

Quezon City

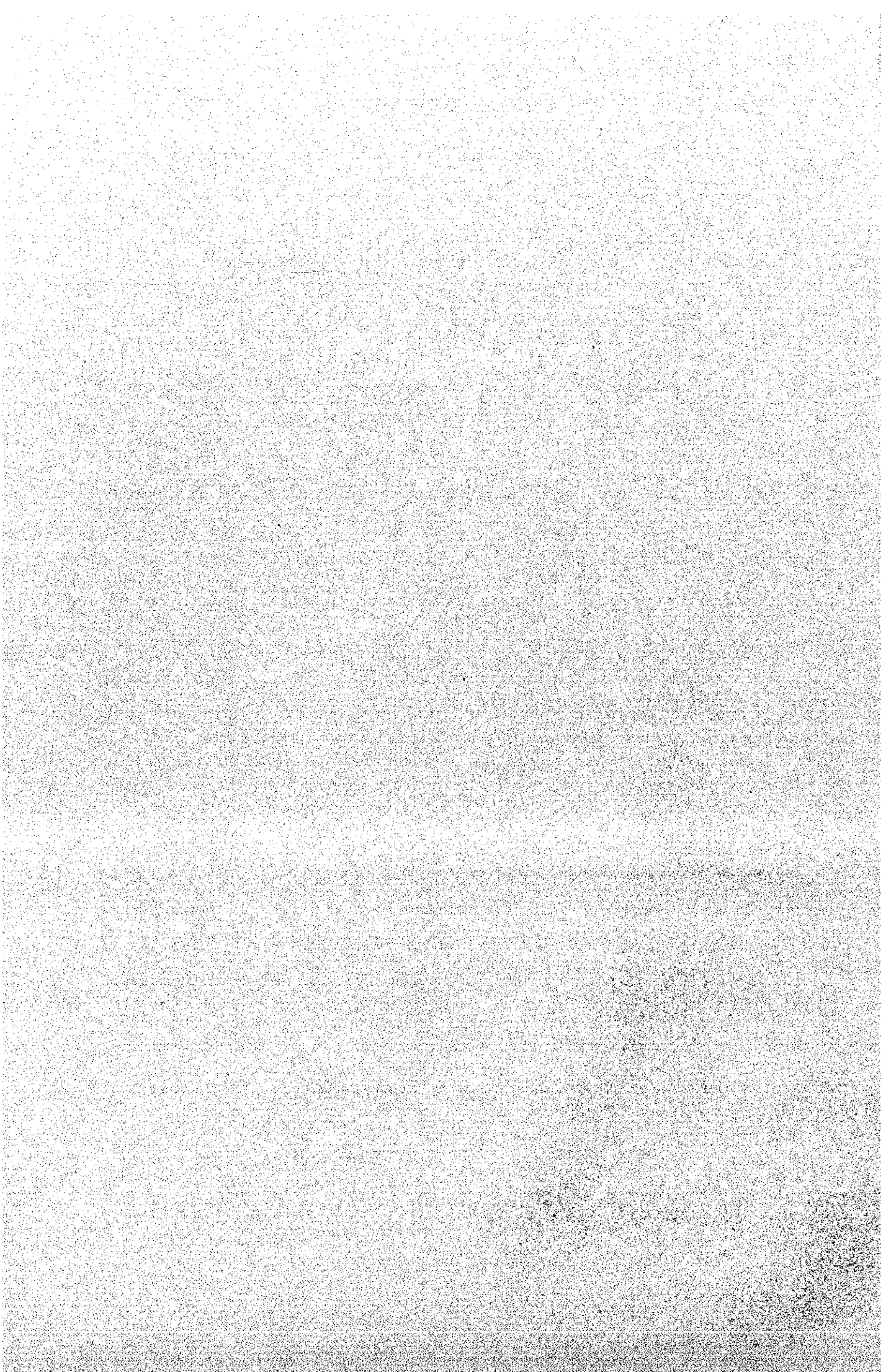
Individual Information Sheets for the Traffic Bottleneck Points

