CHAPTER 4

EXISTING TRAFFIC CONDITIONS

4.1 TRAFFIC SURVEYS UNDERTAKEN

Table 4.1-1 shows outline of traffic surveys undertaken.

TABLE 4.1-1 OUTLINE OF TRAFFIC SURVEYS

Surveys	Method	Survey Stations	Implement Period
12-hour Traffic Counts	Manual count by direction and vehicle type. Recorded at every one hour.	40 stations (Figure 4.1-1)	From 06:00 to 18:00, 2003/4/22-5/14 (weekday)
24-hour Traffic Counts*	Manual count by direction and vehicle type. Recorded at every one hour.	11(+3) stations (Figure 4.1-1)	From 06:00 to 06:00 next morning, 2003/4/23-5/14 (weekday)
24-hr OD Survey*	Roadside driver interview. For taxi, jeepney and bus, passengers were also interviewed.	11(+3) stations (Figure 4.1-1)	From 06:00 to 06:00 next morning, 2003/4/23-5/14 (weekday)
Terminal Survey	Terminal layout plan, number of bays, parking capacity, bus jeepney / routes, number of bus/jeepney for each route, facilities for waiting passengers, etc.	7 terminals (Figure 4.1-1)	From 06:00 to 18:00, 2003/4/24-5/12 (weekday)
Travel Time Survey	Floating car method for car and truck. For a jeepney and a bus, surveyor rode on a bus/jeepney to measure travel time.	10 routes (Figure 4.1-2)	3 times (morning, after noon, and evening) per day

* 3-more Traffic Counts and OD Survey were conducted at Iloilo Airport, Passenger Ferry Port (Fort San Pedro & Mulley Loney), and Cargo Port (Loboc & Fort San Pedro), in addition to Roadside Traffic Counts & OD Survey, to obtain necessary data for other transport related facilities.

Table 4.1-2 shows sampling rate at all OD survey stations.

TABLE 4.1-2 SAMPLING RATE OF ROADSIDE & TERMINAL OD SURVEY

Type of Survey	Station No.	*Total Traffic Volume		No. of Sample Interviewed		Average Sampling Rate (%)	
		Vehicle / Driver	Passenger	Vehicle / Driver	Passenger	Vehicle / Driver	Passenger
Roadside OD	41	4,834	18,997	781	1,236	16.2	6.5
	42	3,458	22,546	1,839	2,589	53.2	11.5
	43	4,171	23,144	1,413	2,239	33.9	9.7
	44	4,714	34,153	2,200	2,038	46.7	6.0
	45	4,323	32,125	1,377	2,412	31.9	7.5
	46	1,558	5,707	704	1,118	45.2	19.6
	47	6,994	46,723	2,086	4,141	29.8	8.9
	48	4,351	25,675	1,075	1,930	24.7	7.5
	49	11,242	81,809	2,049	2,315	18.2	2.8
	50	15,137	177,811	1,833	3,043	12.1	1.7
	51	2,482	7,221	1,430	990	57.6	13.7
	Total	**63,264**	**475,911**	**16,787**	**24,051**	**26.5**	**5.1**
Passenger Terminal OD	A.P.	-	1,726	-	551	-	31.9
	L.F.P.	-	2,208	-	685	-	31.0
	M.F.P.	-	6,062	-	1,236	-	20.4
	S.F.P.	-	13,584	-	2,358	-	17.4
	Total	**-**	**23,580**	**-**	**4,830**	**-**	**20.5**
Cargo Terminal OD	I.C.P.	996	-	988	-	99.2	-
	D.C.P.	102	-	100	-	98.0	-
	D.B.P.	51	-	50	-	98.0	-
	Total	**1,149**	**-**	**1,138**	**-**	**99.0**	**-**
Overall	**Total**	**64,413**	**499,491**	**17,925**	**28,881**	**27.8**	**5.8**

Remarks Vehicle/Driver : Estimated AADT for Roadside Stations (excluding Tricycle, Motorbike, and Special Equip.), Observed Traffic Volume for Cargo Terminal Stations (except Domestic Balk Cargo Port), or Estimated Traffic Volume for Domestic Balk Cargo Port from Adjacent Station Data

Passenger : Estimated from Observed Average Occupancy for Roadside Stations (excluding Driver), or Estimated from A.T.O. & P.P.A. Statistical Data for Passenger Terminal Stations

A.P. : Airport

L.F.P. : Long-Range Ferry Port (Fort San Pedro) for Manila/Gensan/Others

M.F.P. : Mid-Range Ferry Port (Muelle Loney) for Bacolod

S.F.P. : Short-Range Ferry Port (Fort San Pedro) for Guimaras

I.C.P. : International Cargo Port (Loboc)

D.C.P. : Domestic Container Cargo Port (Fort San Pedro)

D.B.P. : Domestic Balk Cargo Port (Muelle Loney)

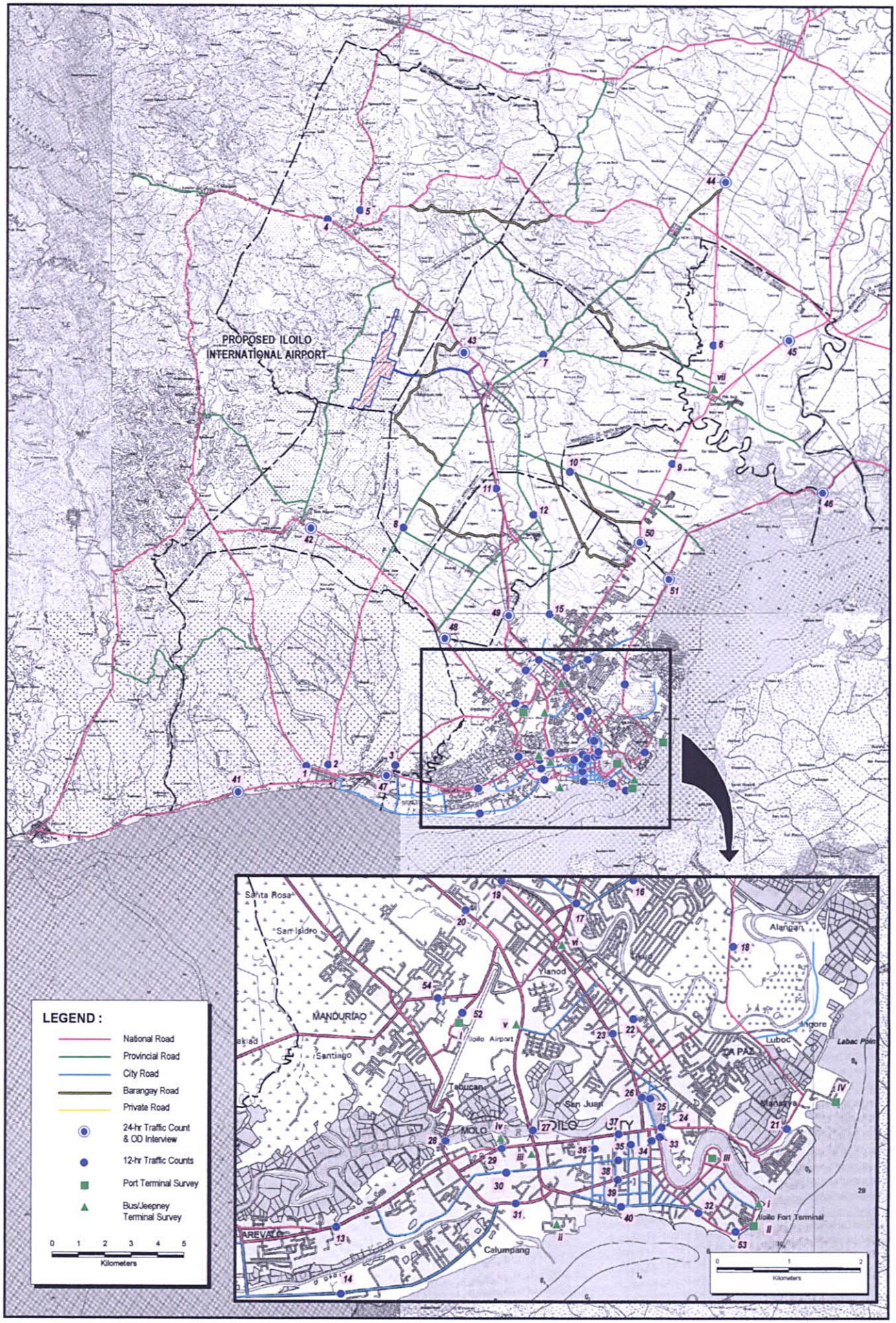

FIGURE 4.1-1 TRAFFIC SURVEY STATIONS (METRO ILOILO)

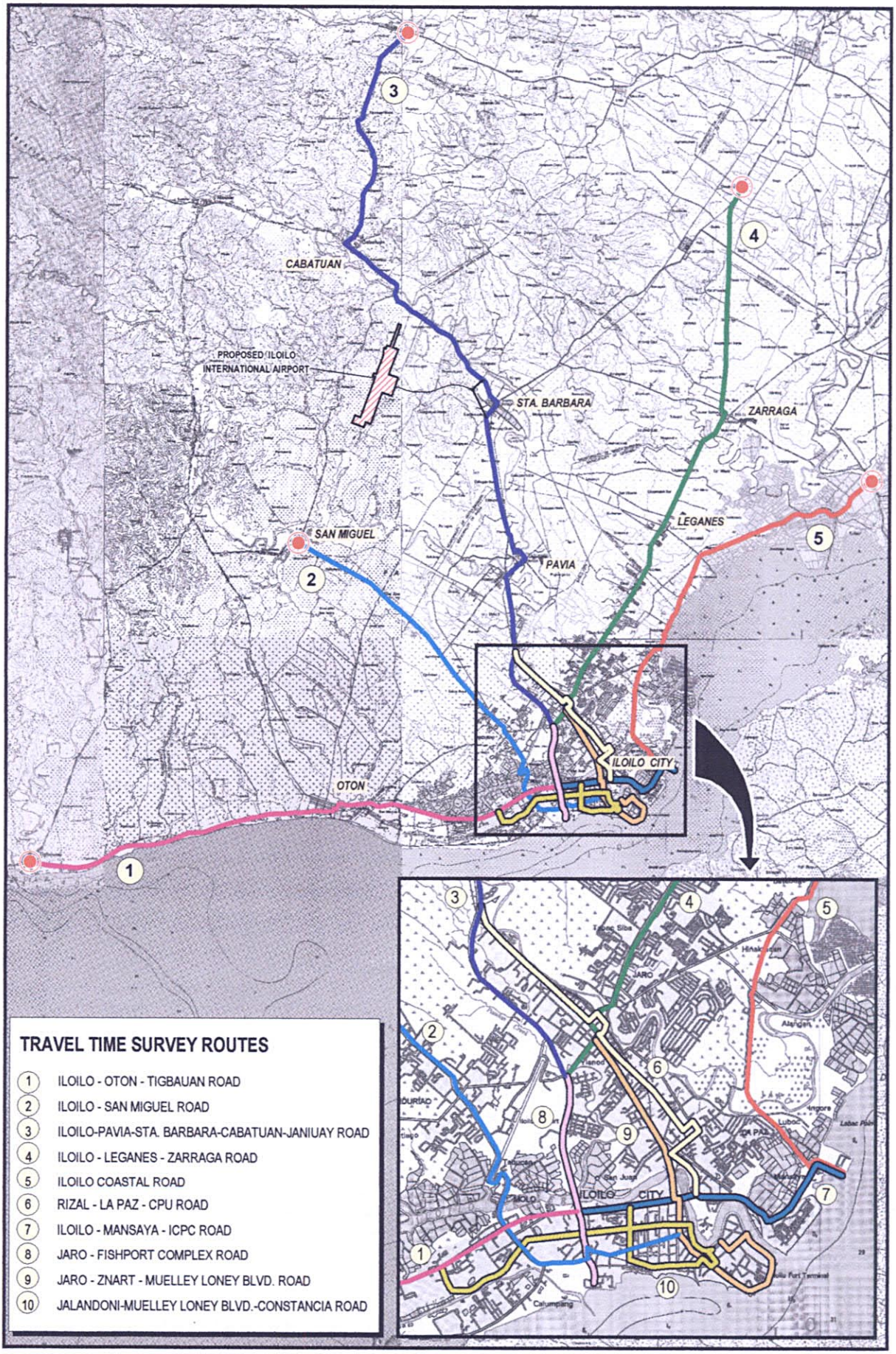

FIGURE 4.1-2 TRAVEL TIME SURVEY ROUTE (METRO ILOILO)

4.2 TRAFFIC CHARACTERISTICS

4.2.1 Present OD Pattern

1) Traffic Volume on Cordon Line

Table 4.2-1 and Figure 4.2-1 shows traffic volume at all 24-hr stations (cordon line) in the Metro Iloilo Area. Total traffic volume along outer cordon line was estimated as around 28 thousand vehicles per day. In contrast, that of along inner cordon line was accumulated as around 45 thousand vehicles per day.

TABLE 4.2-1 TRAFFIC VOLUME ON CORDON LINE IN THE METRO ILOILO

Section	Station No.	Type of Vehicles						
		Car	Taxi	Jeepney	Bus	Truck	Others	Total
Outer Cordon Line	41	2,374	277	1,483	73	627	405	5,239
	42	1,190	125	1,501	-	642	1,008	4,466
	43	2,124	185	1,346	56	460	1,236	5,407
	44	2,431	175	1,103	352	653	998	5,712
	45	1,677	126	1,816	251	453	659	4,982
	46	782	93	371	10	302	557	2,115
	Total	10,578	981	7,620	742	3,137	4,863	27,921
Inner Cordon Line	47	3,396	466	2,447	100	585	544	7,538
	48	1,598	252	1,775	-	726	759	5,110
	49	4,803	611	4,433	100	1,295	1,041	12,283
	50	7,165	641	5,797	671	863	1,551	16,688
	51	1,692	92	339	-	359	595	3,077
	Total	18,654	2,062	14,791	871	3,828	4,490	44,696

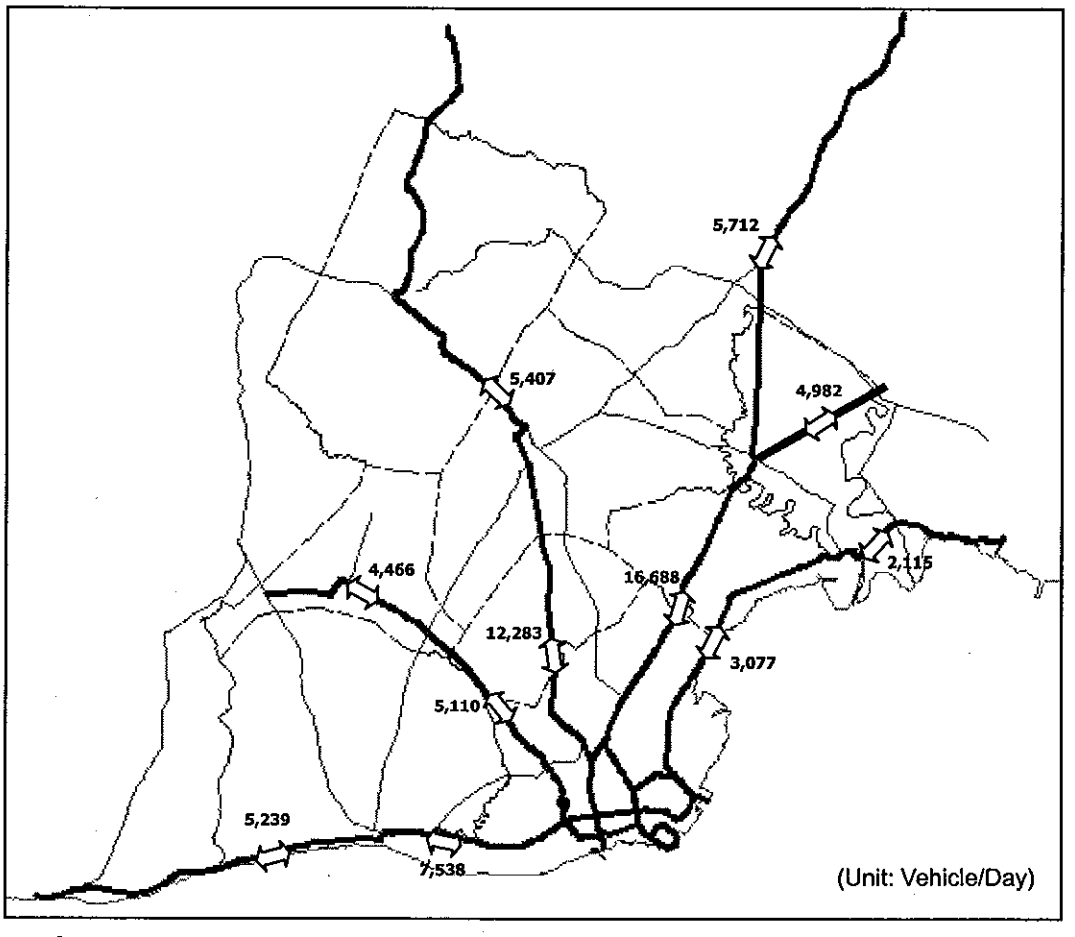

FIGURE 4.2-1 TRAFFIC VOLUME ON CORDON LINE IN THE METRO ILOILO AREA

2) Present OD Pattern

Figure 4.2-2 and Figure 4.2-3 shows present OD pattern for passenger and cargo traffic in the Metro Iloilo Area, respectively. These figures indicate that there are tight connection between Iloilo City and other municipalities within as well as outside the Metro Iloilo Area, although most of trips are concentrated within Iloilo City.

