8.6 PHASING OF URBAN DEVELOPMENT AND MAJOR PROJECTS

8.6.1 URBAN DEVELOPMENT PHASES AND LOCATIONAL DEVELOPMENT GUIDELINES

There shall be three phases; Phase I (1993-1998). Phase II (1998-2005); and Phase III (2005-2010). Table 8.6.1 shows the location and development phases of proposed projects in this urban study. The symbol "1" in the Phase I column indicates that the project/program is recommended for implementation in the short-term. Nine key projects/programs are proposed for implementation in Metro Cebu, and five for other cities. More detailed information on these projects/programs are described in Section 1.8 of this study.

8.6.2 DEVELOPMENT ADMINISTRATION

This Master Plan will provide a macro development framework. This framework, includes key issues in the preparation and implementation of local development plans.

Urban growth is not limited in Metro Cebu areas, but also in the local urban centers of Toledo City, Danao City , Daanbantayan, Madridejos, Bogo, Carcar. For them, the first priority is the preparation of multi-municipal (Metro Area) spatial development plans. The preparation of more detailed Master Plan Study for Metro Cebu to cope with the future urbanization expansion is another priority. Metro Cebu Area will expand its economic influence over the central Cebu. The future Metro Cebu shall be the area from Argao to Carmen and Barili to Tuburan, including Mactan Island. Metro Cebu Master Plan Study would be desirable to include new administrative organization for area-wide planning.

However, interim measures are needed to provide technical support to local government units in multi-municipal (area-wide) planning. This would be managed by an area-wide administration. National government and local government unit do not have the technical capacity to do this type of master planning.

8.7 CONCEPTUAL MAPS OF URBAN LAND USE IN MAJOR CITIES

8.7.1 METRO CEBU AREA

Figures 8.7.1 and 8.7.2 illustrate the existing and proposed road network in Metro Cebu Area. Following these figures, Figure 8.7.3 shows the exsinting landuse in Metro Cebu Area. The conceptual diagrams of urban landuse plans in Metro Cebu, Toledo City, and Danao City are presented in Figures 8.7.4 to 8.7.6.

TABLE 8.6.1 Urban Development Project by Location and Phase

Location	Project No.	Proposed Project Title	Phase I (1993~98)	Phase II (1998~2005)	Phase III (2005~2010)
Metro Cebu Area	UD 01/12	Metro Cebu Roads Improvement and Land Development Project (Extension of MCDP)	m	m	m
	UD 02	Cebu South Reclamation Project	I		
	UD 03/13	Metro Cebu Drainage System Improvement Project	m	m	m
				(Phase I) (Cebu, Mandaue, Lapulapu)	(Phase II) (Compostela, Liloan, Consolacion, Talisay, Minglanilla, Naga)
	UD 04/15	Metro Cebu Solid Waste Treatment Project - Extension of MCDP	I		m
	UD 05	Metro Cebu Sewerage System Development Project	m	m	
	UD 06/16	Metro Cebu Public Housing Development Program	I	m	m
	UD 07	Urban Renewal Project in Ermita Area	m	m	
	UD 11	Metro Cebu Urban Development Study	I		
	UD 14	New Urban Center Development (Cebu South Reclamation Area)			m
Toledo, Balamban	UD 8/17	Toledo-Balamban Metro Area Urban Structure Development Project	I	m	m
Danao (Carmen)	UD 09	• Danao City Urban Structure Development Project	m	m	
	UD 18	• Danao-Carmen Metro Area Urban Development Project			m
Danao, Toledo, Carcar, Bantayan, Bogo, Santander, Dumanjug	UD 10	Local Economic Vitalization Project (Phase I)	I		
Tabuelan, Sogod, Daan-bantayan	UD 19	Local Economic Vitalization, Project (Phase II)			m

