		. San Juan/Mandaluyong - Makati (when extended)
-	from C-2	. Caloocan/Quezon City South - Makati
-	from Rizal Ave/ Dimasalang	. Navotas/Malabon/Valenzuela/Caloocan - San Juan/Mandaluyong/Pasig

4.6.3 Impact of R-10

Figure 4.18 shows the travel pattern on R-10. The pattern is typical for radial roads in Metro Manila wherein traffic volume near the CBD is very large and gradually decreases with distance from the center. The projected traffic volume exceeds capacity between Del Pan Bridge and C-2. The major contribution of this road is to decongest H. Lopez and J. Luna/A. Mabini which run parallel to R-10. The secondary effect is to ease the traffic situation at J. A. Santos and Rizal Avenue/Rizal Avenue Extension, which in turn relieves Dimasalang/A. Bonifacio from its heavy traffic. As the northern corridor gets saturated, R-10 becomes more effective and important for the entire corridor.

The major travel movements which R-10 can absorb are:

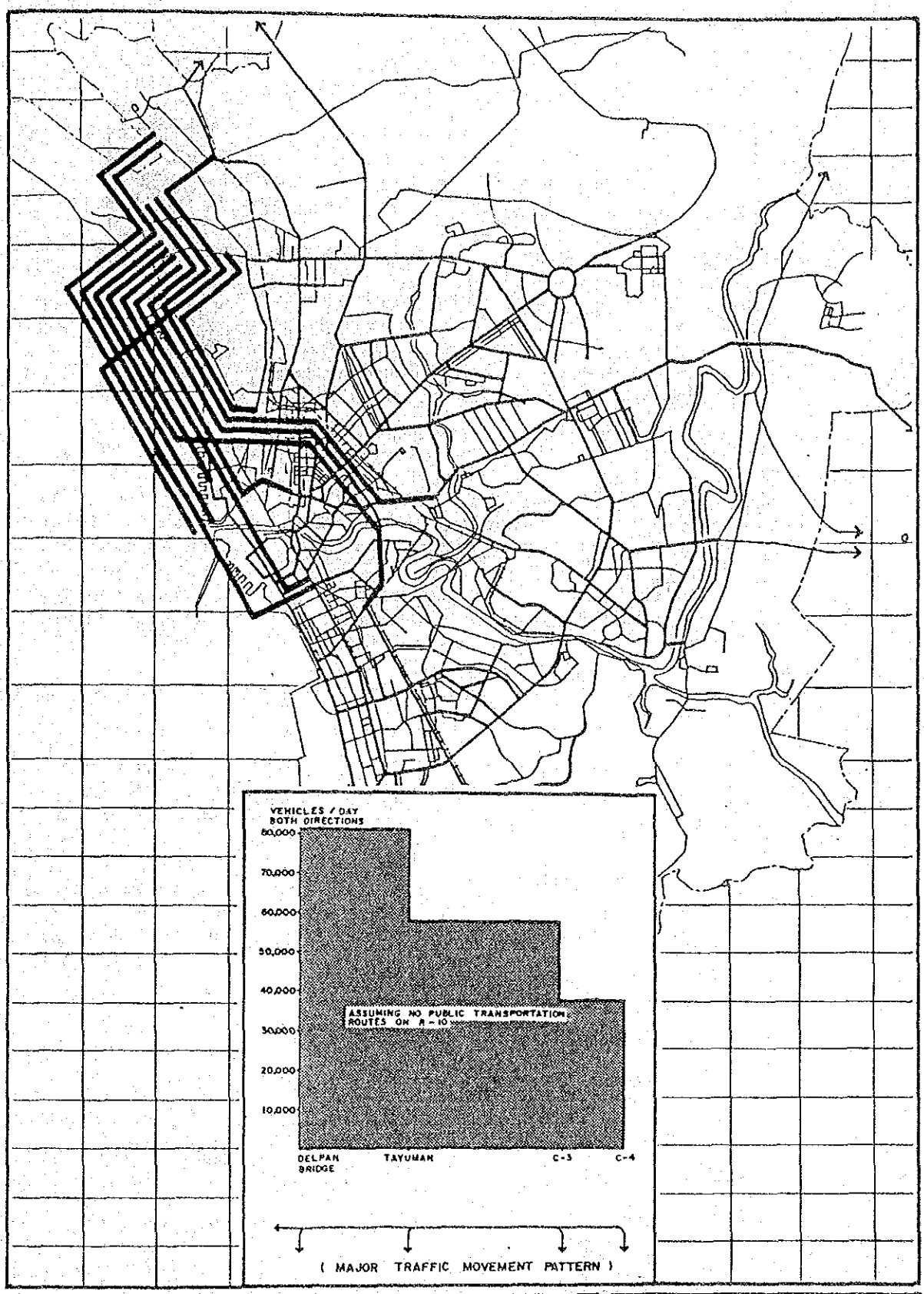
-	from H. Lopez	. CBD - Navotas
-	from J. Luna/A. Mabini	. CBD - Malabon/Valenzuela . Navotas/Malabon/Valenzuela/Caloocan - Pasay/Parañaque/Manila City South
-	from Rizal Ave/ Rizal Ave. Ext.	. Navotas/Malabon/Valenzuela/Caloocan - Pasay/Parañaque/Manila City South

4.7 IMPACT OF THE PNR

As of 1982, the PNR recorded 26,000 commuters a day, brokendown in Table 4.16. Recent reports showed substantial decline to less than 10,000/day.

Even without the decline, PNR's role is small when compared to those of jeepney and bus, as Table 4.17 will prove.

The PNR Commuter Study Report (July 1982) concluded that improvement of the commuter service is possible via higher service frequencies but no more than twice the level under then existing circumstances. It was estimated that the number of PNR passengers could reach 76 to 102 thousand a day by 1992 provided doubling of service frequency and better access to PNR stations were made. This optimistic patronage would still be negligible compared to passengers carried by jeepney, bus, or LRT.



LEGEND:

——— MAJOR TRAFFIC FLOW

Figure 4.18
Major Demand Distribution
for R-10, 1990

Table 4.16
PNR Commuter Passenger Load by Line

Line	No. of Passengers (000/day)	Section
South Line	23	Manila - Carmona
North Line	2	Caloocan - San Fernando
East Line[1/]	1	Cordillera - Guadalupe

Source: PNR Commuter Study, July 1982

1/ Not existing at present

Just to validate the 1982 study, the TRANSTEP computer simulation (public transportation assignment) model was run using the optimistic parameters for PNR.* The results can be summarized as follows:

- Definitely, the contribution of PNR is and will remain, small. Public transport passenger flow in most of Metro Manila roads did not show any perceptible change.

- If at all, PNR's service area would show the following changes:

  * 7 - 8% decrease in number of public transportation passengers at South Superhighway (Pres. Quirino - South); this corresponds to approximately 2% of the total traffic in that corridor.

  * 5 - 7% decrease in number of public transportation passengers on Boni Avenue and a part of Shaw Boulevard; this corresponds to approximately 4 - 5% of the total traffic assuming the reopening of the East Line.

Table 4.17
Passenger Traffic Volume of PNR and Bus/Jeepney

Mode	No. of Passengers 000/day	%	Passenger-Kms. 000/day	%
Bus/Jeepney	7,643	99.7	50,766	99.2
PNR	26	0.3	413	0.8
Total	7,669	100.0	51,179	100.0

Source: PNR Commuter Study, July 1982

4.8 IMPACT OF THE LRT

4.8.1 Overall Impact of LRT Line No. 1

The transport impact of the LRT Line No. 1 is far greater than that of the PNR. Neither will these impacts be limited along Taft - Rizal but will extend all over Metro Manila inside C-4.

JUMSUT I analyzed in detail the ridership prospects of the LRT. Figure 4.19 shows the changes in jeepney and bus passenger flow as a result of LRT Line No. 1. Although an increase has been observed in some parallel road sections (such as F. B. Harrison, Andalucia and J. A. Santos), this may be attributed to the rerouting of jeepneys as proposed by JUMSUT I. The general effect, even without rerouting on the parallel streets will be a reduction of road-based passengers. Assuming rerouting, the impacts of the LRT Line No.1 on road traffic are portrayed in Table 4.18.

Furthermore, a remarkable increase in jeepney and bus passenger traffic at some roads feeding into the LRT (such as Pres. Quirino, Buendia and Pasay Road) can be expected. On the other hand, a decrease would occur on J. P. Rizal, Roosevelt Avenue, G. Araneta Avenue, and EDSA.

Table 4.18
Summary of the Impact of the LRT Line No.1 1/

Road Names	Increase/Decrease in Jeepney and Bus Passenger Traffic Volume (%)		Increase/Decrease in Total Vehicular Traffic Volume (%)	
1) Rizal Ave. & Rizal Ave. Ext.	-32	-65	-25	-55
2) Taft Avenue	-35	80	-18	-44
3) H. Lopez	-20		-12	-15
4) J. Luna/A. Mabini	+15	-35	+ 4	-11
5) J.A. Santos	+40	-35	+ 3	- 7
6) Andalucia	+15		+ 8	
7) Mabini/M.H. del Pilar	+40	-50	-18	-26
8) F.B. Harrison	+10	+20	+ 8	+17
9) Roxas Blvd.	+15		+ 3	
10) South Superhighway	+10		+ 1	

1/ Rerouting plan proposed by JUMSUT I is incorporated

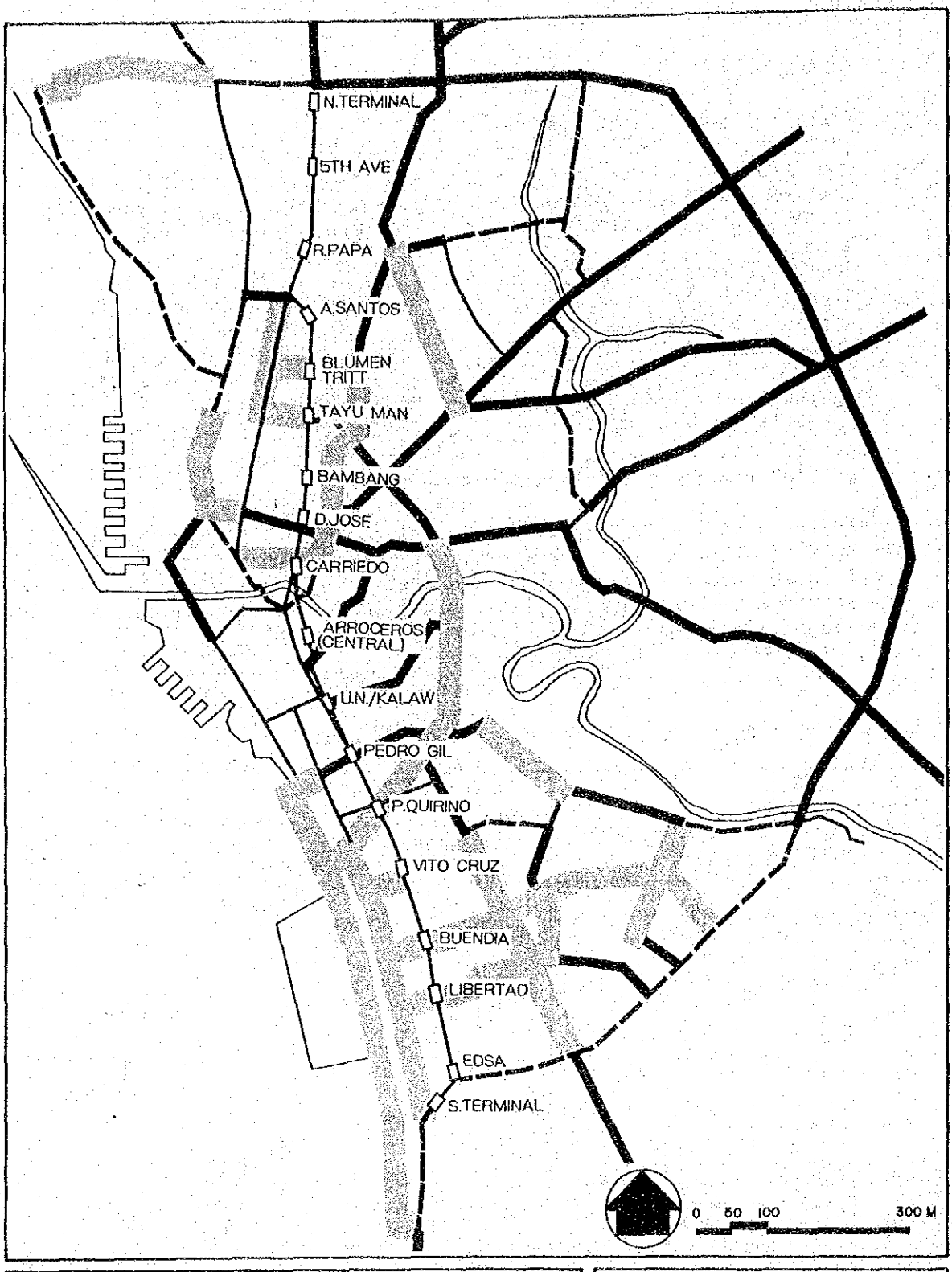


Figure 4.19
Increase/Decrease of Bus/Jeepney Passenger Traffic Volume on Road Sections "With LRT and Rerouting" in Comparison with "Without LRT and Rerouting"

As expected, the impact of the LRT will be very significant along the road where it is constructed. In the case of Rizal Avenue and Taft Avenue, nearly half of the passenger traffic demand for the jeepney and bus will likely shift to the LRT. Should the rerouting of PUVs not occur, the LRT will absorb a large portion of the jeepney/bus passenger traffic on the parallel roads; while volume on the roads feeding into the LRT will increase to a lesser extent.

4.8.2 Ridership on the LRT South Line

On December 1, 1984, the South Line of the LRT started commercial operation. Actual ridership recorded in the first month of operation is shown in Table 4.19. On a normal weekday, approximately 111 thousand passengers used the LRT. By station, the South Terminal has the largest share of about 30%, followed by Central Station (25%), UN Avenue (13%) and EDSA (9%). Although not comparable to the JUMSUT I estimates made for the entire line, the actual ridership is very close to expectations and model results.

Table 4.19
Number of Boarding Passengers of LRT South Line by Station and by Direction (December 1984, Average of Weekday and Saturday, excluding Wednesday) 1/

Station	No. of Passengers (000/day)		
	Northbound	Southbound	Total
South	-	33	33
EDSA	0	10	10
Libertad	0	7	7
Buendia (Sen. G.J. Puyat)	1	2	3
Vito Cruz	2	2	4
P. Quirino	4	1	5
P. Gil	6	1	7
U.N. Avenue	14	0	14
Central	28	-	28
Total	55	56	111

Source: JUMSUT II

Note: 1/ Because of the attraction of the mass held in Baclaran Church every Wednesday, the number of passengers shoots up by about 50% against ordinary days.

Nevertheless, selected interviews of LRT passengers were conducted during the period December 8 to 20, 1984. From a survey sample of 693, the following are the findings:

a) Characteristics of interviewees:

Sex	:	Male	(58%)
		Female	(42%)
Age	:	17 - 20	(26%)
		21 - 29	(38%)
		30 - 39	(19%)
		40 -	(17%)
Occupation	:	Service	(6%)
		Administrative/ Professional	(24%)
		Sales/Clerical	(13%)
		Factory/Transport	(7%)
		Student	(34%)
		Others	(16%)
Car Ownership	:	Household	(21%)
		Own use	(11%)

b) Most passengers (87%) had a specific purpose for riding the LRT, i.e., not novelty-riders. Most of them have started using the LRT regularly as shown in Table 4.17. Only 13% answered "for experience only" as their reason for riding the LRT.

Table 4.20
Reasons for Using the LRT
(December 1984)

No. of Rides a Week	No. of Interviewees by Reason			
	For Experience Only	Specific Purpose	N.A.	Total
1	60	17	7	84
2	12	59	2	73
3 - 5	0	132	0	132
6 - 10	0	138	3	141
11 - 20	1	141	2	144
20	1	118	0	119
Total	74	605	14	693

Source: JUMSUT II

c) Before the opening of the LRT, 88% of the interviewees were commuters along Taft Avenue. Out of the former Taft users, 73% travel regularly and 92% previously used jeepney (3% from bus and 4% from private car).

d) Only 20% of the interviewees reside along the LRT South Line. Others are from various places inside Metro Manila (73%) and outside Metro Manila (7%),

e) Trip purpose composition for the interviewees are compared to that of the 1980 HIS in Table 4.21 "To work" and "Private" purposes have a higher share than the general pattern suggested by the 1980 HIS.

f) In terms of access to the LRT stations, 55% of the passengers use jeepney, 39% walk and 4% use the bus.

g) Almost 100% of the passengers who regularly take Taft Avenue prior to LRT answered that they would use the LRT regularly. Even most of the induced traffic are planning to use it regularly.

Table 4.21
Trip Purpose Composition of LRT Passengers

	LRT[1/] Passengers	1980 HIS[2/] (All Modes Unlinked Trip)
To Work	21	18
To School	15	16
Private	20	14
Business	3	4
To Home	41	48

Source: 1/ JUMSUT II
2/ JUMSUT I

h) The impression about the LRT is quite favorable. The following aspects scored favorably:

- clean
- fast
- safe
- comfortable
- economical
- fashionable

If this is any indication, then the LRT is well on its way of creating a loyal following among Metro Manila commuters, bolstered by the system characteristics favored by riders.

5.0 PUBLIC TRANSPORTATION PLANNING DESIDERATA

5.1 WHY ROUTE IMPROVEMENTS?

In general, PUV rerouting or route redesign becomes necessary when:

- a traffic congestion pertaining to public transportation exists or is anticipated;
- new transport facilities are introduced and it is logical to maximize their utilization;
- a different pattern of demand arises as to alter intermodal composition.

Out of historical neglect, the route structure of public transportation offers the most promise for substantial improvements. Planning objectives are therefore as follows:

Short-term

- Mitigate traffic congestion in obvious problem areas
- Strengthen feeder service to the LRT
- Extend route coverage to upgrade the service level
- Integrate route information for better control and management of public transportation

Mid-term

- Make maximum use of the new roads to be constructed by 1990
- Attain a better intermodal mix to meet the travel demand consistent with government policies
- Eliminate distortions in the distribution and handling of the current traffic demand
- Improve the capacity of public transportation to cope with higher demands.

5.2 SHORT-TERM SOLUTIONS

In JUMSUT I, a jeepney rerouting plan for the LRT corridor was recommended. Its principal concept is as follows:

- reasonable intermodal coordination along the corridor
- effective use of sidestreets
- better feeder service to the LRT

As a consequence of the JUMSUT I proposals, MOTC drafted several rerouting guidelines for the jeepney with the help of other government agencies. These guidelines include:

a) 15 kilometers ceiling for jeepney route length.

   - This was established to clarify the roles of jeepney and bus and simplify the competition between the two modes.

   - This ceiling was arrived at after an analysis of the number of routes affected.

b) Limitation of provincial jeepneys' entrance to Metro Manila

   - The principles behind this are to minimize competition between urban and provincial jeepneys, to facilitate control, achieve better load factors, and minimize congestion.

c) Rationalization of turning circuits

   - To avoid unnecessary traffic conflict caused by the turning movement of the jeepney, more suitable turning points can be identified/designed.

d) Greater use of sidestreets

   - In order to make maximum use of available road capacity and to alleviate traffic congestion on major roads, sidestreets should be identified and included into the route network.

e) Integration of routes

   - As a result of route cutting due to the ceiling and to the designation of common turning circuits, a number of routes should be integrated.

   - Routes that were found no longer relevant during the determination of RMC for each route can be dropped and the units reassigned.

f) Development of new feeder routes to the LRT

   - The objective is to strengthen the complementary roles of the jeepney and the LRT.

These guidelines were applied by JUMSUT II in the solution of short-term problems. The proposals were then discussed with MOTC and other relevant government agencies. The results are presented in Chapter 6.

5.3 MID-TERM SOLUTIONS

From a mid-term point of view, the planning of route structure is less straight-forward and more ambiguous due to some prediction problems.

1) How newly constructed roads will be used.

   - route structure
   - mode
   - impact on nearby roads

2) How to determine better intermodal mix.

   - passenger characteristics
   - nearby land use
   - road dimensions
   - government policies (especially the ceiling of route length)

3) How the distortion of demand distribution can be corrected.

   - interrelationship among corridors

4) How the service level of public transportation can be maintained against increasing demand.

   - road usage between private and public modes.

In the formulation of alternative plans, the following aspects were considered:

a) New Roads

   - Create new demand pattern which must be reflected in the new route structure.

   - Have new characteristics which differentiate mode (bus is unsuitable for narrow streets).

   - Increase/decrease passenger travel demand on nearby roads; which translate to changes in vehicle number as well as the mode to be used.

b) Intermodal Relations

   - Average Trip Length of Pasenger Travel Demand determines the more preferred mode vis-a-vis government policy on ceiling to jeepney route length

   - Other Passenger Characteristics such as income level by zone can be used for determining feasibility of premium bus routes.

- Land Use, where a continuous commercial development suggest suitability of jeepney because of frequent stops to be made.

- Road Dimensions, where the presumption is for the bus to gradually shift its routes from narrow roads to wider roads

- Government Policies, at present could continue into the medium term period.

c) Distortion in Demand Distribution

- Due to prevailing traffic congestion around the CBD, vehicles tend to make detours to less congested roads. In addition, the construction of the LRT and numerous street diggings distort normal traffic patterns. The network interactions among the corridors can be used to determine the magnitude of rerouting required.

d) Improvement of Passenger Throughput

- Modal split between private and public modes dictates the passenger capacity that roads can carry, hence determining the required mix between them is crucial.