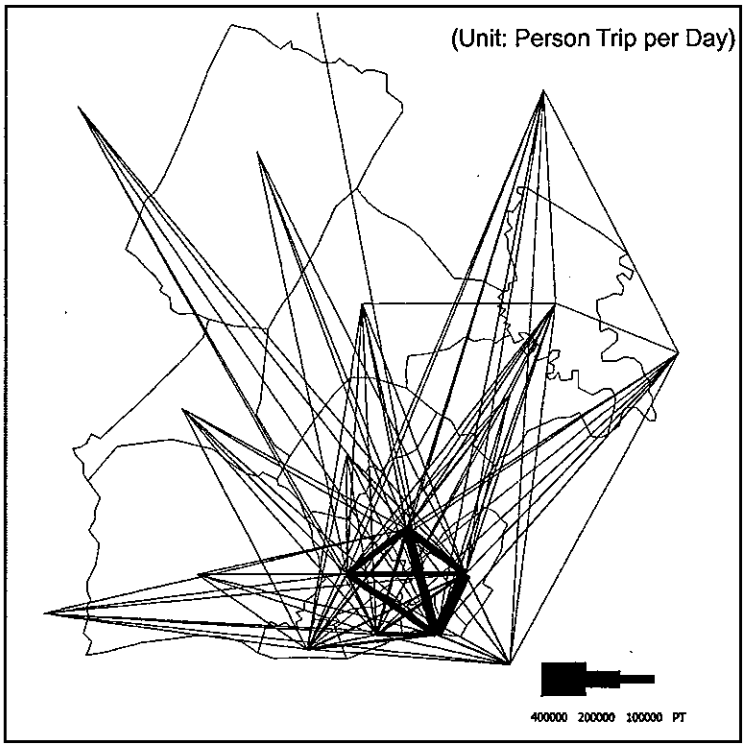

FIGURE 4.2-2 PRESENT DESIRED LINE (PASSENGER TRIP)

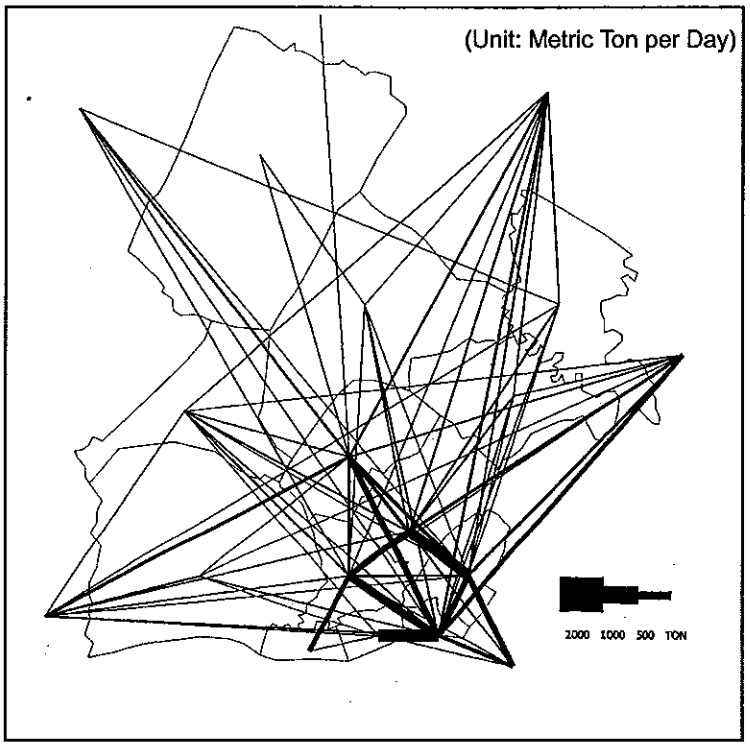

FIGURE 4.2-3 PRESENT DESIRED LINE (CARGO TRIP)

3) Trip Purpose of Passengers

Table 4.2-2 shows passenger trips by purpose based on the roadside OD surveys in the Metro Iloilo Area. It is noted that share of trip purpose of "business" and "private" are relatively high among the trip purposes for both directions to/from Metro Iloilo as well as Iloilo City, except trip purpose of "to home" for outbound direction on both roadside OD survey stations, located at Metro Iloilo and Iloilo City boundaries.

TABLE 4.2-2 TRIP PURPOSE OF PASSENGERS IN METRO ILOILO

Location	Direction	To Work	To School	Business	Private	To Home	Total
Metro Iloilo	Inbound	11,442	3,320	27,964	22,608	18,148	83,481
(Sta.41,42,43,		14%	4%	33%	27%	22%	100%
44,45,46)	Outbound	7,521	1,260	22,333	19,288	44,412	94,813
		8%	1%	24%	20%	47%	100%
	Total	18,962	4,579	50,297	41,895	62,560	178,293
		11%	3%	28%	23%	35%	100%
Iloilo City	Inbound	20,530	6,056	48,842	42,787	22,571	140,785
(Sta.47,48,49,		15%	4%	35%	30%	16%	100%
50,51,)	Outbound	13,626	1,890	36,949	27,124	81,391	160,979
		8%	1%	23%	17%	51%	100%
	Total	34,155	7,946	85,790	69,910	103,962	301,763
		11%	3%	28%	23%	34%	100%

(Unit: Person Trip per Day)

4) Passenger Trip Generation/Attraction by Zone

Figure 4.2-4 shows passenger trip generation and attraction by zone. About one-half of trips is generated and/or attracted at Iloilo City. One-quarter each of trips is generated and/or attracted in the municipalities within and/or outside the Study Area.

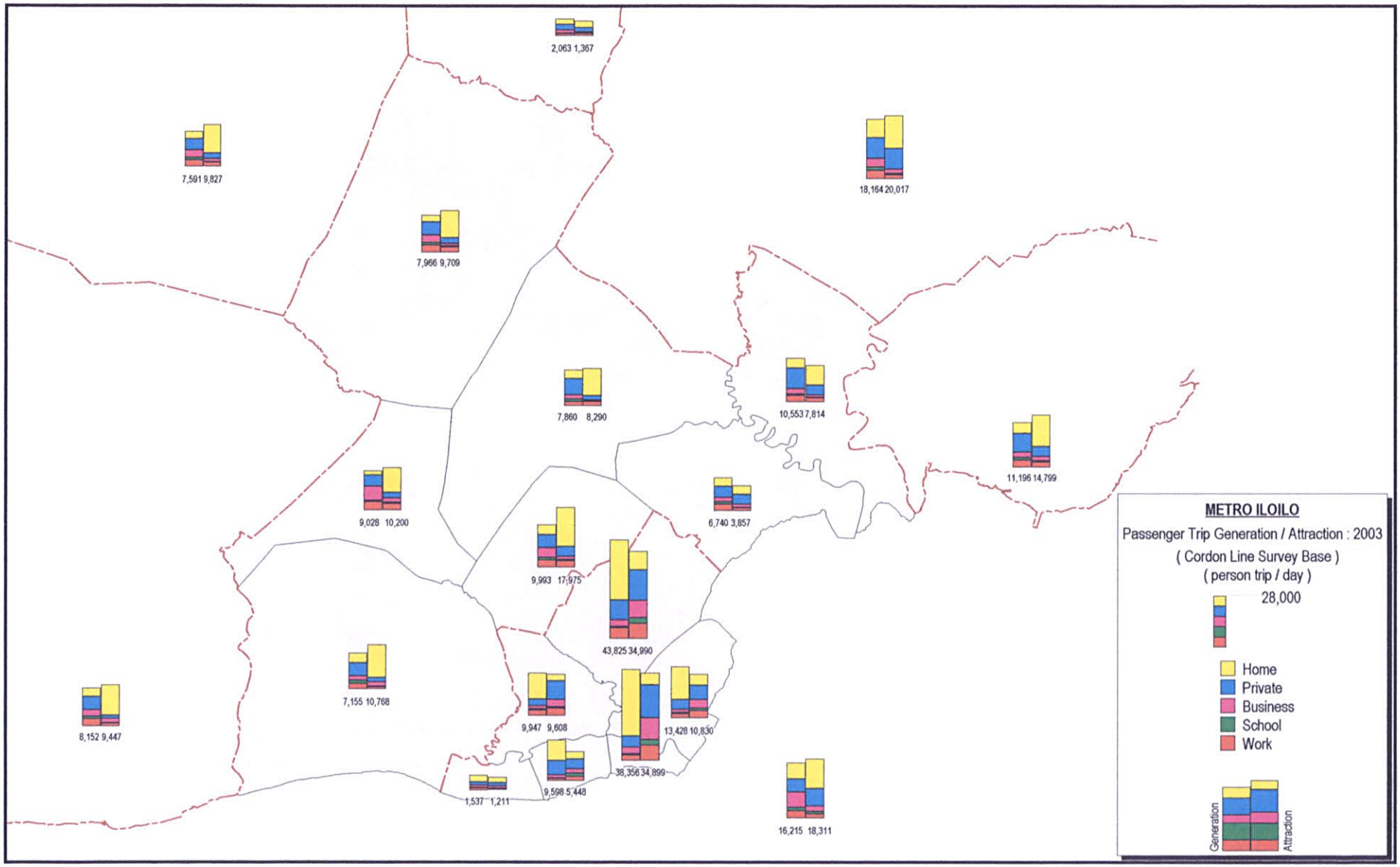

FIGURE 4.2-4 PASSENGER TRIP GENERATION / ATTRACTION BY ZONE

5) Type of Commodity

Table 4.2-3 shows cargo volume by item based on the roadside OD surveys in the Metro Iloilo Area. Total share of "construction materials" is the highest with around 40%, followed by "agro-products" with around 27%, then "manufactured products" with around 25%, on both roadside OD survey stations, located at Metro Iloilo and Iloilo City boundaries. By direction, "construction materials" is also the highest among the items, except outbound side of Metro Iloilo boundary, where "manufactured products" is the highest.

TABLE 4.2-3 TYPE OF COMMODITY IN METRO ILOILO

Location	Direction	Agro-Products	Manufact'd Products	Forest,Mining,Mineral	Construc'n Materials	Container & Empty	Total
Metro Iloilo (Sta.41,42,43, 44,45,46)	Inbound	1,257	829	111	2,480	393	5,069
		25%	16%	2%	49%	8%	100%
	Outbound	1,109	1,639	173	1,071	90	4,081
		27%	40%	4%	26%	2%	100%
	Total	2,366	2,468	283	3,550	482	9,149
		26%	27%	3%	39%	5%	100%
Iloilo City (Sta.47,48,49, 50,51,)	Inbound	1,667	1,161	203	2,760	233	6,023
		28%	19%	3%	46%	4%	100%
	Outbound	1,392	1,213	337	1,798	201	4,940
		28%	25%	7%	36%	4%	100%
	Total	3,058	2,374	539	4,558	433	10,962
		28%	22%	5%	42%	4%	100%

(Unit: Metric Ton per Day)

6) Cargo Trip Generation/Attraction by Zone

Figure 4.2-5 shows cargo trip generation and attraction by zone. It is noted that beside some districts in Iloilo City, Pavia also generates and attracts relatively high volume of commodities.

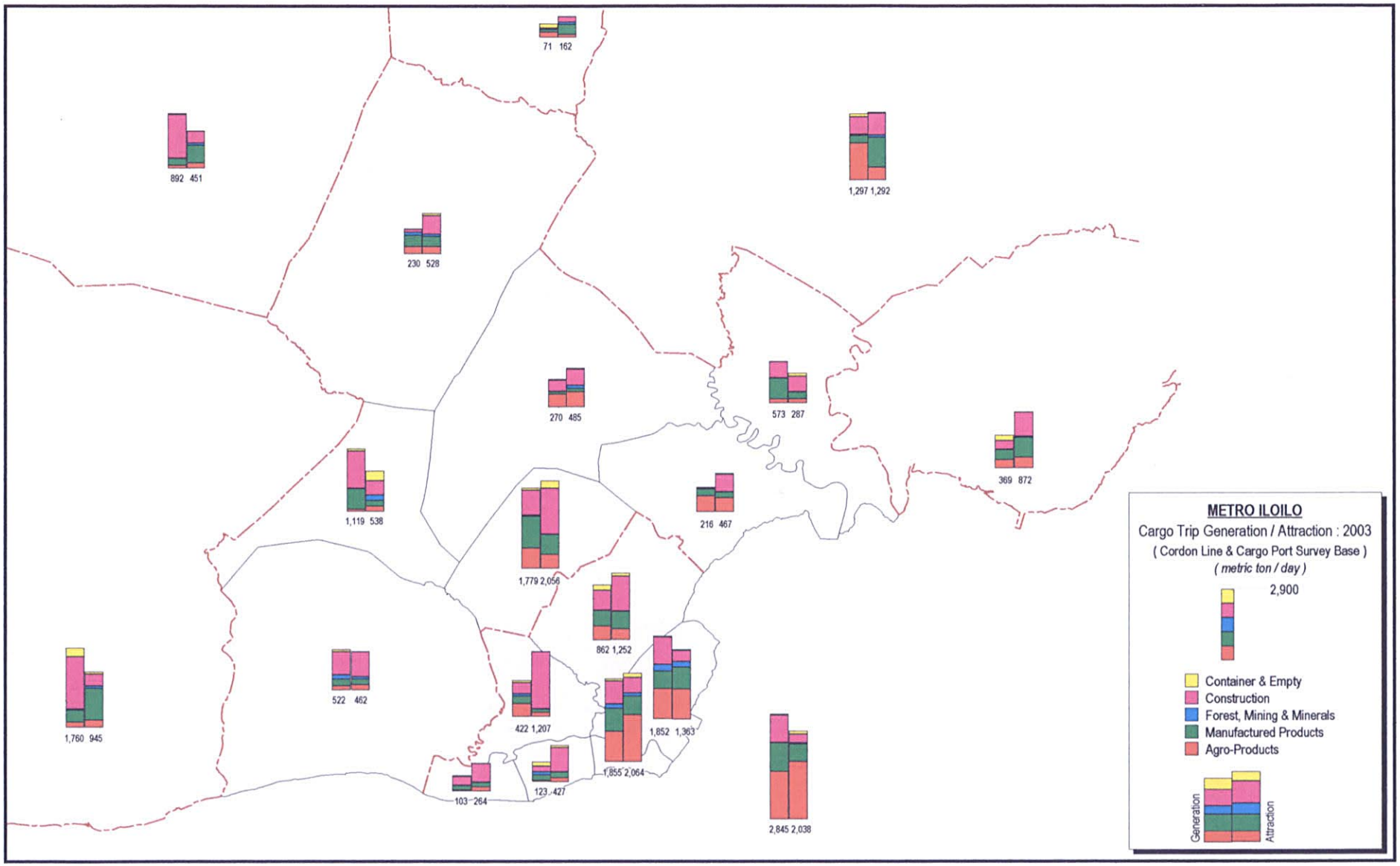

FIGURE 4.2-5 CARGO TRIP GENERATION / ATTRACTION BY ZONE

4.2.2 Traffic Volume on Major Roads

1) Survey Result

(a) Traffic Volume and Vehicle Compositions

Table 4.2-5 and Figure 4.2-6 shows traffic volume and its vehicle composition on major roads in the Metro Iloilo Area.

TABLE 4.2-5 TRAFFIC VOLUME AND VEHICLE COMPOSITIONS ON MAJOR ROADS IN THE METRO ILOILO AREA

Section	Sta.	Road Name & Locatior	Car	Jeepney	Bus	Truck	Others	Total
Metro Iloilo Cordon Line	41	Oton - Tigbauan Rd.	2,651	1,483	73	627	405	5,239
			51%	28%	1%	12%	8%	100%
	42	Iloilo - San Miguel Rd.	1,315	1,501	0	642	1,008	4,466
			29%	34%	0%	14%	23%	100%
	43	Sta. Barbara - Cabatuan Rd.	2,309	1,346	56	460	1,236	5,407
			43%	25%	1%	9%	23%	100%
	44	New Lucena - Pototan Rd.	2,606	1,103	352	653	998	5,712
			46%	19%	6%	11%	17%	100%
	45	Zarraga - Dumangas Rd.	1,803	1,816	251	453	659	4,982
			36%	36%	5%	9%	13%	100%
	46	Leganes - Dumangas Rd.	875	371	10	302	557	2,115
			41%	18%	0%	14%	26%	100%
Iloilo City Cordon Line	47	Iloilo - Oton Rd.	3,862	2,447	100	585	544	7,538
			51%	32%	1%	8%	7%	100%
	48	Iloilo - San Miguel Rd.	1,850	1,775	0	726	759	5,110
			36%	35%	0%	14%	15%	100%
	49	Iloilo - Pavia Rd.	5,414	4,433	100	1,295	1,041	12,283
			44%	36%	1%	11%	8%	100%
	50	Iloilo - Leganes Rd.	7,806	5,797	671	863	1,551	16,688
			47%	35%	4%	5%	9%	100%
	51	Iloilo - Dumangas Rd.	1,784	339	0	359	595	3,077
			58%	11%	0%	12%	19%	100%
Iloilo City CBD	13	Avancena St.	9,409	7,191	45	536	1,437	18,618
			51%	39%	0%	3%	8%	100%
	17	Montinola Brdg.	20,840	11,579	645	773	2,410	36,247
			57%	32%	2%	2%	7%	100%
	23	Lopez & Luna St.	14,314	9,403	-	8	1,283	25,008
			57%	38%	0%	0%	5%	100%
	25	Lapaz Mkt.	13,196	1,930	-	400	2,181	17,707
			75%	11%	0%	2%	12%	100%
	26	Forbes Brdg.	21,892	20,929	1	27	1,984	44,833
			49%	47%	0%	0%	4%	100%
	27	Diversion Rd.	19,578	7,908	694	597	1,348	30,125
			65%	26%	2%	2%	4%	100%
	29	M.H.del Pilar St.	14,054	10,644	10	124	949	25,781
			55%	41%	0%	0%	4%	100%
	33	Muelle Loney St.	13,037	890	2	1,063	3,364	18,356
			71%	5%	0%	6%	18%	100%
	34	Iznart St.	6,731	21,507	-	3	666	28,907
			23%	74%	0%	0%	2%	100%
	37	Gen. Luna St.	15,954	6,652	4	8	593	23,211
			69%	29%	0%	0%	3%	100%

At the boundary of Metro Iloilo, the total traffic volume was around 28,000 vehicles per day, of which 41% was small cars, followed by jeepneys with 27%.

