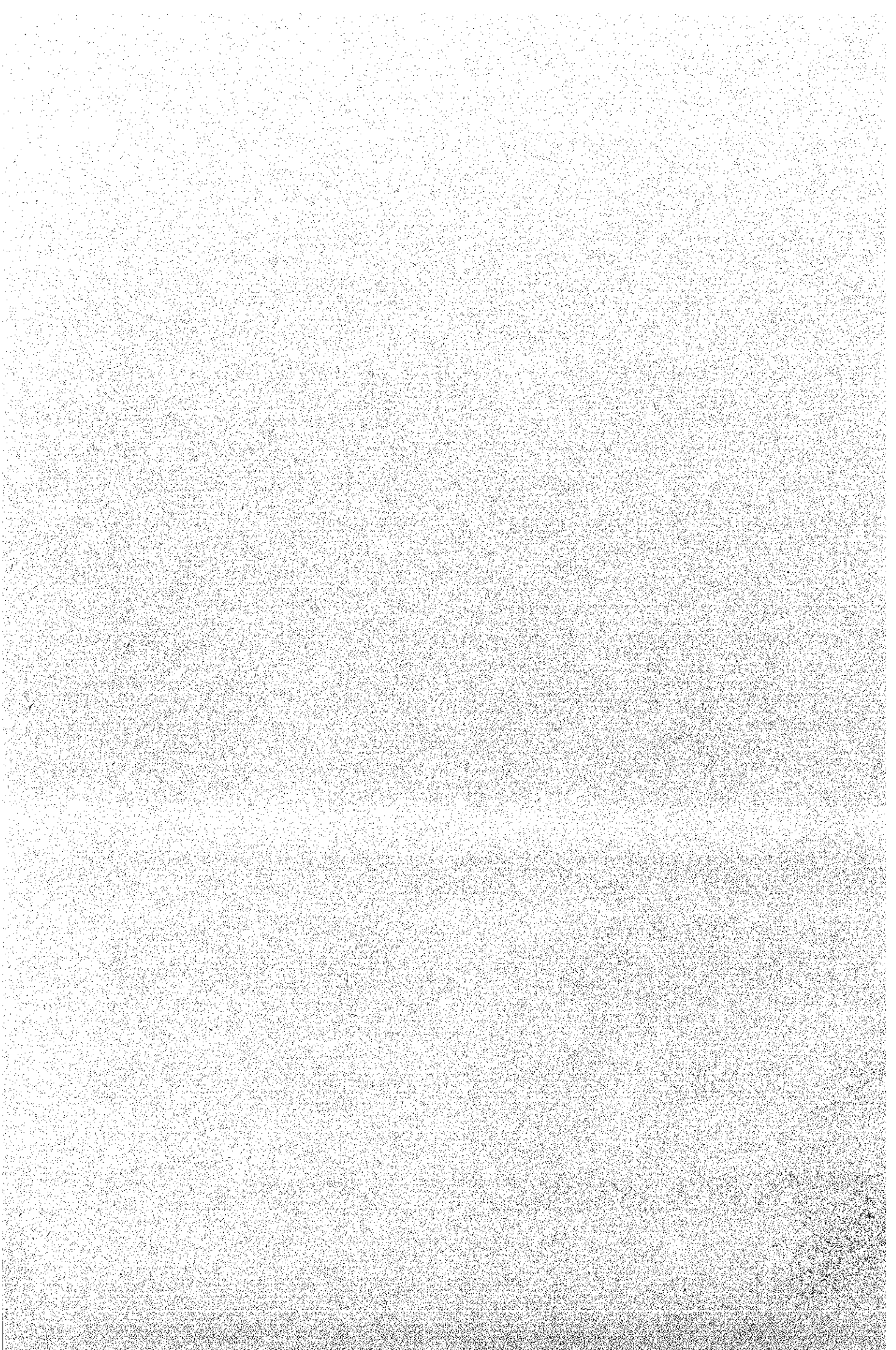


Parañaque

Individual Information Sheets for the Traffic Bottleneck Points

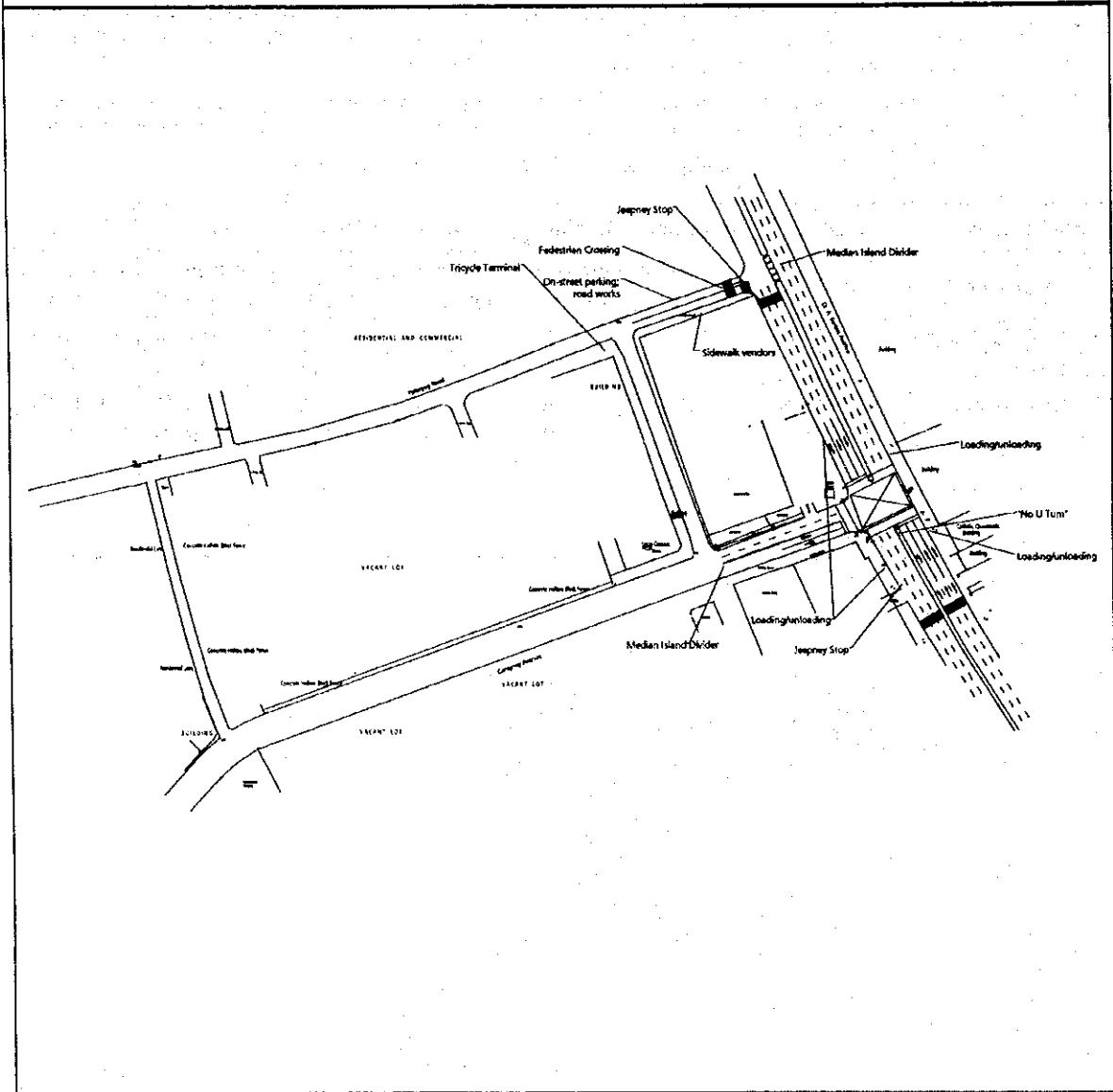
- PQ-01 Canaynay Avenue / Dr A Santos Ave
- PQ-02 Quirino Ave / Kabihasn Rd
- PQ-03 Ninoy Aquino Ave / Medina Ave
- PQ-04 Dr A Santos Ave / San Antonio Rd / Squaremart
- PQ-05 Dr A Santos Ave / President Ave



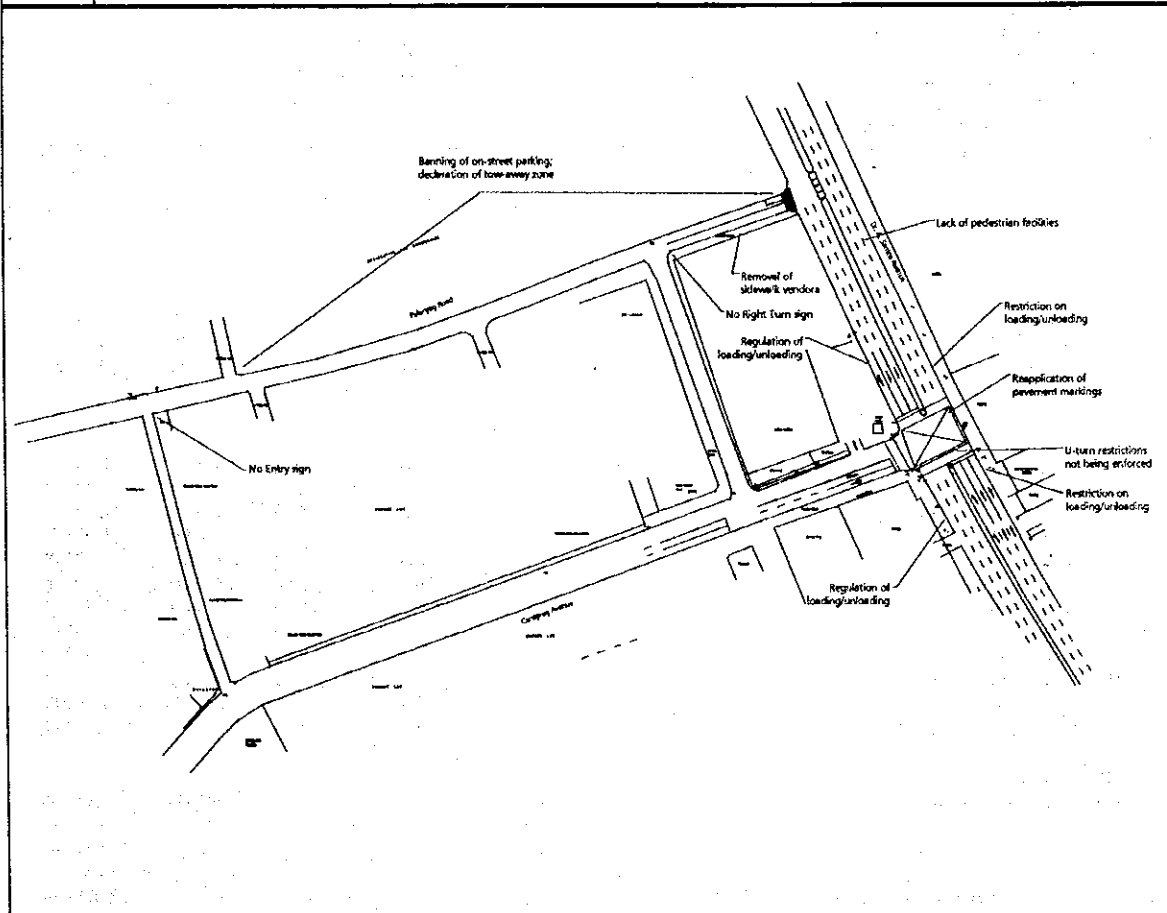
Name	Dr A Santos Ave / Canaynay Ave				Code	PQ-01		
Sheet	Summary of Observations				LGU	Parañaque		
Traffic Conditions	<ol style="list-style-type: none"> 1) Heavy vehicle volume along Dr A Santos Ave (Sucat Road) 2) Junction is host to commercial activities 3) Sufficient parking space at Canaynay junction, although a clear lack along Palanyag Road; 4) Phasing of signal cycle times could be improved to offer higher levels of service 							
	Physical Conditions	<ol style="list-style-type: none"> 1) A T-type and signalized intersection, the bottleneck point consists of a main road with three lanes in each direction but separated by a median. The intersecting road, on the other hand, has four undivided lanes. 2) Physical constraints identified at the bottleneck point include substandard turning radius of street corners and uneven pavement transition along Canaynay Ave. and Evacom Ave., the latter's pavement being higher than the former creating a hump like situation leading to slowing down of vehicles at both roads when one vehicle is turning toward Evacom Ave. The same situation is experience at the intersection of Evacom Ave. and Palanyag Road. All streets surrounding the bottleneck point are accessible in both directions. 3) The median opening at the intersection of Palanyag Road and Dr. A. Santos Ave. has been temporarily closed to turning movements such that only right turn to Dr. A. Santos is allowed. 4) All roads at the intersection are paved with concrete in good condition. 						
Signalization		Signalized	Pavement Markings	With markings	Peak	16:00-17:00		
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume	
		Left	Through	Right	Total			
A1: Dr A Santos (N)	24 m	31 (U)	1534	265	1830	30.49%	Moderate	
A2: None	None	None	None	None	None	None	None	
A3: Dr A Santos (S)	15 m	351	1459	NA	1810	30.44%	Moderate	
A4: Canaynay	24 m	516	NA	316	833	21.61%	Light	
Total		898	2993	581	4473			
Passenger Flows							16,000	
<p>Peak Hour Volumes (PCUs) Parañaque PQ-01 Canaynay Av / Dr A Santos Av</p>								

Name	Dr A Santos Ave / Canaynay Ave	Code	PQ-01
Sheet	Analysis	LGU	Las Piñas

- 1) Canaynay Avenue links to Las Piñas and to the Alabang-Zapote Road via CAA Road. It functions as a north-south arterial between the Laguna Lakeshore (SLEX and Manila South Road) and the Manila Bay shore (Coastal Road). In turn, Dr A Santos Ave leads to EDSA via the Airport area.
- 2) The junction, while signal controlled, often reverts to manual operation due to non-optimized signal timing.
- 3) The block formed by Dr A Santos Ave, Canaynay Ave, Palanyag Road and Evacom Road hosts a number of retail establishments, attracting patrons who do their marketing activities.
- 4) Palanyag Road hosts a number of retail establishments which allowed their parking spaces to be occupied by vendors. With no off-street parking facilities available along Palanyag Road, vehicles have to park on street.



Name	Dr A Santos Ave / Canaynay Ave	Code	PQ-01
Sheet	Proposed Improvements	LGU	Las Piñas
Engineering	<ol style="list-style-type: none"> 1) Palanyag Road is proposed to be converted to one-way traffic from Dr A Santos Ave, between Dr A Santos Ave and Don Jose. 2) Placement of permanent median barriers along Canaynay Avenue 3) Improvement (concreting, to be shouldered by LGU) of Ruby St. 4) Ruby Street to be converted to one way from Palanyag Road to Canaynay Ave. 5) Closure of median break along Dr A Santos Ave north of Palanyag Road. 6) Reapplication of pavement markings. 7) Installation of "No Entry" and "One Way" signs. 		
Enforcement	<ol style="list-style-type: none"> 1) Enactment of city ordinance declaring Palanyag Road as one way from Dr A Santos Ave to Don Jose Green Court. 2) Banning of parking and declaration of Palanyag Road as tow-away zone between Dr A Santos Ave and Don Jose. 3) One way traffic system for Evacom Road from Canaynay Ave to Palanyag Road. 4) Enforcement of loading/unloading regulations. 		



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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : PQ-01: Dr A Santos Ave / Canaynay Ave (PARAÑAQUE)
(cost summary based on actual implementation)

A. Pavement Markings	<u>Unit</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Total Cost</u>
<i>Longitudinal Lines</i>				
1. Center Lines				
a.) Broken Lines, 100 or 150 mm width, 3m length 4.50 m gaps	l.m.	539.00	90.00	48,510.00
b.) Solid White Lines, 150mm width	l.m.	-	-	-
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	-	-
b.) Broken Lines, w = 150mms, 200mm width	l.m.	-	-	-
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	-	-
b.) Single Yellow Line with broken White Lines (100-150mm)	l.m.	-	-	-
4. Edge Lines				
a.) Pavement Edge (Shoulders)	l.m.	-	-	-
b.) Median Edge	l.m.	-	-	-
5. Continuity Lines				
a.)	l.m.	-	-	-
6. Transition Line				
a.)	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	l.m.	30.00	270.00	8,100.00
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	-	-	-
b.) Cross Walks (Signalized), width = 300mm	l.m.	305.00	180.00	54,900.00
<i>Other Lines</i>				
1. Turn Lines (Broken Lines)	l.m.	-	-	-
2. Parking Bay Lines				
a.) Parallel Bays, width = 100mm	l.m.	-	-	-
b.) Angle Bays	l.m.	-	-	-
3. Painted Median Islands	l.m.	-	-	-
4. Bus and PUJ Lane Markings	l.m.	-	-	-
5. Channelized Junction Pavement Marking	l.m.	-	-	-
6. Yellow Box Line, w = 200mm	l.m.	142.00	120.00	17,040.00
<i>Messages and Symbols</i>				
1. Messages				
a.)	pcs.	-	-	-
2. Symbols				
a.) Give Way Symbol	pcs.	-	-	-
b.) Pavement Arrows				
1.) Through Arrow = 1.21 sq.m. / each	pcs.	6.00	945.00	5,670.00
2.) Combined Arrow = 2.44 sq.m. / each	pcs.	2.00	1,575.00	3,150.00
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	3.00	1,165.00	3,495.00
c.) Numerals				
B. Signs				
1. Jeepney Stop Sign	pcs.	1.00	2,042.00	2,042.00
2. Right Turn Only Sign	pcs.	3.00	2,716.00	8,148.00
3. No Parking/Tow Away Zone Sign	pcs.	4.00	2,590.00	10,360.00
4. No Left Turn Sign	pcs.	2.00	2,716.00	5,432.00
5. No Right Turn Sign	pcs.	2.00	2,716.00	5,432.00
6. No Loading/Unloading Sign	pcs.	2.00	2,590.00	5,180.00
7. No U - Turn Sign	pcs.	1.00	2,716.00	2,716.00
8. No Entry Sign	pcs.	3.00	2,716.00	8,148.00
9. One Way Left Sign	pcs.	2.00	2,212.00	4,424.00
10. One Way Right Sign	pcs.	3.00	2,212.00	6,636.00
11. Pedestrian Crossing Sign	pcs.	2.00	3,850.00	7,700.00
12. Keep Intersection Open Sign	pcs.	3.00	3,724.00	11,172.00
C. Other Works				
1. Paint removal of existing markings	L.S.	1	2,644.40	2,644.40
TOTAL				220,899.40
TOTAL COST				=====
				220,899.40

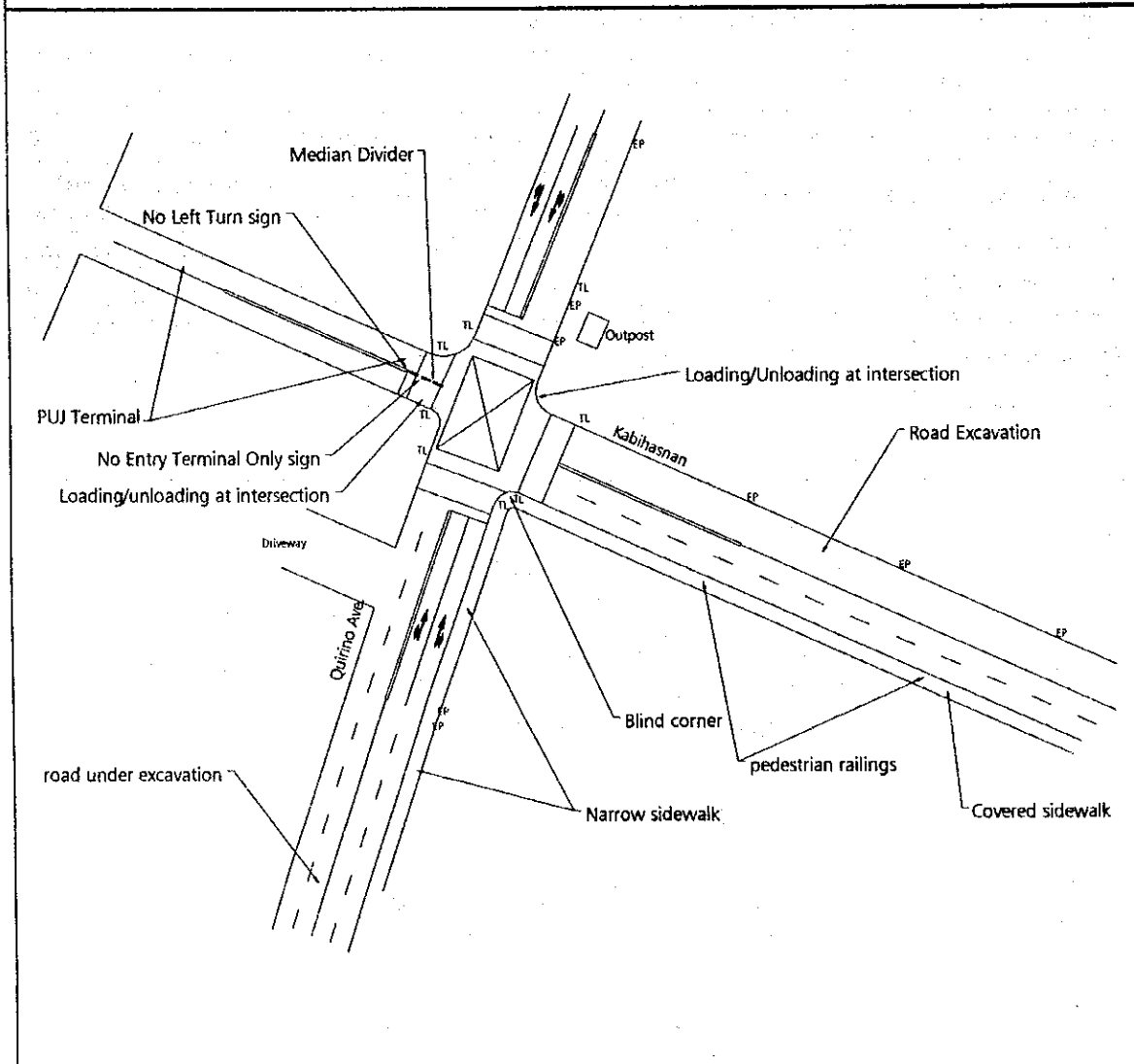
Name	Quirino Ave / Kabihasanan			Code	PQ-02		
Sheet	Summary of Observations			LGU	Parañaque		
Traffic Conditions	<ol style="list-style-type: none"> 1) Main causes of congestion include presence of San Dionisio Elementary School in the area, retail establishments near the junction, as well as constricted road widths. 2) Elementary school generates heavy pedestrian / student traffic particularly during dismissal time (noon and afternoon). 3) Tricycle maneuvers often block through traffic. 4) Signal timing for the intersection is not optimized, with traffic enforcers reverting to manual control. 5) The presence of jeepney terminals at the west end of Kabihasanan, as well as FX terminals during peak periods, also adds to the congestion. 						
	<ol style="list-style-type: none"> 1) Four-legged intersection, although portion of Kabihasanan Road (west leg) has no through outlet, and is being used as jeepney turnaround cum terminal. 2) Road excavations along Kabihasanan Road further constrict road capacity. 3) Quirino Avenue is asphalt-paved in fair condition; Kabihasanan Road is concrete paved in good condition. 4) Sight distance at the southeast corner is below standard. 5) Sidewalk at the southeast corner is very narrow. 6) Pedestrian sidewalk along Kabihasanan Road leading to school is covered, giving all weather protection to the high number of pedestrians. 						
Signalization	Signalized	Pavement Markings	Needs replacement	Peak	08:00-09:00		
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: Quintin Ave (N)	11.6m	204	390	29	623	43.57%	Moderate
A2: Kabihasanan Rd (E)	7.6m	222	158	159	538	34.09%	Heavy
A3: Quintin Ave (S)	11.9m	124	658	535	1,316	24.46%	Moderate
A4: Kabihasanan Rd(W)	5.0m	65	330	6	401	22.12%	Light
Total		615	1536	729	2,878		
Passenger Flows							

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Small Scale Traffic Improvement Measures for Metro Manila

Name	Quirino Ave / Kabihasanan	Code	PQ-02
Sheet	Analysis	LGU	Parañaque

- 1) Kabihasanan Road is a major jeepney route for Sucat-Kabihasanan-Baclaran jeepneys coming from Parañaque heading towards Baclaran. There is also one route terminating at Kabihasanan Road.
- 2) The west end of Kabihasanan Road links with the Manila-Cavite Coastal Road, although access to the tollway facility is restricted. At times, when traffic along the tollway becomes congested, tollway officials allow northbound vehicles to exit at Kabihasanan Road instead of at the end of the tollway at MIA Road. This often results in heavy congestion for the junction of Quirino Ave and Kabihasanan.
- 3) The junction is signalized, although the phasing/timing needs to be adjusted. Often, traffic enforcers revert to manual control of the intersection because the signal timing is not optimized.
- 4) Quirino Avenue is a major public transport corridor linking southern Metro Manila with the metropolitan center, with most of the public transport routes terminating at the Baclaran area.
- 5) The presence of a big elementary school (San Dionisio) with a high student population generates heavy pedestrian and commuter traffic, often using hired tricycles.



