

d) Drastic reduction in vehicle operating cost (VOC) is expected. VOC will be reduced to about 67% in 2022 by the Master Plan.

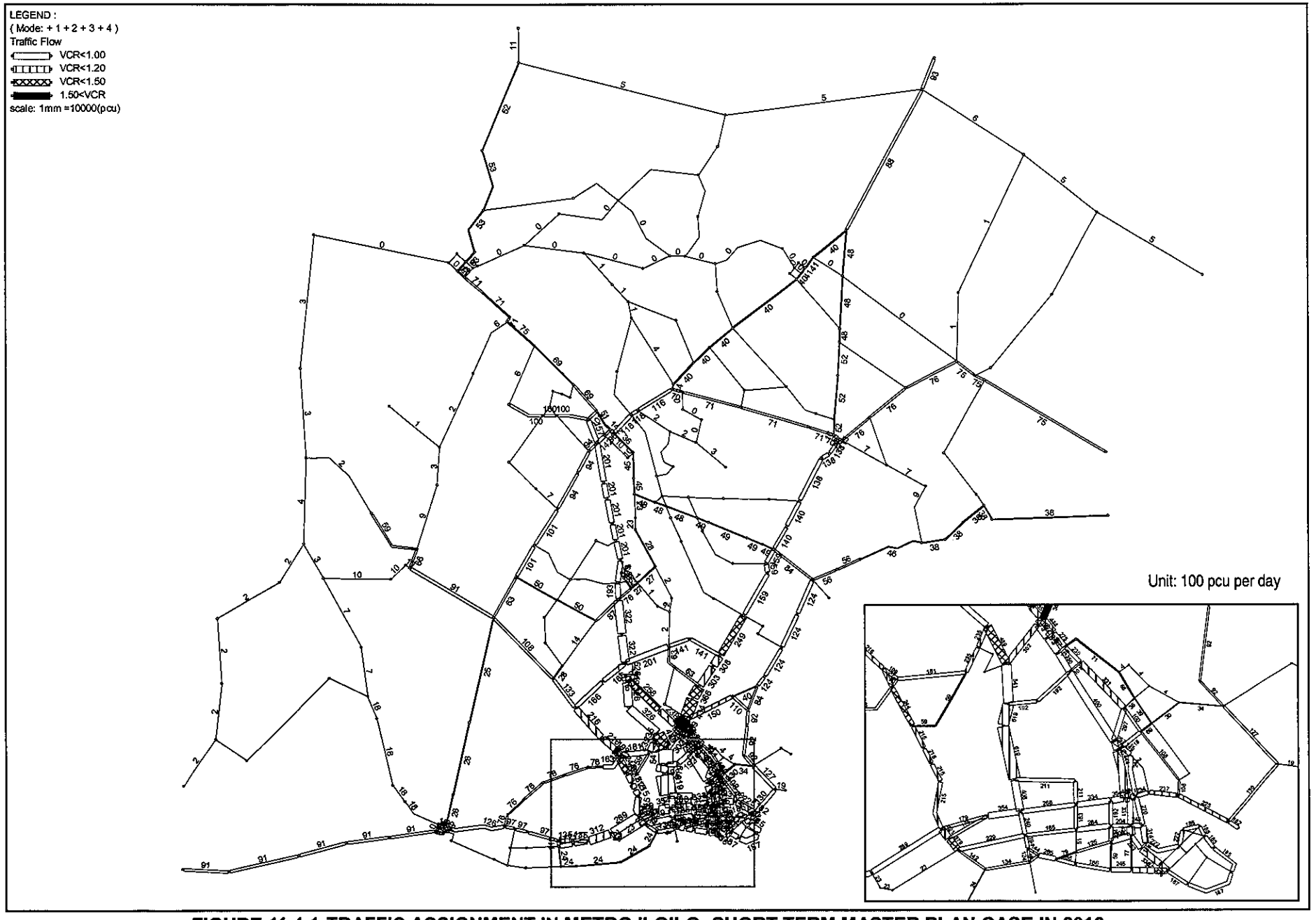

FIGURE 11.4-1 TRAFFIC ASSIGNMENT IN METRO ILOILO: SHORT TERM MASTER PLAN CASE IN 2010

FIGURE 11.4-2 TRAFFIC ASSIGNMENT IN METRO ILOILO: MEDIUM TERM MASTER PLAN CASE IN 2016

FIGURE 11.4-3 TRAFFIC ASSIGNMENT IN METRO ILOILO: LONG TERM MASTER PLAN CASE IN 2022

TABLE 11.4-1 TRANSPORT EFFICIENCY IMPROVEMENT BY MASTER PLAN

Indicators	Area	Case	Short Term (in 2010)	Medium Term (in 2016)	Long Term (in 2022)
pcu-kilometer ('000)	Whole Area	Do-Nothing	2,950 *(1.00)*	3,750 *(1.00)*	4,800 *(1.00)*
		Master Plan	2,930 *(0.99)*	3,570 *(0.95)*	4,770 *(0.99)*
	Inside C-1	Do-Nothing	1,700 *(1.00)*	2,100 *(1.00)*	2,630 *(1.00)*
		Master Plan	1,650 *(0.97)*	1,880 *(0.90)*	2,290 *(0.87)*
pcu-hour ('000)	Whole Area	Do-Nothing	101.7 *(1.00)*	145.7 *(1.00)*	213.9 *(1.00)*
		Master Plan	92.7 *(0.91)*	113.7 *(0.78)*	159.5 *(0.75)*
	Inside C-1	Do-Nothing	63.9 *(1.00)*	90.4 *(1.00)*	133.9 *(1.00)*
		Master Plan	57.6 *(0.90)*	70.3 *(0.78)*	93.1 *(0.70)*
Average Travel Speed (km/hr)	Whole Area	Do-Nothing	29.0 *(1.00)*	25.8 *(1.00)*	22.5 *(1.00)*
		Master Plan	31.6 *(1.09)*	31.4 *(1.22)*	29.9 *(1.33)*
	Inside C-1	Do-Nothing	26.5 *(1.00)*	23.3 *(1.00)*	19.6 *(1.00)*
		Master Plan	28.7 *(1.08)*	26.8 *(1.15)*	24.6 *(1.25)*
Congested Section Length (VCR>0.9)	Whole Area	Do-Nothing	41.5 *(1.00)*	72.1 *(1.00)*	84.4 *(1.00)*
		Master Plan	33.7 *(0.81)*	44.8 *(0.62)*	68.0 *(0.81)*
	Inside C-1	Do-Nothing	36.5 *(1.00)*	52.2 *(1.00)*	58.3 *(1.00)*
		Master Plan	29.9 *(0.82)*	37.2 *(0.71)*	46.8 *(0.80)*
Vehicle Operation Cost (M. Peso)	Whole Area	Do-Nothing	3,610 *(1.00)*	5,120 *(1.00)*	7,430 *(1.00)*
		Master Plan	3,210 *(0.89)*	3,700 *(0.72)*	5,010 *(0.67)*
	Inside C-1	Do-Nothing	2,130 *(1.00)*	2,950 *(1.00)*	4,270 *(1.00)*
		Master Plan	1,890 *(0.89)*	2,230 *(0.76)*	2,870 *(0.67)*