QC-01 Boni Serrano St / Benitez St / Valentina St

QC-02 Anonas St / Molave St

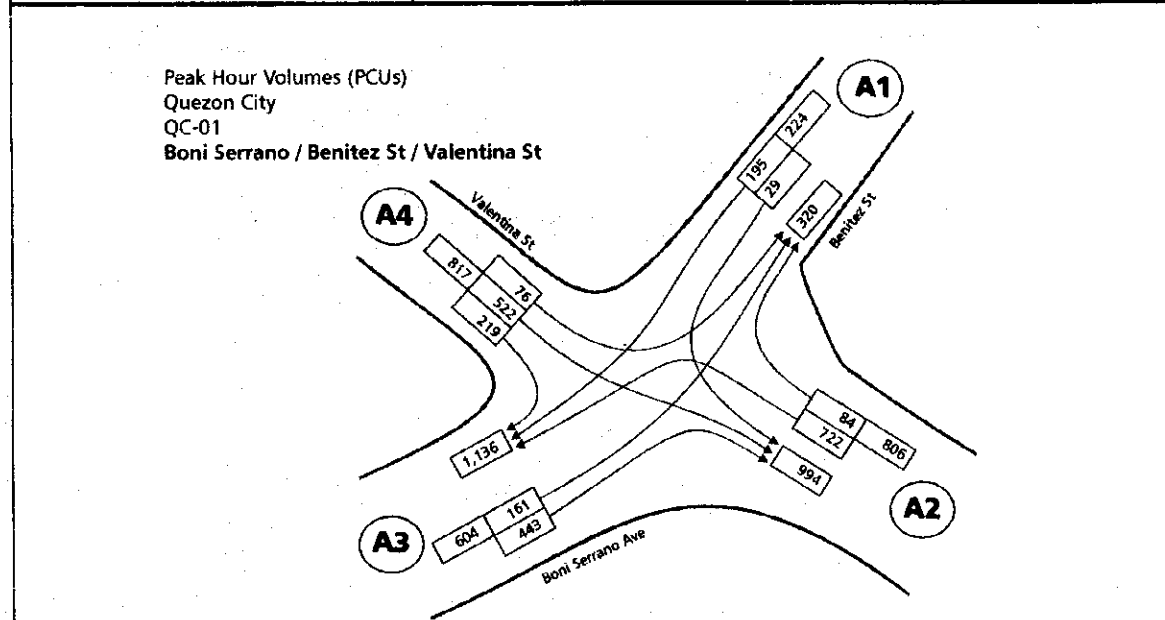
QC-03 Visayas Ave / Road 1

QC-04 Zabarte Road / Quirino Hwy



Name	Boni Serrano Ave / Benitez St / Valentina St	Code	QC-01
Sheet	Summary of Observations	LGU	Quezon City
Traffic Conditions	<ol style="list-style-type: none"> 1) Curve approach in the roadway along Boni Serrano poses risks at high speeds. 2) Uncontrolled junction, except when manned by enforcers. 3) Left turn from Benitez to Boni Serrano (to EDSA) difficult to execute; requires acute angle turns. 4) Valentina St. being used as alternative bypass through Horseshoe Village. 		
Physical Conditions	<ol style="list-style-type: none"> 1) A 4-legged and unsignalized intersection characterizes the bottleneck point. 2) Valentina St., a four lane divided road intersects another four lane undivided road, B. Serrano St. and 2-two lane roads, namely, Horseshoe Drive and C. Benitez St.. Except for C. Benitez St. which is asphalt paved, the rest are paved with concrete in good condition. Physical constraints include the conflict area at the channelized section of B. Serrano and C. Benitez St.. 3) The section allows left turning movement from C. Benitez St. toward B. Serrano rather than at the main junction. The one way movement at Horseshoe Drive provides sufficient allowance for left turning movement despite the substandard radius of the street corner. All other corners have sufficient turning radius. 		

Signalization	None	Pavement Markings		With Markings		Peak	06:00-07:00
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: Benitez (N)	8.0m	29	195	NA	224	12.74%	Light
A2: Serrano (E)	15.0m	722	NA	84	806	15.73%	Light
A3: Serrano (S)	15.5m	NA	161	443	604	25.27%	Light
A4: Valenzuela (W)	7.0m	76	522	219	817	3.85%	Light
Total		827	878	746	2451		
Passenger Flows						4,800	



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Small Scale Traffic Improvement Measures for Metro Manila

Name	Boni Serrano Ave / Benitez St / Valentina St	Code	QC-01
Sheet	Analysis	LGU	Quezon City

- 1) The wide intersection structured as a Y-junction with an appendage - allows for too many vehicular conflicts.
- 2) Vehicle maneuvers not guided, due to lack of control devices.
- 3) The narrow carriageway along C. Benitez St. cannot accommodate heavy volume of vehicles, compounded by the sharp curvature.

The diagram illustrates a Y-junction intersection where Valentina St (top left) meets B Serrano St (bottom). C Benitez St (top right) branches off from the junction. The intersection is annotated with several traffic-related issues:

- Narrow carriageway cannot accommodate heavy volume of vehicles:** Points to the sharp curve of C Benitez St.
- No Entry:** Located at the intersection of Valentina St and B Serrano St.
- Too wide intersection; no clear allocation of approach lane capacity:** Points to the wide area where Valentina St meets B Serrano St.
- Existing pavement markings with cat's eye:** Points to the markings on B Serrano St.
- U-turning maneuvers & left turning flow causing conflicts in vehicular movements:** Points to the area where B Serrano St approaches the junction.
- Vehicles turning left towards B. Serrano cut the intersection at this point:** Points to the intersection of C Benitez St and B Serrano St.