Name	Quirino Ave / Kabihasanan	Code	PQ-02
Sheet	Proposed Improvements	LGU	Parañaque
Engineering	<ol style="list-style-type: none"> 1) Road excavation works need to be completed immediately, so as to allow for a higher traffic throughput. 2) Recalculation of optimal signal timing. 3) Relocation of loading/unloading areas away from the intersection. 4) Reapplication of pavement markings: yellow box, centerline markings, pedestrian crossings. 5) Application of pedestrian lane markings near designated loading/unloading areas away from the intersection. 6) Regulation of jeepney terminal activities. 		
Enforcement	<ol style="list-style-type: none"> 1) Strict enforcement of loading/unloading regulations. 2) Control of jeepney terminal operations 3) Designation of outer lanes (Kabihasanan Road) for pedicab/tricycle (non-exclusive) usage. 		

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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION: PQ-02 : Quirino Avenue / Kabigasnan Road (PARANAQUE)
(cost summary)

A. Pavement Markings:	<u>Unit</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Total Cost</u>
<i>Longitudinal Lines:</i>				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length	l.m	-	45.00	-
b) Solid White Lines, 150 width	l.m	140.00	112.50	15,750.00
2. Lane Lines (100mm or 150mm width)				
a) Solid Lines, w = 150 mm	l.m	-	112.50	-
b) Broken Lines w= 150mm	l.m	-	45.00	-
3. Barrier Lines				
a) Unbroken Double Yellow Lines (100 or 150mm width)	l.m	-	-	-
b) Single Yellow Line with broken White Lines (100-150mm)	l.m	-	-	-
4. Edge Lines				
a) Pavement Edge (Shoulders)	l.m	-	-	-
b) Median Edge	l.m	-	-	-
5. Continuity Line				
a) Continuity Line	l.m	-	-	-
6. Transition Line				
a) Transition Line	l.m	-	-	-
<i>Transverse Lines:</i>				
1. Stop Lines (Solid Lines) white, width = 450 mm				
a) Stop Lines	l.m	-	337.50	-
2. Give Way (Yield Lines)				
a) Give Way	l.m	-	-	-
3. Pedestrian Crossing Markings				
a) Zebra Crossing (Non-Signalized), width = 300mm	l.m	128.00	225.00	28,800.00
b) Cross Walks (Signalized), width = 300mm	l.m	-	225.00	-
<i>Other Lines:</i>				
1. Turn Lines (broken Lines)				
a) Turn Lines	l.m	-	-	-
2. Parking Bay Lines				
a) Parallel Bays, width = 100mm	l.m	-	75.00	-
b) Angle Bays	l.m	-	-	-
3. Painted Median Islands				
a) Painted Median Islands	l.m	-	-	-
4. PUJ Lane Markings				
a) PUJ Lane Markings	l.m	50.00	112.50	-
5. Channelized Junction Pavement Marking				
a) Channelized Junction Pavement Marking	l.m	-	-	-
6. Yellow Box Line, w= 150mm				
a) Yellow Box Line	l.m	128.00	112.50	14,400.00
<i>Other Markings:</i>				
1. Approach Markings to Islands and Obstructions				
a) Approach Markings	l.m	-	-	-
2. Chevron Markings				
a) Chevron Markings	l.m	-	-	-
3. Curb Markings for Parking Restrictions				
a) Curb Markings	l.m	-	262.50	-
4. Loading/Unloading Line Zone (200mm)				
a) Loading/Unloading Line Zone	l.m	-	150.00	-
<i>Messages and Symbols:</i>				
1) Messages				
a) Messages	pcs	-	-	-
2) Symbols				
a) Give Way symbol	pcs	-	-	-
b) Pavement Arrows				
1) Through Arrow = 1.21 sq.m / each	pcs	-	907.50	-
2) Combined Arrow = 2.44 sq.m / each	pcs	-	1,830.00	-
3) Turn Arrow = 1.46 sq. m / each	pcs	-	1,095.00	-
c) Numerals	pcs	-	-	-
B. Signs				
1. No loading / Unloading Sign	pcs.	2.00	3,850.00	7,700.00
TOTAL				66,650.00
Contingencies, 5%				3,332.50
CMS, 10%				6,665.00
Miscellaneous (fees, permits, etc), 5%				3,332.50
Govt. Supervision, 2%				1,333.00
TOTAL COST				81,313.00

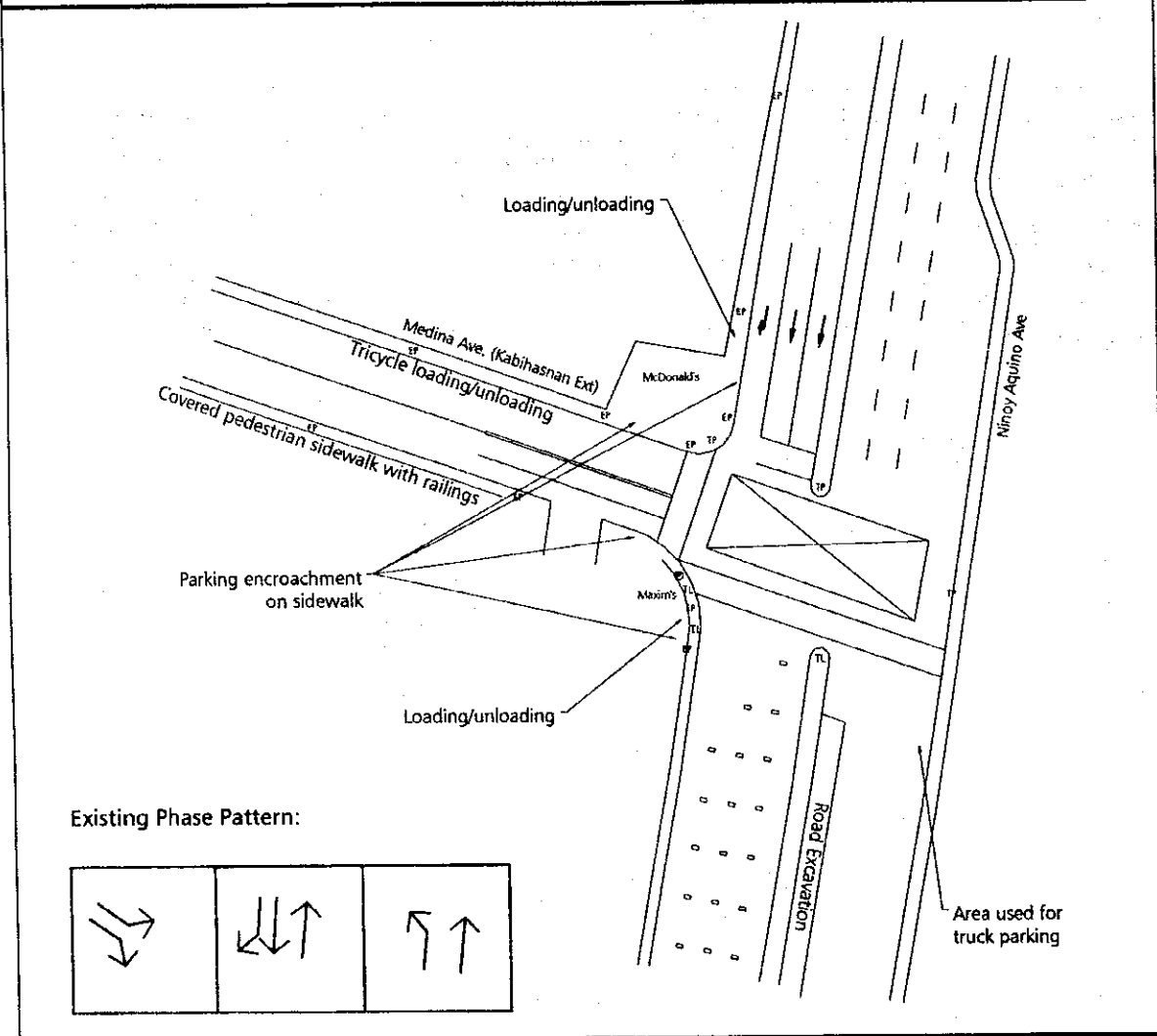
Name	Ninoy Aquino Ave / Medina Ave			Code	PQ-03		
Sheet	Summary of Observations			LGU	Parañaque		
Traffic Conditions	1) Congestion at intersection caused by heavy volume of turning vehicles, since junction is a T-junction. 2) Also, congestion at the junction a downstream effect of congestion along Kabihasanan Road (caused by school traffic, among others) and congestion along Ninoy Aquino Avenue. 3) PM peak traffic along Ninoy Aquino Ave in excess of 2,000 pcu per direction. Medina Ave has peak traffic in excess of 1,000 pcu for the combined directions. 4) School traffic greatly contributes to congestion along Medina Ave. A number of pupils/students are brought/fetched by tricycles, which adds to the congestion with their unregulated maneuvers.						
	Physical Conditions						
1) Ninoy Aquino Avenue is a wide three-lane-per direction road. Medina Ave intersects it forming a T-junction. 2) Pavement condition along Ninoy Aquino Ave is asphalt in fair condition. Along Medina, concrete in good condition. 3) Retail establishments around the Medina Ave portion of the junction utilize portion of sidewalks for customer parking. 4) Pavement markings are present, but needs replacement.							
Signalization	Signalized	Pavement Markings		With markings		Peak	07:00-08:00
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: Ninoy Aquino (N)	29.9m	NA	1,199	182	1,381	37.21%	Moderate
A2: None	None	None	None	None	None	None	None
A3: Ninoy Aquino (S)	39.6m	381	2,398	NA	2,779	31.89%	Moderate
A4: Medina Ave	13.9m	826	NA	340	1,166	25.68%	Heavy
Total		1,207	3,597	522	5,327		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Parañaque PQ-03 Ninoy Aquino Ave / Medina Ave</p>							

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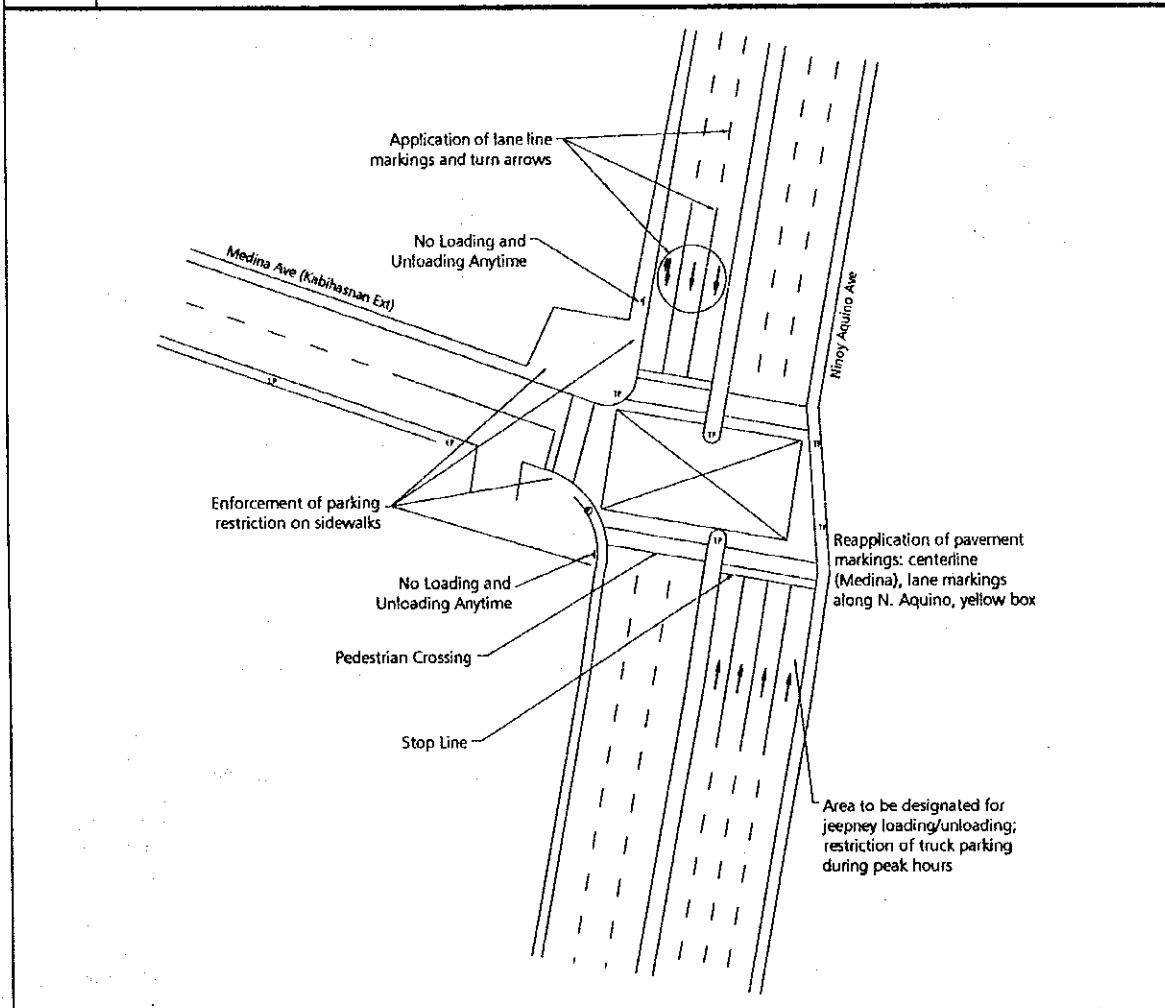
Small Scale Traffic Improvement Measures for Metro Manila

Name	Ninoy Aquino Ave / Medina Ave	Code	PQ-03
Sheet	Analysis	LGU	Parañaque

- 1) Junction was identified as a bottleneck point prior to operation of traffic signals. Congestion has somewhat eased with signal operation.
- 2) A high volume of pedestrian traffic in the area is due to the presence of traffic generating land uses such as retail establishments and the San Dionisio Elementary School.
- 3) Parking area of McDonald's outlet at the corner occupies space for pedestrian sidewalk, forcing pedestrians to the carriageway.
- 4) The exit driveway of McDonald's is very near the junction, adding to turning movement conflicts.
- 5) Medina Avenue leads to Kabihasanan Road, which is a major link between Ninoy Aquino Avenue and Quirino Avenue.
- 6) There are a number of public transport routes using Medina Ave / Kabihasanan, which further adds to the traffic demand along the link.
- 7) Tricycle traffic along Kabihasanan / Medina also adds to congestion, with some tricycle units loading/unloading passengers at the corner of the junction where the McDonald's outlet is located.



Name	Ninoy Aquino Ave / Medina Ave	Code	PQ-03
Sheet	Proposed Improvements	LGU	Parañaque
Engineering	<ol style="list-style-type: none"> 1) Reapplication of pavement markings: centerline markings along Medina Ave., lane separators, stop lines, pedestrian lanes (along Medina Ave. and along Ninoy Aquino Ave.) 2) Designation and proper marking of loading/unloading area along Ninoy Aquino Ave at the north exit of the junction (front of McDonald's). Space is available for separate facility, although markings and signages are needed. 3) Change parking layout of McDonald's and Maxim's to allow for proper pedestrian sidewalk not in conflict with vehicular parking. This may entail changing the present perpendicular parking to diagonal, and would result in fewer number of parking slots available. 		
Enforcement	<ol style="list-style-type: none"> 1) Enforcement of tricycle loading/unloading regulations. Ban them at Ninoy Aquino Avenue. 2) Enforcement of jeepney loading/unloading regulations. 3) Coordination with zoning administrators / building officials on encroachment of pedestrian sidewalks by retail parking uses. 		



LOCATION: PQ-03: Ninoy Aquino Avenue / Medina Avenue (PARANAQUE)
(cost summary)

A. Pavement Markings:	<u>Unit</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Total Cost</u>
<i>Longitudinal Lines:</i>				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length	l.m	70.00	45.00	3,150.00
b) Solid White Lines, 150 width	l.m	30.00	112.50	3,375.00
2. Lane Lines (100mm or 150mm width)				
a) Solid Lines, w = 150 mm	l.m	150.00	112.50	16,875.00
b) Broken Lines w= 150mm	l.m	750.00	45.00	33,750.00
3. Barrier Lines				
a) Unbroken Double Yellow Lines (100 or 150mm width)	l.m	-	-	-
b) Single Yellow Line with broken White Lines (100-150mm)	l.m	-	-	-
4. Edge Lines				
a) Pavement Edge (Shoulders)	l.m	-	-	-
b) Median Edge	l.m	-	-	-
5. Continuity Line				
l.m	-	-	-	-
6. Transition Line				
l.m	-	-	-	-
<i>Transverse Lines:</i>				
1. Stop Lines (Solid Lines) white, width = 450 mm				
l.m	-	-	337.50	-
2. Give Way (Yield Lines)				
l.m	-	-	-	-
3. Pedestrian Crossing Markings				
a) Zebra Crossing (Non-Signalized), width = 300mm	l.m	-	225.00	-
b) Cross Walks (Signalized), width = 300mm	l.m	149.00	225.00	33,525.00
<i>Other Lines:</i>				
1. Turn Lines (broken Lines)				
l.m	-	-	-	-
2. Parking Bay Lines				
a) Parallel Bays, width = 100mm	l.m	-	75.00	-
b) Angle Bays	l.m	-	-	-
3. Painted Median Islands				
l.m	-	-	-	-
4. PUJ Lane Markings				
l.m	-	-	112.50	-
5. Channelized Junction Pavement Marking				
l.m	-	-	-	-
6. Yellow Box Line, w= 150mm				
l.m	138.00	-	112.50	15,525.00
<i>Other Markings:</i>				
1. Approach Markings to Islands and Obstructions				
l.m	-	-	-	-
2. Chevron Markings				
l.m	-	-	-	-
3. Curb Markings for Parking Restrictions				
l.m	-	-	262.50	-
4. Loading/Unloading Line Zone (200mm)				
l.m	-	-	150.00	-
<i>Messages and Symbols:</i>				
1) Messages				
pcs	-	-	-	-
2) Symbols				
a) Give Way symbol				
pcs	-	-	-	-
b) Pavement Arrows				
1) Through Arrow = 1.21 sq.m / each	pcs	-	907.50	-
2) Combined Arrow = 2.44 sq.m / each	pcs	-	1,830.00	-
3) Turn Arrow = 1.46 sq. m / each	pcs	-	1,095.00	-
c) Numerals				
pcs	-	-	-	-
B. Signs				
1. No loading / Unloading Sign	pcs.	2.00	3,850.00	7,700.00
TOTAL				113,900.00
Contingencies, 5%				5,695.00
CMS, 10%				11,390.00
Miscellaneous (fees, permits, etc), 5%				5,695.00
Govt. Supervision, 2%				2,278.00
TOTAL COST				138,958.00

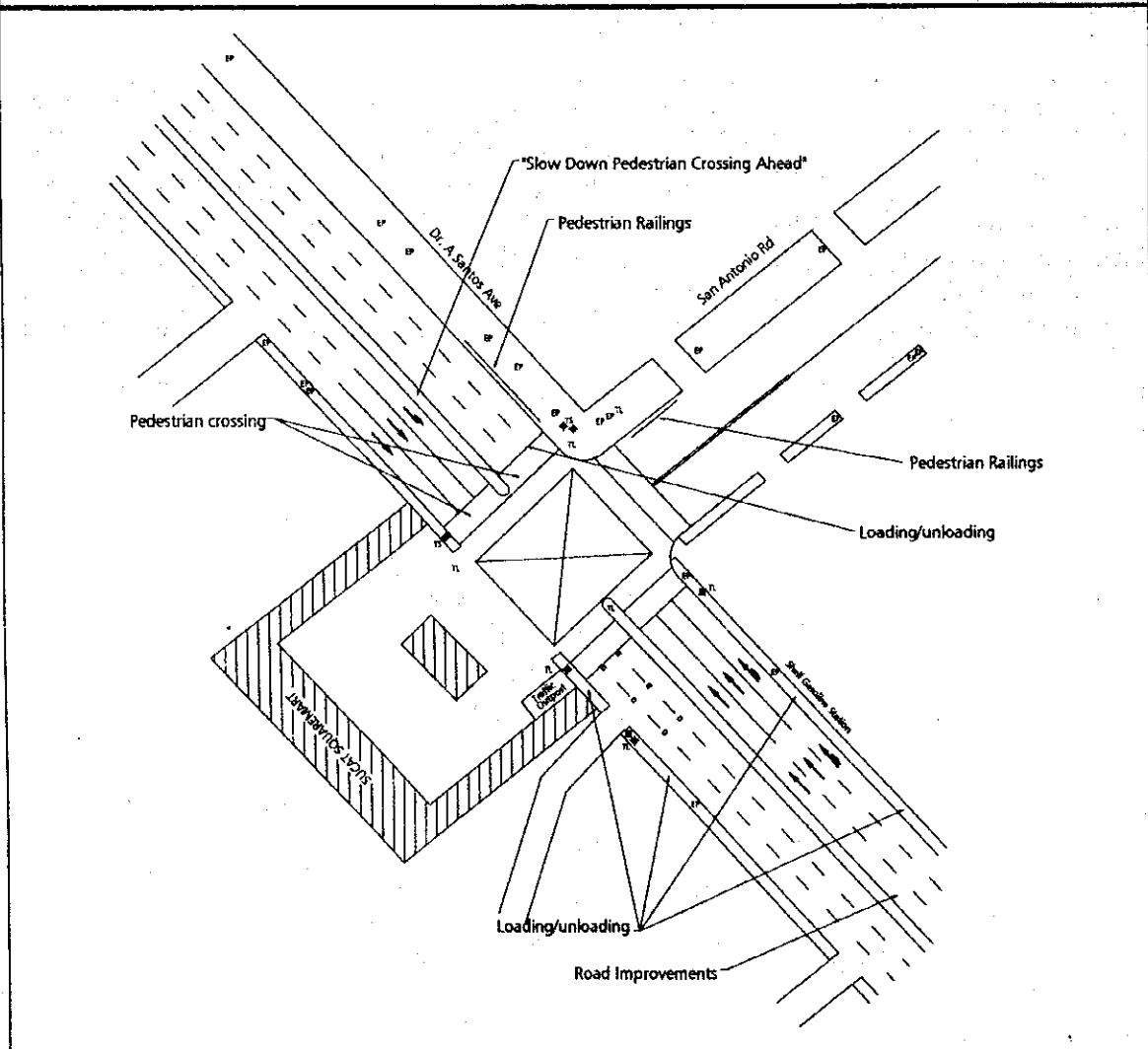
Name	Dr A Santos Ave / San Antonio Ave / Squaremart			Code	PQ-04		
Sheet	Summary of Observations			LGU	Parañaque		
Traffic Conditions	<p>1) Numerous retail activities in the vicinity of the junction generate high rates of mode transfer, as well as pedestrian traffic demand.</p> <p>2) Turning movements are unregulated, with signs banning some turns but violations rampant.</p> <p>3) There are inadequate pedestrian facilities in the area. Along Dr A Santos Ave in front of 7-11, sidewalk is narrow, and area is being used for jeepney loading/unloading, which blocks the intersection.</p>						
	<p>1) Junction is T-type, on top of which is a commercial block. San Antonio Ave is a two-lane (one per direction), asphalt road. Dr A Santos Ave is concrete paved with three lanes per direction. On opposite side of Dr A Santos Ave is Sucat Squaremart, with small retail outlets and a market.</p> <p>2) Intersection is signalized, with ample pavement markings.</p> <p>3) Pedestrian facilities are inadequate, particularly for the eastern portion of Dr. A Santos Ave. While the pedestrian crossing across San Antonio Ave is marked, the connecting pedestrian sidewalks are blocked by utility poles.</p>						
Signalization	Signalized	Pavement Markings	With markings	Peak	09:00-10:00		
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: San Antonio	18.9m	224	7	309	540	15.40%	Moderate
A2: Dr. A Santos (NW)	23.8m	1	1,868	331	2,199	34.76%	Moderate
A3: to Squaremart	24.7m	6	6	9	21	9.52%	Moderate
A4: Dr. A Santos (SW)	23.7m	367	1,664	27	2,058	32.10%	Moderate
Total		598	3,545	676	4,818		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Parañaque PQ-04 Dr A Santos Ave / San Antonio Rd / Squaremart</p>							

