CHAPTER 10

FUTURE ROAD NETWORK DEVELOPMENT PLAN

10.1 SUMMARY OF PROBLEMS OF EXISTING ROAD NETWORK

Problems of existing road network were discussed in Chapter 5 and summarized hereunder:

Problems of Existing Road Network

Study Area

- Road network in the Study Area is composed of only radial roads, all of which start from the Iloilo City Proper.
- Urbanized area (or town proper) of Municipalities of Oton, Pavia and Leganes is formed at about 10 km radius from the Iloilo City proper, those of San Miguel, Sta. Barbara and Zarraga at about 15 km radius and Cabatuan at about 23 km radius. Those urbanized areas are connected with the Iloilo City Proper by radial roads; however, circumferential roads directly linking those urbanized areas each other (such as a Oton-Pavia-Leganes Link) are not formed yet.
- Due to lack of circumferential roads, trips between above town propers (such as Oton to Pavia or vice versa) have to pass through Iloilo City.
- Among inter-city roads, Iloilo-Roxas Road carries the heaviest traffic, followed by Iloilo-Sta. Barbara-Kalibo Road and Iloilo-Antique Road. When the airport is transferred to Cabatuan, Iloilo-Sta. Barbara Road will carry the heaviest traffic.
- The inter-city road passes through the town proper of Oton, Leganes and Zarraga where a bypass is needed to separate through traffic and local traffic.
- At Pavia and Sta. Barbara, the mini-bypass was constructed.

Iloilo City

- A mesh-type road network is formed within the Iloilo City proper. Roadsides of all roads have been densely built-up, widening of existing roads or construction of new road within the Iloilo City Proper is extremely difficult, or close to practically impossible.
- Road network outside the Iloilo City proper is a complex one. Roadsides of most roads have also been densely developed.
- Trip desire line shows that there is high demand of trips which wishes to travel along circumferential direction at about the Iloilo City boundary.
- The City Government of Iloilo plans to expand urban areas outside the existing urbanized areas, particularly along the city boundary areas by controlling further development of City Proper area and its adjacent areas. However, a road which guides the planned urban expansion does not exist yet. The City Government's top priority is to construct the proposed Iloilo City Circumferential Road (C-1).

Road Sections with low level of service

LOS E : • Short section at Jaro

LOS D : • Road sections in the down town area in City Proper
- Road in Jaro
- Iloilo – Roxas Road
- Iloilo – Sta. Barbara Road
- Short section of Iloilo-Antique Road
- Mandurriao-Jaro Road

10.2 FUTURE PROBLEMS OF EXISTING ROAD NETWORK (ANALYSIS OF "DO-NOTHING" CASE)

In order to identify future problems of the existing road network, "Do-Nothing" case analysis was undertaken. "Do-Nothing" case means that if no investment is made for road network improvement, but traffic grows as predicted, what would be the traffic situation on the road network. In other words, traffic demand in year 2022 was assigned to the 2003 road network. Traffic assignment result is shown in Figure 10.2-1. Level of service of roads in Iloilo City under "Do Nothing" case is shown in Figure 10.2-2.

Future Problems of Existing Road Network

- Heavy traffic will be concentrated on roads not only inside Iloilo City but also within the radius of 10 km (or between Oton, Pavia, Leganes and Iloilo City).
- Oton-Sta. Barbara Road and Leganes-Sta. Barbara Road will attract heavy traffic ranging from 12,000 to 15,000 pcu per day. Both roads will function as circumferential roads.
- Inside Iloilo City, all radial roads will exceed their traffic capacity, most of which have slight possibility of widening.
- Inside the Iloilo City proper, most of roads except 4-lane divided roads will exceed their capacity and level of service will be aggravated to D or E or F. However, further widening of such roads is extremely difficult.

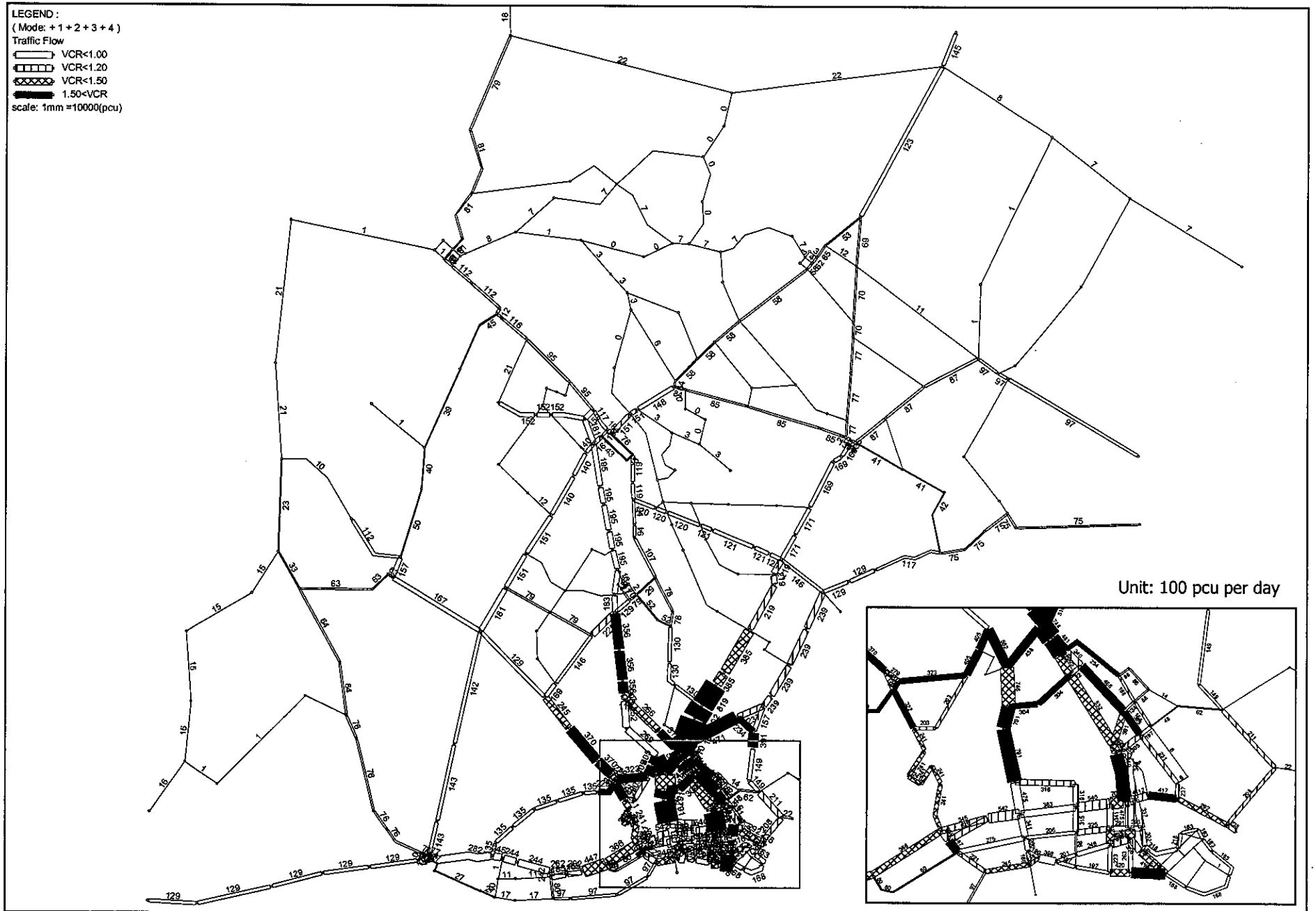


FIGURE 10.2-1 TRAFFIC ASSIGNMENT IN METRO ILOILO -2022- [DO-NOTHING]

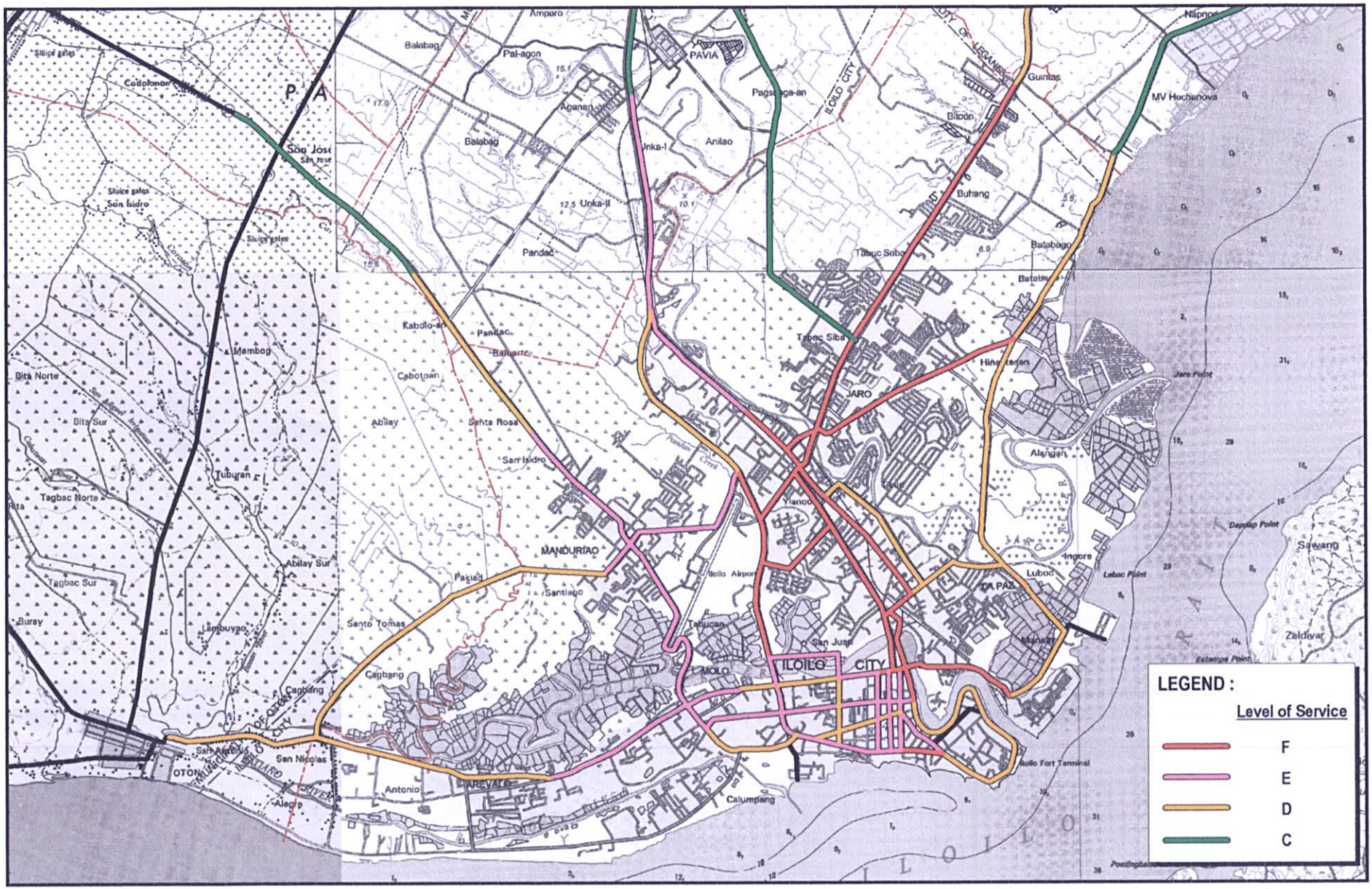


FIGURE 10.2-2 LEVEL OF SERVICE OF ROADS IN ILOILO CITY : DO NOTHING CASE

10.3 ROAD NETWORK DEVELOPMENT OBJECTIVES AND STRATEGIES

10.3.1 Objectives

In due consideration of the present and future road network issues, future urban development issues and economic development targets in the Study Area as well as its surrounding areas, the following road network development objectives were established:

Road Network Development Objectives

- Reduction of traffic congestion in the City Proper area.
- Road network which will guide and support planned urban development.
- Formation of flexible road network which will provide alternative routes to road users.
- Road network which will contribute to the economic development of the Study Area as well as its hinterland.
- Road network which will enhance international and domestic investment in the Study Area as well as its hinterland.
- Road network which will realize expected investment effects of related projects.
- Road network development with environmental and social considerations.