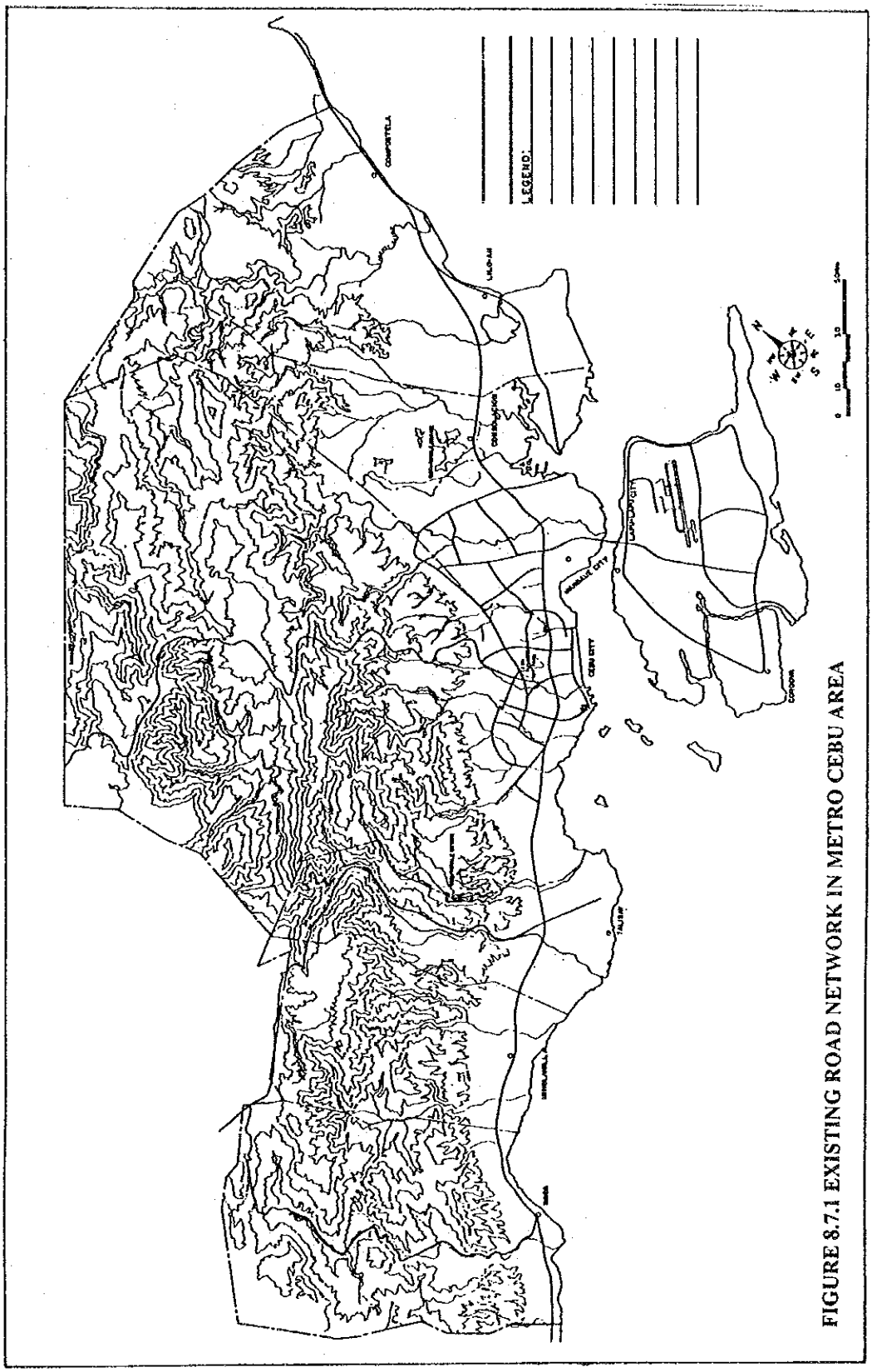


FIGURE 8.7.1 EXISTING ROAD NETWORK IN METRO CEBU AREA

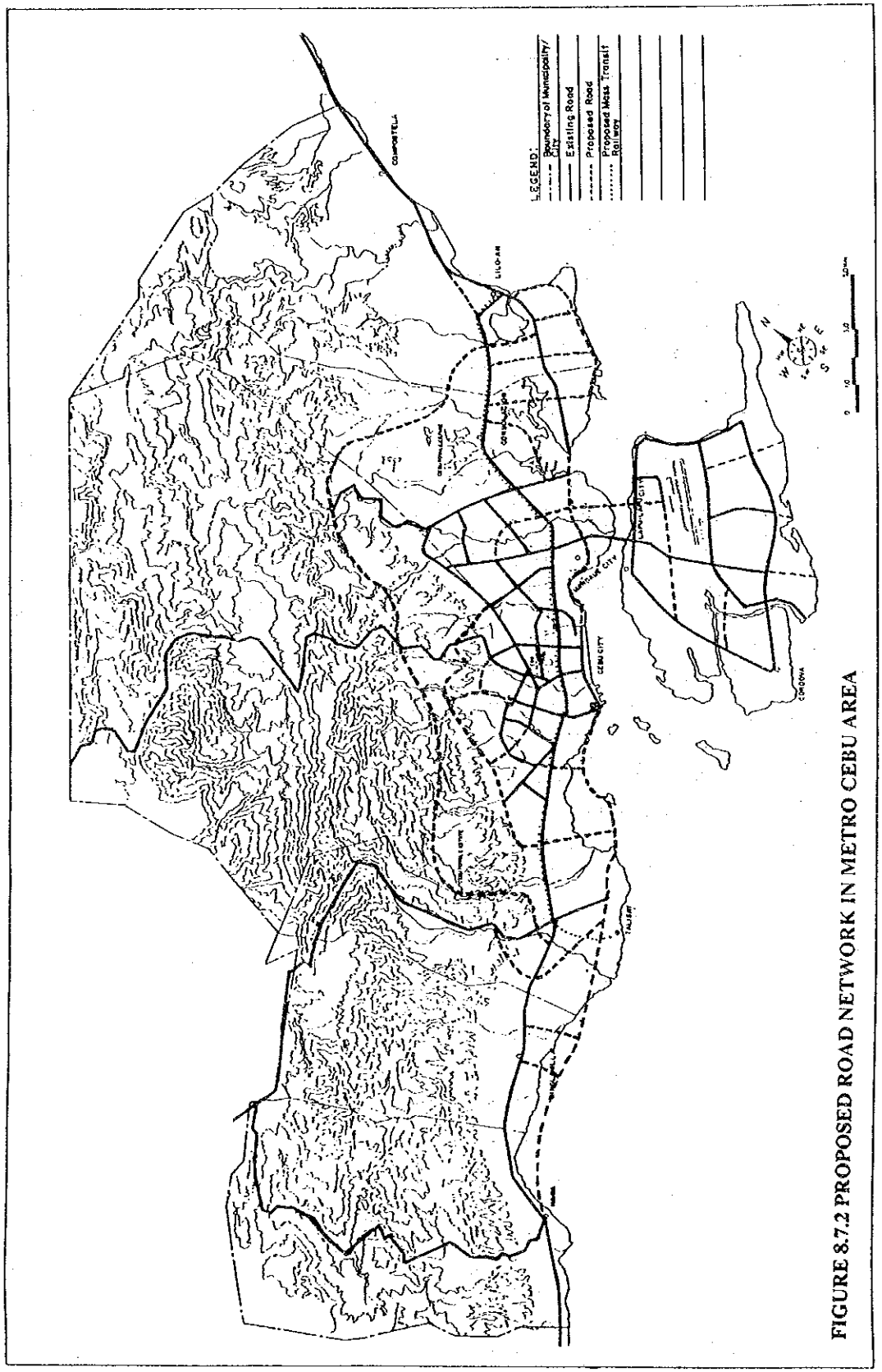


FIGURE 8.7.2 PROPOSED ROAD NETWORK IN METRO CEBU AREA

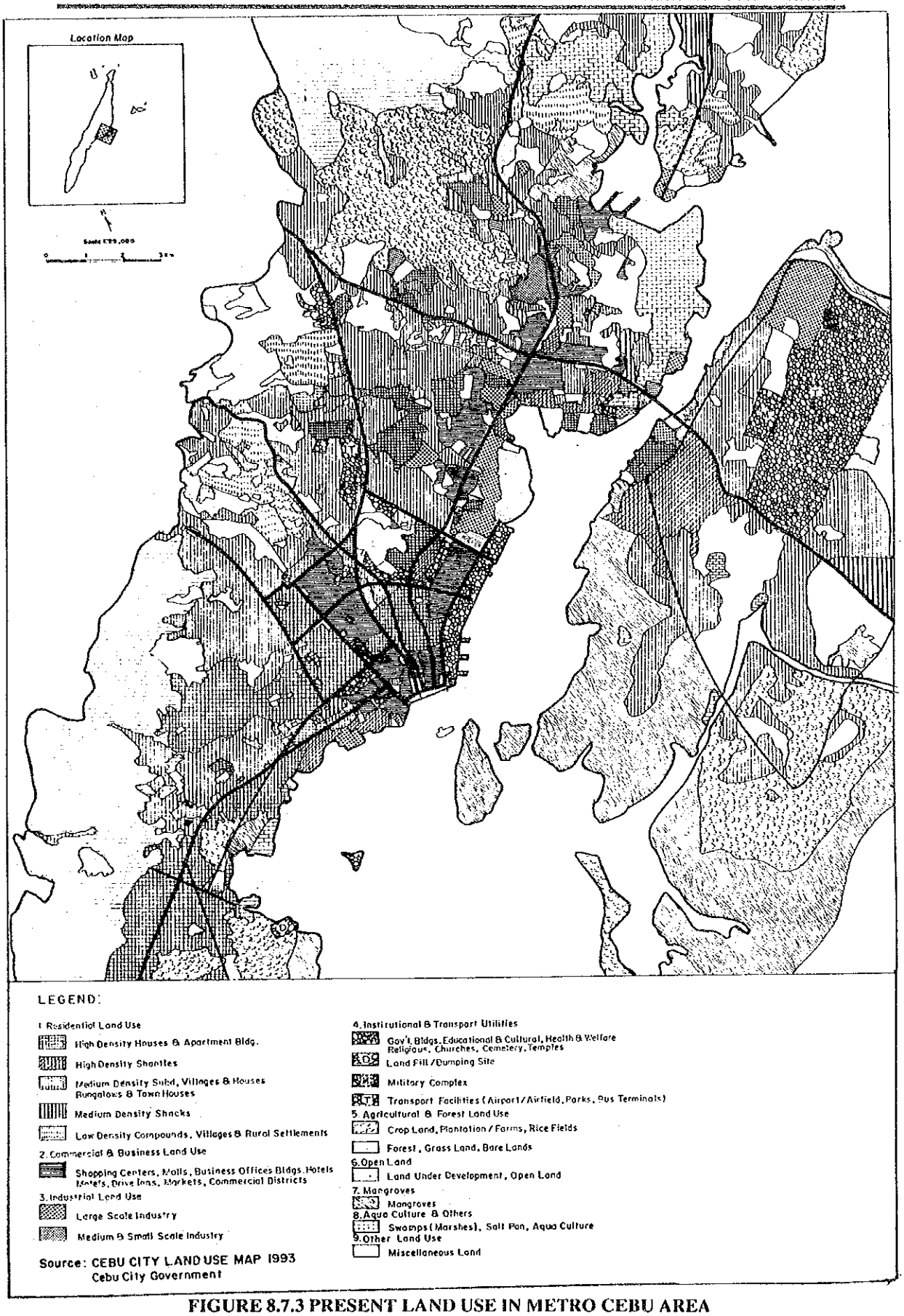


FIGURE 8.7.3 PRESENT LAND USE IN METRO CEBU AREA

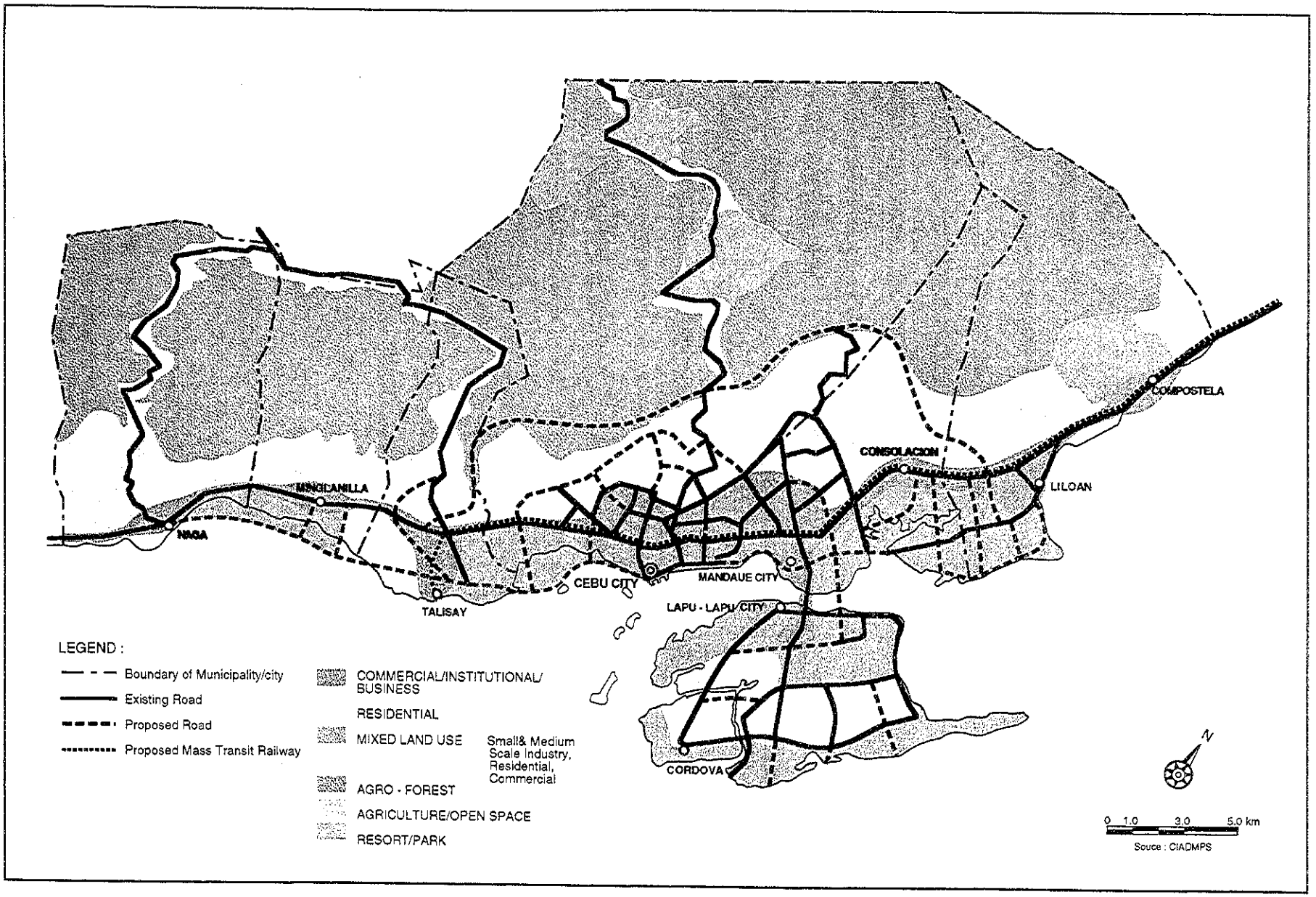


FIGURE 8.7.4 CONCEPTUAL MAP OF LAND USE PLAN IN METRO CEBU AREA

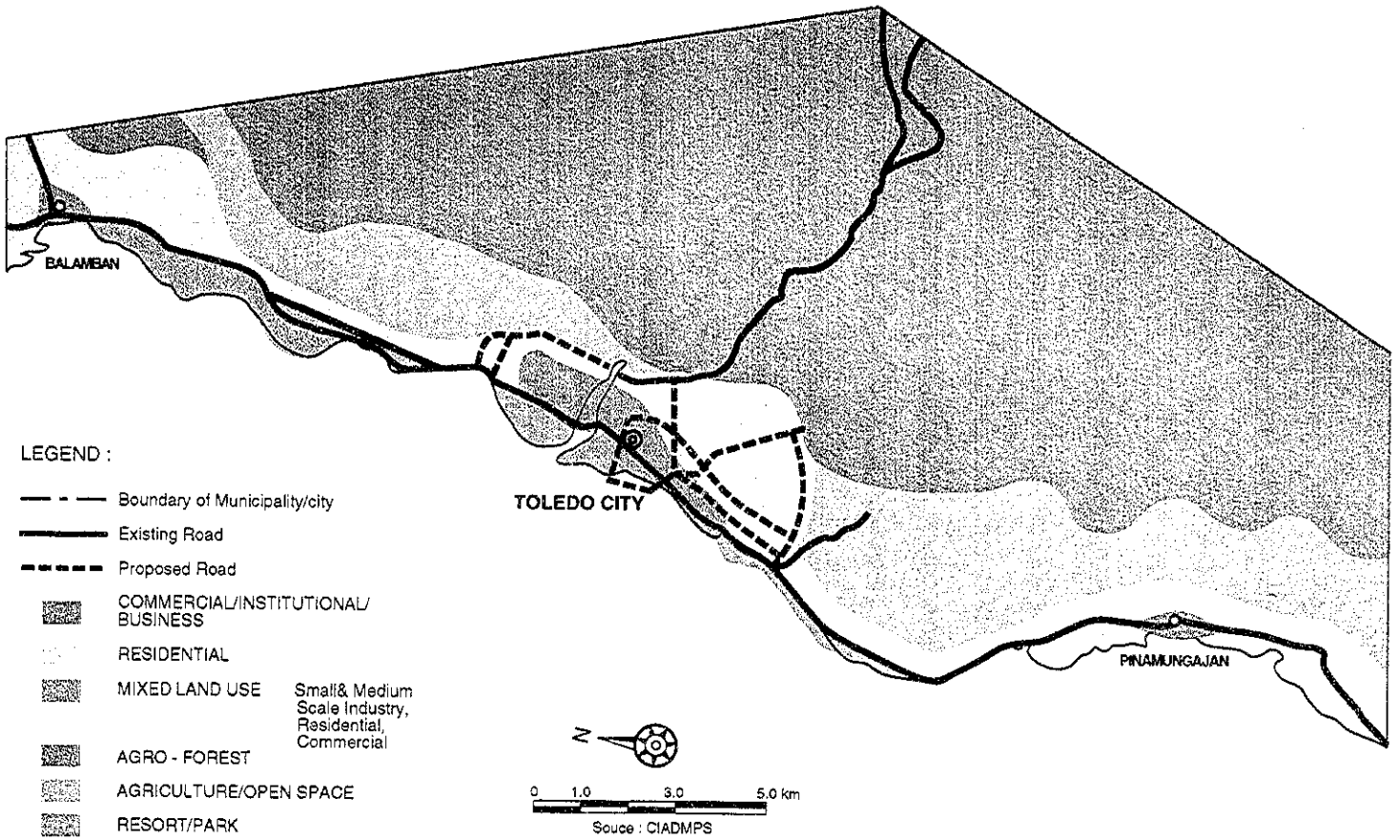
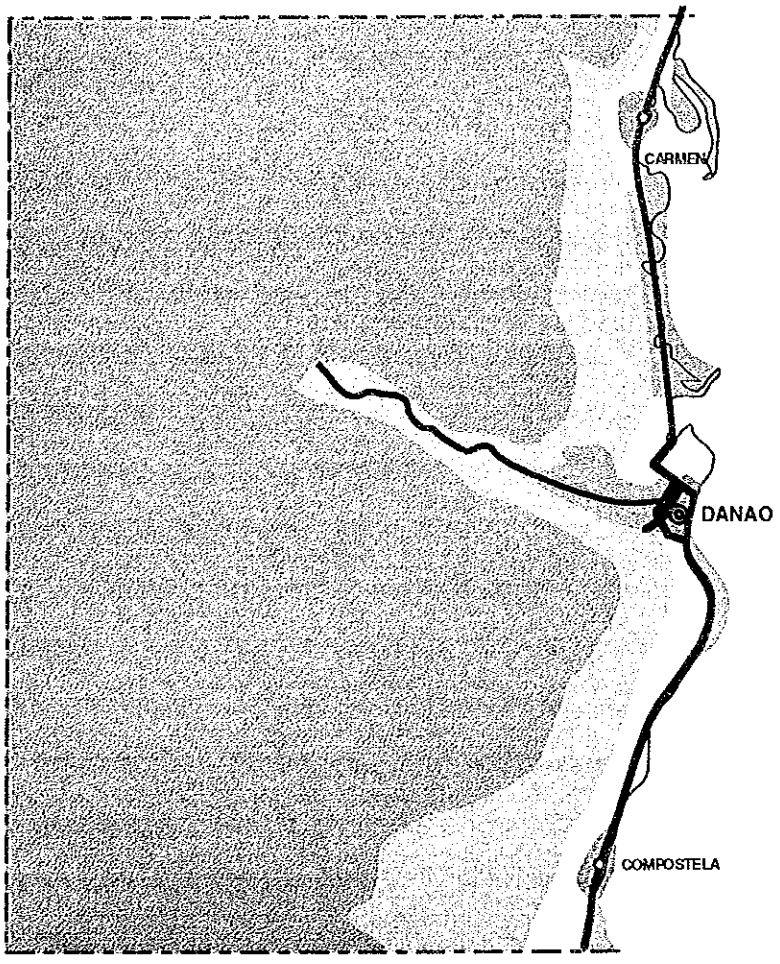


FIGURE 8.7.5 CONCEPTUAL MAP OF LAND USE PLAN IN TOLEDO CITY



LEGEND :

- Boundary of Municipality/city
- Existing Road
- COMMERCIAL/INSTITUTIONAL/ BUSINESS
- RESIDENTIAL
- MIXED LAND USE — Small& Medium Scale Industry, Residential, Commercial
- AGRO - FOREST
- AGRICULTURE/OPEN SPACE
- RESORT/PARK

N

0 1.0 3.0 5.0 km

Souce : CIADMPS

FIGURE 8.7.6 CONCEPTUAL MAP OF LAND USE PLAN IN DANAO CITY

8.8 MAJOR PROJECTS AND PROGRAMS IN THE STUDY AREA

1. Metro Cebu Roads Improvement and Land Development Project

• Objectives:	- To enhance the economic development potential - To promote infrastructure development for further urbanization - To generate employment opportunities
• Project Descriptions:	- South Coastal Expressway - Cebu South Reclamation - Mass Transit System - Second Mactan Bridge - Road and Drainage Development and Maintenance - Urban Renewal - Cebu Flood Control
• Expected Benefits:	- Improved socio-economic conditions - More job opportunities
• Major Recommended Locations:	Metro Cebu Area (Argao to Carmen in the east coast area and Barili to Tuburan in west coast)
• Project Phases:	Phase I - 1993 to 1998 Phase II - 1998 to 2005 Phase III - 2005 to 2010
• Cost:	15,000 ~ 20,000 Million Pesos/package. (excluding: South Coastal Expressway, Cebu South Reclamation, Mass Transit System and 2nd Mactan Bridge)
• nstitution Recommendation:	Expansion of Metro Cebu Development Office.
• Project Infomation:	Refer to Figure 8.8.1, Metro Cebu Road Map

2. Cebu South Reclamation Project

• Objectives:	- To enhance economic activities in the southern part of Metro Cebu - To agglomerate scattered small and medium scale industries in Metro Cebu - To improve socio-economic conditions in Metro Cebu Area - To increase tax revenue

• Project Descriptions:	- Land reclamation area: 330 hectares - New industrial estate and business/commercial center, etc. (See Figure 8.8.2)
• Expected Benefits:	- Expansion of City's scarce land resource - To encourage decentralization policy and internationalization - New urban sub-center - To strengthened local industrial technologies and their linkages
• Beneficiaries:	- Foreign and domestic industrialists - Unskilled laborers - Low and medium income families
• Major Recommended Locations:	Foreshore land of southern Cebu City up to Tanke, Talisay
• Project Phases:	Phase I - 1993 to 1998
• Cost Estimates:	2,600 Million Pesos
• Institution Recommendation:	Metro Cebu Development Project Office with DPWH and DTI.
• Project Infomation:	Refer to Figure 8.8.2, Project Site Map

3. Metro Cebu Public Housing Development Program

• Objectives:	- To improve the quality of life of urban poor families - To improve urban landscape and physical environment - To improve sanitary condition in the communities - To improve mixed land use conditions.
• Project Descriptions:	- Land development for public housing sites - Construction of 2,000 housing units - Institutional arrangements for low income housing financing - Provision of housing sites and utilities in designated areas - Warehouse for construction equipment and materials
• Expected Benefits:	- To reduce infant mortality and mobility rates - To improve sanitary condition in the communities - To reduce economically depressed areas

- Cost Estimates: 900 Million Pesos
- Institution Recommendation: Housing and Urban Development Coordinating Council in cooperation with MCDPO.
- Project Infomation: Refer to Figure 8.8.3.

4. Local Economies Vitalization Project (Phase I & II)

- Objectives:
  - To revitalize economic activities in major local urban centers
  - To improve living conditions of communities in the rural areas
- Project Descriptions:
  - Construction of food terminal
  - Construction of multi-purpose community center
  - Identification of public transportation terminal sites
- Expected Benefits:
  - Expansion of regional economic activities
  - Increase of farmer's income
  - Increase of job opportunities for unskilled laborers
- Major Recommended Locations:
  - Phase I: Danao, Toledo, Carcar, Bantayan, Bogo, Santander & Dumanjug.
  - Phase II: Tabuelan, Sogod, Daanbantayan
- Project Phases: Phase I - 1993 to 1998
Phase II - 1998 to 2005
- Cost Estimates: 50 Million Pesos per site
- Institution Recommendation: Cebu Provincial Government in association with DA, DTI, Philippine Tourism Authority.
- Project Infomation: Refer to Figure 8.8.4.