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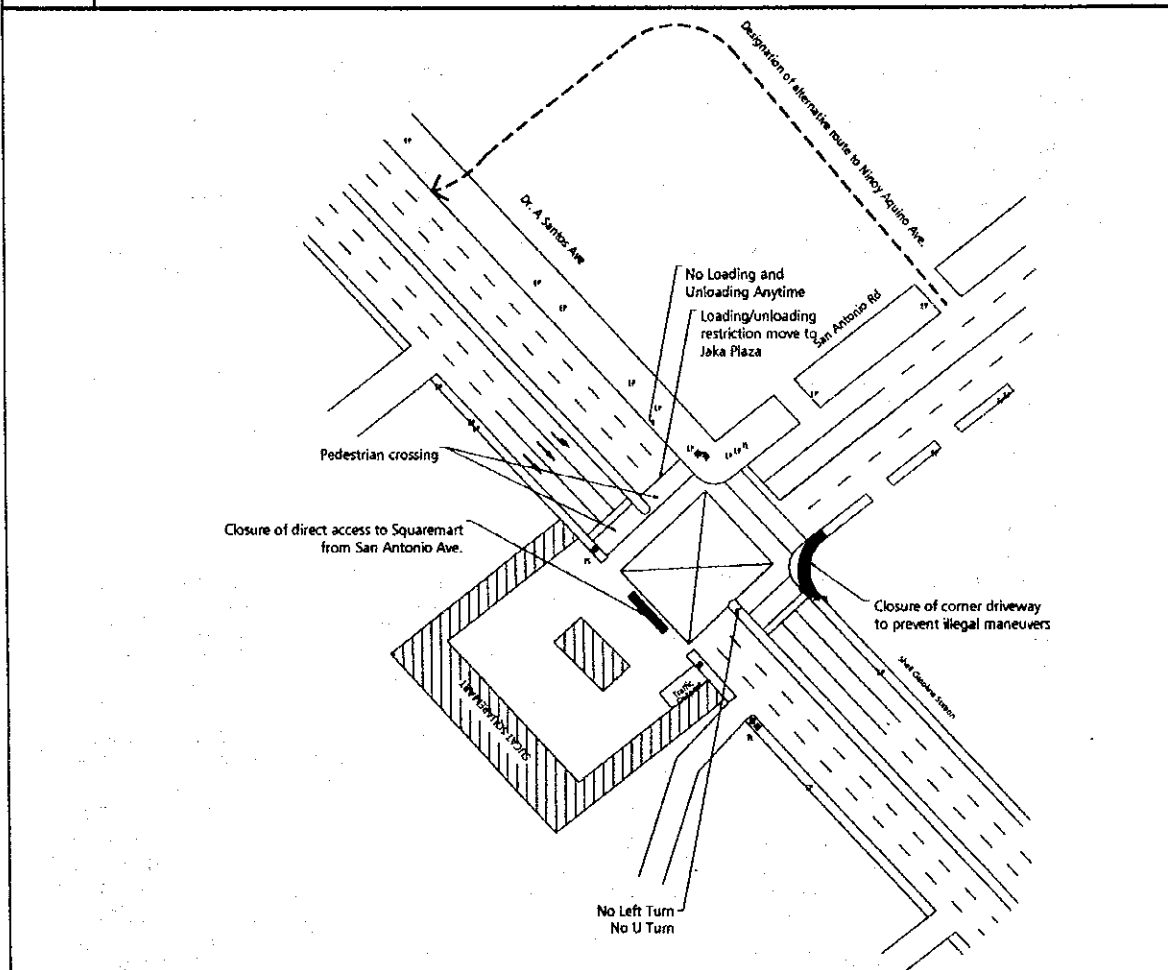
Small Scale Traffic Improvement Measures for Metro Manila

Name	Dr A Santos Ave / San Antonio Ave / Squaremart	Code	PQ-04
Sheet	Analysis	LGU	Parañaque

- 1) While junction is mainly T-type, operation is similar to a four-legged intersection due to presence of Squaremart across Dr A Santos Ave from San Antonio Ave. The retail stores at Squaremart generate considerable level of traffic, particularly patrons on board tricycles.
- 2) The presence of the Shell gas station at the eastern corner of the junction poses considerable opportunities for undisciplined drivers to disregard proper lane designations. The entrance driveway runs the whole length of the station along Dr. A Santos Ave, blocked only by utility poles at the corner of San Antonio Ave. Jeepneys utilize portion of the station as loading/unloading area, and a number of vehicles turning right to San Antonio Ave from Dr A Santos Ave also use the station as a short cut.
- 3) It has also been observed that a number of vehicles make a U-turn from the station, going back to southbound Dr A Santos Ave.
- 4) Pedestrian facilities are inadequate, particularly along San Antonio Ave and along Dr Santos Ave in front of the 7-11 outlet. While there are pedestrian markings across the street, these lanes lead to obstructing utility poles, and the sidewalks are very narrow.



Name	Dr A Santos Ave / San Antonio Ave / Squaremart	Code	PQ-04
Sheet	Proposed Improvements	LGU	Parañaque
Engineering	<ol style="list-style-type: none"> 1) Closure of the corner access at the Shell gas station to control vehicle maneuvers 2) Designation of proper loading/unloading zones away from the corners of the intersection. The loading/unloading area in front of 7-11 should be transferred to (in front of) Jaka Plaza. 3) Designation of alternate route along Dela Paz St behind Jaka Plaza for vehicles exiting to Dr. A Santos Ave northwest-bound. 4) Designation of entry and exit driveway access ramps to Sucat Squaremart, and closure of direct access to intersection. 		
Enforcement	<ol style="list-style-type: none"> 1) Enforcement of U-turn restrictions along Dr A Santos Ave. 2) Enforcement of proper loading/unloading areas. 3) Enforcement of counterflow restrictions along San Antonio Ave. 4) Enforcement of "yellow box" rule. 5) Ban direct access to San Antonio Ave from Squaremart. (Opposite flow may be allowed, i.e. from San Antonio to Squaremart, as it does not involve vehicular conflict. Through phase to Squaremart may be timed together with left turn phase from San Antonio Ave. 		



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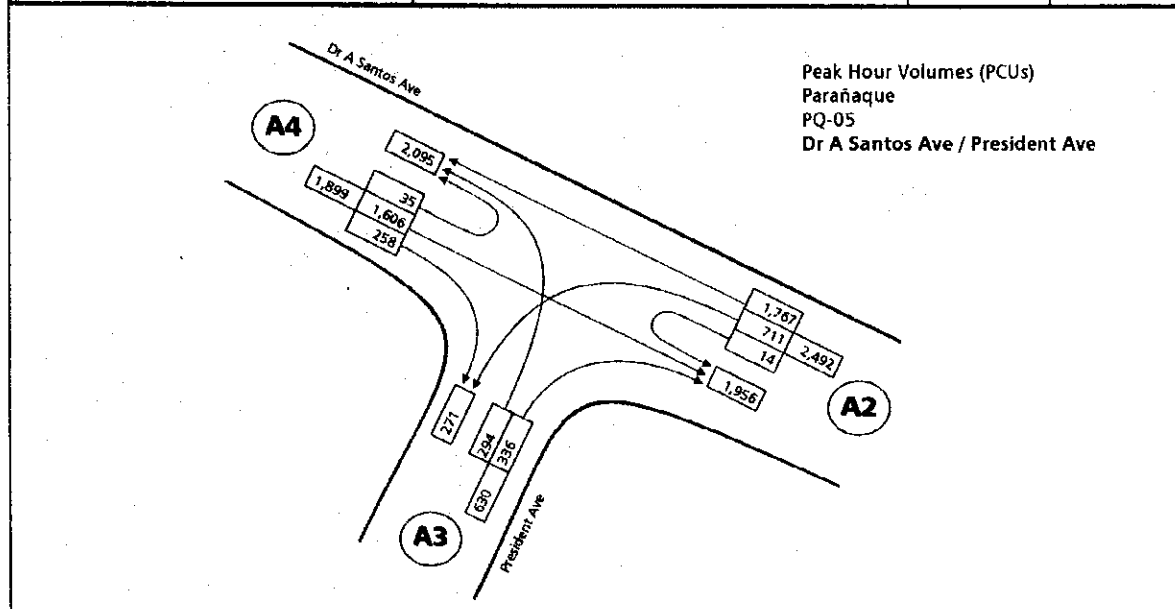
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION: PQ-04: Dr. Santos A. Avenue / San Antonio Road / Square Mart (PARANAQUE)
(cost summary)

A. Pavement Markings	<u>Unit</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Total Cost</u>
<i>Longitudinal Lines:</i>				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length	l.m		45.00	-
b) Solid White Lines, 150 width	l.m	100.00	112.50	11,250.00
2. Lane Lines (100mm or 150mm width)				
a) Solid Lines, w = 150 mm	l.m	150.00	112.50	16,875.00
b) Broken Lines w= 150mm	l.m	850.00	45.00	38,250.00
3. Barrier Lines				
a) Unbroken Double Yellow Lines (100 or 150mm width)	l.m	-	-	-
b) Single Yellow Line with broken White Lines (100-150mm)	l.m	-	-	-
4. Edge Lines				
a) Pavement Edge (Shoulders)	l.m	-	-	-
b) Median Edge	l.m	-	-	-
5. Continuity Line	l.m	-	-	-
6. Transition Line	l.m	-	-	-
<i>Transverse Lines:</i>				
1. Stop Lines (Solid Lines) white, width = 450 mm	l.m	31.00	337.50	10,462.50
2. Give Way (Yield Lines)	l.m	-	-	-
3. Pedestrian Crossing Markings				
a) Zebra Crossing (Non-Signalized), width = 300mm	l.m	-	225.00	-
b) Cross Walks (Signalized), width = 300mm	l.m	106.00	225.00	23,850.00
<i>Other Lines:</i>				
1. Turn Lines (broken Lines)	l.m	-	-	-
2. Parking Bay Lines				
a) Parallel Bays, width = 100mm	l.m	-	75.00	-
b) Angle Bays	l.m	-	-	-
3. Painted Median Islands	l.m	-	-	-
4. PUJ Lane Markings	l.m	-	112.50	-
5. Channelized Junction Pavement Marking	l.m	-	-	-
6. Yellow Box Line, w= 150mm	l.m	148.00	112.50	16,650.00
<i>Other Markings:</i>				
1. Approach Markings to Islands and Obstructions	l.m	-	-	-
2. Chevron Markings	l.m	-	-	-
3. Curb Markings for Parking Restrictions	l.m	-	262.50	-
4. Loading/Unloading Line Zone (200mm)	l.m	-	150.00	-
<i>Messages and Symbols:</i>				
1) Messages	pcs	-	-	-
2) Symbols				
a) Give Way symbol	pcs	-	-	-
b) Pavement Arrows				
1) Through Arrow = 1.21 sq.m / each	pcs	-	907.50	-
2) Combined Arrow = 2.44 sq.m / each	pcs	-	1,830.00	-
3) Turn Arrow = 1.46 sq. m / each	pcs	-	1,095.00	-
c) Numerals	pcs	-	-	-
B. Signs				
1. No loading / Unloading Sign	pcs.	1.00	3,850.00	3,850.00
2. No Left Turn	pcs.	1.00	3,850.00	3,850.00
TOTAL				125,037.50
Contingencies, 5%				6,251.88
CMS, 10%				12,503.75
Miscellaneous (fees, permits, etc), 5%				6,251.88
Govt. Supervision, 2%				2,500.75
TOTAL COST				152,545.75

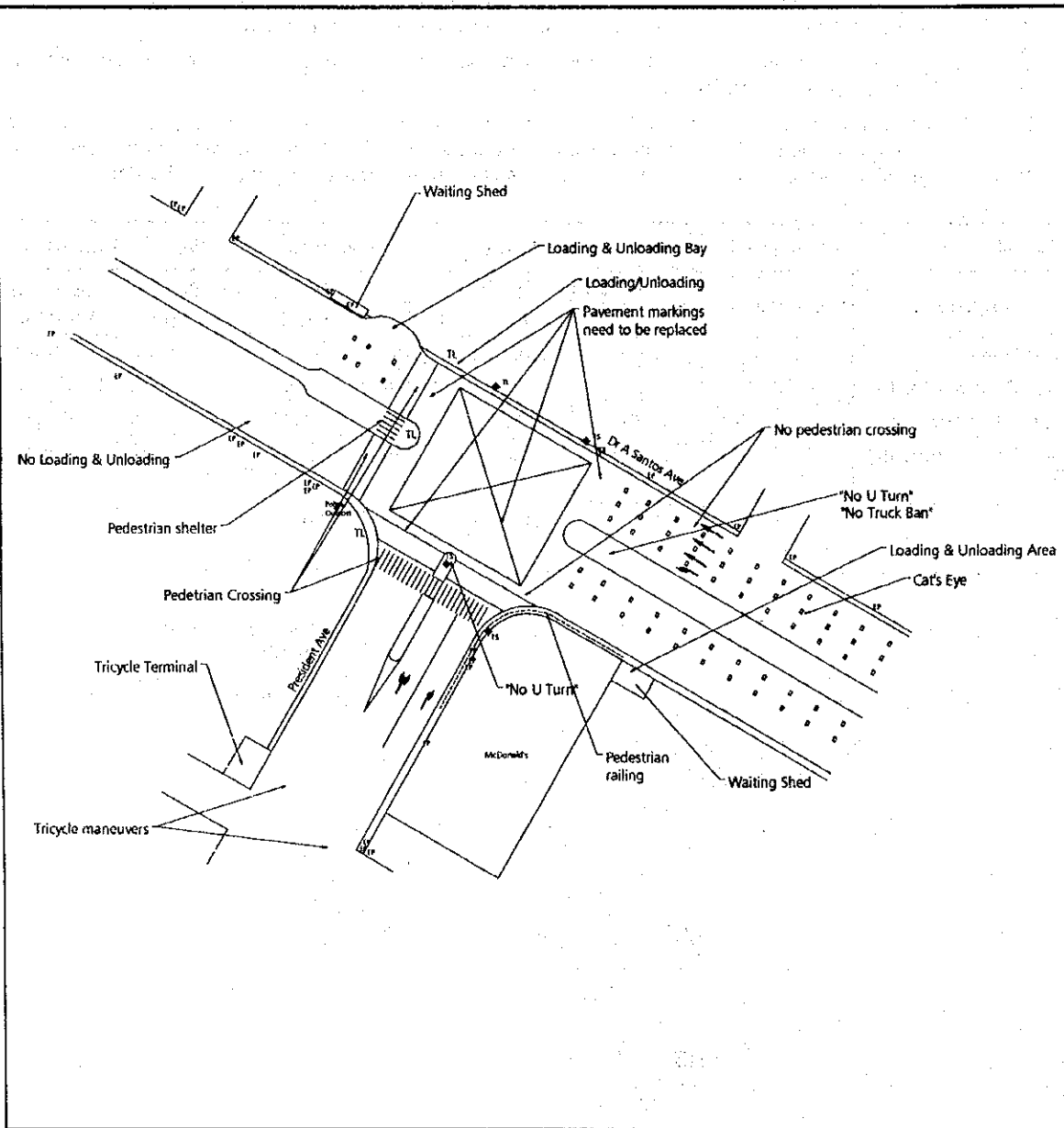
Name	Dr A Santos Ave / President Ave	Code	PQ-05
Sheet	Summary of Observations	LGU	Parañaque
Traffic Conditions	<ol style="list-style-type: none"> 1) President Avenue leads to large residential subdivisions in Parañaque, such as BF Homes, Tahanan Village, and others. 2) Heavy volume of pedestrians crossing Dr A Santos in conflict with vehicular flows, as there is no separate phase within the signal cycle to accommodate unobstructed pedestrian crossing. 3) Volume of crossing pedestrians attracts public transport vehicles to load/unload right at intersection, particularly for the westbound direction of Dr Santos Ave. 4) Intersection control often reverts to manual operation due to non-optimized signal timing. 5) Public transport along President Ave is mainly served by tricycles, but they have no off-street terminal. 		
Physical Conditions	<ol style="list-style-type: none"> 1) T-type intersection; President Avenue a four-lane concrete road with median divider near the junction; Dr A Santos Ave a six-lane divided concrete-paved arterial road. 2) Intersection is signalized, but phasing maybe outdated, and poses conflicting phases between pedestrian and vehicular flows. 3) Pedestrian crossing across Dr A Santos Ave allowed only on west side, with pedestrian shelter at median; pedestrian crossing across President Avenue has been relocated, with new zebra markings (yellow). Previous lane markings still present, but lead to pedestrian barriers. 		

Signalization	Signalized	Pavement Markings		With markings		Peak	17:00-18:00
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: None	None	None	None	None	None	None	None
A2: Dr. A Santos (SE)	30.9m	725	1,767	NA	2,492	28.56%	Moderate
A3: President Ave	23.7m	294	NA	336	630	9.12%	Heavy
A4: Dr. A Santos (N)	30.9m	35	1,606	258	1,899	41.96%	Moderate
Total		1,054	3,373	594	5,021		
Passenger Flows							

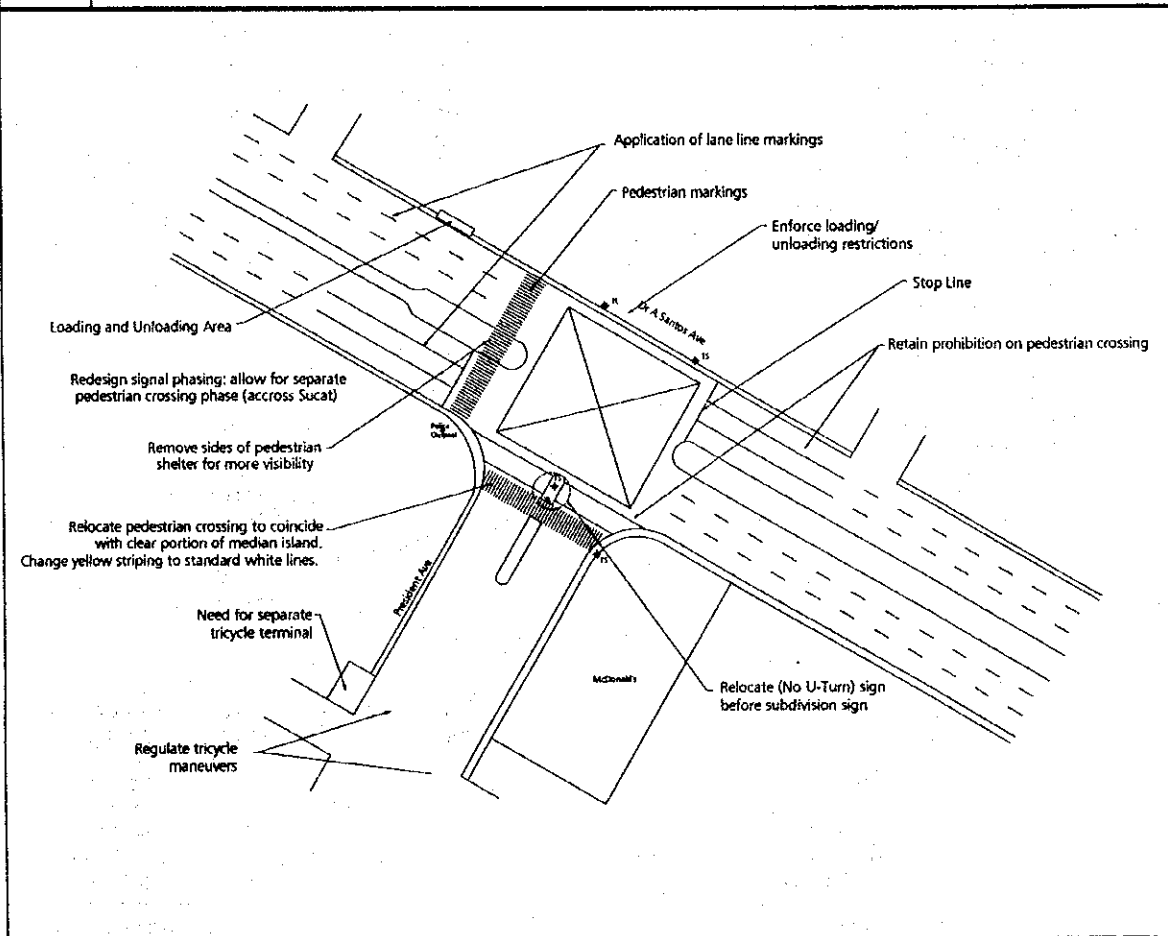


Name	Dr A Santos Ave / President Ave	Code	PQ-05
Sheet	Analysis	LGU	Parañaque

- 1) Phasing of signal lights is not optimal, and would need to be readjusted to cater to varying traffic volumes. Phase for pedestrian crossing across Dr. A Santos Ave in conflict with left-turn phase for vehicles from President Ave.
- 2) Tricycle terminals and tricycle maneuvers along President Avenue obstruct flow of through traffic.
- 3) FX and jeepney loading/unloading at the intersection, particularly for westbound Dr A Santos Ave blocks through traffic.



Name	Dr A Santos Ave / President Ave	Code	PQ-05
Sheet	Proposed Improvements	LGU	Parañaque
Engineering	<ol style="list-style-type: none"> 1) Because of the tricycles, they should either purchase a lot for tricycle terminal along President Avenue, or implement a tricycle volume reduction program. 2) Signal phasing needs to be adjusted to allow for unobstructed pedestrian crossing, as well as for optimal timing. 3) Removal of billboard along sides of pedestrian shelter at median of Dr A Santos Ave to allow for more visibility and safety. 4) Reapplication of pavement markings: centerline and lane markings. 5) Removal of unused pedestrian lane marking across President Ave, and reapplication of new marking using white color (instead of current yellow). 		
Enforcement	<ol style="list-style-type: none"> 1) Enforcement of proper loading/unloading regulations for jeepneys and megataxis along Dr A Santos Ave and for tricycles along President Ave. 		