The most controversial aspect of the preceding discussions concerns the entry of jeepney and bus in new roads as well as their relationship in problem corridors. Several alternatives were formulated and tested using the TRANSTEP model. The procedure and the results are presented in Chapter 7.

6.0 SHORT-TERM PLANS

6.1 MAJOR PROBLEM AREAS

6.1.1 Marikina Town Proper

A. Identified Problems

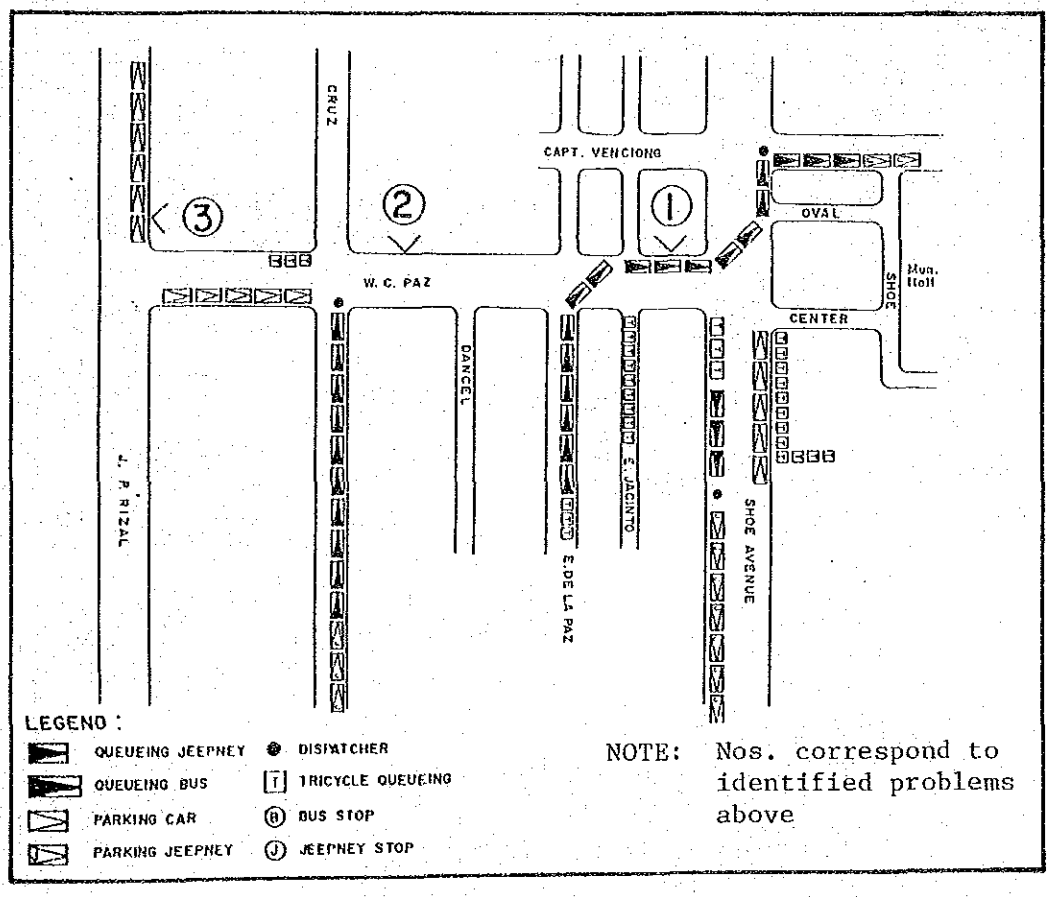
The problems of Marikina Town Proper are pictured in Figure 6.1 and described as follows:

1) Conflict among pedestrians, jeepney, and tricycles on W. C. Paz, infront of the market and Shoe Avenue. Furthermore, vendors occupy the sidewalk and carriageway.

2) On-street parking on W. C. Paz

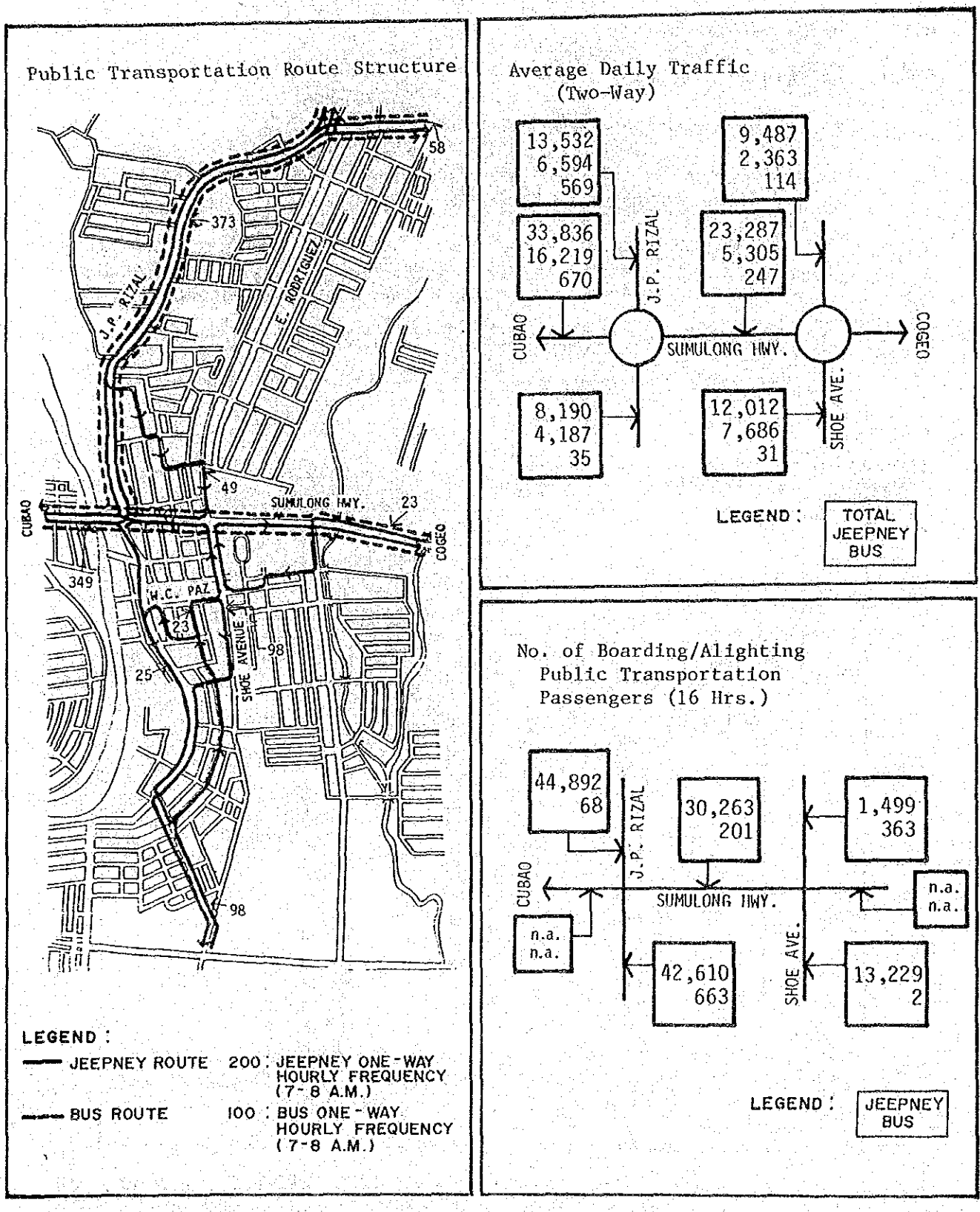
3) On-street parking on J. P. Rizal

Figure 6.1
Identified Problems at Marikina Town Proper



In addition, the intersection of J. P. Rizal/A. Bonifacio is reaching its capacity. Loading/unloading activities of PUVs on J. P. Rizal aggravates the situation.

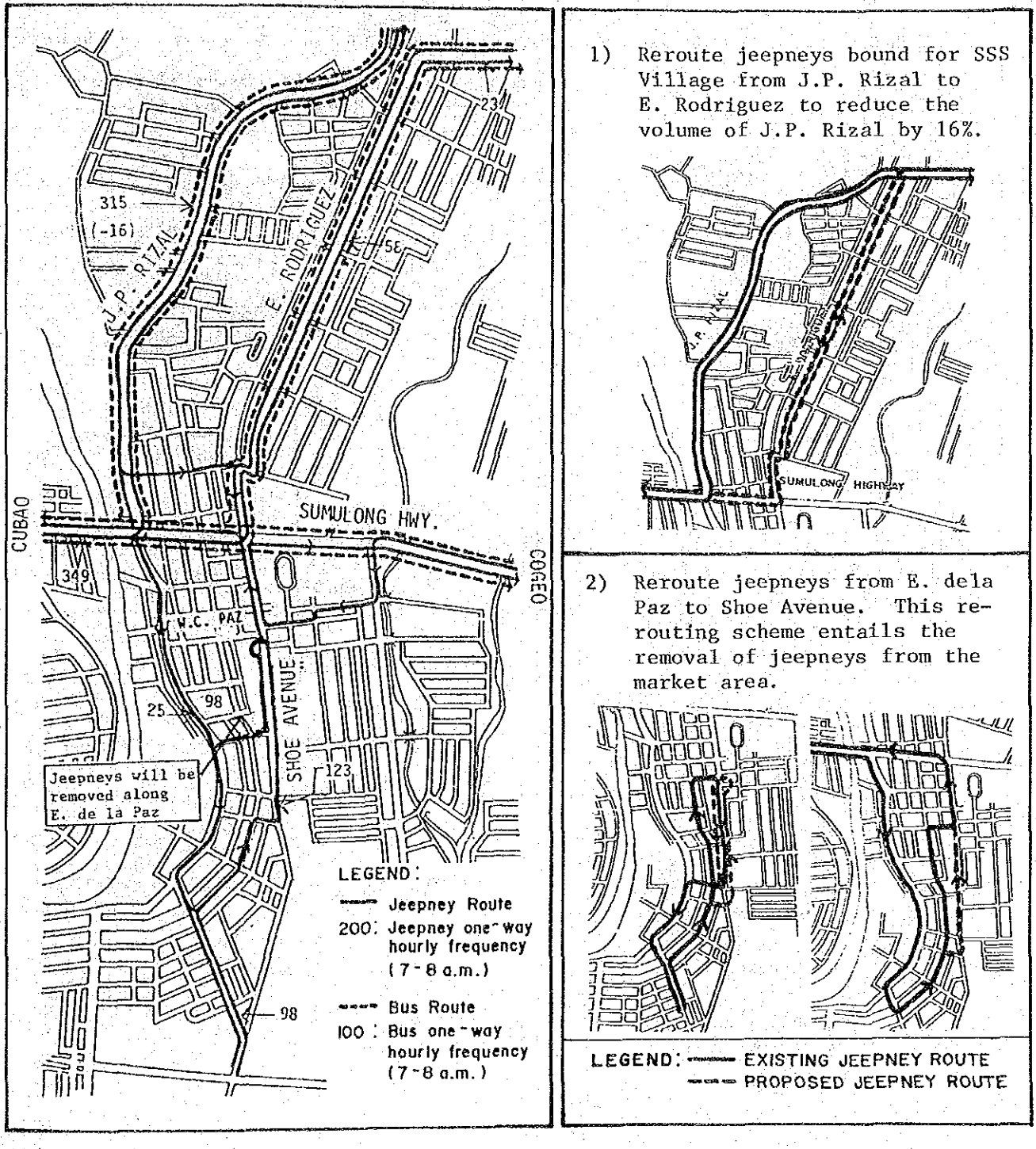
Figure 6.2
Existing Traffic Situation at Marikina Town Proper



B. Route Structure Improvement

The existing route structure is shown in Figure 6.2. Proposed improvements are shown below:

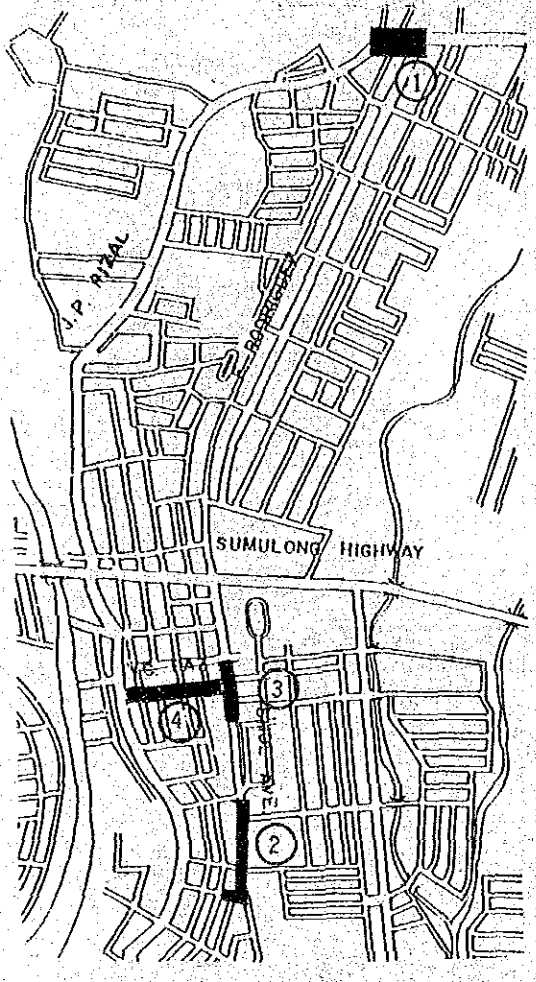
Figure 6.3
Proposed Route Structure Improvement
for Marikina Town Proper



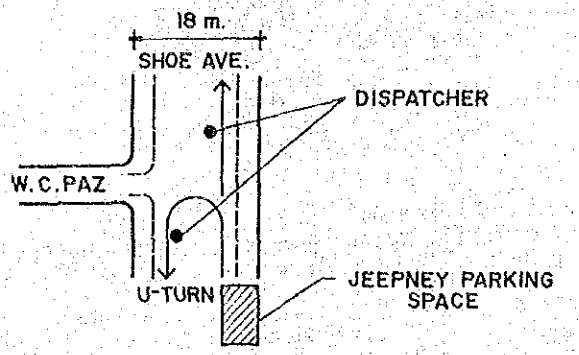
C. Associated Improvements

To complement the proposed rerouting schemes, several counter-measures are also required. These include, among others, road improvements and signposting. Details are shown in Figure 6.4.

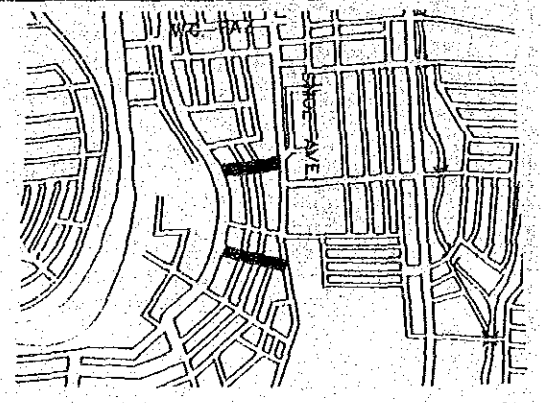
Figure 6.4
Associated Improvements for Marikina Town Proper



- Improvement of the road surface of J.P. Rizal/Bayan-bayanan/E. Rodriguez (1)
- Pavement of Shoe Ave. Ext. (2)
- Improvement of the dispatching system of the jeepney terminal on Shoe Ave. (3)
  - Elimination of conflict between jeepney and passenger movements

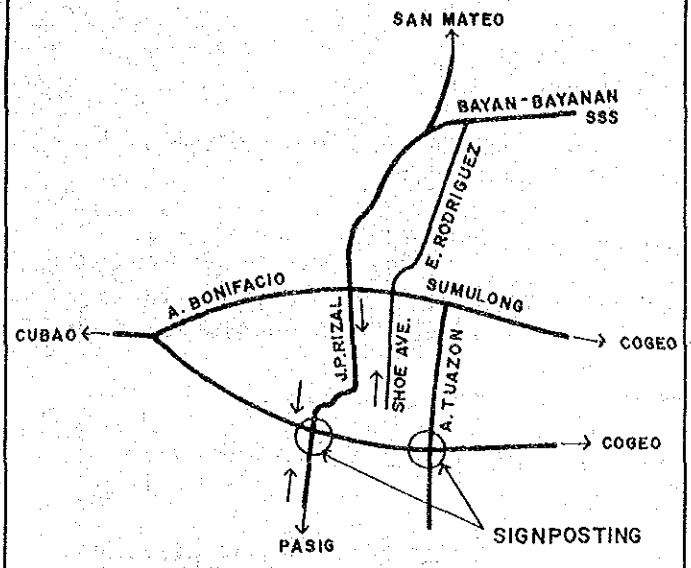


- Banning of tricycles on W.C. Paz: (4)
  - Elimination of conflict between tricycle and pedestrian movements
- Widening of sidewalk of W.C. Paz

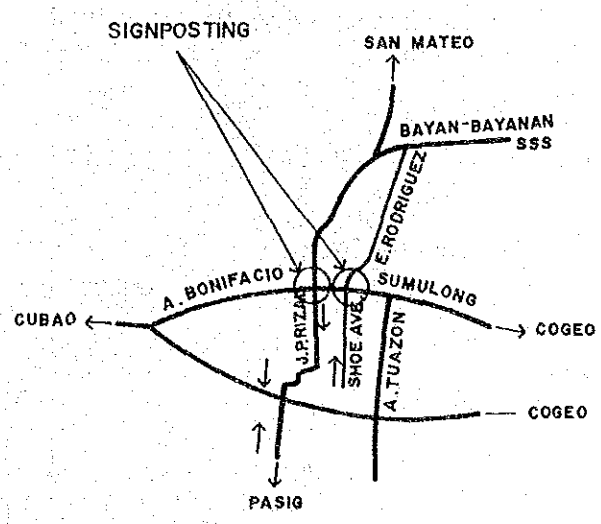


- One-way couple for Mendoza and Roxas streets.

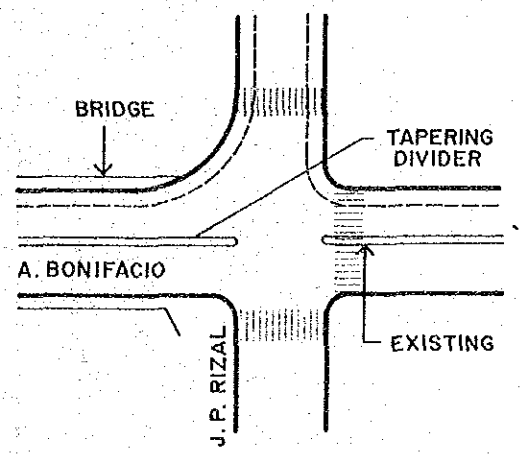
(Cont. Figure 6.4)



- Signposting in order to direct northbound traffic along Marcos Highway to take A. Tuazon from J.P. Rizal/ A. Tuazon



- Signposting to indicate that vehicles should take E. Rodriguez instead of J.P. Rizal
  - Reduction of left-turn movement at J.P. Rizal/A. Bonifacio
  - Reduction of load of J.P. Rizal



- Geometric improvement at the intersection of J.P. Rizal by widening it, using the vacant lot at the foot of the bridge

6.1.2 N. Domingo

A. Identified Problems

The problems prevailing along this area, shown in Figure 6.5, are briefly described as follows:

1) Queueing jeepneys (San Juan - Kalentong route) along N. Domingo near the corner of Blumentritt.

2) Queueing/parking jeepneys along Blumentritt.

3) On-street parking along Blumentritt. Out of four lanes, two lanes are occupied by parking cars or jeepneys.

4) Parked cars on bothsides of N. Domingo.

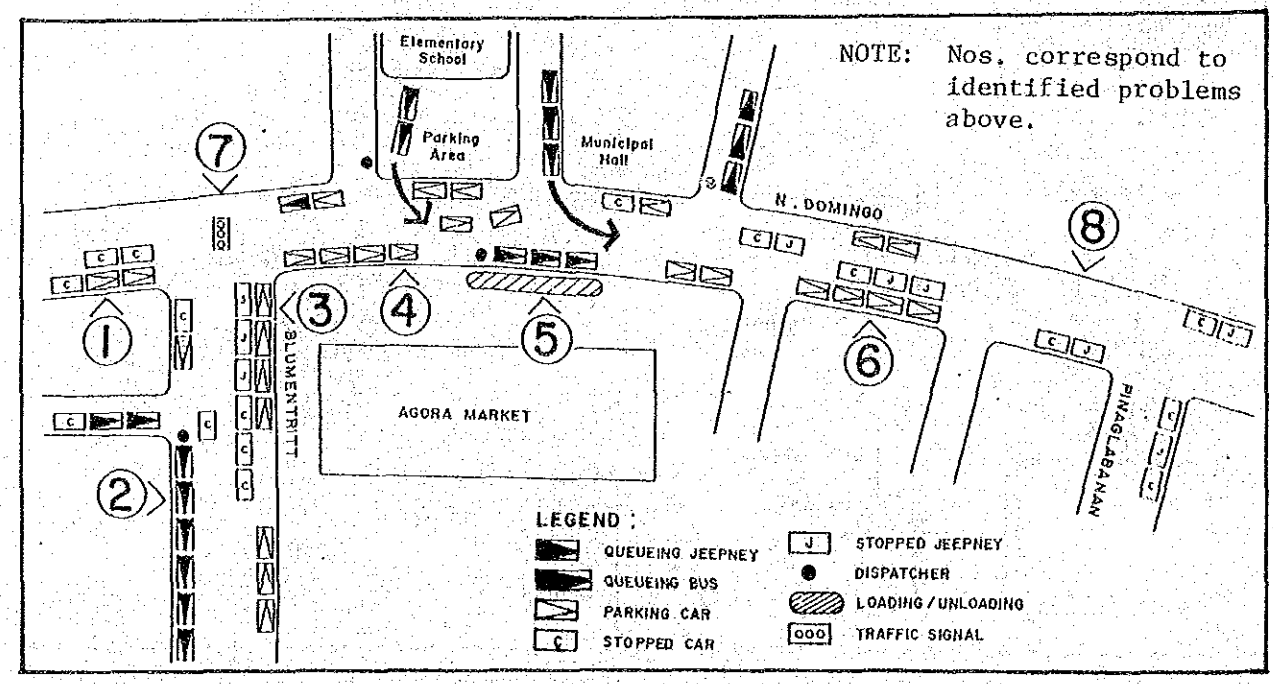
5) Queueing jeepneys infront of Agora market (San Juan - Cubao route).