Note: Figures in the ( ) are Transport Efficiency Improvement Index vs. Do-Nothing Case in Each Target Year

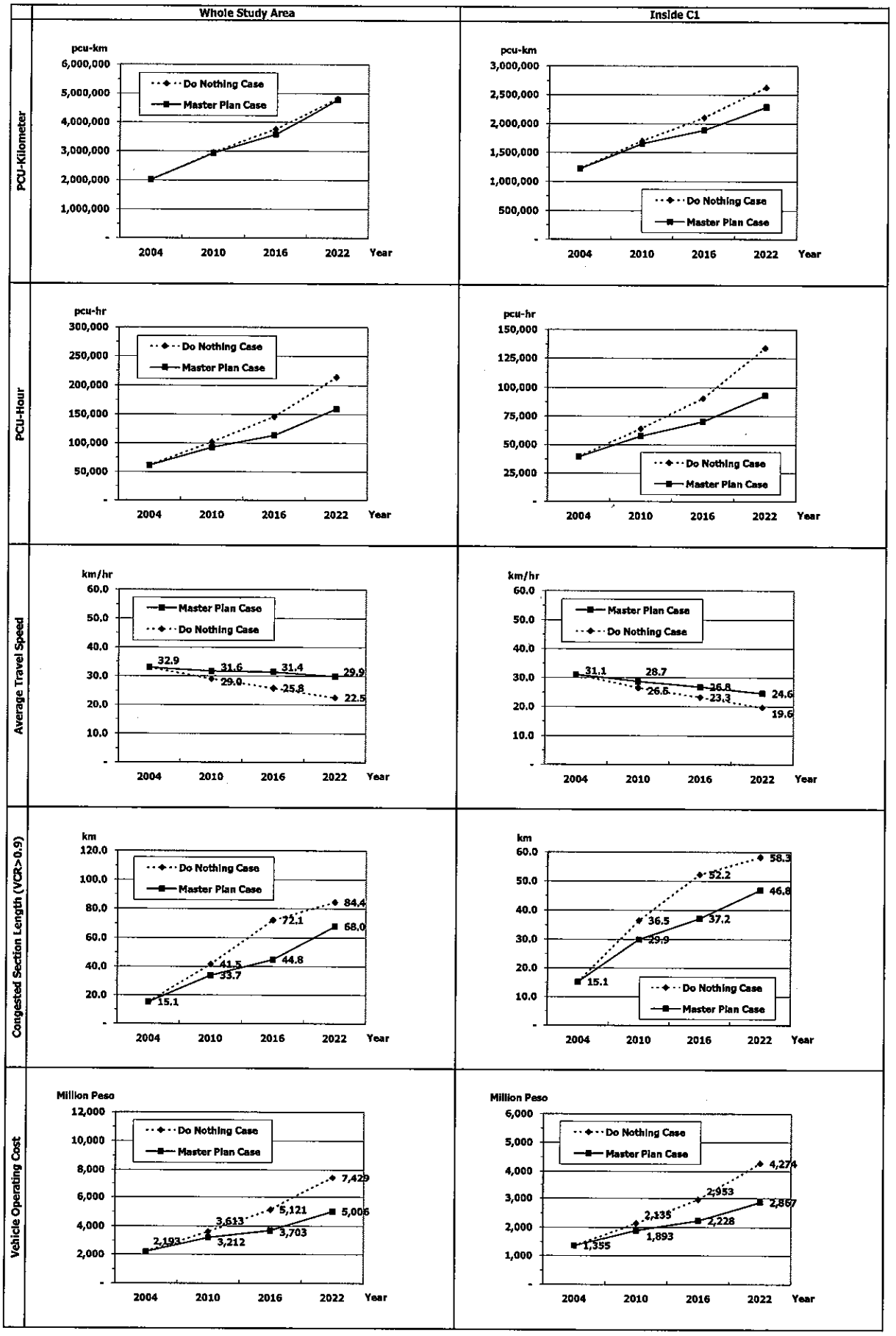

FIGURE 11.4-4 TRANSPORT EFFICIENCY IMPROVEMENT BY MASTER PLAN

11.4.2 Economic Viability

Economic viability of the Master Plan was evaluated in accordance with the assumptions and procedure presented in Appendix 11.4-1. Economic evaluation results were as follows:

	Net Present Value (Million Pesos)	B/C Ratio	EIRR (%)
Short Term Plan	2,070	3.44	45.3
Medium Term Plan	1,105	3.40	50.6
Long Term Plan	85	1.27	21.0
Whole Master Plan	3,882	3.34	46.1

Notes: 1) Project life was assumed to be 20 years

2) Discount rate at 15%

As shown above, the Master Plan was evaluated highly economically feasible.

11.4.3 Achievement of Road Network Development Objectives By the Master Plan

Prior to formulation of future road network development plan, road network development objectives were established. Whether the established objectives can be achieved by the Master Plan in each term was evaluated and summarized in Table 11.4-2.

It can be concluded that the Master Plan will successfully achieve the objectives of road network development.