10.3.2 Strategies

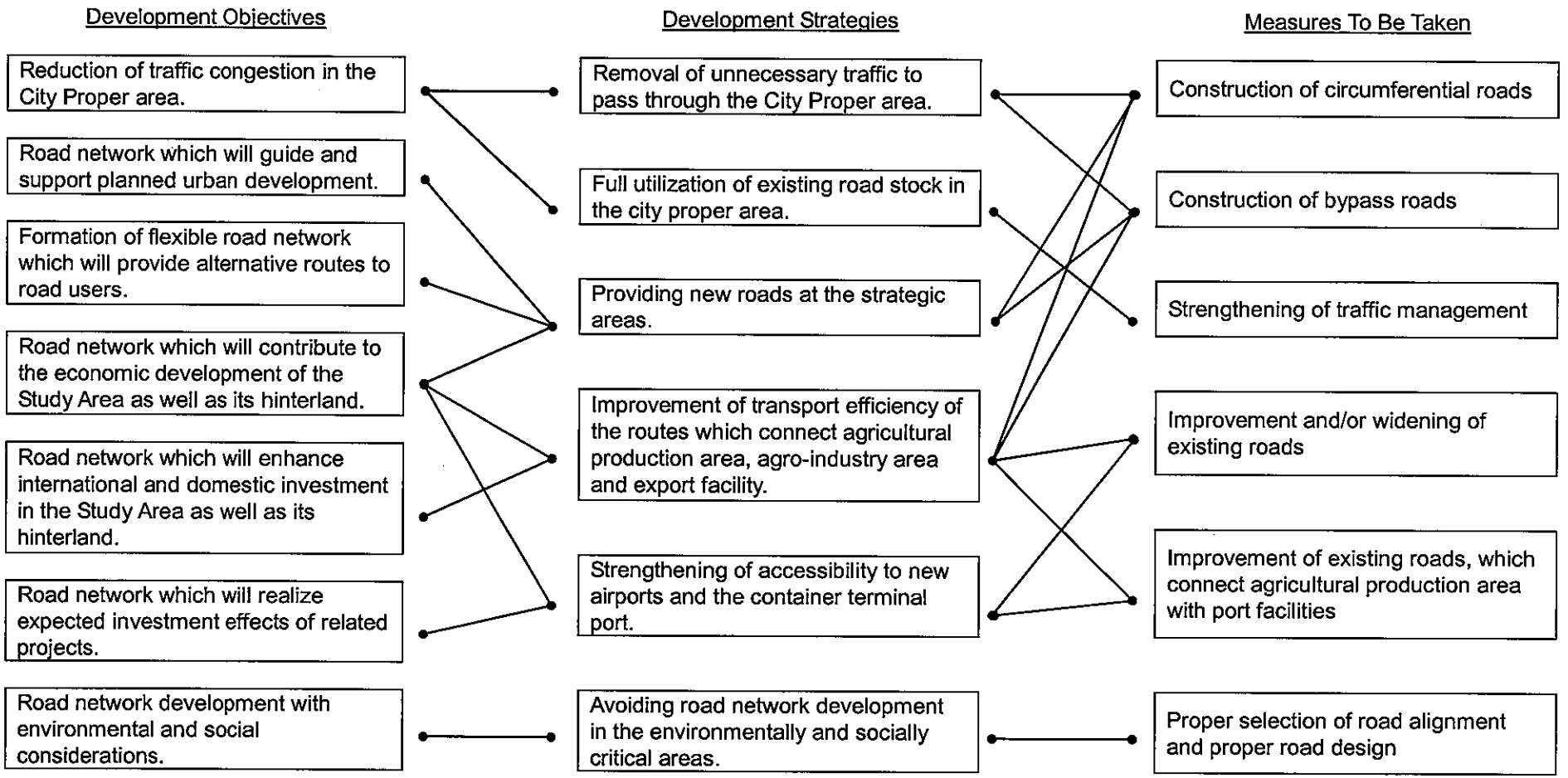
In order to achieve above objectives, the following strategies were established:

Road Network Development Strategies

- Removal of unnecessary traffic to pass through the City Proper area.
- Full utilization of existing road stock in the city proper area.
- Providing new roads at the strategic areas.
- Improvement of transport efficiency of the routes which connect agricultural production area, agro-industry area and export facility.
- Strengthening of accessibility to new airports and the container terminal port.
- Avoiding road network development in the environmentally and socially critical areas.

Road network development objectives, strategies and measures to be adopted are shown in Table 10.3-1.

TABLE 10.3-1 ROAD NETWORK DEVELOPMENT OBJECTIVES, STRATEGIES, AND MEASURES



10.4 FUTURE ROAD NETWORK ALTERNATIVES

10.4.1 Basic Concepts for Development of Road Network Configuration

Basic concepts for development of road network configuration were established as follows:

Inside the City Proper area and its adjacent areas

- Due to wide spread of build-up area (refer to Figure 10.4-1) new road construction requires high number of dislocation of people and structures, therefore is not planned.
- Widening of existing road is planned only for the section where an adverse social impact is minimum.
- Measures other than road development are recommended:
  - Control of further urban development. Urbanization should target outside this area.
  - Efficient traffic management
  - Modal shift from jeepney to city bus

Outside the City Proper area and its adjacent areas

- A radial and circumferential road network is to be formed.
- In due consideration of distribution of municipal urban centers (town propers), a circumferential road is planned at the following radius from Iloilo City proper:
  - C-1: about 5 km (or Iloilo city boundary)
  - C-2: about 10 km
  - C-3: about 15 km
  - C-4: between 20 to 25 km (mostly outside the Study Area)
- Existing inter-city roads form radial components of a network:
  - R-1: Iloilo-Antique Road
  - R-2: Iloilo-San Miguel Road
  - R-3: Iloilo-Sta. Barbara-Kalibo Road
  - R-4: Iloilo-Roxas Road
  - R-5: Iloilo Coastal Road
- Major functions of circumferential and radial roads

  C-1

  - to guide planned urban development
  - to distribute radial road traffic to its optimum route for access to a destination and also to avoid unnecessary traffic to pass through Iloilo City urbanized areas.

  C-2

  - to provide direct linkage between the following town propers:
    San Miguel – Pavia – Leganes
    or
    Oton – Pavia – Leganes
  - to distribute radial road traffic to its optimum route for access to a destination and also to avoid unnecessary traffic to pass through Iloilo City, particularly

new airport related traffic.

- to provide easy access to industrial zone in Pavia and to enhance international and domestic investment.

C-3

- to provide direct linkage between the following town propers:
  San Miguel – Sta. Barbara – Zarraga

C-4

- to provide direct linkage between the following town proper:
  Tigbaoan (outside Study Area) – Cabatuan –
  New Lucena (outside Study Area)

R-1

- to contribute to the economic development of the Study Area as well as its hinterland, particularly western area of Iloilo Province and Antique Province.
- to enhance international and domestic investment in the Study Area as well as its hinterland.

R-2

- to contribute to the economic development of the Study Area.

R-3

- to contribute to the economic development of the Study Area as well as its hinterland, particularly northern area of Iloilo Province, Capiz Province and Aklan Province.
- to realize expected investment effects of new Iloilo Airport.
- to provide easy access to industrial zone in Pavia and to enhance international and domestic investment.

R-4

- to contribute to the economic development of the Study Area as well as its hinterland, particularly northern area of Iloilo Province and Capiz Province.

R-5

- to provide easy access to the Iloilo International Port.

10.4.2 Future Road Network Alternatives

Based on the basic concepts, the following four (4) alternatives were developed:

Alternative-1 (refer to Figure 10.4-2)

- Follows basically the proposal of the Metropolitan Iloilo Development Council (MIDC).
- C-1: Same as other alternatives.
- ⊙ C-2: Different from other alternatives. The alignment follows MIDC's proposal.
- ⊙ C-3: Slightly different from other alternatives.
- C-4: Same as other alternatives.
- R-1 Bypass : Same as other alternatives
- Mini-bypass at Cabatuan along R-3 : Same as other alternatives.
- ⊙ Mini-bypass at Leganes and Zarraga along R-4 : Same as Alternative-2 (A)

Alternative-2(A) (refer to Figure 10.4-3)

- Follows basically basic concepts established by the Study Team.
- C-1: Same as other alternatives.
- ⊙ C-2: Connects Oton-Pavia-Leganes
- C-3: Connects San Miguel-Sta. Barbara-Zarraga
- C-4: Same as other alternatives
- R-1 Bypass: Same as other alternatives.
- Mini-bypass at Cabatuan along R-3 : same as other alternatives
- ⊙ Mini-bypass at Leganes and Zarraga along R-4: Same as Alternative-1.

Alternative-2(B) (refer to Figure 10.4-4)

- Basically same as Alternative-2(A), except the following:
- ⊙ Instead of providing two mini-bypasses at Leganes and Zarraga which are apart only about 5 km, one large scale bypass (bypassing Leganes and Zarraga) is to be provided.

Alternative-3 (refer to Figure 10.4-5)

- Basically same as Alternative-2(A), except the following:
- ⊙ C-2 : Oton-Pavia-Leganes (an alignment to pass through Pavia Industrial Zone)
- Provide an R-4 / R-5 connection link to relieve traffic on R-4 by diverting traffic to R-5. By this way, mini-bypasses at Leganes and Zarraga are also intended to be eliminated.

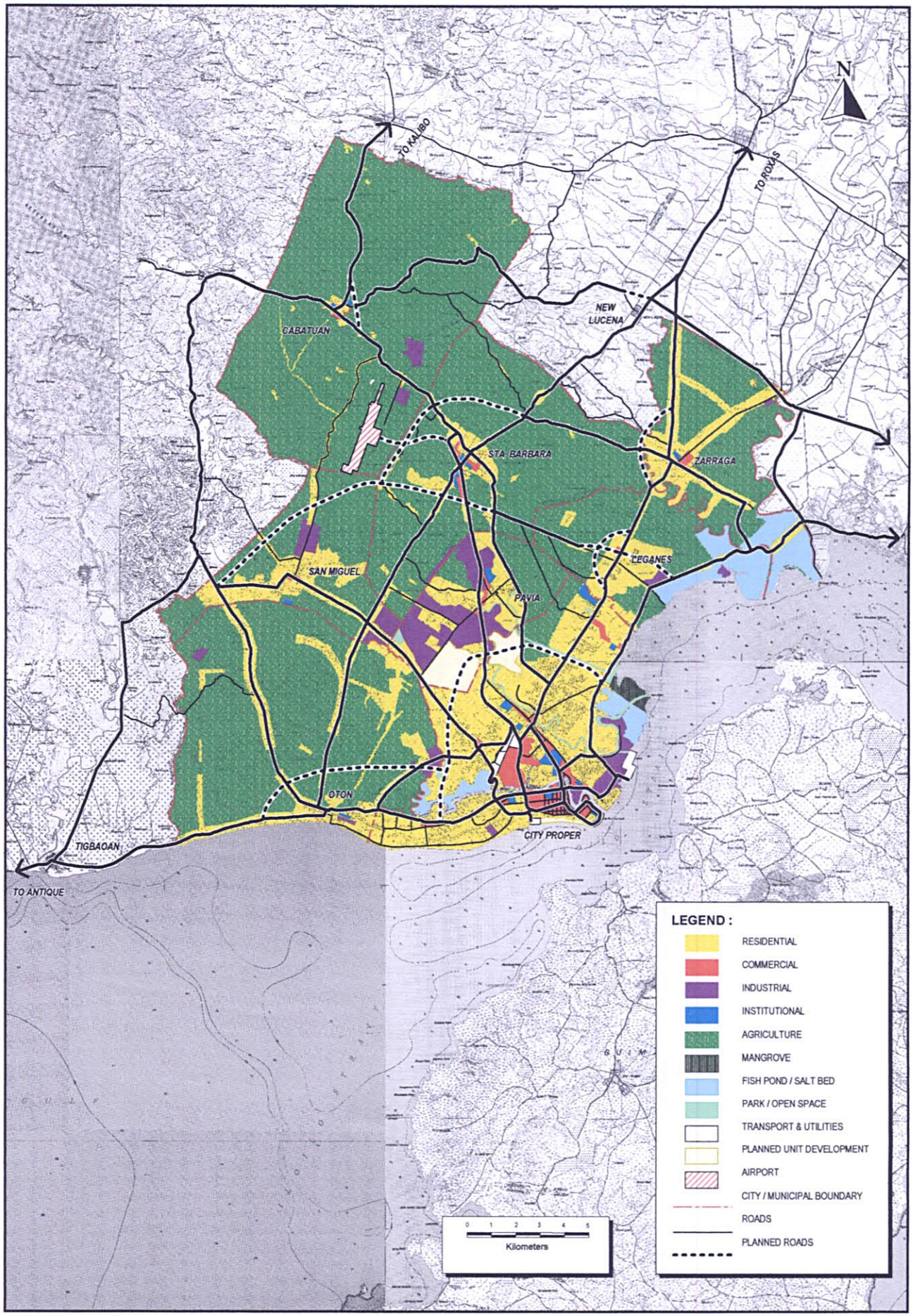


FIGURE 10.4-2 FUTURE ROAD NETWORK : ALTERNATIVE-1

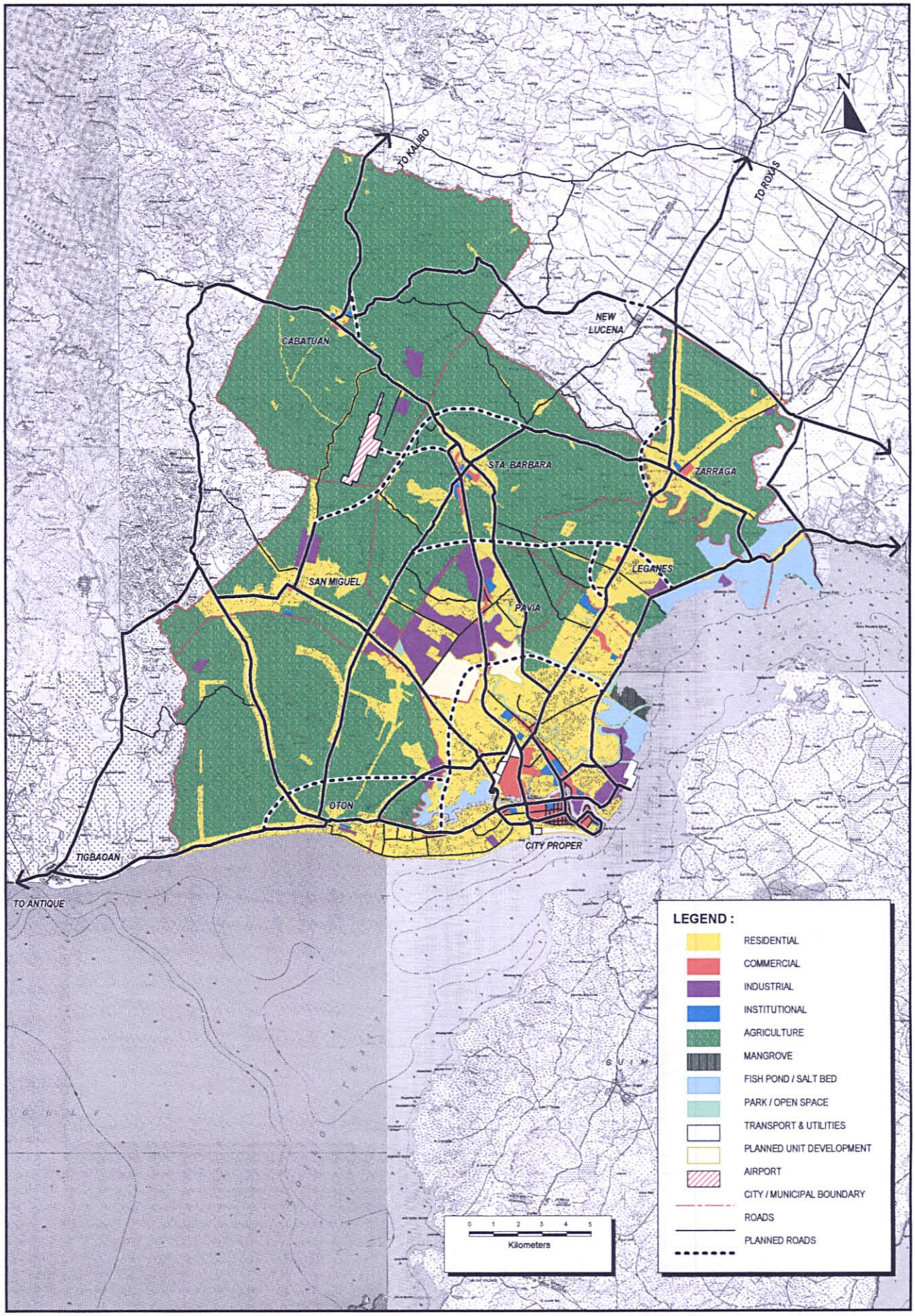


FIGURE 10.4-3 FUTURE ROAD NETWORK : ALTERNATIVE-2(A)