6) Haphazard PUVs loading/unloading. As a result of parking, queueing, and loading/unloading, only two lanes of N. Domingo are used; cars are thus forced to stop whenever jeepneys load/unload their passengers.

7) The intersection of N. Domingo/Blumentritt has already reached its capacity because of the abovementioned reasons.

8) The intersection of N. Domingo/Pinaglabanan has also reached its capacity.

Figure 6.5
Identified Problems at N. Domingo



B. Route Structure Improvement

The existing and proposed route structures for N. Domingo are presented in Figures 6.6 and 6.7.

Figure 6.6
Existing Traffic Situation at N. Domingo

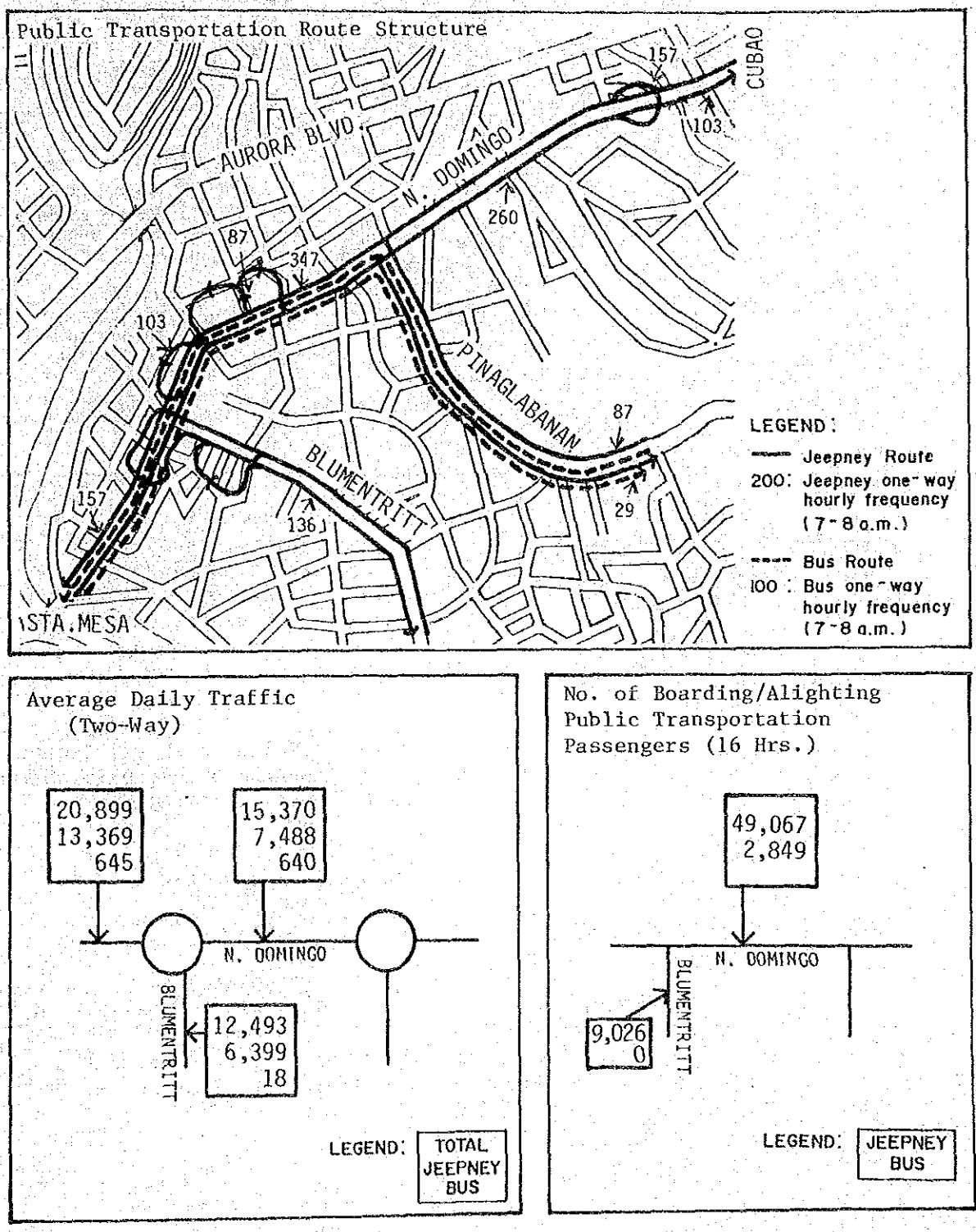
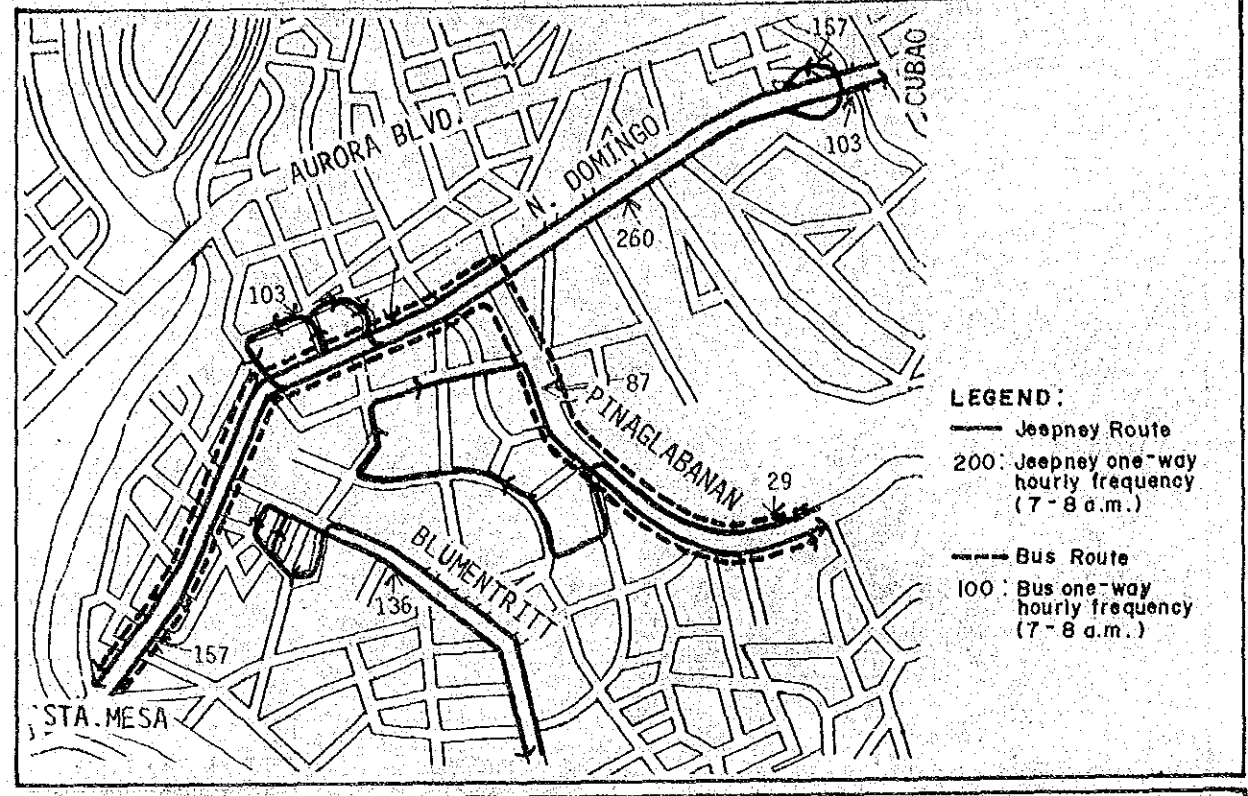
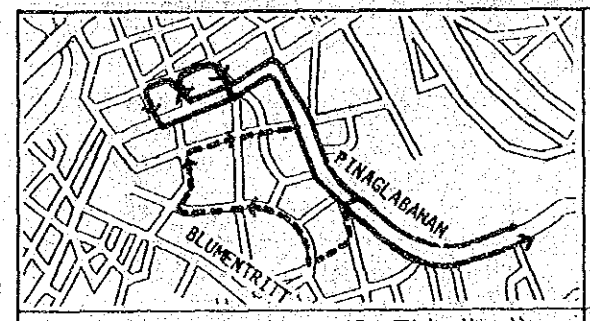
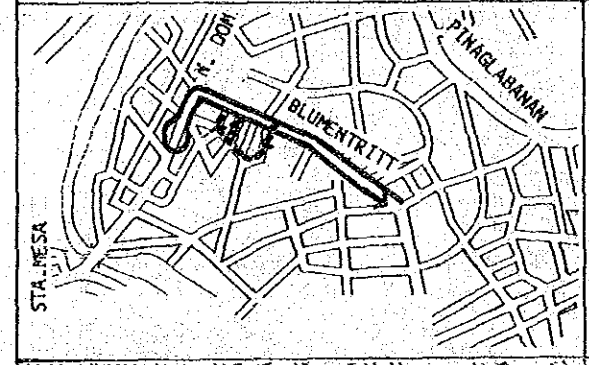


Figure 6.7
Proposed Route Structure Improvement for N. Domingo



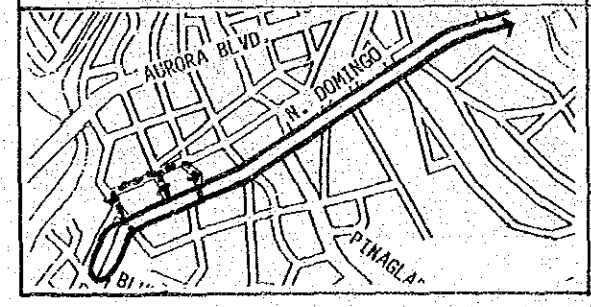


1) Rerouting of jeepney routes bound for Crame and Tropical/Meralco. The elimination of the right/left turn movements into and out of Pinaglabanan will result in a reduction of saturation level at the N. Domingo/ Pinaglabanan intersection.



2) Rerouting of Kalentong-bound jeepney route supplemented by the elimination of the following activities:

- right/left-turn movements at N. Domingo/Blumentritt
- U-turn movement of jeepneys at N. Domingo
- queueing of jeepneys on N. Domingo, near the corner of Blumentritt St.



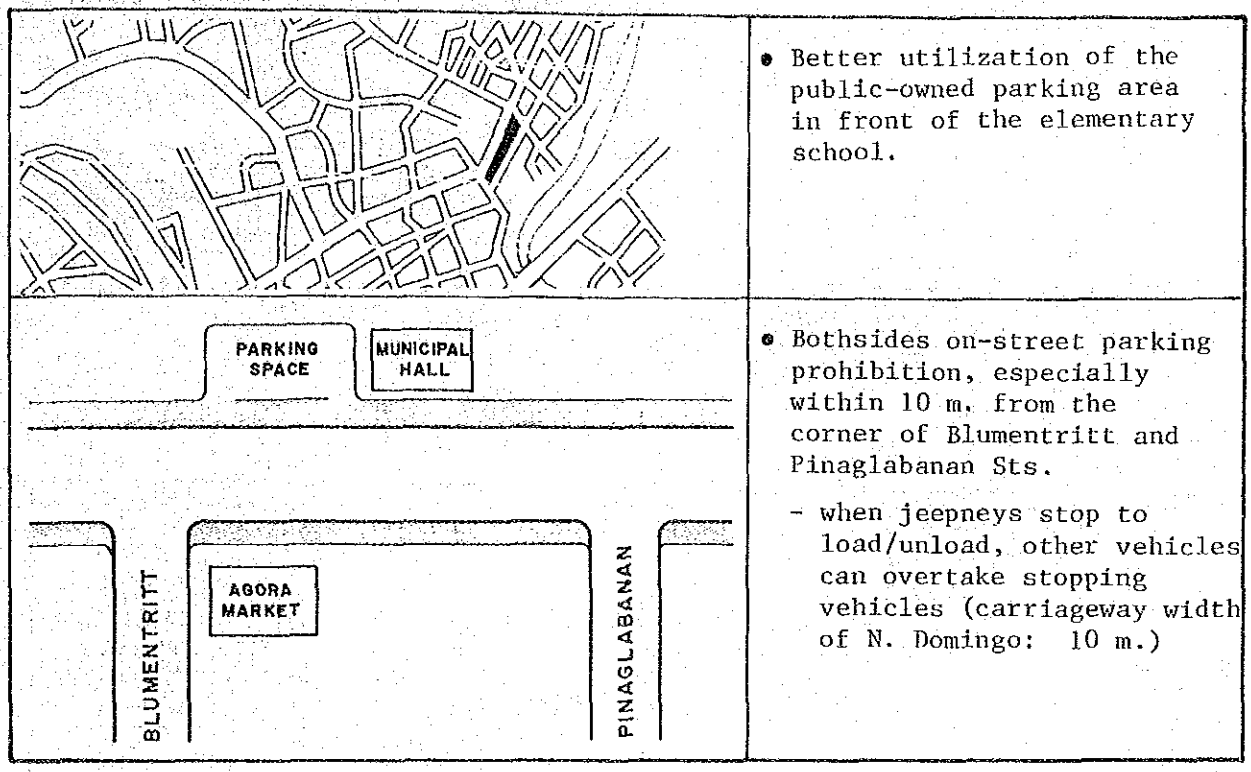
3) A change in turning point of the jeepney route bound for Cubao.

LEGEND: Existing Jeepney Route
Proposed Jeepney Route

C. Associated Improvements

The central idea in the countermeasures being proposed is the effective utilization of parking space. To encourage this, strict enforcement of the "no parking" restriction on both-sides of N. Domingo should be done. Schematic diagrams for these associated countermeasures are shown below:

Figure 6.8
Associated Improvements for N. Domingo



- Better utilization of the public-owned parking area in front of the elementary school.
- Bothsides on-street parking prohibition, especially within 10 m. from the corner of Blumentritt and Pinaglabanan Sts.
  - when jeepneys stop to load/unload, other vehicles can overtake stopping vehicles (carriageway width of N. Domingo: 10 m.)

6.1.3 Sta. Mesa

A. Identified Problems

The causes of congestion in Sta. Mesa are depicted in Figure 6.9 and briefly described as follows:

1) Conflict between through-traffic and outgoing/incoming traffic.

2) Traffic at the entrance of the service road. The conflict is further aggravated by jeepneys loading/unloading and the jeepney queueing at the entrance. The queue length reaches over 100 meters during peak hours.

3) On-street parking on the service road. Vendors on the sidewalk force pedestrians to walk on the carriageway of the service road.

4) The service road is in poor condition. As a result, its capacity is reduced forcing PUVs to use R. Magsaysay instead of the service road.

5) Loading/unloading activities along R. Magsaysay which disturb through-traffic.

6) Conflict between vehicles and pedestrian movements decreases the capacity at the R. Magsaysay/Old Sta. Mesa intersection.

7) Queueing/parking jeepneys (Santol - Stop and Shop) occupy one out of two available lanes.

8) Haphazard loading/unloading on Old Sta. Mesa; on-street parking.

9) Large volume of PUP students taking a ride at Old Sta. Mesa/Valenzuela.

As a result of 7, 8 and 9, the travel speed on Old Sta. Mesa is less than 10 kilometers throughout the day.

Figure 6.9
Identified Problems at Sta. Mesa

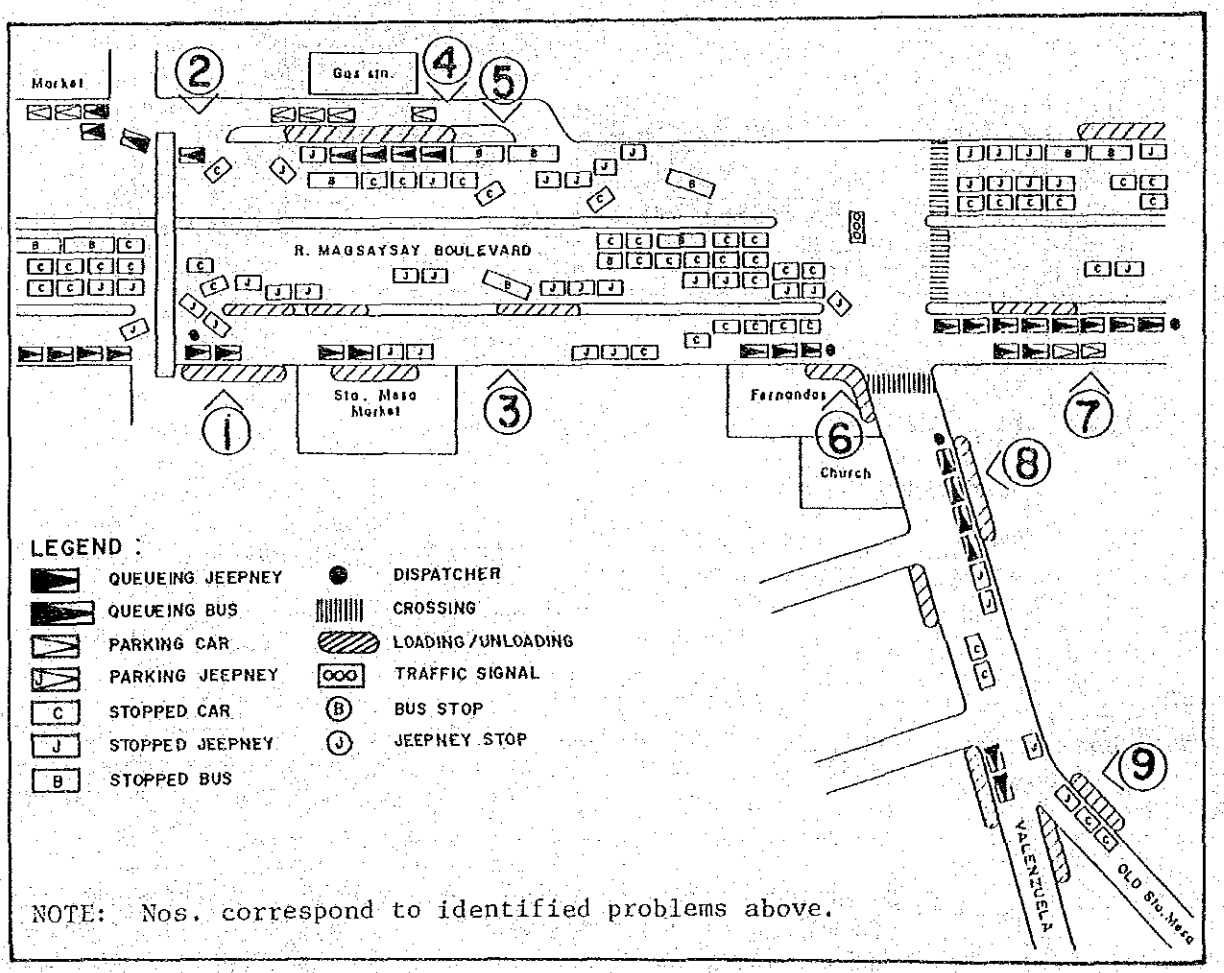
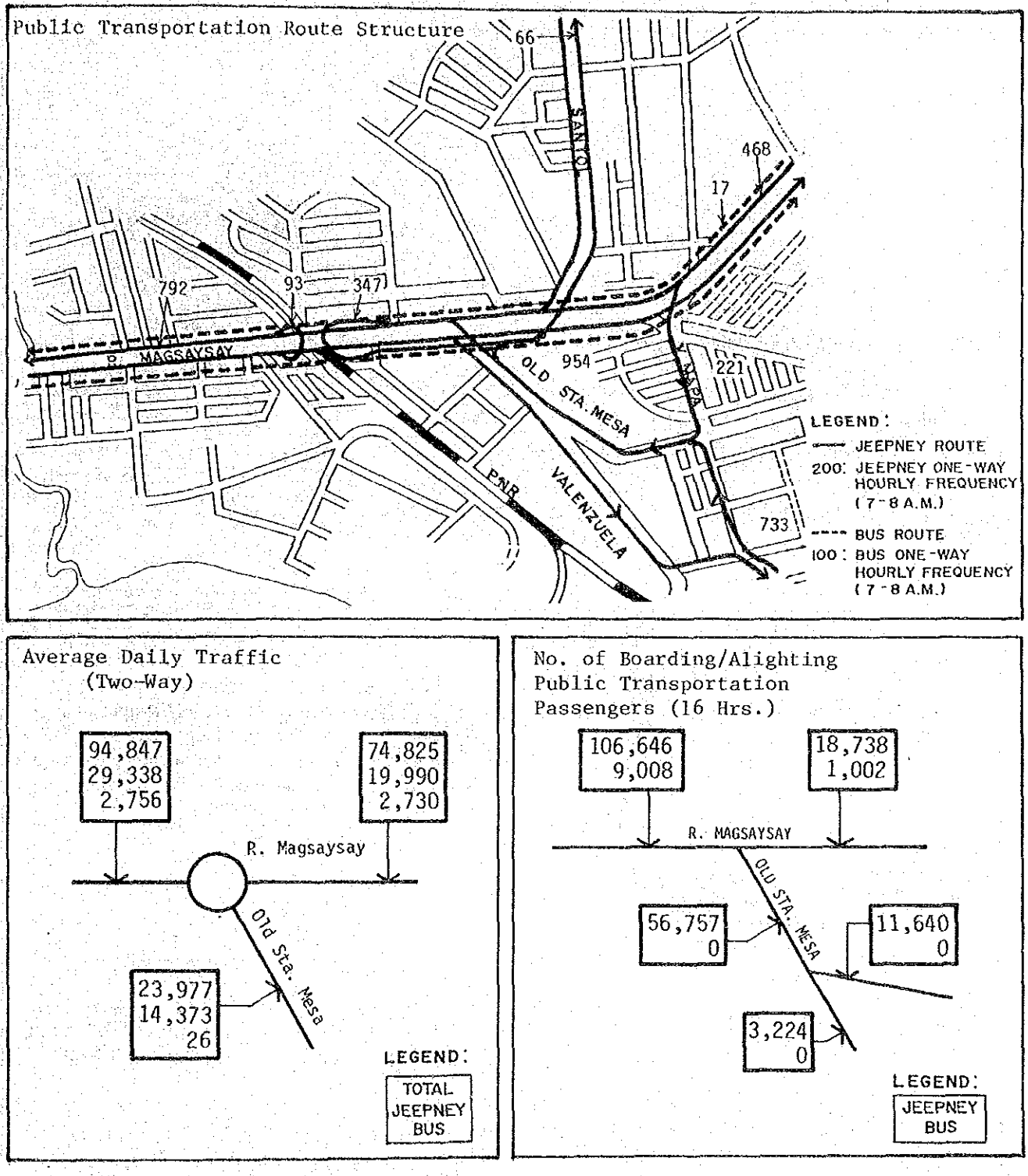