TABLE 11.4-2 ACHIEVEMENT OF ROAD NETWORK DEVELOPMENT OBJECTIVES BY MASTER PLAN

Road Network Development Objectives	SHORT TERM (2005-2010)	MEDIUM TERM (2011-2016)	LONG TERM (2017-2022)
Physical Target	• New construction of C-1 (2-lane) • Widening of R-3 from Iloilo City to Sta. Barbara	• Improvement and new construction of C-2 • R-4 bypass (2-lane) • Widening of inside C-1 section of R-5	• New construction of R-1 bypass (2-lane) • Widening of C-1 to a 4-lane divided road. • Widening of R-4 • Minor improvement of R-1 • Minor improvement of R-2 • Improvement of S-2
• Reduction of traffic congestion in the City Proper area.	• Such traffic as Oton-pavia, Oton-Leganes etc.,will utilize C-1, thus traffic congestion in City Proper Area	• Such traffic as Oton-Sta.Barbara, Oton-Leganes/Zarraga, Sta.Barbara-Leganes/Zarraga etc.,will utilize C-2, thus traffic congestion in Iloilo City will be mitigated.	• Widening fo C-1 will contribute to mitigation of traffic congestion in Iloilo City.
• Road network which guide and support planned urban development.	• Urbanized along C-1 where the Iloilo City Government identified for future urban area will be guided and accelerated.	• Planned urbanization along R-4 will be guided and accelerated by a R-4 bypass.	• Planned urbanization along R-1 will be guided and accelerated by a R-1 bypass.
• Formation of flexible road network which provide alternative routes to road users.	• C-1 will increase possibility of route selection by road users, thus road network becomes highly flexible.	• With completion of C-1 and C-2, road users are provided with several routes to choose, thus road network becomes highly flexible. • R-4 corridor will have two routes for selection.	• In addition to Medium-Term situation, R-1 and R-3 corridors will have two routes for selection.
• Road network which contribute to the economic development in the Study Area as well as its hinterland.	• Due to improvement of accessibility and less transport cost, economy along the corridor of R-3 will be stimulated.	• In addition to R-3 corridor, R-4 corridor's economy will be stimulated.	• Overall transport efficiency in the Study Area will be improved which will contribute to economic development in the Study Area as well as its hinterlands.
• Road network which enhance international and domestic investment in the Study Area as well as its hinterland.	• Due to improvement of accessibility to the Pavia Industrial Estates, more local / international investors will be attracted.	• C-2 will provide another route of access to the Pavia Industrial Estates, more local / international investors will be attracted.	• Efficient transport linkage between industrial estates and transport facilities (an airport and a port) will attract more local / foreign investors.
• Road network which will realize expected investment effects of related project.	• Due to improvement of accessibility to new Iloilo Airport by R-3, intended effects and investment return of the new airport project will be realized as planned.	• Widening of R-5 will improve accessibility to the Iloilo International Port.	• Accessibility to new Airport and the International Port will be improved, thus economic return of investment to these project will be realized.
• Road network development with environmental and social consideration.	• Relocation of affected families and ROW acquisition must be so undertaken that adverse social impact will be minimized.	• Same as Short-Term	• Same as Short-Term

11.5 PROPOSED ADMINISTRATIVE ROAD CLASSIFICATION AND IMPLEMENTING AGENCY

As discussed in "Section 11.1 Financial Framework", funding capacity for road development of LGUs is quite limited, thus LGUs can not make investment for large scale projects such as circumferential road construction. It is recommended that new road construction be implemented by DPWH. Widening, improvement and rehabilitation of existing roads should be implemented by presently responsible agency.

Present Classification	Proposed Administrative Classification	Proposed Implementing Agency
None (new road)	National Road	DPWH
National Road	National Road	DPWH
Provincial Road	Provincial Road	Provincial Government
City Road	City Road	City Government

As an exceptional case, development of C-2 needs to be implemented by DPWH. Present administrative classification of C-2 is as follows:

C-2 : Oton - Sta. Barbara Road
Section from R-1 to R-2 ---------- National Road
Section from R-2 to Sta. Barbara ---------- Provincial Road
C-2 : New Road
Section from Oton - Sta. Barbara Road to R-5 ---------- National Road

In order to systematically develop C-2, section from R-2 to Sta. Barbara is recommended to be converted to National Road.

Instead, S-1: Oton - Bancal Road should be turned over to Provincial Government to reduce financial burden of DPWH.

Similarly, it is also recommended that the following sections be turned over to local government after completion of a bypass:

R-1 from Iloilo City to Oton :	Turn over to Iloilo City and Municipality of Oton
R-4 from C-1 to Zarraga :	Turn over to Iloilo City, Municipalities of Leganes and Zarraga.

These sections will function as an urban street when a bypass is completed.

11.6 ROAD MAINTENANCE PLAN

11.6.1 Unit Rate of Maintenance

Unit rate of maintenance is shown in Table 11.6-1.

TABLE 11.6-1 UNIT RATE OF MAINTENANCE ACTIVITY

Maintenance Definition	Activity	Unit Rate (Economic)	Unit Rate (Financial)
I. Routine Maintenance	1. Vegetable control	21,279.10 *P/km*	25,950.62 *P/km*
	2. Clearing and repair of culverts	6,845.27 *P/km*	10,792.68 *P/km*
	3. Replace, clean and repair traffic signs	4,808.83 *P/km*	6,282.67 *P/km*
	4. Clearing side ditches	11,273.51 *P/km*	15,418.86 *P/km*
	Total per Annum	**44,206.71 P/km**	**58,444.83 P/km**
II. Periodic Maintenance	1. Gravel (Surface)	2,485.27 *P/m3*	2,968.48 *P/m3*
	1.1 Regrade and reshape gravel	12.00 *P/m2*	16.41 *P/m2*
	a. Traveled way (carriage way)	20.17 *P/m2*	27.61 *P/m2*
	b. Shoulder	83.75 *P/m2*	107.73 *P/m2*
	2. Resurfacing	248.35 *P/m2*	316.51 *P/m2*
	a. DBST (SST)	389.73 *P/m2*	495.00 *P/m2*
	b. AC (3cm)	575.92 *P/m2*	728.17 *P/m2*
	3. Overlays	711.06 *P/m2*	897.74 *P/m2*
	a. AC (5cm)	3,626.50 *P/m2*	4,732.20 *P/m2*
	b. AC (8cm)	3,336.24 *P/m2*	4,353.45 *P/m2*
	c. AC (10cm)	2,901.20 *P/m2*	3,785.76 *P/m2*
	4. Replacement of failed bays	2,766.86 *P/m2*	3,595.90 *P/m2*
	a. t=250mm	2,610.87 *P/m2*	3,406.91 *P/m2*
	b. t=230mm	31,785.12 P/km	42,818.06 P/km
	c. t=200mm	2,386.81 *P/m3*	2,834.42 *P/m3*
	d. t=190mm	687.75 *P/m2*	842.90 *P/m2*
	e. t=180mm	127.80 *P/m2*	168.54 *P/m2*
	5. Repair cracks/joints	188.60 *P/m2*	245.52 *P/m2*
	6. Patching and potholes repair	856.32 *P/m2*	1097.98 *P/m2*
	a. Pothole repair (Gravel)	107.62 *P/m2*	140.25 *P/m2*
	b. Pothole repair (DBST)	602.15 *P/m2*	785.09 *P/m2*
	b.1 Repair (DBST)	588.93 *P/m2*	767.08 *P/m2*
	b.2 Sealing (DBST)	1026.13 *P/m2*	1,302.10 *P/m2*
	b.3 Patching (DBST)	28.63 *P/lm*	34.60 *P/lm*

Source: DPWH, April 2003

11.6.2 Routine Maintenance and Minor Repair Cost

Maintenance cost by pavement type is estimated by adopting the above cost estimate. Table 11.6-2 presents the annual maintenance costs including routine maintenance and minor repair cost.