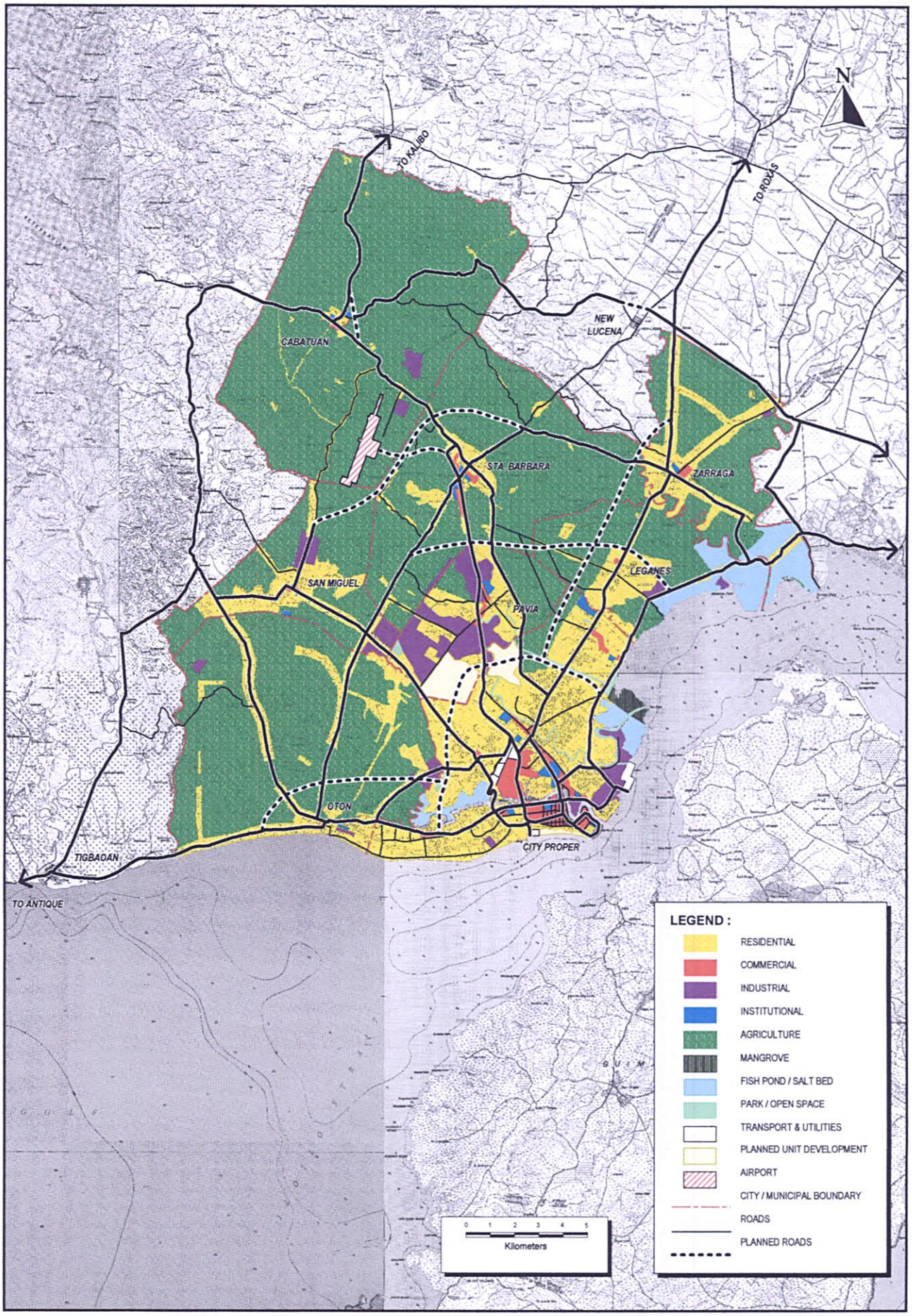


FIGURE 10.4-4 FUTURE ROAD NETWORK : ALTERNATIVE-2(B)

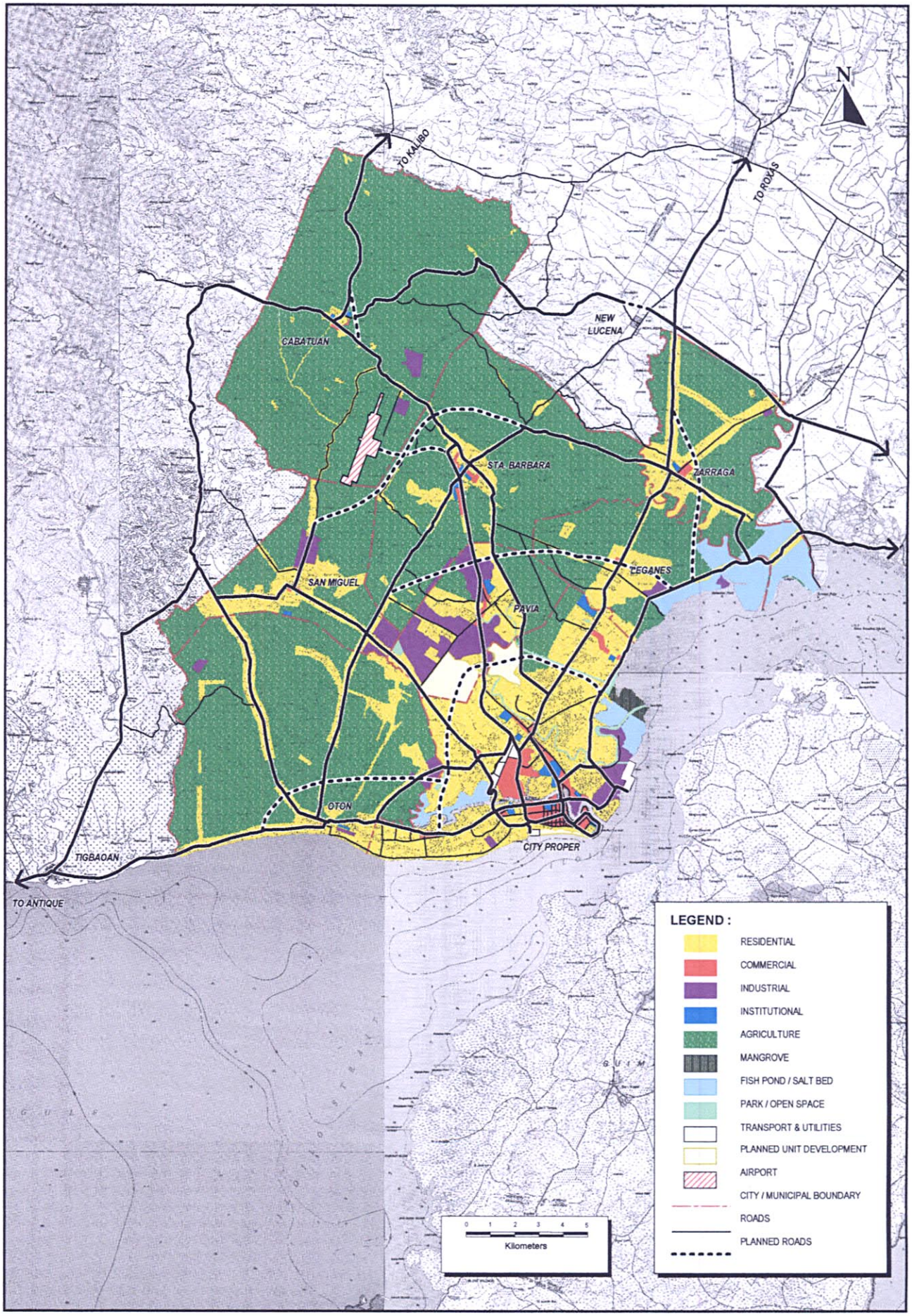


FIGURE 10.4-5 FUTURE ROAD NETWORK : ALTERNATIVE-3

10.5 EVALUATION AND SELECTION OF FUTURE ROAD NETWORK

10.5.1 Traffic Assignment Results

Traffic demand in 2022 was assigned to road network of each Alternative, and results are shown in Figure 10.5-1 to Figure 10.5-4. Traffic efficiency of each Alternative is discussed in the succeeding section.

10.5.2 Evaluation of Road Network Alternatives

Evaluation of road network alternatives is shown in Table 10.5-1.

Alternative-2(B) was recommended for the future road network in Metro Iloilo in view of the following:

- Best scheme in terms of traffic efficiency.
- Although total cost is the highest among Alternatives, but investment is compensated by traffic cost savings.
- Most flexible road network for road users, since major radial corridors have two routes.
  - R-1 Corridor : Existing R-1 road and R-1 Bypass
  - R-3 Corridor : R-3 and S-2
  - R-4 Corridor : Existing R-4 road and R-4 Bypass
- All circumferential roads are strategically placed by connecting urban centers.

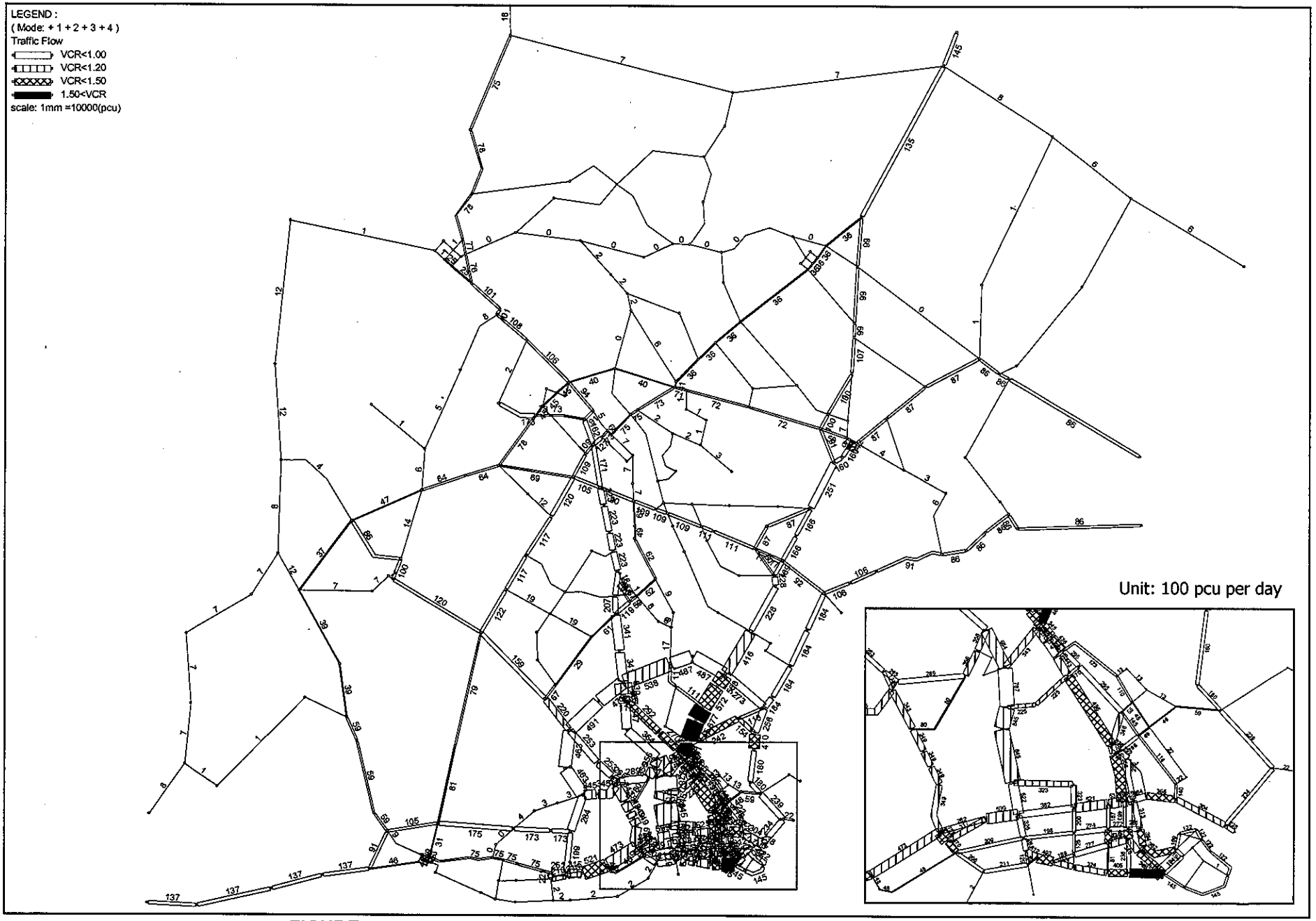


FIGURE 10.5-1 TRAFFIC ASSIGNMENT IN METRO ILOILO -2022- [ALTERNATIVE-1]