At the boundary of Iloilo City, there are five main entrance/exit points, from/to municipalities of Oton, San Miguel, Pavia, Leganes, and coastal village, such as Dumangas. The total traffic volume from/to Iloilo City was around 45,000 vehicles per day, of which 46% was small cars, followed by jeepneys with 33%.

Among them, the largest traffic volume was observed along the Iloilo ~ Leganes Road with a total traffic volume of around 17,000 vehicles per day, followed by the Iloilo ~ Pavia Road with around 12,000 vehicles per day.

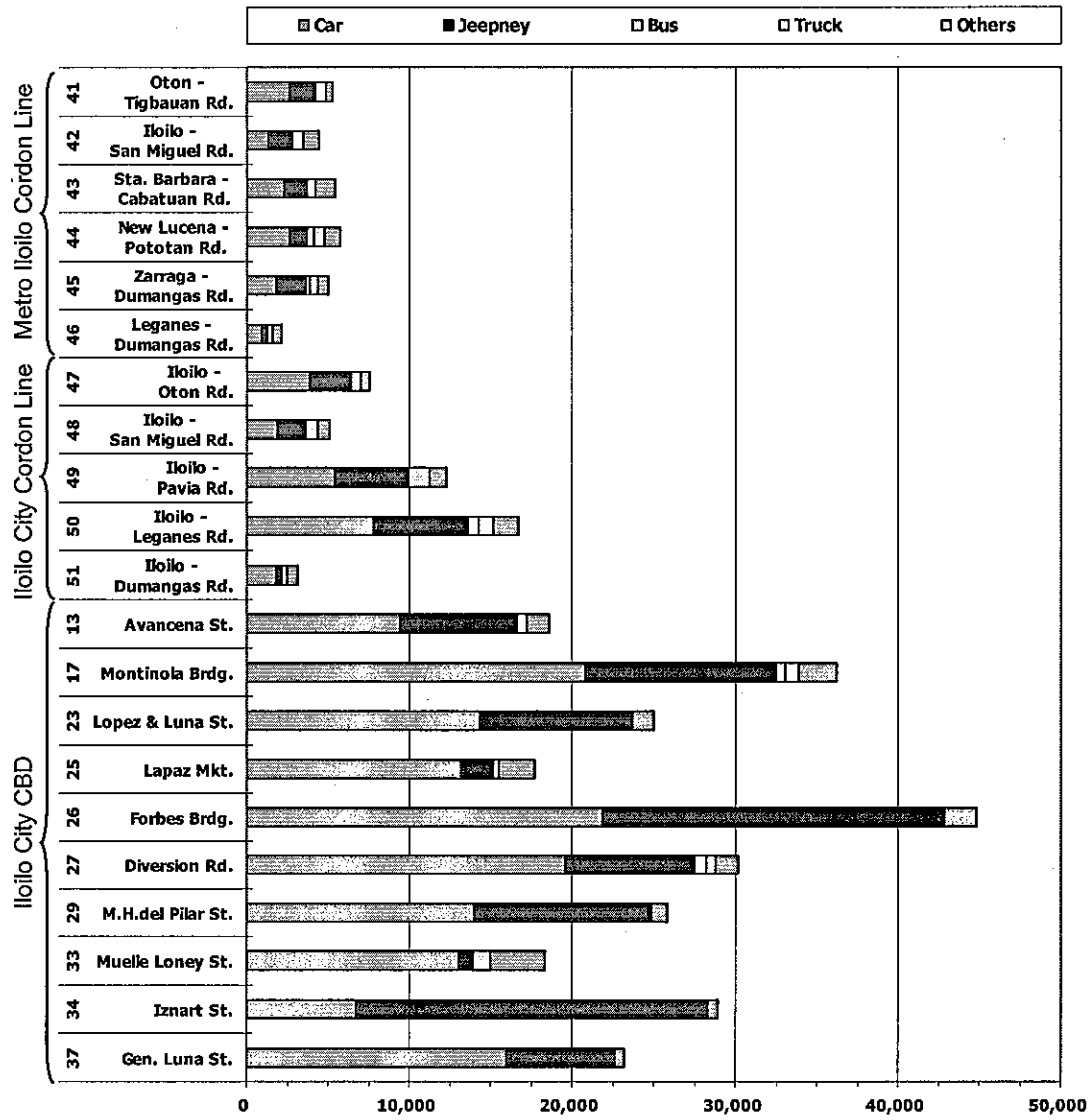

FIGURE 4.2-6 TRAFFIC VOLUME AND VEHICLE COMPOSITIONS ON MAJOR ROADS IN THE METRO ILOILO AREA

As for the traffic inside the Iloilo City, the largest traffic volume was observed at the Forbes Bridge, which connects the districts of City Proper and Lapaz each other. Remarkably, the traffic volume at this station was reaching about 45,000 vehicles per day, of which about one-half was small cars, and remaining one-half was jeepneys.

The second largest traffic volume was observed at Montinola Bridge, which connects

the Jaro Plaza and remaining divisions of Jaro. This bridge consists of twin bridges carrying northeast-bound and southwest-bound traffic separately. The total traffic volume at this station was around 36,000 vehicles per day, of which around three-fifths (3/5) was small cars, and remaining two-fifths (2/5) was jeepneys.

The traffic in the most divisions of the Iloilo City CBD is characterized by the high volume and high composition rates of small cars and jeepneys.

(b) Hourly Variation on Major Roads

Figure 4.2-7 (1) ~ (3) shows the typical hourly variations of traffic volume on major roads in the Metro Iloilo Area.

Metro Iloilo Cordon Line (i.e. Sta.43 / Santa Barbara ~ Pulupandan Road)

The inbound traffic has a morning peak between 07:00 and 09:00, while the outbound traffic has a morning peak around 10:00 and two evening peaks between 16:00 and 18:00.

Throughout the daytime from 07:00 to 17:00, the hourly traffic volume is around 400 (between 350 and 450) vehicles per hour as a whole. The peak hour ratio to the daily traffic is 8.0%, which is recorded between 08:00 and 09:00.

Iloilo City Cordon Line (i.e. Sta. 50 / Iloilo ~ Leganes Road)

The inbound traffic has a morning peak between 07:00 and 09:00 and an afternoon peak between 13:00 and 15:00, while the outbound traffic has a morning peak between 10:00 and 12:00 and an evening peak between 16:00 and 18:00.

Throughout the daytime from 07:00 to 18:00, the hourly traffic volume is around 1,000 (between 900 and 1,200) vehicles per hour as a whole. The peak hour ratio to the daily traffic is 7.5%, which is recorded between 10:00 and 11:00.

Main Roads in Iloilo City (i.e. Sta. 26 / Forbes Bridge)

Most of the main roads in Iloilo City have similar characteristics in hourly traffic variation. It is difficult to identify the peak hour for both the inbound and outbound traffic, since there is no big variation in hourly volume during the daytime from 08:00 to 18:00.

At the Forbes Bridge, where the highest volume was recorded, the inbound traffic has a morning peak around 08:00, and thereafter, continuous flat flow with around 1,200 vehicles per hour was observed, while the outbound traffic has a morning peak around 10:00. After the off-peak around 13:00, this outbound traffic flow has been gradually increased again, and then reached evening peak flow with around 1,800 vehicles per hour between 17:00 and 18:00.

As a whole, a morning peak occurred between 10:00 and 11:00, and an evening peak occurred between 17:00 and 18:00. The peak hour ratio to the daily traffic is 7.3%, which is recorded between 17:00 and 18:00.

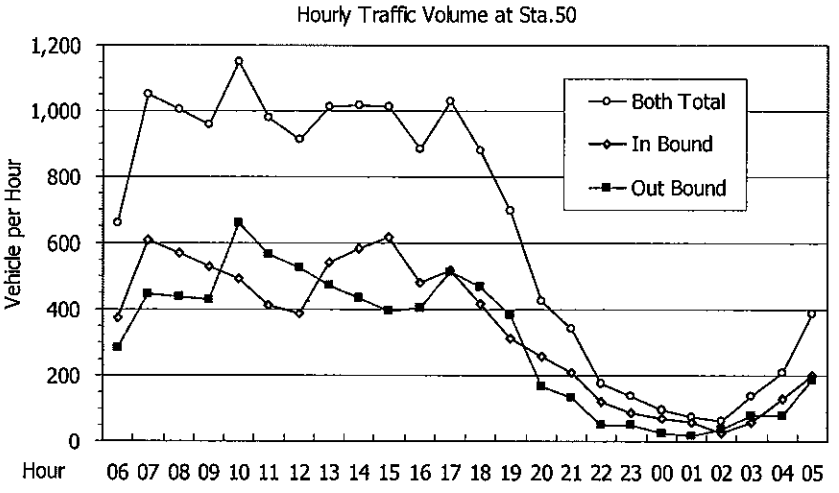

FIGURE 4.2-7 (1) HOURLY VARIATION ON MAJOR ROAD ALONG METRO ILOILO CORDON LINE [SANTA BARBALA ~ CABATUAN ROAD]

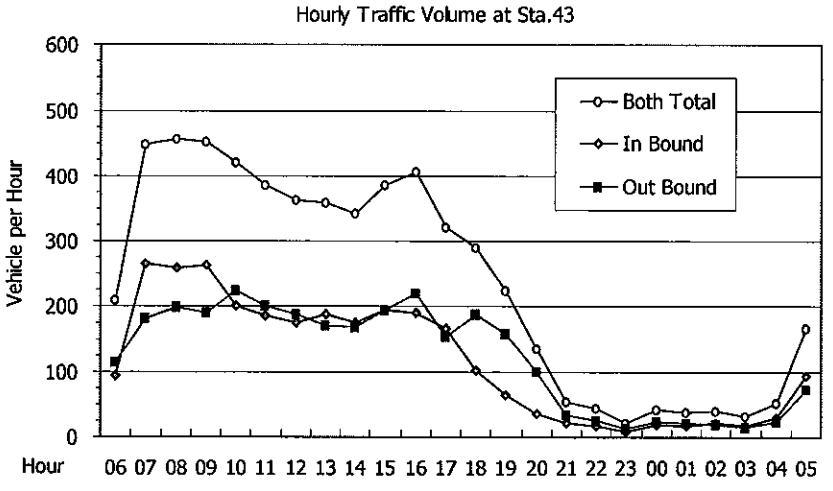

FIGURE 4.2-7 (2) HOURLY VARIATION ON MAJOR ROAD ALONG ILOILO CITY CORDON LINE [ILOILO ~ LEGANES ROAD]

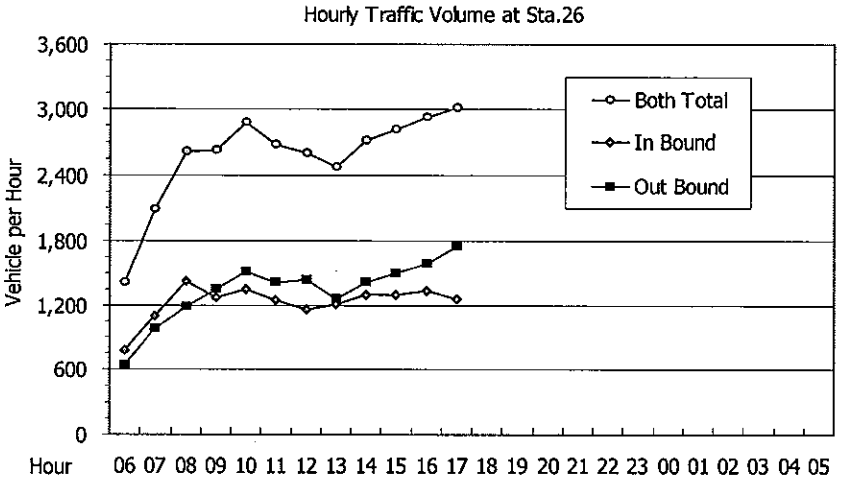

FIGURE 4.2-7 (3) HOURLY VARIATION ON MAJOR ROAD IN ILOILO CITY CBD [FORBES BRIDGE]

(c) Vehicle Passenger Occupancy

Table 4.2-6 shows average passenger occupancy obtained from the roadside OD survey.

TABLE 4.2-6 AVERAGE OCCUPANCY RATE

Vehicle Type	Average Passenger Occupancy
Car	2.74
Jeepney	11.90
Bus	28.61
Truck	2.28

(Unit: Passenger per Vehicle, including Driver)

d) Loading Volume

Table 4.2-7 shows average loading volume and empty vehicle ratio obtained from the roadside OD survey. Among the heavy vehicles, the trucks with three axles have the heaviest tonnages with approximately 4.6 tons per vehicle-trip in terms of gross average (including empty trucks).

The overall average loading volume is estimated as 4.8 tons per vehicle-trip in terms of net average (excluding empty trucks), and 2.5 tons per vehicle-trip in terms of gross average taking into account the empty truck ratio of about 48%.

TABLE 4.2-7 AVERAGE LOADING VOLUME

Code	Main Commodity	Pick-up, Van	Truck w/ 2-axle	Truck w/ 3-axle	Truck w/ 4-axle or more	Truck Average
01	Unprocessed Agro-Products	0.39	3.94	9.90		4.62
02	Sugar Cane		1.55			1.55
03	Processed Agro-Products	0.55	6.10	11.25	12.34	7.27
04	Manufactured Foodstuff	0.34	3.39	8.09	8.32	3.95
05	Manufactured Goods	0.30	2.73	1.05		2.54
06	Forestry Products			10.24	5.85	8.05
07	Mining & Mineral Oil Products	0.41	3.71	7.41	4.37	4.68
08	Construction Materials	0.36	6.65	14.62	14.24	9.19
09	Producers Goods	0.70	5.16	12.96	9.75	6.24
00	Container & Empty	0.00	0.19	0.20	0.01	0.19
Average Loading Volume (Gross)		0.01	2.00	4.62	2.57	2.50
Empty Vehicle Ratio		0.96	0.45	0.54	0.70	0.48
Average Loading Volume (Net)		0.35	3.65	10.06	8.58	4.79

(Unit: Metric Ton per Vehicle)

2) Traffic Assignment Result**

(a) Daily Traffic Volume

Figure 4.2-8 shows traffic demand and volume-capacity (v/c) ratio on present road networks in the Metro Iloilo Area as well as Iloilo City. In general, the traffic volume is higher, as the location of road section is closer to City Proper in Iloilo City.

It is also pointed out that the traffic demand is concentrating at some districts centers of Iloilo City, such as Jaro Plaza, Lapaz Plaza, and City Proper Plaza.

The highest traffic volume of 53,000 pcu per day is found at the entrance point to Jaro Plaza on the Iloilo ~ Leganes Road.

There are several sections where v/c ratios are exceeding 1.0, indicating that those sections are already facing serious situations due to over-concentration of the traffic at present.

(b) Average Travel Speed

Average travel speed by different type of cars along major radial roads as well as major streets in the Iloilo City CBD is shown in Table 4.2-8

With regard to the Iloilo~Leganes Road, the travel speed becomes less than 20 km/hr, at the entrance point to the Jaro Plaza in Iloilo City due to over-concentration of the traffic as mentioned above.