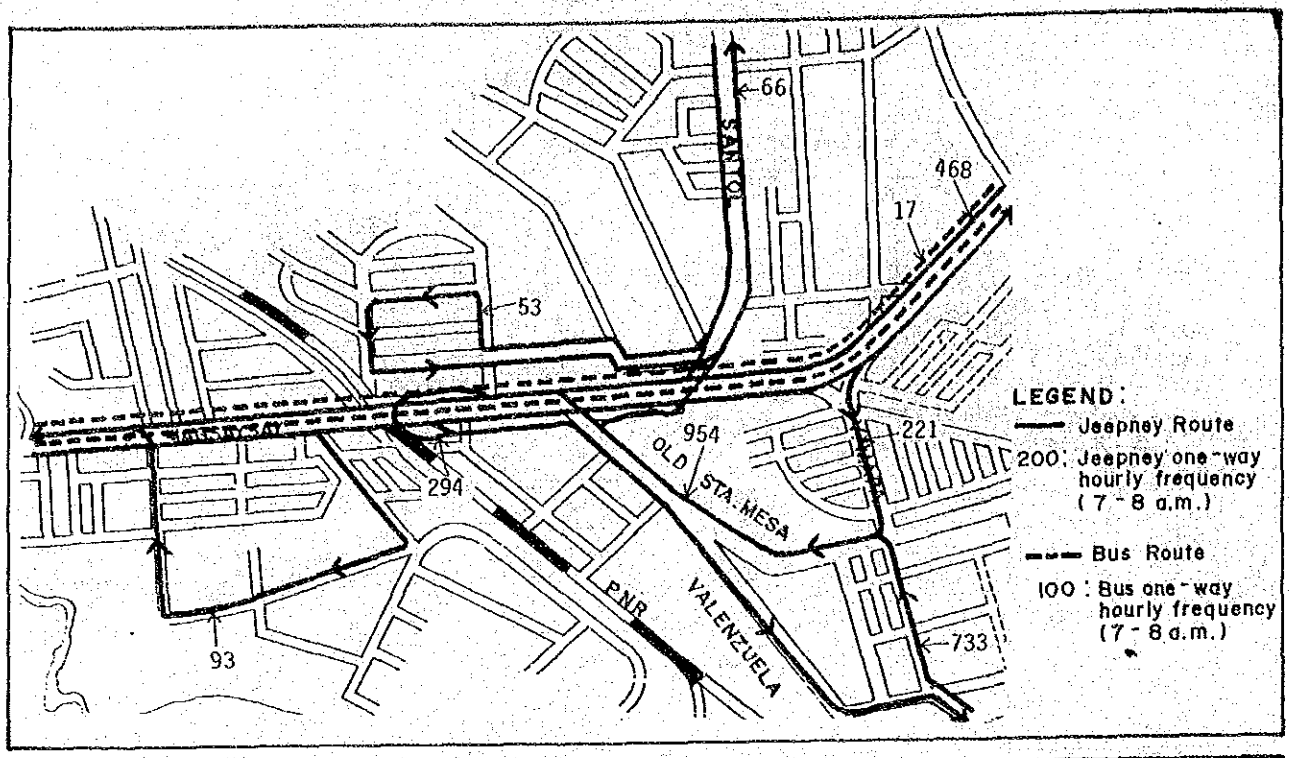
Figure 6.10
Existing Traffic Situation at Sta. Mesa

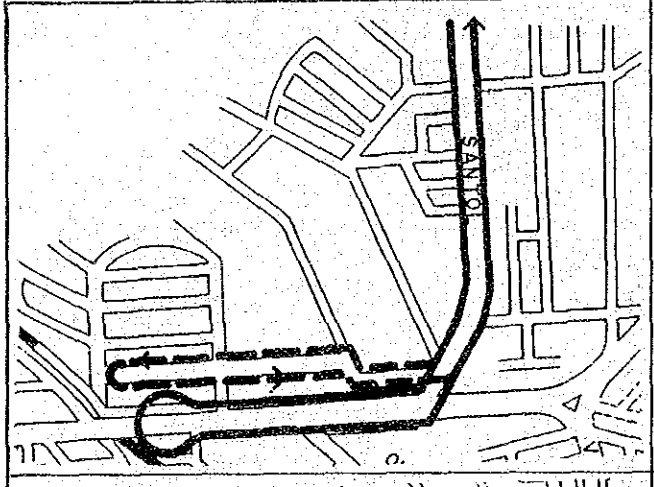


B. Route Structure Improvement

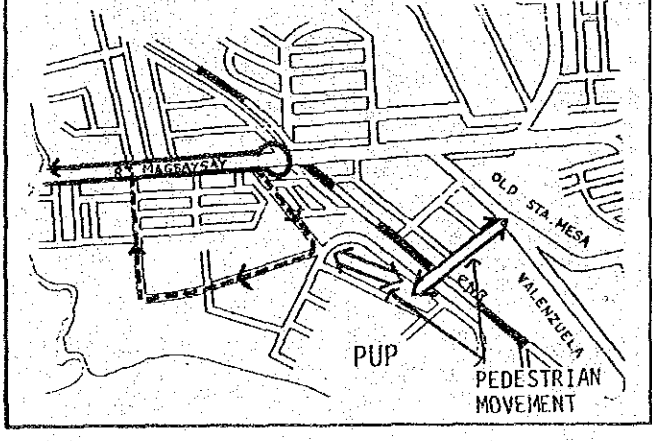
The existing route structure in Sta. Mesa is shown in Figure 6.10. Proposed jeepney/bus route structures are given in Figure 6.11.

Figure 6.11
Proposed Route Structure Improvement for Sta. Mesa





1) Rerouting of Santol-Stop & Shop jeepney route. This will reduce the load on the service road by 15% and the load of R. Magsaysay/ Santol. Furthermore, queueing/ waiting jeepneys on Santol, between Old Sta. Mesa and R. Magsaysay, will be eliminated.

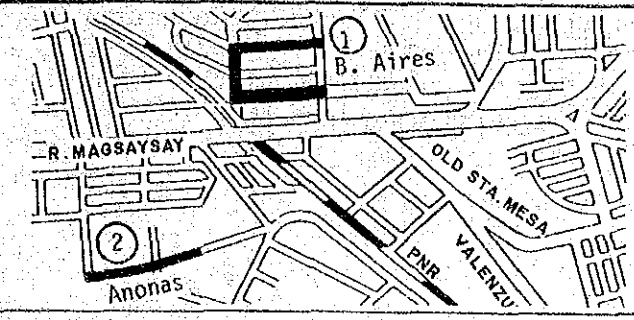


2) Rerouting the Divisoria - Sta. Mesa jeepney route. This proposal will increase the convenience to PUP students.

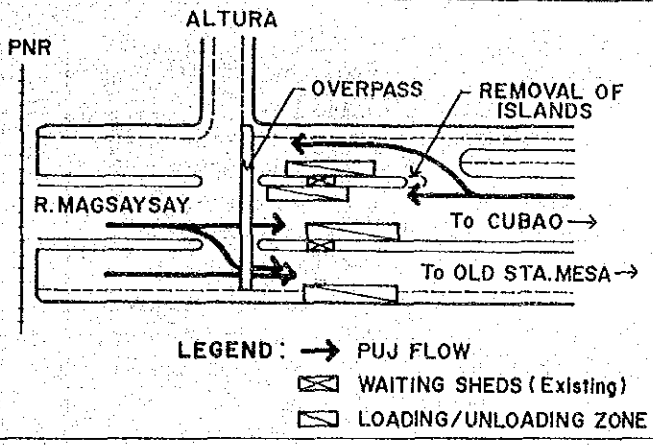
C. Associated Improvements

In addition to the proposed route improvements, several associated measures are given in Figure 6.12. They include, among others, paving of road surface, channelization, etc.

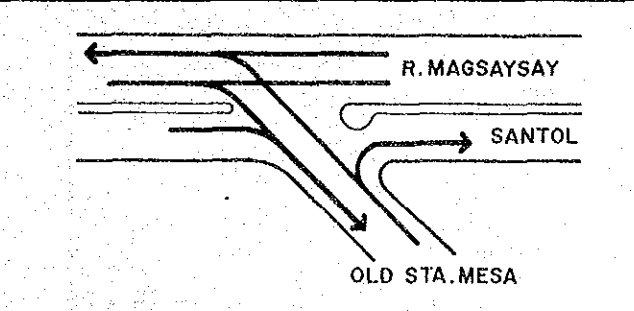
Figure 6.12
Associated Improvements for Sta. Mesa



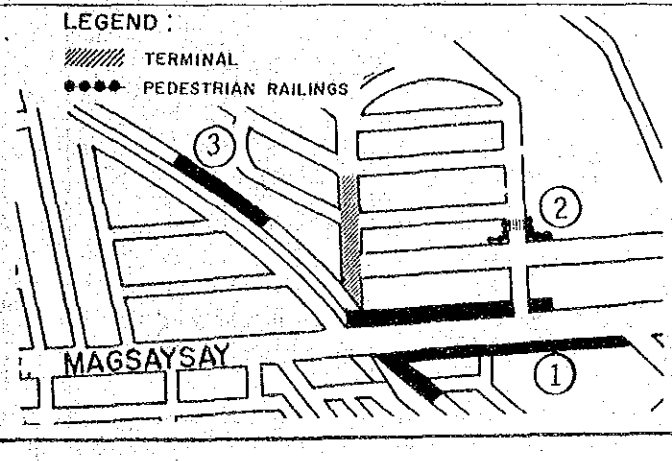
- Pavement of the road surface: (1)
- Improvement of the road surface of Anonas: (2)



- Channelization at the foot of the R. Magsaysay overpass
- Passing-through jeepneys should pass R. Magsaysay and jeepneys turning to Sta. Mesa should pass the service road
- Strict prohibition of loading/unloading activities at the entrance of the service road
- Construction of waiting sheds



- Channelization of Ramon Magsaysay/Old Sta. Mesa



- Prohibition of on-street parking on service roads: (1)
- Installation of pedestrian railings and provision of a pedestrian crossing: (2)
- Provision of a terminal for the Santol and Stop & Shop jeepney routes: (3)

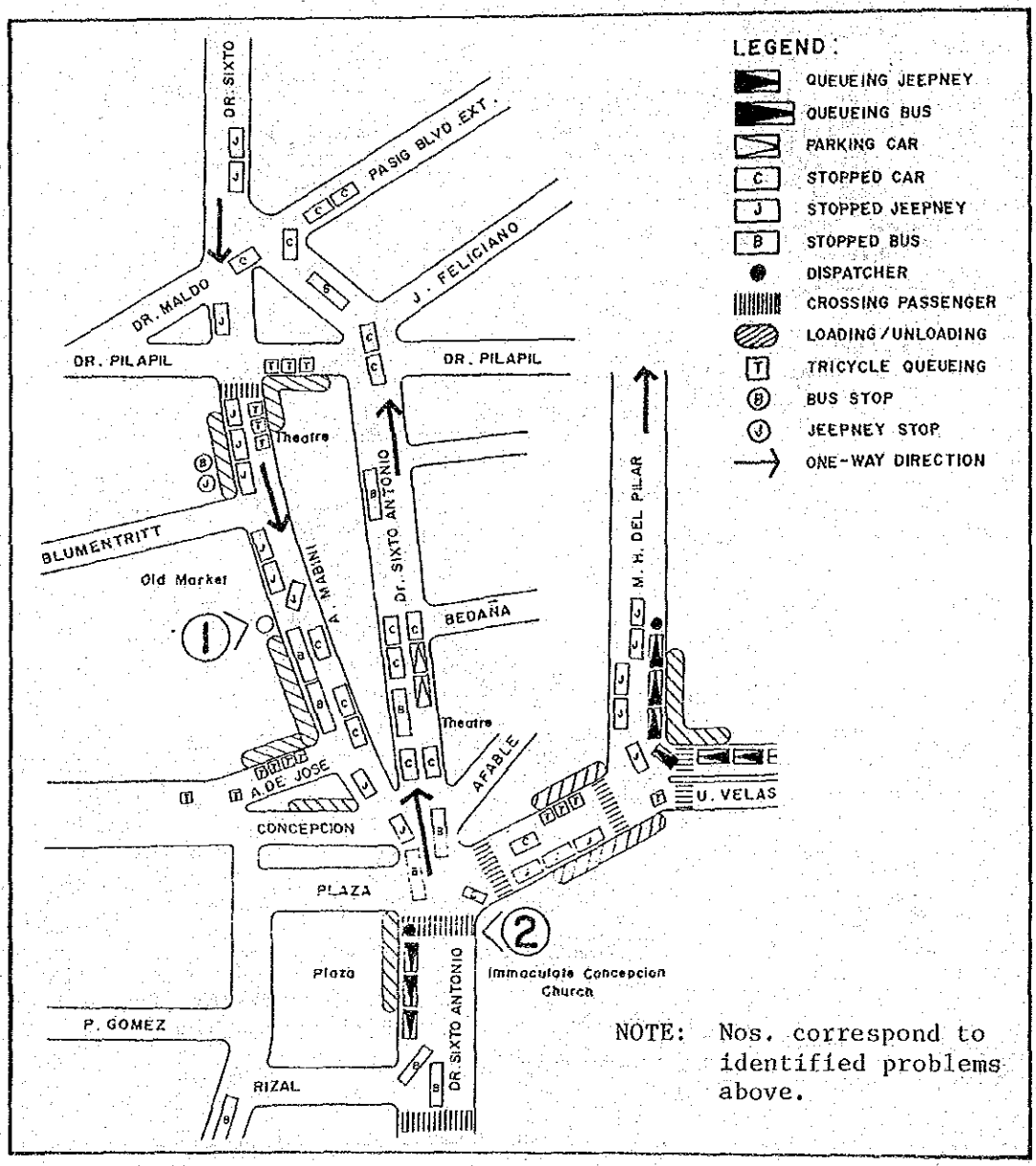
6.1.4 Pasig Town Proper

A. Identified Problems

The present traffic situation in Pasig Town Proper is described as follows:

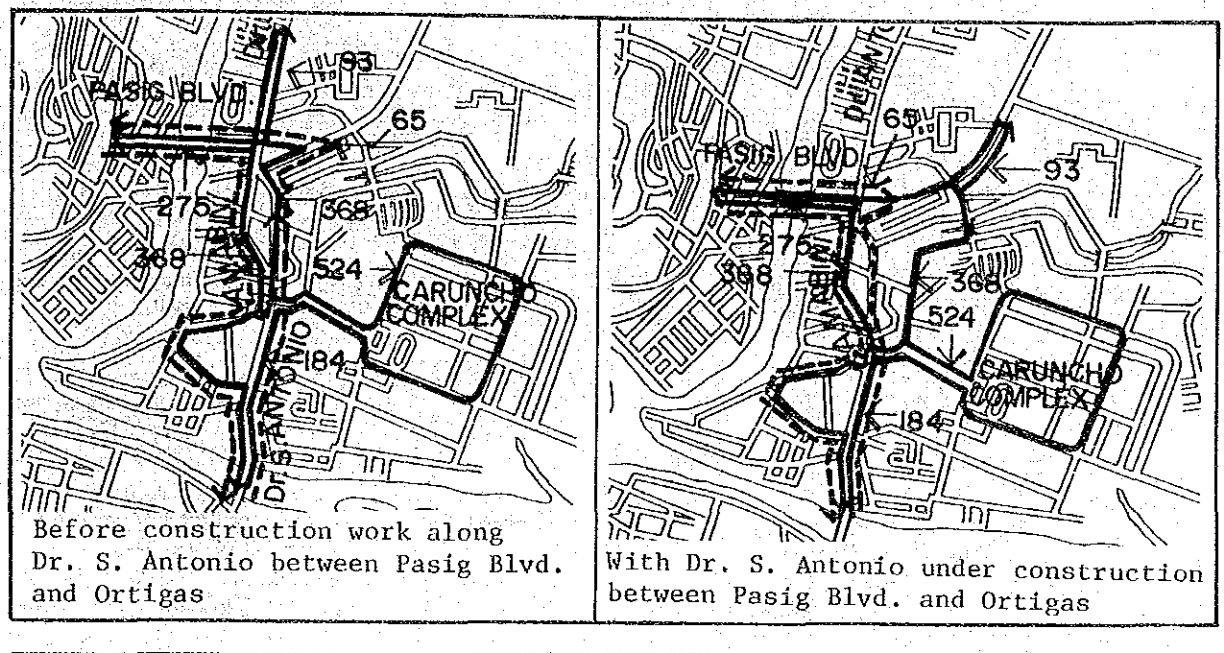
1) On-street parking on both sides of A. Mabini and Dr. Sixto Antonio (one-third are tricycles). In addition, haphazard loading/unloading of PUVs and pedestrians crossing along A. Mabini can be observed. Consequently, A. Mabini becomes a one-lane (carriageway width: 9 meters) road and travel speed goes down to less than 10 kilometers throughout the day.

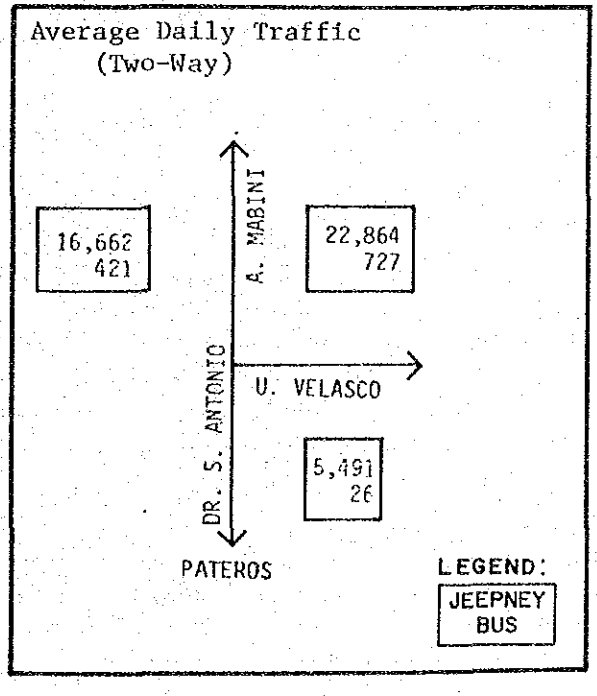
Figure 6.13
Identified Problems at Pasig Town Proper

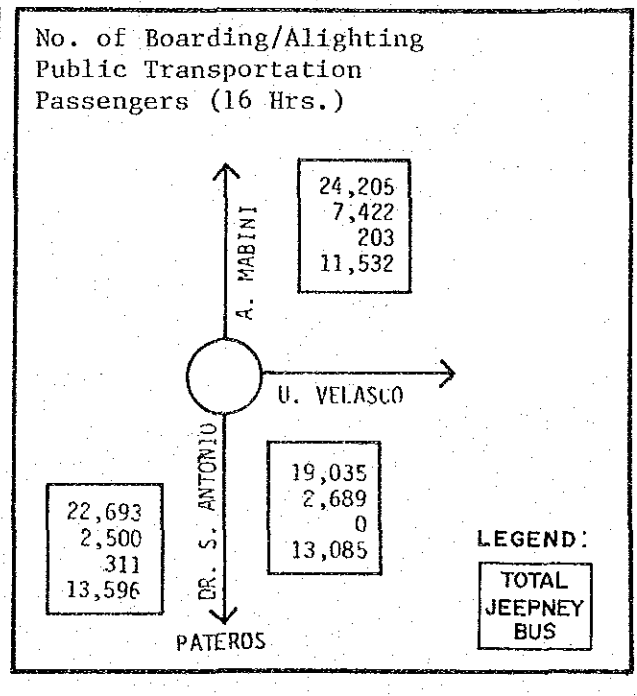


2) Prior to the construction work being done on Dr. S. Antonio, from Pasig Boulevard to Ortigas Avenue, all northbound jeepneys pass through the intersection of Dr. S. Antonio/U. Velasco, which makes the intersection overloaded. As a consequence, jeepney routes were detoured and the congestion was eased somewhat. However, the existing loading/unloading activities near the intersection and the unruly behavior of drivers, abetted by lack of lane markings, still make the intersection saturated (see Figure 6.14).