FIGURE 10.5-2 TRAFFIC ASSIGNMENT IN METRO ILOILO -2022- [ALTERNATIVE-2A]

FIGURE 10.5-3 TRAFFIC ASSIGNMENT IN METRO ILOILO -2022- [ALTERNATIVE-2B]

FIGURE 10.5-4 TRAFFIC ASSIGNMENT IN METRO ILOILO -2022- [ALTERNATIVE-3]

TABLE 10.5-1 EVALUATION OF ROAD NETWORK ALTERNATIVES : METRO ILOILO

			Do Nothing Case	Alternative - 1		Alternative -2				Alternative - 3	
						Alternative -2(A)		Alternative -2(B)			
Basic Concept for Road Network Formation • A radial and circumferential type of road network. Circumferential Road: C1~C4 Radial Road: R-1~R-5 • Road network to support planned urbanization • Efficient access to new airport and ports • Support economic development • Inside C-1, measures other than road development be implemented			—	Difference from other Alternatives C-2 : San Miguel-Sta. Barbara - Leganes R-4 : Mini-bypass at Leganes and Zarraga		Difference from other Alternatives C-2 : Oton-Pavia-Leganes R-4 : Mini-bypass at Leganes and Zarraga		Difference from other Alternatives C-2 : Oton-Pavia-Leganes R-4 : Large scale bypass from C-1 to Zarraga		Difference from other Alternatives C-2 : Oton-Pavia-Leganes (Alignment passess through Pavia Industrial Zone) R-4 : A road which links R-4 with R-5 to divert	
Road Component	New Roads (km)		—	53.80 (1.00)		51.90 (0.96)		57.00 (1.06)		52.70 (0.98)	
	Existing Roads (km)		242.40	242.40		242.40		242.40		242.40	
	Total (km)		242.40	305.99		304.09		309.19		304.89	
Estimated Cost (Million ₱)		Civil Work	—	5,211.7 (1.00)		5,118.9 (0.98)		5,398.0 (1.04)		5,211.5 (1.00)	
		ROW Acquisition	—	307.1 (1.00)		306.0 (1.00)		313.7 (1.02)		308.7 (1.01)	
		Total	—	**5,518.8 (1.00)**	o	**5,424.9 (0.98)**	◎	**5,711.7 (1.03)**	Δ	**5,520.2 (1.00)**	o
Traffic Efficiency (Year 2022)	PCU-Km (x1,000)	Inside C-1	2,611	2,304	Δ	2,290	o	2,255	◎	2,290	o
		Outside C-1	2,190	2,369	◎	2,424	o	2,418	o	2,422	o
		Study Area	4,801	4,673		4,714		4,673		4,712	
	PCU-Hour (x1,000)	Inside C-1	125	89	◎	88	◎	87	◎	88	◎
		Outside C-1	79	65	o	66	o	63	◎	66	o
		Study Area	204	154		154		150		154	
	Volume/Capacity Ratio inside C-1 (in Km)	below 1.0	63.1	82.2	o	82.0	o	80.9	◎	80.4	◎
		1.0 - 1.5	30.7	27.1		26.6		29.8		29.5	
		above 1.5	21.0	5.5		6.3		4.2		4.9	
	Volume/Capacity Ratio, Study Area (in Km)	below 1.0	269.7	315.0		319.6		319.9		319.8	
		1.0 - 1.5	48.5	34.7	◎	34.9	◎	34.4	◎	36.1	o
		above 1.5	23.4	5.5	o	6.3	Δ	4.2	◎	4.9	◎
	Average Travel Speed (km / hr)	Inside C-1	20.9	26.0		25.9		26.0		26.0	
		Outside C-1	27.7	36.3		36.8		38.4		36.5	
		Study Area	23.5	30.4	o	30.6	o	31.2	◎	30.5	o
Traffic Cost (1,000 P/day)		VOC	8,294	7,516		7,527		7,495		7,509	
		Time Cost	3,659	2,912		2,890		2,856		2,895	
		Total	11,953	10,428	Δ	10,417	o	10,351	◎	10,404	o
Economic Return		Single Year B/C Ratio	—	2.07	o	2.12	◎	2.10	◎	2.10	◎
Other Factors				• C-2 will not function efficiently. • Access to Pavia Industrial Estate not strengthened.	Δ	• Two mini-bypasses at Leganes and Zarraga located too near. • Ultimately Alternative2(B) will be required.	o	• Most flexible road network for road users.	◎	• A R-4 / R-5 link road does not divert traffic so much from R-4 to R-5.	Δ
Ranking and Recommended Alternative				—	Δ	—	o	Recommended	◎		Δ

Note: Civil work cost does not include C-4. Compensation cost is not included yet.

10.6 FUNCTIONAL ROAD CLASSIFICATION AND STANDARD ROAD CROSS-SECTIONS

10.6.1 Present Road Classification in the Philippines

1) Administrative Classification

In the Philippines, the present road classification has been established by a series of Executive Orders, Republic Acts and/or Presidential Decrees. Of these the most fundamental was the Republic Act No.917 or "The Philippine Highway Act", which provided five categories of classification of roads.

- National Highway/Roads
- Provincial Highway/Roads
- City Roads
- Municipal Roads
- Barangay Roads

In 1955, the classification was more clearly re-defined by the Executive Order No.113 (EO). Under this EO, the Department of Public Works and Highways (DPWH) has responsibility of National Roads in terms of planning, construction and maintenance; whereas Local Government Units (Province, City, and Municipality) are responsible for provincial roads, city roads, municipality roads, barangay roads within their jurisdictions, respectively. The Provincial, City, or Municipality Engineers Offices execute the road planning, construction, and maintenance. Thus the administrative road classification is clearly defined and shown in Table 10.6 -1.

TABLE 10.6-1 ADMINISTRATIVE CLASSIFICATION

Road Category	Level of Responsibility	Definition
National Road	DPWH	Road continuous in extent that form part of the main trunk link system; all roads leading to national air ports, national seaports, parks or coast-to-coast roads.
Provincial Road	Provincial Government	Roads connecting one municipality with another; all roads extending from a municipality or from a provincial or national road to a public wharf or railway station; and any other roads to be designated by the Province.
City Road	City Government	Road/streets within the urban area of the city to be designated by the City.
Municipal Road	Municipal Government	Roads /streets within the poblacion (populated) area of a municipality to be designated by the Municipality.
Barangay Road	Barangay Road	Rural roads located either outside the urban area of city or outside industrial, commercial, or residential subdivisions that act as feeder farm-to-market roads, and which are not otherwise classified as national, provincial, city, or municipality road. Roads located outside the poblacion area of municipality and those roads located outside the urban area of a city to be designated as such by the Barangay Council concerned.

Source: DPWH, JICA, Roads in the Philippines 2003

2) Functional Classification for National Road

The DPWH adopts a functional road classification of the national roads; National Arterial roads and Secondary roads. The national arterial roads are sub-classified into three groups:(1) North –South Backbone; (2) East-West Laterals; and (3) Other Strategic Roads. These classifications are summarized in Table 10.6-2

TABLE 10.6-2 FUNCTIONAL CLASSIFICATION OF NATIONAL ROADS

Functional Classification		Arterial Road
Arterial Road	North-South Backbone	A backbone road network in consideration of road and sea (ferry) linkages. This covers also interconnection of primary centers and road leading to growth corridor.
	East-West Laterals	Arterial roads which inter-link the North-South Backbone road network in an east-west lateral orientation across the country with an interval of 50 to 200 kilometers.
	Strategic Road	Roads which connect other primary entries and all secondary and tertiary centers. These also interconnect the above category roads in an appropriate interval as well as forming a closed network and alternative roads. It includes also island circumferential and cross-island road.
Secondary National Road	National Roads Other than Above	

Source: DPWH, JICA, Roads in the Philippines 2003

As for the Provincial, City, Municipal, and Barangay roads, there is no clear functional road classification.

10.6.2 Functional Classification of Roads in the Study Area

1) Functional Road Classification Criteria

The Study Area consists of urban and rural areas. Majority area in Iloilo City is urban and the rest of the Study Area is predominantly rural. Thus, most of roads pass through both urban and rural areas. Under such situation, functional road classification criteria under this Study were established as shown in Table 10.6-3.

TABLE 10.6-3 FUNCTIONAL ROAD CLASSIFICATION CRITERIA AND ADMINISTRATIVE RESPONSIBILITY

Road Classification	Criteria	Responsibility	
		DPWH	Provincial/City Government
Primary Arterial Road	• Constitute a backbone in overall road network. • Primarily carries through traffic with long trip length. • Provides direct access to major transport facilities such as an airport and/or a port	◎	—
Arterial Road	• Connects major sources of traffic generation with primary arterial roads. • Carries relatively long trip traffic.	◎	—
Collector Road	• Connects arterial roads with local roads for collection and distribution of traffic. • Carries relatively short trip traffic.	◎	◎
Local Road	• Provides access to roadsides and local communities. • Primarily carries local traffic and limits through traffic.	—	◎

Based on the criteria, roads in the Study Area were classified by function as shown in Figure 10.6-1.

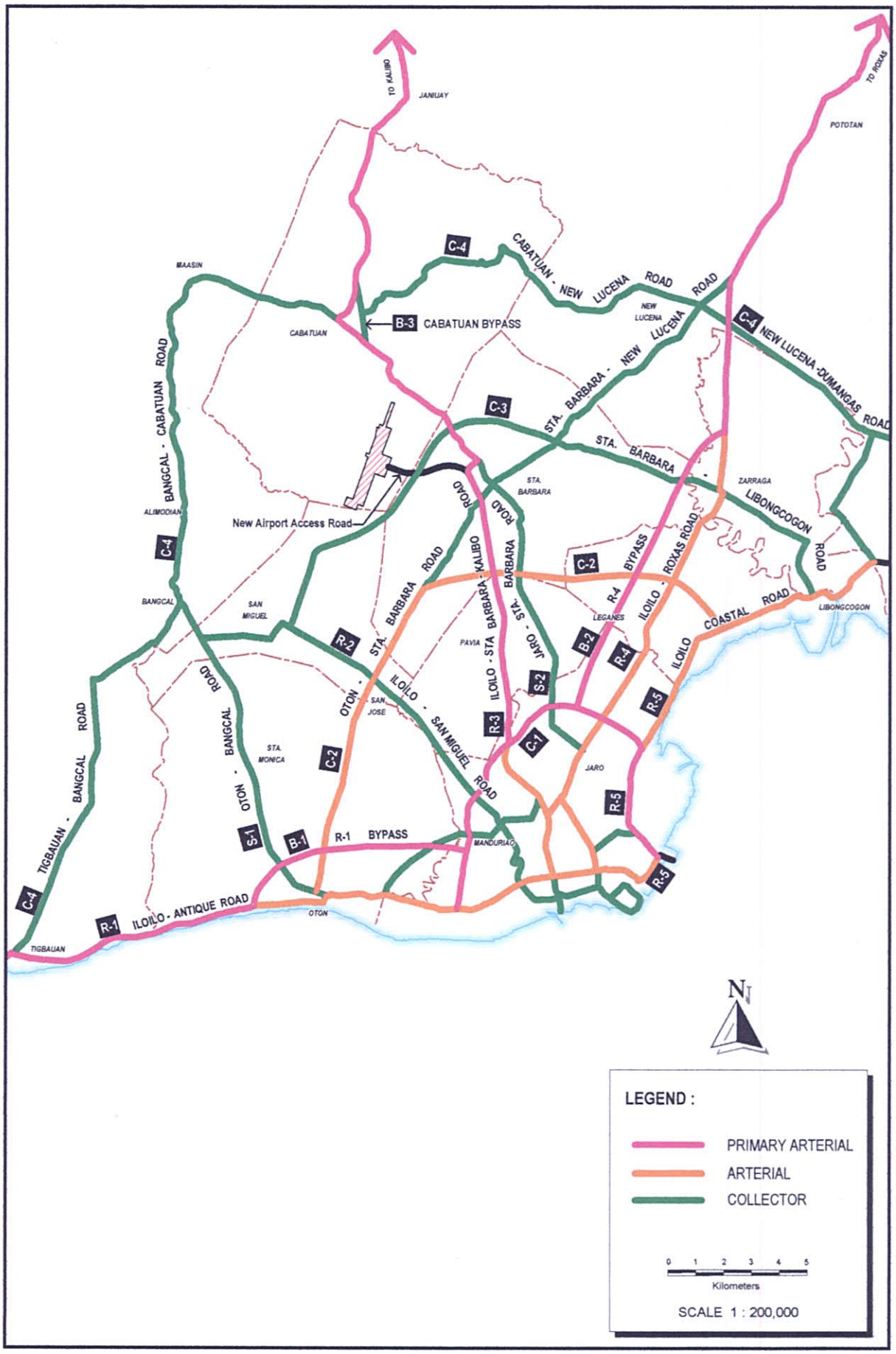


FIGURE 10.6-1 ROAD CLASSIFICATION BY FUNCTION

10.6.3 Proposed Design Criteria and Standard Road Cross-Section by Function

Table 10.6-11 presents proposed design criteria and Figure 10.6-2 shows standard road cross-section.

TABLE 10.6-11 RECOMMENDED ROAD CLASSIFICATION AND CROSS-SECTION

Road Function	Area		Design Speed	Lane Width	Right-of-Way
Primary Arterial	Urban	UG	80	3.50	40
		I	80	3.50	30
	Rural	I	80	3.50	30
		II	80	3.50	20+
Arterial	Urban	II	60	3.25	30
		III	60	3.25	20
	Rural		60	3.25	20+
Collector	Urban		60,50,40	3.00	16
	Rural		60,50,40	3.00	10+

Note: The above cross-section will be adopted taking the existing existing and possible ROW into consideration. Some variation in shoulder, sidewalk, median except lane width be applicable.