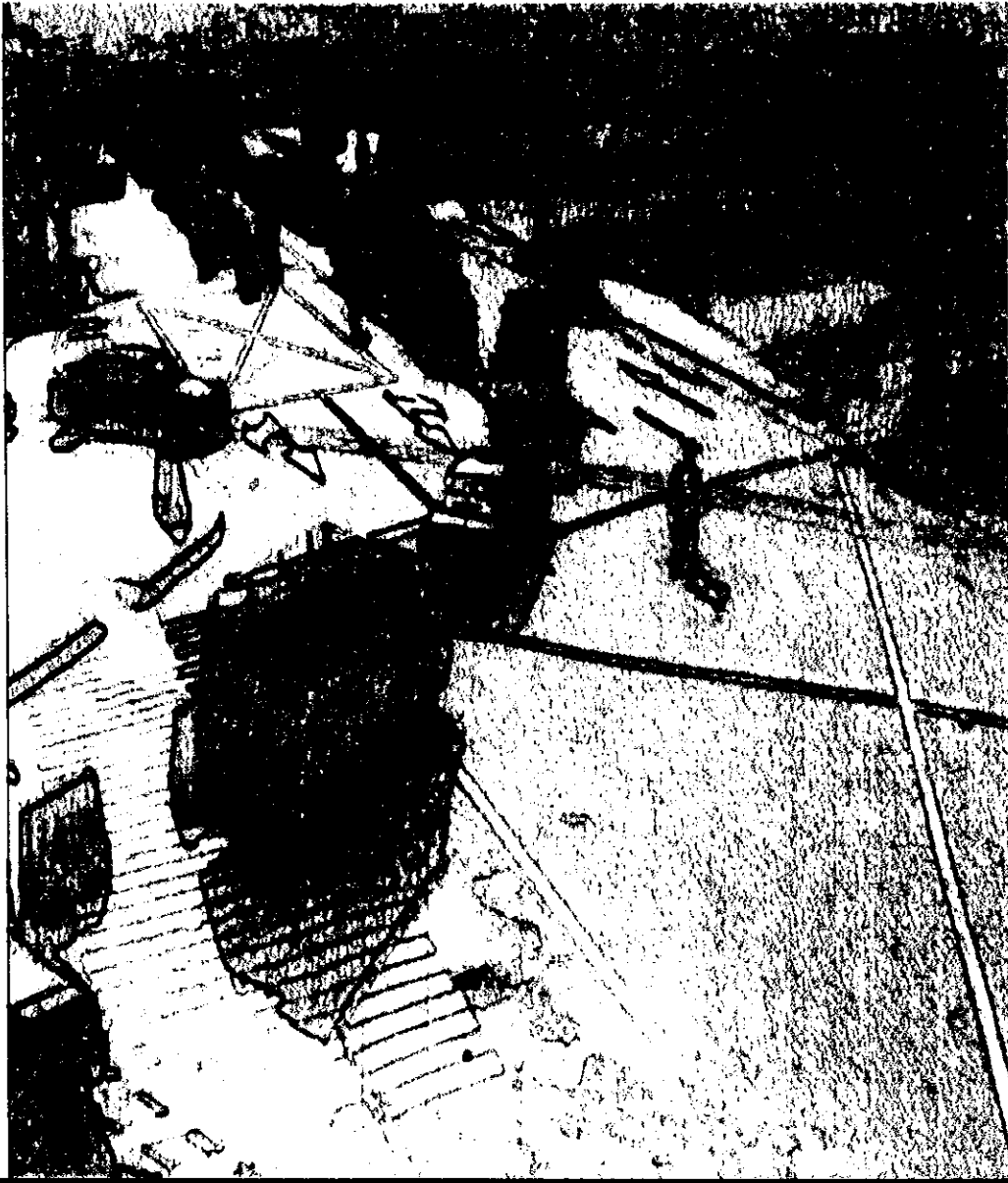


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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION: PQ-05: Dr. Santos A. Avenue / President Avenue (PARANAQUE)
(cost summary)

A. Pavement Markings	<u>Unit</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Total Cost</u>
<i>Longitudinal Lines:</i>				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length	l.m	280.00	45.00	12,600.00
b) Solid White Lines, 150 width	l.m	120.00	112.50	13,500.00
2. Lane Lines (100mm or 150mm width)				
a) Solid Lines, w = 150 mm	l.m	-	112.50	-
b) Broken Lines w= 150mm	l.m	-	45.00	-
3. Barrier Lines				
a) Unbroken Double Yellow Lines (100 or 150mm width)	l.m	-	-	-
b) Single Yellow Line with broken White Lines (100-150mm)	l.m	-	-	-
4. Edge Lines				
a) Pavement Edge (Shoulders)	l.m	-	-	-
b) Median Edge	l.m	-	-	-
5. Continuity Line	l.m	-	-	-
6. Transition Line	l.m	-	-	-
<i>Transverse Lines:</i>				
1. Stop Lines (Solid Lines) white, width = 450 mm	l.m	24.00	337.50	8,100.00
2. Give Way (Yield Lines)	l.m	-	-	-
3. Pedestrian Crossing Markings				
a) Zebra Crossing (Non-Signalized), width = 300mm	l.m	88.00	225.00	19,800.00
b) Cross Walks (Signalized), width = 300mm	l.m	-	225.00	-
<i>Other Lines:</i>				
1. Turn Lines (broken Lines)	l.m	-	-	-
2. Parking Bay Lines				
a) Parallel Bays, width = 100mm	l.m	-	75.00	-
b) Angle Bays	l.m	-	-	-
3. Painted Median Islands	l.m	-	-	-
4. PUJ Lane Markings	l.m	-	112.50	-
5. Channelized Junction Pavement Marking	l.m	-	-	-
6. Yellow Box Line, w= 150mm	l.m	208.00	112.50	23,400.00
<i>Other Markings:</i>				
1. Approach Markings to Islands and Obstructions	l.m	-	-	-
2. Chevron Markings	l.m	-	-	-
3. Curb Markings for Parking Restrictions	l.m	-	262.50	-
4. Loading/Unloading Line Zone (200mm)	l.m	-	150.00	-
<i>Messages and Symbols:</i>				
1) Messages	pcs	-	-	-
2) Symbols				
a) Give Way symbol	pcs	-	-	-
b) Pavement Arrows				
1) Through Arrow = 1.21 sq.m / each	pcs	-	907.50	-
2) Combined Arrow = 2.44 sq.m / each	pcs	-	1,830.00	-
3) Turn Arrow = 1.46 sq. m / each	pcs	-	1,095.00	-
c) Numerals	pcs	-	-	-
B. Signs				
1. No loading / Unloading Sign	pcs.	-	3,850.00	-
2. No Left Turn	pcs.	-	3,850.00	-
C. Other Works				
1. Removal of Pavement Markings	l.m.	750.00	75.00	56,250.00
2. Removal of billboard	l.s.	1.00	5,000.00	5,000.00
TOTAL				138,650.00
Contingencies, 5%				6,932.50
CMS, 10%				13,865.00
Miscellaneous (fees, permits, etc), 5%				6,932.50
Govt. Supervision, 2%				2,773.00
TOTAL COST				169,153.00

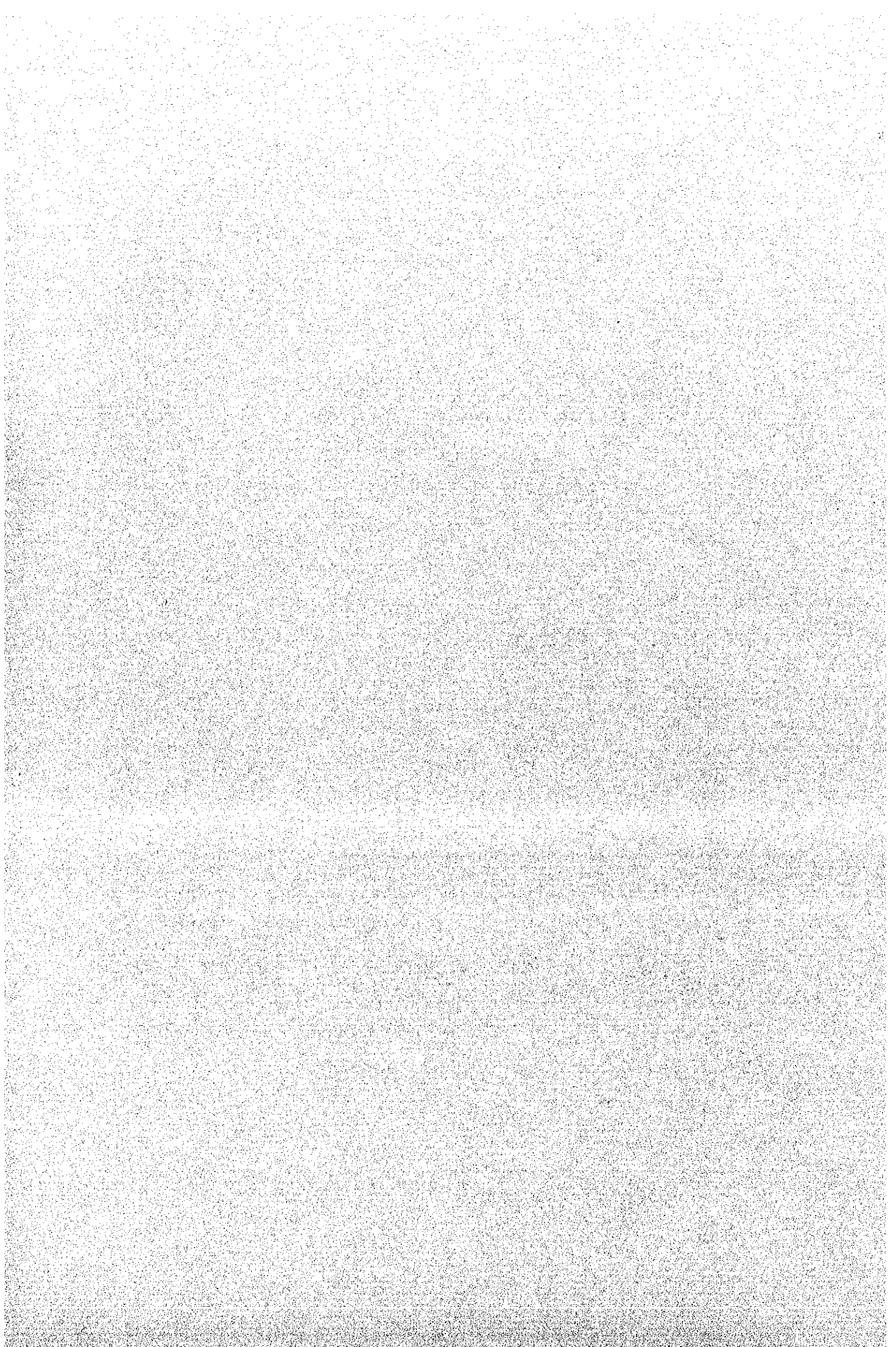


Pasay City

Individual Information Sheets for the Traffic Bottleneck Points

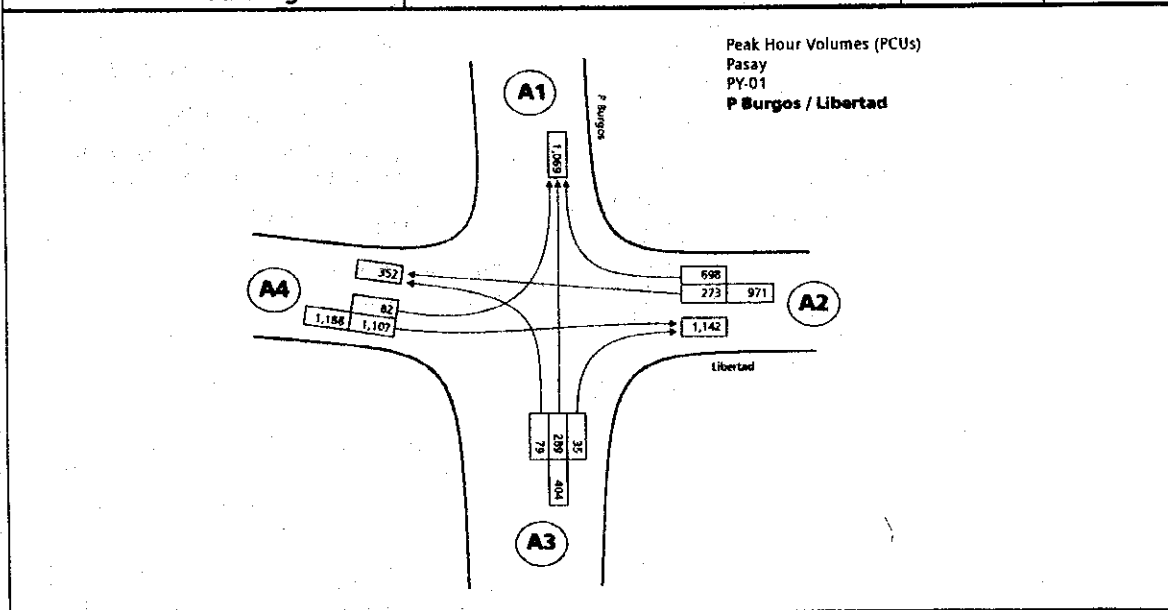
PY-01 Burgos St / Libertad St

PY-02 Redemptorist Rd / Taft Ave Ext / Quirino Ave



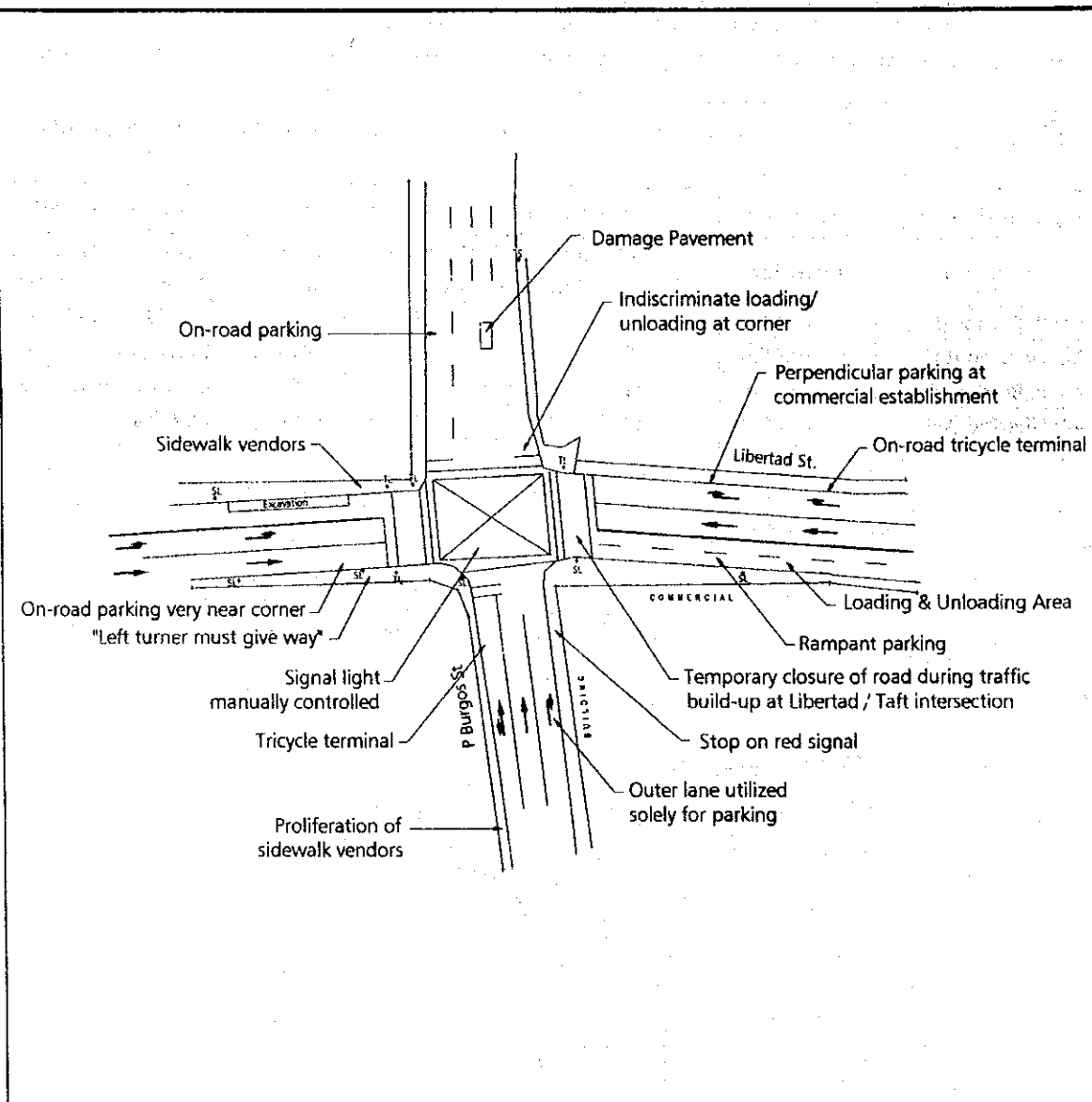
Name	Burgos St / Libertad St	Code	PY-01
Sheet	Summary of Observations	LGU	Pasay
Traffic Conditions	1) Ongoing road construction (waterworks) renders half of P Burgos width unutilized for traffic flow. 2) Jeepneys loading and unloading passengers right at intersection, taking advantage of slower speeds due to road works. 3) Presence of tricycles, at times with makeshift queues or mini-terminals. 4) Heavy pedestrian traffic arising from a nearby LRT station. 5) P. Burgos is already one-way northbound, meant to increase flow capacity.		
	1) A four-legged and signalized intersection characterizes the existing bottleneck point. Both intersecting roads have four undivided lanes on one section and three lanes on the other. The intersection has adequate lane and intersection markings. 2) Physical constraints to the smooth flow of traffic along the said intersection are the following: <ul style="list-style-type: none"> a. Inadequate or substandard turning radius of street corners; b. Abandoned excavated sections of the road pavement right at the intersection approaches. 		

Signalization	Signalized	Pavement Markings	With markings	Peak	6:00-7:00		
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: P. Burgos (N)	10.14m	NA	NA	NA	NA	NA	Moderate
A2: Libertad (E)	10.66m	NA	273	698	971	76.28%	Heavy
A3: P. Burgos (S)	15.09m	79	289	35	404	82.58%	Moderate
A4: Libertad (W)	11.89m	82	1107	NA	1188	78.06%	Heavy
Total		161	1669	733	2563		
Passenger Flows					12,400		

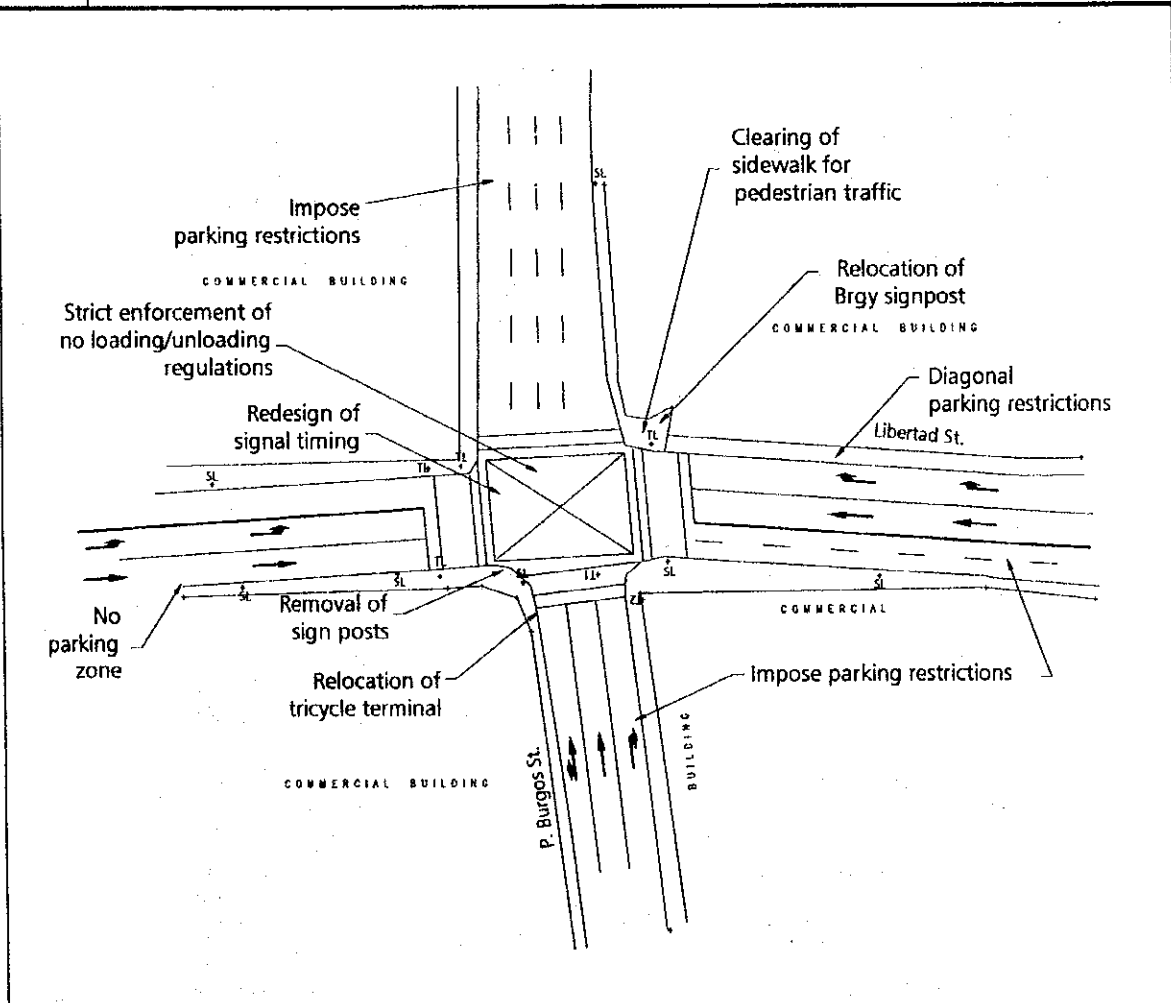


Name	Burgos St / Libertad St	Code	PY-01
Sheet	Analysis	LGU	Parañaque

- 1) Bottleneck is caused by many factors, including undisciplined loading/unloading of jeepneys and tricycles, and an unfinished road excavation for a water supply project. Said excavation is at the middle of P Burgos.
- 2) Roadside parking is uncontrolled. At the corner where there is a Jollibee outlet, perpendicular off-street parking poses obstructions to the pedestrian path
- 3) Pedestrian sidewalks are adequate in widths, but some crosswalks are blocked by utility poles, and some portions are occupied by sidewalk vendors.
- 4) There are a number of tricycle terminals in the area, their street behavior hamper south flow of through traffic.



Name	Burgos St / Libertad St	Code	PY-01
Sheet	Proposed Improvements	LGU	Parañaque
Engineering	<ol style="list-style-type: none"> 1) On-going excavations preclude any substantial re-engineering of intersection. 2) In order to facilitate pedestrian flows, a number of makeshift signs need to be removed. These include Barangay signs and other advertisements that encroach / obstruct sidewalk. 3) Signal timing for the intersection needs to be redesigned/optimized. 		
Enforcement	<ol style="list-style-type: none"> 1) Strict enforcement of loading/unloading restrictions at the corners, especially with the on-going construction. 2) Restrict roadside parking, as well as perpendicular parking which blocks pedestrian paths. Diagonal parking for affected establishments maybe permitted, provided pedestrian pathways are respected. 3) Clean sidewalks for pedestrian use. 		