TABLE 11.6-2 ANNUAL ROUTINE AND MINOR REPAIR COST

Unit: Peso/km/year

Pavement (PCC)		Pavement (AC)		Un-Paved (Gravel)	
Good	Bad	Good	Bad	Good	Bad
84,482	153,545	94,850	221,104	98,002	169,298

The cost estimate is mostly same as base cost of Equivalent Maintenance Kilometer (EMK) estimated by DPWH (EMK = 82,000 Pesos in 2003). Since new maintenance cost estimate has not been established, the Study will apply the above cost.

11.6.3 Rehabilitation Cost

Overlay on the new road is considered as rehabilitation after 10 year opening. The following cost will be adapted.

TABLE 11.6-3 OVERLAY COST

Overlays	Unit	Economic Cost (Peso)	Financial Cost (Peso)
a. AC (5cm)	P/m2	389.73	495.00
b. AC (8cm)	P/m2	575.92	728.17
c. AC (10cm)	P/m2	711.06	897.74

11.6.4 Increase of Maintenance Expenditure

In progress of implementing the master plan, maintenance cost will be increased by additional length of new roads. Table 11.6-4 summarizes the annual increase of maintenance cost by administration.

TABLE 11.6-4 MAINTENANCE EXPENDITURE

Unit: '000 Pesos

Term	Year	DPWH	Term Total
Short-Term (2005~2010)	2006	0	
	2007	0	
	2008	0	
	2009	0	
	2010	0	0

Term	Year	DPWH	Term Total
Medium-Term (2011~2016)	2011	0	
	2012	0	
	2013	1081	
	2014	1081	
	2015	1081	
	2016	1081	4325
Long –Term (2017~2022)	2017	2053	
	2018	2053	
	2019	2712	
	2020	2712	
	2021	2712	
	2022	47790	60,032
After 2023 (Annual cost)	2023	4520	

11.6.5 Requirement of Total Maintenance Expenditure

1) Requirement of Total Maintenance Expenditure

Requirement for total maintenance expenditure for the road network in Metro Iloilo is estimated.

TABLE 11.6-5 REQUIREMENT OF TOTAL MAINTENANCE EXPENDITURE

Unit: '000 Pesos

Administration	Annual Cost		Maintenance Expenditure			Annual Cost (2023~)
	Road	Bridge	Short Term (2005~2010)	Medium Term (2011~2016)	Long Term (2017~2022)	
National	20,407	612	126,113	130,438	186,145	25,539
Province	8,446	253	52,199	52,199	52,199	8,700
City	4,631	139	28,619	28,619	28,619	4,770
Barangay	6,534	196	40,380	40,380	40,380	6,730
Total	**40,018**	**1,201**	**247,311**	**251,636**	**307,343**	**45,738**

2) Maintenance Capacity Building for LGU

Besides budgetary arrangement, capacity building for road and bridge maintenance to LGU is required by organizing periodic seminar and training for technical staff in the province, city and municipality engineer's offices from DPWH staff. Major training issues are;

- Maintenance operation management;
- Contract management; and
- Engineering technology update.

11.7 TRAFFIC MANAGEMENT PLAN

Traffic management issues are identified and recommended measures are presented in the preceding sections. Some of the improvement measures require time to implement and some take time before tangible effect is observed. Among the recommended measures, those that can be implemented immediately are presented here with the tentative list of target intersections and road sections. They cover the following works:

- Geometric improvement at intersection and road section
- Traffic signal
- Pavement marking and traffic sign

These measures are intended to enhance the efficiency and safety of traffic by regulating the flow. Most of the works are to be done in City Proper where traffic concentrates and traffic management issues are more serious.

1) Geometric Improvement

Intersection geometric improvement work modifies intersection geometry. Basic objectives of the work are to:

- Regulate and guide traffic movement at intersection by such facilities as median and island
- Provide left turn lane to the intersection where left turn volume is high and intersection geometry permits it.
- Provide or improve sidewalk for better pedestrian environment

A total of 28 intersections are tentatively selected for the work as listed below and shown in Figure 11.7-1. Intersection inventory survey and turning volume count survey must be conducted. Then geometric improvement work can be designed based on the analysis of the collected data.

Geometric Improvement Intersections

	Intersection		Median	Island	Left turn	Side-walk	Pavement	Others
1	Gen Luna	Diversion			O			
2	Gen Luna	San Agustin	O		O			
3	Gen Luna	Mabini	O		O			
4	Gen Luna	Quezon	O		O			
5	Delgado	San Agustin	O					
6	Delgado	Mabini	O					
7	Delgado	Quezon	O					
8	Delgado	Valeria	O					
9	Ledesma	Tanza		O				
10	Ledesma	Jalandoni	O		O			
11	Ledesma	Fuentes			O			
12	Ledesma	Mabini			O			
13	Ledesma	Quezon	O					
14	Ledesma	Valeria			O			
15	Ledesma	Iznart		O				
16	Bonifacio	Hueriana		O				
17	Rizal	Hueriana		O				
18	Luna	Bonifacio		O				
19	Luna	Jalandoni					O	
20	Jaro Plaza	South corner		O		O		
21	Jaro Plaza	East corner		O		O		
22	Jaro Plaza	North corner		O		O		
23	Jaro Plaza	West corner		O		O		
24	Diversion	Jalandoni	O	O	O	O		
25	Diversion	Rizal	O	O		O		
26	Diversion	Airport	O	O		O		
27	del Pilar	Locsin		O				
28	Avacena	Quezon			O	O	O	