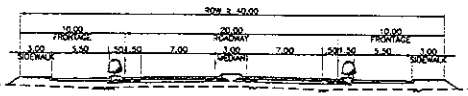
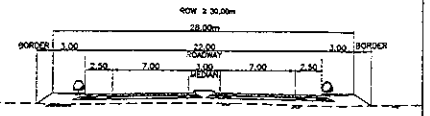
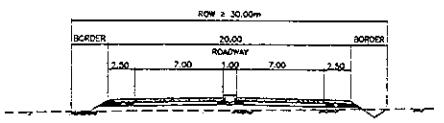
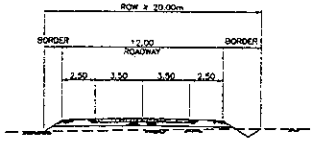
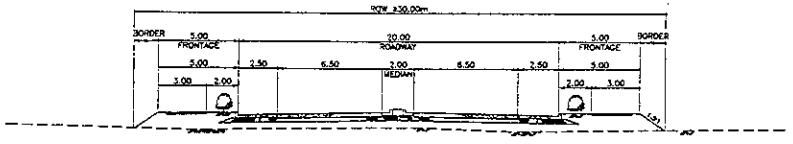
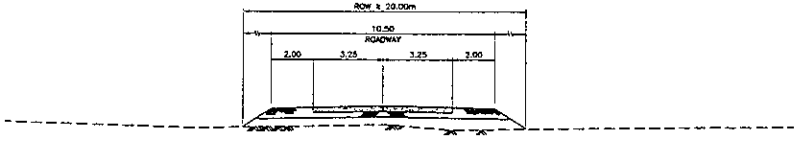
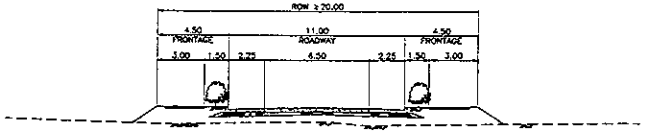
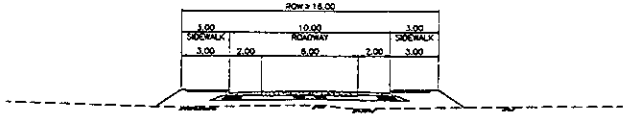
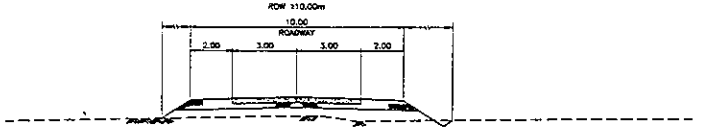
	URBAN		RURAL	
PRIMARY ARTERIAL	4-Lane  TYPE : URBAN PRIMARY ARTERIAL (URBAN UG) RESIDENTIAL R.O.W ≥ 40.00M V > 80km/hr, with 3.0m Median, and 10.0m Frontage Road including 1.50m Planting Strip, and 3.0m Sidewalk Note : This cross section will be applied in the case of increased through traffic	4-Lane  TYPE : URBAN PRIMARY ARTERIAL (URBAN 1) OTHERS 4-LANE, R.O.W. ≥ 30.00m V = 80km/hr, with 3.0m Median, and 2.50m Shoulder including 1.0m Planting Strip, and 2.00m Sidewalk	4-Lane  TYPE : RURAL PRIMARY ARTERIAL (RURAL I, BUILT-UP) 4-LANE, R.O.W. ≥ 30.00m V = 80km/hr, ,2.50m Shoulder	2-Lane  TYPE : RURAL ARTERIAL (RURAL II, OTHERS) 2-LANE, ROADWAY = 12.00m V = 80km/hr, with 2.50m Shoulder
ARTERIAL	4-Lane  TYPE : URBAN ARTERIAL (URBAN II) 4-LANE, R.O.W. ≥ 30.00m V = 60km/hr, with 2.00m Median,2.50m Shoulder and 5.00m Frontage including 2.00m Planting Strip, and 3.00m Sidewalk		2-Lane  TYPE : RURAL ARTERIAL (RURAL) 2-LANE, ROADWAY = 10.50m V = 80km/hr, with 2.00m Shoulder	
	2-Lane  TYPE : URBAN ARTERIAL (URBAN III) 2-LANE, R.O.W. ≥ 20.00m V = 60km/hr, 2.25m Shoulder and 4.50m Frontage including 1.50m Planting Strip, and 3.00m Sidewalk			
COLLECTOR	2-Lane  TYPE : URBAN COLLECTOR (URBAN) 2-LANE,R.O.W. ≥16.00m V = 60~40 km/hr, with 2.00m Shoulder and 3.00m Sidewalk		 TYPE : RURAL COLLECTOR (RURAL), ROADWAY = 10.00m V = 60, 50, 40 km/hr, with 2.00m Shoulder	

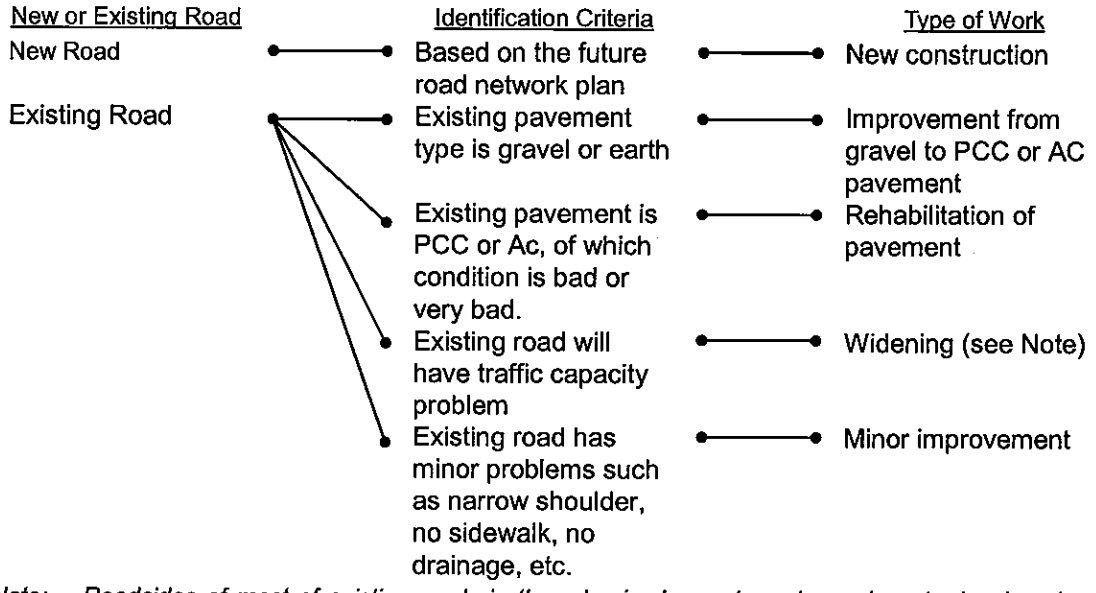
FIGURE 10.6-2 STANDARD CROSS SECTION

10.7 ROAD PROJECTS AND COST ESTIMATE

10.7.1 Road Projects

1) Road Project Identification Criteria

Road project identification criteria were established as follows:



Note: Roadsides of most of existing roads in the urbanized area have been densely developed or built-up, therefore, widening needs to be planned to minimize adverse social impacts.

2) Identified Road Projects

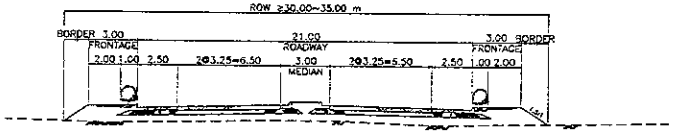
Identified road projects are shown in Table 10.7-1. Type of road cross-section to be adopted is shown in Figure 10.7-1, together with applied cross-section to the future road network in Figure 10.7-2, and proposed bridge location map in Figure 10.7-3.

TABLE 10.7-1 METRO ILOILO ROAD PROJECTS

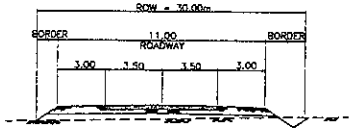
( ) existing ROW: m

Road No.	Road Name		Admi. Classi.	Road Length (km)	Existing Condition		Type of Improvement	Additional ROW	Type of Cross section	Remarks
					No. of Lane	Pavement Condition				
C-1	**Circumferential Road No. 1**		—	12.8	—	—	New construction (4-lane divided)	35	1	
C-2	**Circumferential Road No. 2**	Section - 1 (Oton-Jct. Iloilo-San Miguel Road)	NR	7.8	2	Gravel (Good)	Improvement from gravel to PCC/AC pave. (2-lane)	10 (20)	2.1	
		Section - 2 (Jct. Iloilo-San Miguel Road-Sta. Barbara)	Prov.	3.7	2	Gravel (Good)	Improvement from gravel to PCC/AC pave. (2-lane)	10 (20)		
			Prov.		2	Gravel (Good)	Improvement from gravel to PCC/AC pave. (2-lane)	10 (20)		
		Section - 3 (New Construction Sect.)	—	11.5	—	—	New construction (2-lane)	30	2	
C-3	**Circumferential Road No. 3**	Section - 1 (Jct. Iloilo-San Miguel-Jct. Sta. Barbara-New Lucena Road)	Prov.	2.9	2	Gravel (Fair)	Improvement from gravel to PCC/AC pave.(2-lane)	10 (20)	2.1	
			—	10.6			New construction (2-lane)	30	2	
		Section - 2 (Jct. Sta.Barbara-New Lucena Road-Iloilo Coastal Road)	Prov.	12.0	2	Gravel (Fair)	Improvement from gravel to PCC/AC pave. (2-lane)	10 (20)	2.1	
C-4	**Circumferential Road No. 4**	Tigbaun - Bangcal Road	NR	15.9	2	9.9km Gravel (good), 1.6km AC (Bad)	Improvement from gravel to PCC/AC pavement (2-lane), L=9.9km	10 (20)	2.2	
		Bangcal-Cabatuan Road	NR	17.3	2	12.1km Gravel (Bad), 5.2km PCC (Good)	Improvement from gravel to PCC/AC pave.(2-lane), L=12.1km	10 (20)		
		Cabatuan-New Lucena Road	NR	14.9	2	12km Gravel (Bad), 7.7km PCC (Good)	Improvement from gravel to PCC/AC pave.(2-lane), L=12.0km (study area : 5.7km)	10 (20)		
		New Lucena-Dumangas Road	NR	16.7	2	Gravel (Fair)	Improvement from gravel to PCC/AC pavement, (2-lane) L=16.7km	10 (20)		
R-1	**Iloilo-Antique Road**	Iloilo-Oton Section	NR	10.2	2	PCC / AC (Fair)	Rehabilitation (shoulder pavement, sidewalk construction)	0 (20)	4.1, 4.3, 4.6	
		Oton-Tigbauan Section	NR	12.0	2	PCC (Fair)	No work.	0 (20)		
R-2	**Iloilo-San Miguel Road**	Molo-Manduriao Section	NR	1.9	2	PCC (Fair)	No work.	0 (20)		
		Manduriao-San Miguel Section	NR	12.1	2	PCC (Fair/Bad)	Pavement rehabilitation and shouder widening from 1.0m to 2.5m	0 (20)	5	
R-3	**Iloilo-Sta.Barbara-Kalibo Road**	City Proper-Jaro Section	NR	3.0	4	PCC (Good)	Minor improvement (improvement of median and sidewalk)	0 (60)	6.1	
		Jaro-City Bdry. Section	NR	3.9	2	PCC (Good)	Widening within ROW	0 (30)	6.1	Removal of encroached structure needed.
		Pavia Section	NR	5.5	2	PCC (Good)	Widening within ROW	0 (20)	6.2	Removal of encroached structure needed.
		Sta. Barbara Section	NR	2.8	2	PCC (Good)	Widening within ROW	0 (20)	6.3.1, 6.3.2	Removal of encroached structure needed.
		Sta. Barbara Bypass Section	NR	1.6	2	PCC (Good)	Widening within ROW	0 (30)	6.4.1, 6.4.2	Removal of encroached structure needed.
		- Cabatuan Section	NR	9.6	2	PCC (Good)	No work.	0 (20)		
		- Janiuay Section	NR	14.9	2	PCC (Good)	No work.	0 (20)		
R-4	**Iloilo-Roxas Road**	Jct. Iloilo-Sta. Barbara Road-Jaro Bridge Section	NR	1.2	4	PCC (Good)	No work.	0 (30)		
		Jaro Bridge-Jct. Jaro-Sta. Barbara Road Section	NR	1.4	4	PCC (Good)	No work.	0 (20)		
		Jct. Jaro-Sta.Barbara Road-Leganes Proper Sect.	NR	5.7	2	PCC (Good)	Widening within ROW	0 (20)	7.1	Removal of encroached structure needed.
		Leganes Proper-Zarraga Proper Section	NR	4.7	2	PCC (Good)	Widening within ROW	0 (20)	7.2	Removal of encroached structure needed.
		Zarraga Proper-Jct. New Lucena-Dumangas Rd. Sect.	NR	7.5	2	PCC (Good)	No work.	0 (20)		
R-5	**Iloilo Coastal Road**	Iloilo River Bridge-Jct. Int'l Port Access Road Section	NR	4.0	2	PCC (Good)	Widening within ROW	(20)	8.1, 8.2	
		Jct. International Port Access Road-Study Area Bdry.Sect.	NR	16.0	2	PCC (Good)	Widening within ROW (L = 7.8km)	(20)	8.3	
B-1	**R-1 Bypass Road**		—	8.6	—	—	New construction (2-lane)	30	9	
B-2	**R-4 Bypass Road**		—	11.5	—	—	New construction (2-lane)	30	9	
B-3	**Cabatuan Bypass Road**		—	2.1	—	—	New construction (2-lane)	30	9	
S-1	**Oton-Bangcal Road**		NR	12.0	2	Gravel (Fair)	Improvement from gravel to PCC/AC pavement (2-lane)	(20)	2.1	
S-2	**Jaro-Sta.Barbara Road**	Iloilo City Section	PR	2.9	2	AC (Bad)	No work.	(20)		TW=6.0 SL=1.0
		Pavia Section	PR	4.1	2	Gravel (Fair)	Improvement from gravel to PCC/AC pavement (2-lane)	(20)	10	TW=6.0 SL=1.5
		Sta. Barbara Section	PR	3.6	2	Gravel (Fair)	Improvement from gravel to PCC/AC pavement (2-lane)	(20)	10	TW=6.0 SL=1.5

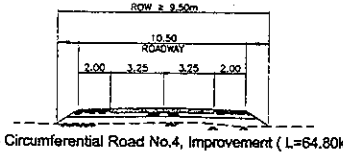
Note: 2-lane rehabilitation includes shoulder and sidewalks improvement within ROW.