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Small Scale Traffic Improvement Measures for Metro Manila

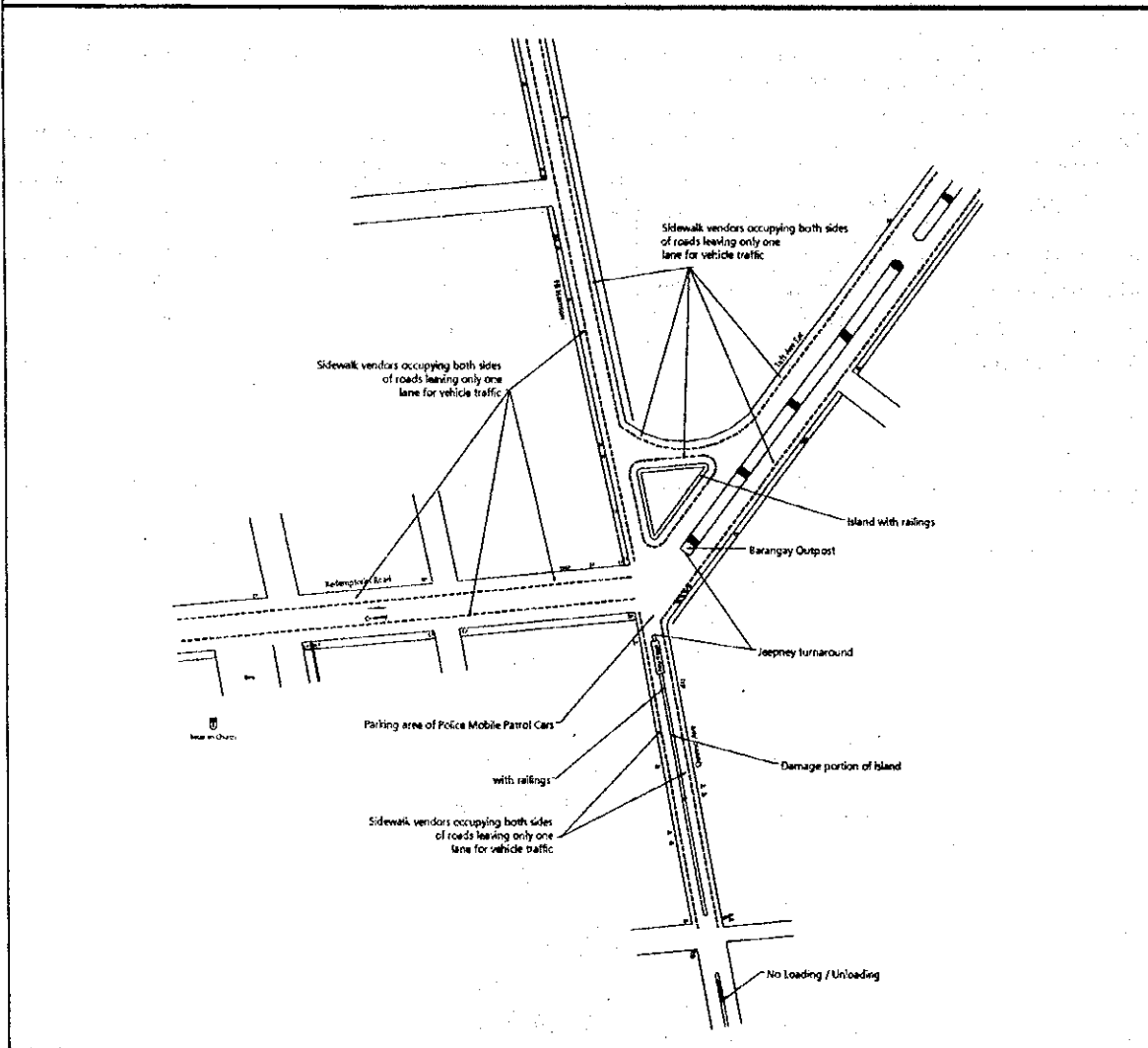
LOCATION : PY-01: Burgos St / Libertad St (PASAY)
(cost summary)

A. Pavement Markings	Unit	Quantity	Unit Cost	Total Cost
<i>Longitudinal Lines</i>				
1. Center Lines				
a.) Broken Lines, 100 or 150 mm width, 3m length 4.50 m gaps	l.m.	460.00	45.00	20,700.00
b.) Solid White Lines, 150mm width	l.m.	200.00	150.00	30,000.00
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	120.00	150.00	18,000.00
b.) Broken Lines, w = 150mms, 200mm width	l.m.	-	-	-
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	-	-
b.) Single Yellow Line with broken White Lines (100-150mm)	l.m.	-	-	-
4. Edge Lines				
a.) Pavement Edge (Shoulders)	l.m.	-	-	-
b.) Median Edge	l.m.	-	-	-
5. Continuity Lines				
6. Transition Line	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	l.m.	55.00	337.50	18,562.50
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	-	-	-
b.) Cross Walks (Signalized), width = 300mm	l.m.	180.00	225.00	40,500.00
<i>Other Lines</i>				
1. Turn Lines (Broken Lines)	l.m.	-	-	-
2. Parking Bay Lines				
a.) Parallel Bays, width = 100mm	l.m.	-	-	-
b.) Angle Bays	l.m.	-	-	-
3. Painted Median Islands	l.m.	-	-	-
4. Bus and PUJ Lane Markings	l.m.	-	-	-
5. Channelized Junction Pavement Marking	l.m.	-	-	-
6. Yellow Box Line, w = 200mm	l.m.	240.00	200.64	48,153.60
<i>Other Markings</i>				
1. Approach Markings to Island and Obstructions	l.m.	-	-	-
2. Chevron Markings	l.m.	-	-	-
3. Curb Markings to Parking Restrictions	l.m.	-	-	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines, (w=200mm)	l.m.	-	-	-
<i>Messages and Symbols</i>				
1. Messages	pcs.	-	-	-
2. Symbols				
a.) Give Way Symbol	pcs.	-	-	-
b.) Pavement Arrows				
1.) Through Arrow = 1.21 sq.m. / each	pcs.	-	-	-
2.) Combined Arrow = 2.44 sq.m. / each	pcs.	-	-	-
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	-	-	-
c.) Numerals				
B. Signs				
1. Loading/Unloading Sign	pcs.	-	-	-
2. No Loading/Unloading Sign	pcs.	2.00	3,850.00	7,700.00
3. No Parking Sign	pcs.	4.00	3,850.00	15,400.00
C. Other Works				
1. Removal of Pavement Marking	l.s.	1.00	****	42,382.00
2. Removal of Signpost	l.s.	2.00	5,000.00	10,000.00
TOTAL				251,398.10
Contingencies, 5%				12,569.91
CMS, 10%				25,139.81
Miscellaneous (fees, permits, etc.), 5%				12,569.91
Govt. Supervision, 2%				5,027.96
TOTAL COST				*****

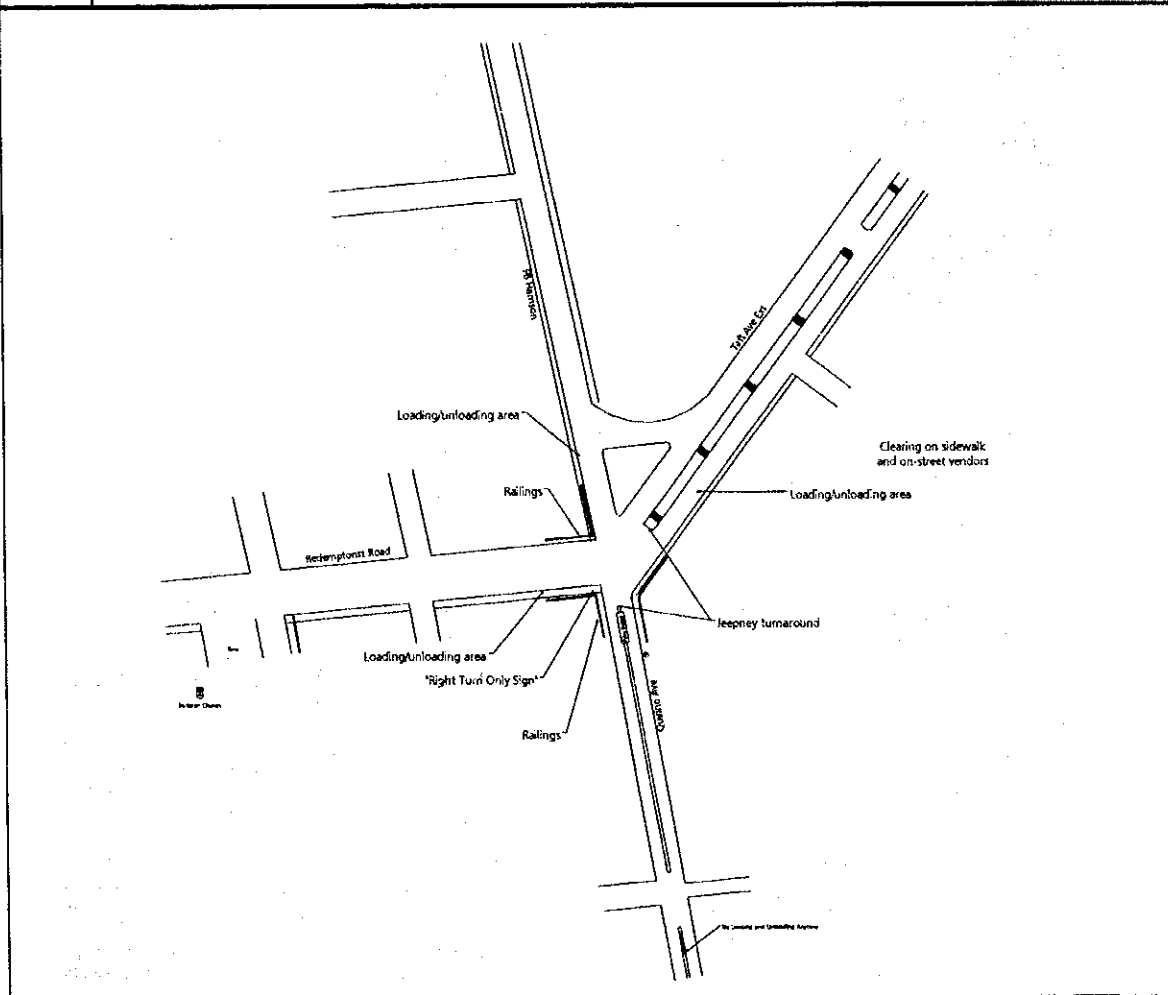
Name	Redemptorist Rd / Taft Ave Ext / Quirino Ave				Code	PY-02	
Sheet	Summary of Observations				LGU	Pasay	
Traffic Conditions	<ol style="list-style-type: none"> 1) The area is a major turnaround point for Baclaran-bound jeepneys coming from various parts of southern Metro Manila and Cavite. 2) Particularly during Wednesdays when a lot of pilgrims go to the nearby Baclaran Church along Redemptorist Road, traffic halts to a standstill. 3) The whole area is characterized by vendors selling all sorts of merchandise, occupying not just sidewalks but portions of the carriageways themselves. 4) As a result of the congestion, the junction has a very low throughput. Traffic volumes are in the order of 100 to 300 pcus per peak hour per direction. 5) F. B. Harrison is one-way southbound. 						
Physical Conditions	<ol style="list-style-type: none"> 1) Redemptorist Road should be able to accommodate three traffic lanes without the sidewalk/street vendors 2) Along Taft Avenue Extension runs the LRT Line 1, which terminates at the junction. The right of way should allow two traffic lanes per direction even with the middle road space occupied by the columns of the elevated LRT line. With vendors, however, a single lane of vehicles could not even negotiate the stretch unobstructed. 3) FB Harrison links the Baclaran area with areas to the north. It should be able to accommodate a minimum of two lanes if unobstructed with roadside friction caused by vendors and spillover pedestrians. 4) Quirino Avenue links the Baclaran area to the south. It is a divided roadway with space for two traffic lanes in each direction. 						
Signalization	None	Pavement Markings	None		Peak	06:00-07:00	
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: FB Harrison	7m	35	148	NA	183	32.30%	Heavy
A2: Taft Ave Ext	14.9m	180	NA	NA	180	80.62%	Heavy
A3: Quirino Ave	15.6m	39	NA	243	282	61.47%	Heavy
A4: Redemptorist	12.4m	NA	4	204	208	94.29%	Very
Total		253	152	447	853		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Pasay PY-02 Redemptorist Rd / Taft Ave Ext / Quirino Ave</p>							

Name	Redemptorist Rd / Taft Ave Ext / Quirino Ave	Code	PY-02
Sheet	Analysis	LGU	Parañaque

- 1) The Baclaran area is one of the busiest districts in the country in terms of commercial and retail activities. All the roads and sidewalks leading to the junction are occupied by vendors selling all sorts of merchandise. During Wednesdays when pilgrims go to hear mass at the nearby Baclaran Church, congestion caused by the mass of people extends to areas far away.
- 2) The area is a major turnaround point for jeepney and bus routes. Public transport terminals abound in the area, and the junction itself is a major turnaround point. Traffic regulations are implemented on and off, sometimes on experimental basis, and the mass of undisciplined public utility drivers can give nightmares to traffic enforcers.
- 3) Pavement deterioration in some portions of the junction decreases the throughput of the intersection, although even if the roads are well paved, they would just be occupied by vendors or spillover pedestrians.
- 4) Peak period volumes are around 300 pcus in the peak direction, and they are low mainly because of the congestion.
- 5) Small-scale measures in this area can still be done, but the benefits will be minimal unless roadways and sidewalks are cleared of encroachment, and PUJs are compelled to obey rules.



Name	Redemptorist Rd / Taft Ave Ext / Quirino Ave	Code	PY-02
Sheet	Proposed Improvements	LGU	Parañaque
Engineering	<ol style="list-style-type: none"> 1) Reduce number of terminating PUJ routes in the Baclaran area. 2) Ban on-street terminals, and designate loading and unloading zones for PU transport. 3) Construct pedestrian barriers at the 4 corners to channelize pedestrian crossings. 4) Ban through traffic from Redemptorist to Taft Avenue. 5) Install signage from Redemptorist, with designation of "Right-Turn Only" before the intersection. 		
Enforcement	<ol style="list-style-type: none"> 1) Clear sidewalks and roadways of vendors. 2) Limit loading / unloading time; no waiting for PUJs. 3) No U-turn at end of Taft Avenue. Compel PUJs with terminating routes to take right lane of Taft Avenue and maneuver via F. B. Harrison. This should clear inner lane of southbound Taft. 		

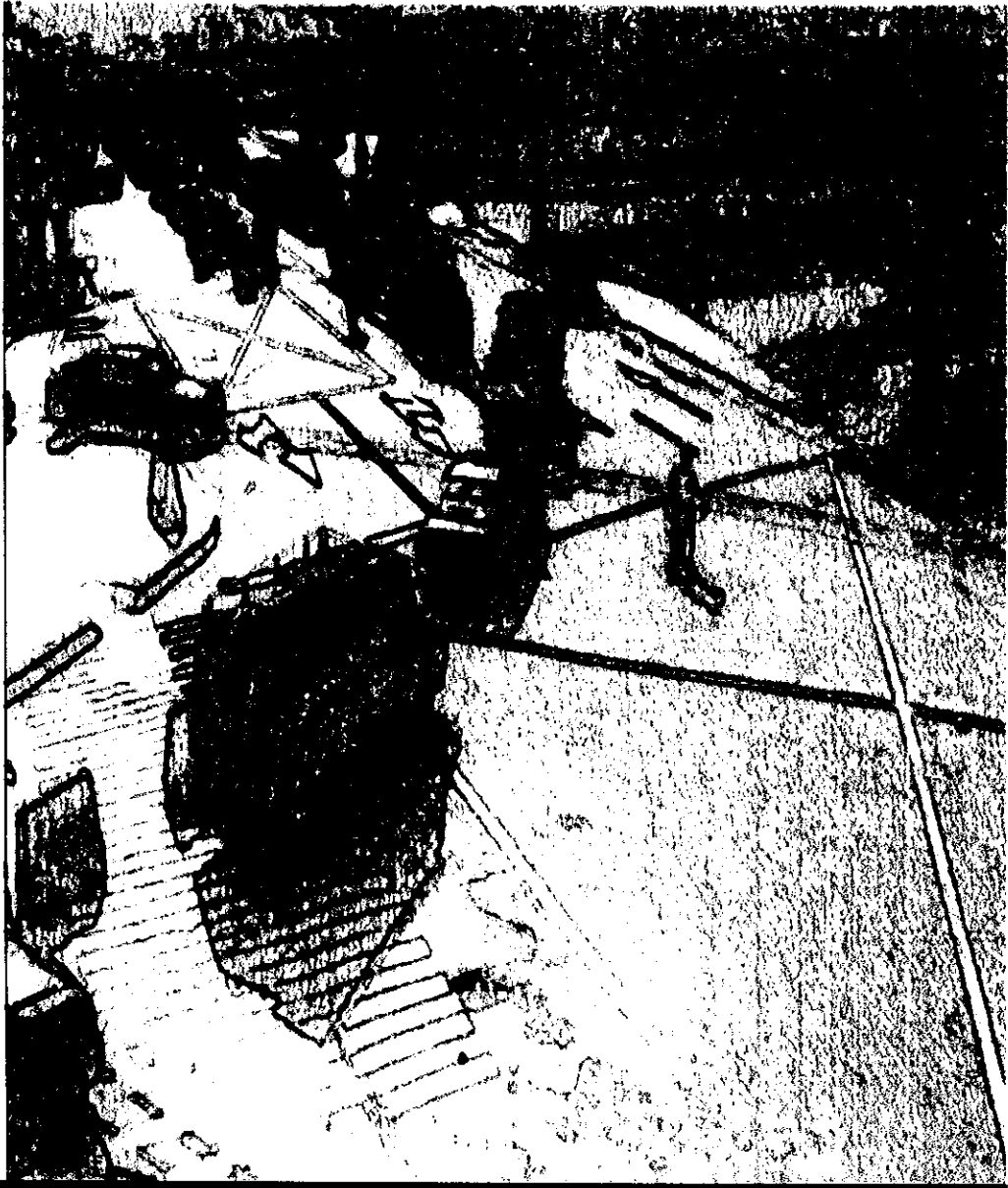


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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION: PY-02 : Redemptorist Road / Taft Avenue Ext. / Quirino Avenue (PASAY)
(cost summary)

A. Pavement Markings	<u>Unit</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Total Cost</u>
<i>Longitudinal Lines</i>				
1. Center Lines				
a.) Broken Lines, 100 or 150 mm width, 3m length 4.50 m gaps	l.m.	-	-	-
b.) Solid White Lines, 200mm width	l.m.	-	-	-
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	-	-
b.) Broken Lines, w = 150mms, 200mm width	l.m.	-	-	-
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	-	-
b.) Single Yellow Line with broken White Lines (100-150mm)	l.m.	-	-	-
4. Edge Lines				
a.) Pavement Edge (Shoulders)	l.m.	-	-	-
b.) Median Edge	l.m.	-	-	-
5. Continuity Lines	l.m.	-	-	-
6. Transition Line	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	l.m.	-	-	-
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	440.00	225.00	99,000.00
b.) Cross Walks (Signalized), width = 300mm	l.m.	-	-	-
<i>Other Lines</i>				
1. Turn Lines (Broken Lines)	l.m.	-	-	-
2. Parking Bay Lines				
a.) Parallel Bays, width = 100mm	l.m.	-	-	-
b.) Angle Bays	l.m.	-	-	-
3. Painted Median Islands	l.m.	-	-	-
4. Bus and PUJ Lane Markings	l.m.	-	-	-
5. Channelized Junction Pavement Marking	l.m.	-	-	-
6. Yellow Box Line, w = 150mm	l.m.	-	-	-
<i>Other Markings</i>				
1. Approach Markings to Island and Obstructions	l.m.	-	-	-
2. Chevron Markings	l.m.	-	-	-
3. Curb Markings to Parking Restrictions	l.m.	-	-	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines	l.m.	-	-	-
<i>Messages and Symbols</i>				
1. Messages	pcs.	-	-	-
2. Symbols				
a.) Give Way Symbol	pcs.	-	-	-
b.) Pavement Arrows				
1.) Through Arrow = 1.21 sq.m. / each	pcs.	-	-	-
2.) Combined Arrow = 2.44 sq.m. / each	pcs.	-	-	-
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	-	-	-
c.) Numerals				
B. Signs				
1. Loading/Unloading Signs	pcs.	-	-	-
2. No Loading/Unloading Sign	pcs.	-	-	-
3. No Parking Signs	pcs.	4.00	3,850.00	15,400.00
4. Right-Turn Only Sign	pcs.	2.00	3,850.00	7,700.00
C. Other Works				
1. Asphalt primer	sq.m	480.00	36.00	17,280.00
2. Asphalt Overlay, 2" thick	cu.m	24.00	6,712.00	161,088.00
3. Pedestrian Barrier (Steel Railing)	l.m.	132.00	860.00	113,520.00
TOTAL				413,988.00
Contingencies, 5%				20,699.40
CMS, 10%				41,398.80
Miscellaneous (fees, permits, etc.), 5%				20,699.40
Govt. Supervision, 2%				8,279.76
TOTAL COST				505,065.36



Pasig

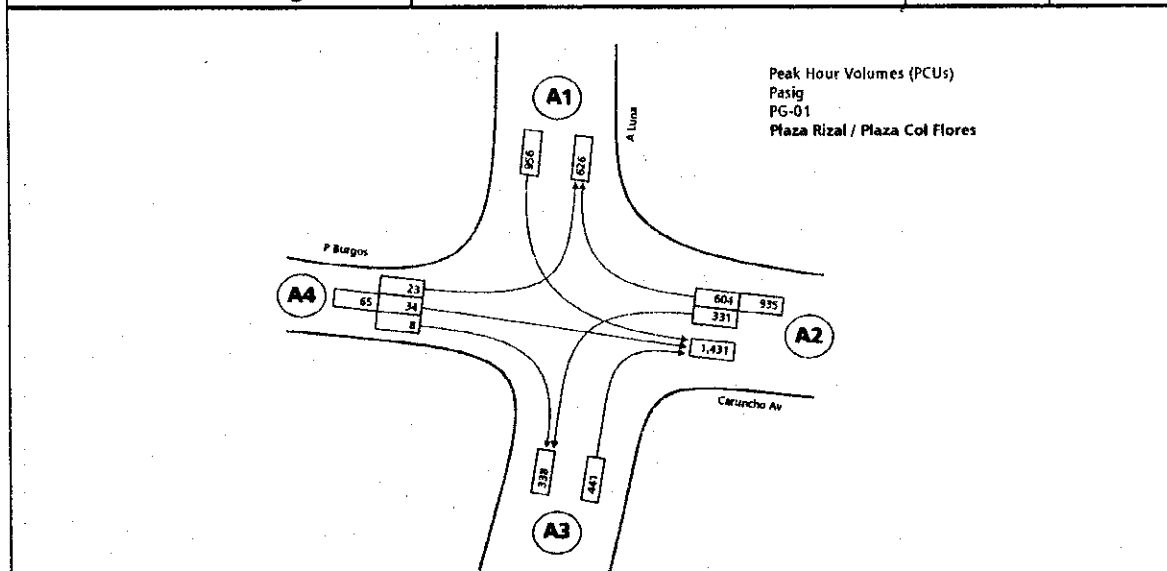
Individual Information Sheets for the Traffic Bottleneck Points

- PG-01 Plaza Rizal / Plaza Col Flores
- PG-02 San Joaquin Junction / Elisco Rd
- PG-03 A Mabini St



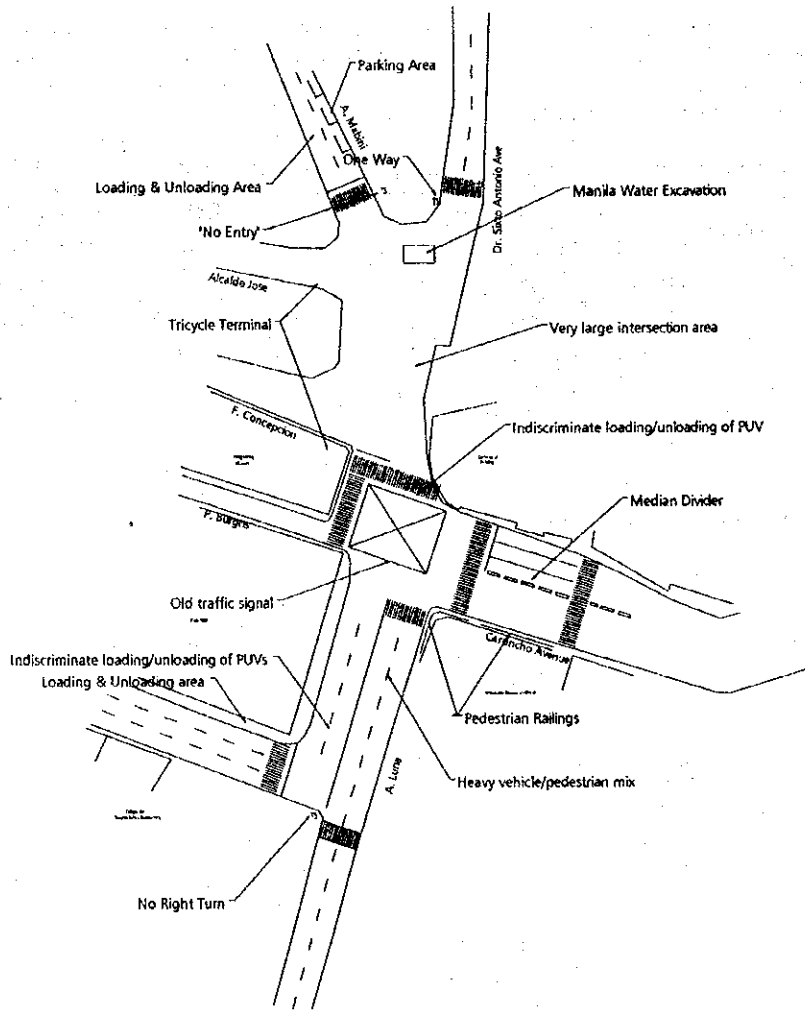
Name	Plaza Rizal / Plaza Col Flores	Code	PG-01
Sheet	Summary of Observations	LGU	Pasig
Traffic Conditions	1) Located at highly built up commercial / institutional area in Pasig. Major intersection for various trip origins and destinations. Traffic volume consistent with that of major arterials in Metro Manila. 2) Wide approaches invite broad latitude to motorists. 3) Too many vehicular conflicts due to too many intersection legs. 4) No proper control for pedestrian movements. 5) Traffic signal is old and controls only Caruncho Ave / Luna Ave intersection (which is just a portion of the whole "intersection area") 6) Requires many traffic enforcers acting in a coordinated manner. 7) No defined loading and unloading zones.		
	1) The bottleneck point is characterized by complicated but signalized intersection accommodating all traffic movements from and to Caruncho Ave. Street corners have inadequate turning radius, although turning movement is facilitated and compensated by the numbers of lanes on the main road. 2) The intersection lacks proper lane markings and delineators inasmuch as road edges have uneven alignment. 3) Circulation is quite complicated since there are series of roads allowing turning movements near the main intersection. Mountable pre-cast New Jersey barriers provide smooth flow along Caruncho Ave. as the barriers prohibit crossing of vehicles coming from the church which is located on one of the corners of the intersection.		