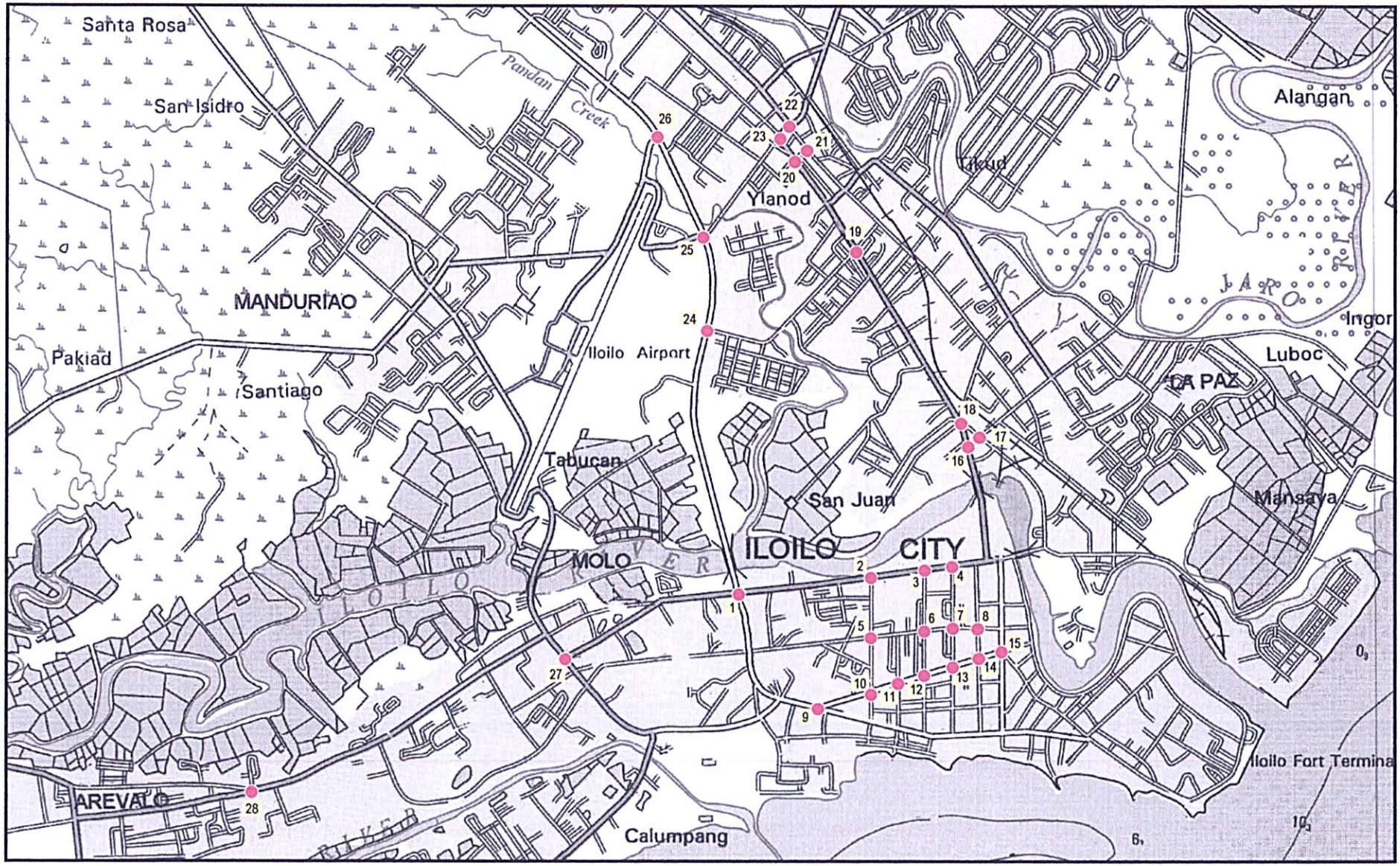

FIGURE 11.7-1 GEOMETRIC IMPROVEMENT INTERSECTION

2) Traffic signal

Traffic signal is a basic tool to control right-of-way at intersection, where conflicting movements cross each other. There are at the moment ten (10) traffic signals in Iloilo City but all of them but one is operating. The proposed work will repair or replace the malfunctioned signals and signal timing will be adjusted for the working signal. In addition, ten (10) signals will be newly installed (see Figure 11.7-2). It is noted, however, these new signal intersections are selected without signal warrant analysis. Turning movement count survey must be conducted and signal warrant must be checked before the final selection of intersections for signalization.

Traffic Signal Intersections

	Intersection of			Signal	
	Street 1	Street 2	New	Repair	Modification
1	Gen Luna	Diversion Road			O
2	Gen Luna	San Agustin		O	
3	Gen Luna	Mabini		O	
4	Gen Luna	Valeria		O	
5	Gen Luna	Bonifacio		O	
6	Delgado	Valeria		O	
7	Delgado	Iznart		O	
8	Ledesma	Mabini		O	
9	Ledesma	Valeria		O	
10	JM Basa	Aldequer		O	
11	Delgado	West Ave.	O		
12	Delgado	San Agustin	O		
13	Delgado	Mabini	O		
14	Ledesma	Rizal/Tanza	O		
15	Ledesma	Jalandoni	O		
16	Ledesma	Fuentes	O		
17	Iznart	Rizal	O		
18	MH del Pilar	Locsin	O		
19	Diversion Road	Jalandoni	O		
20	Luna	Jalandoni	O		

3) Pavement Markings

Pavement markings are almost non-existent in metro Iloilo area. Such situation seems to contribute disorder of the traffic in the area. Most of the streets in City Proper and some arterial streets outside of city center are selected as target road for their relatively high traffic volume covering 43 road sections and 81 intersections with the total road length of 33.6 km as listed in the table below and shown in Figure 11.7-3. Center line, lane line, stop line, directional arrow and pedestrian crossing will be drawn. Reflective thermoplastic pavement marking materials shall be applied with the standard thickness of 2.0 mm.