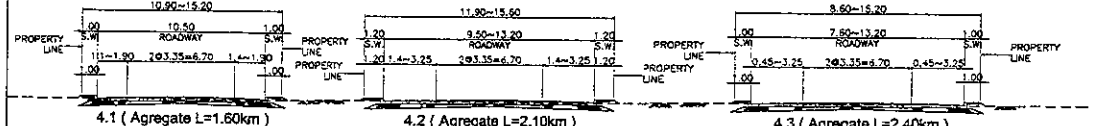
1. C-1 Circumferential Road No.1, 4 Lane Divided new Construction (L=12.80km)



2. C-2 Circumferential Road No.2, 2 Lane New Construction (L=11.50km)
C-3 Circumferential Road No.3, 2 Lane New Construction (L=10.60km)

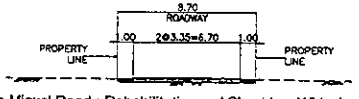


3. C-4 Circumferential Road No.4, Improvement (L=64.80km)

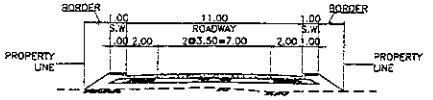


4.1 (Agregate L=1.60km) 4.2 (Agregate L=2.10km) 4.3 (Agregate L=2.40km)

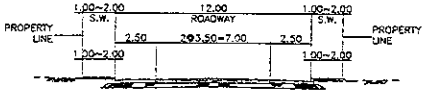
4. R-1 Iloilo- Antique Road : Rehabilitation, Iloilo-Oton Section (L=10.2 km)



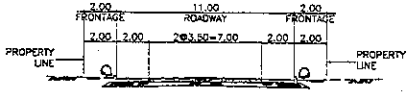
5. R-2 Iloilo - San Miguel Road : Rehabilitation and Shoulder , Widening (L=12.10km)



6.1 Jaro-City Bdry. Section, L=6.90km

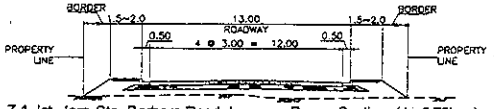


6.2 Pavia Section, L=5.50km

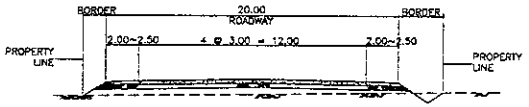


6.3 Sta. Barbara Section, L=2.80km

6. R-3 Iloilo - Sta.Barbara - Kalibo Road : Widening within ROW
(L=16.80km including Sta Barbara Bypass, L=1.60km)

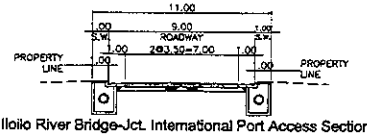


7.1 Jct. Jaro-Sta. Barbara Road, Leganes Proper Section, (L=5.70km)

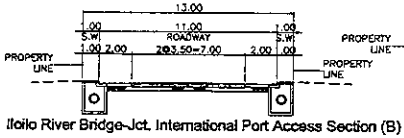


7.2 Leganes Proper-Zarraga Proper Section, (L=4.70km)

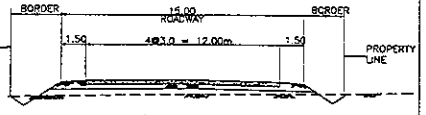
7. R-4 Iloilo-Roxas Road : Widening within ROW (L=10.40km)



8.1 Iloilo River Bridge-Jct. International Port Access Section (A)
(L=0.10km)

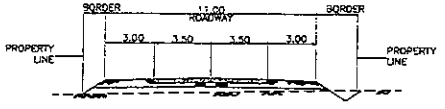


8.2 Iloilo River Bridge-Jct. International Port Access Section (B)
(L=2.30km)

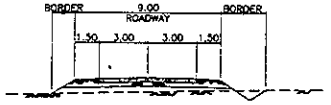


8.3 Jct. International Port Access Road - C-1 Bypass
(L=7.80km)

8. R-5 Iloilo Coastal Road ,Improvement (L=11.8km)



9. B-1 R-1 Bypass Road ,2 Lane New Construction (L=8.60km)
B-2 R-4 Bypass Road ,2 Lane New Construction (L=11.50km)
B-3 Cabatuan Bypass Road (L=2.10km)



10. S-2 Jaro-Sta. Barbara Road (7.70km)

Figure 10.7-1 ILOILO : Proposed Cross-Section for New Road and Widening

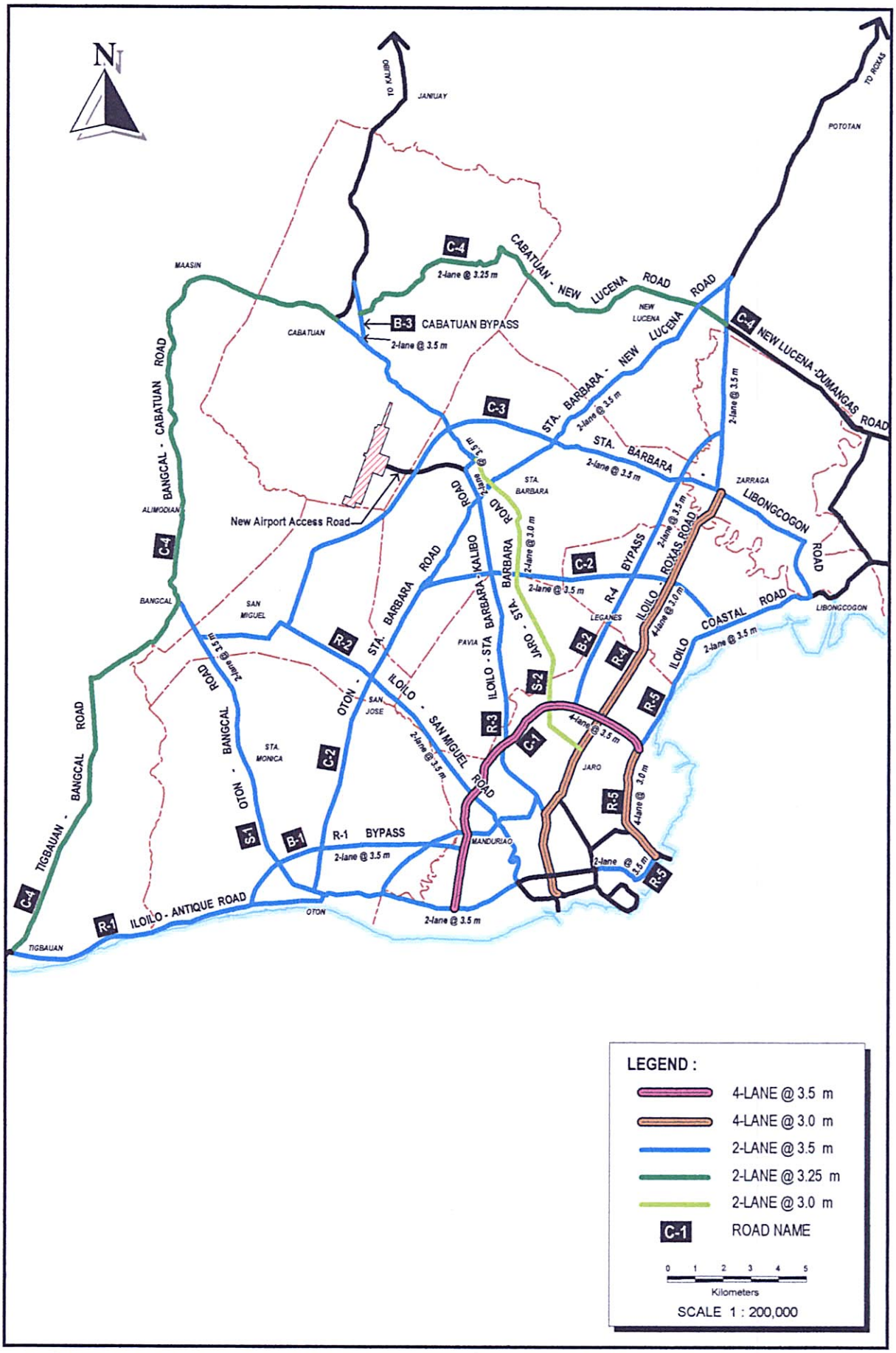


FIGURE 10.7-2 METRO ILOILO APPLIED CROSS-SECTION TO FUTURE ROAD NETWORK

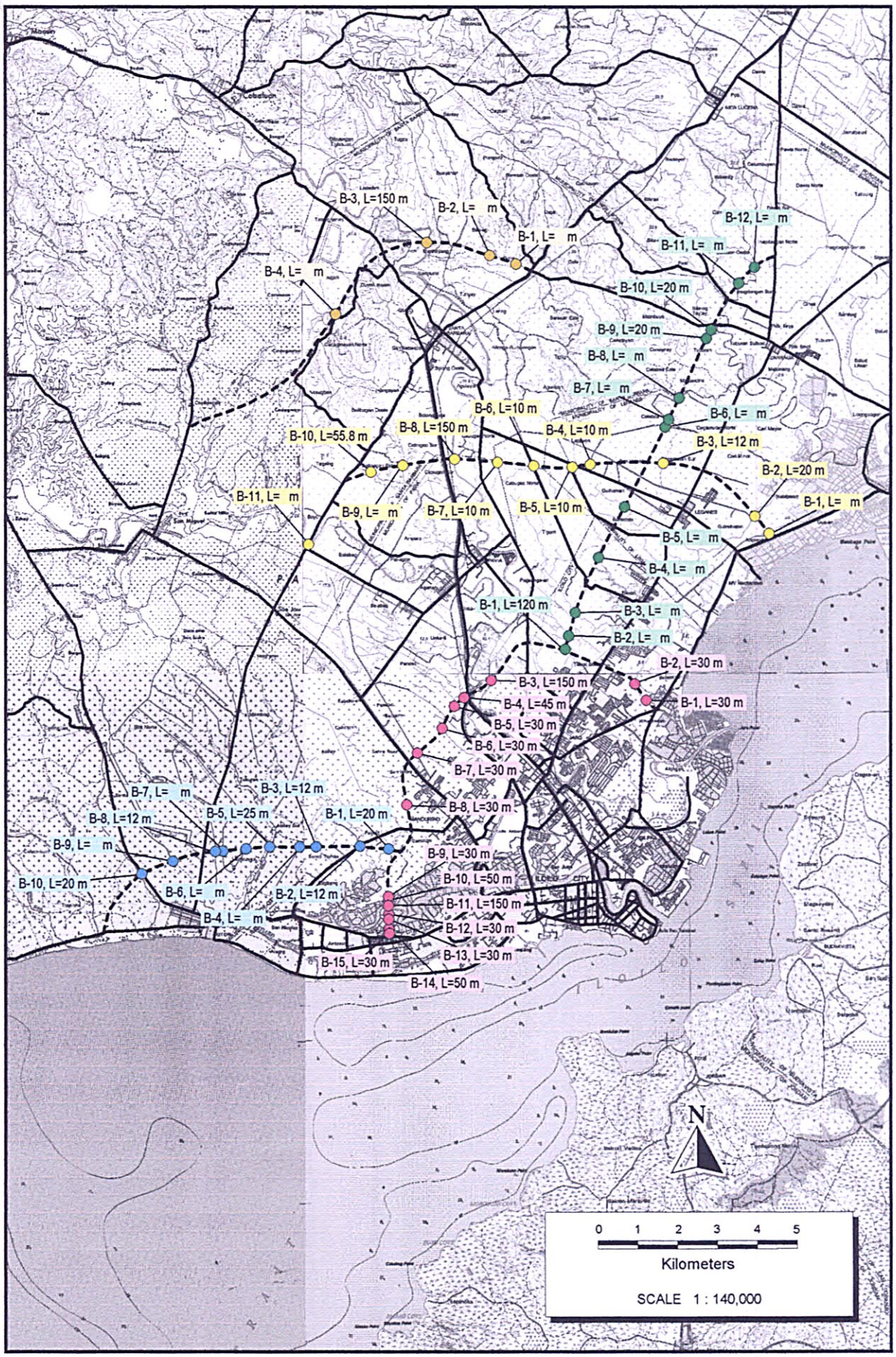


FIGURE 10.7-3 METRO ILOILO PROPOSED BRIDGES LOCATION MAP

10.7.2 Cost Estimate

1) Procedure of Project Cost Estimate

The procedure of project cost estimate is shown in Figure 10.7-4. Based on the collected unit prices of construction materials, labor costs and equipment costs, unit costs of major construction items were examined and compared with latest prices of on-going projects. Quantity estimate for each type of work was conducted and each construction cost per km (or per meter for bridges) was estimated for each type of cross section based on the determined unit cost of major construction items.