Name	Boni Serrano Ave / Benitez St / Valentina St	Code	QC-01
Sheet	Proposed Improvements	LGU	Quezon City
Engineering	<ol style="list-style-type: none"> 1) Construct concrete island (on northeast quadrant) to restrict turning maneuvers. 2) Install pavement markings (lane, directional arrows), zebra crossings. 3) Extension of median barrier using median markings instead. 4) Traffic signs (on island) – one for “No Entry” for vehicles from C. Benitez to left of island; another sign “Give Way” for vehicles from C. Benitez to yield to passing vehicles on B. Serrano. 		
Enforcement	<ol style="list-style-type: none"> 1) Occasional deployment of traffic enforcers, to oversee phasing or transition; also to preclude counterflows. 		
<p>The diagram illustrates the proposed improvements at the intersection of Boni Serrano Ave, Benitez St, and Valentina St. Key features include:</p> <ul style="list-style-type: none"> Construction of concrete island to restrict turning maneuvers on the northeast quadrant. Placement of pedestrian lane markings on Valentina St. Double yellow line marking on B Serrano (Santolan Rd). Median markings as extension of Median Island on B Serrano (Santolan Rd). Delineation of lanes & placement of lane markings, & directional arrows on B Serrano (Santolan Rd). No entry sign and Give way sign on the island. 			

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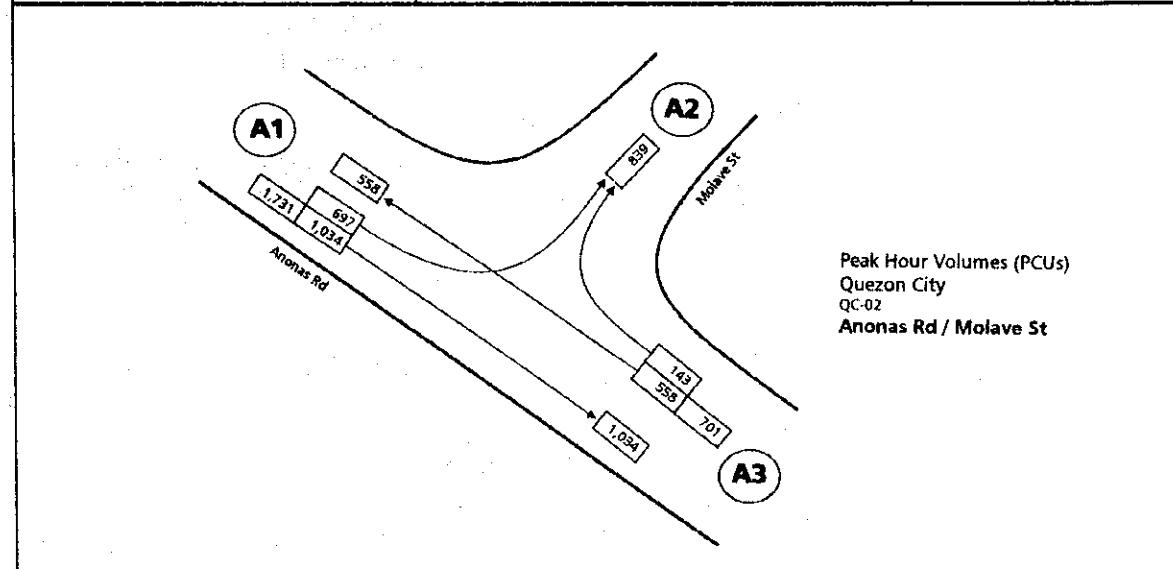
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : QC-01: Boni Serrano Ave / Benitez St / Valentina St (QUEZON CITY)
(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.	380.00	45.00	17,100.00
b.) Solid White Lines, 150mm width	l.m.	90.00	150.00	13,500.00
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	90.00	-	-
b.) Broken Lines, w = 150mms, 200mm width	l.m.	440.00	45.00	19,800.00
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				
a.) Continuity Lines	l.m.	-	-	-
6. Transition Line				
a.) Transition Line	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	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.	200.00	225.00	45,000.00
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				
a.) Painted Median Islands	l.m.	-	-	-
4. Bus and PUJ Line Markings				
a.) Bus and PUJ Line Markings	l.m.	-	-	-
5. Channelized Junction Pavement Marking				
a.) Channelized Junction Pavement Marking	l.m.	-	-	-
6. Yellow Box Line, w = 200mm				
a.) 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				
a.) 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.	6.00	1,830.00	10,980.00
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	4.00	1,095.00	4,380.00
c.) Numerals	pcs.	-	-	-
B. Signs				
1. No Entry Sign	pcs.	1.00	3,850.00	3,850.00
2. Give Way Sign	pcs.	1.00	4,780.00	4,780.00
C. Other Works				
1. Construction of Island	l.s.	1.00	29,575.00	29,575.00
2. Surface Preparation	sq.m.	202.40	50.00	10,120.00
3. Remove Existing ACP	sq.m.	32.00	250.00	8,000.00
TOTAL				178,815.00
Contingencies, 5%				8,940.75
CMS, 10%				17,881.50
Miscellaneous (fees, permits, etc.), 5%				8,940.75
Govt. Supervision, 2%				3,576.30
TOTAL COST				218,154.30