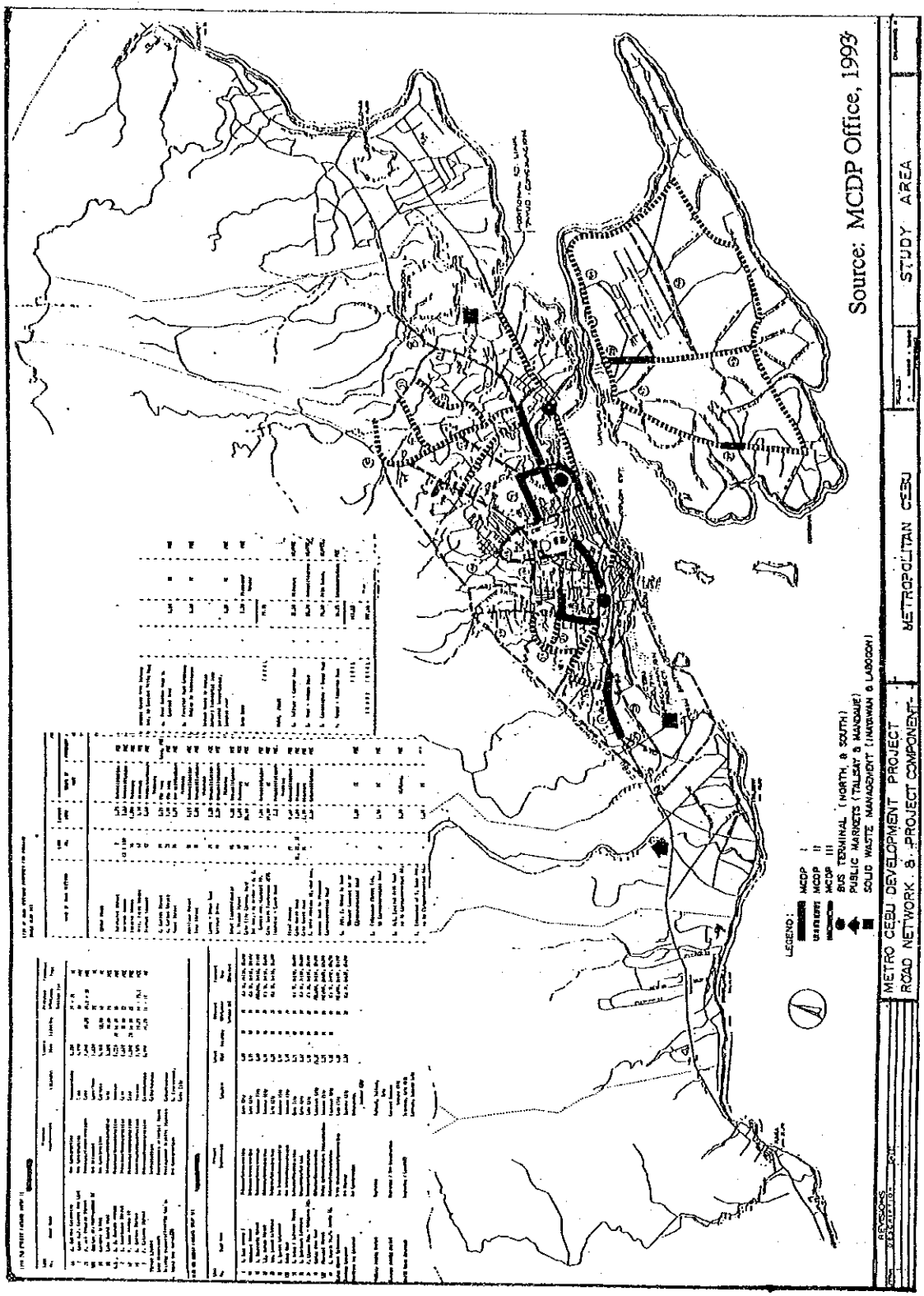
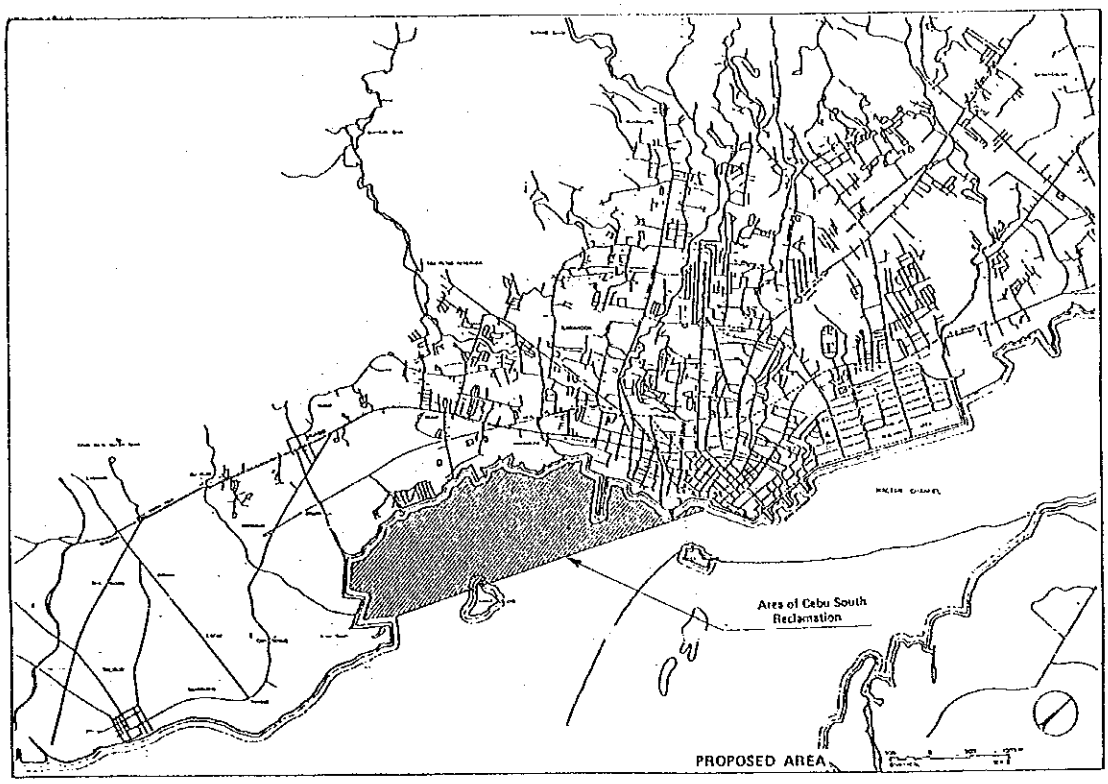
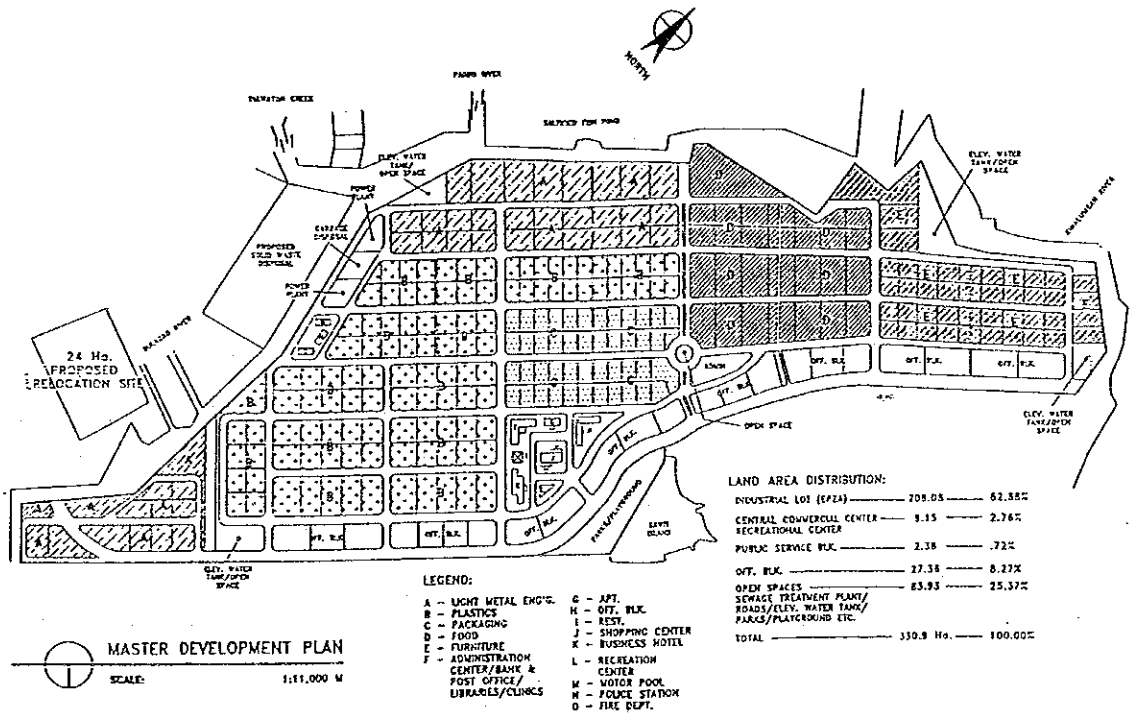


FIGURE 8.8.1 METRO CEBU DEVELOPMENT PROJECT: ROAD NETWORK AND PROJECT COMPONENT (MCDP)





Source: OECF, "Final Report on the Metro Cebu Development Project in the Republic of the Philippines," March 1989; MCDP Office, "Answers to the Questionnaire of the OECF Fact Finding Mission for the 19th Yen Loan Package," 8 December 1993

FIGURE 8.8.2 MASTER DEVELOPMENT PLAN OF CEBU SOUTH RECLAMATION

New Housing Requirements

		Urban Metro Cebu Area	
1)	HUDCC/UNCHS-Habitat Estimate: (5 year interval)	1998-2002	2003-2007
		46,100 (units)	53,300 (units)
2)	JICA Team Estimate: (10 year interval)	1990-2000	2000-2010
		99,800 (units)	136,900 (units)

Prospective areas for housing development sites in Metro Cebu Area
(Tentative)

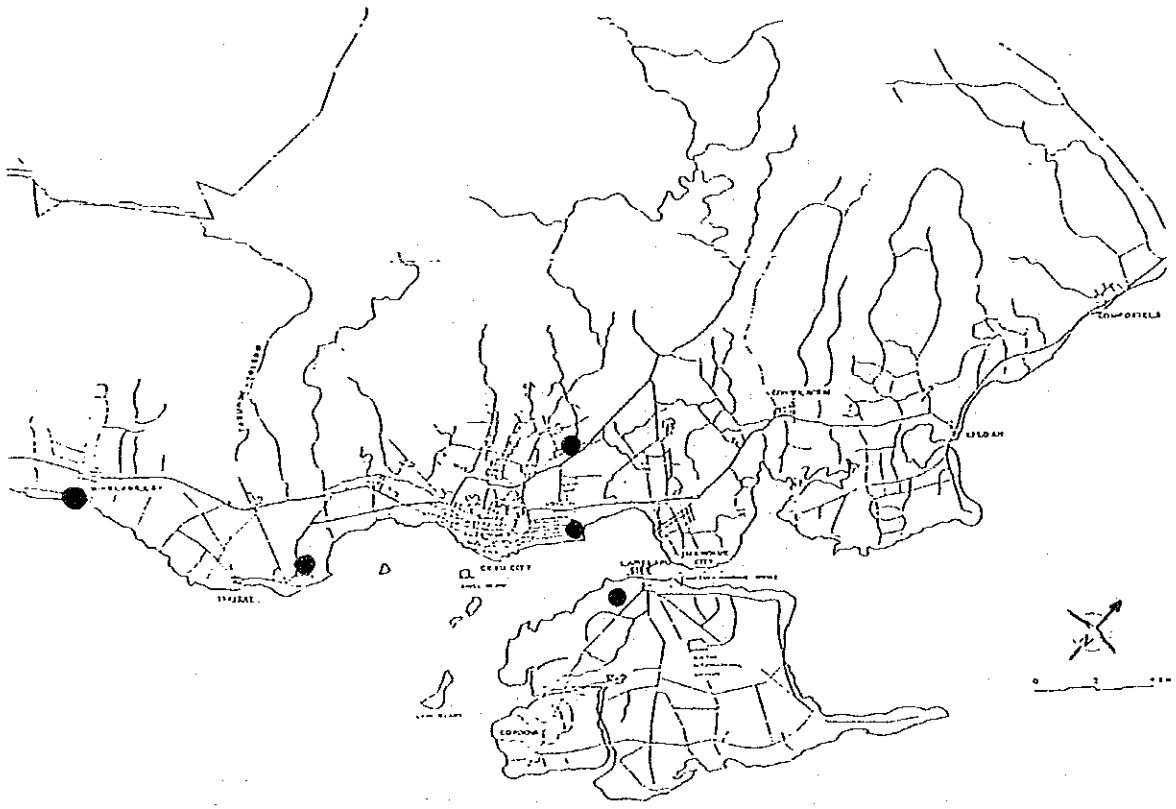
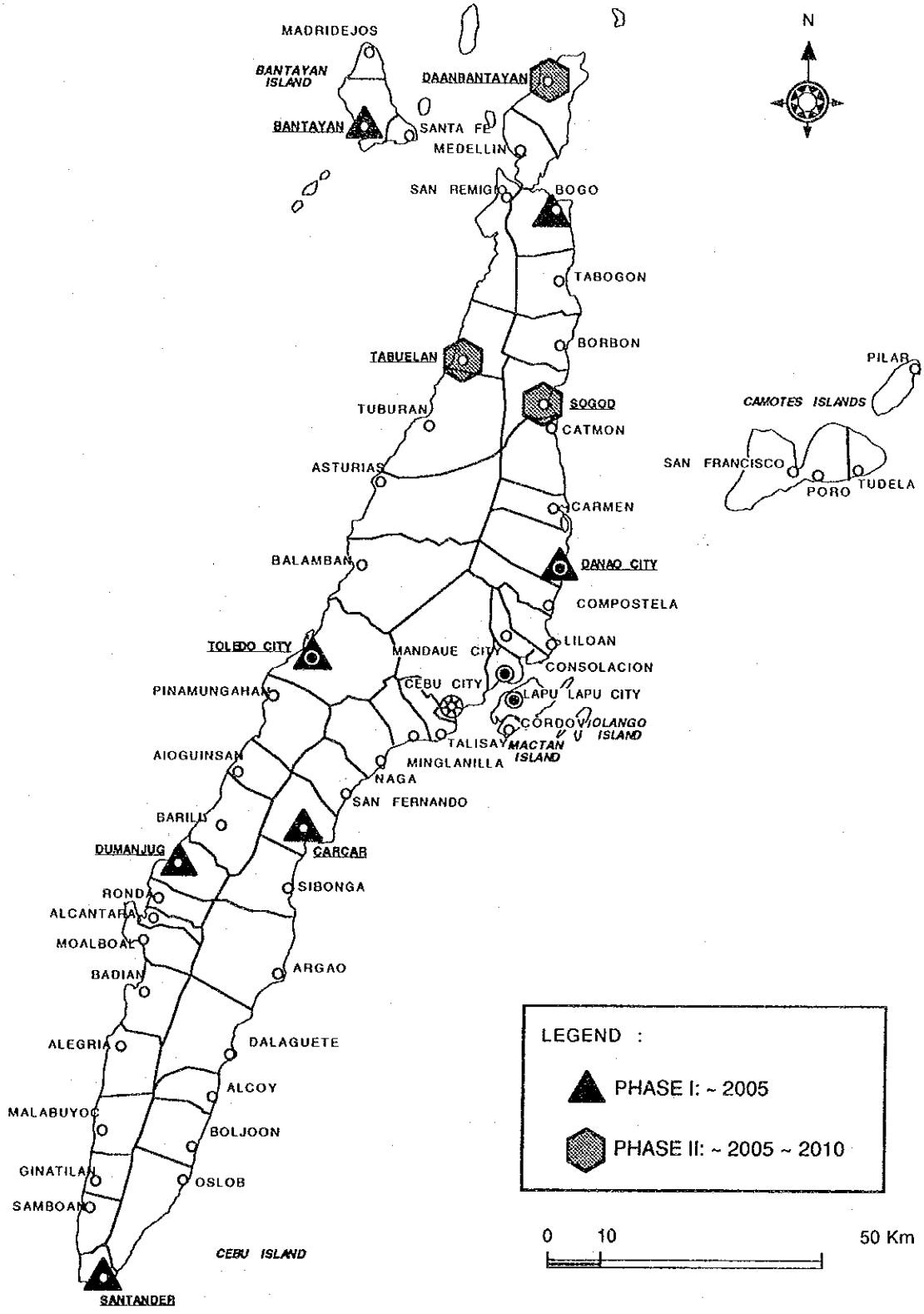