Signalization	Single lamp	Pavement Markings	With markings	Peak	17:00-18:00		
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: A Luna (N)	10.0m	956	NA	NA	956	72.00%	Heavy
A2: Caruncho Ave		331	NA	604	935	73.05%	Moderate
A3: A Luna (S)	10.0m	NA	NA	441	441	82.06%	Moderate
A4: P Burgos (W)	11.0m	23	34	8	65	68.53%	Light
Total		1,310	34	1,053	2,397		
Passenger Flows		8,500					

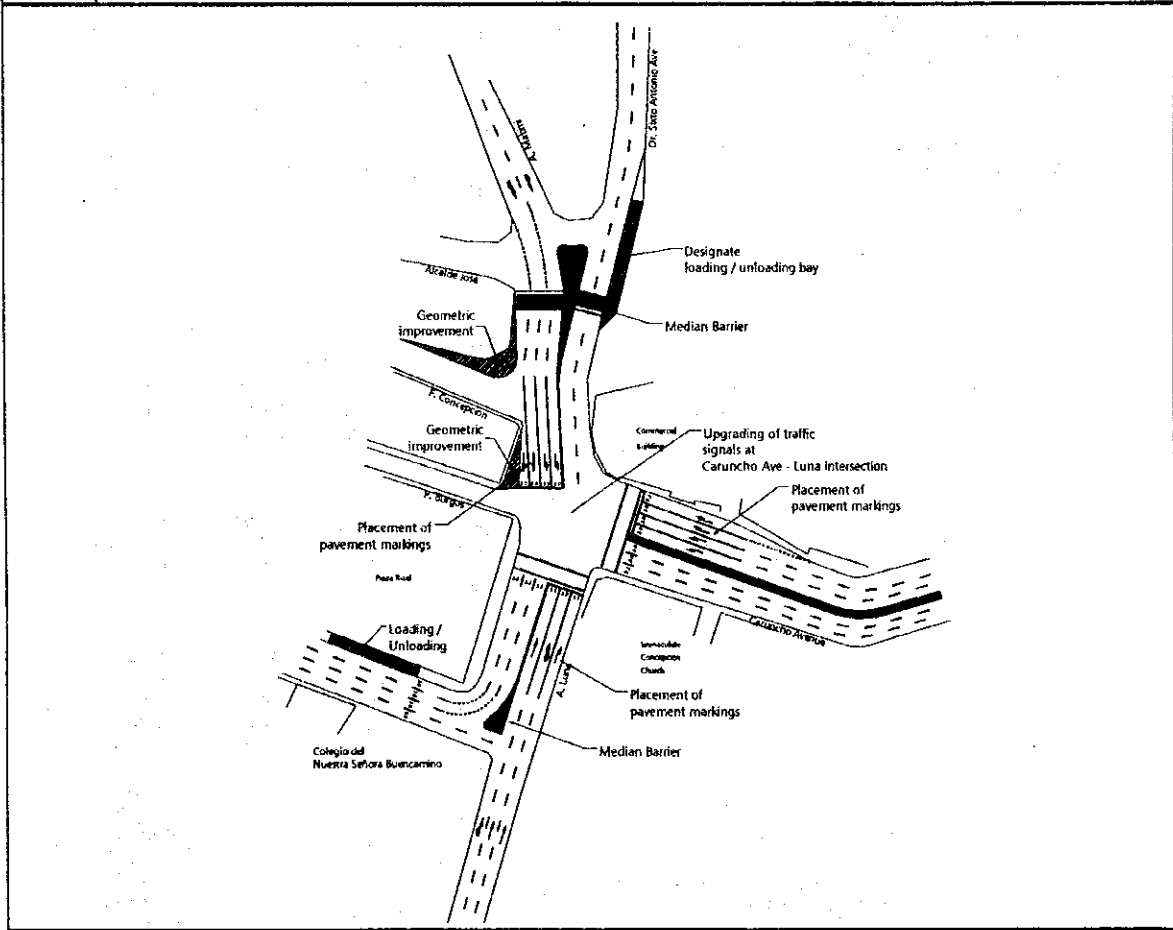


Name	Redemptorist Rd / Taft Ave Ext / Quirino Ave	Code	PG-01
Sheet	Analysis	LGU	Pasig

- 1) The elongated intersection induces diverse vehicular movements, invite jumping the queue, thereby creating too many conflicts. Drivers' behavior exacerbate congestion.
- 2) Loading and unloading practices of public utility vehicles hampers smooth flow of traffic especially at the corners of the various approaches to the intersection.
- 3) In addition to vehicular flow conflicts, pedestrian movements across A. Luna (north segment) contribute to the messy situation.
- 4) Through traffic banned from A. Luna (south), thus, minimized conflict.
- 5) Dominant traffic streams along A. Luna - Caruncho virtually convert the 4-way crossing into a "T-site" intersection.



Name	Redemptorist Rd / Taft Ave Ext / Quirino Ave	Code	PG-01
Sheet	Proposed Improvements	LGU	Pasig
Engineering	<ol style="list-style-type: none"> 1) Upgrade traffic signals at Caruncho Ave./A. Luna intersection. Additional signals for Alcalde Jose; pedestrian signal at Caruncho Ave. 2) Median barrier along A. Luna Ave. (north segment, before A. Mabini) and Caruncho Ave. (fronting the Church). 3) Pavement markings to improve geometry of the intersection, lane delineation and allocation, extending all the way to the Y-junction of A. Mabini and Sixto Antonio. 4) Designate loading / unloading bay, north of A. Luna near the approach to Sixto Antonio. 5) Zebra crossing near the Alcalde Jose corner and across the proposed Median barrier and island on A. Luna. 6) No left turn to Alcalde Jose (from Caruncho) except for emergency police vehicle. 		
Enforcement	<ol style="list-style-type: none"> 1) Limited deployment of traffic enforcers, to ensure compliance with loading / unloading restriction. 2) Oversee signals at Caruncho – Luna intersection, until a better automatic system has been installed. 		



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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : PG-01: Plaza Rizal / Plaza Col Flores (PASIG)
(cost summary)

	<u>Unit</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Total Cost</u>
A. Pavement Markings				
<i>Longitudinal Lines</i>				
1. Center Lines				
a.) Broken Lines, 100 or 150 mm width, 3m length 4.50 m gaps	l.m.	850.00	45.00	38,250.00
b.) Solid White Lines, 150mm width	l.m.	-	-	-
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	240.00	150.00	36,000.00
b.) Broken Lines, w = 150mms, 200mm width	l.m.	-	-	-
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	-	-
b.) Single Yellow Line with broken White Lines (100-150mm)	l.m.	-	-	-
4. Edge Lines				
a.) Pavement Edge (Shoulders)	l.m.	-	-	-
b.) Median Edge	l.m.	-	-	-
5. Continuity Lines				
6. Transition Line	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	l.m.	60.00	337.50	20,250.00
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	-	-	-
b.) Cross Walks (Signalized), width = 300mm	l.m.	250.00	225.00	56,250.00
<i>Other Lines</i>				
1. Turn Lines (Broken Lines)	l.m.	-	-	-
2. Parking Bay Lines				
a.) Parallel Bays, width = 100mm	l.m.	-	-	-
b.) Angle Bays	l.m.	-	-	-
3. Painted Median Islands	l.m.	-	-	-
4. Bus and PUJ Lane Markings	l.m.	-	-	-
5. Channelized Junction Pavement Marking	l.m.	-	-	-
6. Yellow Box Line, w = 200mm	l.m.	-	-	-
<i>Other Markings</i>				
1. Approach Markings to Island and Obstructions	l.m.	-	-	-
2. Chevron Markings	l.m.	-	-	-
3. Curb Markings to Parking Restrictions	l.m.	-	-	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines, (w=200mm)	l.m.	-	-	-
<i>Messages and Symbols</i>				
1. Messages	pcs.	-	-	-
2. Symbols				
a.) Give Way Symbol	pcs.	-	-	-
b.) Pavement Arrows				
1.) Through Arrow = 1.21 sq.m. / each	pcs.	5.00	907.50	4,537.50
2.) Combined Arrow = 2.44 sq.m. / each	pcs.	4.00	1,830.00	7,320.00
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	7.00	1,095.00	7,665.00
c.) Numerals				
B. Signs				
1. No Left Turn Sign	pcs.	2.00	3,850.00	7,700.00
2. No Loading/Unloading Sign	pcs.	4.00	3,850.00	15,400.00
3. Loading/Unloading Sign	pcs.	3.00	3,850.00	11,550.00
4. No Double Parking Area	pcs.	-	-	-
C. Other Works				
1. New Concrete Curb	l.m.	405.00	270.00	109,350.00
2. Surface Preparation	sq.m.	180.00	50.00	9,000.00
3. Remove Existing ACP	sq.m.	406.00	350.00	142,100.00
4. 0.10m Concrete Walk	cu.m.	40.60	3,250.00	131,950.00
5. Median Barrier	cu.m.	165.00	700.00	115,500.00
TOTAL				712,822.50
Contingencies, 5%				35,641.13
CMS, 10%				71,282.25
Miscellaneous (fees, permits, etc.), 5%				35,641.13
Govt. Supervision, 2%				14,256.45
=====				
TOTAL COST				869,643.45

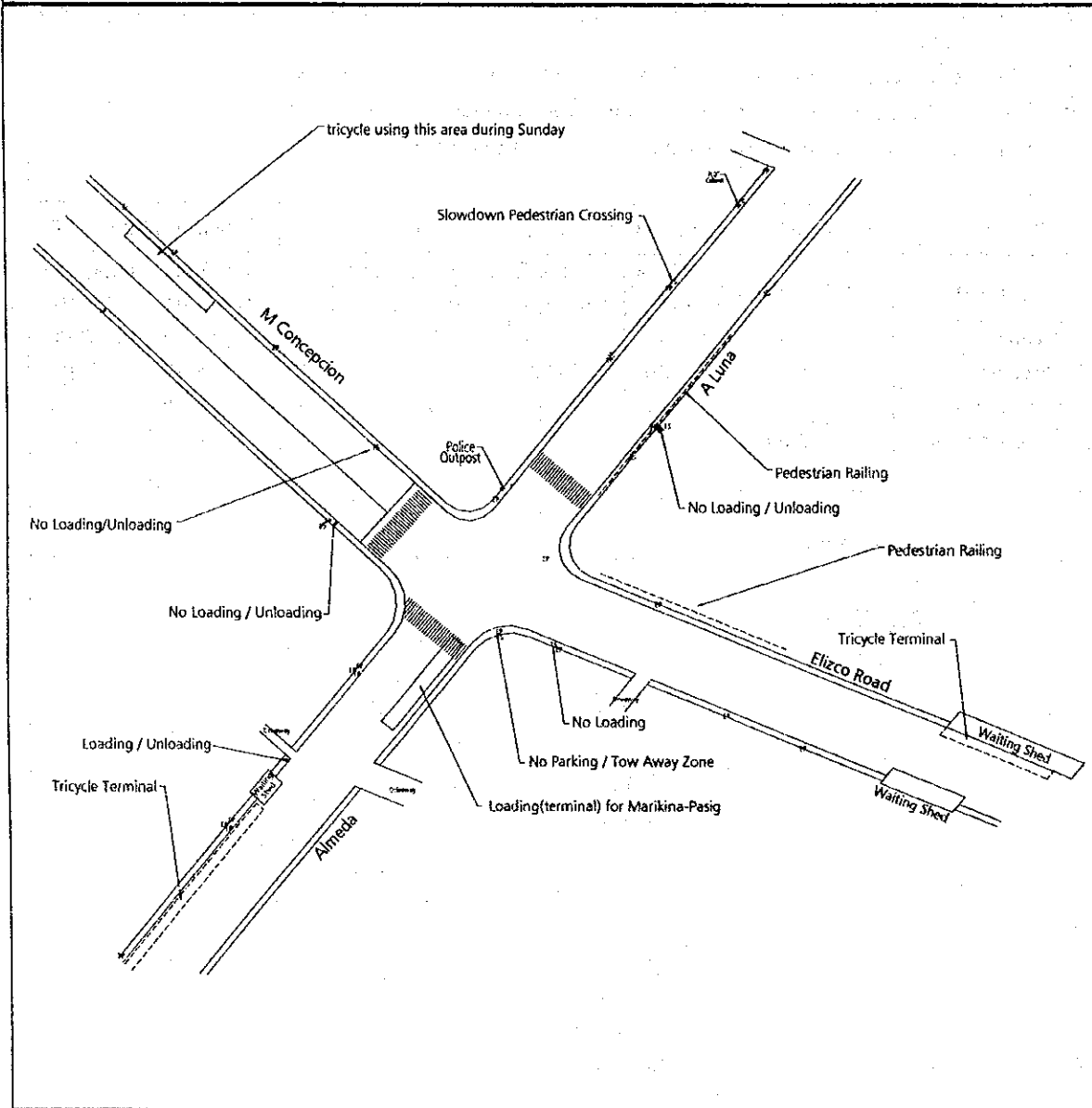
Name	San Joaquin Junction / Elizco Rd			Code	PG-02		
Sheet	Summary of Observations			LGU	Pasig		
Traffic Conditions	<ul style="list-style-type: none"> 1) Heavy congestion experienced in all approaches. 2) Flow is restricted due to diggings (considered temporary). 3) Widest road (Concepcion) has lowest volume of the 4-leg approaches, but more than 50% of which turn left. 						
Physical Conditions	<ul style="list-style-type: none"> 1) Unsignalized intersection; area of intersection is very wide. 2) Concepcion has 4 lanes; Almeda has 2 lanes. 3) Diggings on one side of San Joaquin. 4) No clear delineation of the carriageway at the intersection corners (presently used as parking space). 5) Some corners have no sidewalk causing pedestrians to use carriageway. 6) Electric post in one of the corners limit turning radius. 7) Terminal for Marikina-Pasig jeepneys located at Almeda approach. 						
Signalization	None	Pavement Markings	Partial	Peak	07:00-08:00		
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: A Luna	14.3m	49	373	314	735	59.28	Medium
A2: Elizco Rd	14.1m	36	468	132	635	39.16	Light
A3: M Almeda	14.0m	195	514	69	777	57.16	Light
A4: M Concepcion	17.0m	249	130	66	445	50.77	Light
Total		529	1485	581	2,592		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Pasig PG-02 San Joaquin Junction / Elizco Rd</p>							

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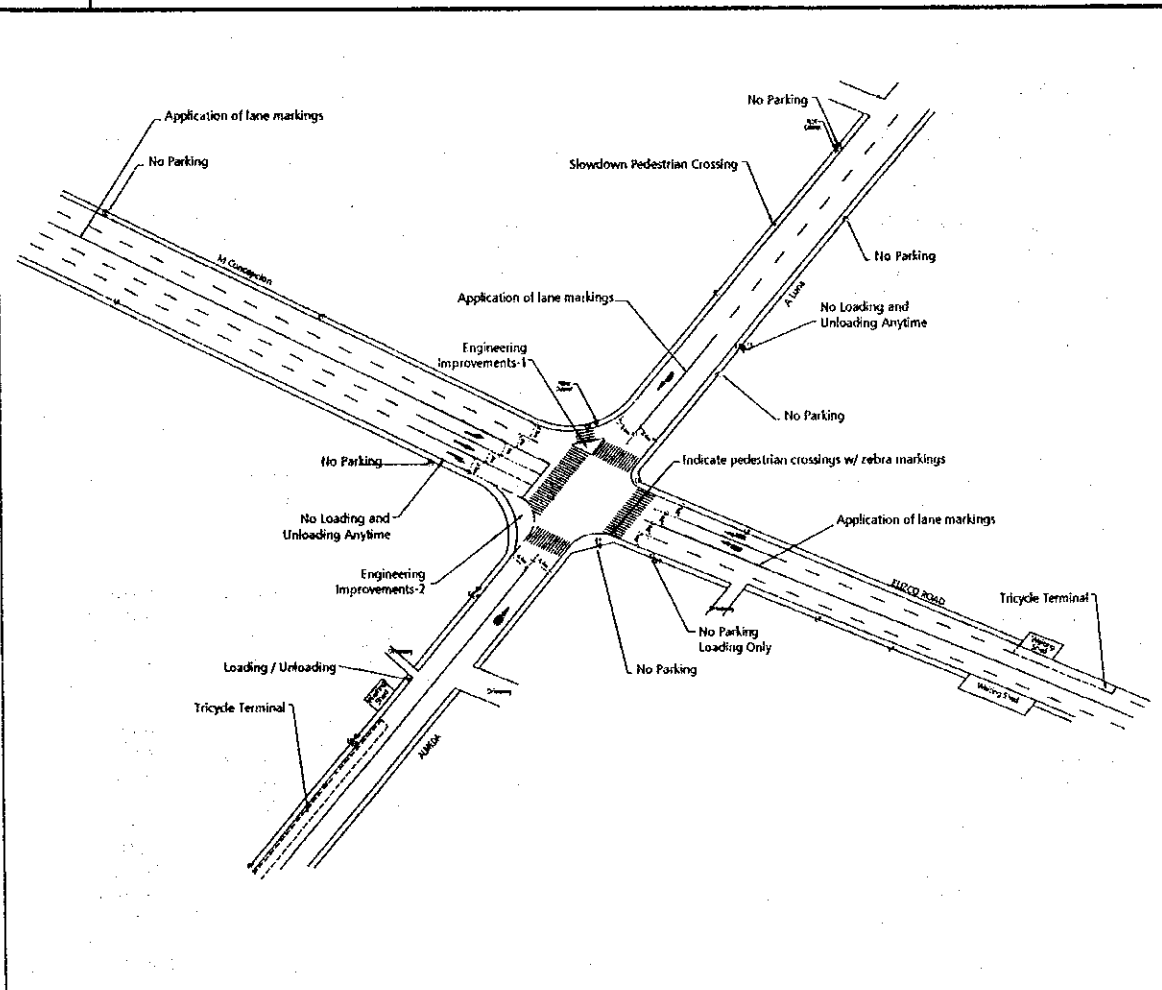
Small Scale Traffic Improvement Measures for Metro Manila

Name	San Joaquin Junction / Elizco Rd	Code	PG-02
Sheet	Analysis	LGU	Pasig

- 1) Numerous point of conflict due to large / broad area and geometry of the intersection.
- 2) Without enforcer, the intersection becomes a bottleneck because of heavy left turns from Concepcion to A. Luna St with vehicles scrambling to be first priority. Traffic crossing Concepcion is also very heavy.



Name	San Joaquin Junction / Elizco Rd	Code	PG-02
Sheet	Proposed Improvements	LGU	Pasig
Engineering	<ol style="list-style-type: none"> 1) Reduce or channelize points of conflict by constructing a corner island (Mercury Drug quadrant). 2) The carriageway in front of 7-Eleven must be clearly delineated from the parking space. It is preferable to improve the geometry of the intersection corner in that quadrant; by concrete curbs. Second best solution is to mark the boundary. 3) Volume and other parameters justify or warrant the installation of traffic signals. 		
Enforcement	<ol style="list-style-type: none"> 1) While traffic signals are not installed yet, the intersection should be manned by trained traffic enforcer/s. Due to the limited width of the approaches, enforcers may adopt a simplified phasing of one approach at-a-time on green. 2) The waiting area terminal for Marikina – Pasig jeepneys (on Almeda) must be relocated some 20 – 30 meters away from the intersection. 		