TABLE 4.2-8 AVERAGE TRAVEL SPEED

Road No.	Road Name	Length (km)	Travel Speed (km/hr)							
			Car				Jeepney			
			am	noon	pm	ave.	am	noon	pm	ave.
R1	Iloilo-Oton Road	20.90	30.8	32.2	33.0	32.0	29.6	30.5	31.4	30.5
R2	Iloilo-San Miguel Road	17.40	28.1	30.1	28.3	28.9	26.4	28.3	26.9	27.2
R3	Iloilo-Pavia-Sta Barbara-Cabatuan-Janiuay Road	30.60	46.3	48.1	47.1	47.2	44.8	43.7	45.6	44.7
R4	Iloilo-Leganes Road	22.30	34.3	38.2	35.8	36.1	30.9	36.7	33.5	33.7
R5	Iloilo Coast Road	16.00	38.4	36.5	36.9	37.3	-	-	-	-
R6	Rizal-La Paz-CPU Road	6.70	19.9	18.3	18.0	18.7	15.7	15.4	16.3	15.8
R7	Iloilo-Mansaya-Intl.Container Port Complex Road	4.60	21.5	26.5	22.1	23.4	17.3	24.4	20.3	20.6
R8	Jaro-Fish Port Complex Road	3.50	15.4	18.3	14.7	16.1	13.4	17.5	13.8	14.9
R9	Jaro-Znart-Muelley Loney Blvd. Road	7.00	18.3	17.5	19.1	18.3	16.3	17.6	17.0	17.0
R10	Jalandoni-Muelley Loney Blvd.-Constancia Road	7.90	14.2	13.9	14.5	14.2	13.0	12.8	13.5	13.1

Road No.	Road Name	Length (km)	Travel Speed (km/hr)							
			Dumptruck				Bus			
			am	noon	pm	ave.	am	noon	pm	ave.
R1	Iloilo-Oton Road	20.90	31.9	-	32.2	32.1	30.6	31.7	30.3	30.9
R2	Iloilo-San Miguel Road	17.40	27.8	-	-	27.8	-	-	-	-
R3	Iloilo-Pavia-Sta Barbara-Cabatuan-Janiuay Road	30.60	47.1	49.6	-	48.3	47.3	-	48.5	47.9
R4	Iloilo-Leganes Road	22.30	34.8	-	-	34.8	31.9	-	33.6	32.7
R5	Iloilo Coast Road	16.00	38.5	40.4	37.2	38.7	-	-	-	-
R6	Rizal-La Paz-CPU Road	6.70	18.3	16.8	17.5	17.5	-	-	-	-
R7	Iloilo-Mansaya-Intl.Container Port Complex Road	4.60	20.7	23.0	20.4	21.4	-	-	-	-
R8	Jaro-Fish Port Complex Road	3.50	16.2	17.3	16.4	16.6	-	-	-	-
R9	Jaro-Znart-Muelley Loney Blvd. Road	7.00	15.3	17.6	15.9	16.3	-	-	-	-
R10	Jalandoni-Muelley Loney Blvd.-Constancia Road	7.90	13.8	13.1	14.3	13.7	-	-	-	-

** Traffic Volume together with Volume-Capacity Ratio (VCR) indicated in this section is provided by the JICA-STRADA (System for Traffic Demand Analysis) packages. Therefore, indices in the figures are not always matching with exact values obtained from the traffic surveys.

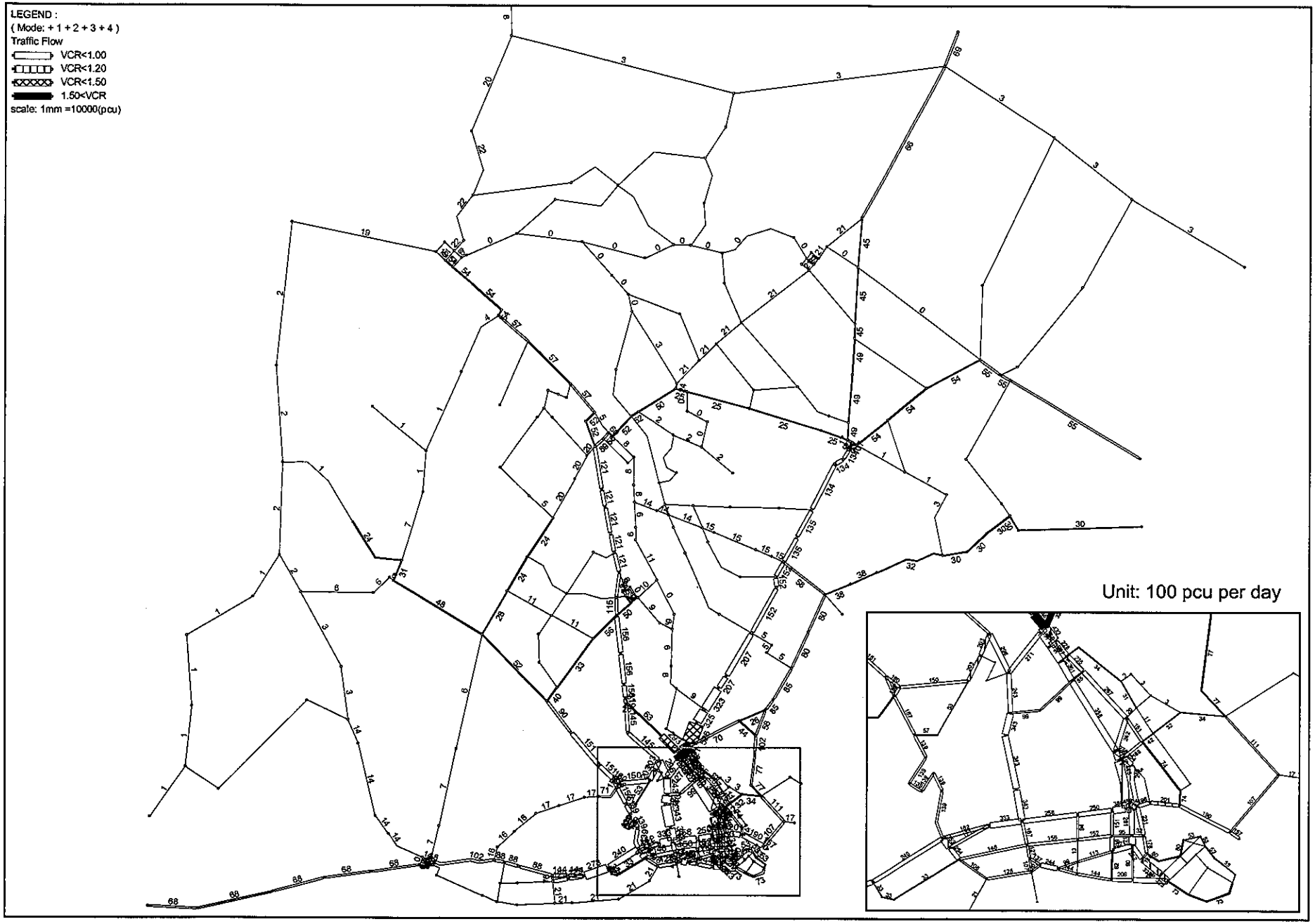

FIGURE 4.2-8 TRAFFIC ASSIGNMENT IN METRO ILOILO AREA -2003-

4.2.3 Airport and Seaport Related Traffic[***]

1) Airport

The present Iloilo Airport is located at the north side of the Iloilo River, just west of the Diversion Road (Iloilo ~ Pavia / Santa Barbara / Cabatuan Road) with a runway length of 1,800 meters. The Iloilo Airport is serving for the flight from/to Manila and Cebu operated by Philippine Airlines (PAL), Cebu Pacific Air (CPA), Air Philippines, and some military and general aviation.

(a) Passengers and Cargo Volume

Table 4.2-9 and Figure 4.2-9 show the number of passengers and cargo handled by the Iloilo Airport in recent five years, obtained from Air Transport Office, DOTC. According to these records, the average number of passengers and cargo volume were reaching around 2,300 persons and 30 metric tons per day in 2001, respectively.

TABLE 4.2-9 PASSENGERS AND CARGO HANDLED BY ILOILO AIRPORT

Departure / Arrival Total	1998	1999	2000	2001	2002	Ave. Growth ('98~'02)
Passengers (persons)						
Annual Total	592,941	641,675	695,245	701,736	676,663	3.4%
Daily Average	1,976	2,139	2,317	2,339	2,256	
Cargo (tons)						
Annual Total	5,759	6,474	8,423	9,464	8,890	13.3%
Daily Average	19.2	21.6	28.1	31.5	29.6	

(Data Source: Air Transport Office, Iloilo Airport, DOTC)

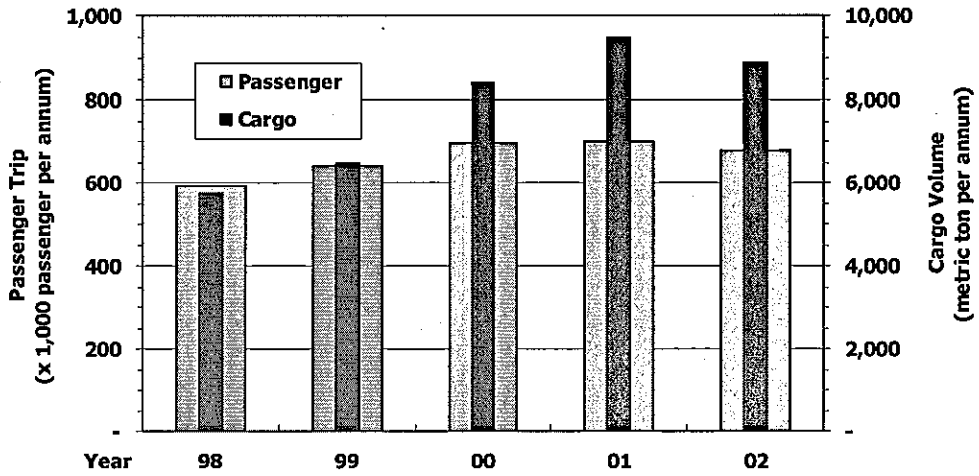

FIGURE 4.2-9 PASSENGERS AND CARGO HANDLED BY ILOILO AIRPORT

(b) Airport Related Traffic Demand

As shown in Table 4.2-10, the total number of airport related traffic is estimated around 6,900 vehicles and 15,600 persons per day based on the traffic counting survey at the Iloilo Airport. The main mode is small cars, followed by jeepneys.

[***] Daily average figures indicated in this section are estimated from the following formula taking account of the cancellation of the flights/voyages that occur several times during the year due to critical weather conditions and/or malfunction of the aircrafts/vessels. [Daily Average = Annual Total / 300]

TABLE 4.2-10 AIRPORT RELATED VEHICLE & PASSENGER TRAFFIC GENERATION & ATTRACTION

Type	Vehicle/Day	Share
Car	5,464	79.5%
Jeepney	794	11.6%
Bus	10	0.1%
Truck	92	1.3%
Others	512	7.5%
Total	6,873	100.0%

Type	Persons/Day	Share
Car	9,210	59.1%
Jeepney	5,106	32.7%
Bus	265	1.7%
Truck	205	1.3%
Others	810	5.2%
Total	15,596	100.0%

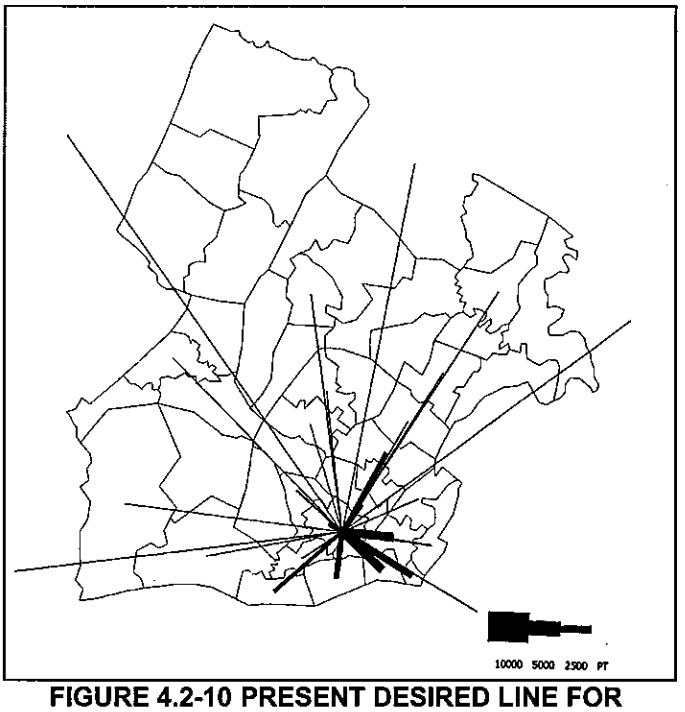

FIGURE 4.2-10 PRESENT DESIRED LINE FOR AIRPORT RELATED TRAFFIC

Origin and/or destination of the airport users are illustrated in Figure 4.2-10. Iloilo City is absorbing almost half of the airport related vehicle and passenger traffic, accounting for 48% of the total demands.

2) Seaports

The present Iloilo Seaports are scattering along the shoreline facing the Iloilo Strait. They consist of following three ports, namely "Fort San Pedro" handling long-range ferry and cargo (for Manila, General Santos, etc.) at the tip of the Iloilo Peninsula, "Mulley Loney" handling medium/short-range ferry and cargo (for Bacolod, Pulupandan, Guimaras, etc.) at the mouth of the Iloilo River, and "Loboc" handling international cargo at the newly developed berths in Lapaz. In addition, there is one more port exist as a fishery port in the reclamation area located at south of City Proper.

(a) Passengers and Cargo Volume

Table 4.2-11 and Figure 4.2-11 show the number of passengers and cargo handled by the Iloilo Seaports in recent five years, obtained from Philippines Port Authority.

TABLE 4.2-11 PASSENGERS AND CARGO HANDLED BY ILOILO SEAPORTS

Embark / Disembark Total	1998	1999	2000	2001	2002	Ave. Growth ('98~'02)
Passengers (persons)						
Annual Total	2,373,030	2,522,484	2,470,884	2,311,370	2,520,031	1.7%
Daily Average	7,910	8,408	8,236	7,705	8,400	
Cargo (tons)						
Annual Total	2,872,155	2,776,217	2,394,142	2,550,237	2,848,656	0.3%
Daily Average	9,574	9,254	7,980	8,501	9,496	

(Data Source: Annual Statistical Report, Philippine Port Authority)

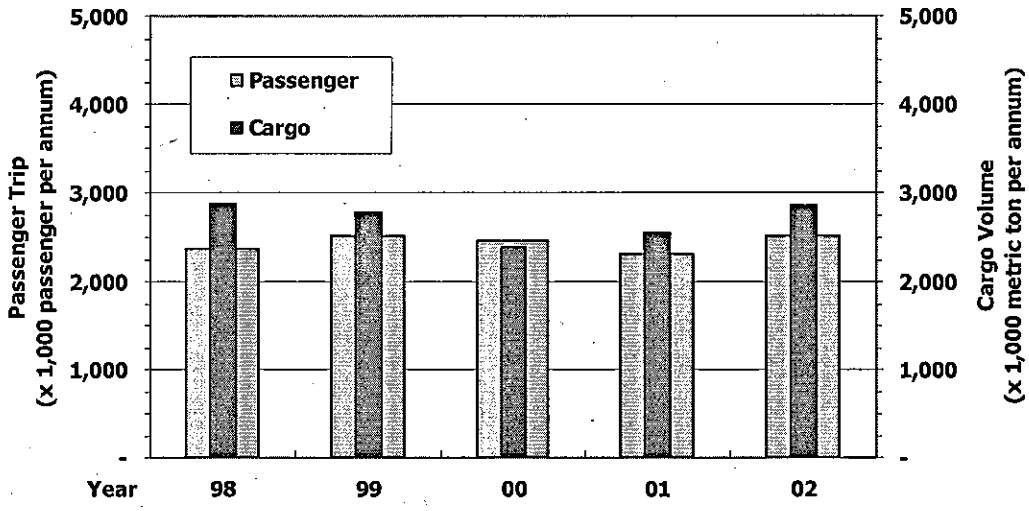

FIGURE 4.2-11 PASSENGERS AND CARGO HANDLED BY ILOILO SEAPORTS

According to these records, the average number of passengers and cargo volume were reaching around 8,400 persons and 9,500 metric tons per day in 2002, respectively.

(b) Seaports Related Traffic Demand

As shown in Table 4.2-12, the total number of seaports related traffic demands is estimated around 19,300 vehicles and 70,500 persons per day based on the traffic counting survey at the Iloilo Seaports. Major sub-mode of seaports users is mainly jeepneys or other vehicles, such as tricycle or pedal-cabs, although this general shares are vary by their original mode. Details are described in following section.

TABLE 4.2-12 SEAPORTS RELATED VEHICLE & PASSENGER TRAFFIC GENERATION & ATTRACTION

Type	Vehicle/Day	Share
Car	5,471	28.3%
Jeepney	4,468	23.1%
Bus	57	0.3%
Truck	6	0.0%
Others	9,318	48.2%
Total	19,320	100.0%

Type	Persons/Day	Share
Car	16,446	23.3%
Jeepney	28,226	40.0%
Bus	1,274	1.8%
Truck	13	0.0%
Others	24,520	34.8%
Total	70,479	100.0%

FIGURE 4.2-12 PRESENT DESIRED LINE FOR SEAPORTS RELATED TRAFFIC

The main origin and/or destination of the seaports users are illustrated in Figure

4.2-12. Iloilo City is absorbing more than half of the seaport related vehicle and passenger traffic, accounting for around 60% of the total demands.

3) Trip Production

Table 4.2-13 and Figure 4.2-13 shows estimated number of embarked/disembarked passengers at airport and seaports on the day of survey, as well as trip production rate of vehicles and persons that send off and/or welcome those embarked/disembarked passengers.