FIGURE 8.8.3 PROPOSED PUBLIC HOUSING DEVELOPMENT SITES IN METRO CEBU AREA



Source: The Study Team

FIGURE 8.8.4 LOCATION OF DESIGNATED URBAN CENTERS

8.9 RECOMMENDATIONS

The 1990 census population showed that the urban population accounted for 52.4% of the total population for Cebu Province. The average urban growth rate of 4.09% p.a. is nearly double the total population growth (2.34% p.a.). and 5.5 times the rural population growth (0.75% p.a) The urban population growth is concentrated in the Metro Cebu. Rapid and radical urbanization has been extended to Consolacion (20.4% p.a.) and Talisay (16.1% p.a.) Results of various projection studies by the study team indicate that land scarcity for urban land used would be serious in 2010. Metro Cebu would need an additional 2,545 hectares for residential land use and 5,091 hectares for Urban Land use by the year of 2010 compared to the 1988 existing land use condition. These numbers indicate that 81.6% of probable development capacity (suitable land capacity: 0-8% slope area) in Metro Cebu would be for urban development .

Therefore, the need for cities to cope with present and future urbanization pressures should be recognized. They should be provided with assistance from the national government. The following strategies are hereby recommended:

1. Comprehensive Urban Development Study

A comprehensive study on urbanization and urban development for the urbanized areas is required to avoid irresponsible land use practices. Private sector programs and projects should be planned and implemented within the framework of local government plans and national urban development policies.

2. Clustering of Municipalities for Planning

Comprehensive land use planning requires the re-definition of an effective planning unit. For Metro Cebu, the urbanized areas have been expanding their boundaries socio-economically and geographically. The present administrative machinery is not adequate to meet the requirements of an effective land use policy due to the limitations local government units. Clustering of cities and municipalities is recommended for effective planning decisions. Aggregation of cities and municipalities provides a more dynamic planning area than the single municipality.

3. Comprehensive Land Use Planning Office

The responsibility for urban development policy-formulation and financial assistance rest among various national government agencies for effective coordination. An integrated inter-agency committee to prepare a comprehensive development plant at the local level is needed. These agencies must be housed in a single building for better and efficient coordination in the preparation of a comprehensive land use plan.

4. Optimal Land Use

There are idle lands in Metro Cebu. LGUs should identify and recognize their importance in urban land use planning. These idle land should be protected from squatters. Idle lands in urbanized areas have to be used within the framework of comprehensive planning. Densification of the inner city area is also necessary to accommodate growing population.

5. Efficient Financial Management by LGUs

There is inadequate urban finance for infrastructure and social services. It is necessary to optimize taxing powers of LGUs such as real property tax, business tax, licenses, new planning tax, and utility taxes (road toll fee, bridge toll fee, etc.). National government should allow local governments to borrow local loans or float bonds for development expenditure. Participation of the private sector in B.T. or BOT projects is also appreciated. Gains from public lotteries issued by the local government can be another option for fund raising (Local Philippine Charity Sweeptakes Office (PCSO)). However the fundamental measure for raising project funds is to improve tax collection power by establishing an accurate tax map in Metro Cebu and in Cebu Province.

CHAPTER 9

TRANSPORTATION DEVELOPMENT

CHAPTER 9

TRANSPORTATION SECTOR DEVELOPMENT

9.1 INTRODUCTION

Considering its archipelagic nature and its strategic location in the country, the importance of transportation sector development cannot be stressed too much as the supportive means of social activities and economic development at present and in the future.

The Cebu economy is far from a self-sufficient structure and heavily dependent on those of Luzon and Mindanao as well as the neighboring islands, especially in terms of agricultural products.

Cebu can be said to be the only hub of Visayas. More precisely, Cebu Port and Mactan International Airport function as the gateways of the Visayas. At the same time, Cebu should be the hub of Visayas because of the said structure. In fact, various tertiary industries such as trade and transportation are accumulated in Cebu to compensate for poor agricultural sector. In other words, exchange of goods and people is the reason for Cebu's existence.

Sea transport takes a dominant role in terms of the magnitude of traffic volume, while air transport can meet small but valuable trafic demand with quick service. Hoever, any trip is unable to complete itself without road transport.

Therefore, the formation of intermodel transport system is a matter of great importance in Cebu. For that reason, this chapter analyzes road, sea and air transports individually as well as integrally.

9.2 TRANSPORTATION SECTOR PROFILE OF CENTRAL VISAYAS

9.2.1 CENTRAL VISAYAS IN NATIONAL TRANSPORT SYSTEM

The national transport system is a predominantly dual mode system, with road and sea basically complementing each other. On the other hand, air transport has established a relatively distinct market for long-distance inter-island travel and rail transport is limited to the Bicol-Manila corridor in Luzon.

The transportation system in the Philippines is composed of roads with a total length of 161,705 km, railways with 740 km, 429 ports (195 public and 234 private) and 162 airports/airstrips (84 national and 78 private). Roads and shipping are the major transportation modes. Roads share 65% and 90% of the total ton-km and passenger-km, respectively. Air and rail only share minimal percentages in passenger transport and hardly contribute to goods transport.

Inter-island traffic moves almost all by sea, while long- distance road freight traffic movements are only in Luzon. The main centers of production outside Luzon are located in the hinterland of a port and traffic normally drains to the nearest port of exit, minimizing high-cost road movement and maximizing sea movement. Thus, outside Luzon, population trend to be located in coastal areas with major concentrations in and around ports.

The regional transport policy of the Government has been devoted to the development of arterial roads to link major urban centers with each other and with their hinterlands. Efforts of improving Maharlika Highway (Philippine-Japan Friendship Highway), which forms the backbone of the country and links Luzon, Visayas and Mindanao via ferries and bridges, have been continuously undertaken. Expansion and improvement of feeder roads of Maharlika Highway are also underway.

Central Visayas, due to its locational advantages, is relatively well served by the national transport system, especially sea and air modes. For instance, Cebu Port is one of the largest hub of domestic trade and Mactan International Airport is the gateway of the Philippines next to Ninoy Aquino International Airport (NAIA) in Metro Manila. However, due to its archipelagic nature, traffic services within Central Visayas are not provided well.

9.2.2 CENTRAL VISAYAS TRANSPORT NETWORK

(1) Overview

The transport network in Central Visayas is largely based on a system of roads, seaports and airports which are linked with one another in an integrated manner. The network almost invariably follows the pattern of the coastline and with circumferential and cross-country roads that usually end up at a seaport or airport.

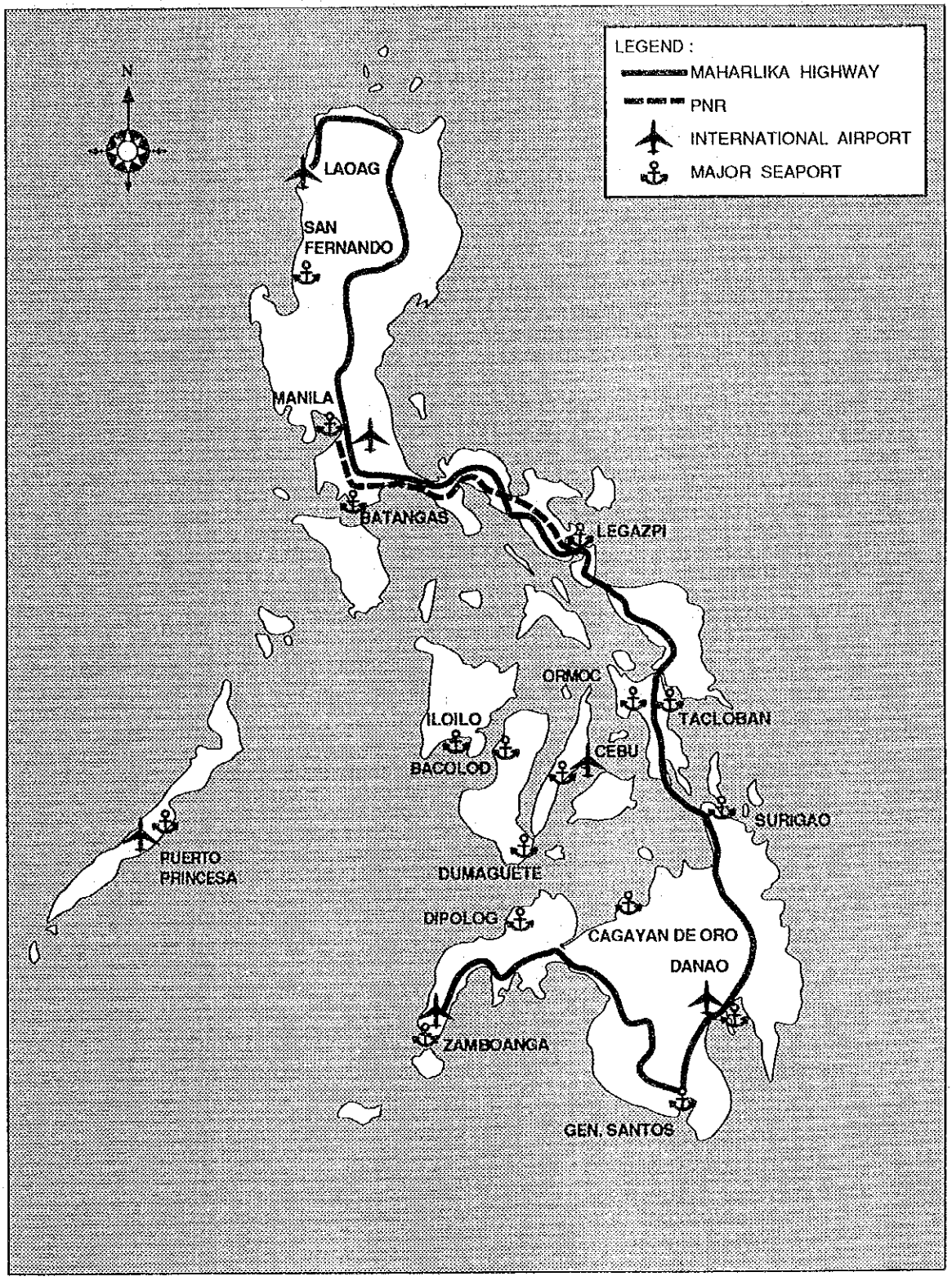


FIGURE 9.2.1 NATIONAL TRANSPORTATION SYSTEM

The road network in Central Visayas has a total length of 13,132 km in 1992. The small-island configuration of the region contributed much to the state and condition of the road network. Thus, the narrow and centrally mountainous shape of Negros Oriental and Cebu resulted in road system that is coastal and circumferential in nature, with a few secondary distribution roads going inland, and with a few transcentrals. On the other hand, the rounded shapes of Bohol and Siquijor have evolved an interior road system in addition to the circumferential/coastal roads.

Sea transport plays a very crucial role in the overall transport network of Central Visayas. Since the region is composed of several major islands and numerous other small islands, much of the movement of cargo and passengers is by sea. There are 95 existing ports in the region, broken down into 62 public and 33 private ports. 24% of the country's ports are located in Central Visayas. Because Cebu Port is the second busiest, almost all major inter-island operators in the country are based or have branches in Cebu. And all urban centers in the region have existing sea routes servicing them.

The Mactan International Airport (MIA) is the second busiest airport in the country. Aside from MIA, there are nine national airports including two trunkline airports in the provincial capital cities of Dumaguete and Tagbilaran. In line with the industrial and tourism development of Cebu, MIA has been incresaing its traffic volume substantially. But air network in the region is not well developed.

(2) Conceptual Network

The transport network which concentrates in Cebu comprises the strongest national artery to/from Manila, and various secondary links that connect major urban centers in Visayas and Mindanao by sea and air modes. Even though Cebu has the advantage of dual modes, vehicular traffic is not convenient due to the island's nature and insufficient Ro/Ro facilities.