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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION: PG-02 : San Joaquin Junction / Elisco Road (PASIG)
(cost summary)

A. Pavement Markings:	<u>Unit</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Total Cost</u>
<i>Longitudinal Lines:</i>				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length	l.m	70.00	45.00	3,150.00
b) Solid White Lines, 150 width	l.m	100.00	112.50	11,250.00
2. Lane Lines (100mm or 150mm width)				
a) Solid Lines, w = 150 mm	l.m	90.00	112.50	10,125.00
b) Broken Lines w= 150mm	l.m	410.00	45.00	18,450.00
3. Barrier Lines				
a) Unbroken Double Yellow Lines (100 or 150mm width)	l.m	230.00	225.00	51,750.00
b) Single Yellow Line with broken White Lines (100-150mm)	l.m	-	-	-
4. Edge Lines				
a) Pavement Edge (Shoulders)	l.m	-	-	-
b) Median Edge	l.m	-	-	-
5. Continuity Line	l.m	-	-	-
6. Transition Line	l.m	-	-	-
<i>Transverse Lines:</i>				
1. Stop Lines (Solid Lines) white, width = 450 mm	l.m	-	337.50	-
2. Give Way (Yield Lines)	l.m	-	-	-
3. Pedestrian Crossing Markings				
a) Zebra Crossing (Non-Signalized), width = 300mm	l.m	316.00	225.00	71,100.00
b) Cross Walks (Signalized), width = 300mm	l.m	-	225.00	-
<i>Other Lines:</i>				
1. Turn Lines (broken Lines)	l.m	-	-	-
2. Parking Bay Lines				
a) Parallel Bays, width = 100mm	l.m	-	75.00	-
b) Angle Bays	l.m	-	-	-
3. Painted Median Islands	l.m	-	-	-
4. BUS and PUJ Lane Markings	l.m	-	-	-
5. Channelized Junction Pavement Marking	l.m	-	-	-
6. Yellow Box Line, w= 150mm	l.m	-	112.50	-
<i>Other Markings:</i>				
1. Approach Markings to Islands and Obstructions	l.m	-	-	-
2. Chevron Markings	l.m	-	-	-
3. Curb Markings for Parking Restrictions	l.m	-	262.50	-
4. Tricycle Loading/Unloading Line Zone (200mm)	l.m	70.00	150.00	10,500.00
<i>Messages and Symbols:</i>				
1) Messages	pcs	-	-	-
2) Symbols				
a) Give Way symbol	pcs	-	-	-
b) Pavement Arrows				
1) Through Arrow = 1.21 sq. m / each	pcs	1.00	907.50	-
2) Combined Arrow = 2.44 sq. m / each	pcs	5.00	1,830.00	-
3) Turn Arrow = 1.46 sq. m / each	pcs	2.00	1,095.00	-
c) Numerals	pcs	-	-	-
B. Signs				
1. No Parking (RS-R1-1)	pcs	5.00	3,850.00	19,250.00
2. No Loading / Unloading (RS-R5-6)	pcs	2.00	3,850.00	7,700.00
3. No Loading / Unloading (RS-R5-2p)	pcs	1.00	3,850.00	3,850.00
4. No Parking (RS-R1-1)	pcs	1.00	3,850.00	3,850.00
C. Other Works				
1. Construction of Island	cu.m.	53.50	750.00	40,125.00
2. Sub-base Course	cu.m.	10.70	485.00	5,189.50
3. Curb and Gutter	l.m.	32.00	700.00	22,400.00
TOTAL				278,689.50
Contingencies, 5%				13,934.48
CMS, 10%				27,868.95
Miscellaneous (fees, permits, etc), 5%				13,934.48
Govt. Supervision, 2%				5,573.79
TOTAL COST				340,001.19

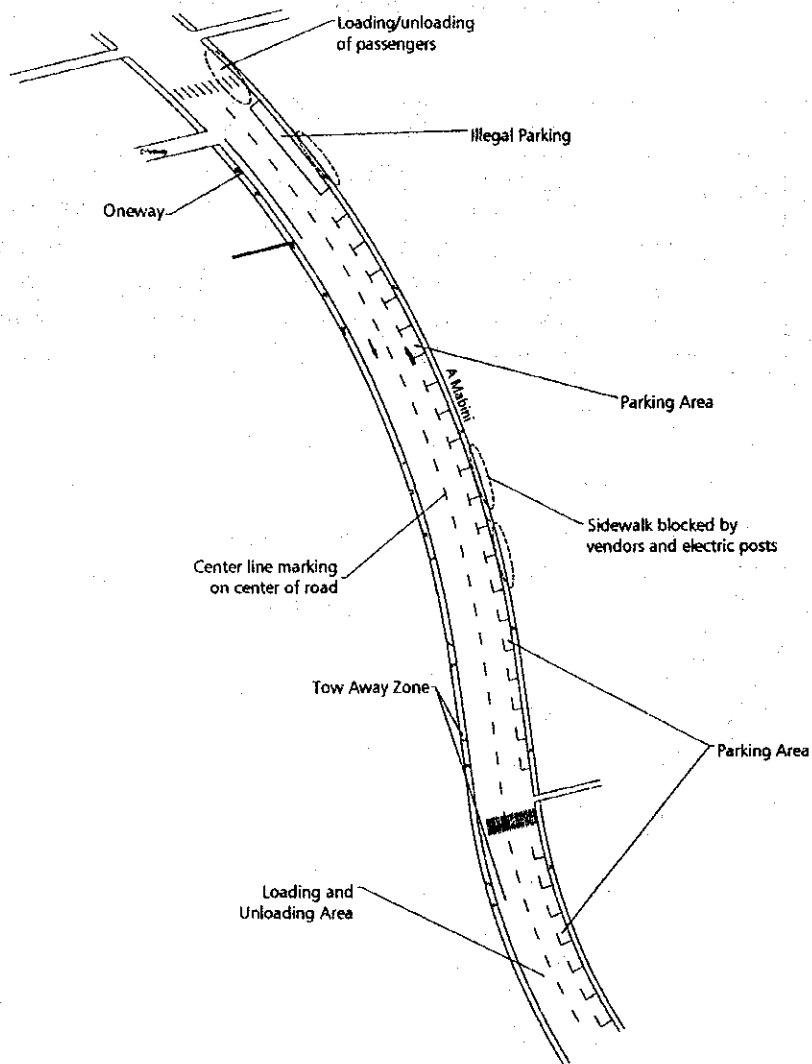
Name	A Mabini St				Code	PG-03	
Sheet	Summary of Observations				LGU	Pasig	
Traffic Conditions	1) Heavy flow of jeepneys with all its characteristics traffic behavior. 2) Slow movement of traffic flow; due to constricted roadway and roadside friction. 3) Crossing of pedestrians anywhere and anytime. 4) Illegal parking on the right side of the road.						
	1) A one-way road lined with commercial establishments; 2) Parking allowed on left side of the road; parking not allowed on the right side; 3) Encroachment of vendors of pavement; 4) Path of pedestrians (Sidewalks) blocked by vendors and electric posts.						
Signalization	None	Pavement Markings	Incomplete		Peak	07:00-08:00	
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: A Mabini	10.79m	NA	1,559	NA	1,559	60.57%	Heavy
A2: None	None	None	None	None	None	None	None
A3: None	None	None	None	None	None	None	None
A4: None	None	None	None	None	None	None	None
Total			1,559		1,559		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Pasig PG-03 A Mabini St</p>							

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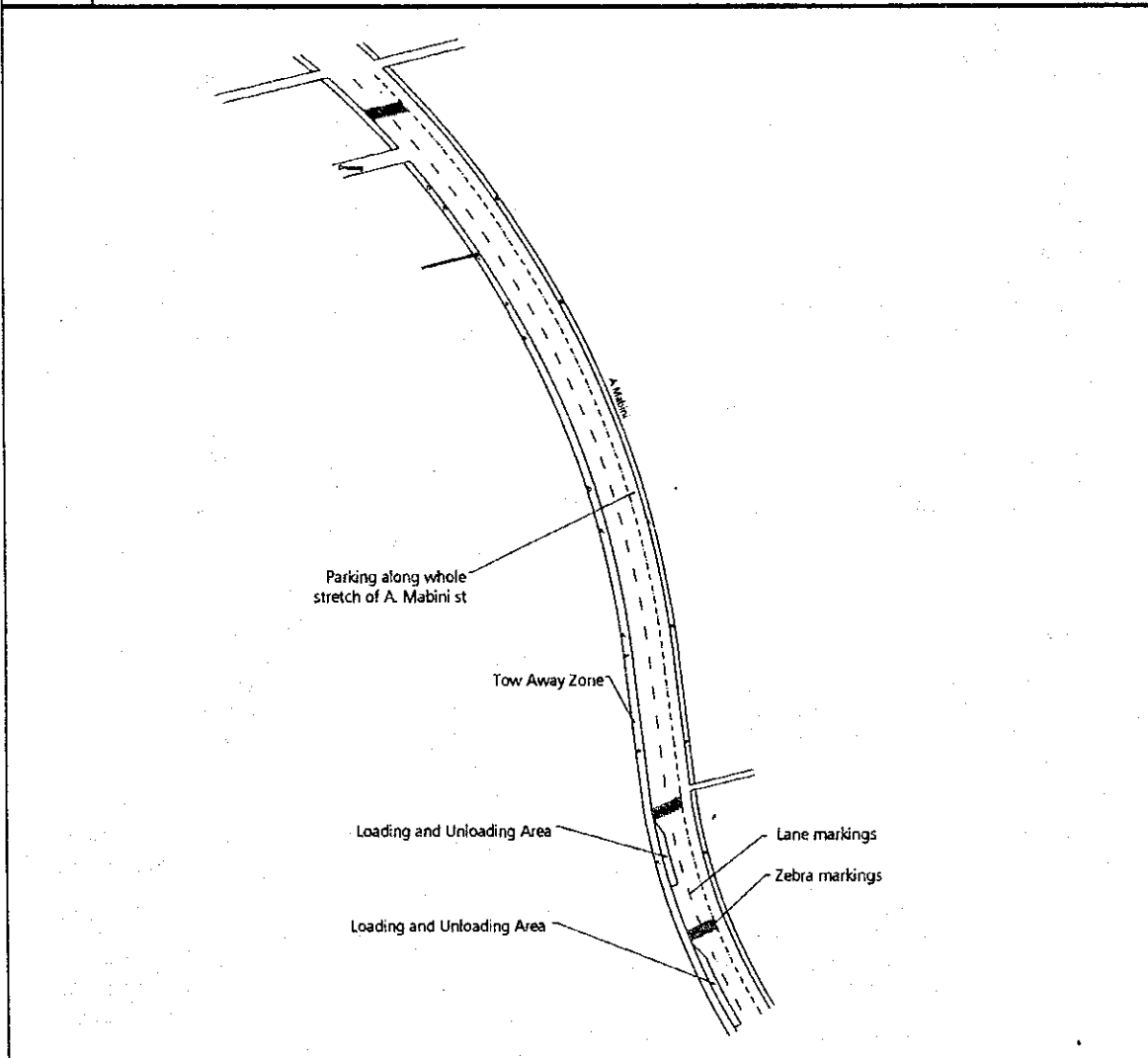
Small Scale Traffic Improvement Measures for Metro Manila

Name	A Mabini St	Code	PG-03
Sheet	Analysis	LGU	Pasig

- 1) The slow movement of traffic is caused by:
 - a. loading and unloading of passengers at any point along Mabini;
 - b. bottleneck downstream at the signalized intersection;
 - c. parking maneuvers and illegal parking on the right side of the road; pedestrians crossing anywhere.
- 2) Low importance given to pedestrians; Vendors are granted more leeway to pre-empt narrow sidewalks.

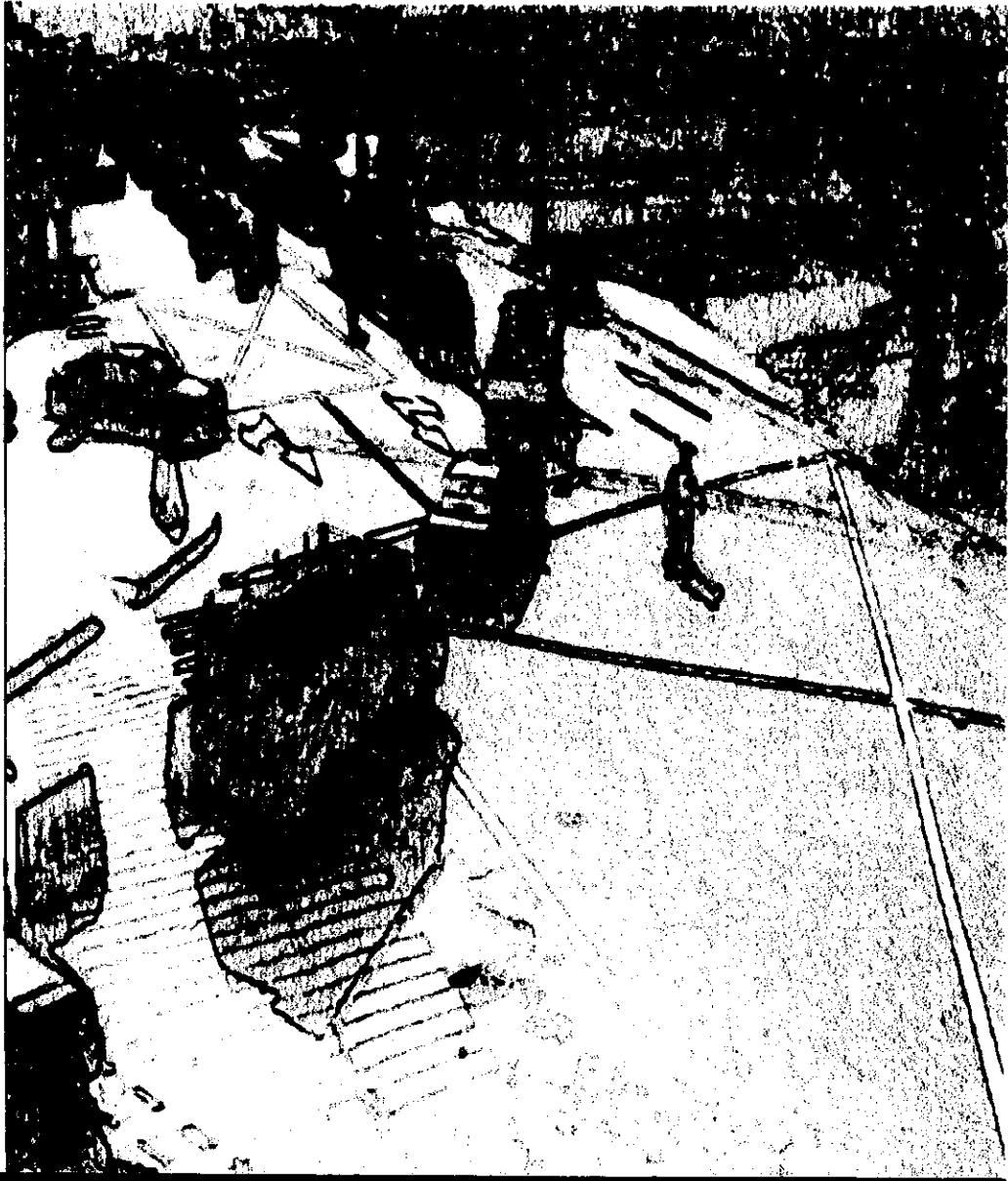


Name	A Mabini St	Code	PG-03
Sheet	Proposed Improvements	LGU	Pasig
Engineering	<p>1) The improvements on the signalized intersection have been proposed and must be taken as integral part of the solution for smoother flow of traffic along Mabini St.; Jeepney stops must be designated and the loading and unloading of passengers must be regulated (i.e., no waiting).</p> <p>2) Pedestrian crossing at strategic points along Mabini St. must be designated by zebra crossing.</p>		
Enforcement	<p>1) Illegal parking on the right side of the road must be enforced consistently.</p> <p>2) Clear sidewalks of vendors. At the very least, vendors must keep pedestrians, pathway unobstructed.</p>		



LOCATION: PG-03 : A. Mabini St. (PASIG)
(cost summary)

A. Pavement Markings:	<u>Unit</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Total Cost</u>
<i>Longitudinal Lines:</i>				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length	l.m	-	45.00	-
b) Solid White Lines, 150 width	l.m	205.00	112.50	23,062.50
2. Lane Lines (100mm or 150mm width)				
a) Solid Lines, w = 150 mm	l.m	-	112.50	-
b) Broken Lines w= 150mm	l.m	-	45.00	-
3. Barrier Lines				
a) Unbroken Double Yellow Lines (100 or 150mm width)	l.m	-	225.00	-
b) Single Yellow Line with broken White Lines (100-150mm)	l.m	-	-	-
4. Edge Lines				
a) Pavement Edge (Shoulders)	l.m	-	-	-
b) Median Edge	l.m	-	-	-
5. Continuity Line	l.m	-	-	-
6. Transition Line	l.m	-	-	-
<i>Transverse Lines:</i>				
1. Stop Lines (Solid Lines) white, width = 450 mm	l.m	-	337.50	-
2. Give Way (Yield Lines)	l.m	-	-	-
3. Pedestrian Crossing Markings				
a) Zebra Crossing (Non-Signalized), width = 300mm	l.m	-	225.00	-
b) Cross Walks (Signalized), width = 300mm	l.m	-	225.00	-
<i>Other Lines:</i>				
1. Turn Lines (broken Lines)	l.m	-	-	-
2. Parking Bay Lines				
a) Parallel Bays, width = 100mm	l.m	-	75.00	-
b) Angle Bays	l.m	-	-	-
3. Painted Median Islands	l.m	-	-	-
4. BUS and PUJ Lane Markings	l.m	-	-	-
5. Channelized Junction Pavement Marking	l.m	-	-	-
6. Yellow Box Line, w= 150mm	l.m	-	112.50	-
<i>Other Markings:</i>				
1. Approach Markings to Islands and Obstructions	l.m	-	-	-
2. Chevron Markings	l.m	-	-	-
3. Curb Markings for Parking Restrictions	l.m	-	262.50	-
4. Jeepney Loading/Unloading Line Zone (200mm)	l.m	56.00	150.00	8,400.00
5. Parking Line Zone (100mm)	l.m	142.00	95.00	13,490.00
<i>Messages and Symbols:</i>				
1) Messages	pcs	-	-	-
2) Symbols				
a) Give Way symbol	pcs	-	-	-
b) Pavement Arrows				
1) Through Arrow = 1.21 sq.m / each	pcs	-	907.50	-
2) Combined Arrow = 2.44 sq.m / each	pcs	-	1,830.00	-
3) Turn Arrow = 1.46 sq. m / each	pcs	-	1,095.00	-
c) Numerals	pcs	-	-	-
B. Signs				
1. No Parking	pcs	2.00	3,850.00	7,700.00
TOTAL				52,652.50
Contingencies, 5%				2,632.63
CMS, 10%				5,265.25
Miscellaneous (fees, permits, etc), 5%				2,632.63
Govt. Supervision, 2%				1,053.05
TOTAL COST				64,236.05

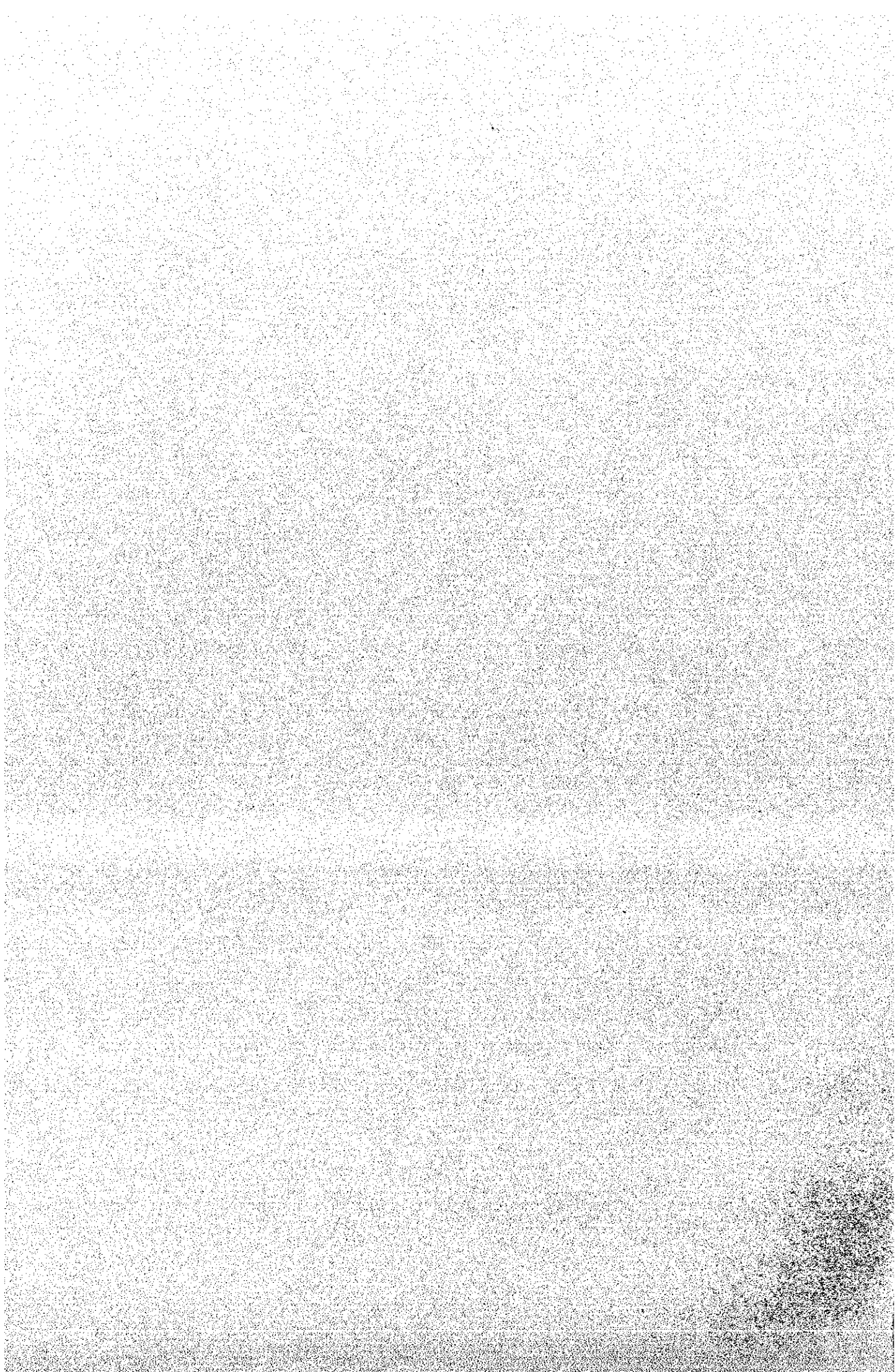


Pateros

Individual Information Sheets for the Traffic Bottleneck Points

PT-01 B Morcilla / P Herrera

PT-02 B Morcilla / M Almeda



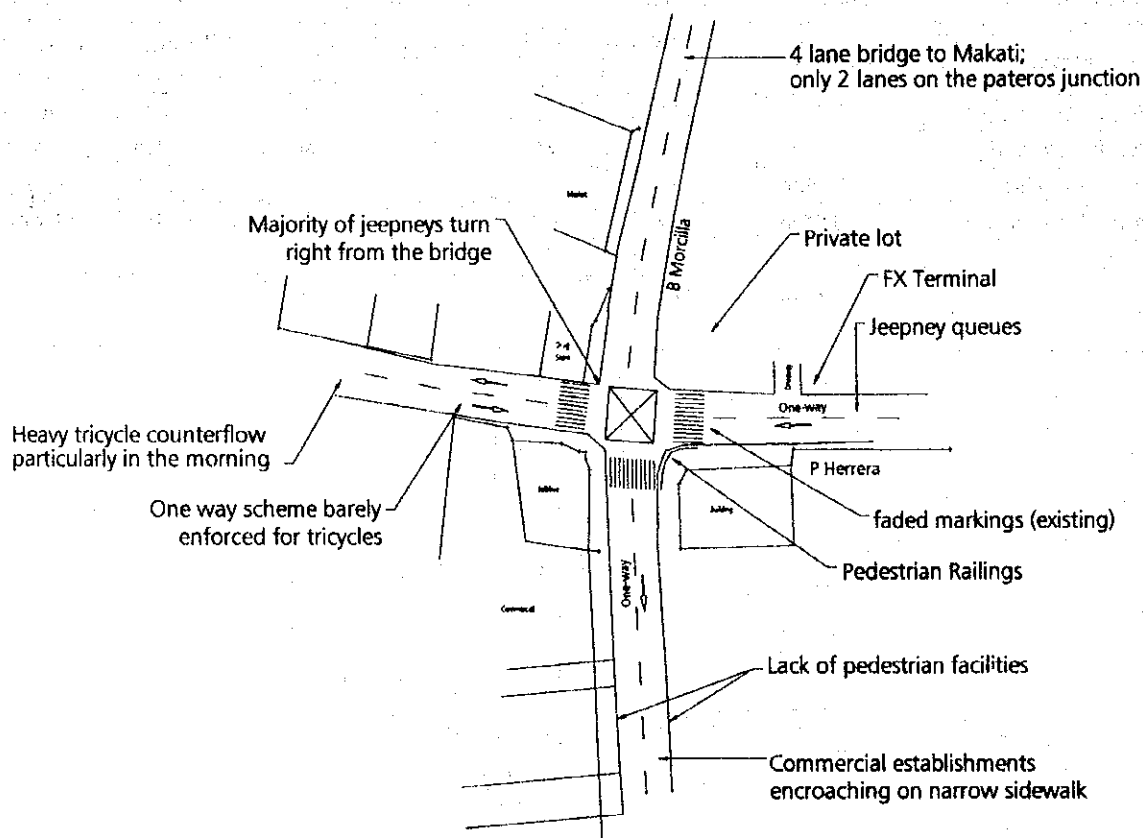
Name	B Morcilla / P Herrera			Code	PT-01		
Sheet	Summary of Observations			LGU	Pateros		
Traffic Conditions	1) Intersection leads to Makati with bridge crossing over Pateros River; 2) Bridge approach on Pateros side still incomplete (Pateros approach only half of bridge width); due to ROW problem. 3) With half of bridge unutilized by vehicles, ambulant vendors have occupied one side; generating heavy pedestrian volumes; 4) One-way scheme being implemented in this area of the municipality, with the road network basically laid out in a grid manner; 5) Prevalence of commercial activities in the area has led to high passenger interchange levels and high pedestrian traffic; 6) Narrow or missing sidewalks further constrict road traffic movement; 7) Jeepsneys and tricycles loading and unloading passengers at the intersection create delays.						
	Physical Conditions 1) A four-legged intersection along a heavily built up area in Pateros. Both roads along the intersection are asphalt paved in fair condition and have two lanes. One section of each road allows bi-directional traffic movements while the other section allows one way traffic movement only. 2) At heavily built up area, the road width is insufficient at 6.0-6.76 meters since pedestrians even use the roadway edges. 3) Street corners likewise have substandard turning radius. Proposed widening of B. Morcilla and the construction of bridge were not completed.						
Signalization	Signalized	Pavement Markings	With Markings	Peak	08:00-09:00		
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: B Morcilla (N)	7.31m	160	257	437	854	74.41%	Heavy
A2: P Herrera (E)	7.55m	NA	NA	NA	NA	NA	Light
A3: B Morcilla (S)	7.08m	17	0	46	63	64.08%	Heavy
A4: P Herrera (W)	6.95m	NA	103	388	491	39.71%	Moderate
Total		177	360	871	1408		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Pateros PT-01 B Morcilla / P Herrera</p>							