TABLE 4.2-13 AIRPORT & SEAPORTS RELATED TRAFFIC

Terminal	Embarked / Disembarked Passengers	Trip Production Rate	
		Vehicles	Passengers
A.P.	1,726	3.98	9.04
L.F.P.	2,208	0.71	2.38
M.F.P.	6,062	1.07	3.36
S.F.P.1	7,644	0.90	3.35
S.F.P.2	5,940	0.73	3.24
Total / Average	23,580	1.11	3.65

Remarks : A.P. : Airport
L.F.P. : Long-Range Ferry Port (Fort San Pedro) for Manila/Gensan/Others
M.F.P. : Mid-Range Ferry Port (Muelle Loney) for Bacolod
S.F.P. : Short-Range Ferry Port (Muelle Loney) for Guimaras

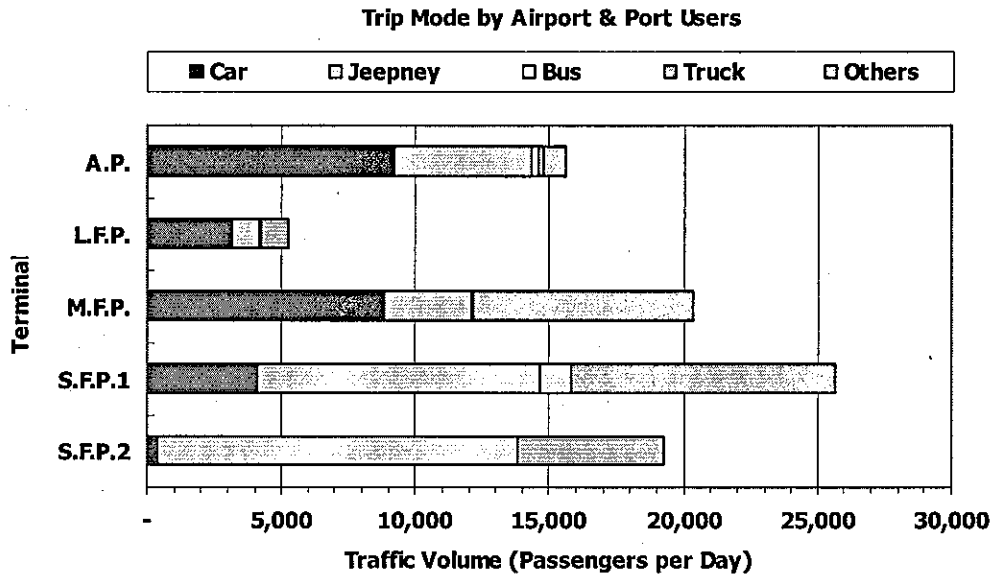

FIGURE 4.2-13 AIRPORT & SEAPORTS RELATED TRAFFIC

It is noted that small cars are major sub-mode for airport and long-range ferry users from/to Manila, Cebu, and General Santos, etc. On the other hand, jeepneys and tricycles or pedal-cabs are major sub-mode for short-range ferry users from/to Guimaras Island, who usually commute across the Iloilo Strait, and generate short distance trips within the nearest districts of Iloilo City, such as City Proper and La Paz from/to the roll-on/roll-off points. Major sub-mode for mid-range ferry users from/to

Bacolod is small cars or tricycles and pedal cabs, therefore jeepneys are not so popular sub-mode for them.

4.2.4 Bus/Jeepney Routes and Terminals

Table 4.2-14 shows number of arrival and departure, as well as on standby in peak hour with capacity of each bus/jeepney terminal in the Metro Iloilo Area. According to this result, most of bus/jeepney terminals are able to handle most of present demands of arrival and/or departing buses/jeepneys, except Iloilo Fishing Port and Parola terminal (near Fort San Pedro).

TABLE 4.2-14 CONDITION OF BUS/JEEPNEY TERMINALS

#	Terminal	Peak Hour						Capacity	
		Arrival	VCR	Departure	VCR	Stand-by	VCR	On & Off	Stand-by
1	Iloilo Fishing Port	109	***	65	*	215	***	5	80
2	Parola	155	***	167	***	60	***		
3	Iloilo Doctors	25	-	19	-	45	*	3	40
4	SM City	79	-	94	-	22	-	20	80
5a	SM Jaro	47	-	38	-	39	-	8	60
5b	Jaro Public Market	69	-	73	-	3	-	16	20
6	Antique Bus	19	-	9	-	59	**	12	40
7	Ceres Bus	26	-	18	-	18	-	4	40
8	Bolilao Jeepney	23	-	29	-	43	-	3	60
9	Zarraga Public Market	24	-	15	-	13	-	4	20

Remarks : Volume-Capacity Ratio (VCR) is calculated as follows;
On & Off : Maximum Arrival & Departure in 5 min vs On & Off Spaces
Stand-by : Maximum Stand-by in Any Hour vs Stand-by Spaces
*** : VCR>1.5 ** : VCR>1.2 * : VCR>1.0 - : VCR<1.0

Main role of Iloilo Fishing Port terminal is stand-by space for inter-city jeepneys during the daytime, therefore not enough on&off spaces are not vital problem, although attaining enough spaces for stand-by is vital.

On the other hand, Parola is not "off-road" terminal, it is rather "on-road" terminal, therefore on&off, stand-by spaces are not designated, and they expand and/or shrink according to the demands along the roadside. It is recommendable that this type of terminal shall be replaced by properly designed "off-road" type terminal.

Iloilo Doctors terminal and Antique Bus terminal shows that stand-by spaces are not enough for maximum demands, therefore it is recommendable that these terminal require expansion of stand-by spaces or provision of additional spaces for maximum demands. Considering capacity of other terminals, it is recommendable that utilization of stand-by spaces among the terminals is one of the options to attain those necessary spaces without additional cost.

Figures 4.2-14 shows jeepney routes within the central part of Iloilo City. Several routes of those are concentrating on to the particular streets in the CBD.

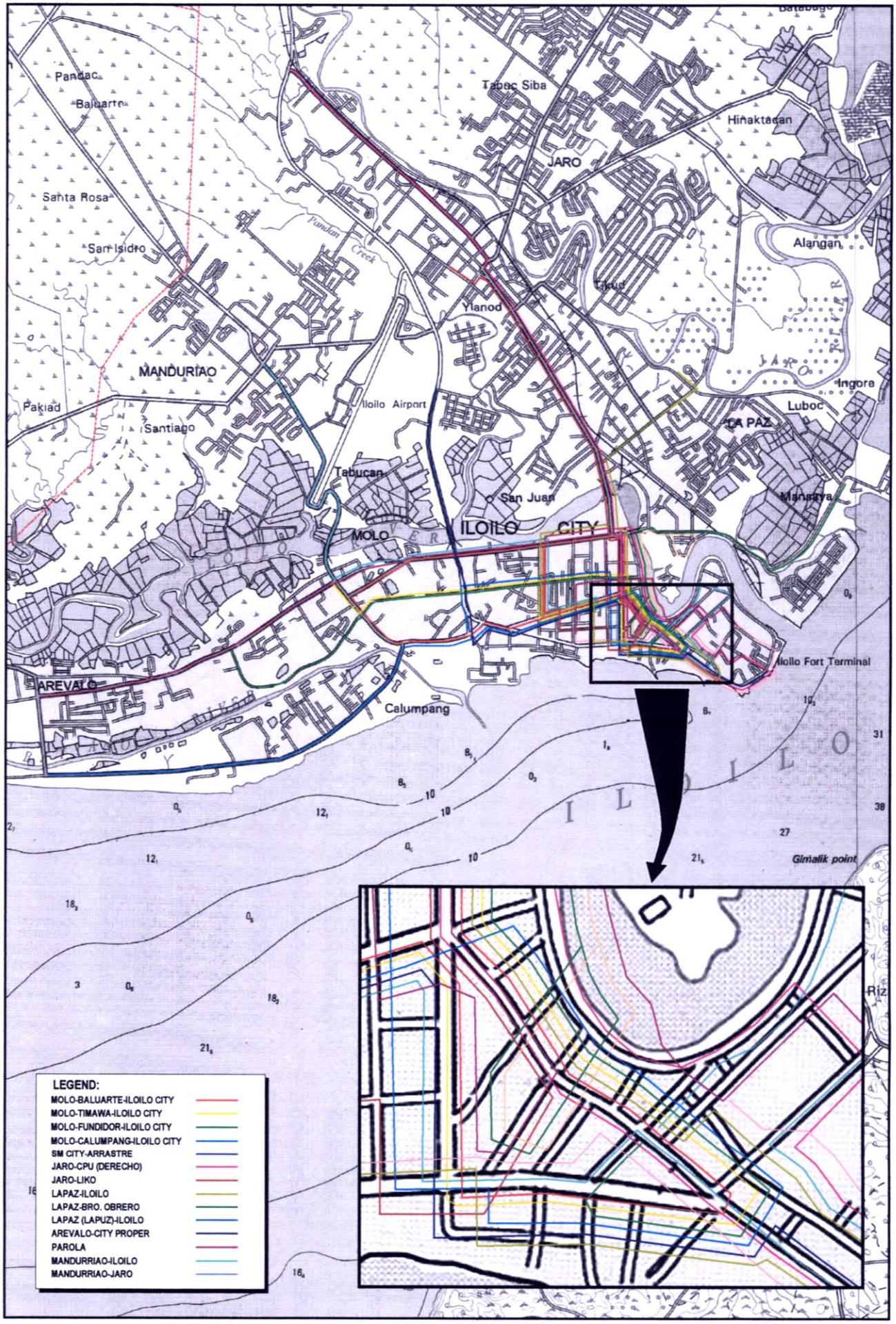

FIGURE 4.2-14 JEEPNEY ROUTE MAP (ILOILO CITY)

4.3 TRAFFIC MANAGEMENT IN ILOILO CITY AND ADJOINING AREAS

4.3.1 Existing Conditions

1) Road Network

The study area takes a form of fun spread out about 135 degree with Iloilo City at its center. A specific feature of the study area is that Iloilo River runs parallel to the shore line and delineates a peninsula that stretches out from west to east. Many small winding creeks are also found all over the study area and there are low lying areas, where flooding is a problem. Road network also follows the geographic shape. Several radial streets emanate from the city in all directions connecting the outer towns with Iloilo City.

In general, the focus area of the study can be divided into four separate areas in terms of traffic characteristics:

- Central area
- Outer central area
- Suburbs
- Outer town area

a. Central Area

The central area is an area located on the peninsula surrounded by water except the west side, where San Agustin Street and Jalandoni Street are the boundary. It is approximately the eastern half of City Proper. At the tip of the peninsula, semi-grid road network is formed and several government offices including City Hall locate there. A ring road encloses the network along shoreline and two ferry terminals are located there. Another grid road network exists to the west and is occupied by many commercial establishments. Old buildings built in 1950s still stand there but new development like Robinson Shopping Mall has recently opened. Two grid networks join together with 45 degrees and central market locates at the joint.

Roads in the central area are generally good having two to four lanes in both directions with sidewalk and with or without median. They are separated each other 200 to 300 meters apart. Density of road is thus higher than other areas. One-way system is introduced to some of the roads in north-south direction.

Because of the geographic condition, access to the central area is limited to two directions, from north and from west. The central area is connected with the northern area only with three bridges. Forbes Bridge is a most important bridge connecting Luna, La Paz and Jaro Districts with City Proper. In fact the largest daily volume of over 30,000 vehicles in 12 hours is observed on the bridge. Another bridge parallel to Forbes Bridge supplements the access from the north and northeast. Quirino Lopez Bridge connects City Proper with the eastern area including Iloilo International Port. Higher share of trucks is observed there. Two more bridges exist over Iloilo River west of the central area, which also provide access from the north. A bridge along Aquino Road (or more commonly called Diversion Road) is becoming important for its large capacity and the area along Diversion Road is emerging as new commercial center. Another two lane bridge, Carpenter Bridge, to the west connects the existing Airport and the central area. In addition to these existing bridges, a new bridge is being constructed over Iloilo River as extension of San Agustin Street.

Access from the west is also limited to three roads. General Luna along the south side of Iloilo River is a national road that connects Oton and other towns along southern shoreline to City Proper. Timawa Avenue at the center of peninsula

provides an access for residential area in the west. Narrow Molo Blvd. and Tanza along sea shore is another access road for densely populated Molo and Areval areas.

b. Outer Central Area

There are two outer central areas in the study area. On the west side of the central area is the outer central area approximately defined by San Agustin/Jalandoni as eastern boundary and Yulo Street in Molo District as western boundary. North of the area is bounded by Iloilo River and the south side is Iloilo Strait.

Another outer central area exists to the north of the central area beyond Iloilo River with Jaro Plaza at its center. It has slim rectangular shape in northwest and southeast directions due to the constraint of Dungong River and Jaro River on each side of the area. Jaro district developed separately from the central area but now two areas are joined together by Luna Street and Forbes Bridge over Iloilo River.

These outer central areas are mostly residential area. In addition, a number of educational institutions including University of the Philippines in the Visayas, religious facilities and hospitals also locate in the area.

Road network is less dense compared with central area and most of the roads have only two lanes in both directions except M. H. del Pilar on the peninsula and Lopez Jaena in Jaro La Paz areas.

c. Suburbs

Outside of the outer city center expands vast area of suburbs, mostly used as rice field and livestock farming. Roads connecting outer towns scattered over the study area pass through the area. Most of them are two-lane road with shoulder and no sidewalk is provided. Exception is Diversion Road (Aquino Sr. Road) located east of airport runway. It is a four lane divided road with wide shoulder. Because of the good accessibility along the road, the area is emerging as new commercial area including SM City shopping mall. Such facilities as pedestrian overpass, covered jeepney and bus terminal, service road and jeepney bay are constructed there.

d. Outer Town Areas

There are several small outer towns in the study area like Oton, San Miguel, Pavia, Santa Barbara, Leganes and Zarraga. In general, national road penetrates these outer towns and another one or two arterials streets diverge from the national road toward other outer towns.

Although road network in these towns is different each other in shape, church, market and town hall are commonly found at town center and people's daily activities concentrate there. Inter-city roads connecting outer towns are also main street in the town. Thus there is a mixture of local traffic and through traffic there, creating potential hazard to the residents. A bypass was constructed around Pavia and Santa Barbara to remove through traffic from the town center. The bypass road around Santa Barbara will also serve as part of access road to the proposed Iloilo International Airport.

2) Intersections Layout

Intersection is a place where conflicting movements share the same space. Road capacity is often limited by the capacity at intersection. Thus the operation at intersection is critical for smooth and safe traffic movement. Comments relating to the layout of intersections are highlighted as follows.

a. Uncontrolled / Priority / Give Way

The priority / give way intersection is the basic intersection type when two or more roads connect and is the predominant intersection type in the study area. General characteristics of existing intersections are:

- Many intersections are formed by intersecting roads without traffic engineering design
- Priorities are not defined on the approaches
- Lane line is not drawn at approaches and no turning direction is designated
- Large undefined areas with irregular traffic streams
- Relies on traffic taking avoiding action to avoid collisions
- Lack of left turn pockets results in delays to through traffic movements
- Sidewalk is not provided to many intersections in suburbs and movement of vehicle and pedestrian is not segregated

b. Roundabout

There are only few roundabouts in the study area. Three locations along Iznart, Iznart–Rizal, Iznart–Ledesma and Iznart–Gen. Luna are roundabout. The main observations relating to roundabouts are summarized as follows:

- Central island and vehicle circulating area are too small to operate as roundabout
- Priorities are not defined on the approaches
- Vehicles tend to make shortcut
- Pedestrian crossing is not provided, thus generating many jaywalkers

c. Signalized Intersection

Conflicts between opposing traffic streams are regulated by traffic signal which defines the use of the intersection for conflicting movements. Unfortunately only one signal is operating and other nine signals are out of order.

- Evidence of poor maintenance as all but one signals are not working
- Signal timings are not related to traffic demand
- Manual operation of signal by police
- Modern traffic engineering principles such as lane widening not applied

3) Traffic Operation

a. Traffic Volume Count

Traffic volume count survey was conducted at 54 survey stations throughout the Study Area. 24-hour count was conducted at 14 locations while the 12-hour count was conducted at the remaining 40 locations.

Due to geographic condition and road network configuration, roads connecting City Proper with other areas are limited. The traffic volume (total of both directions) in 12 hours (6:00 -18:00) in vehicle around the city center is shown in Figure 4.3-1. About 80,000 vehicles cross Iloilo River and most of them are assumed to head for or come from the city center. Bonifacio and Diversion road are two main accesses carrying about 30,000 vehicles. From the west side, 42,000 vehicles make trip to and from the city center and half of them use M. H. del Pilar and General Luna.