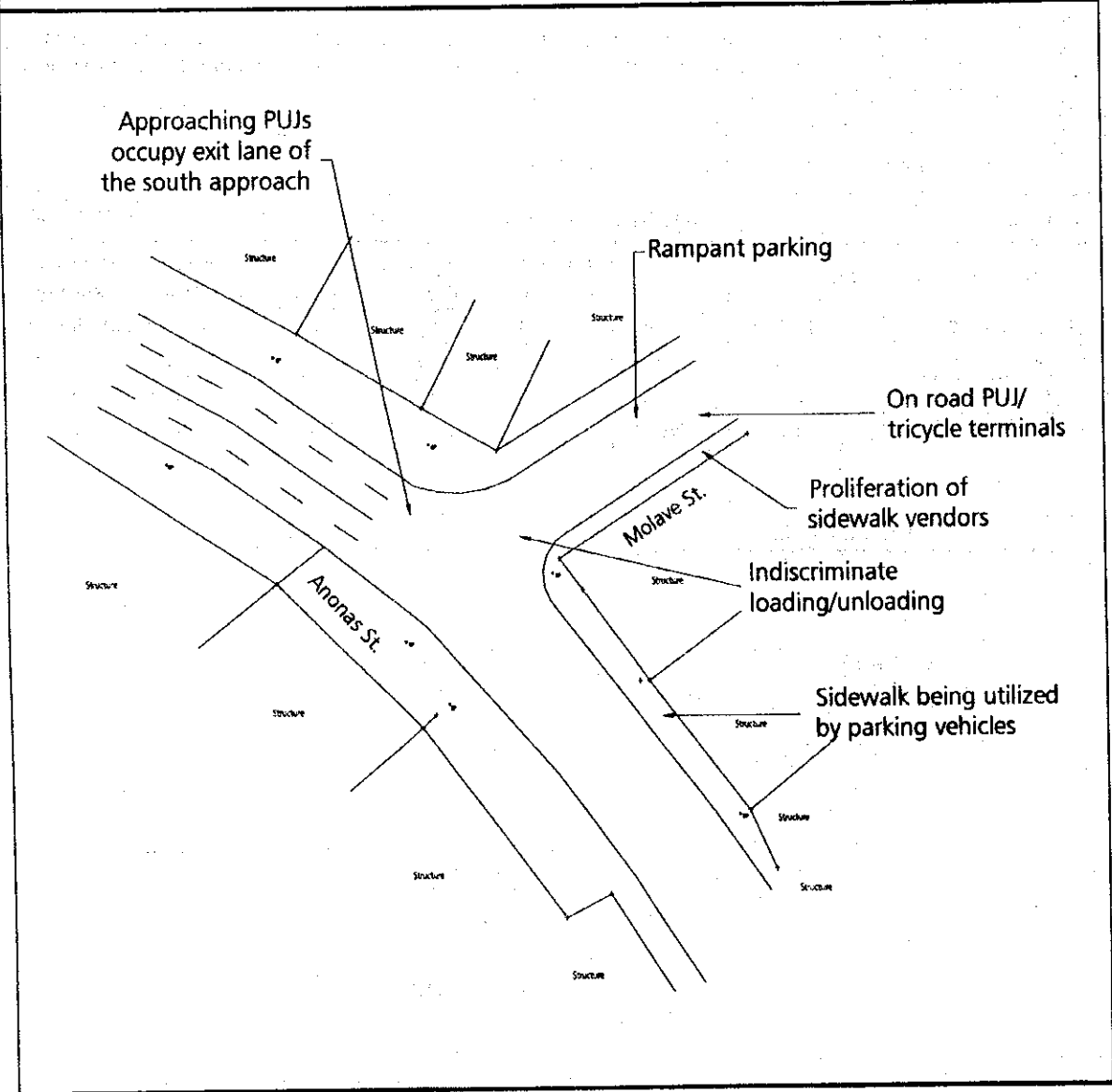
Name	Anonas Rd / Molave St	Code	QC-02
Sheet	Summary of Observations	LGU	Quezon City
Traffic Conditions	1) Molave is one-way from Anonas intersection up to Narra St intersection 2) Approaching jeepneys from the north occupy exit lane of approach from south as they turn left to Molave (east); the lack of painted center line or other barrier may be causing drivers to miscalculate the risk involved in their maneuvers. 3) Jeepneys load / unload passengers at Molave without fully exiting the intersection. 4) Prevalence of tricycle and jeepney terminals in the area. 5) Proliferation of sidewalk vendors along Molave St constricts flows. 6) Junction is near a major jeepney turnaround / terminal. 7) On-road parking on both sides is a common condition.		
	1) A T-type intersection along a curved alignment. Anonas St. has four-lanes and asphalt pavement in fair condition, whereas Molave St. is a two lane one-way road also paved with asphalt surfacing. 2) Generally, all street corners have adequate turning radius; however, due to inadequate lane markings or delineators traffic conflicts occur as vehicles tend to indiscriminately counter flow in making turning movement at the intersection. 3) Lack of adequate sidewalk 4) Area is host to strip-type commercial development;		