Figure 6.14
Existing Traffic Situation at Pasig Town Proper



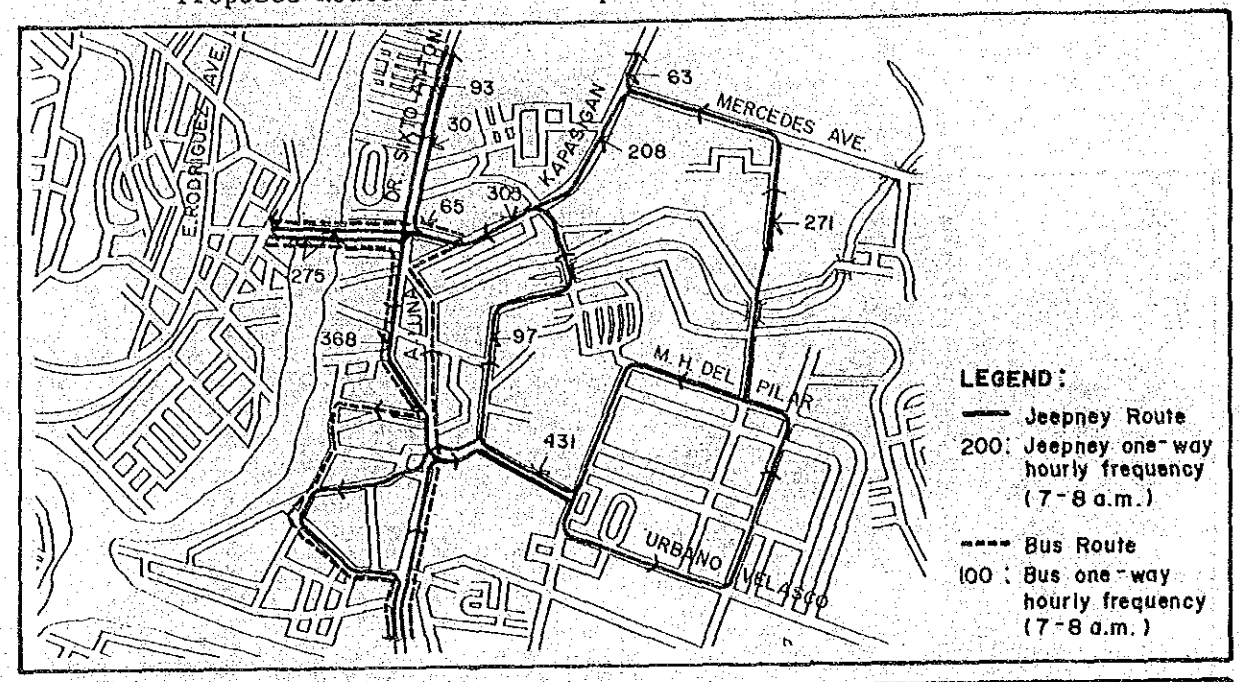


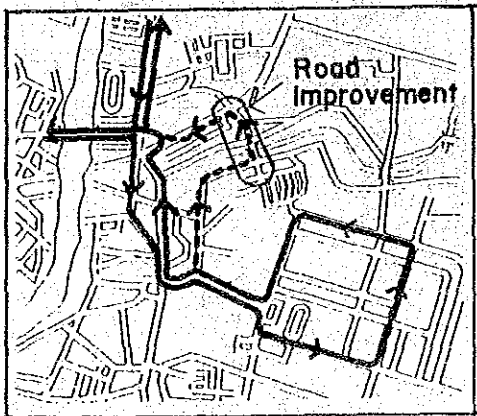


B. Route Structure Improvement

In the proposed rerouting plans, the reduction of load at the intersection of Dr. S. Antonio and U. Velasco was recognized. Details of the proposals are shown below.

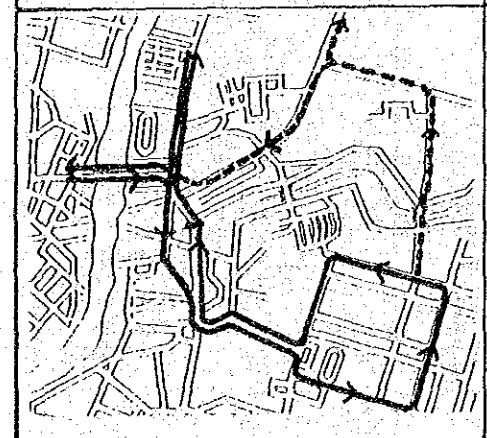
Figure 6.15
Proposed Route Structure Improvement for Pasig Town Proper





1) Rerouting of jeepney routes bound for Crossing, Rosario and Ugong, from Dr. S. Antonio to M.H. del Pilar/Raymundo

- Reduction of load on the intersection of Dr. S. Antonio/U. Velasco
- Reduction of load on Dr. S. Antonio (between A. Mabini and U. Velasco)
- Road surface improvement should be done for A. Angeles Street.



2) Rerouting of jeepney routes bound for Marikina, Cainta, Taytay, Antipolo, Quiapo, JRC and Stop & Shop. Jeepneys shoud use Market Ave/Mercedes Ave./Raymundo Ave.

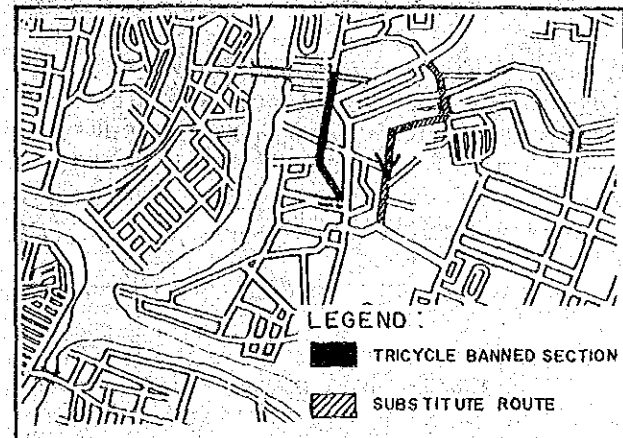
- Reduction of load at the intersection of Dr. S. Antonio/U. Velasco
- Reduction of load on Dr. S. Antonio, Both Raymundo Ave. and Dr. S. Antonio will be used basically as a one-way pair for PUVs.

LEGEND: Existing Jeepney Route
Proposed Jeepney Route

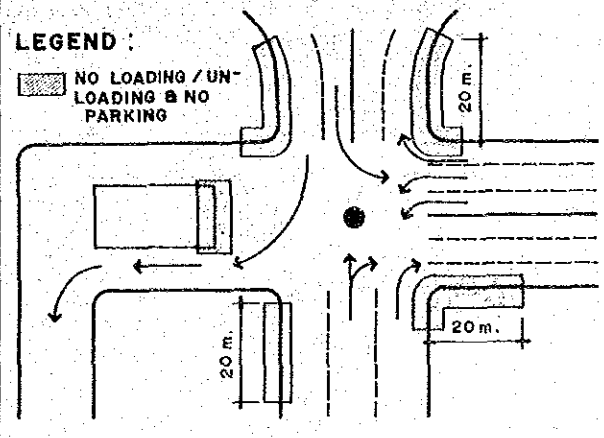
C. Associated Improvements

Since rerouting will not fully solve the congestion problem at Pasig, countermeasures have been drawn up. These are also given in Figure 6.16.

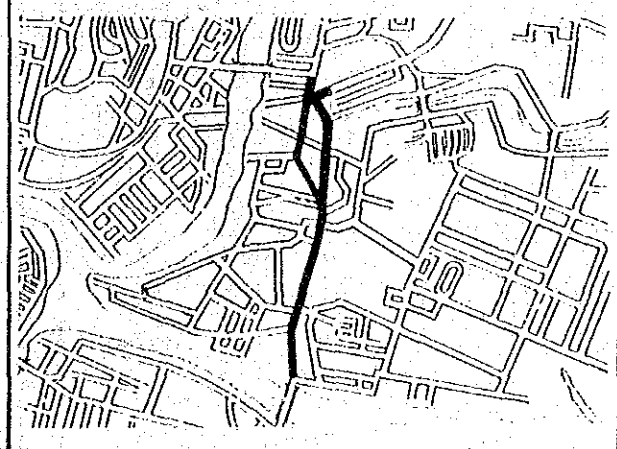
Figure 6.16
Associated Improvements for Pasig Town Proper



- One side prohibition of on-street parking along A. Mabini and Dr. S. Antonio. Bothsides prohibition of on-street parking within 10 m. of the following intersections:
  - Pasig Blvd./Dr. S. Antonio
  - Dr. S. Antonio/U. Velasco
  - Dr. S. Antonio/Dr. Garcia
- The traffic signal at Pasig Blvd./Dr. S. Antonio should be repaired.



- Banning of tricycles at the intersection of Dr. S. Antonio/Pasig Blvd. and A. Mabini Ave.
  - Reduction of traffic volume on A. Mabini (tricycles account for 44% of the total traffic on A. Mabini)
  - Removal of queueing/parking tricycles on A. Mabini
  - Elimination of left-turn movement of tricycles from A. Mabini to U. Velasco



- Channelization of the intersection of Dr. S. Antonio/U. Velasco

  Lane markings will be useful to avoid conflict at the intersection. Existing non-functioning traffic signals should be repaired/ replaced.
  - With these measures, coupled with the proposed route structure improvements, the congestion at Dr. S. Antonio/U. Velasco intersection is expected to be reduced to a great extent.

6.1.5 EDSA/Shaw

A. Identified Problems

The traffic volume at EDSA/Shaw is still below its capacity. However, inefficient use of the intersection has saturated it. This is depicted in Figure 6.17 and briefly explained below.

1) Queueing buses on EDSA service road (more than 10) occupy two out of three lanes during peak hours.

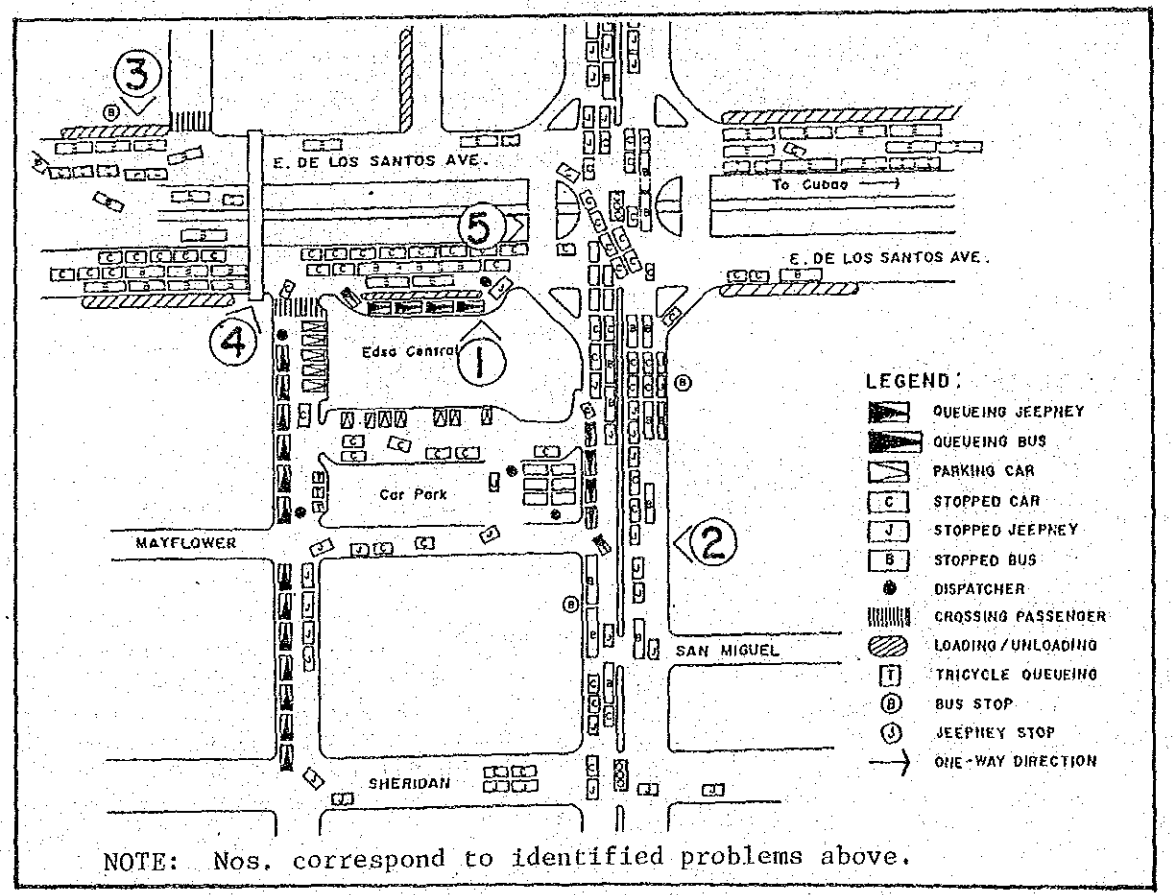
2) Queueing jeepneys on Shaw Boulevard, especially on the southside (mainly inter-city jeepneys from JRC), often occupy two lanes during peak hour. The queue extends as far back up the intersection and blocks other movements.

3) Dangerous weaving of buses using the underpass.

4) Right-turn traffic from United Avenue to EDSA service road conflicts with through-traffic.

5) U-turn movements from the south on EDSA account for 40% of the total inbound volume of the EDSA service road. According to the plate number survey, only a few (less than 10%) of U-turning vehicles are bound for Boni Avenue and most of them go to the direction of Makati.

Figure 6.17
Identified Problems at EDSA/Shaw



NOTE: Nos. correspond to identified problems above.

B. Route Structure Improvement

The existing and proposed public transportation route structures are shown in Figures 6.18 and 6.19. The proposed plans aim at reducing the degree of saturation at the EDSA/Shaw intersection by 20% and the elimination of the queueing of inter-city jeepneys on Shaw Boulevard.

Figure 6.18
Existing Traffic Situation at EDSA/Shaw

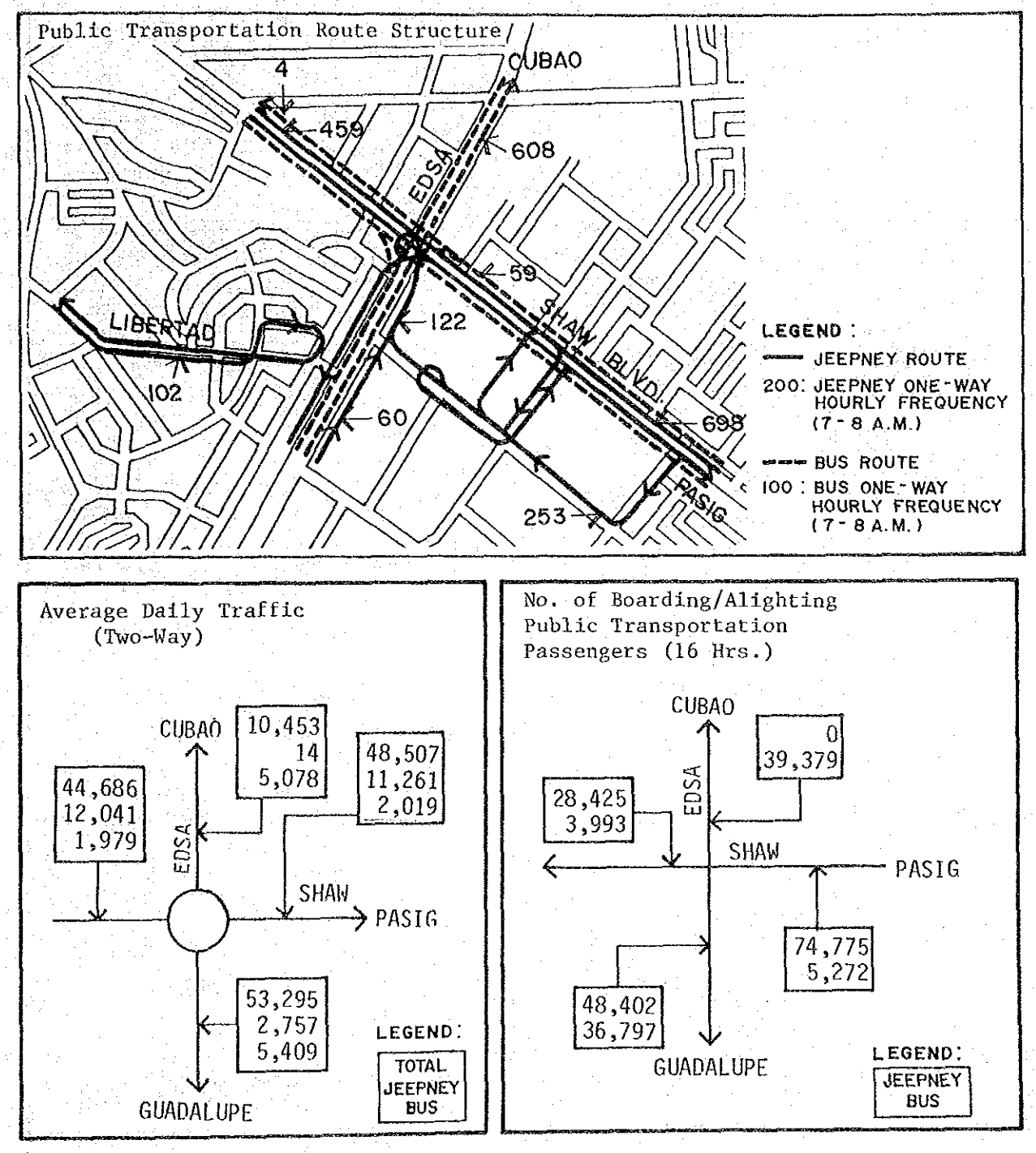
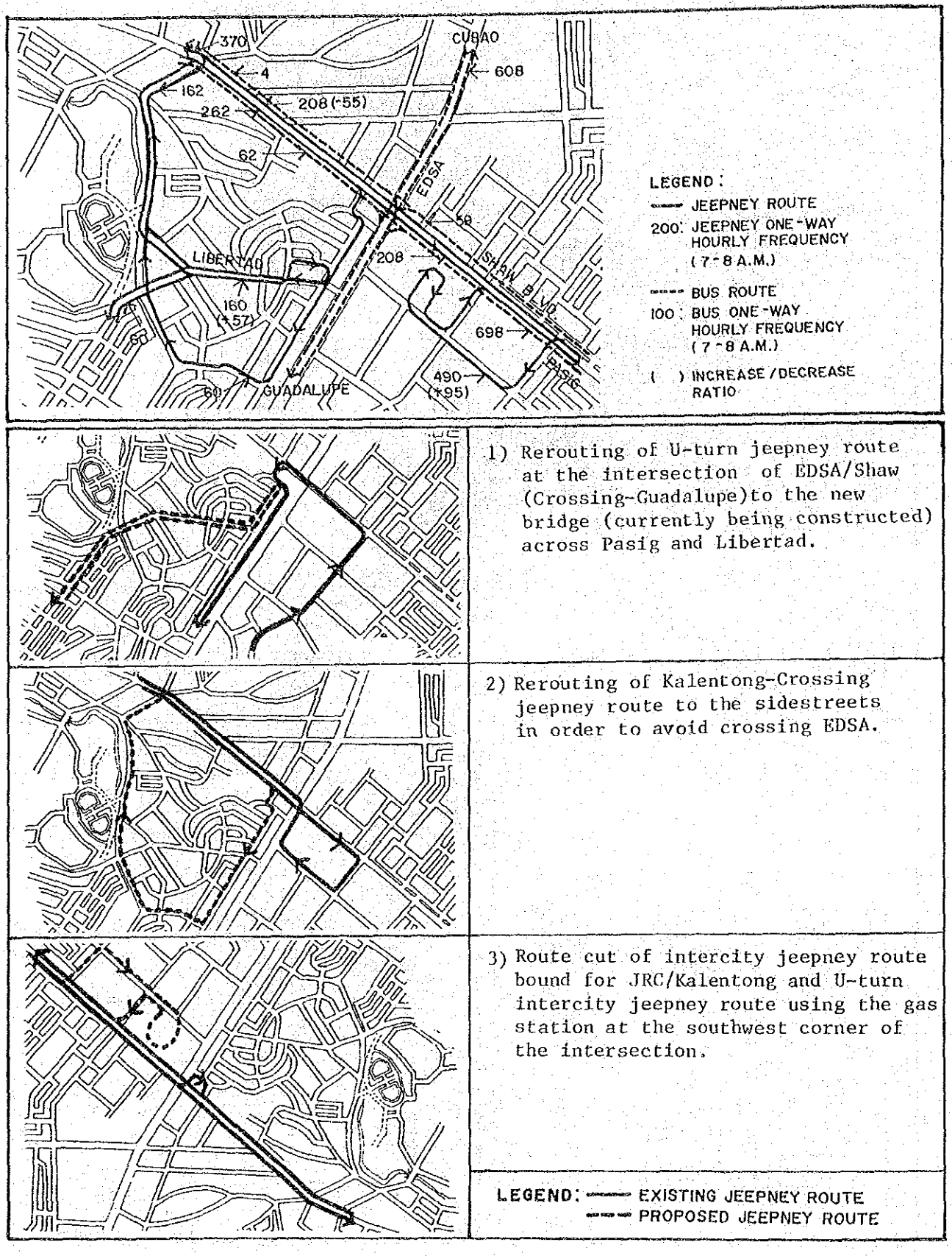


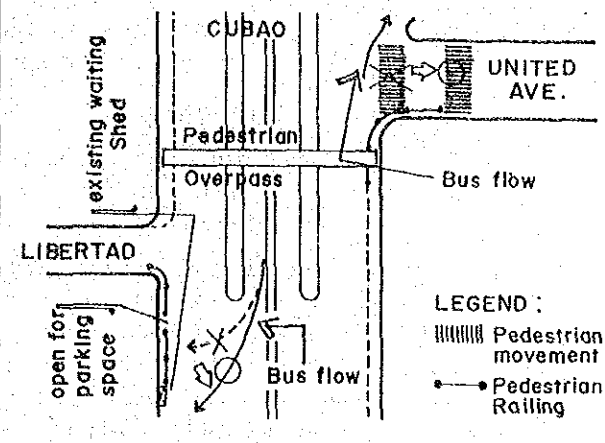
Figure 6.19
Proposed Route Structure Improvement at EDSA/Shaw



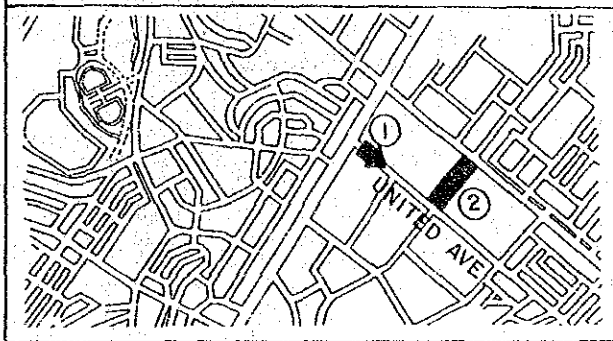
C. Associated Improvements

There are other measures to be done in order to achieve a higher degree of accomplishment to ease the traffic situation at EDSA/Shaw. These are presented in Figure 6.20.