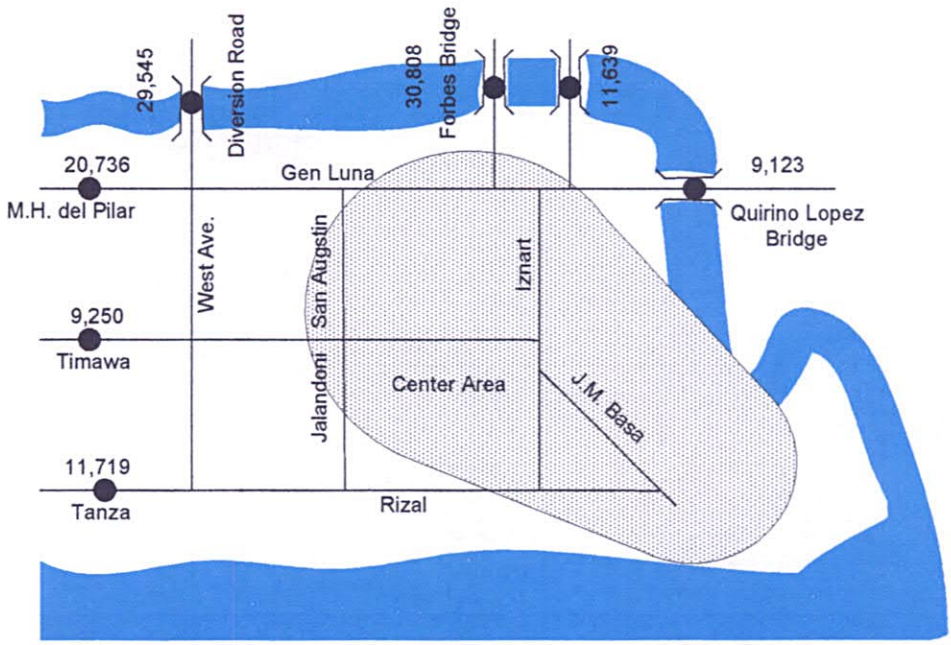

FIGURE 4.3-1 TRAFFIC VOLUME TO AND FROM CITY CENTER

The traffic volume within the city center is shown in Figure 4.3-2. The largest traffic volume of over 20,000 vehicle in 12 hours is found along General Luna for east-west direction, while along Iznart in north-south direction. Other streets with relatively high traffic volume coincide with the jeepney routes.

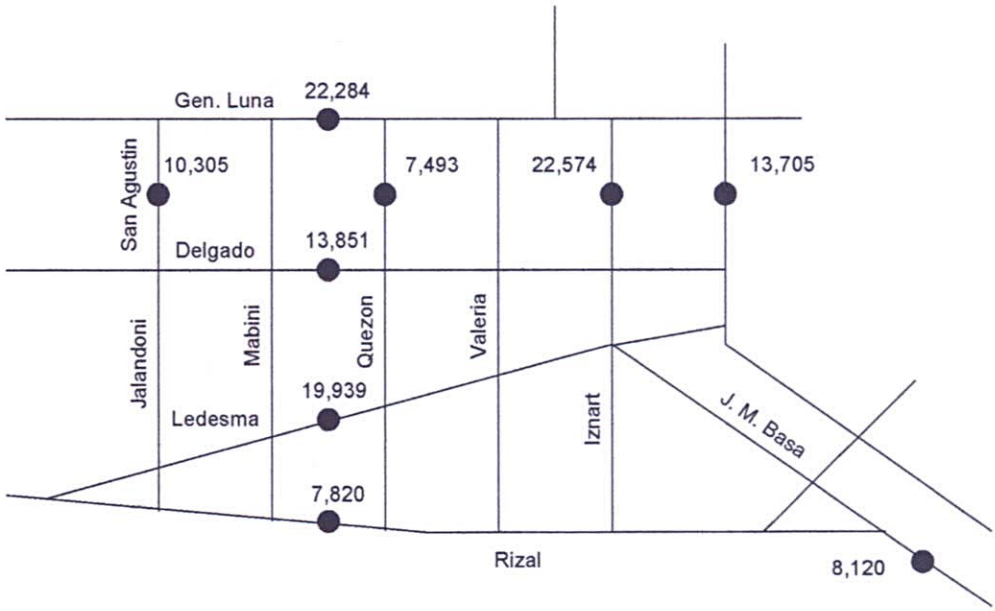

FIGURE 4.3-2 TRAFFIC VOLUME WITHIN CITY CENTER

Traffic volume count in outer central area suggests that there is large volume of through traffic passing though the area in addition to the traffic generated or attracted in the area. Avacena and M. H. del Pilar are a national road leading to other cities and towns along southern shoreline on the east side of Panay Island. As such, traffic volume is high and many of them seem to be through traffic. On the other hand, Arevalo Blvd. and Molo Blvd are local road serving only the traffic demand in the area.

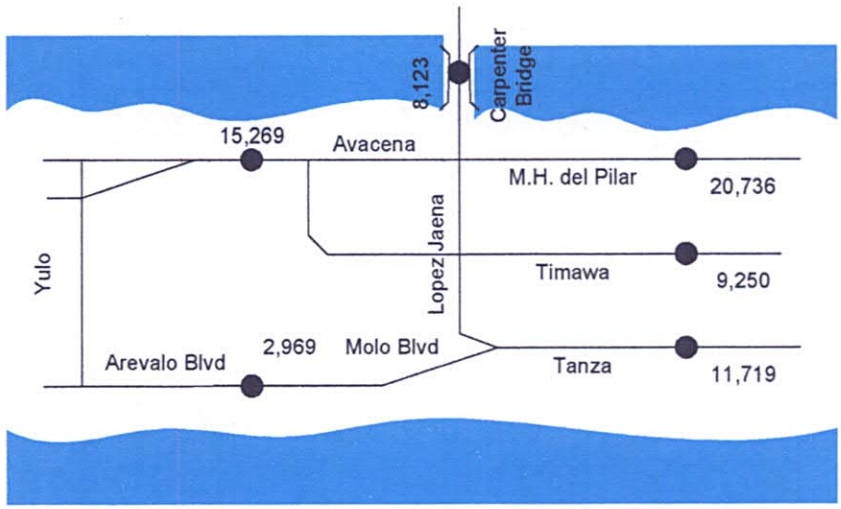

FIGURE 4.3-3 TRAFFIC VOLUME IN MOLO

The same tendency can be seen in the traffic volume of Jaro area. Ledesma is a national road that reaches Roxas City and Kalibo City on the northern shore of the island. Due to the long rectangular shape of the area, main traffic flow is seen on two roads, Burgos and Luna. Of the two, Luna carries more traffic as it is a road leading to City Proper.

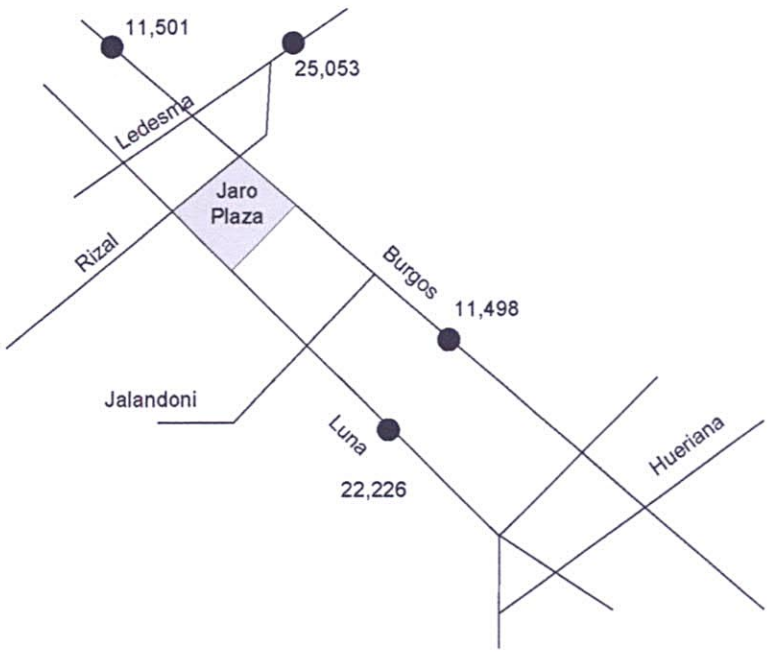

FIGURE 4.3-4 TRAFFIC VOLUME IN JARO

Traffic volume in the suburbs is shown in the figure below. The figure indicates 24-hour traffic volume where available as well as 12-hour traffic volume. Main traffic flows in the suburbs is in the direction to and from Iloilo City and traffic volume decreases as survey station becomes farther from Iloilo City. Traffic volume between outer towns is generally small.

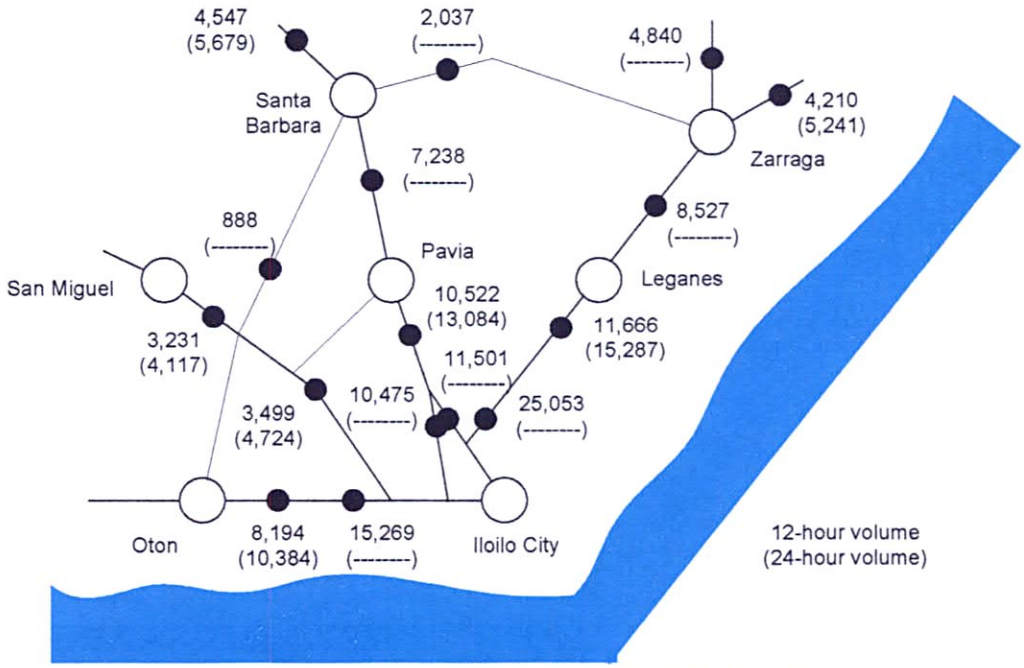

FIGURE 4.3-5 TRAFFIC VOLUME IN SUBURBS

b. Vehicle Composition

In general, public transport is the primary measures in the Philippines. In Metropolitan Iloilo study area, jeepney and tricycle are key transport for the residents and there is no intra-city bus service. Hence traffic count records show the high share of these two modes. According to the traffic volume count survey conducted by this study, the following seven locations have the share of jeepney higher than 50%. Naturally, they are all located along the jeepney route with relatively large traffic volume.

TABLE 4.3-1 LOCATION WITH HIGH JEEPNEY SHARE

	Sta.	Location	Share	Volume (12h)
1	34	Iznart Street	79.4 %	22,574
2	19	San Isidro	72.7	11,501
3	39	Ledesma Street	62.2	19,939
4	14	Arevalo Blvd.	60.3	2,969
5	36	Jalandoni Street	59.3	10,305
6	26	Forbes Bridge	53.4	30,808
7	32	Hughes Street	52.6	8,120
8	23	Luna	47.6	22,226
9	31	Baluarte Elem. School	46.9	11,719
10	29	M. H. del Pilar	46.3	20,736

On the other hand, tricycle is more prominent in rural area. The table below shows ten highest tricycle share locations. Two locations, Station Nos. 15 and 40, are located in Iloilo City and only Station 40 is within City Proper. Other counting stations are outside of Iloilo City. Traffic volume of these locations is small.

TABLE 4.3-2 LOCATION WITH HIGH TRICYCLE SHARE

	Sta.	Location/Street	Share	Volume (12h)
1	12	Tigum	57.4 %	937
2	8	Bgy. Buyo, Sta. Barbara	54.1	888
3	1	Buray	53.8	2,305
4	2	Tagbac Sur	46.7	1,496
5	15	Tacas	40.9	2,935
6	7	Bgy. Lanag, Sta. Barbara	38.3	2,037
7	5	Bgy. Ayaman, Cabatuan	27.6	4,099
8	3	Cagbang	20.6	1,098
9	10	Lapayon	20.6	282
10	40	Rizal	19.9	7,820

4) Operation at Intersections

There are four main intersection types categorized by their operating characteristics. Findings through the observation of traffic operation at the intersection are presented hereunder for each type of intersection.

a. Uncontrolled / Priority / Give Way

Typical intersection forms are T-intersection or cross-roads and are the simplest form of intersection when two roads join. The general traffic rules require vehicles to give way to the right unless on the priority road. General characteristics of existing intersections are:

- Traffic enters in a free-for-all manner
- System works on a first come first served basis
- Vehicles enter the intersection even exit is not clear and stays within intersection blocking other flows
- Jeepneys tend to stop just before or after the intersection for loading and unloading
- Multiple paths of crossing vehicles increases congestion and risk, while reduces capacity

b. Roundabout

A central island is created for all traffic to circulate in an anticlockwise direction. The main objective is to remove crossing conflicts and require vehicles to merge and diverge from the circulating flow.

- Traffic enters in a free-for-all manner
- System works on a first come first served basis and priority rule is ignored
- Relies on traffic taking avoiding action to avoid collisions

The intersection of Diversion Road and Airport Access Road has a center island (or monument). But it operates as standard T-intersection rather than roundabout.

c. Signalized Intersection

Conflicts between opposing traffic streams are regulated by defining separate time periods for opposing streams.

- Vehicles generally observe the signals
- Left turn movements cut across opposing traffic stream

- Vehicles turning left take any available route creating multiple conflicts and unregulated traffic stream which disrupts the opposing traffic stream

5) Bottleneck and Congested Street

Based on the observations during the reconnaissance tour of the study area, hearing with the local officials and the reports of the previous studies, the bottleneck points in the city, where queue is often created, are identified as shown in Figure 4.3-6.

Congestion in Iloilo City is not caused by the excessive demand over physical capacity of road or intersection. It is rather an operational problem. There are four major causes of congestion. The congestion at bottleneck point can be attributed to any of these causes or their combination.

- Parked car and parking maneuver
- Loading and unloading activity, taking over maneuver and waiting at on-street terminal of jeepney
- Competing vehicles of conflicting movement at intersection where signal is warranted but not installed
- Vehicles entering intersection even when exit is not clear causing block of vehicles in other directions

There is almost no standard no-parking sign. Thus it is not clear whether parking is prohibited or not for a particular section of road. Many sidewalks in the city center are converted to parking lots and even sidewalk not for parking is often occupied by vehicles as temporary parking place. Besides traffic police currently does not enforce no-parking regulation. All of these facts have led to an uncontrolled parking practice causing high resistance to the traffic flow.

Unique feature of jeepney is that it stops anywhere for loading and unloading. Although such activity is prohibited near intersection, jeepney is still a big obstruction to the smooth flow. In spite of small passenger carrying capacity, loading and unloading of jeepney takes long time due to its structure. It has only one opening at rear and boarding is possible after alighting. The roof is low so that passengers have to stoop.

Swerving action to left lane by jeepney to take over jeepneys in front of it often disturbs the flow on the left lane causing instant bottleneck. Jeepneys waiting at on-street terminal also reduce the capacity of the road and contribute to the congestion.

In Iloilo City, there are many intersections where signal is not provided or signal is not working. Such intersections operate on a first-come-first-served basis and easily get tangled. Traffic police or traffic aide is assigned to these intersections for manual control of traffic flow. But they are much less effective than signal. Manual control is also often interrupted when they engage in other duties or take rest.

4.3.2 Traffic Control and Management Facilities

1) Signal Systems

Currently, there are a total of ten (10) signals in Iloilo City and no traffic signal outside of the city. Only one signal located at intersection of General Luna and Diversion Road is functional and other signals are not working.