The following links can be pointed out as regional transport network:

(a) Roads on Cebu Island

- Cebu North Road (Cebu - Hagnaya Wharf, 110.6 km, paved)
- Cebu South Road (Cebu - Santander, 141.1 km, paved)
- San Remegio - Toledo - Mantalongan (131.9 km, partially paved)
- Barili Southern Road (Barili - Santander, 86.6 km, partially paved)
- Toledo - Naga (38.0 km, paved)
- Carcar - Barili (24.5 km, paved)

(b) Inter-island sea routes (except the routes served by small boats such as motor bancas)

- Cebu - Dumaguete
- Cebu - Tagbilaran
- Cebu - Tubigon
- Cebu - Talibon
- Cebu - Jagna
- Cebu - Larena
- Cebu - Sta. Fe
- Tuburan - Danao in Escalante
- Toledo - San Carlos
- Sta. Fe - Hagnaya

(c) Air routes

- MIA - Dumaguete
- MIA - Tagbilaran

9.2.3 TRANSPORT ORGANIZATIONS AND ADMINISTRATION

(1) National Agencies

A multitude of agencies are engaged directly or indirectly in the provision of transport services in the Philippines as illustrated in Figure 9.2.2. Main functions of each agency are summarized in Table 9.2.1. They are categorized into those dealing with infrastructue construction and maintenance and others with policies governing transport operation.

The Department of Transportation and Communications (DOTC) is the primary government agency responsible mainly for planning and policy formulation related to road, rail, air and water transportation. DOTC started to implement its infrastructure projects in 1988. Agencies under DOTC are the Land Transportation Office (LTO) and the Land Transportation Franchising and Regulatory Board (LTFRB) for road transport, the Philippine Ports Authority (PPA) and the Maritime Industry Authority (MARINA) for seaborne transport, the Air Transportation Office (ATO) and the Civil Aeronautics Board (CAB) for air transport, and the Philippine National Railway (PNR) for rail transport. They carry out the planning, management and regulatory functions in respective areas.

The Department of Public Works and Highways (DPWH) is responsible for the planning, construction and maintenance of most kinds of infrastructure and practically all urban thoroughfares. DPWH is responsible for national roads while provincial, city/municipal and rural (barangay) roads are under the Department of Interior and Local Government (DLG).

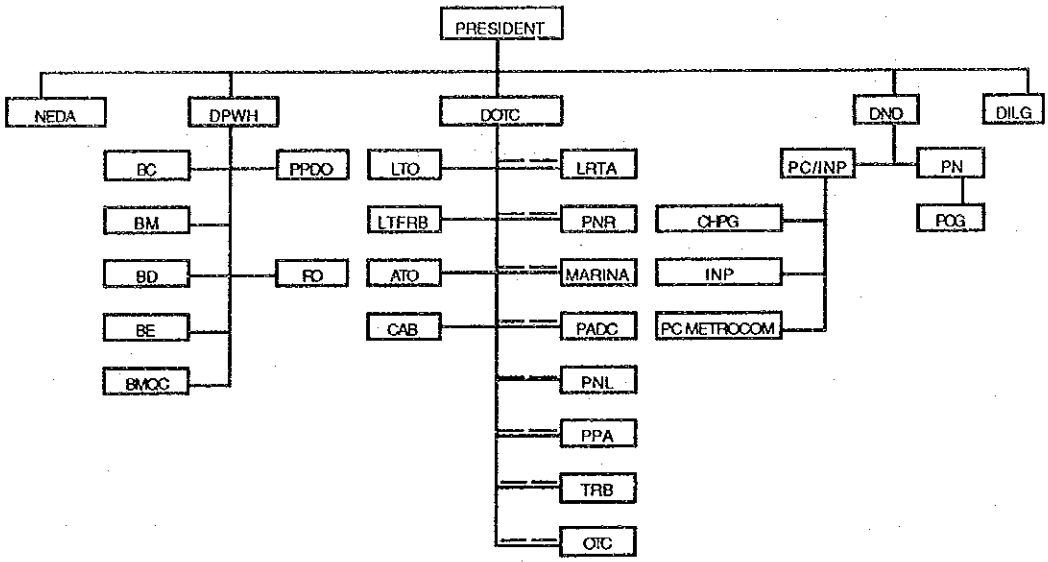
The National Economic and Development Authority (NEDA) is responsible for the formulation of development plans, annual and medium-term public investment programs, programming of official development assistance (ODA), and monitoring of project implementation. On the enforcement side, the Department of National Defence is responsible for enforcing traffic rules and regulations nationwide (i.e., through the Philippine Constabulary /Integrated National Police).

(2) Regional and Local Set-Up

At a regional level, the Regional Development Council (RDC) Region VII consisting of local government representatives with coordination of NEDA Region VII addresses the transport and other needs of their particular area and coordinates their plans with the national agencies concerned.

At a provincial level, the provincial government of Cebu takes care of the provincial roads of 982 km and two airstrips in Bantayan Island and Poro Island. The provincial roads complement national roads to formulate trunk road network in the province.

At a metropolitan level, the Metro Cebu Development Project Committee (MCDPC) consisting of three cities and seven municipalities was established in 1989 in order to enhance economic potential of Metro Cebu. As the executing agency, the Metro Cebu



LEGEND : ——— Direct Supervision
——— Attached Agency (Advisory Relationship)

NEDA	-	National Economic and Development Authority
DPWH	-	Department of Public Works and Highways
BC	-	Bureau of Construction
BM	-	Bureau of Maintenance
BD	-	Bureau of Design
BE	-	Bureau of Equipment
BMQC	-	Bureau of Materials and Quality Control
PPDO	-	Planning and Project Development Office
RO	-	Regional Office
DOTC	-	Department of Transportation and Communications
LTO	-	Land Transportation Office
LTFRB	-	Land Transportation Franchising and Regulatory Board
ATO	-	Air Transportation Office
CAB	-	Civil Aeronautics Board
LRTA	-	Light Rail Transit Authority
PNR	-	Philippine National Railways
MARINA	-	Maritime Industry Authority
PADC	-	Philippine Aerospace Corporation
PNL	-	Philippine National Lines
PPA	-	Philippine Ports Authority
TRB	-	Toll Regulatory Board
OTC	-	Office of the Transport Cooperatives
DND	-	Department of National Defense
PC/INP	-	Philippine Constabulary/Integrated National Police
CHPG	-	Constabulary Highway Patrol Group
INP	-	Integrated National Police
PC METROCOM	-	PC Metropolitan Command
PN	-	Philippine Navy
POG	-	Philippine Coast Guard
DILG	-	Department of Interior and Local Government

FIGURE 9.2.2 NATIONAL TRANSPORT ORGANIZATIONS AND ADMIONISTRATIONS

TABLE 9.2.1 FUNCTIONS OF RELEVANT TRANSPORT AGENCIES

Organization	Agency	Functions
DOTC	LTO	1) Inspects/registers motor vehicles. 2) Administration test, gives licenses and educates drivers and conductors. 3) Enforces traffic rules and regulations.
	LTFRB	1) Evaluates application for franchises. 2) Issues franchises to public transport operators/owners. 3) Monitors performances of these PU operators. 4) Establishes, prescribes and regulates routes, zones, and/or areas of operations for PU vehicle.
	ATO	1) Develops policies, standards, programs, rules and regulations governing air space utilization, air traffic, and the maintenance/operation of aircraft and components and airports operation services. 2) Develops policies, standards and criteria for the design, construction and maintenance of airports, seaports and heliports.
	CAB	1) Formulates policies governing civil air transport. 2) Regulates economic aspects of air transport. 3) Evaluates application for franchises from foreign carriers.
	PNR	Manages the operation of the railway network in Manila.
	LTRA	Manage the operation of the urban light rail system in Metro Manila. Also provides comprehensive policy guidance for the development, operation and promotion of an LRT system.
	MARINA	Provides for the effective supervision, regulations and rationalization management, ownership and operations of all water transport utilities and other maritime enterprises.
	PADC	Develops capabilities in the maintenance, repair/overhaul, and modification of aerospace and associated flight and ground equipment and components thereof in order to provide technical services to government agencies owning aerospace equipment.
	PNL	Undertakes all manner of business activity for the establishment of a reliable shipping services.
	TTC	Upgrades all manner of business activity for the establishment of a reliable shipping services.

TABLE 9.2.1 FUNCTIONS OF RELEVANT TRANSPORT AGENCIES (CONT'D)

Organization	Agency	Functions
DOTC	PPA	1) Supervises, controls, regulates, constructs, maintains, operates and provides such facilities or services as are necessary in the ports vested or belonging to the authority.
		2) Prescribes rules and regulations, procedures, and guidelines governing the establishment, construction, maintenance and operations of all other ports, including private ports in the country.
	TRB	Encourage private investments in public infrastructure programs by way of expectation of reasonable returns through collection of tolls from these facilities.
NEDA		Key agency for carrying out intermodal coordinating among ports, railways airports, highways and rural roads in terms of allocating resources for already prepared projects in all sectors.
DPWH	BC	Provide policies for the construction of all public infrastructures.
	BM	Provides policies and guidelines for the maintenance of all public infrastructures.
	BD	Provides guidelines for the design of all public infrastructures.
	PPDO	Responsible for formulating highway development plans.
	RO	Each regional office plans, regulates, implements and monitors the construction/improvement and maintenance of national infrastructures in their area of jurisdiction.
DND	PC/INP	Enforces existing and prescribed traffic rules/regulations.
	CHPG	Promotes safety on the highways and major thoroughfares and conducts operations against crimes committed on highways/thoroughfares.
	PCG	Enforces laws, rules and regulations governing the territorial waters of the Philippines.
DILG		Responsible for construction/improvement and maintenance of infrasructures on the local government level (i.e., provincial, city and municipal roads).

Development Project Office (MCDPO) is responsible for the overall planning and supervision of all projects under the name of MCDP.

The Mactan-Cebu International Airport Authority (MCIAA) was established under Republic Act 6958 in December 1990 in order to renovate airport facilities to international standards. Various facilities and hangar spaces were also constructed because of the transfer of the Lahug General Aviation Airport to the Mactan International Airport.

9.2.4 CURRENT GOVERNMENT PLANS AND POLICIES ON TRANSPORTATION DEVELOPMENT

(1) National Plan

According to the Middium Term Philippine Development Plan 1993-1998, transport sector aims at the following two goals and objectives:

- Provide for basic human mobility and strengthen interregional and urban-rural linkages through all-weather flow of agri-industrial commodities, and
- Ensure safe, efficient, economical and responsive transport services to meet dynamic market demands.

In pursuit of the said goals and objectives, the transport sector investment plan is prepared by the Government for the period 1993-1998 as shown in Table 9.2.2. The allocated amount of land transport subsector have the biggest share and substantially increase every year. The capital-intensive projects, however, concentrate in the National Capital Region.

Of the total government infrastructure investment program, 28.7% is for the transport sector. It is considered that almost the same share will be kept since the former investment plan for the period 1987-1992.

TABLE 9.2.2 TRANSPORT SECTOR INVESTMENT PROGRAM FOR 1993-1998
(in million pesos)

Subsector	1993	1994	1995	1996	1997	1998	Total
Land Transport	10,545	14,283	16,523	23,045	29,624	42,992	137,012
Water Transport	2,984	2,602	2,806	2,652	2,754	2,875	16,674
Air Transport	7,789	1,276	2,025	2,157	2,695	1,952	17,895
Rail Transport	2,469	2,177	3,923	3,346	3,911	2,182	18,014
Total	23,787	20,338	25,284	31,200	38,984	50,002	189,595

Source: Medium Term Philippine Development Plan 1993-1998

(2) Regional Plan

The Regional Development Plan from 1993 - 1998 is prepared by the Regional Deveopment Council (RDC) of Central Visayas. Prior to the proposed projects, the plan reveals the following concerns:

- Though access between growth points within the region is fairly well established, the condition of many road links is oftentimes poor. Unpaved and narrow roads put difficulties on vehicular traffic, especially during the rainy season. Furthermore, approach corridors to urban centers are clogged and congested regularly.

- While Cebu has an international port with modernized container- handling facilities, most of the smaller ports lack facilities which could ease passenger and cargo handling. Pier and wharf infrastructure need repair and improvement. The absence of adequate Ro/Ro facilities has also become significant. Other port facilities and water services should also be considered.

- In the provinces except Cebu, there is much to be done in terms of air transport capacity and convenience. Negros Oriental and Bohol have trunkline airports which cannot accomodate medium size jets due to short runways. Siquijor on the other hand, can be accessed by chartered flights using light aircraft.

The total investment cost of proposed projects for transport sector is estimated to be 13,891 million pesos under the current medium-term development plan as shown in Table 9.2.3.

TABLE 9.2.3 REGIONAL INVESTMENT PROGRAM FOR TRANSPORT SECTOR

(in million pesos)

Subsector	1994	1995	1996	1997	1998	Total
Land Transport	2,510	2,258	2,062	1,806	1,152	9,788
Water Transport	292	108	450	90	71	1,011
Air Transport	3,087	5	0	0	0	3,092
Total	5,889	2,371	2,512	1,896	1,223	13,891

Source: Central Visyas Regional Development Plan 1993-1998

Of all modes, land transport has the largest share because considerable construction volume of national roads (some 700 km) and urban roads (MCDP II and III) are planned every year.

As for sea and air transports, however, introduction of Vessel Traffic Service (VTS) near Cebu Port and rehabilitation of the Mactan International Airport are dominant projects in this period. Therefore, the proposed projects can not follow the above-mentioned concerns well due to financial constraints.

(3) Provincial Plan

The provincial government of Cebu is responsible for roads, ports and airports under the jurisdiction of the government. The Office of the Provincial Engineer which is in charge of transport infrastructure development prioritizes the following road projects:

(a) Concreting

		(length)	(amount)
1.	Samboan - Badian	43 km	258 M
2.	Lugo - Tabuelan	19 km	114 M
3.	Medellin - Daanbantayan - Maya	20 km	120 M
4.	Medellin - Daanbantayan	15 km	90 M
5.	Austrias - Tuburan	26 km	156 M
6.	Tuburan - Tabuelan	10 km	60 M
7.	Tabuelan - San Remegio	22 km	132 M
8.	Tabogon - Cayaan	14 km	84 M

(b) Rehabilitation

1.	San Fernando - Pinamungajan	28 km	28 M
2.	Papan Sibonga - Dumanjug	28 km	28 M

(c) Road opening

1.	Barili - Aloguinsan	15 km	672 M

The above priority projects cost the government 1,742 million pesos. According to the regular budget in 1993, the government disburses 99 million pesos for transport infrastructure, of which the priority projects account for 25%. Therefore, priority does not mean immediate implementation.

9.3 ROAD AND ROAD TRANSPORT ANALYSIS

9.3.1 EXISTING ROAD NETWORK

(1) Cebu Province

The road network of Cebu Province is composed of the circumferential roads along coastal lines and the hilly roads connected between eastern and western sides of Cebu Island as shown in Figure 9.3.1. Due to geographic constraints, the network is not sufficient in length and in quality.