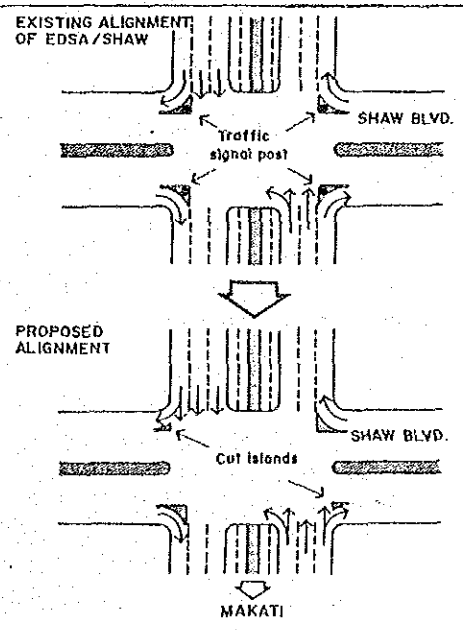
Figure 6.20
Associated Improvements at EDSA/Shaw



- Installation of pedestrian railings. Its advantages are as follows:
  - On the westside, it will force passengers to wait at the proper waiting space and prevent buses, coming from the underpass, to make dangerous-weaving movements.
  - On the eastside, it will push passengers to the proper pedestrian crossing on United Avenue, thereby preventing conflict with buses intending to use the bus bay.

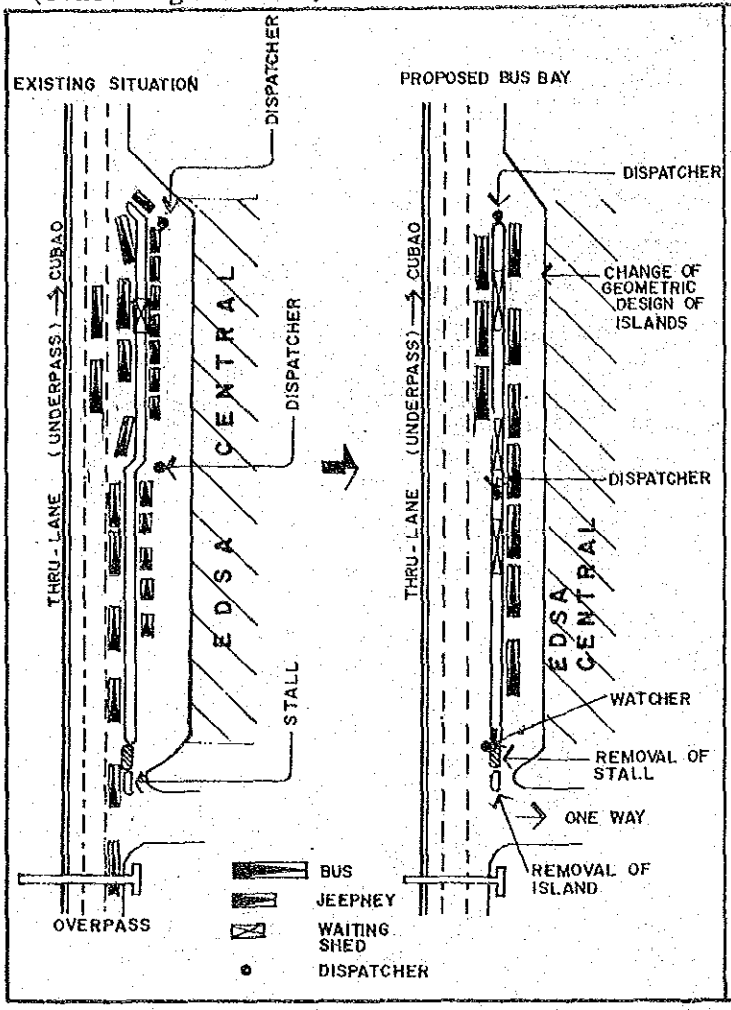


- Prohibition of entry from United Avenue to EDSA service road: ①
  - Removal of conflict between through-traffic and right-turn traffic at the intersection of EDSA service road/United Avenue.
  - Paving of Sheridan: ②



- Redesign of island at the intersection of EDSA/Shaw (also proposed by TEAM). The volume of right turning vehicles from EDSA to Shaw is very low in relation to straight, left-turn, and U-turn (especially at the south) volumes. Accordingly, it is recommended that the island be cut in size to give EDSA service road three lanes for straight or left/U-turn traffic. All traffic signal posts now on the island would then have to be transferred.

(Cont. Figure 6.20)



- Remove the existing jeepney terminal (Crossing-Kalentong, Crossing-Guadalupe) and use it as bus bay.
- Change the geometric design of the outer island for better utilization of the bus bay, although it can be used as bus bay in the existing alignment.
- Install waiting sheds.
- Improve the dispatching system in order to avoid conflict at the bus bay exist.
- Segregation of bus routes which use either the bus bay or the EDSA service road similar to Cubao. This becomes advisable since the bus bay could no longer accommodate all the buses. To enforce the segregation, a watcher or controller should be stationed at the entrance of the bus bay.

6.1.6 Kalentong

A. Identified Problems

The following pedestrian and vehicle activities make Kalentong one of the major problem areas:

1) The intersection of Shaw/Kalentong is reaching its capacity. What makes it worse is the existence of on-street parking and loading/unloading on Kalentong or Blumentritt. The queue length on Shaw Boulevard in the east reaches over 200 meters.

2) On-street parking and haphazard loading/unloading on both-sides of Kalentong. Although Kalentong is wide enough for three lanes, it functions only as two lanes. When jeepneys stop to load/unload, cars following them are also forced to stop.

3) Jeeney queueing between P. Martinez and PNR.

4) Jeepney queueing/parking (Kalentong-Pinatubo route) on Kalentong infront of the market.

5) Left-turning jeepneys from Kalentong to G. Aglipay conflict with passing through vehicles.

6) Jeepneys queueing/parking (Sta. Ana - L. Guinto) near the corner of G. Aglipay.

7) The road width of Kalentong is narrow under the PNR overpass and there is no sidewalk. Pedestrians walk on the cariageway.

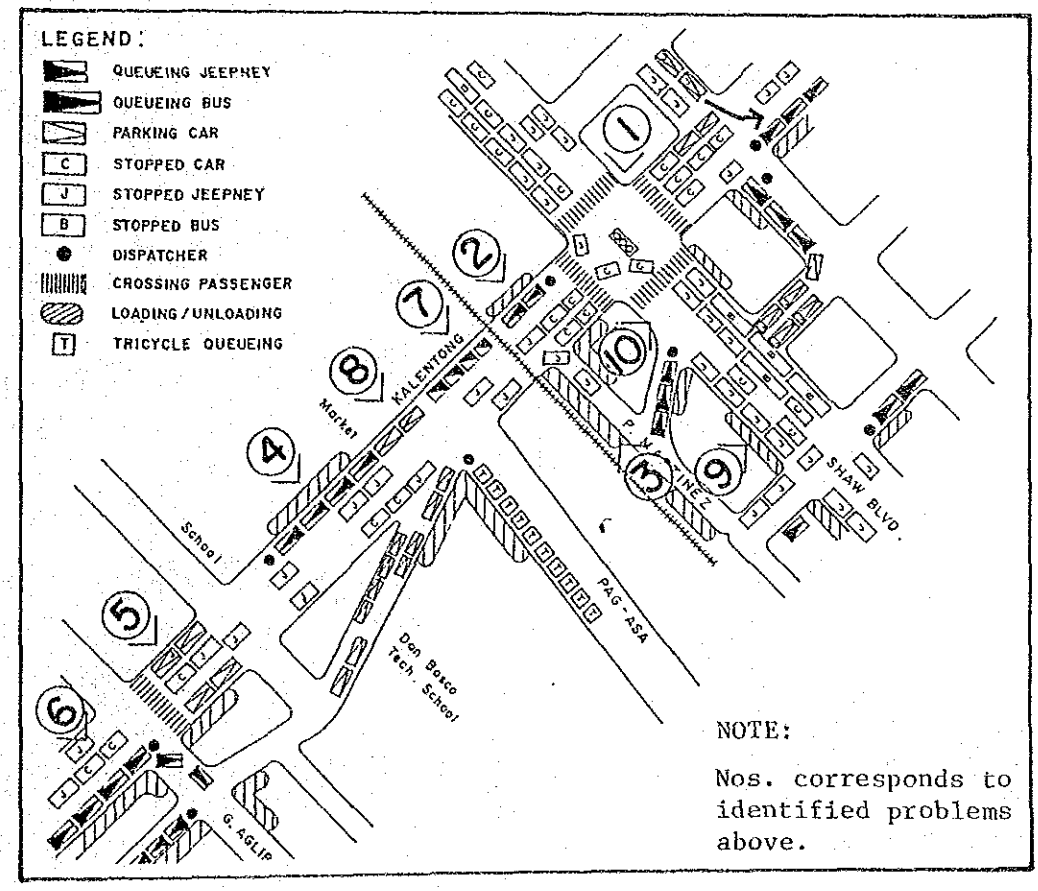
8) Pedestrians cross Kalentong indiscriminately and are often forced to walk on the roadway (because of the poor condition of the sidewalk (presence of vendors, poor surface, etc.). Consequently, travel speed of Kalentong is less than 10 kilometers throughout the day.

9) Jeepneys queueing and making a U-turn on Shaw Boulevard, using the gas station (mainly inter-city routes).

10) Jeepney terminal near the intersection (Libertad-Kalentong) disrupts through-traffic.

The problems enumerated are pictured below:

Figure 6.21
Identified Problems in Kalentong



B. Route Structure Improvement

Figure 6.22 shows the existing public transportation route structure. Based on the ADT (two-day) information - the high volume of passengers boarding/alighting and of vehicles passing the intersections at Shaw/Kalentong, Shaw/Blumentritt and other adjoining intersections - a route restructuring appears warranted. These route changes are schematically shown in Figure 6.23.

Figure 6.22
Existing Traffic Situation at Kalentong

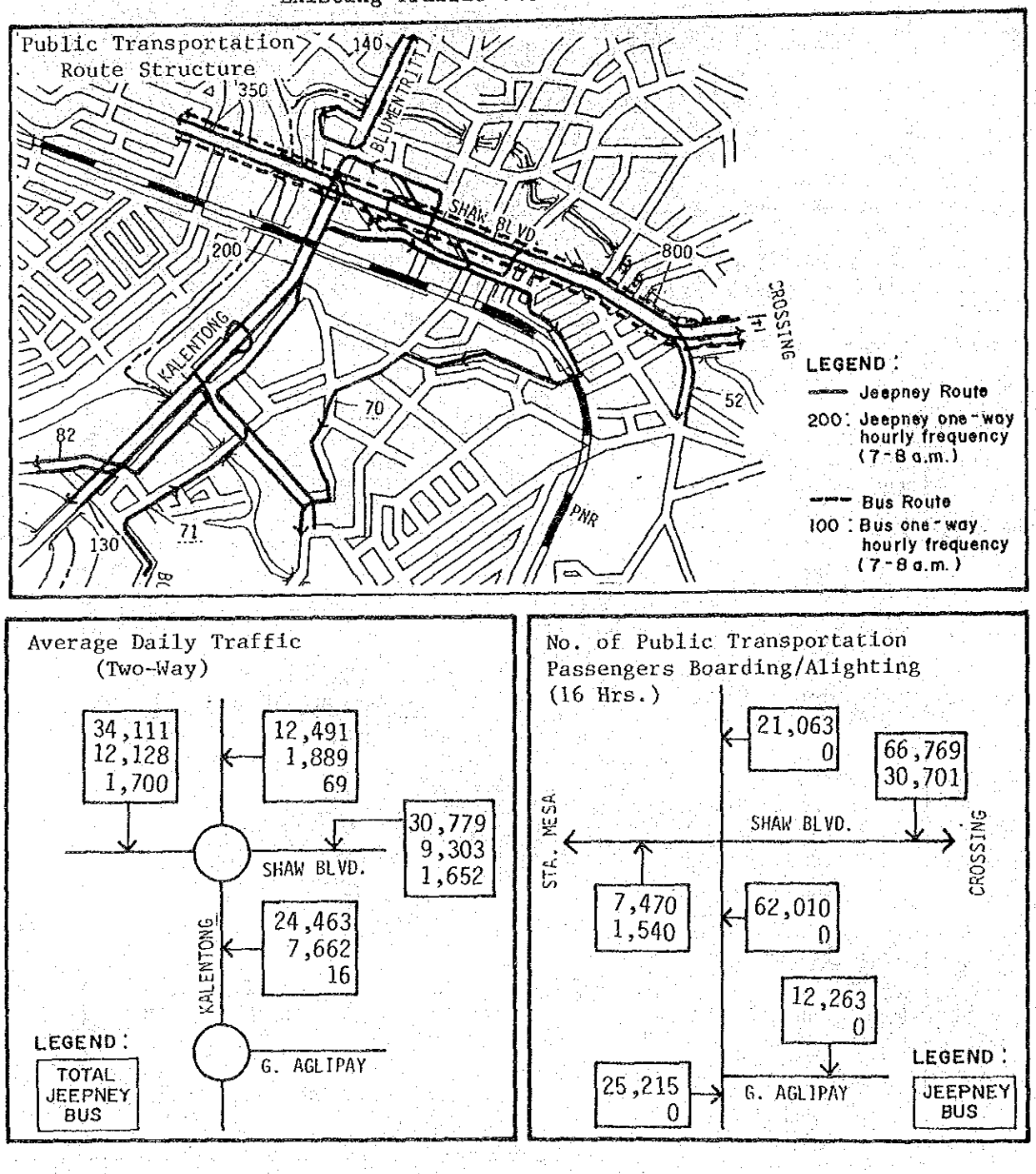
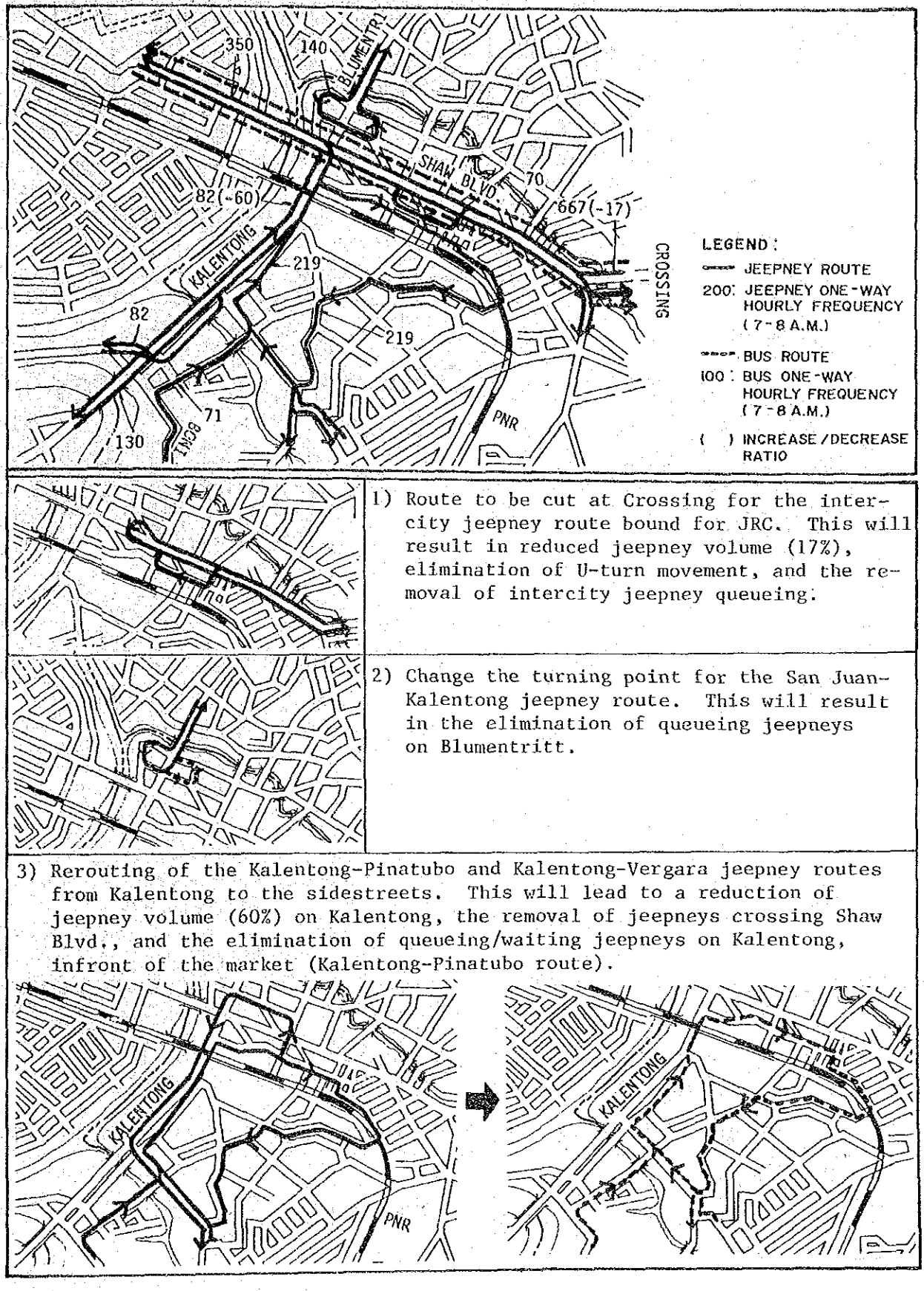


Figure 6.23
Proposed Route Structure Improvement for Kalentong



1) Route to be cut at Crossing for the intercity jeepney route bound for JRC. This will result in reduced jeepney volume (17%), elimination of U-turn movement, and the removal of intercity jeepney queueing.

2) Change the turning point for the San Juan-Kalentong jeepney route. This will result in the elimination of queueing jeepneys on Blumentritt.

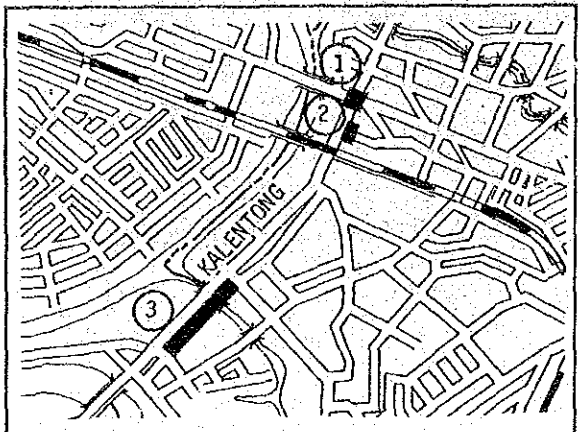
3) Rerouting of the Kalentong-Pinatubo and Kalentong-Vergara jeepney routes from Kalentong to the sidestreets. This will lead to a reduction of jeepney volume (60%) on Kalentong, the removal of jeepneys crossing Shaw Blvd., and the elimination of queueing/waiting jeepneys on Kalentong, infront of the market (Kalentong-Pinatubo route).