Signalization	None	Pavement Markings		Partial	Peak	08:00-09:00	
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: Anonas (NW)	12.0 m	697	1,034	NA	1,731	48.13%	Moderate
A2: Molave (NE)	8.0 m	NA	NA	NA	NA	NA	NA
A3: Anonas (SE)	12.0 m	NA	558	143	701	35.60%	Moderate
A4: None	None	None	None	None	None	None	None
Total		697	1592	143	2432		
Passenger Flows						9,800	



Name	Anonas Rd / Molave St	Code	QC-02
Sheet	Analysis	LGU	Quezon City

- 1) The indiscriminate loading / unloading of public utility jeepneys as they go into Molave is a major cause of a traffic bottleneck at the intersection.
- 2) The presence of sidewalk vendors force pedestrians to use roadway space thus constricting vehicular flow.
- 3) Counterflow vehicles occupy the lane of the northbound flow, causing vehicles to slow down or divert to the southbound lane, thus compounding the problem.
- 4) Queue propagation arising from nearby Anonas-Aurora Junction (southeast direction, endpoint of A3) extends all the way across the bridge. This induces counterflow behavior noted above.



Name	Anonas Rd / Molave St	Code	QC-02
Sheet	Proposed Improvements	LGU	Quezon City
Engineering	<ol style="list-style-type: none"> 1) Install pavement markings (double yellow, lane, directional arrows) 2) Construction of median barrier to restrict counterflow movement along the north approach to the intersection, from exit point of Anonas/Molave intersection up to the Anonas/Tindalo intersection just before the bridge. 3) Provision of pedestrian zebra crossing on Anonas and Molave. 4) Install signage " Rightmost Lane Must Go Straight" 		
Enforcement	<ol style="list-style-type: none"> 1) Prohibit parking along Molave St. from Anonas up to Narra St. along Molave 2) Strictly enforce traffic regulations. 3) Reclaim sidewalks from vendors. 4) Deploy enforcers periodically to guide phasing as well as coordinate movements at the intersection with signals on the Aurora-Anonas intersection. 		

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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : QC-02: Anonas Rd / Molave St (QUEZON CITY)
(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.	360.00	45.00	16,200.00
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 = 150mm, 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.	160.00	225.00	36,000.00
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 = 200mm	l.m.	66.00	200.64	13,242.24
<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.	2.00	907.50	1,815.00
2.) Combined Arrow = 2.44 sq.m. / each	pcs.	1.00	1,830.00	1,830.00
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	1.00	1,095.00	1,095.00
c.) Numerals				
B. Signs				
1. Loading/Unloading Sign	pcs.	-	-	-
2. No Loading/Unloading Sign	pcs.	-	-	-
3. No U - Turn Sign	pcs.	-	-	-
4. No Left Turn Sign	pcs.	-	-	-
C. Other Works				
1. New concrete curb	l.m.	80.00	270.00	21,600.00
2. Surface Preparation	sq.m.	80.00	50.00	4,000.00
3. Remove Existing ACP	sq.m.	12.00	250.00	3,000.00
4. Median Barrier (Concrete)	l.s.	1.00	30,000.00	30,000.00
TOTAL				128,782.24
Contingencies, 5%				6,439.11
CMS, 10%				12,878.22
Miscellaneous (fees, permits, etc.), 5%				6,439.11
Govt. Supervision, 2%				2,575.64
TOTAL COST				157,114.33