Engineering service cost was estimated by using the percentage (%) of construction cost. ROW acquisition costs for new roads and widenings were estimated by the prevailing land cost.

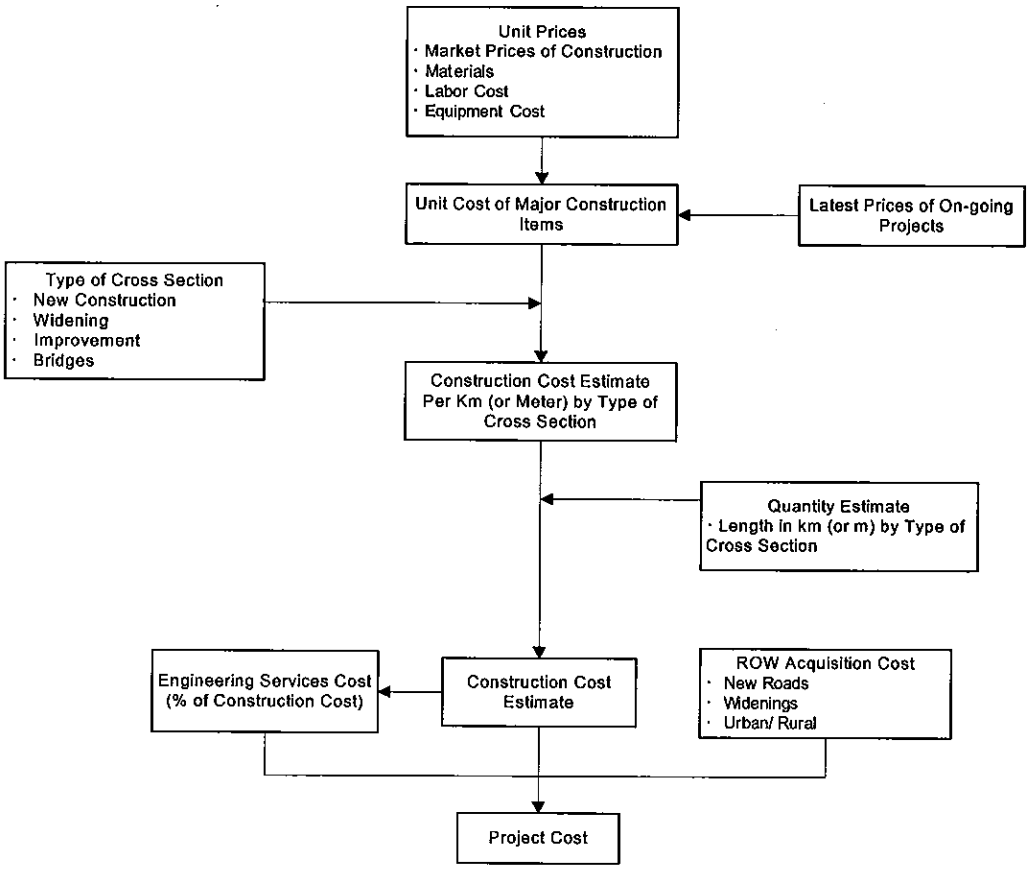


FIGURE 10.7-4 PROCEDURE OF PROJECT COST ESTIMATE

3) Unit Cost

Unit cost of construction Items is shown in Table 10.7-2.

TABLE 10.7-2 UNIT COST OF CONSTRUCTION

DESCRIPTION	UNIT	UNIT COST	FOREIGN COMPONENT	%	LOCAL COMPONENT	%	TAXES	%
EARTHWORK								
Clearing and Grubbing	P/ha.	51,000.00	29,019.00	57	13,719.00	27	8282.00	16
Removal of Existing Asphalt Pavement	P/m²	35.00	9.49	27	19.57	56	5.95	17
Removal of Existing Concrete Pavement	P/m²	120.00	32.52	27	67.08	56	20.40	17
Removal of Existing Pipe Culverts & Other Drainage Str.	P/m	1,320.00	726.00	55	237.60	18	356.40	27
Unsuitable Excavation	P/m³	165.00	97.52	59	28.55	17	38.94	24
Surplus Common Excavation	P/m³	165.00	99.50	60	40.26	24	25.25	15
Structure Excavation	P/m³	310.00	178.25	58	83.70	27	48.05	16
Bridge Excavation (AWL)	P/m³	200.00	105.60	53	62.80	31	31.60	16
Bridge Excavation (BWL)	P/m³	750.00	382.50	51	252.00	34	115.50	15
Foundation Fill (Granular Materials)	P/m³	780.00	268.76	34	387.68	50	125.58	16
Pipe Culverts and Drain Excavation	P/m³	280.00	160.44	57	76.44	27	43.12	15
Embankment from Roadway Excavation	P/m³	200.00	116.00	58	52.60	26	31.40	16
Embankment from Borrow	P/m³	460.00	257.60	56	135.70	30	66.70	15
Selected Borrow for Topping	P/m³	500.00	120.00	24	295.00	59	85.00	17
Subgrade Preparation (Common Material)	P/m²	17.00	9.76	57	4.51	27	2.74	16
Breaking of Existing Concrete Pavement	P/m²	75.00	20.33	27	41.93	56	12.75	17
SUBBASE AND BASE COURSE								
Aggregate Subbase Course	P/m³	660.00	355.08	54	209.88	32	95.04	14
Aggregate Base Course	P/m³	700.00	369.60	53	232.40	33	98.00	14
Crushed Aggregate Base Course	P/m³	750.00	405.75	54	236.25	32	108.00	14
Portland Cement Stabilized Road Mix Base Course	P/m³	940.00	578.10	62	221.84	24	140.06	15
Asphalt Stabilized Road Mix Base Course	P/m³	1,320.00	840.84	64	248.16	19	231.00	18
SURFACE COURSE								
Bituminous Prime Coat (MC-70 Cut-Back Asphalt)	P/t	25,000.00	16,175.00	65	4,350.00	17	4475.00	18
Bituminous Tack Coat (Emulsified Asphalt Grade SS-1)	P/t	25,000.00	16,150.00	65	4,375.00	18	4475.00	18
Bituminous Concrete Surface Course, Hot Laid	P/t	3,500.00	2,229.50	64	644.00	18	626.50	18
Portland Cement Concrete Pavement								
Thickness=0.10m	P/m²	450.00	280.80	62	101.70	23	67.50	15
Thickness=0.18m	P/m²	620.00	388.88	62	140.12	23	93.00	15
Thickness=0.23m	P/m²	770.00	480.48	62	174.02	23	115.50	15
Thickness=0.25m	P/m²	820.00	511.68	62	185.32	23	123.00	15
BRIDGE CONSTRUCTION								
Precast Concrete Piles, Furnished and Driven (0.4m x 0.4m)	P/m	3,200.00	1,568.00	49	1,184.00	37	448.00	14
Cast-in Place Concrete Bored Piles								
φ1000	P/m	16,500.00	6,270.00	38	7,425.00	45	2805.00	17
φ1500	P/m	30,000.00	11,400.00	38	13,500.00	45	5100.00	17
Railings	P/m	2,500.00	800.00	32	1,375.00	55	325.00	13
Reinforcing Steel, Grade 60	P/kg	35.00	17.50	50	12.95	37	4.55	13
Reinforcing Steel, Grade 40	P/kg	33.00	16.50	50	12.21	37	4.29	13
Structural Concrete Class "A" (for Heavily Reinforced)	P/m³	5,200.00	1,768.00	34	2,600.00	50	832.00	16
Structural Concrete Class "A" (for Substructure)	P/m³	3,500.00	1,190.00	34	1,750.00	50	560.00	16
Structural Concrete Class "B" (for Plain or Lightly reinforced)	P/m³	4,500.00	1,530.00	34	2,250.00	50	720.00	16
Structural Concrete Class "C" (for thin member)	P/m³	4,300.00	1,462.00	34	2,150.00	50	688.00	16
Structural Concrete Class "P" (for Prestressed Concrete)	P/m³	5,800.00	2,030.00	35	2,842.00	49	928.00	16
Lean Concrete	P/m³	2,750.00	1,182.50	43	1,017.50	37	550.00	20
Prestressed Structural Concrete Members								
AASHTO Type IV Prestressed I-Girder, 25-meter span	P/ea.	400,000.00	284,000.00	71	68,000.00	17	48000.00	12
AASHTO Type IV-A Prestressed I-Girder, 30-meter span	P/ea.	550,000.00	390,500.00	71	93,500.00	17	66000.00	12
AASHTO Type IV-A Prestressed I-Girder, 35-meter span	P/ea.	780,000.00	553,800.00	71	132,600.00	17	93600.00	12
AASHTO Type IV-A Prestressed I-Girder, 40-meter span	P/ea.	1,050,000.00	745,500.00	71	178,500.00	17	126000.00	12
Elastomeric Bearing Pads								
400 x 300 x 50	P/ea.	15,000.00	3,150.00	21	9,600.00	64	2250.00	15
600 x 310 x 50	P/ea.	23,000.00	4,830.00	21	14,720.00	64	3450.00	15
DRAINAGE AND SLOPE PROTECTION STRUCTURES								
Reinforced Concrete Pipe Culvert, 610mmφ (Extra. Str.)	P/m	2,030.00	1,142.89	56	574.49	28	312.62	15
Reinforced Concrete Pipe Culvert, 910mmφ (Extra. Str.)	P/m	4,650.00	2,631.90	57	1,297.35	28	720.75	16
Reinforced Concrete Pipe Culvert, 1070mmφ (Extra. Str.)	P/m	6,660.00	3,796.20	57	1,838.16	28	1025.64	15
Reinforced Concrete Headwall, 1-610mmφ RCPC	P/ea.	7,800.00	2,184.00	28	4,446.00	57	1170.00	15
Reinforced Concrete Headwall, 1-910mmφ RCPC	P/ea.	19,300.00	5,404.00	28	11,001.00	57	2895.00	15
Reinforced Concrete Headwall, 1-1070mmφ RCPC	P/ea.	22,000.00	6,600.00	30	12,100.00	55	3300.00	15
Reinforced Concrete Box Culvert 1.5m x 1.5m	P/m	8,400.00	3,536.40	42	3,578.40	43	1285.20	15
Reinforced Concrete Box Culvert 1.0m x 1.5m	P/m	3,500.00	1,473.50	42	1,491.00	43	535.50	15
Reinforced Concrete Headwall, Box Culvert 1.5m x 1.5m	P/ea.	22,500.00	9,945.00	44	9,112.50	41	3442.50	15
Catch Basin for RCPC φ610	P/ea.	18,000.00	6,912.00	38	8,298.00	46	2790.00	16
Catch Basin for RCPC φ910	P/ea.	24,700.00	9,484.80	38	11,386.70	46	3828.50	16
Catch Basin for RCPC φ1,070	P/ea.	28,900.00	11,097.60	38	13,351.80	46	4450.60	15
Drop Inlet Manhole for RCPC φ610	P/ea.	9,200.00	2,852.00	31	4,968.00	54	1380.00	15
Drop Inlet Manhole for RCPC φ910	P/ea.	13,500.00	4,185.00	31	7,290.00	54	2025.00	15
Drop Inlet Manhole for RCPC φ1,070	P/ea.	15,200.00	4,712.00	31	8,208.00	54	2280.00	15
Grouted Riprap, Class "A"	P/m³	2,250.00	1,086.75	48	816.75	36	346.50	15
Stone Masonry	P/m³	2,360.00	1,300.36	55	700.92	30	358.72	15
Gabions	P/m³	3,508.43	1,791.79	51	1,178.16	34	536.48	15
MISCELLANEOUS STRUCTURES								
Concrete Curb (200*450)	P/m	640.00	371.84	58	174.72	27	93.44	15
Combination Concrete Curb and Gutter (675*364)	P/m	1,095.00	636.20	58	298.94	27	159.87	15
Metal Guardrail (Metal Beam)	P/m	7,800.00	4,531.80	58	2,129.40	27	1138.80	15
Guardrail End Pieces	P/ea.	7,700.00	4,473.70	58	2,102.10	27	1124.20	15
Concrete Post for Guardrail	P/ea.	1,400.00	813.40	58	382.20	27	204.40	15
Warning Signs	P/ea.	16,800.00	9,760.80	58	4,586.40	27	2452.80	15
Regulatory Signs	P/ea.	14,000.00	8,134.00	58	3,822.00	27	2044.00	15
Informatory Signs	P/ea.	15,400.00	8,947.40	58	4,204.20	27	2248.40	15
Reflectorized Thermoplastic Pavement Markings	P/m²	590.00	342.79	58	161.07	27	86.14	15
Sodding	P/m²	181.95	105.71	58	49.67	27	26.56	15
Trees (Furnishing and Transplanting)	P/ea.	800.00	464.80	58	218.40	27	116.80	15
Street Lighting Pole (Single lamp)	P/ea.	62,500.00	36,312.50	58	17,062.50	27	9125.00	15
Street Lighting Pole (Double lamp)	P/ea.	78,000.00	45,318.00	58	21,294.00	27	11388.00	15
Other Miscellaneous for 2-Lane	L.S.		1,452,500.00	58	682,500.00	27	365000.00	15
Other Miscellaneous for 4-Lane	L.S.		2,324,000.00	58	1,092,000.00	27	584000.00	15

4) Construction Cost per Km.

Construction cost per km for each type of cross section was estimated. (Refer to Appendix 10.7-1) and summarized as shown in Table 10.7-3.