C. Associated Improvements

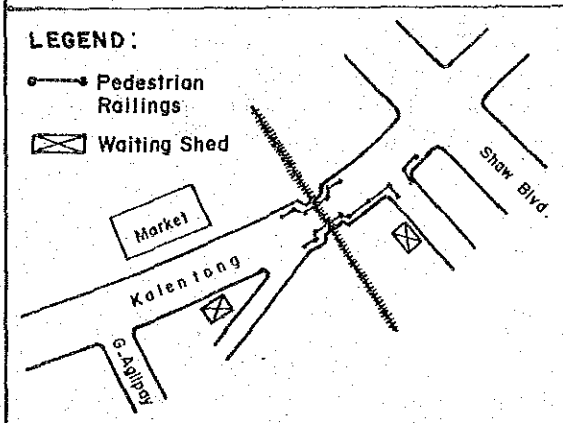
Similar to the other areas, other remedial measures for Kalentong include

- improvement of road surface;
- installation of pedestrian railings and waiting sheds;
- parking restrictions;
- removal of stalls along the sidewalk; and
- traffic signal relocation.

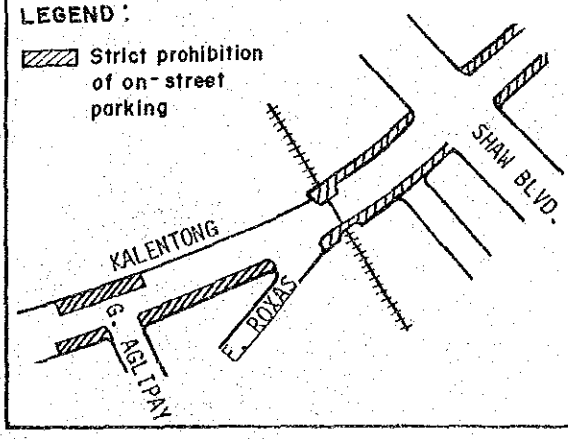
Figure 6.24
Associated Improvements at Kalentong



- Improvement of road surface in the following intersections/road:
  - the intersection of Shaw/Kalentong: (1)
  - the intersection of Kalentong/P. Martinez: (2)
  - F. Roxas: (3)

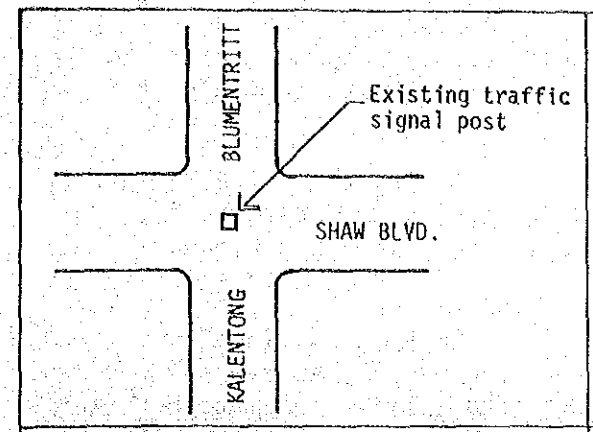


- Installation of pedestrian railings and construction of waiting sheds
  - Elimination of haphazard loading/unloading and queueing on Kalentong
  - Dissolution of conflict between vehicles and pedestrians under the railway overpass. After the installation of the pedestrian railings, Kalentong will still have two lanes at this portion.

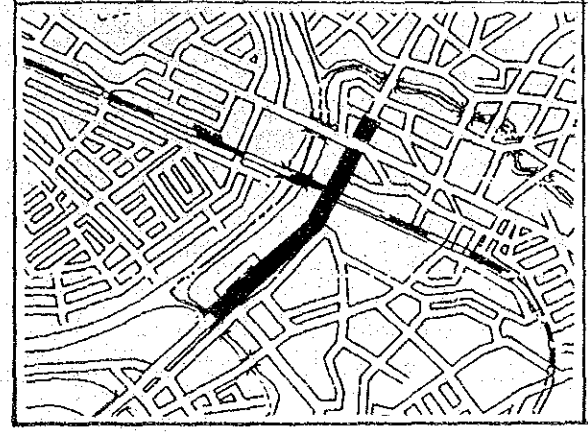


- Strict prohibition of both-side on-street parking along Kalentong, between F. Roxas and Shaw Blvd.
- One side parking prohibition along Kalentong, between G. Aglipay and PNR.
- Strict prohibition of on-street parking within 10 m. from the following intersections:
  - Shaw/Kalentong/Blumentritt
  - Kalentong/G. Aglipay

(Cont. Figure 6.24)



- Removal of the traffic signal post at the center of the intersection because it disturbs traffic movements in the intersection
- Installation of a new traffic post at the corner



- Removal of stalls along the sidewalks of Kalentong
- Maintenance of the sidewalks which includes paving of gaps and holes, and replacing missing drainage hole covers
  - Pedestrians are often forced to walk on the carriageway because of the existing poor sidewalk condition and conflict with vehicles

6.1.7 Guadalupe

A. Identified Problems

Guadalupe is one of the more popular objects of traffic study because of its varied activities and enormous amount of pedestrian and vehicle movements.

The problems associated with Guadalupe are presented in Figure 6.25 and described below:

1) The intersections at J. P. Rizal, EDSA ramps, and Sgt. Yabut are overloaded due to the following reasons:

   - overlapping movements of both east and westbound jeepney routes
   - vehicles turning left from J. P. Rizal (which has only two lanes) to the EDSA ramp tend to block through-traffic
   - poor road condition at the J. P. Rizal/EDSA ramp intersection

The condition is worsened by the long queue of vehicles that spills over to EDSA, and disturbs through-traffic.

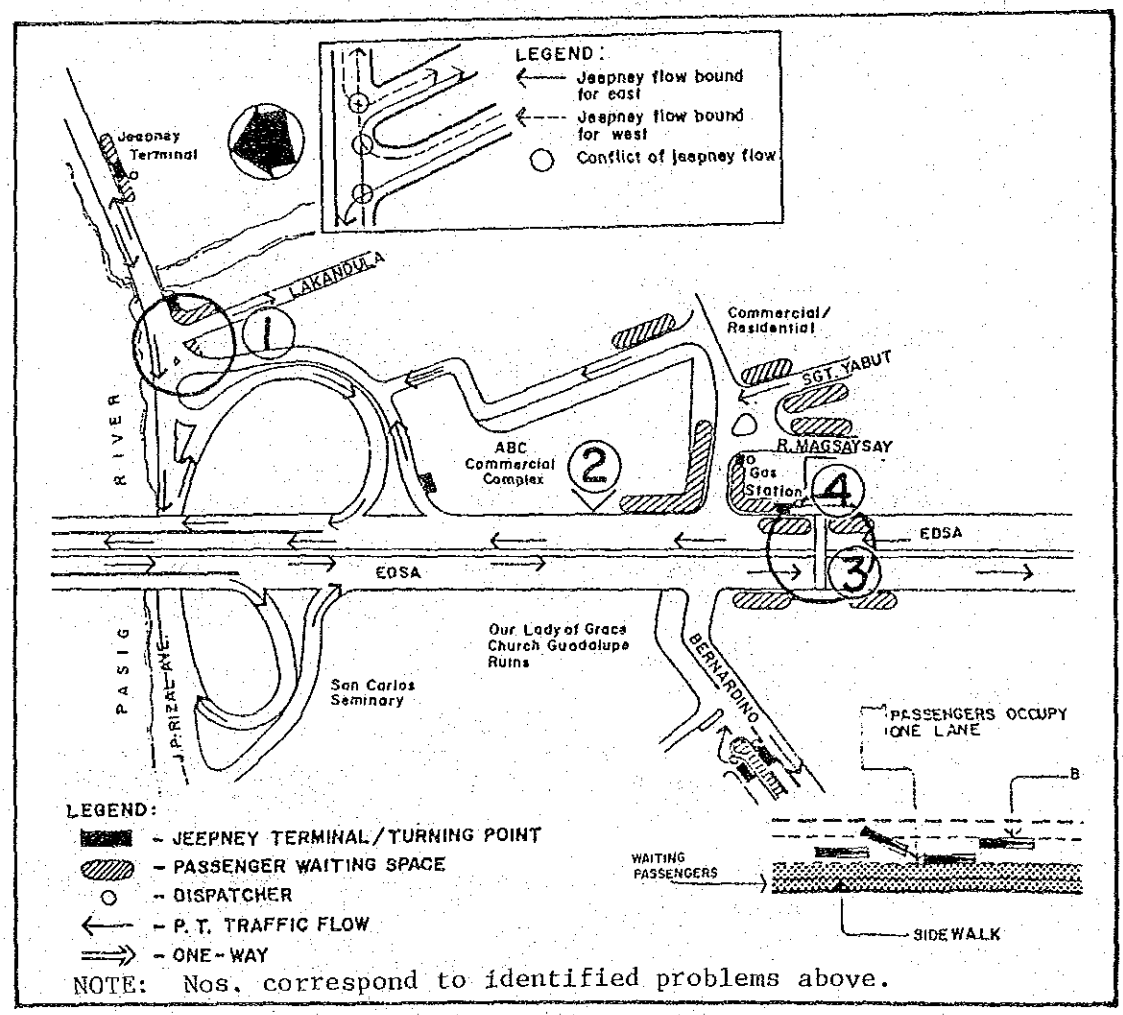
In contrast, the intersection of EDSA ramp (west) and J. P. Rizal can handle far more than its present traffic volume.

2) Local traffic, especially jeepneys, utilizes EDSA infront of ABC for maneuvering and parking. Consequently, cars leaving the parking area create risky situations as they enter EDSA.

3) Pedestrians wait and walk on the EDSA carriageway to take rides between P. Burgos and the pedestrian overpass. This forces buses to stop on the second lane, or further into the inner lanes not to mention the double queueing of buses.

4) The extremely heavy concentrations of pedestrians are forced to use the road in the vicinity of the bus/jeepney stops because of the narrow or non-existent sidewalks. Sidewalks are occupied by stalls.

Figure 6.25
Identified Problems at Guadalupe



B. Route Strtucture Improvement

The existing route structure for public transportation is presented in Figure 6.26. Figure 6.27 shows the proposed route changes.

Figure 6.26
Existing Traffic Situation at Guadalupe

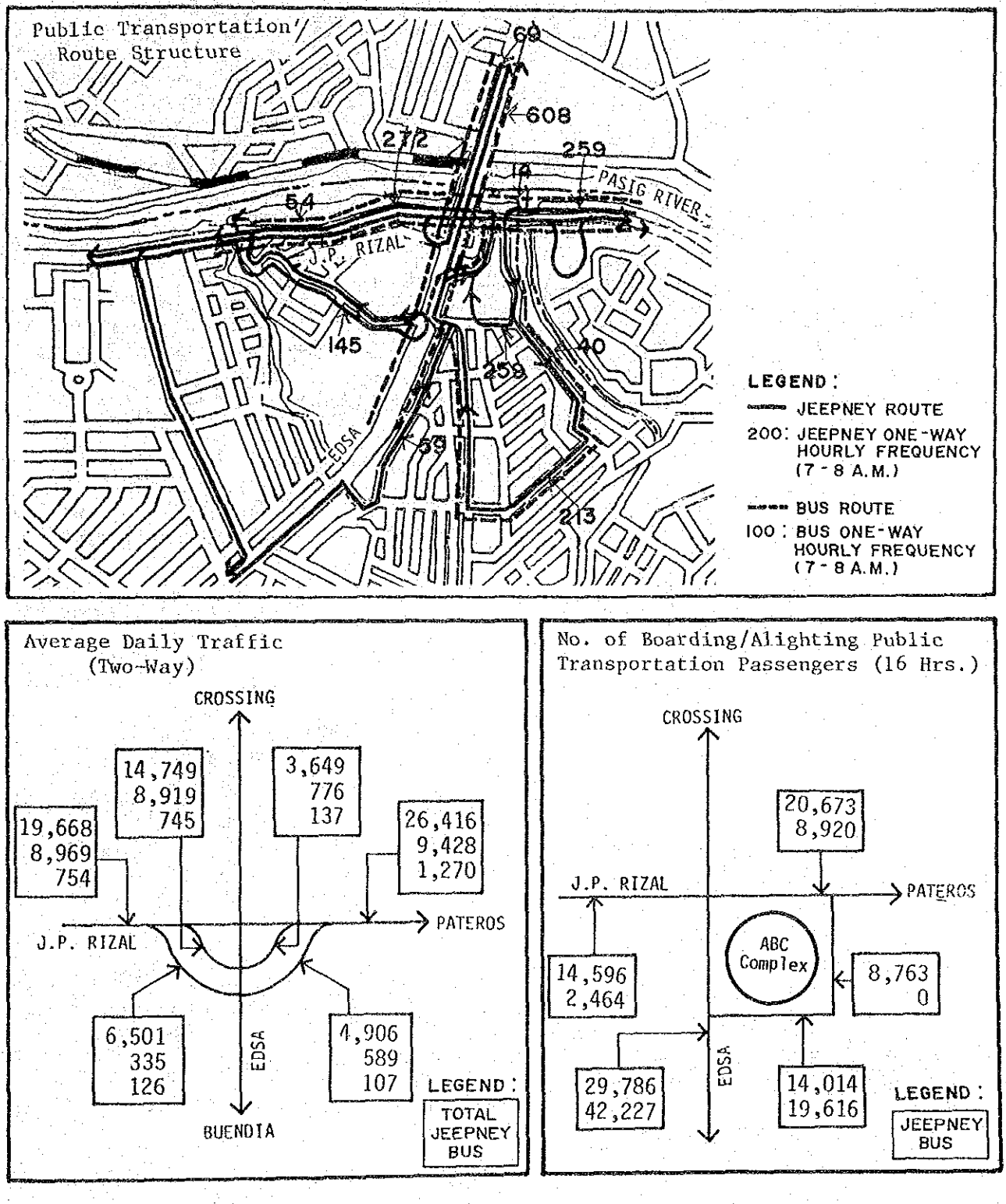
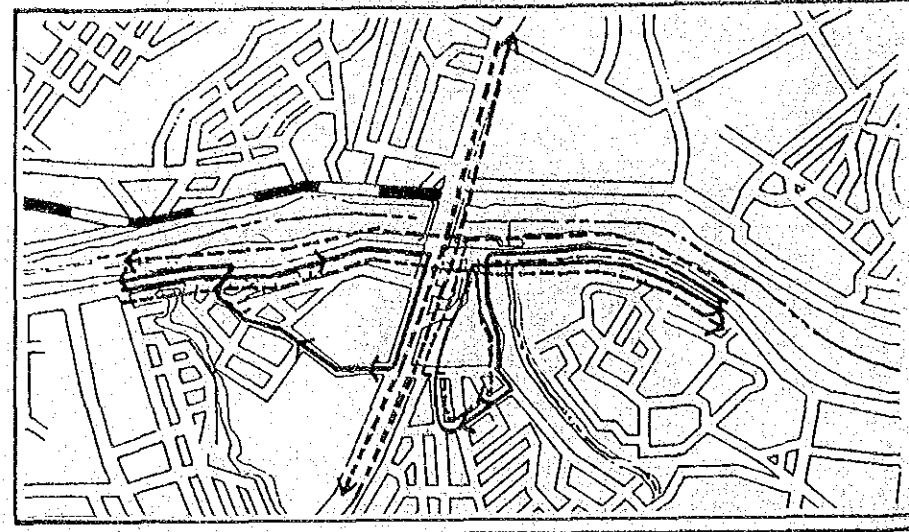
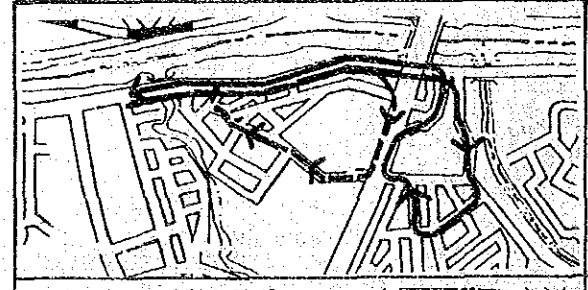


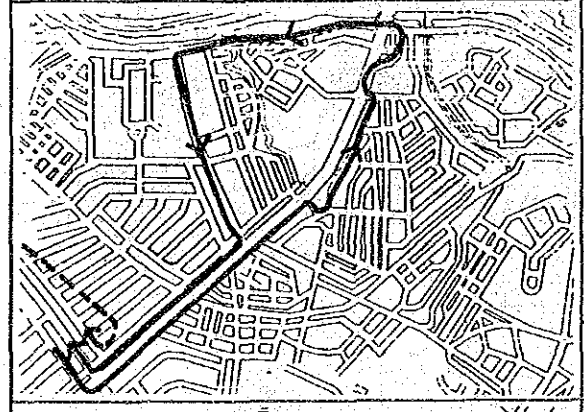
Figure 6.27
Proposed Route Structure Improvement for Guadalupe



LEGEND :
- JEEPNEY ROUTE
- 200: JEEPNEY ONE-WAY HOURLY FREQUENCY (7-8 A.M.)
- BUS ROUTE
- 100 : BUS ONE-WAY HOURLY FREQUENCY (7-8 A.M.)

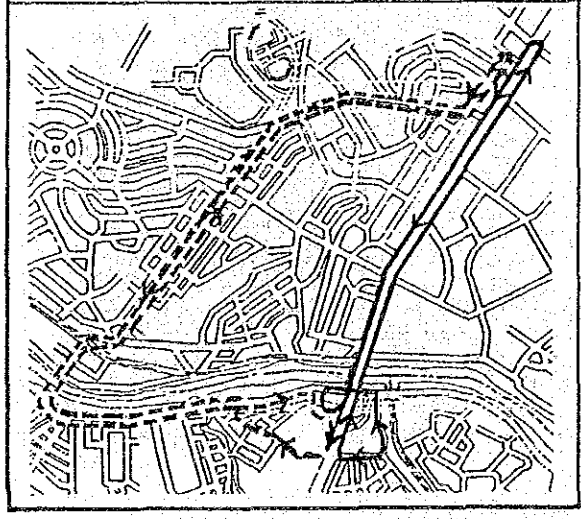


1) Rerouting of westbound jeepney routes to J.P. Rizal, EDSA ramp, Bernardino and Carballo. These routes currently use Sgt. Yabut, EDSA and the EDSA ramp. This change will avoid conflict of turning movements at these streets.



2) Cutting of the Cartimar-Guadalupe jeepney route at the intersection of Buendia/EDSA. This will reduce the conflict at the intersection of J.P. Rizal, Sgt. Yabut, and EDSA ramps. Furthermore, it will induce a complimentary relationship with buses.

LEGEND: —— EXISTING JEEPNEY ROUTE
---- PROPOSED JEEPNEY ROUTE



3) Rerouting of the Crossing-Guadalupe jeepney route, after the construction of the new bridge. The merits of this plan are the same as those of the above. In addition, it is a new route to meet anticipated demand occasioned by the bridge's opening.

As a result, the congestion of the intersection of J.P. Rizal, EDSA ramps, and Sgt. Yabut (east of EDSA) will be relieved to a great extent based on the intersection analysis done. (Total inflow volume of jeepneys will be reduced by 50%)

C. Associated Improvements

Recognizing that rerouting per se is not sufficient to relieve traffic congestion at Guadalupe, countermeasures had been developed and shown in Figures 6.29 to 6.30.

The emphasis of the countermeasures is on control of pedestrian/passenger movements, viz.:

1) Improvements on EDSA, westside (see Figure 6.28)

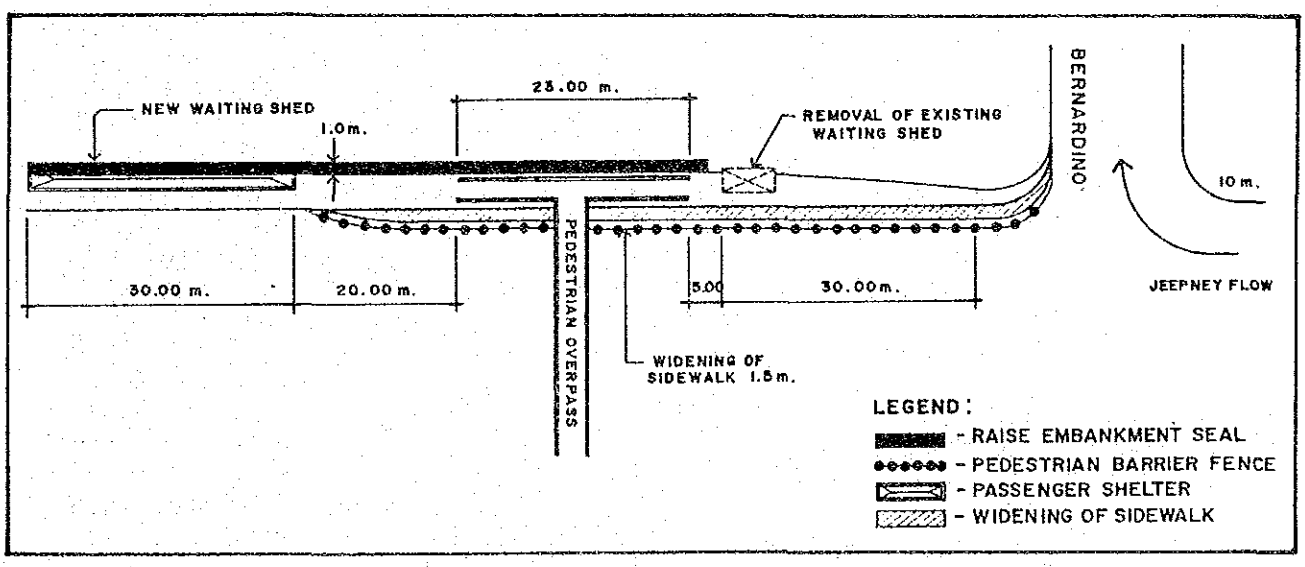
- Widening of the sidewalk. Even though this area is used by vehicles, it will be underutilized anyway since one lane of EDSA on the north of Bernardino will be occupied by the new jeepney flow.