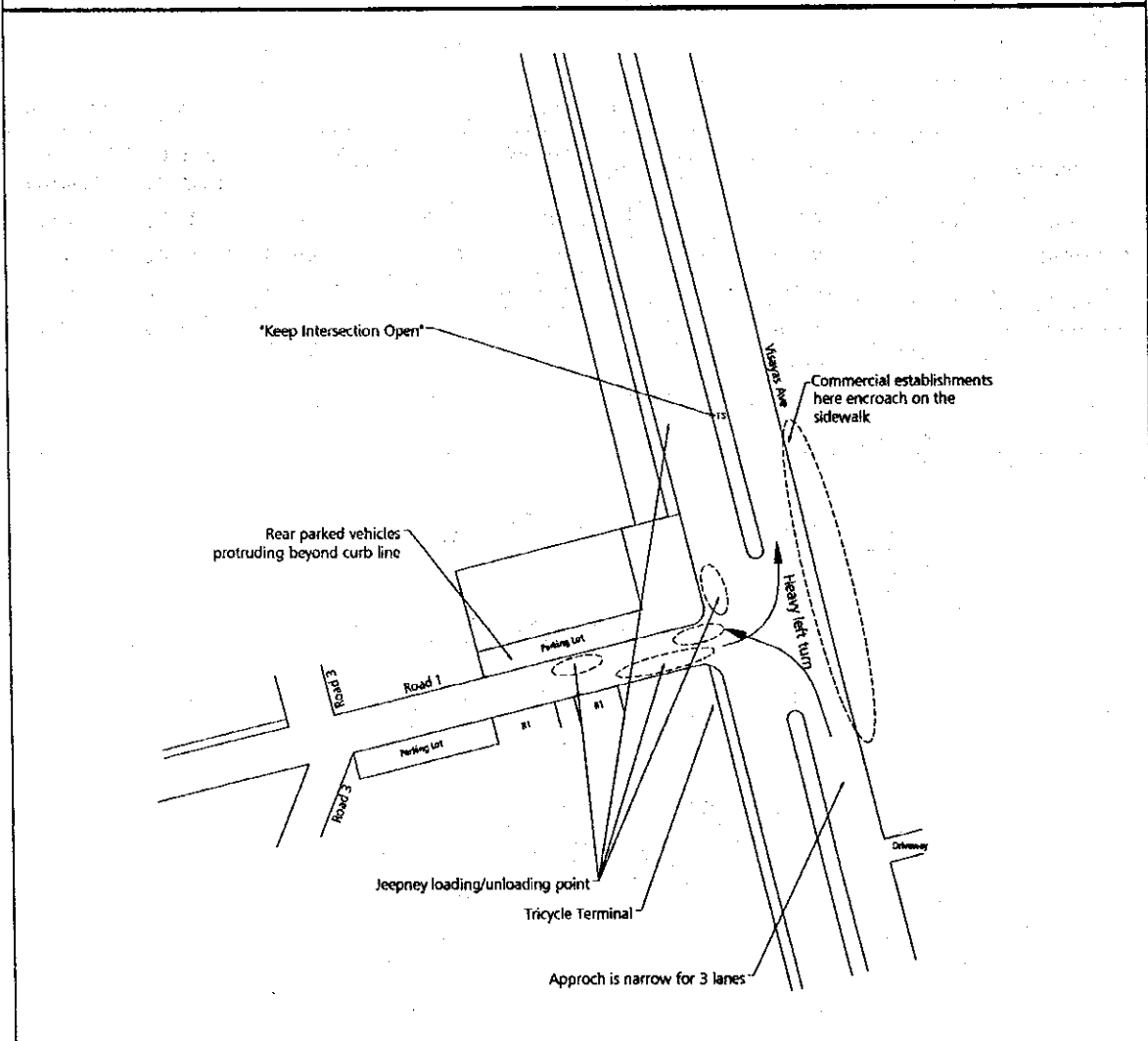
Name	Visayas Ave / Road 1		Code	QC-03			
Sheet	Summary of Observations		LGU	Quezon City			
Traffic Conditions	<ul style="list-style-type: none"> 1) Loading and unloading of jeepneys at corners block through and right turning vehicles. 2) Heavy left turn movement (light to heavy trucks, cars, jeepneys) from Visayas Ave. to Rd; 1 causes blockage of through traffic (along Visayas). 3) With perpendicular parking along Rd; 1 (on the side of MacDonalds), rears/tails of vehicles protrude beyond curb line. 4) Parking is not regulated along Visayas Ave. close to the intersection. 5) Low pedestrian movement. 						
	<ul style="list-style-type: none"> 1) A T-intersection, currently unsignalized. 2) Visayas Ave. with median island; left turn bay provided but substandard in width. 3) No sidewalk along Rd. 1 (one side fenced with GI sheets; other side occupied by parking). 4) Commercial stalls encroaching sidewalk ROW 						
Signalization	None		Pavement Markings	None		Peak	16:00-17:00
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: Visayas Ave (N)	19.0m	NA	688	208	896	32.95	Light
A2: None	None	None	None	None	None	None	None
A3: Visayas Ave (S)	19.2m	457	1,664	NA	2,121	22.30	Light
A4: Road 1	7.4m	245	NA	194	439	39.76	Light
Total			757	2,351	387	3,494	
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Quezon City QC-03 Visayas Ave. / Road 1</p>							