These signals were installed under Regional Cities Development Project of World Bank more than ten years ago. It seems that no maintenance work has been undertaken and no spare parts were procured. Malfunctioned signal was repaired by

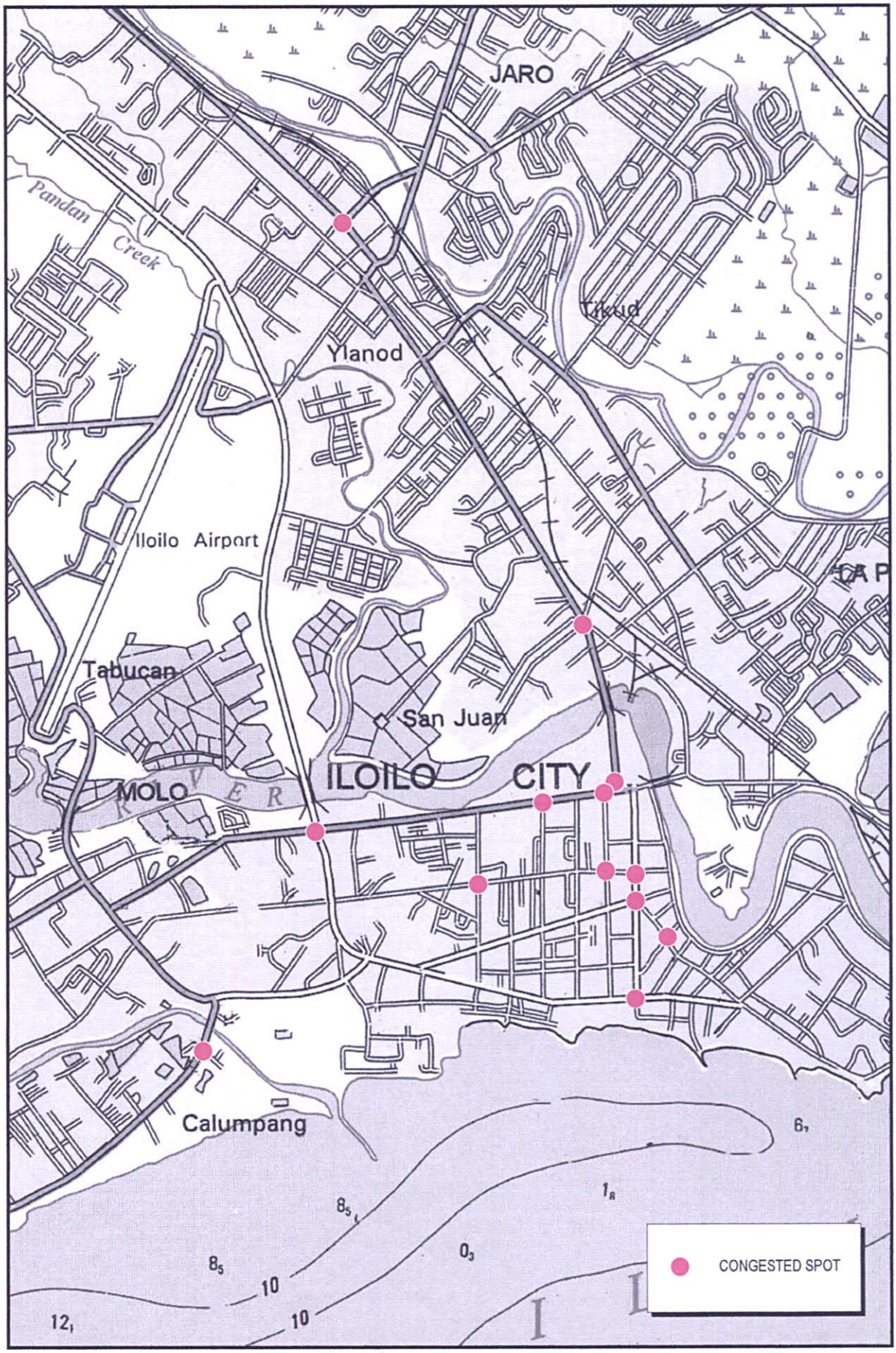

FIGURE 4.3-6 MAP OF CONGESTED LOCATIONS

retrieving necessary parts from other signals. In this way, the number of operating signals gradually decreased and eventually all signals become inoperative.

The working signal was repaired by a Bacolod based company in December 2002. They installed local controller made by Siemens of Germany. According to a city official, the new controller is under observation period and if the signal is found acceptable, a contract will be made between the city and the supplier.

TABLE 4.3-3 TRAFFIC SIGNALS IN ILOILO CITY

	Street 1	Street 2	Status
1	Gen. Luna	Diversion	Working
2	Gen. Luna	San Agustin	Not working
3	Gen. Luna	Mabini	- do -
4	Gen. Luna	Iznart	- do -
5	Gen. Luna	Bonifacio	- do -
6	Iznart	Delgado	- do -
7	Delgado	Valeria	- do -
8	Ledesma	Valeria	- do -
9	Ledesma	Mabini	- do -
10	J. M. Basa	Aldequer	- do -

Separately from the on-going repair, Traffic Engineering Center of DPWH once conducted a survey of the traffic signals and prepared design plans and cost estimate to rehabilitate the signal system in November 2001. The proposal covers rehabilitation of eight (8) existing signals and signalization of two intersections. The proposal presents three options for rehabilitation, 1) using new signal controllers for all intersections, 2) using old controllers that TEC posses for all intersections, and 3) using two new controllers for new signalization and eight old controllers for rehabilitation of existing signals. The proposal recommends adopting first option using new controllers for all intersections for long time cost saving. This option is estimated to cost Pesos 20,379,333.40. No action is said to have been taken since the preparation of the proposal.

2) Traffic Signs and Pavement Markings

There is virtually no traffic sign of standard design in the study area. Makeshift painted sign is instead placed. But their number is scarce and traffic regulation in effect is hard to know.

FIGURE 4.3-8 "NO LEFT TURN" SIGNBOARD IN THE INTERSECTION

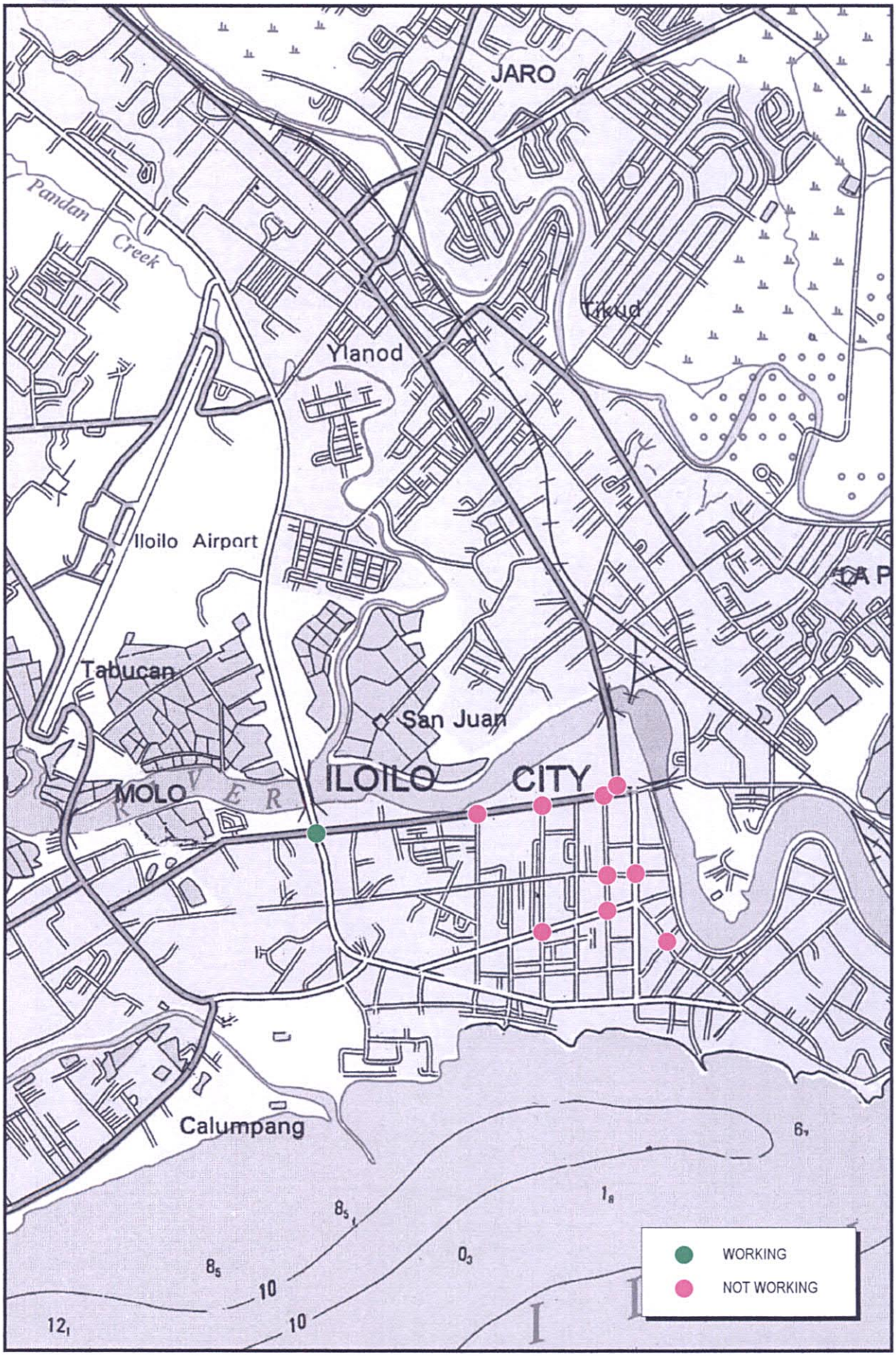

FIGURE 4.3-7 MAP OF EXISTING TRAFFIC SIGNAL LOCATIONS

Pavement marking is likewise poorly provided. Only centerline is drawn and no other markings such as lane line, stop line, pedestrian crossing, etc. scarcely exists. The existing centerline is faded and requires re-application. Use of white and yellow colors is also not in conformity with the standard. Yellow marking is used for pedestrian crossing and lane line for example. Standard practice is that yellow color line indicates no crossing of the line and used only for centerline where crossing line into lane of opposite direction for overtaking purpose is prohibited.

Some of the national roads have studs along the centerline or lane line (J. M. Basa for example). Stud must be used together with marking. But in many cases, pavement marking is already worn out and studs are not performing their function. Likewise some pedestrian crossings are marked by studs but they are not conspicuous enough.

FIGURE 4.3-9 STUDS ALONG CENTERLINE

Unique feature not found in other cities is that some pedestrian crossings in the city center are delineated by the white rectangular plates embedded in the pavement. It is very visible although installation cost is higher than marking.

Other devices such as delineator, hazard warning reflector and so forth are not found.

3) Median and Barrier

Median is provided to some roads like Gen. Luna, Ledesma, Iznart and J. M. Basa to prevent vehicles from taking opposite lane. Temporary type median made of concrete block is also used at some locations like west approach of Quirino Lopez Bridge. The device is effective for making traffic flow more orderly. Because it is a tendency of drivers, particularly, those of jeepneys to trespass onto the lane for opposite direction when there is congestion. Such action is not only against traffic discipline but also destructive to traffic flow as opposing flows often lock up each other.

Barriers are also placed along centerline near intersection for the same purpose as temporary measure. It is effective to make traffic orderly but not aesthetics and permanent type median or island must replace it.

4) Pedestrian Overpass

Pedestrian overpass is constructed at the following three locations in Iloilo City.

- Delgado – Valeria intersection (square shape over all approaches)

- Gen. Luna – Valeria intersection (L-shaped over Valeria and west approach of Gen. Luna)
- Bonifacio in front of Department of Tourism (mid-block section)

In addition, private overpass connecting commercial buildings is provided at two locations.

- Over Valeria at mid block section between Delgado and Ledesma
- Over De Leon connecting Robinson Shipping Center building and its parking facility

5) Intersection Improvement

There is no clear sign of geometric improvement at intersections. Many intersections are too wide and provide too much flexibility to vehicles. To regulate the vehicle movements, removable barrier is temporarily place at intersection.

Median island is narrowed along the approach of M. H. del Pilar at intersection with West Ave. But left turn bay is too narrow to function as such. No left turn bay, physical or designated by pavement marking, is found at other locations.

FIGURE 4.3-10 NARROWED MEDIAN FOR TOO NARROW LEFT TURN BAY

4.3.3 Parking Management

1) Parking Space Requirement

City Ordinance No. 072, year 2001 called Comprehensive Zoning Ordinance of Iloilo City sets forth the requirement for parking space for different types of building as shown in Table4.3-4 below. According a city official, adherence to the ordinance is not strictly checked.

TABLE 4.3-4 PARKING SPACE REQUIREMENT IN ZONING ORDINANCE

	Building type	Parking space		Unit
1	Multiple storey apartment buildings for residential purpose	1	/	apartment unit
2	Hotels	1	/	2 rooms
3	Neighborhood shopping centers	3	/	100 sq. m. of rentable floor area
4	Regional shopping center	1	/	100 sq. m. of rentable floor area
5	Food markets	6	/	100 sq. m. of rentable floor area
6a	Retail stores			
	Less than 500 sq. m. of rentable floor area	1	/	40 sq. m. of rentable floor area
6b	Over 500 sq. m. to 2000 sq. m.	13 + 1	/	30 sq. m. of rentable floor area
7	Restaurants and bars	1	/	15 customers seats
8	Buildings in CBD where mass transit is available	1	/	60 sq. m. of gross floor area
	Where mass transit is not available	1	/	30 sq. m. of rentable floor area
9	Office building and general business	1	/	90 sq. m. of rentable floor area
10	Banks, professional offices and service shops	1	/	50 sq. m. of gross floor area
11	Public assembly buildings such as theatres, auditorium and stadiums	1	/	10 fixed seats or 70 sq. m. of seating area
12	Churches and other places for worship	1	/	20 fixed seats
13	Schools			
	Elementary schools	1	/	4 class room
	High schools and trade schools	1	/	20 seats
	Colleges	1	/	12 students
14	Hospitals	1	/	200 sq. m. of gross floor area, or
		1	/	4 beds
15	Recreational buildings			
	Bowing alleys	1	/	alley
	Amusement center	10	/	100 sq. m. of gross floor area
	Dance halls	1	/	20 seats
	Beaches	1	/	200 sq. m. of beach area
	Golf course	3	/	Hole and
		1	/	20 sq. m. of floor area of public assembly
16	Warehouses	1	/	160 sq. m. of gross floor area
	plus truck space	1	/	500 sq. m. of gross floor area

2) Parking Fee

The Tax Ordinance No 399 as amended or the local revenue code of the City of Iloilo specifies the amount of fee to be collected from vehicle parked on street, sidewalk or public space during night time. It also specifies the amount to be collected from owners or users of private motor vehicle using designated parking area of the PNP during daytime (5:00 – 17:00). The ordinance is not implemented and no collection is currently made.

3) Parking Prohibition

Parking is prohibited along major streets. See Section 4.3-7(4) for details.

4.3.4 Traffic Management Organizations

There are three agencies directly involved in traffic management in Iloilo City. Task Force Traffic is a policy making body. Traffic Police and traffic aides are responsible for daily operation of traffic management and control. And City Engineer's Office is in charge of signal system. In addition, there are other agencies such as City Planning and Development Office, which oversees parking space requirement in connection

with zoning regulation, and Land Transport Franchise Regulatory Board (LTFRB), an issuing agency of public transport license.

1) Task Force Traffic

Task Force Traffic was created as per Executive Order No. 36 Series of 2001 "Creation of a Task Force on Traffic." It is a governing body headed by City Mayor as far as traffic management is concerned. According to the ordinance, it is tasked to formulate traffic schemes to alleviate traffic problems in the city. Task Force Traffic is composed of government officials and representatives from private business sector. Unfortunately there are no traffic engineers in the member. Although they convene weekly, no traffic management scheme has been prepared by the Task Force so far.

The Iloilo City Traffic Management and Engineering Commission created as per Ordinance No. 107 Series of 2000 still officially exists. But it is not functioning and virtually overtaken by the Task Force Traffic.

2) Traffic Police

Traffic Engineering and Management Unit (TEMU) is tasked to handle daily operation of the traffic management. But authority and responsibility of TEMU and Task Force are not clearly defined and approval must be secured from the Task Force for minor matters such as deployment program of traffic aides. Such rigid system hampers flexibility and effective operation of traffic management.

TEMU has currently a total of 281 traffic aides. There are two problems associated with the current traffic aide system. First problem is their qualification. There is no requirement or qualification for traffic aides. Besides, they are contractual employee hired on a bimonthly basis so that training is not enough and professional performance cannot be expected. Secondly, actual man-power is much smaller than the number of persons listed as some of them are assigned to works other than traffic management such as control of public transport at terminal and check point.

The number of traffic aides is not sufficient. Every intersection where traffic aides are deployed needs at least four traffic aides to operate in two shifts (6:00 am~1:00 pm, 1:00 pm~8:00 pm) and there are about 100 intersections that need traffic aides. List of intersections in City Proper (20 intersections) and Jaro District (27 intersections) where traffic aide is deployed is provided to the Study Team.

Traffic Police has three (3) units of jeep and four (4) motorcycles, all of which are equipped with radio communication unit. In addition, there are about 15 portable units. But the function of base station is partly degraded.

3) Enforcement

Traffic violation apprehended during the year 2002 is shown in below. Vast majority of more than 90% of violations is obstruction that refers to the undisciplined or improper behavior hampering the movement of other vehicles.

TABLE 4.3-5 VIOLATION APPREHENSION RECORD (2002)

	Violation	Number	Remarks
1	LTO	154	
2	Warned reprimand	0	
3	City Ordinance No. 78-2-A	48,824	Obstruction
4	City Ordinance No. 170-93	475	
5	City Ordinance No. 084	176	
6	City Ordinance No. 277	440	
7	City Ordinance No. 166	605	Truck ban
8	City Ordinance No. 035	68	
9	City Ordinance No. 064	592	
10	City Ordinance No. 132	55	
11	City Ordinance No. 399	20	
12	City Ordinance No. 105	196	
13	City Ordinance No. 7-s'91	5	
14	City Ordinance No. MTOP	141	
15	City Ordinance No. 242	329	
16	City Ordinance No. 122	1,062	Re-routing & designation of loading/ unloading/ parking areas
17	City Ordinance No. 159	16	
18	City Ordinance No.2002-246	369	
19	City Ordinance No.379	17	
	Total	53,544	

Source: Traffic Management and Engineering Unit, Iloilo City

Apprehension procedure is explained below. When a vehicle is apprehended for traffic rule violation, driver's license is confiscated and in exchange temporary operation permit is issued. Driver has to bring it to the City Treasurer Office and pay the fine. Then driver will come to Traffic Aide Office to redeem driver's license.