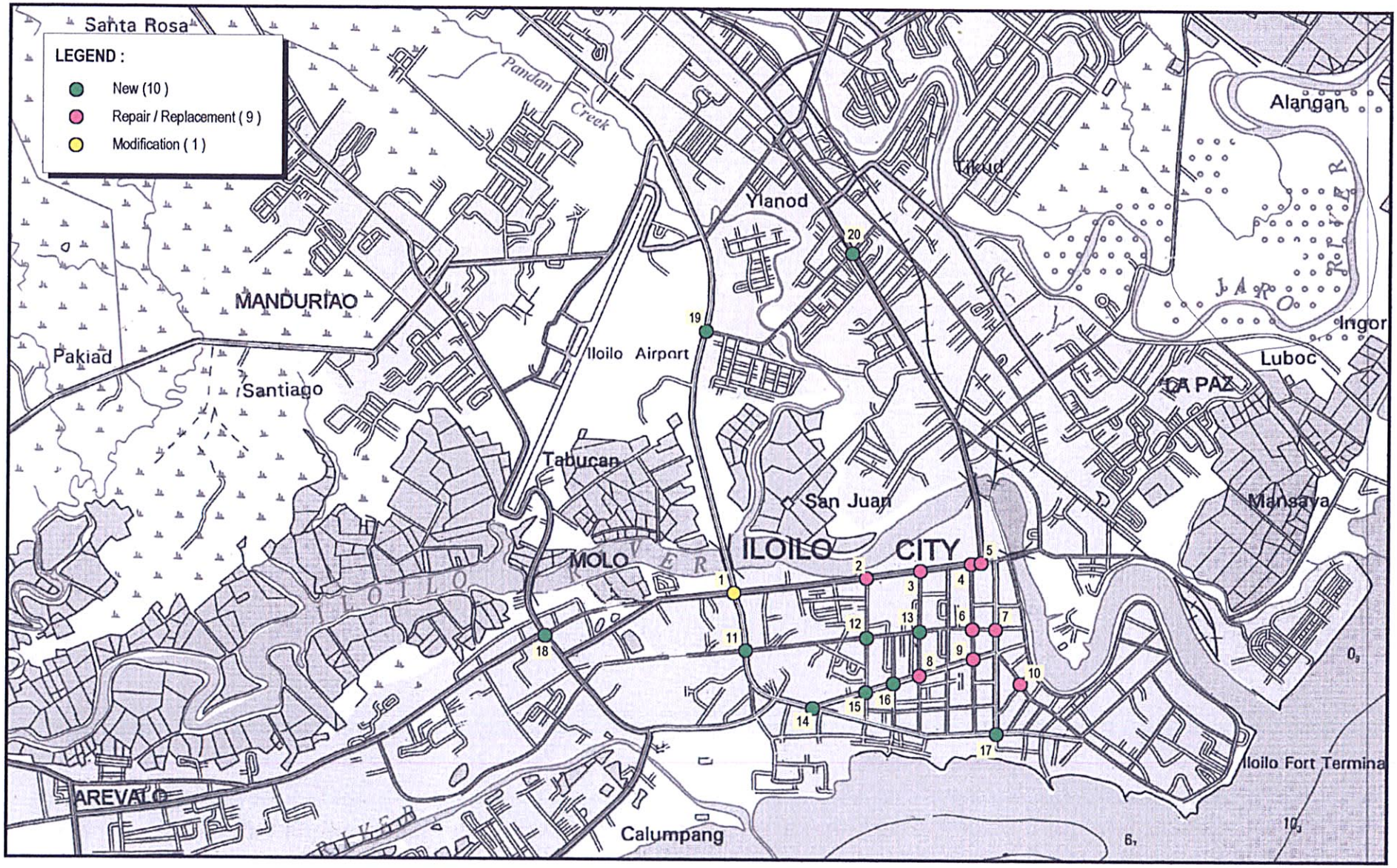

FIGURE 11.7-2 TRAFFIC SIGNAL INTERSECTIONS

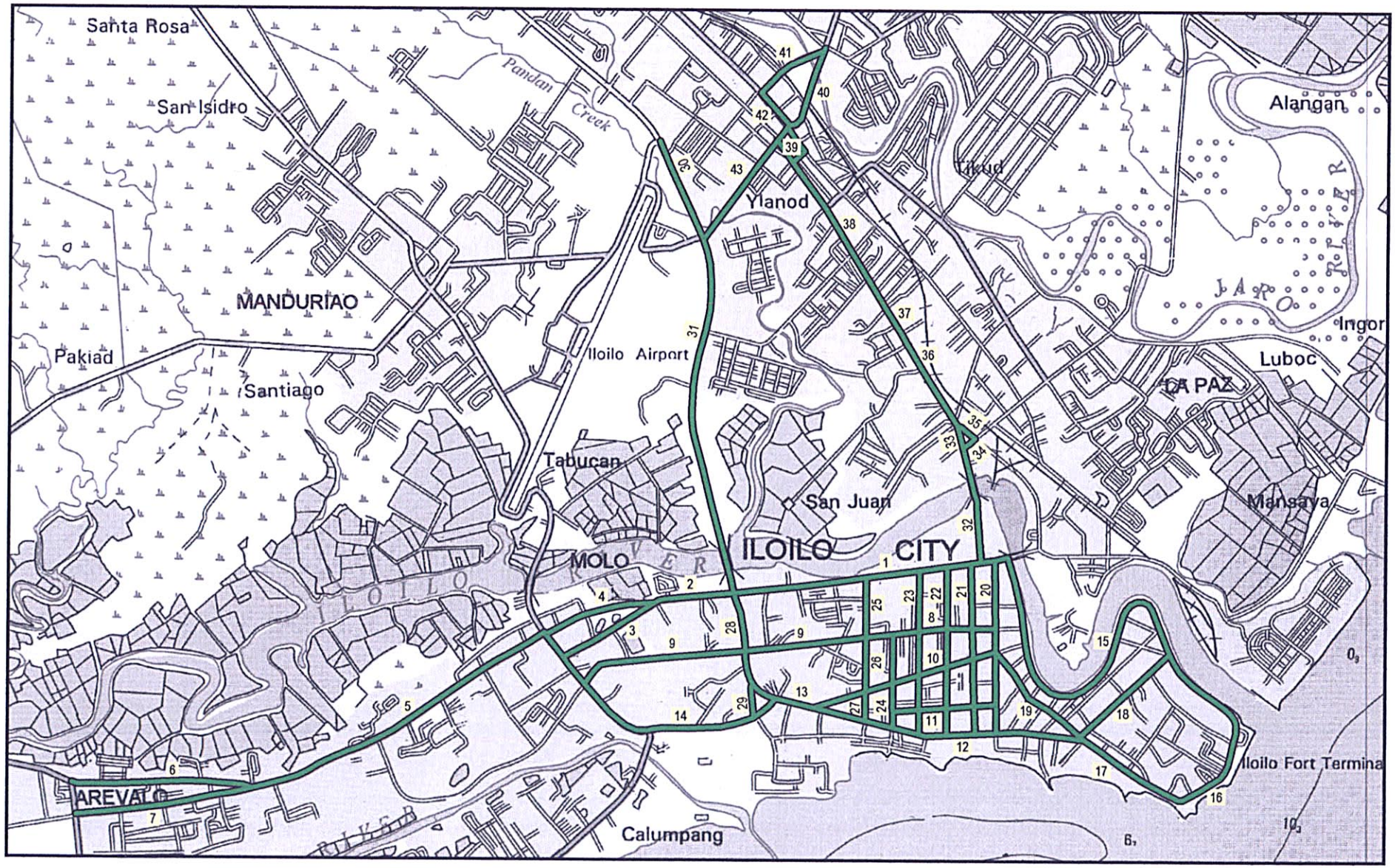

FIGURE 11.7-3 ROAD SECTION FOR PAVEMENT MARKINGS & TRAFFIC SIGNS

Road Sections for Pavement Marking Work

	Street Name	From	To	Length (m)	Lane	Median	One-way
1	Gen Luna	Quirino Bridge	Diversion	1700	4	Y	
2	MH del Pilar	Diversion Road	San Marcos	315	4	Y	
3	MH del Pilar	San Marcos	Locsin	675	3		Y
4	San Marcos	MH del Pilar	Locsin	665	2		Y
5	Avacena	Locsin	Quezon	820	2		
6	JV Jocson	Quezon	Rizal	520	2		
7	Quezon	Avacena	Rizal	560	2		
8	Delgado	Iznart	San Agustin	800	4		
9	Timawa	San Agustin	Lopez Jaena	1800	2		
10	Ledesma	Iznart	Tanza	1170	4	Y	
11	De Laon	Iznart	Jalandoni	800	4		
12	Rizal	Gen Hughes	Ledesma	1700	2		
13	Tanza	Ledesma	West Ave	450	4	Y	
14	Lopes Jaena	Tanza	MH del Pilar	1520	2		
15	Muelle Loney	Quirino Bridge	Rotary Park	3200	2		
16	Fort San Pedro	Rotary Park	Sto Rosario	840	2	Y	
17	Gen Hughes	Sto Rosario	Rizal	130	2		
18	Zamora	JM Basa	Muelle Loney	770	4		
19	JM Basa	Rizal	Iznart	720	4	Y	
20	Iznart	Gen Luna	Rizal	1030	4	Y	
21	Valeria	Gen Luna	Rizal	1040	2		Y
22	Quezon	Gen Luna	Rizal	1030	4		
23	Mabini	Gen Luna	Rizal	1000	4		
24	Fuentes	Delgado	Rizal	570	2		Y
25	San Agustin	Gen Luna	Delgado	360	4		
26	Jalandoni	Delgado	Ledesma	320	2		
27	Jalandoni	Ledesma	Rizal	70	2		Y
28	West Ave	Gen Luna	Tanza	570	4	Y	
29	West Ave	Tanza	Lopes Jaena	180	2		Y
30	Diversion	Airport	Rizal	580	2		
31	Diversion	Rizal	Gen Luna	2200	4	Y	
32	Bonifacio	Gen Luna	Hueriana	680	4		
33	Bonifacio	Luna	Hueriana	140	3		Y
34	Hueriana	Bonifacio	Rizal	90	3		Y
35	Rizal	Hueriana	Luna	110	4		Y
36	Luna	Bonifacio	Mission	810	4	Y	
37	Luna	Mission	Jalandoni	400	2		
38	Lopes	Jalandoni	Jaro Plaza	610	2		
39	Jaro Plaza			680	3		Y
40	Rizal	Jaro Plaza	Balabag	550	2		Y
41	Ledesma	Balabag	Lopes Jaena	480	2		Y
42	Lopes Jaena	Ledesma	Jaro Plaza	250	2		Y
43	Rizal	Jaro Plaza	Diversion	690	2		

4) Traffic Sign

Another shortcoming in terms of traffic management facility in Iloilo area is that there are only few standard traffic regulatory signs. Temporary and make shift signs, which are less visible and less effective in enforcement, are often used instead. Whether on-street parking is allowed or not is not clear at many road sections, for example. Traffic signs for parking regulation, speed limit, one-way, no entry, turn restriction, loading/unloading zone, etc. must be extensively installed. The target road sections and intersections will be same as those for pavement markings.

5) Cost Estimates