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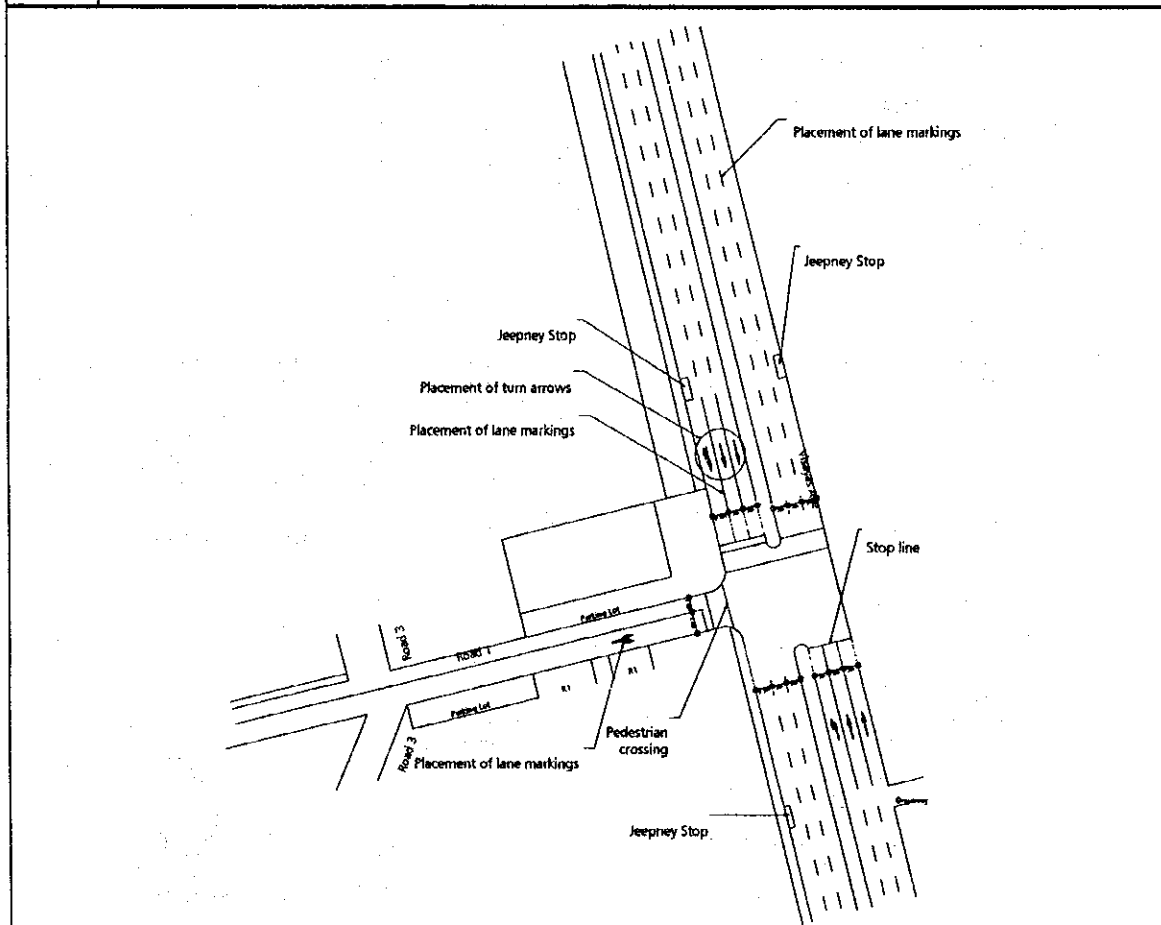
Small Scale Traffic Improvement Measures for Metro Manila

Name	Visayas Ave / Road 1	Code	QC-03
Sheet	Analysis	LGU	Quezon City

- 1) The left turn movements to and from Road 1 are very heavy, often staking priority over the flow of through traffic on Visayas Avenue. On the approach of Visayas Ave. (from QMC), left turn vehicles jump queue on the right lane, thereby blocking through traffic.
- 2) The designated left turn bay is narrow and is not enough for commercial vehicles (light trucks). This too often causes blockage of through traffic.
- 3) There is heavy parking demand close to the intersection. With very limited parking slots available, many vehicles have to use the carriageway. In particular, the number of parking spaces for McDonald's fastfood store is very few. Moreover, the dimension of parking spaces on the side of Road 1 is substandard. With perpendicular parking, the rear of the cars protrude beyond the curb line.
- 4) Loading and unloading of passengers at the corners of the intersection compound the problem of blockage. Commuters are mostly waiting for rides at these locations.
- 5) With the absence of signals and/or traffic enforcers, a gridlock often occurs with no one yielding to the other.



Name	Visayas Ave / Road 1	Code	QC-03
Sheet	Proposed Improvements	LGU	Quezon City
Engineering	<ol style="list-style-type: none"> 1) The current heavy traffic volume at the intersection warrants the installation of traffic signals. This would eliminate the conflicts of through and heavy left turns at the intersection, as well as lack of priority between movements. 2) The existing left turn bay at the Visayas Ave. approach needs to be widened to accommodate the light trucks. 3) Parking at the side of McDonald's should be made parallel or oblique instead of perpendicular. 4) Traffic signs (no parking and loading/unloading) have to be installed; pavement markings have to be applied to delineate traffic lanes and pedestrian crossings. 5) Jeepney stops should be located at least 30 meters away from the intersection. 		
	Enforcement	<ol style="list-style-type: none"> 1) Enforce No Loading / Unloading zone, prohibit waiting of passengers at the corners of the intersection. 2) Persuade / compel commercial establishments to modify their parking layouts. 3) In the absence of traffic signals, deploy enforcer to oversee phasing. Recommend pattern shown below. 	