Enforcement is concentrated on undisciplined public utility vehicles and enforcement of illegal parking is virtually not carried out.

4.3.5 Traffic Related Laws and Regulations

1) Introduction

The following executive order and city ordinances are related to traffic management:

TABLE 4.3-6 LOCAL REGULATION ON TRAFFIC MANAGEMENT

Type	No.	Series	Title	Date
EO	61	2002	Amending EO No. 41 of Task Force "Trapik"	Sep. 12, 2002
OR	408	2002	Establishing perimeter boundaries for provincial public utility vehicles entering the City of Iloilo.	Dec 4, 2002
OR	100	2002	Amendment of Ordinance No. 40 Series of 1983, "An ordinance prohibiting any person responsible for any motor vehicle or trailer damaged in an accident or for any cause a motor vehicle cannot move by its power or to park, repair or to abandon such motor vehicle or trailer on any portion of a public street, road, highways within the territorial jurisdiction of the city of Iloilo when such vehicle poses an obstruction or hazards to the traffic of other motor vehicle or pedestrians and providing	Feb 13, 2002

			for the towage and storage service fees and penalties thereof for any violation"	
EO	36	2001	Creation of A Task Force on Traffic	Sep. 13, 2001
OR	107	2000	Creating the Iloilo City Traffic management and Engineering Commission	Aug 16, 2000
OR	105	2000	Regulating the operation of FILCAB (L-300) and those of similar nature in Iloilo and providing penalties for its violation	Aug 2, 2000
OR	56	1998	Prohibiting the placing and putting all forms of advertisements and announcements on traffic signs and posts bearing traffic sings, and providing penalties thereof.	Mar 25, 1998
OR	170	1993	Penalizing public utility vehicle drivers and passengers who shall load or unload in non-designated areas for loading and unloading of passengers and/or cargo and for other purposes	May 12, 1993
OR	42	1993	Prohibiting smoke belching in the City of Iloilo, prescribing the mechanics for inspection apprehension and imposition of penalties for violation of this ordinance	Feb 24, 1993
OR	309	1992	Amending ordnance No. 20, Series of 1952, (Jaywalking) and providing for heavier penalty for violation thereof	Sep 23, 1992
OR	129	1983	Amending ordinance No. 354, Series of 1982, an ordinance regulating the operation of bicycles in the city of Iloilo and providing penalties for violation thereof	Apr 28, 1983
OR	354	1982	Regulating the operation of bicycles in the city of Iloilo and providing penalties for violation thereof	Dec 16, 1982
OR	277	1981	Amending Section 2 of Ordinance No. 46, Series of 1979, as amended by Ordinance 266, Series 1981	Nov 5, 1981
OR	266	1981	Amending Section 2 of Ordinance No. 46, Series of 1979	Oct 22, 1981
OR	122	1981	Prohibiting the parking of motor vehicles inside all public plazas within the City of Iloilo	May 7, 1981
OR	46	1979	Regulating the use of stereos in public utility vehicles and providing penalties in violation thereof	Mar 29, 1979
OR	146	1978	Prohibiting obstruction on any public sidewalk, highway, road or street and providing penalties in violation thereof	Dec 19, 1978
OR	242	1977	Requiring drivers of motorcycles to wear crash helmets and prohibiting more than two (2) persons including the driver to ride on motorcycles	Nov 29,1977
OR	429	1976	Prohibiting the placing and removing of traffic signs on any street, boulevard, avenue or highway without permit from proper authority	Oct 5, 1976
OR	317	1976	Regulating the use of pedestrian lanes in the city of Iloilo and providing penalties for violation thereof	Jul 15, 1976

Notes: EO: Executive order

OR: Ordinance

2) Features of Traffic Laws and Regulations

City ordinances cover wide range of subjects; from the organizational set-up to operation of jeepney, bicycle and even pedestrian. These ordinances have been separately issued in the past so that there is no one single ordinance that sets forth all traffic regulations in force in the city. Creation of comprehensive traffic regulation ordinance is highly needed.

4.3.6 Traffic Regulation

1) One-Way

One-way operation is effective in reducing conflicts at intersections. In the study area one-way system is applied to several locations as shown in Figure 4.3-11. Most of them are not the one-way system of two parallel streets. Instead, one-way operation is introduced to the rectangular or triangle area like plaza.

Valeria Street in the city center is one-way northbound toward Gen. Luna. There is no pairing southbound one-way street, however. But the southbound traffic on the neighboring Quezon Street is 3.9 times larger than northbound traffic. One-way section of Jalandoni and Flentes one-way pair does not coincide. These irregularities of one-way system must be reviewed.

Time limited one-way system is introduced around the triangle of Luna, Hueriana and Rizal in Luna. During peak hours, the streets forming the triangle are one-way anti-clockwise, while Luna becomes two-way during off-peak hours. Other two edges remain one-way whole day.

One-way in front of airport is temporarily suspended and two-way operation is being implemented.

2) Turning Restriction

There are only several intersections where left turn is prohibited due to high traffic volume or geometric reasons as shown in Figure 4.3-11. Instead of standard sign, painted pillar is placed at the center to indicate the restriction. Although the meaning of the sign is clear, use of traffic sign conforming to the standard design is necessary. See Section 4.3.3(2) for photo.

Left turn prohibition from Diversion Road to Jalandoni in front of SM City seems to have been lifted. Median along Diversion Road in this area is not yet constructed and the traffic circulation plan in front of SM City is still tentative.

3) Truck Ban

Truck ban is imposed on the major street like M. H. del Pilar and Delgado as shown on Figure 4.3-11. Like other regulations, the section where truck is banned is shown by not standard traffic sign but by painted signboard.

4) Parking Prohibition

On-street parking is prohibited along arterial streets like M. H. del Pilar, General Luna, Ledesma and Luna as shown in Figure 4.3-11. The prohibition is tipulated by city order. But sign showing no-parking is few so that it is very difficult to know the status of specific road section.

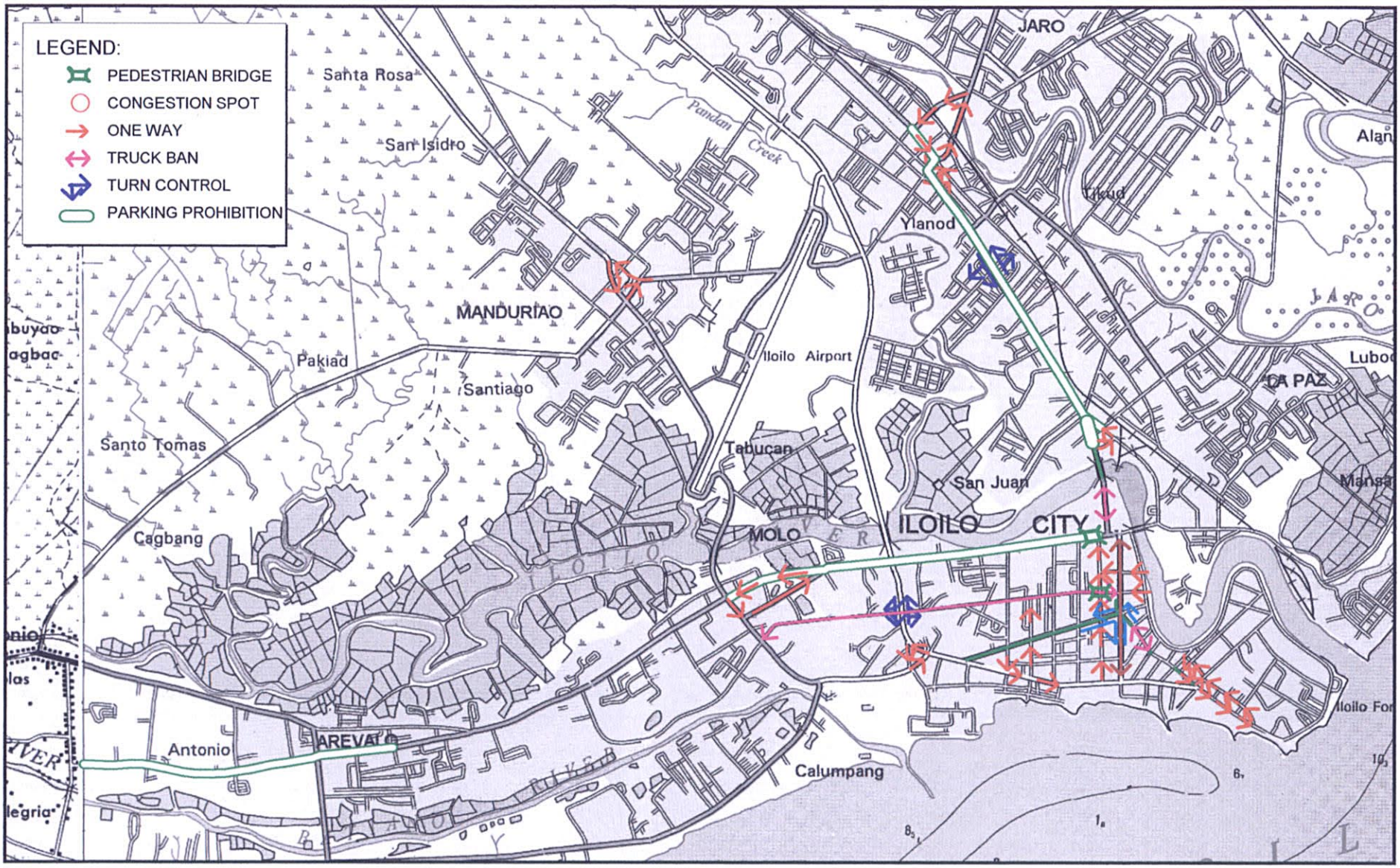

FIGURE 4.3-11 MAP OF ONE WAY,LEFT TURN,TRUCK BAN AND NO PARKING

4.3.7 Traffic Safety

1) Traffic Accident Record

A total of 4,687 accident occurred in Iloilo City, and 14 persons killed and 726 persons injured during year 2002. The traffic accident data is shown in Table 4.3-7 and Table4.3-8. Although there is no data for comparison, the share of vehicle vs. pedestrian accident seems high as more than 1/3 of accidents involves pedestrian. Such tendency indicates lack of pedestrian safety facilities and poor pedestrian environment.

TABLE 4.3-7 TYPE AND NUMBER OF ACCIDENTS IN ILOILO CITY (2002)

	Accident Type	Number
1.	Vehicle vs. vehicle	2,520
2.	Vehicle vs. pedestrian	1,600
3.	Vehicle vs. fixed object	429
4.	Vehicle accident (non-collision)	138
	Total	4,687

TABLE 4.3-8 TYPE AND NUMBER OF CASUALTIES IN ILOILO CITY (2002)

	Casualty Type	Number
1.	Killed	14
2.	Injured	726
	Total	740

2) Accident Prone Locations

According to DPWH Iloilo City District Engineering Office, the number of traffic accidents occurred on the national roads under its jurisdiction is shown below. The highest number of accidents is observed on Iznart – Ledesma – Molo Road section followed by Iloilo South Road. The reasons for many accidents on these roads are not certain. To analyze the type and cause of accidents, more detailed data such as exact location and type of accident are necessary. Likewise, the reasons for more accidents in year 2003 compared with the previous year are not known.

TABLE 4.3-9 ACCIDENTS ON NATIONAL ROADS

Road		Station		2002	2003*	Total
		From	To			
1.	Iznart - Ledesma - Molo Road	0+000	3+560	103	150	253
2.	Iloilo - Jaro Diversion Road	2+065	8+804	81	52	133
3.	JM Basa - Gen. Hughes - Fort San Pedro	0+588	2+728	60	22	82
4.	Iloilo South Road	0+000	8+100	84	78	162
5.	Iloilo North Road	0+000	6+500	71	58	129
6.	Muelle Loney Marginal Wharf Road	0+000	2+850	28	0	28
7.	Iloilo East Coast Capiz Boundary Road	3+350	9+400	14	0	14
8.	La Paz - Jaro Road	1+284	3+424	20	0	20
9.	Mandurriao - Jaro Road	5+907	9+512	3	0	3
10.	Iloilo Airport Direct Road	0+270	2+240	1	0	1
11.	Location Unknown			3	0	3
	Total			468	360	828

*Note: * Period of January through April*

4.3.8 Traffic Management Issues

Based on the present condition of traffic in the study are described above, issues related to traffic management can be summarized as shown below.

a. Inadequate Intersection Geometry

Many intersections are constructed just as an intersecting point of two or more roads without adequate traffic engineering consideration and design. Corner radius is too large or too small causing irregular turning movement. Corner island or separator is not placed where needed resulting in unregulated flow. Entry and exit have different width. Left turn bay is not provided where it is effective. These are some examples of inadequate design.

b. Lack of Traffic Engineering Approach

Due probably to the lack of resources and experience, traffic management measures are designed and implemented without traffic engineering analysis. No scientific approach like computer program or simulation based on the data is applied to plan and design traffic engineering measures. Measures are rather developed in intuitive and try and error manner. Current one-way system in the city center is in adequate due to no existence of pair or no continuity of lanes and capacity.

c. Unfriendly Environment for Pedestrians

Importance of pedestrian environment is not properly recognized. All sidewalks are very narrow, occupied by vendors, cursed with obstacles, or used as parking space for shops fronting it. More attention must be given to pedestrians. To encourage walking as most convenient mode of transport, sidewalk must be kept in good condition and free from disturbance.

FIGURE 4.3-12 SIDEWALK USED NO PARKING SPACE

d. Lack of Basic Traffic Control Device

Basic traffic control devices such as traffic sign, pavement marking, delineator and stud are desperately lacking. These devices seem not to have tangible effect on the traffic flow individually but if they are properly installed in combination, it will make traffic flow more orderly and safe and contribute to the efficient traffic operation.

e. Traffic Signal

Another main contributor to the traffic congestion in the city is traffic signal or lack of it. All but one existing signal is not functioning and intersections with malfunctioned traffic signal are always congestion prone area, not to mention the congestion at intersections where signal is warranted but no signal exists.

f. Indiscriminate Parking

City center is full of parked vehicles. On-street parking is a common practice and no-parking regulation is not strictly enforced. Sidewalk which is intended for use by pedestrians is converted to parking lot at many locations. Parked car is often found on sidewalk forcing pedestrian to walk on carriageway. There is no paid parking and people's concept is that parking is free even on public space like street. Parking space requirement in zoning ordinance is not followed. The city does not have parking management policy. All of these have resulted in the present chaotic condition.

g. Lack of Professionalism of Traffic Aides

At the moment, traffic aides are short term contractual employee only. There is no qualification for becoming traffic aide and no training is provided after recruitment. As a result their role and efficiency are limited.

In conclusion, traffic management facilities and practices in the study area seem to be good in the past. But they did not progress and now they are lagging behind the increased number of traffic demands and proliferation of vehicles. Measures based on the modern traffic engineering technology must be introduced. Traffic police, traffic aide, staff in City Engineer's Office and those who engage in traffic management must be trained for basics of traffic engineering. At the same time, people must change their concept and behavior regarding traffic so as not to hinder the economic, social and cultural development of the area with poor transportation system.

4.3.9 Recommended Measures

In order to address the issues described above and to make traffic flow more efficient and to enhance traffic safety, the measures listed below are recommended. For the central area of Iloilo City, in particular, comprehensive set of measures must be planned and implemented.

a. Geometric Improvement of Intersection

Intersection geometry is to be reviewed and if necessary improved. For intersections in suburbs, sidewalk will be provided and unpaved portion will be paved near intersection.

b. Traffic Engineering Approach

Review of one-way system, banning of left turn, banning of on-street parking, truck ban, jeepney route, traffic accident analysis, and traffic safety program will be undertaken using traffic engineering approach.

c. Enhancement of Pedestrian Environment

Removal of obstruction on sidewalk, restoring sidewalk used as parking area, decorated sidewalk pavement and planting of trees will be undertaken to create friendly environment for pedestrians. Pedestrian mall and transit mall on Sundays and holidays will be studied and implemented with the cooperation of agencies concerned.

d. Installation of Traffic Control and Safety Device

Traffic sign: Traffic signs of stop, no-parking, one-way, no entry, no left turn, no loading and unloading, etc. will be installed. The design of sign must conform to the national standards prepared by DPWH

Pavement marking: Pavement markings such as stop line, pedestrian crossing, center line, lane line, etc. will be installed on national roads and other arterial streets in Iloilo City. The layout and color of pavement markings must conform to the national standards prepared by DPWH.

Others: Chatter bar, delineator, guardrail, reflector, pavement stud, etc. will be installed at locations where such devices are needed.

e. Restoration of Existing Signals and Installation of New Signals

The existing non-working signals must be repaired urgently. Now signals will be installed at 5 or 6 locations. Those signals installed at city center where distance between intersections is short, signals must be coordinated.

f. Establishment of Parking Policy and its Implementation

A parking management policy must be established, in which requirement of parking space for new building must be implemented strictly, parking on main streets must be prohibited, paid on-street or off-street parking must be developed and parking business by private sector is encouraged. At the same time, a campaign aimed at modifying the perception of resident about parking will be held.

g. Training of Staff Engaged in Traffic Management

Training on traffic facility development and traffic operation will be provided to traffic police, traffic aides, city hall staff engaged in traffic management depending on their duties and responsibilities.