TABLE 10.7-3 CONSTRUCTION COST PER KM

Type of Cross-Section	Cost per Km (Million Pesos)
Iloilo TYPE-1	65.2
Iloilo TYPE-2	28.5
Iloilo TYPE-2.1	16.1
Iloilo TYPE-2.2	15.2
Iloilo TYPE-4.1	10.4
Iloilo TYPE-4.2	8.4
Iloilo TYPE-4.3	21.6
Iloilo TYPE-4.4	5.6
Iloilo TYPE-4.5	7.5
Iloilo TYPE-4.6	13.1
Iloilo TYPE-4.8	17.4
Iloilo TYPE-5	8.8
Iloilo TYPE-6.1	21.6
Iloilo TYPE-6.2	26.2
Iloilo TYPE-6.3.1	19.8
Iloilo TYPE-6.3.2	14.5
Iloilo TYPE-6.4.1	19.5
Iloilo TYPE-6.4.2	14.2
Iloilo TYPE-7.1	38.2
Iloilo TYPE-7.2	21.3
Iloilo TYPE-8.1	18.3
Iloilo TYPE-8.2	20.4
Iloilo TYPE-8.3	20.7
Iloilo TYPE-9	28.7
Iloilo TYPE-10	16.0

5) Project Cost

Estimated civil work cost and the ROW acquisition cost were estimated for the identified road projects and shown in Table 10.7-4. (Estimated costs of other road network development alternatives are presented in Appendix 10.7-2).

Engineering services cost was estimated as follows:

- Detailed Design ---------- 4.0% of civil work cost
- Construction Supervision ---------- 8.0% of civil work cost

Project cost of selected future road network plan is summarized as follows:

Project Cost of Selected Future Road Network Plan

Civil Work Cost	----------	6,066.0
ROW Acquisition Cost	----------	321.9
Engineering Services Cost	----------	727.9
Detailed design	----------	(242.6)
Construction Supervision	----------	(485.3)
Total Project Cost	----------	7,115.8

TABLE 10.7-4 ROAD AND BRIDGE CONSTRUCTION COST FOR METRO ILOILO FUTURE ROAD NETWORK PLAN (ALTERNATIVE-2B)

Road No.	Road Name		Admi. Classi.	Civil Work: Road: Road Length (km)	Road: Target Road: Length (km)	Road: Target Road: Type of Cross-section	Road: Cost Per Km (Million Peso)	Road: Cost (Million Peso)	Road: Project Total Cost (Million Peso) FINANCIAL	Bridge: No.	Bridge: Target Bridge: No.	Bridge: Target Bridge: Widening (m)	Bridge: Target Bridge: New Construction 2-Lane (m)	Bridge: Target Bridge: New Construction 4-Lane (m)	Bridge: Cost (Million Peso): Widening	Bridge: Cost (Million Peso): New Construction 2-Lane	Bridge: Cost (Million Peso): New Construction 4-Lane	Bridge: Cost (Million Peso): Project Total Cost FINANCIAL	Civil Work Total: FOREIGN	Civil Work Total: LOCAL	Civil Work Total: TAX	Civil Work Total: FINANCIAL	Land: Additional ROW (m)	Land: Road Length (km): Urban	Land: Road Length (km): Rural	Land: Cost Per m2 (Peso): Urban	Land: Cost Per m2 (Peso): Rural	Land: Cost (Million Peso): Urban	Land: Cost (Million Peso): Rural	Land: Cost (Million Peso): Total	Total Cost
C-1	Circumferential Road No. 1		-	12.8	12.8	1	65.2	834.9	834.9	25.0	15.0			715.0			643.5	643.5	721.6	507.7	249.1	1,478.4	35.0	0.7	12.1	3500.0	100.0	85.8	42.4	128.1	1,606.5
C-2	Circumferential Road No. 2	Section - 1 (Oton-Jct. Iloilo-San Miguel Road)	NR	7.8	7.8	2.1	16.1	125.2	578.1	2.0								0.0	399.2	216.8	111.0	727.0	10.0	0.0	7.8		50.0	0.0	3.9	3.9	810.5
		Section - 2 (Jct. Iloilo-San Miguel Road-Sta. Barbara)	Prov.	7.8	7.8	2.1	16.1	125.2															10.0	0.0	7.8		50.0	0.0	3.9	3.9	
		Section - 3 (New Construction Sect.)	-	11.5	11.5	2	28.5	327.7		10.0	10.0		330.8			148.9		148.9					30.0	1.0	10.5	2000.0	50.0	60.0	15.8	75.8	
C-3	Circumferential Road No. 3	Section - 1 (Jct. Iloilo-San Miguel-Jct. Sta. Barbara-New Lucena Road)	Prov.	2.9	2.9	2.1	16.1	46.5	541.2	2.0	1.0	24.0			8.4			8.4	357.5	184.6	95.3	637.4	10.0	0.0	7.9		35.0	0.0	1.0	1.0	653.7
			-	10.6	10.6	2	28.5	302.1															30.0	0.0	10.6		35.0	0.0	11.1	11.1	
		Section - 2 (Jct. Sta.Barbara-New Lucena Road-Iloilo Coastal Road)	Prov.	12.0	12.0	2.1	16.1	192.6		4.0	4.0		195.0			87.8		87.8					10.0	0.0	12.0		35.0	0.0	4.2	4.2	
C-4	Circumferential Road No. 4	Tigbauan - Bangcal Road	NR	15.9	9.9	2.2	15.2	150.6	771.4	10.0	3.0	9.2	19.0		3.2	8.6		11.8	473.3	200.7	109.2	783.2	10.0	0.0	15.9		5.0	0.0	0.8	0.8	791.4
		Bangcal-Cabatuan Road	NR	17.3	12.1	2.2	15.2	184.1															10.0	0.0	17.3		5.0	0.0	0.9	0.9	
		Cabatuan-New Lucena Road	NR	14.9	12.0	2.2	15.2	182.6															10.0	0.0	14.9		5.0	0.0	0.7	0.7	
		New Lucena-Dumangas Road	NR	16.7	16.7	2.2	15.2	254.1															10.0	0.0	16.7		35.0	0.0	5.8	5.8	
R-1	Iloilo-Antique Road	Iloilo-Oton Section	NR	4.1	4.1	4.3	21.6	88.4	163.1	4.0	1.0		29.5			13.3		13.3	101.4	49.4	25.7	176.4									176.4
				4.1	4.1	4.6	13.1	53.8																							
				2.0	2.0	4.1	10.4	20.9																							
		Oton-Tigbauan Section	NR	12.0																											
R-2	Iloilo-San Miguel Road	Molo-Manduriao Section	NR	1.9					106.9	2.0	1.0		87.5			39.4		39.4	81.7	42.5	22.0	146.3									146.3
		Manduriao-San Miguel Section	NR	12.1	12.1	5	8.8	106.9																							
R-3	Iloilo-Sta.Barbara-Kalibo Road	City Proper-Jaro Section	NR	3.0	3.0	6.1	21.6	64.8	374.1	10.0	2.0		193.4			87.0		87.0	251.2	139.0	71.0	461.1									461.1
		Jaro-City Bdry. Section	NR	3.9	3.9	6.1	21.6	84.3																							
		Pavia Section	NR	5.5	5.5	6.2	26.2	144.2																							
		Sta. Barbara Section	NR	1.8	1.8	6.3.1	19.8	35.6																							
				1.0	1.0	6.3.2	14.5	14.5																							
		Sta. Barbara Bypass Section	NR	1.5	1.5	6.4.1	19.5	29.3																							
				0.1	0.1	6.4.2	14.2	1.4																							
		- Cabatuan Section	NR	9.5																											
		- Janiuay Section	NR	14.9																											
R-4	Iloilo-Roxas Road	Jct. Iloilo-Sta. Barbara Road-Jaro Bridge Section	NR	1.2					318.0	4.0	1.0		20.0			9.0		9.0	188.1	91.6	47.3	327.0									327.0
		Jaro Bridge-Jct. Jaro-Sta. Barbara Road Section	NR	1.4																											
		Jct. Jaro-Sta.Barbara Road-Leganes Proper Sect.	NR	5.7	5.7	7.1	38.2	218.0																							
		Leganes Proper-Zarraga Proper Section	NR	4.7	4.7	7.2	21.3	100.0																							
		Zarraga Proper-Jct. New Lucena-Dumangas Rd. Sect.	NR	7.5																											
R-5	Iloilo Coastal Road	Iloilo River Bridge-Jct. Int'l Port Access Road Section	NR	0.1	0.1	8.1	18.3	1.8	160.8	10.0								0.0	94.7	43.4	22.7	160.8									160.8
				3.9	2.3	8.2	20.4	47.0																							
		Jct. International Port Access Road-Study Area Bdry.Sect.	NR	7.8	5.4	8.3	20.7	112.0																							
				8.2																											
B-1	R-1 Bypass Road		-	8.8	8.8	9	28.7	246.6	246.6	10.0	10.0		170.0			76.5		76.5	172.6	100.3	50.3	323.1	30.0	0.4	8.2	2000.0	100.0	24.0	24.6	48.6	371.7
B-2	R-4 Bypass Road		-	11.5	11.5	9	28.7	329.8	329.8	12.0	12.0		310.0			139.5		139.5	244.9	149.8	74.7	469.3	30.0	0.3	11.2	2000.0	50.0	18.0	16.8	34.8	504.1
B-3	Cabatuan Bypass Road		-	2.1	2.1	9	28.7	60.2	60.2									0.0	35.1	16.6	8.5	60.2	30.0	0.0	2.1		35.0	0.0	2.2	2.2	62.4
S-1	Oton-Bangcal Road		NR	12.0	12.0	2.1	16.1	192.6	192.6									0.0	116.9	48.9	26.8	192.6									192.6
S-2	Jaro-Sta.Barbara Road	Iloilo City Section	PR	2.9					123.2									0.0	74.0	32.1	17.1	123.2									123.2
		Pavia Section	PR	4.1	4.1	10	16.0	65.6																							
		Sta. Barbara Section	PR	3.6	3.6	10	16.0	57.6																							
Total				293.0	215.3	-	-	-	4,901.0	95.0	60.0	33.2	1,355.2	715.0	11.6	609.8	643.5	1,265.0	3,312.1	1,823.2	930.7	6,066.0	-	2.4	150.0	-	-	187.8	134.1	321.9	6,387.9

Note: Unit price of bridge construction

2-Lane new bridge = 450,000 P/m

4-Lane new bridge = 900,000 P/m

Widening of 2-Lane bridge = 150,000 P/m

10.8 IEE OF ROAD PROJECTS

1) Project Screening

The Project Screening Table for the Metro Iloilo Study Area indicates the type of environmental study that the proposed development/rehabilitation of the road sections would require in order to merit the issuance of an Environmental Compliance Certificate. (ECC). For projects that will not entail any significant adverse impacts to the environment, a Certificate of Non-Coverage (CNC) is recommended. The criteria used for assessing the type of EIA report to be prepared are based on the documents of Memorandum of Agreement between DPWH and DENR, and the Initial Environmental Examination (IEE) Checklist Guide to Proponents.

A summary of the results of project screening undertaken for Metro Bacolod Area is shown in Table 10.8-1.

TABLE 10.8-1 SUMMARY RESULT OF PROJECT SCREENING FOR THE METRO ILOILO AREA

Road No.	Road Name	No. of PAH-1	Type of EIA Study
Improvement of Existing Roads			
C-2 Circumferential Road No. 2		52	
	Section 1: Oton-Jct. Iloilo-San Miguel Road	13	IEE Checklist
	Section 2: Jct. Iloilo-San Miguel Road-Sta. Barbara	39	IEE Checklist
C-3 Circumferential Road No. 3		368	
	Section 1: Jct. Iloilo-San Miguel Road-Sta. Barbara-New Lucena Road	35	EIS Regional
	Section 2: Jct. Sta. Barbara-New Lucena Road-Iloilo Coastal Road	278	IEE Regional
R-2 Iloilo-San Miguel Road		101	
	Manduriao-San Miguel Section	101	IEE
R-3 Iloilo-Sta. Barbara-Kalibo Road		272	
	Jaro City Bdry. Section	182	IEE
	Pavia Section	42	IEE
	Sta. Barbara Section	16	IEE
	Sta. Barbara Bypass Section	32	IEE
R-4 Iloilo-Roxas Road		27	
	Jct. Jaro-Sta. Barbara Road-Leganes Proper	23	IEE Checklist
	Leganes Proper-Zarraga Proper	4	IEE Checklist
R-5 Iloilo Coastal Road		99	
	Iloilo River Bridge-Jct. Int'l Port Access Road	99	IEE Checklist
S-2-Jaro-Sta. Barbara Road		163	
	Iloilo City Section	85	IEE
	Pavia Section	62	IEE
	Sta. Barbara Section	16	IEE

Proposed New Construction			
C-1	Circumferential Road No. 1	103	EIS Regional
C-2	Section 3-New Construction Section	35	EIS Regional
C-3	Sta. Barbara-New Lucena Road	45	EIS Regional
B-1	R-1 Bypass Road	31	EIS Regional
B-2	R-4 Bypass Road	48	EIS Regional
B-3	Cabatuan Bypass Road	20	EIS Regional

Note: PAH : Project Affected Houses

2) Type of EIA Study

Type of Environmental Impact Assessment (EIA) are summarized in Table 10.8-2.

TABLE 10.8-2 TYPES OF ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

Environmental Study	Major Criteria
1) Certificate of Non-Coverage (CNC)	• The study area is outside ECA • No resettlement is required
2) IEE Checklist - Project Description and Checklist	• The study area is outside ECA. • New road construction - Road length is less than 10km • Improvement or Rehabilitation - ROW acquisition is required for more than 50% of the present ROW
3) IEE	• ECA values are less than 5 • Required resettlement population is less than 200 or 40 families.
4) Environmental Impact Statement	• ECA values are 5 and more • Required resettlement population is 200 or 40 families and more

Note: ECA: Environmentally Critical Area

Rating for Environmentally Sensitive/Critical Areas Values

National Parks / watersheds / sanctuaries	5
Aesthetic potential tourist spots	2
Endangered species	4
Unique historic / archeological / scientific areas	3
Indigenous culture communities	5
High Incidence of natural hazards	1
Critical slopes>40%	5
Prime agricultural land	3
Recharge areas for aquifer	2
Protected water bodies	2
Mangrove areas	4
Coral reefs	5