Cost for implementing these improvement works is estimated. The table below presents the estimated costs. It is pointed out that the cost at this stage is very rough as the target intersections and road sections are tentative and scope of work is not defined.

Estimated Cost for Traffic Management Improvement Works

	Improvement Measure	Cost ('000 Pesos)	Remarks
1.	Geometric improvement	11,160	28 intersections
2.	Traffic signal	42,373	10 existing signals and 10 new signals
3.	Pavement marking	21,675	43 road sections and 81 intersections with total length of 33.6 km
4.	Traffic sign	1,347	526 traffic signs. Project sites are same as pavement marking
	Total	76,554	

11.8 Measures to be Taken for Inside Area of C-1

New road construction as well as widening of existing roads inside area of C-1 is extremely difficult due to expansion of built-up areas and heavy roadside development. Master Plan recommended measures other than road development. If other measures are not implemented, some road sections within C-1 area will suffer heavy traffic congestion as shown in Figure 11.4-3, even after completion of the Master Plan. Some of measures to be undertaken are discussed hereunder.

1) Control of further urban development within the presently urbanized area and shifting urbanization towards the area along C-1

- The City Government should control further development within the presently urbanized area
  - control of high-rise building
  - control of new commercial establishment
- The City Government should accelerate urbanization along C-1 corridor
  - some government / public facilities should be transferred to the C-1 corridor
  - bus / jeepney terminals together with public market should be developed along the C-1 corridor
  - the City Government should guide investors to promote urbanization along the C-1 corridor.

2) Full Utilization of Existing Road Stocks

As presented in 11.7 "Traffic Management Plan", efficient traffic management should be implemented and strict enforcement of traffic rules and regulations should be exercized.

3) Gradual Modal Shifting from Jeepney to Bus

Modal shifting from jeepney to bus transport should be implemented. Jeepneys should be gradually shifted to feeder transport services.

If all jeepney services are converted to bus services along major arterial roads, traffic congestion will be drastically reduced as shown in Figure 11.8-1.

FIGURE 11.8-1 TRAFFIC ASSIGNMENT IN METRO ILOILO: ALTERNATIVE-2B CASE WITH TRAFFIC DEMAND CONTROL IN 2022

11.9 SELECTION OF ROAD PROJECTS FOR F/S

Road projects subjected to a feasibility study under this Study are selected in this section.