According to the statistics of DPWH and Cebu Provincial Engineering Office, the road network consists of about 4,609 km in 1993. The roads are classified into four groups: 655 km national, 983 km provincial, 577 km city/municipal, and 2,405 km barangay roads.

The average road density is 0.90 kilometer per square kilometer (km/sq.km.) in terms of land area, and 1.85 km per thousand inhabitants in terms of population. The national average road densities are at 0.52 and 2.68, respectively. Taking consideration of the small islands configuration which require higher density of road network, and high population density of Cebu Province, the existing road density is seen to be lower than the country's average.

In terms of road surface types, pavement in the province represents 19.2% of the total length. The national roads are mostly suitable for vehicular traffic and pavement ratio is 70.0% while the provincial roads are usually narrow and the pavement ratio is barely 26.3%.

The conditions of major national and provincial roads are summarized in Table 9.3.1 and illustrated in Figure 9.3.2.

1. Cebu North Road

The road from Cebu City to Hagnaya in San Remegio through Mandaue City, Danao City and Bogo is a two-lane or four-lane paved road of 110.6 km with no median and unpaved shoulders. The road section of Compostela and Danao City has a traffic volume of 7,300 annual average daily traffic (AADT) in 1992. The road from Cebu City to Sogod has a concrete or an asphalt pavement in good condition with a few cracks and failures.

The pavement width varies from 6 to 23 meters and the shoulder ranges from 2 to 2.5 meters wide. The road further on from Sogod to Hagnaya Wharf has a concrete pavement with more cracks and failures.

2. Cebu South Road

The road from Cebu City to Bato passing through Naga, Argao, Dalaguete and Santander is a two-lane paved road of 141 km in good condition. The pavement width ranges from 6 to 17 meters while the shoulder width varies from 2 to 2.5 meters.

The road is congested between Talisay and Naga, especially morning peak hours, with a traffic volume of 5,200 AADT in 1992. The road from Carcar to Bato, 100.9 km, was recently rehabilitated and constructed in assistance with ADB.

3. Bogo-Medellin-Daan Bantayan

The road section from Bogo to Daan Bantayan via Medellin is a length of 33.2 km. Despite of a national road, unpaved, and what is worse, earth surface sections widely remain.

4. San Remegio-Toledo-Mantalongon

The western coast road between San Remegio and Tabuelan is an approximately 31.8 km which varies from a flat to rolling terrain with earth surface. The road is designated as a national road but its condition is poor except poblacion area. This section is also called the Antonio Y. de Pio Highway.

The section between Tabuelan and Toledo has an estimated length of 61.3 km. The road covers the town of Toledo City, Balamban, Asturias and Tuburan. The road surface is quite contrastive. Because the section from Toledo to Asturias has concrete pavement in good condition except some wooden bridges. On the other hand, the section from Asturias to Tabuelan has still earth surface.

The road section between Toledo and Mantalongon has an approximate length of 38.8 km and is composed of 16.1 km of asphalt cement pavement in fair condition and 22.7 km earth surface in fair to bad conditions.

5. Barili Southern Road

The road from Barili to Bato in Santander is a two-lane paved or unpaved road of 86.6 km. Even though this road is a part of the island coastal network and serves for considerable traffic volume, the road surface between Samboan and Badian, 25.8 km, is still gravel. The other paved sections have 6.1 meters width of pavement and unpaved shoulders. But there are many cracks and failures which require rehabilitation works.

6. Lugo-Tabuelan

The section between Lugo and Tabuelan is considered to be the loop of eastern and western coasts. This road also functions as the access route for Ro/Ro transport between Escalante and Tuburan Ports. The road has a length of 18.4 km composed of 4.7 km of asphalt in good conditions and 13.7 km gravel surface in fair to bad conditions.

7. Transcentral Highway

The road between Cebu City and Balamban through central mountainous area of the island is an approximate length of 40.5 km. This is the longest eastern-western link comprised 5.0 km concrete and 35.5 km gravel in a steep and bent shape. This is currently unsuitable for vehicular traffic.

But the route configuration is attractive from a viewpoint of the dynamic area development which combines eastern and western sides. For that reason, this road was recently transferred from provincial to national road. In this connection, the Cebu Transcentral Highway Project has started since 1993 by DPWH in assistance with IBRD.

8. Toledo-Naga/Talisay

At present, this road is very important as an access road between Cebu City and Toledo City because Talisay route is narrow and partially damaged. Furthermore, the earth surface section of 19 km cannot cope with heavy traffic.

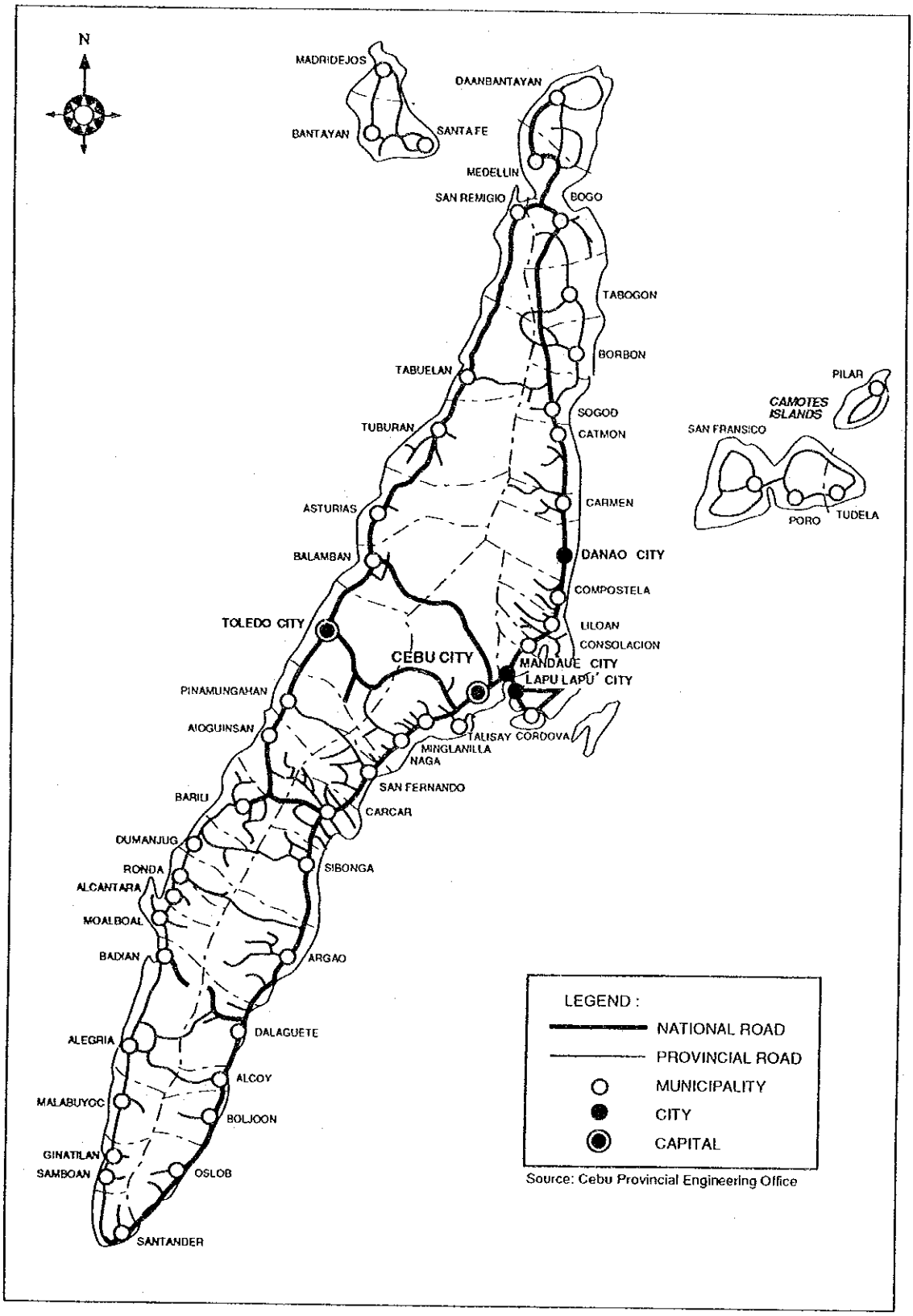
9. San Fernando-Pinamungajan

The road section between San Fernando on eastern side and Pinamungajan on western side has a gravel or earth surface of 27.6 km. Only four-wheel vehicles can travel through mountainous area, therefore, the road is not utilized for public transport.

10. Carcar-Barili

The inland connection road in the southern Cebu has an estimated length of 24.5 km in good surface condition. This section was recently rehabilitated in assistance with ADB. Now this road functions as the public transport corridor which connect Metro Cebu and southwestern side of Cebu.

11. Sibonga-Dumanjug	The inland connection between Sibonga and Dumanjug has gravel surface of 27.8 km. currently only four-wheel vehicles can travel.
12. Argao-Ronda	Argao-Ronda Road is composed of gravel surface 40 km and asphalt surface 0.5 km. As for this road, there are two resolutions. One was resolved from Argao concerning concreting works. The other was from the Provincial Government concerning the reclassification of the road section in Ronda from provincial road to national road.
13. Argao-Moalboal	Argao-Moalboal Road is composed of asphalt 0.8 km and earth 19.0 km in Argao and 6.0 km in Moalboal. Mountainous area obstructs the completion of the road. In addition, road classification is also complicated because the road in Argao is national but the road in Moalboal is provincial.
14. Dalaguete-Badian	Dalaguete-Badian Road is composed of pavement of 1.9 km and earth surface of 30.7 km. This road is also cut by steep mountains with 1.4 km.
15. Alcoy-Alegria	Alcoy-Alegria Road has gravel surface of 18.1 km. It is narrow from 3 to 4 meters. This road is not completed in mountainous area.
16. Boljoon-Malabuyoc	The inland connection road from Boljoon and Malabuyoc is 22.1 km and mostly unpaved. ROW (Right-of-Way) is narrow and road surface is bad. At present, the road is not suitable for vehicular traffic. This road is also cut by steep mountains.
17. Bantayan Island	Three municipalities are connected by provincial roads with concrete or asphalt surface. The surface condition is fair and bearable due to small vehicular traffic.
18. Camotes Islands	The road through the poblacions of San Francisco, Poro and Tudela is paved but others are mostly unpaved. The islands have hilly terrain, therefore, construction of wide and flat roads is difficult.



Source: Cebu Provincial Engineering Office

FIGURE 9.3.1 ROAD NETWORK OF CEBU

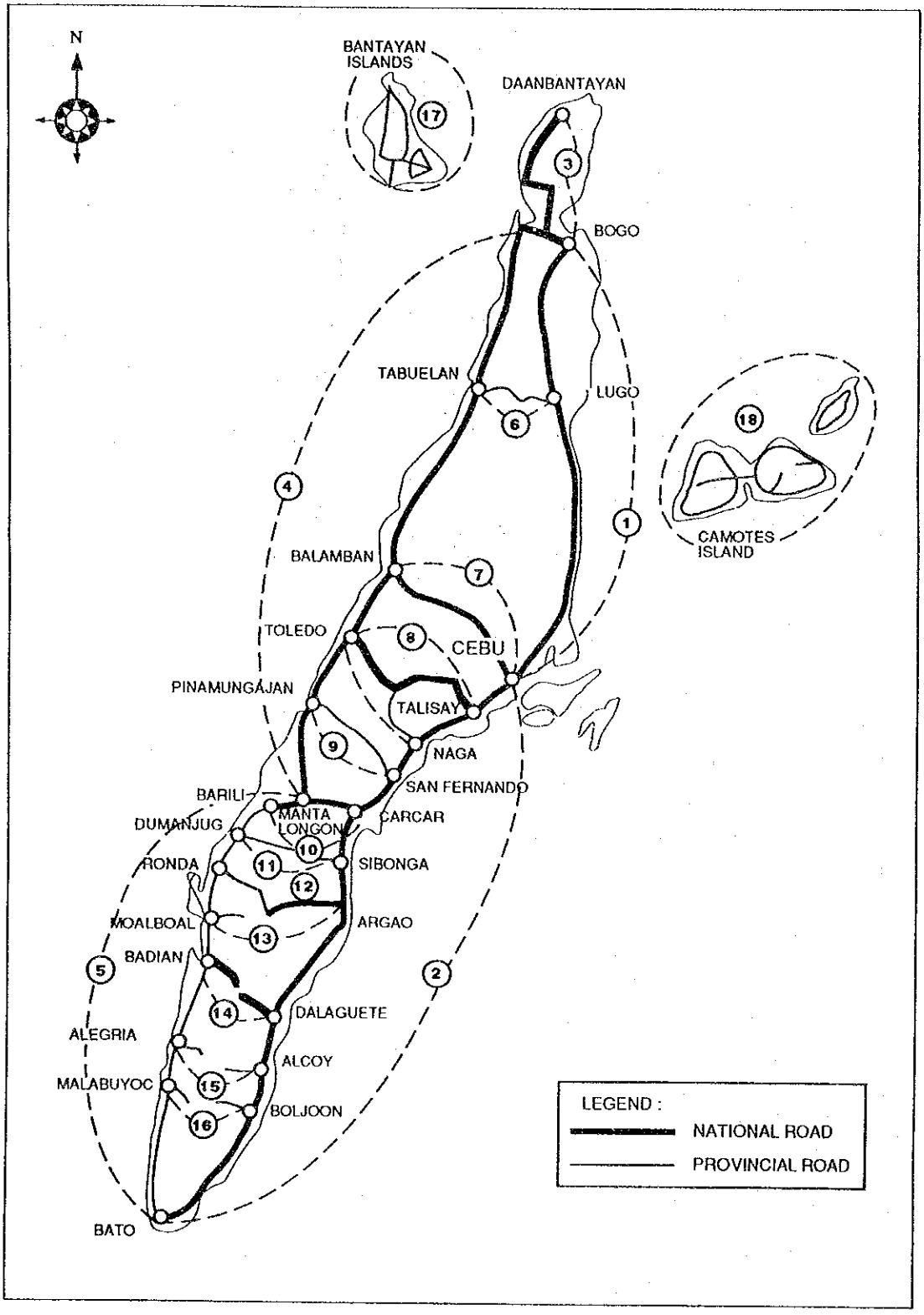


FIGURE 9.3.2 ROAD SECTION FOR INVENTORY

TABLE 9.3.1 SUMMARY OF ROAD INVENTORY

Road Name/Section	Total Length	Surface type				Width of pavement	Classification	Remarks
	(km)	concrete (km)	asphalt (km)	gravel (km)	earth (km)	(l.m)		
1) Cebu North Road (Cebu-Hagnaya Wharf)	110.6	20.4	90.2	0.0	0.0	6.0-23.1	N	
2) Cebu South Road (Cebu-Bato in Santander)	141.1	27.9	113.2	0.0	0.0	6.0-17.4	N	
3) Bogo-Medellin-Daan Bantayan	33.2	1.1	8.6	0.0	23.5	5.5-6.1	N	
4)San Remingo-Toledo-Mantalongon	131.9	37.3	9.0	0.0	85.6	4.0-6.1	N	
5) Barili Southern Road (Barili-Bato in Santander)	86.6	36.1	24.7	25.8	0.0	6.1	P	
6) Lugo-Tabuelan	18.4	0.0	4.7	13.7	0.0	6.0	P	
7) Transcentral Highway (Cebu-Balamban)	40.5	5.0	0.0	35.5		6.1	N	
8) Toledo-Naga/Talisay	57.1	4.8	33.5	0.0	19.1	5.0-7.0	N, P	
9) San Fernando-Pinamungajan	27.6	0.1	2.4	18.0	7.1	4.0-6.0	P	
10) Carcar-Barili	24.5	2.0	22.5	0.0	0.0	5.0-6.1	N	
11) Sibonga-Dumanjug	27.8	0.5	0.0	27.3	0.0	6.0	P	
12) Argao-Ronda	40.6	0.0	0.5	40.1	0.0	6.0	N, P	
13) Argao-Moalboal	25.8	0.0	0.8	6.0	19.0	4.0-7.5	N, P	NC
14) Dalaguete-Badian	32.6	0.8	1.1	0.0	30.7	5.0-6.1	N	NC
15) Alcoy-Alegria	18.1	0.3	0.0	18.1	0.0	3.0-4.0	P	NC
16) Boljoon-Malabuyoc	22.1	0.3	0.0	17.6	4.2	4.0	P	NC
17) Bantayan Island	61.0	5.3	27.9	27.8	0.0	3.0-5.0	P	
18) Camotes Island	115.1	14.5	0.0	100.3	0.3	4.0-6.0	P	

Notes: Road classification: N indicates national and P provincial road.
NC in Remarks denotes "not connected."