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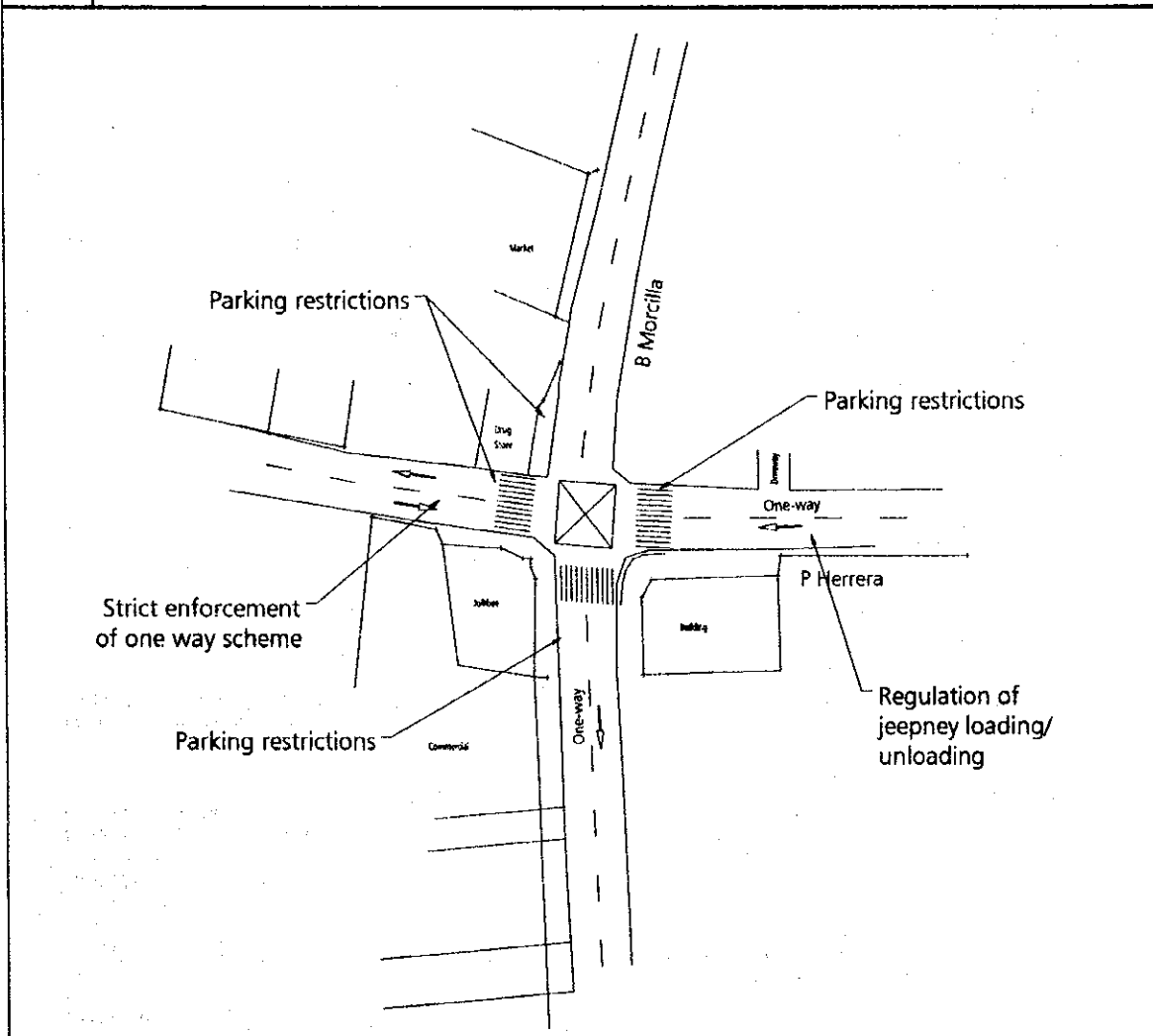
Small Scale Traffic Improvement Measures for Metro Manila

Name	B Morcilla / P Herrera	Code	PT-01
Sheet	Analysis	LGU	Pateros

- 1) B Morcilla is the main link to Makati in the north. It also is the main road in the CBD of Pateros, located in the poblacion area.
- 2) Numerous retail establishments generate a high number of passenger trips.
- 3) A number of jeepney routes terminate in the poblacion area, and the typically grid pattern of streets in the CBD can very well accommodate a one-way traffic system, which has already been done.
- 4) The road capacities are limited, and traffic demand has exceeded available capacity. There is little that can be done on a small-scale basis to the physical attributes of the transport network, given the limited rights of way.
- 5) Restrictions on loading/unloading, one way traffic flows, and roadside parking can possibly increase the capacity to a minor extent.
- 6) Completion of the bridge approach to Makati will provide relief to congestion at the intersection, and improve Pateros access to the rest of Metro Manila.



Name	B Morcilla / P Herrera	Code	PT-01
Sheet	Proposed Improvements	LGU	Pateros
Engineering	1) Installation of "One Way" and "No Entry" signs, as well as turning restriction signages.		
Enforcement	1) Sidewalks are very narrow, and to be able to make use of them, clearing them of obstructions such as parked vehicles and vendors need to be done. 2) Enforcement of tricycle counterflow restrictions along B Morcilla St. and restrict tricycle terminal activities along P Herrera on approach to junction. 3) Regulation of jeepney loading/unloading along P Herrera.		



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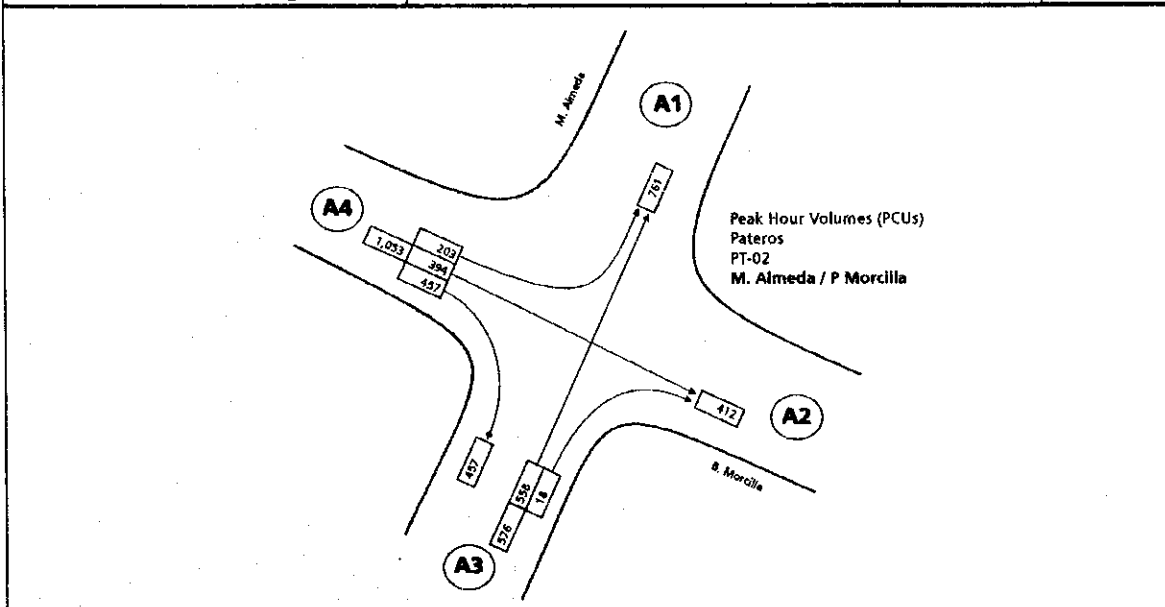
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : PT-01: B Morcilla / P Herrera (PATEROS)
(cost summary)

A. Pavement Markings	Unit	Quantity	Unit Cost	Total Cost
<i>Longitudinal Lines</i>				
1. Center Lines				
a.) Broken Lines, 100 or 150 mm width, 3m length 4.50 m gaps	l.m.	-	-	-
b.) Solid White Lines, 150mm width	l.m.	-	-	-
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	-	-
b.) Broken Lines, w = 150mms, 200mm width	l.m.	400.00	46.00	18,400.00
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	-	-
b.) Single Yellow Line with broken White Lines (100-150mm)	l.m.	-	-	-
4. Edge Lines				
a.) Pavement Edge (Shoulders)	l.m.	-	-	-
b.) Median Edge	l.m.	-	-	-
5. Continuity Lines	l.m.	-	-	-
6. Transition Line	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	l.m.	-	-	-
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	180.00	225.00	40,500.00
b.) Cross Walks (Signalized), width = 300mm	l.m.	-	-	-
<i>Other Lines</i>				
1. Turn Lines (Broken Lines)	l.m.	-	-	-
2. Parking Bay Lines				
a.) Parallel Bays, width = 100mm	l.m.	-	-	-
b.) Angle Bays	l.m.	-	-	-
3. Painted Median Islands	l.m.	-	-	-
4. Bus and PUJ Lane Markings	l.m.	-	-	-
5. Channelized Junction Pavement Marking	l.m.	-	-	-
6. Yellow Box Line, w = 200mm	l.m.	46.00	200.64	9,229.44
<i>Other Markings</i>				
1. Approach Markings to Island and Obstructions	l.m.	-	-	-
2. Chevron Markings	l.m.	-	-	-
3. Curb Markings to Parking Restrictions	l.m.	-	-	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines, (w=200mm)	l.m.	-	-	-
<i>Messages and Symbols</i>				
1. Messages	pcs.	-	-	-
2. Symbols				
a.) Give Way Symbol	pcs.	-	-	-
b.) Pavement Arrows				
1.) Through Arrow = 1.21 sq.m. / each	pcs.	4.00	907.50	3,630.00
2.) Combined Arrow = 2.44 sq.m. / each	pcs.	-	-	-
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	-	-	-
c.) Numerals				
B. Signs				
1. One Way Sign	pcs.	2.00	3,850.00	7,700.00
2. No Entry Sign	pcs.	2.00	3,850.00	7,700.00
3. Loading/unloading Sign	pcs.	2.00	3,850.00	7,700.00
C. Other Works				
1. Repair of street corners	sq.m.	35.00	987.50	34,562.50
2. Surface preparation	sq.m.	87.30	50.00	4,365.00
TOTAL				133,786.94
Contingencies, 5%				6,689.35
CMS, 10%				13,378.69
Miscellaneous (fees, permits, etc.), 5%				6,689.35
Govt. Supervision, 2%				2,675.74
TOTAL COST				163,220.07

Name	M Almeda / B Morcilla	Code	PT-02
Sheet	Summary of Observations	LGU	Pateros
Traffic Conditions	<p>1) The area around the junction hosts numerous retail establishments typical of a central business district or poblacion in a small town.</p> <p>2) There are very heavy pedestrian flows in the streets leading to the junction, the area being the center of Pateros, but the narrow sidewalks are obstructed with sidewalk vendors and encroachment from nearby establishments. Pedestrians would rather walk on the carriageway, further constricting vehicular traffic flows.</p> <p>3) One-way (Northeast bound) on M. Almeda, paired with one-way (Southbound) on P. Herrera.</p>		
Physical Conditions	<p>1) B Morcilla is wide enough to accommodate 2 traffic lanes, and has been designated as one-way flow from P Herrera to M Almeda.</p> <p>2) M Almeda has sufficient width to accommodate two traffic lanes.</p>		

Signalization		Pavement Markings				Peak	08:00-09:00
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: M Almeda (N)	7.38m	NA	NA	NA	NA	NA	Moderate
A2: B Morcilla (E)	7.12m	NA	NA	NA	NA	NA	Moderate
A3: M Almeda (S)	7.38m	NA	558	18	576	53.34%	Heavy
A4: B Morcilla (W)	7.12m	457	394	203	1,053	60.90%	Moderate
Total		457	952	221	1,629		
Passenger Flows							

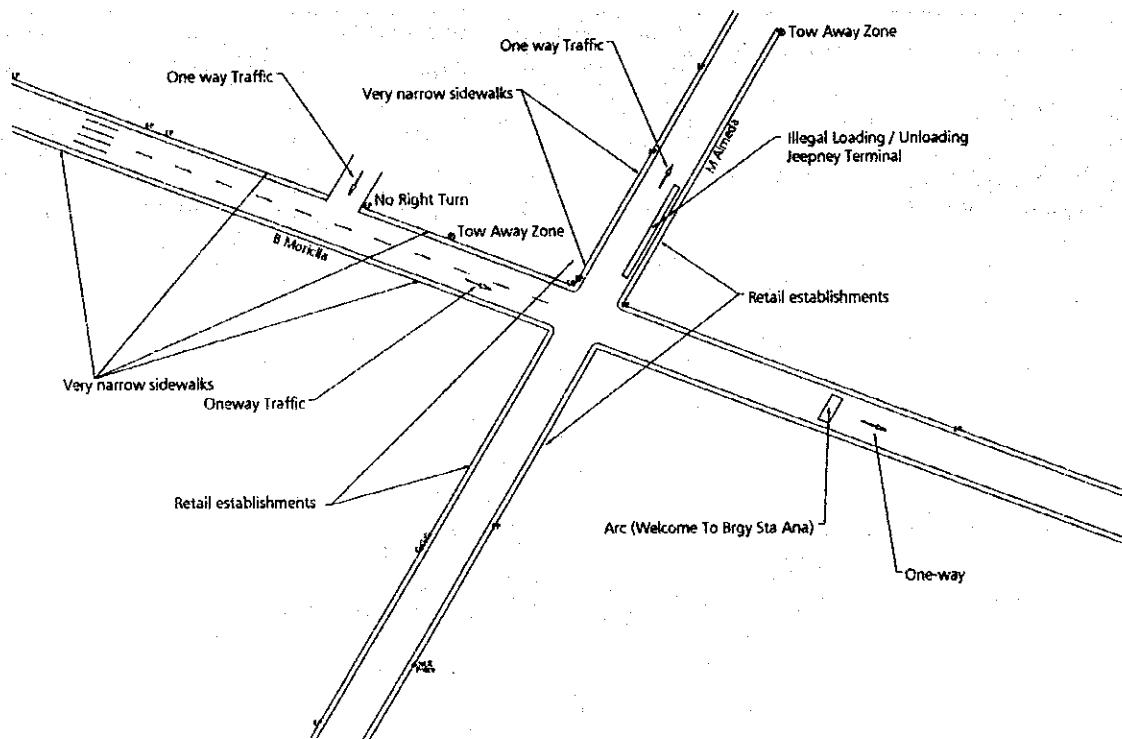


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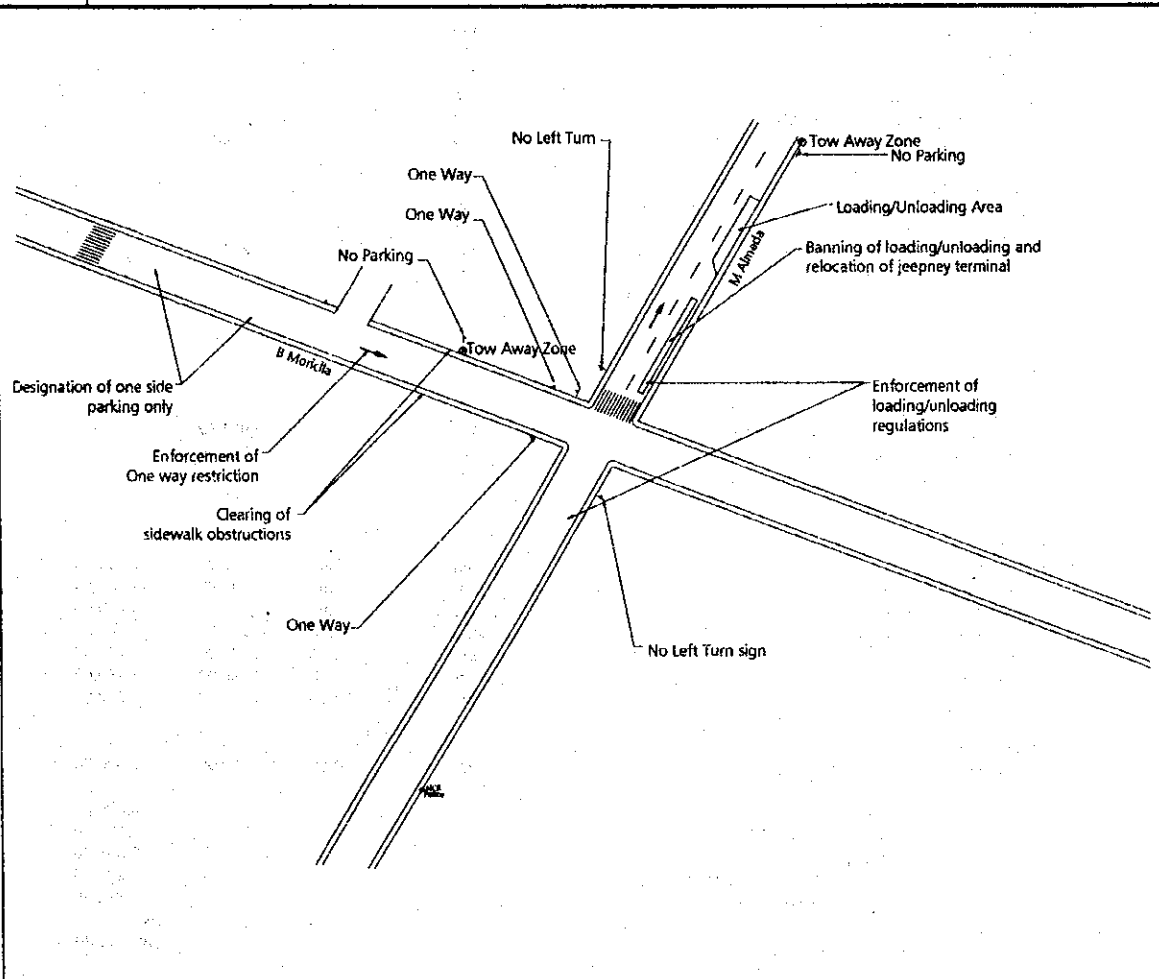
Small Scale Traffic Improvement Measures for Metro Manila

Name	M Almeda / B Morcilla	Code	PT-02
Sheet	Analysis	LGU	Pateros

- 1) M Almeda is the main link of the poblacion area of Pateros with Pasig to the east and Taguig to the southwest. B Morcilla is the main link to Makati in the north.
- 2) The two roads, while municipal in terms of administration, functions as the main arterial connections of the central business district of the municipality.
- 3) A number of jeepney routes terminate in the poblacion area. This would have been necessary if not for the one-way traffic system, implemented therein.
- 4) The road capacities are limited, and traffic demand has exceeded available capacity. There is little that can be done on a small scale basis given the limited rights of way.
- 5) Restrictions on loading/unloading, one way traffic flows, and roadside parking may alleviate congestion, or make it more bearable.



Name	M Almeda / B Morcilla	Code	PT-02
Sheet	Proposed Improvements	LGU	Pateros
Engineering	<ol style="list-style-type: none"> 1) No re-engineering of intersection is required. One-way system employed on the grid pattern of small streets is the best that could be done. 2) Major relief is dependent on the acquisition of ROW to the bridge on B. Morcilla. <ol style="list-style-type: none"> 1) Install control signages (One-way, No entry, No Loading / Unloading) to guide motorists and pedestrians. 		
Enforcement	<ol style="list-style-type: none"> 1) Sidewalks are already narrow. Hence, they must be cleared of obstructions such as parked vehicles and vendors. 2) Penalize tricycles doing counterflows on B. Morcilla Street – with heavy fines / revocation of franchise. 3) Ban loading / unloading within 25 meters of intersection, to facilitate through and turning movements. 		



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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION: PT-02 : B. Morcilla / M. Almeda (PATEROS)
(cost summary)

A. Pavement Markings:	<u>Unit</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Total Cost</u>
<i>Longitudinal Lines:</i>				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length	l.m	-	45.00	-
b) Solid White Lines, 150 width	l.m	100.00	112.50	11,250.00
2. Lane Lines (100mm or 150mm width)				
a) Solid Lines, w = 150 mm	l.m	-	112.50	-
b) Broken Lines w= 150mm	l.m	-	45.00	-
3. Barrier Lines				
a) Unbroken Double Yellow Lines (100 or 150mm width)	l.m	-	-	-
b) Single Yellow Line with broken White Lines (100-150mm)	l.m	-	-	-
4. Edge Lines				
a) Pavement Edge (Shoulders)	l.m	-	-	-
b) Median Edge	l.m	-	-	-
5. Continuity Line	l.m	-	-	-
6. Transition Line	l.m	-	-	-
<i>Transverse Lines:</i>				
1. Stop Lines (Solid Lines) white, width = 450 mm	l.m	-	337.50	-
2. Give Way (Yield Lines)	l.m	-	-	-
3. Pedestrian Crossing Markings				
a) Zebra Crossing (Non-Signalized), width = 300mm	l.m	92.00	225.00	20,700.00
b) Cross Walks (Signalized), width = 300mm	l.m	-	225.00	-
<i>Other Lines:</i>				
1. Turn Lines (broken Lines)	l.m	-	-	-
2. Parking Bay Lines				
a) Parallel Bays, width = 100mm	l.m	-	75.00	-
b) Angle Bays	l.m	-	-	-
3. Painted Median Islands	l.m	-	-	-
4. BUS and PUJ Lane Markings	l.m	-	-	-
5. Channelized Junction Pavement Marking	l.m	-	-	-
6. Yellow Box Line, w= 150mm	l.m	-	112.50	-
<i>Other Markings:</i>				
1. Approach Markings to Islands and Obstructions	l.m	-	-	-
2. Chevron Markings	l.m	-	-	-
3. Curb Markings for Parking Restrictions	l.m	-	262.50	-
4. Loading/Unloading Line Zone (200mm)	l.m	-	150.00	-
<i>Messages and Symbols:</i>				
1) Messages	pcs	-	-	-
2) Symbols				
a) Give Way symbol	pcs	-	-	-
b) Pavement Arrows				
1) Through Arrow = 1.21 sq.m / each	pcs	-	907.50	-
2) Combined Arrow = 2.44 sq.m / each	pcs	-	1,830.00	-
3) Turn Arrow = 1.46 sq. m / each	pcs	-	1,095.00	-
c) Numerals	pcs	-	-	-
B. Signs				
1. One Way (RS-R2-8L)	pcs.	2.00	3,780.00	7,560.00
2. One Way (RS-R2-8R)	pcs.	1.00	3,780.00	3,780.00
3. No Parking (RS-R5-6)	pcs.	1.00	3,780.00	3,780.00
4. No Left Turn (RS-R3-13)	pcs.	1.00	3,780.00	3,780.00
5. No Right Turn (RS-R3-14)	pcs.	1.00	3,780.00	3,780.00
6. No Parking (RS-R5-1)	pcs.	1.00	3,780.00	3,780.00
7. No Loading/Unloading	pcs.	1.00	3,780.00	3,780.00
C. Other Works				
1. Cleaning of Sidewalk Obstruction	l.s.	1.00	3,500.00	3,500.00
TOTAL				65,690.00
Contingencies, 5%				3,284.50
CMS, 10%				6,569.00
Miscellaneous (fees, permits, etc), 5%				3,284.50
Govt. Supervision, 2%				1,313.80
=====				
TOTAL COST				80,141.80