1) Selection Criteria

Selection criteria were established as follows:

- Implementation priority is high and the project is planned to be implemented in the Short Term or early part of Medium Term.
- Proposed road right-of-way needs to be determined as early as possible, so that any development within the proposed road right-of-way can be controlled, then future ROW acquisition can be done without affecting structures and houses.
- The road project is vitally needed to support on-going related projects.
- The road project is expected to be implemented by DPWH.

2) Selection of Road Projects for F/S

Candidate road projects selected based on above criteria were as follows:

<u>Candidate Projects for F/S</u>

- Circumferential Road No. 1 (C-1)
- Iloilo-Sta. Barbara Road (R-3)
- R-4 Bypass (B-2)
- Iloilo-Roxas Road (R-3) within C-1
- Iloilo Coastal Road (R-5) within C-1

a) Circumferential Road No. 1 (C-1)

- Core (or backbone) road for the future road network
- Urbanization is planned towards this corridor. Proposed road right-of-way must be urgently determined and implemented at the earliest possible time.
- Recommended for F/S

b) Iloilo-Sta. Barbara Road (R-3)

- Provides access to New Iloilo Airport which is scheduled to be opened in 2007, thus must be improved / widened urgently.
- Recommended for F/S

c) R-4 Bypass (B-2)

- Urbanization is planned towards east area of this road. Proposed road right-of-way must be urgently determined and any development within the proposed ROW must be strictly controlled.
- To relieve traffic problem of R-4, the Project is urgently needed, though its completion is required to be scheduled after C-1 is built.
- Recommended for F/S

d) Iloilo-Roxas Road (R-3) within C-1

- The Project is scheduled after completion of C-1.
- Proposed widening is planned to be done within the property line without affecting existing buildings and houses, therefore, full scale feasibility study is not needed.
- Not recommended for F/S

e) Iloilo Coastal Road (R-5) within C-1

- The Project is scheduled after completion of C-1.
- Proposed widening is planned to be done within the property line without affecting existing buildings and houses, therefore, full scale feasibility study is not needed.
- Not recommended for F/S

In view of the above, it is recommended following three road projects are subjected to a feasibility study under this Study (see Figure 11.9-1):

Recommended Road Projects for F/S

• Circumferential Road No. 1 (C-1)	L = 13 km
• Iloilo-Sta.Barbara Road from Jct. R-4 to Jct. Access Road to New Iloilo Airport	L = 14 km
• R-4 Bypass	L = 12 km
Total	**L = 39 km**

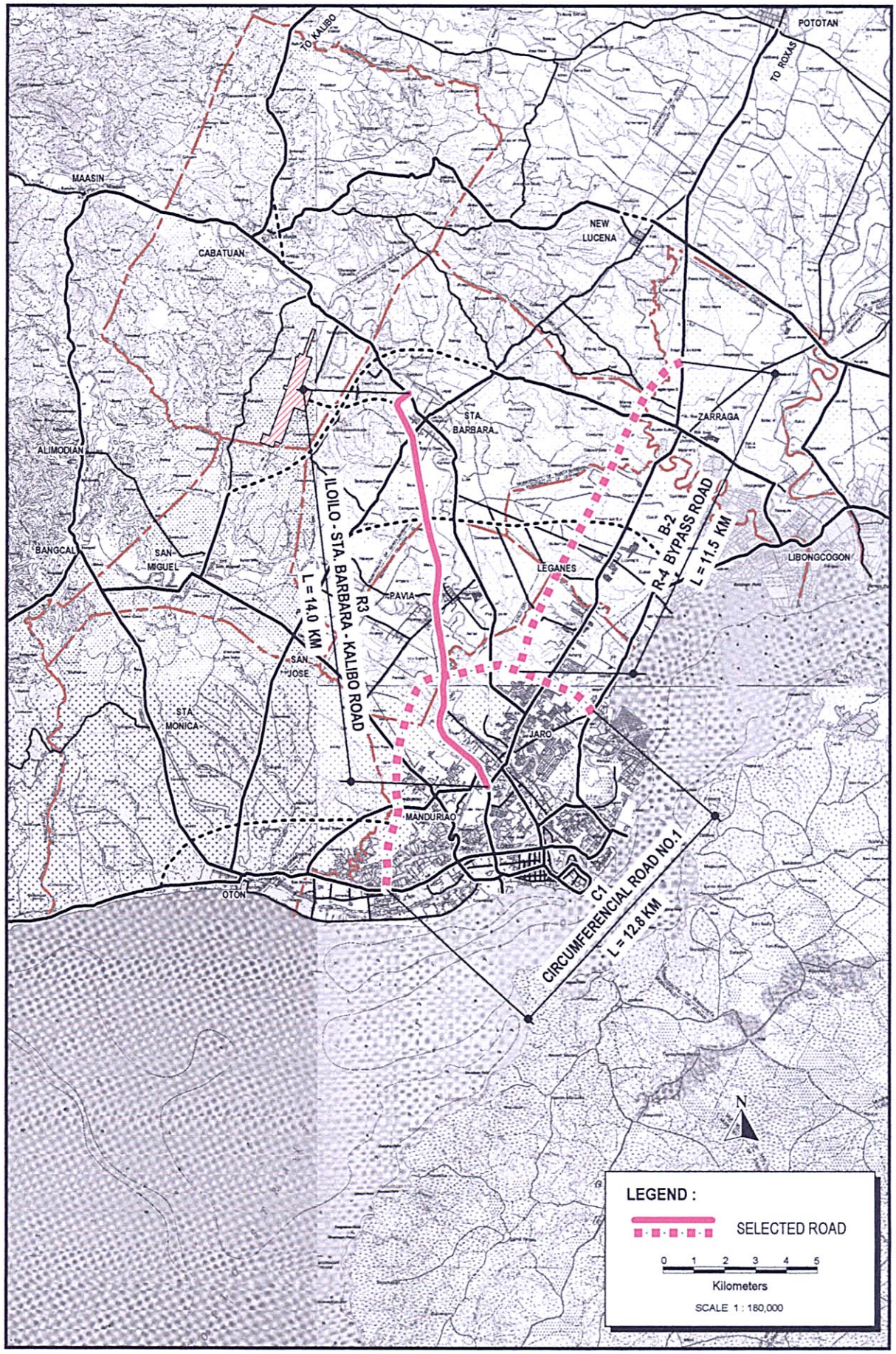

FIGURE 11.9-1 SELECTED ROAD PROJECTS FOR F/S