(2) Metro Cebu

Metro Cebu has a total of about 1,140 km of roads, of which 14% is classified as national road, 10% provincial road, 15% city road, 6% municipal road, and 55% barangay road as shown in Table 9.3.2 and Figure 9.3.3 indicate the present road network of Metro Cebu.

In terms of pavement type, the roads consist of 13% portland cement concrete, 33% asphalt concrete and 54% gravel.

Many urban roads do not have curb and/or gutter and sidewalk and such situations lead to the deterioration of the pavement. As a result, roadside activities are likely to intrude on vehicular movement to some extent.

Some trunk roads are still 2-lane roads and some 4-lane roads have narrow width with no center medians. The outer lanes of 4/6-lane roads are usually utilized for loading and unloading passengers of public utility vehicles such as jeepneys and buses. Therefore, it is considered that practical traffic capacity of these roads should be reduced.

TABLE 9.3.2 ROAD CLASSIFICATION

Classification	Length(km)	Share (%)
National Road	159.6	14.0
Provincial Road	112.5	9.9
City Road	171.1	15.0
Municipal Road	66.4	5.8
Barangay Road	630.6	55.3
Total	1,140.2	100.0

Due to inadequate hierarchical configuration of the roads as well as low road density, relatively heavy traffic volumes are concentrated in the limited number of trunk roads. Table 9.3.3 summarizes the traffic volume at screenline and cordonline stations.

The road sections with relatively heavy traffic are as follows:

1. AADT with more than 30,000: Gorordo Ave., M.J. Cuenco Ave., Archbishop Reyes Ave., Osmeña Blvd., M. Velez St., etc.

2. AADT with more than 20,000 P. del Rosario Ave., Gen. Maxilom Ave., San Jose dela Montaña, N. Escario, Mactan-Mandaue Bridge, etc.

TABLE 9.3.3 TRAFFIC VOLUMEN ON METRO CEBU ROADS, AADT IN 1992

	Public Mode				Private Mode				
Roads	Jeepney	Bus	Tricycle	Sub-total	Car/van	Truck	Motorcycle	Sub-total	Total
Gorordo Av.	9,550	35	187	9,772	22,693	453	3,655	26,801	36,573
N. Escario St.	3,287	67	183	3,537	15,654	503	2,366	18,523	22,060
M. Velez St.	7,465	28	198	7,691	18,262	578	3,456	22,296	29,987
B. Rodriguez St.	4,344	20	205	4,569	11,704	431	1,724	13,859	18,428
P. del Rosario St.	6,630	40	159	6,829	11,837	313	1,658	13,808	20,637
Cebu South Expressway	12,492	803	427	13,722	21,760	1,615	3,829	27,204	40,926
C. Padilla St.	8,816	60	239	9,115	5,213	852	1,455	7,520	16,635
Archbishop Reyes Av.	6,383	110	547	7,040	22,947	1,255	3,577	27,779	34,819
M.J. Cuenco Av.	12,250	343	98	12,691	11,980	2,029	3,646	17,655	30,346
Osmena Blvd.	15,098	90	90	15,278	12,418	230	2,687	15,335	30,613
D. Jakosalem St.	3,338	26	61	3,425	4,860	180	725	5,765	9,190
Gen. Maxilom Av.	1,714	143	64	1,921	18,591	813	2,049	21,453	23,374
San Jose dela Montana Av.	5,208	69	69	5,346	12,183	1,158	1,703	15,044	20,390
A. Bonifacio St.	63	15	4,575	4,653	4,814	264	1,218	6,296	10,949
Mactan-Mandaue Bridge	3,125	149	1,105	4,379	10,390	2,892	3,121	16,403	20,782

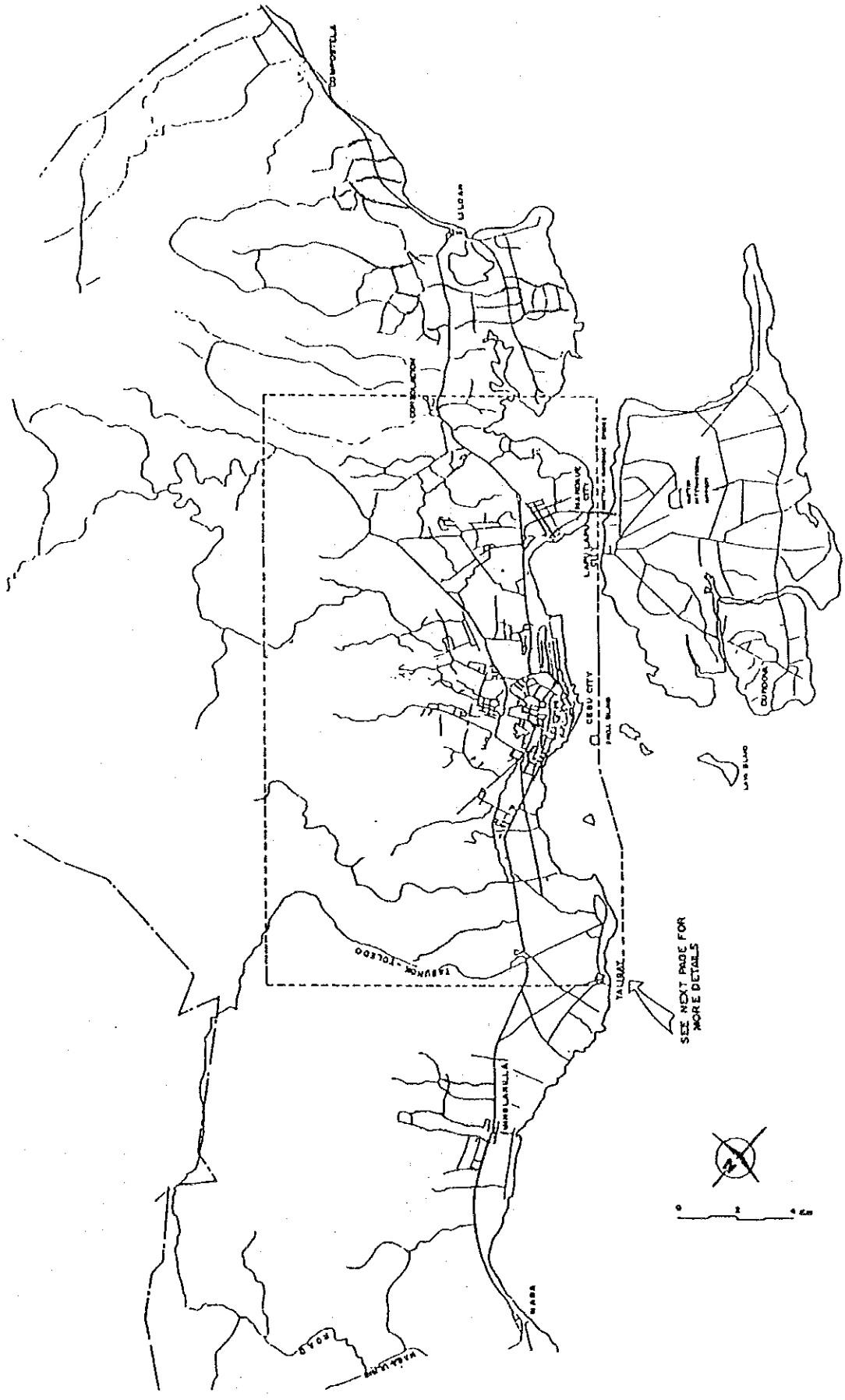


FIGURE 9.3.3 METRO CEBU EXISTING ROAD NETWORK

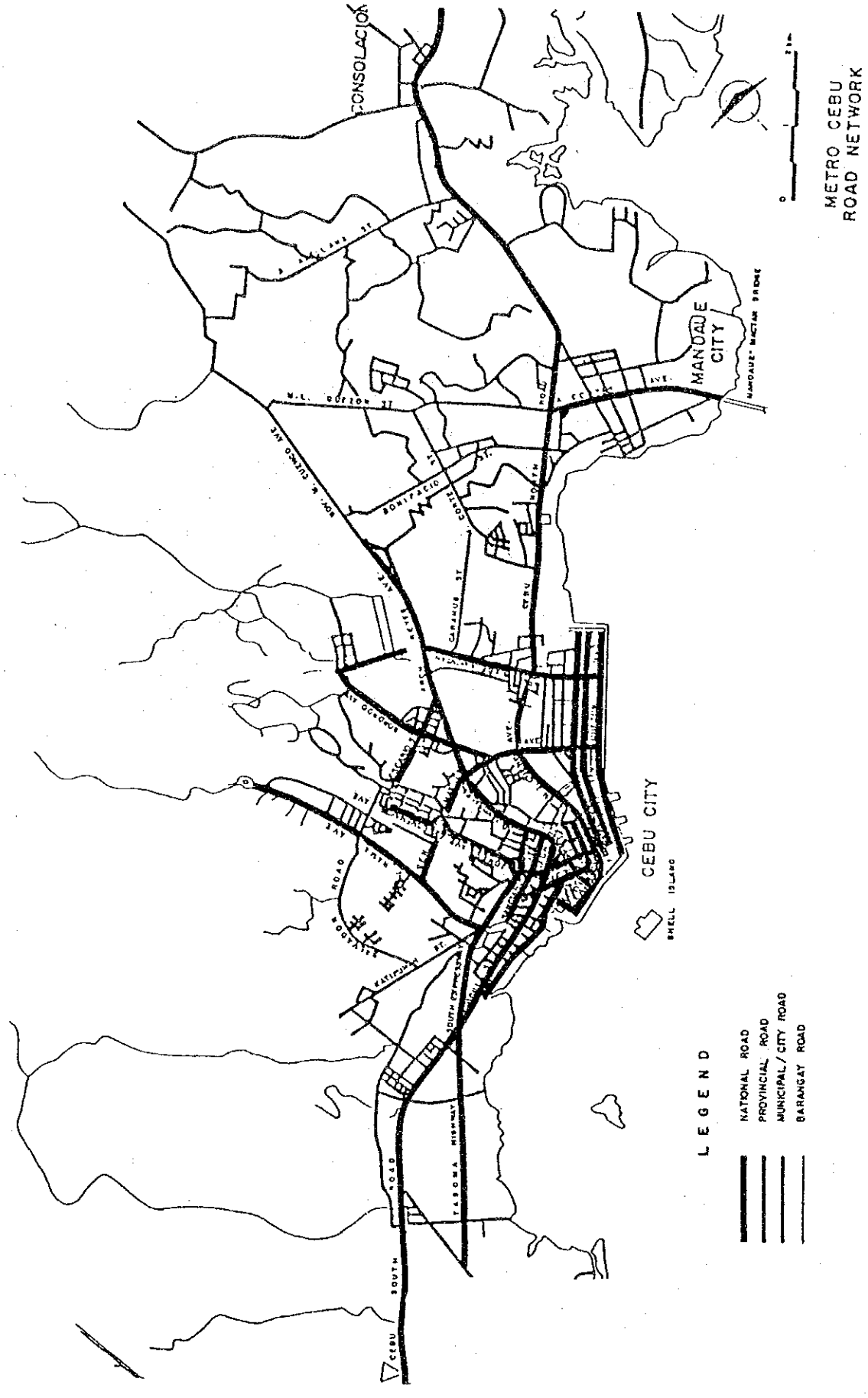


FIGURE 9.3.4 EXISTING ROAD NETWORK AROUND CEBU CITY

9.3.2 ROAD TRAFFIC CHARACTERISTICS

(1) Vehicle Registration

The trend in vehicle registration of the province is indicated in Table 9.3.4. It shows that the dominant vehicle type is privately-owned passenger ones such as passenger cars, motorcycles and utility vehicles. On the other hand, private freight vehicles, government-owned vehicles and the vehicles for hire have drastically increased after the national recession of middle 1980s.

The levels of motorization, expressed as ratios of the number of registered motor vehicles to the length of road (km) and per thousand inhabitants, indicate much higher ratios at 19.67 and 36.45 against the national average ones at 8.08 and 21.62, respectively. Therefore, it is noted that underdeveloped road infrastructure cannot catch up with the advanced motorization in the province.

TABLE 9.3.4 TREND IN VEHICLE REGISTRATION OF CEBU PROVINCE

Year	Private Passenger	Private Freight	Government/ For Hire	Total
1982	35,848	4,995	3,650	44,493
1984	39,261	4,791	3,956	48,008
1986	35,709	4,397	4,971	45,077
1988	43,293	5,823	6,899	64,796
1990	59,547	7,950	10,336	77,833
1992	63,078	9,079	18,048	90,205

Source: LTO

(2) Traffic Demand of Metro Cebu

The analyses of the travel patterns in Metro Cebu based on previous studies (MCLUTS, 1981 and Road Traffic Analysis 1993 as part of MCDP III Detailed Engineering Design Studies) show that the movement of goods and people are mainly concentrated towards Cebu City which has the highest travel demand. Due to the geographical configuration of the area, travel is generally on a linear pattern wherein goods and passengers coming from other parts of Metro Cebu without any bypass routes. Hence, Cebu City, particularly the Central Business District (CBD) suffer from daily traffic congestion.