- Removal of the existing waiting shed and contruction of a new one.

- Installation of pedestrian barrier fence and prohibition of loading/unloading on the northside of the pedestrian overpass to secure the space for passenger movement.

- Strict prohibition of loading/unloading along EDSA between EDSA ramp and Bernardino.

Figure 6.28
Improvements on the Westside of EDSA



2) Improvements on EDSA, eastside (see Figure 6.29)

- Widening of the sidewalk. Even though the area is used as carriageway, it will be underutilzed once a barrier fence median has been installed to provide a one lane service road infront of ABC.

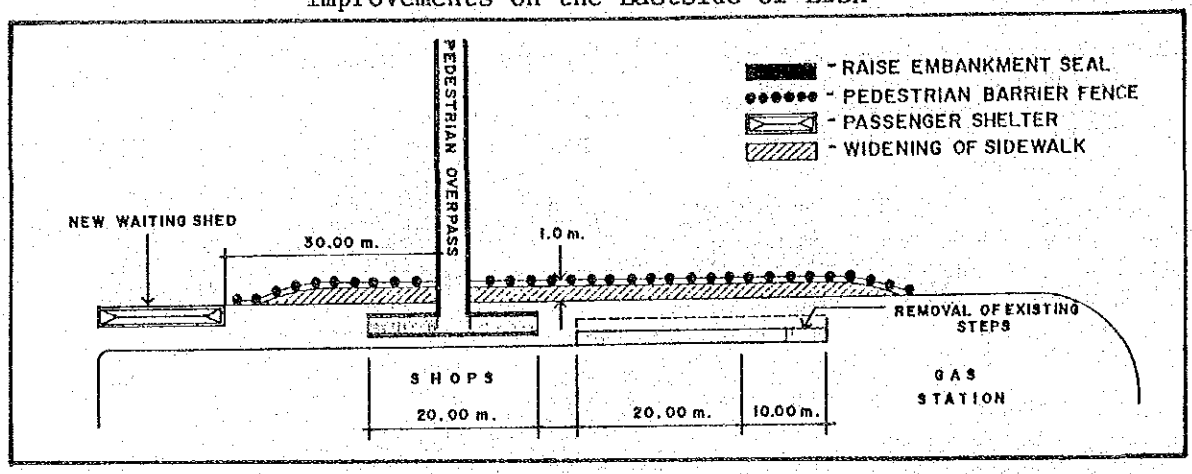
- Removal of existing steps on the sidewalk as proposed by MMUTSTRAP B1.

- Installation of a pedestrian barrier fence and prohibition of bus loading/unloading on the northside of the pedestrian overpass to secure the space for passenger movement.

- Removal of stalls on the sidewalk.

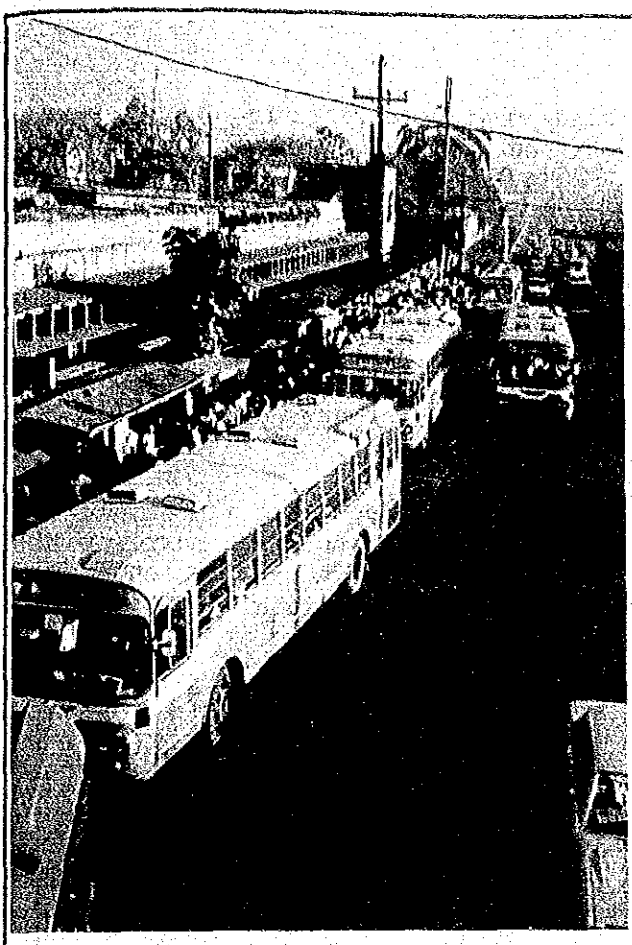
- Installation of new waiting sheds.

Figure 6.29
Improvements on the Eastside of EDSA



As a firm base for the remedial measures, an estimation of pedestrian volume of EDSA's sidewalks was conducted. The existing number of pedestrians on EDSA's sidewalks is broken down as follows: 5,600 persons/hour (evening peak hour, two-way) on the eastside; 2,400 persons/hour on the west side; 6,700 persons/hour on the pedestrian overpass. On the other hand, the total number of boarding/alighting passengers at Guadalupe is about 180,000 persons/16 hours (jeepney: 90,000; bus: 90,000). According to the results of the pedestrian interview survey, the percentage of transfer passengers between jeepneys is 30% or roughly 27,000 persons/16 hours. If the peak hour ratio is 10%, it will be 2,700 persons/hour during the peak hour. On the other hand, the number of generated passengers of jeepneys are estimated to be 30,000 persons/16 hours. If the generated passengers from the west and the east are the same level, then the number of generated passengers who will cross EDSA after the rerouting will be 15,000 persons/16 hours or 1,500 persons/hour.

As a result of the rerouting, the number of passengers who will transfer between jeepneys and are generated/attracted from westbound jeepneys will be on top of the existing number of pedestrians on EDSA's sidewalks. Consequently, the maximum number of pedestrians on EDSA's sidewalks after the rerouting could range from 8,000 to 10,000. Therefore, EDSA will need sidewalks that are over 2 meters wide (existing sidewalk width: 1.0 - 2.0 meters).

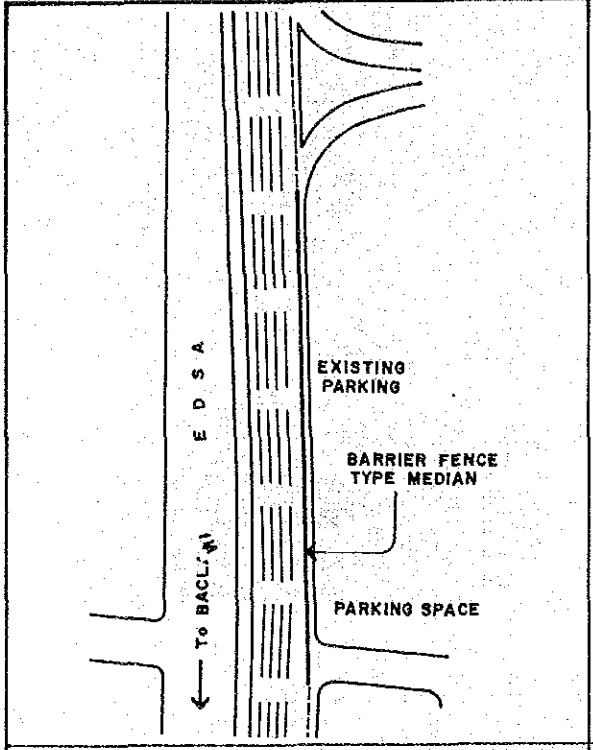


PEDESTRIAN ACTIVITY ON EDSA'S SIDEWALKS AND OVERPASS

JUMSUT 2

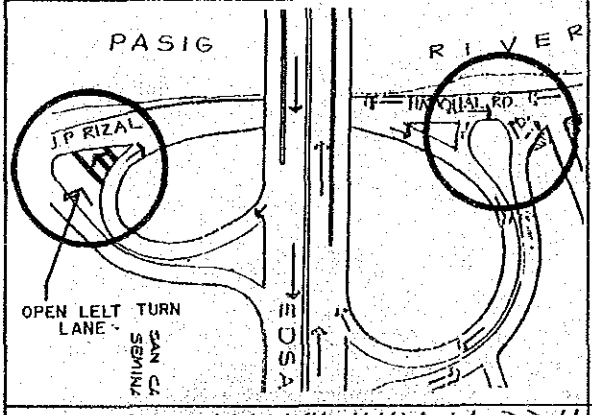
In addition to those already mentioned, Figure 6.30 shows other associated improvements on Guadalupe.

Figure 6.30
Other Associated Improvements for Guadalupe

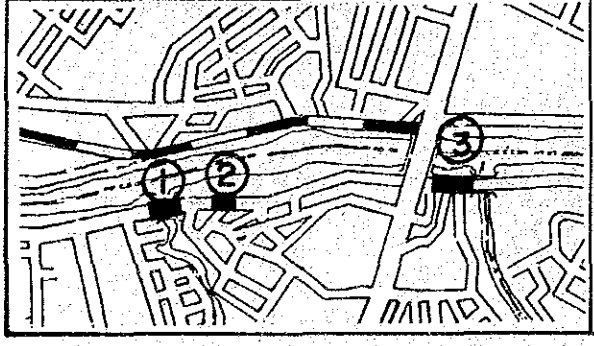


- Installation of barrier fence type median outside ABC to provide service lane to carry circulation and parking traffic

  MMUTSTRAP B1 proposed a 1.0 m. new median but this should be narrower (0.5 m.) and with a barrier fence to avoid loading/unloading

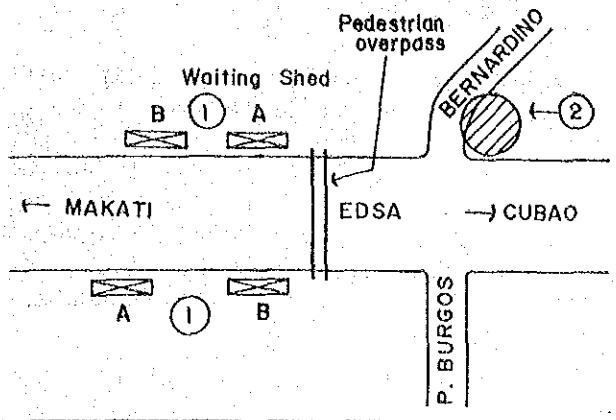


- Signalization and channelization of two intersections of EDSA ramps and J.P. Rizal, allowing left-turn movement from EDSA ramp to J.P. Rizal at the west ramp (MMUTSTRAP proposal)
- Seal the shoulder of J.P. Rizal, between the east and west ramps and make it three lanes. Proper lane marking is also necessary
  - It is impossible to handle these intersections manually

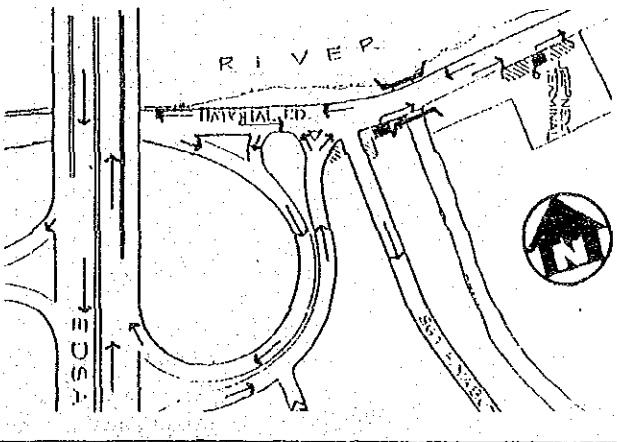


- Road surface improvement along J.P. Rizal at the following:
  - the bridge on the west: (1)
  - the intersection of J.P. Rizal and Carballo, which will be used for the proposed jeepney route: (2)
  - between EDSA and the bridge on the east: (3)

(Cont. Figure 6.30)

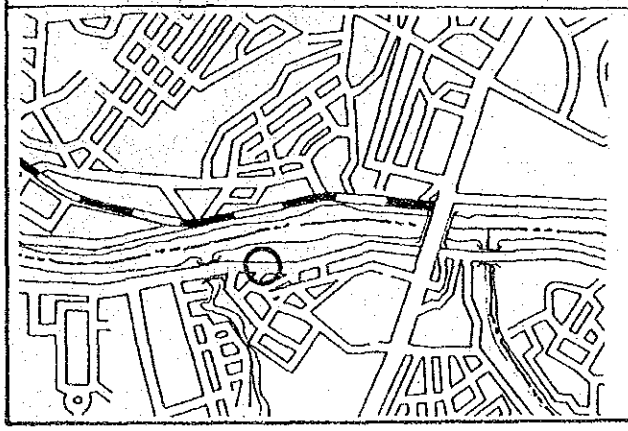


- Improvement of the dispatching system of buses on EDSA: (1)
  - Relocation of bus stop and segregation of buses into two groups
  - Prohibition of two-line queueing
- Improvement of the jeepney dispatching system on Bernardino, which calls for a strict prohibition of loading/unloading near the intersection of EDSA/Bernardino and better utilization of the existing off-road terminal: (2)



Mid-term

- Widening of the bridge



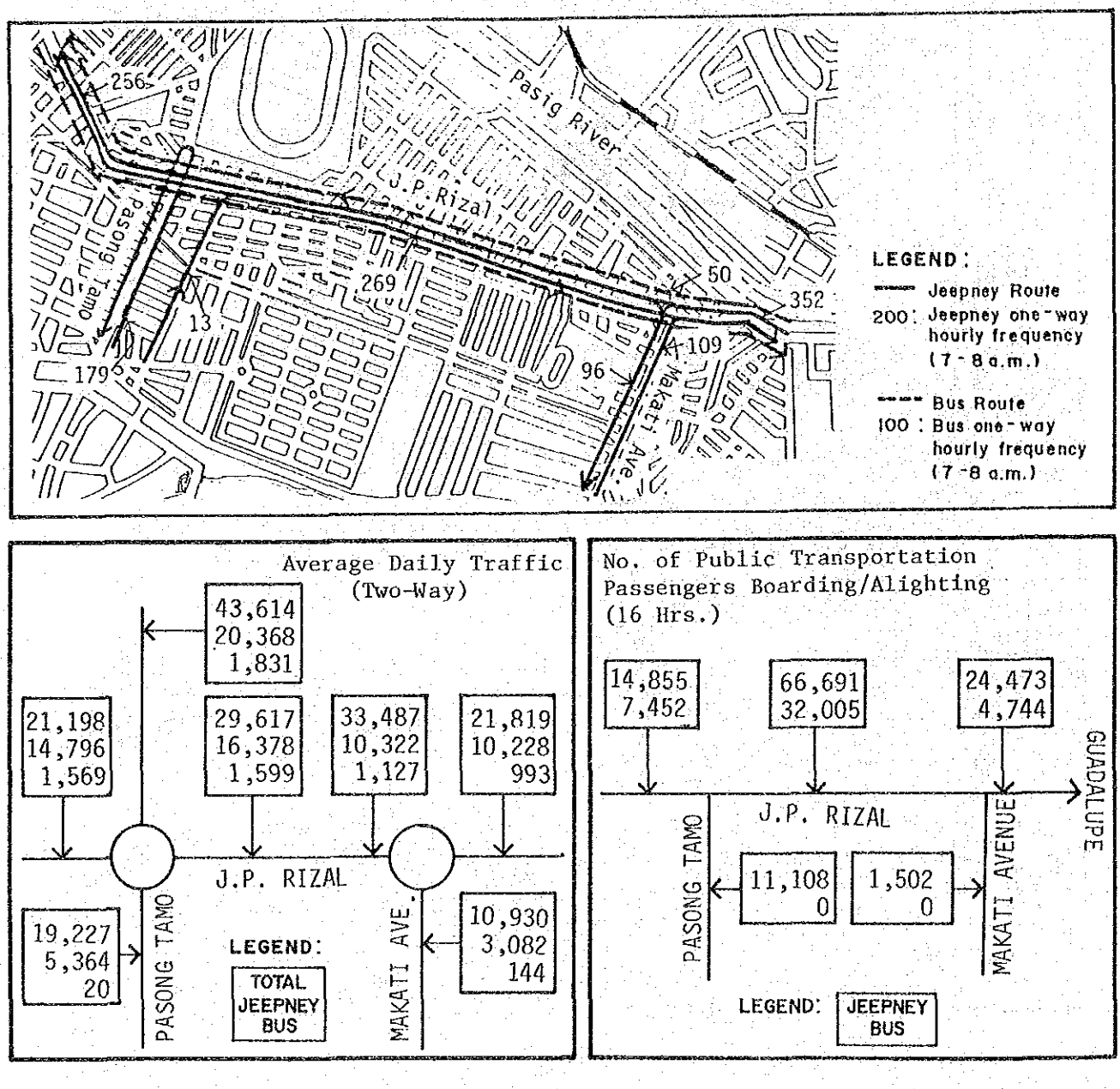
- After the rerouting, the intersection of J.P. Rizal and Carballo must be controlled by traffic aides. It is more desirable, however, to signalize the intersection in the future.

6.1.8 J. P. Rizal

A. Identified Problems

J. P. Rizal makes an interesting case for traffic study with its combined vehicle and pedestrian activities which includes haphazard PUVs loading/unloading, on-street parking, pedestrian movements, etc. Due to these activities traffic volume on J. P. Rizal (ADT: 30,000) may be deemed to have reached the road capacity (carriageway width: about 10 meters). Aggravating the situation are the MWSS diggings which are likely to persist for quite some time. The existing traffic situation in this area is described fully in Figure 6.31.

Figure 6.31
Existing Traffic Situation at J. P. Rizal



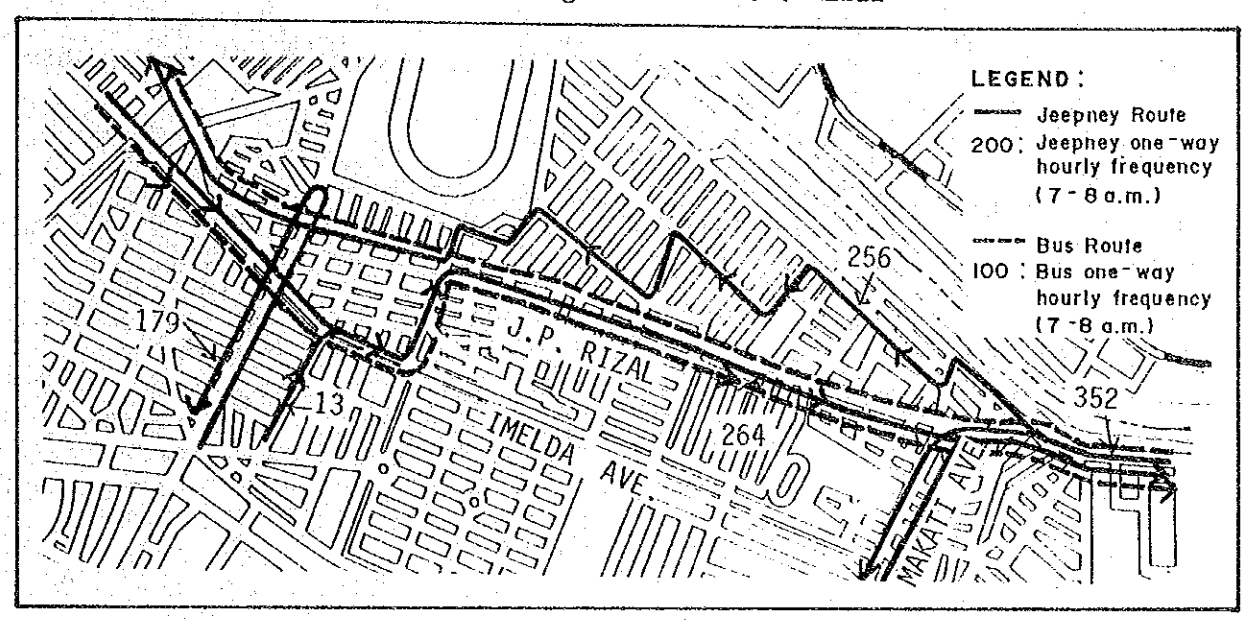
There are no traffic signals along J. P. Rizal. As a result, serious congestion occurs frequently at the intersections, especially the intersection of J. P. Rizal and Pasong Tamo.

B. Route Structure Improvement

MMUSTRAP B1 proposed to make Tejeron and Pasig Line/Imelda Avenue one-way between P. Gil and South Avenue.

This proposal looks acceptable except that the section between South Avenue and Makati Avenue is also saturated. This being the case, it is advisable to detour jeepney routes as shown in Figure 6.32.

Figure 6.32
Jeepney Rerouting Plan for J.P. Rizal



Out of the existing three lanes, two lanes will be devoted to eastbound traffic and one lane for westbound traffic for the section between South Avenue and Makati Avenue.

C. Associated Improvement

Pedestrian railings should be installed at the proper location to restrict PUVs loading/unloading near the intersection and parking on sidewalk which forces pedestrians to walk on the road (parking on sidewalk should be banned strictly).

On-street parking should be prohibited, at least, on one side. Parking ban should be enforced on both sides within 10 meters from the following intersections:

- P. Gil/Tejeron, J. P. Rizal/Pasong Tamo
  J. P. Rizal/South Avenue, J. P. Rizal/Makati Avenue