The overall traffic demand of Metro Cebu in 1979 and 1992 are presented in Table 9.3.5. The present traffic demand in terms of motorized person trips is summarized as follows:

1. Total number of person trips in Metro Cebu is about 1.7 million (excluding walk trips) per day which grew by about 1.5 times compared with 1979.

2. Trip generation rate (trips per person per day) is 1.32 in 1992, which has been slightly increased since 1979.

3. Share of person trips by private mode and public mode were 9.7% and 90.3% in 1979, respectively. Person trips by private mode are drastically increased

and shared 20.5% in 1992, showing the annual average trip growth rate of 9.2%.

4. Person trips by public mode increased by 1.31 times from 1979 to 1992 with the annual average trip growth rate of 2.1% which is lower than population growth rate during the same period.

TABLE 9.3.5 TRAFFIC DEMAND OF METRO CEBU BETWEEN 1979 AND 1992

(Person Trip Basis)

Mode	1979*1	1992*2	Annual Growth Rate	1992/1979
Private Mode	110,500 (9.7)	347,000 (20.5)	9.2%	3.14
Public Mode	1,028,900 (90.3)	1,346,000 (79.5)	2.1%	1.31
Total	1,139,400 (100.0)	1,693,000 (100.0)	3.1%	1.49
Trip Production Rate (Per person per day)	1.26	1.32		

Notes: *1 MCLUTS, 1981
*2 Road Traffic Analysis, 1993

(3) Road Traffic Management

Road traffic management at the provincial level is usually in the hands at the local government units (i.e., cities and municipalities). More specifically, it is the responsibility of the local enforcement groups with the support of civil organizations in order to manage traffic flow within densely populated areas where traffic is normally congested.

In Metro Cebu, the Cebu City Traffic Management Coordination Community (CITOM) controls the traffic signals which are installed at 68 intersections in Cebu City, Mandaue City and Lapulapu City, and enforces other management measures. The CITOM has 200 enforcers and 120 parking aids. As for the signals, the computerized and centralized traffic signal system which was provided by the Australian government, functions very well and has enough room for future expansion. In fact, the CITOM plans additional installations at 22 intersections in the next phase.

Cebu City Ordinance No. 1459 regulates the passage of trucks and trailers at the following major streets during six to nine o'clock in the morning and four to eight o'clock in the evening. This regulation contributes to the enhancement of environmental amenity in CBD to some extent.

- Osmeña Blvd
- Sanciangko St.
- N. Escario St.
- Gorordo Av.
- Magallanes St.
- Archbishop Reyes Av.
- Gen. Maxilom Av.
- Borromeo St.
- M.J. Cuenco Av.
- D. Jakosalem St.
- Leon Kilat St.
- Sabellano St.

9.3.3 ROAD CONSTRUCTION AND MAINTENANCE

(1) Organization

For national roads, four agencies under DPWH are involved with the construction and implementation of road projects. They are:

1. Bureau of Construction (Central Office of DPWH) which is not directly involved in actual construction but in policy formulation, review and evaluation of construction programs and tender and contract documents, inspection and monitoring of activities of field implementing office, etc.

2. Project Management Office (Central Office of DPWH) which implements foreign assisted projects, usually by contract.

3. Construction Division Regional Offices (Field Office of DPWH) implement locally funded projects costing above 1.0 million pesos.

4. Construction Section of District/City Offices (Field Office of DPWH) implement locally funded projects costing up to 1.0 million pesos.

Local roads comprise the provincial roads, municipality/city roads and barangay roads. Provincial roads connect municipalities/cities with each other and with the trunk system, public wharves and other terminals. Municipal/city roads are either roads or streets within the poblacion of a municipality/city or its surroundings. Barangay roads are in essence farm-to-market roads. In accordance with the Government policy of decentralization, local government units (LGUs) are given greater participation, in the implementation of infrastructure programs funded by contract or by administration under the technical guidance and supervision of DPWH and general supervision of DILG.

(2) Construction Method

Generally, there are two methods adopted for road construction: construction by administration and construction by contract. The latter farther comprises equipment-based construction and labor-based construction methods. Labor-based construction method has been pursued to create as many job opportunities as possible.

A noteworthy construction method in the island is the construction of barangay roads by task force. Every municipality is given an opportunity by Provincial Government twice a year (in dry and wet seasons) to use a set of road construction equipments including bulldozer, dump truck, grader, etc. with operators for a week per time for free to construct or maintain their roads. Municipalities shoulder fuel cost and allowances of operators. With this practice, immediate needs of the people mostly of rural areas are somehow met, though these roads are often substandard.

(3) Maintenance

Maintenance for national roads involves Bureau of Maintenance, Maintenance Division of Regional Offices, Bureau of Equipment (all are central offices of DPWH), and Maintenance Section of District/City offices and Regional and Area Equipment Services (both are field offices of DPWH), while that for local roads is practiced by local government units under the technical supervision of DPWH and the administrative supervision of DILG.

The annual overall budget allocation for road maintenance is based on a fixed amount for Each Equivalent Maintenance Kilometer (EMK) which is a formulae converting the road network in each district into a length of standard road by applying factors to each roads section and bridge, depending on their width, pavement type, terrain, rainfall, traffic, etc. Maintenance funds for national roads are appropriated by the General Appropriations Act while those for local roads by the General Appropriations Act under national assistance to local government units and the Local government's general fund. DPWH is presently adopting two systems for road maintenance, one is maintenance by administration (MBA) and the other is maintenance by contract (MBC). Local roads are maintained by administration.

The principal reason for the present inadequate maintenance situation is that the Government for long maintained the budget allocation extremely low wherein the EMK allocation was too low both for routine and periodic maintenance. Quarterly releases of maintenance funds together with the delays cause untimely maintenance work and discourage private contractors from investments in new and more efficient maintenance equipment and technical methods.

9.3.4 ROAD TRANSPORT INDUSTRY

(1) Public Transportation

(a) Public utility vehicles

The number of registered vehicles for public transport such as buses, jeepneys and tricycles is indicated by the district office of Land Transportation Office (LTO) in Table 9.3.6.

Looking into local areas, jeepneys are the prime mode of public transport in the Metro Cebu area while tricycles are dominant in the rest. Generally, introduction of bus system is inevitable to cope with heavy traffic demand of urbanized area. In the Metro Cebu, however, there is still a few routes of buses such as the connection between CBD and the Mactan International Airport and others. On the other hand, buses widely serve as an inter-city mode.

TABLE 9.3.6 PUBLIC TRANSPORT VEHICLES IN 1992

District Offices	Bus		Jeepney		Tricycle		Total	
Cebu Field Office	293	(5.1%)	4,459	(77.9%)	971	(17.0%)	5,723	(100.0%)
Mandaue City Office	11	(0.3%)	956	(20.3%)	3,731	(79.4%)	4,698	(100.0%)
Danao City Office	9	(0.7%)	106	(8.4%)	1,154	(90.9%)	1,256	(100.0%)
Toledo City Office	35	(7.5%)	80	(17.2%)	349	(75.3%)	464	(100.0%)
Carcar Office	100	(8.5%)	258	(21.8%)	825	(69.7%)	1,183	(100.0%)
Cebu Province	448	(3.4%)	5,859	(43.9%)	7,030	(52.7%)	13,337	(100.0%)

Source: LTO

(b) Public transport operators

The Public Utility Vehicle Operators of Cebu (PUVOC) is organized by the operators of public utility vehicles in the province. At present, PUVOC has more than 30 bus operators, 58 taxi operators, around 30 jeepney operators and around 20 truck operators. As for jeepney, there are many small operators owning one or two jeepneys

and it is difficult to estimate the total operators in number because they merely enter the PUVOC.

Tricycle is a popular transport means in the province, especially for feeder service. It is considered that there are many tricycle operators. But they usually organize their associations by subdivision. Therefore it is also difficult to grasp the total number of operators.

To enter the business of public utility vehicles, only the comparatively small initial investment to purchase vehicles and the license from LTFRB are needed. The LTFRB appraises the physical and financial condition of an applicant and issues the Certificate of Public Convenience (CPC). It costs him 420 pesos.

The business of public utility vehicles is labor-intensive because operators employ one or two drivers per vehicle. The number of professional drivers is estimated at 18,400 in the province as shown in Table 9.3.7.

TABLE 9.3.7 ESTIMATION OF PUBLIC UTILITY VEHICLES' DRIVERS

Vehicle Type	Vehicles in Operation	Assigned Driver	Estimated No. of Drivers
Tricycle	7,000	1	7,000
Jeepney	5,800	1	5,800
Taxi	2,000	2	4,000
Bus	400	2	800
Truck	400	2	800
Total	15,600	-	18,400

(2) Trucking Industry

Cebu Truckers Association, Inc. is composed of 26 truck operators. Of which, Aboitiz Inland Concarriers is the biggest one which has 8 truck heads and 60 trailers. Many truckers are located in the reclamation area behind Cebu International Port or Mandaue City. Their major clients are shipping operators, companies in MEPZ and others.

In line with the recent economic growth in the province, truck business has been going well. But profitable ratio is not so high then most of all trucks which are secondhand are imported from Japan. It is noted that there is no governmental incentive to foster trucking industry.

Introduction of Ro/Ro vessels and utilization of barges can make truckers work on the neighboring islands of Cebu. But transportation fee is too expensive to encourage such convenient system.

Cebu Port is the most important place for their operation. But the following problems can be pointed out:

1. damaged road surface, piers and berths
2. obstructive squatters and nightly pilferage
3. shortage of loading/unloading space
4. lack of lighting system

9.3.5 DEMAND FORECAST

Demand forecasting is an essential work to design each infrastructure project as well as to prepare packages in terms of cost estimates and project justifications. In particular, sizable traffic demand is a precondition to implement large-scale infrastructure projects. For that reason, road traffic demand is focused on only Metro Cebu where traffic demand will be intensified and cause severe congestions.

(1) Overall Traffic Demand in Metro Cebu

Overall increase in population, private vehicles and trip rate will be expected to intensify traffic demand in Metro Cebu. Based on past and present analyses of Metro Cebu and experiences of other relevant cities, these increases are projected quantitatively in order to draw the outline of overall traffic demand as follows:

1. Population — The study team prepares three kinds of projections about Metro Cebu population, that is, Case 1: Potential-based (moderate), Case 2: Constraint-suffered (lowest) and Case 3: Target-oriented (highest). The moderate assumption which is estimated at 1,712 thousand in 2000 and 2,301 thousand in 2010 is employed for traffic demand analysis.

2. Trip rate — It is considered that present rate of daily motorized trip of 1.68 per trip maker, of seven years old and above, will grow to 1.80 in 2000 and 1.86 in 2010 owing to hike in incomes and patronage of private vehicles.

3. Private vehicles — The number of future private vehicles is estimated by means of Gompertz Curve because its correlation coefficient is high enough of 0.994 and it can depict successive and substantial motorization trend. As a result, the number of private vehicles is estimated at 110 thousand in year 2000 and 170 thousands in year 2010.

4. Private demand — As for modal share between private and public transports, in general, owners of private vehicles don't use public tranpsort. Conventional public tranport means such as buses and jeepneys cannot compete with private vehicles in terms of convenience and comfortableness within Metro Cebu. And the amount of private traffic is closely related to the magnitude of private vehicles.

   The 1990 HIS (Home Interview Survey) indicates that one private vehicle carried 5.3 persons a day on the average. Accordingly, future private traffic demand can be estimated at 583 thousand trips in 2000 and 901 thousand in 2010.

5. Public demand — The rest people who can't enjoy private transport services must depend on public transport. Their traffic demand is estimated at 1,728 thousands and 2,309 in 2000 and 2010, respectively. Based on the above-mentioned analyses and assumptions, the overall traffic demand of Metro Cebu for the target years is projected as shown in Table 9.3.8.

(2) Sectional Traffic Demand in Metro Cebu

Vehicular traffic movements are generally complicated in urban area due to avoiding traffic congestions and enforcement of traffic management measures. It is difficult to analyze such detailed movements in this study. However, trunk road network can be analyzed by making a comparison between the traffic demand by municipality or city and designed road capacity on the following selected sections.

- Talisay - Cebu
- Cebu - Mandaue
- Mandaue - Consolacion
- Mactan - Mainland

TABLE 9.3.8 OVERALL TRAFFIC DEMAND OF METRO CEBU

		1992	2000	2010
(Person Trips)				
Private	(000)	347	583	901
Public	(000)	1,346	1,728	2,309
Total	(000)	1,693	2,311	3,210
(Assumptions)				
Population	(000)	1,274	1,712	2,301
Trip Maker	(000)	956	1,284	1,726
Trip Rate per Trip Maker		1.68	1.80	1.86
Private Vehicles	(000)	65	110	170

Today, traffic congestions always occur at somewhere in Metro Cebu with various reasons such as traffic accidents and insufficient traffic control. Table 9.3.9 reveals that the trunk road on Talisay - Cebu and Mandaue - Consolacion sections cannot meet existing traffic demand physically. To make matters worse, unless new road constructions and/or existing road expansions, all sections will be totally clogged with increasing traffic demand by 2000.

Based on the aforementioned analysis, the existing trunk road network should be strengthened from a viewpoint of short and long term perspectives as follows:

1. immediate widening of Cebu North Road and Cebu South Road from two to four lanes,
2. construction of a new coastal corridor in addition to the existing north-south corridor by 2000,
3. construction of the second Mactan-Mandaue Bridge by 2000, and
4. construction of a third coastal corridor and introduction of a mass transit system by 2010.

TABLE 9.3.9 ESTIMATED ROAD CONDITIONS

(AADT, PCU basis)

Selected Sections	Existing Road Capacity (A)	Estimated Traffic Demand (B)			Road Congestion Ratio (B)/(A)		
		1992	2000	2010	1992	2000	2010
Talisay-Cebu	30,000[1)]	35,284	61,000	85,000	1.18	2.03	2.83
Cebu-Mandaue	80,000[2)]	51,177	110,000	159,000	0.64	1.38	1.99
Mandaue-Consolacion	20,000[3)]	25,015	55,000	82,000	1.25	2.75	4.10
Mactan-Mainland	20,000[4)]	17,347	36,000	58,000	0.86	1.80	2.90

Notes: 1): inclusive of Cebu South and Tagunol Highway
2): inclusive of M.J. Cuenco Ave., Cabahug St. and Archbishop Reyes Ave.
3): inclusive of Cebu North Road
4): inclusive of Mactan - Mandaue Bridge