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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION: QC03, Visayas Avenue / Road 1, (QUEZON CITY)
(cost summary)

A. Pavement Markings	Unit	Quantity	Unit Cost	Total Cost
<i>Longitudinal Lines:</i>				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length, w = 200mm	l.m	-	-	-
b) Solid White Lines, 200mm width	l.m	100.00	150.00	15,000.00
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	650.00	45.00	29,250.00
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	26.00	337.50	8,775.00
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	64.00	225.00	14,400.00
<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 W = 100mm	l.m	90.00	75.00	6,750.00
5. Channelized Junction Pavement Marking	l.m	-	-	-
6. Yellow Box Line, w= 150mm	l.m	-	-	-
7. Tricycle Stand Markings, width = 100mm	l.m	-	-	-
<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	-	-	-
4. Approach to Railroad Crossings	l.m	-	-	-
5. Diagonal Markings on Sealed Shoulders				
a) Outline, 150mm width	l.m	-	-	-
b) Diagonal Bars, 300mm width	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	1.00	1,830.00	1,830.00
3) Turn Arrow = 1.46 sq. m / each	pcs	3.00	1,095.00	3,285.00
c) Numerals	pcs	-	-	-
B. Signs				
1. No Parking Sign	Units	5.00	2,718.00	13,590.00
2. Pedestrian Crossing Sign	Units	2.00	3,850.00	7,700.00
3. Stop Sign	Units	1.00	2,718.00	2,718.00
4. Directional Sign	Units	-	-	-
5. Bus / PUJ Stop Sign	Units	-	-	-
6. No Loading / Unloading Sign	Units	3.00	2,718.00	8,154.00
C. Other Works				
1. Reprogramming of Traffic Signal	l.s.	-	-	-
2. Pedestrian Steel Railing	l.m.	-	-	-
3. Sidewalk Improvement				
a) Excavation & Subgrade Preparation	l.m	-	-	-
b) 4" Concrete Sidewalk	l.m	-	-	-
4. Repair Damaged Pavement				
a) Excavation & Subgrade Preparation	sq.m	-	-	-
b) 8" Concrete Pavement	sq.m	-	-	-
TOTAL				131,957.00
Contingencies, 5%				6,597.85
CMS, 10%				13,195.70
Miscellaneous (fees, permits, etc), 5%				6,597.85
Govt. Supervision, 2%				2,639.14
TOTAL COST				160,987.54

Name	Zabarte Rd. / Quirino Hwy	Code	QC-04
Sheet	Summary of Observations	LGU	Quezon City

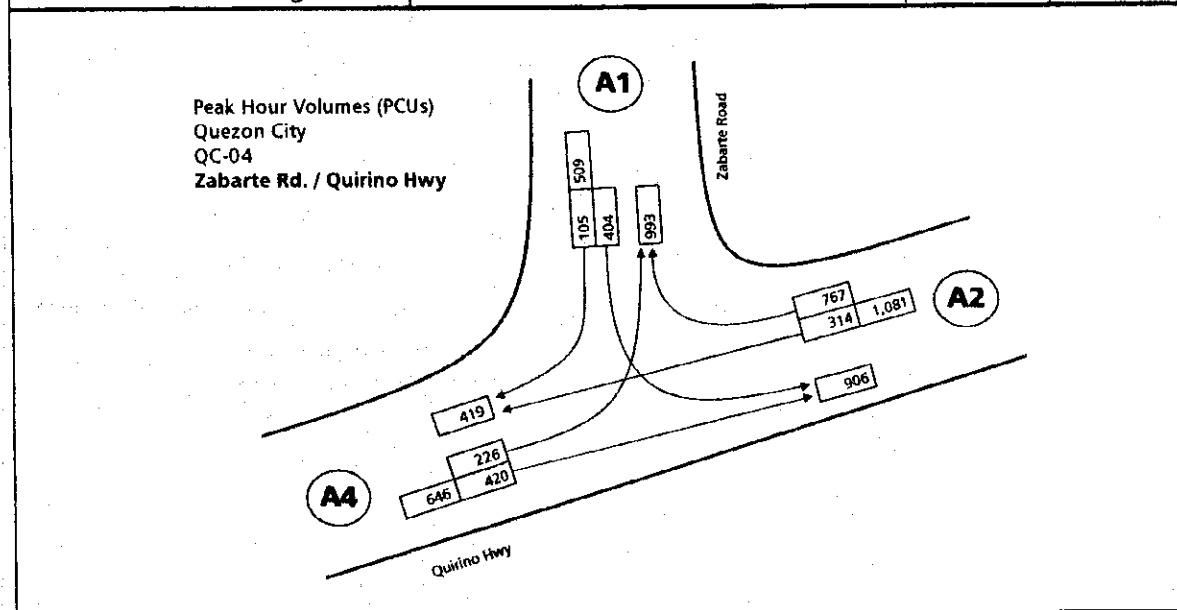
Traffic Conditions

- 1) Very slow speed for all vehicles negotiating right and left turns.
- 2) Uncontrolled loading and unloading of passengers in spite of the presence of enforcers.
- 3) Makeshift barriers placed by enforcers in front of the police outpost narrows through path of vehicles.

Physical Conditions

- 1) An unsignalized T-intersection.
- 2) Zabarte Road has a steep downward slope towards the intersection.
- 3) Asphalt pavement in good condition.
- 4) Sidewalks provided; sidewalk along Quirino Highway totally blocked by police outpost.
- 5) Uneven road widths, in approaches. Northwest (A4) caters to highest volume.

Signalization	None	Pavement Markings	None	Peak	19:00-20:00		
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: Zabarte Rd	13.5m	404	NA	105	509	49.76	Light
A2: Quirino Hwy (E)	6.8m	NA	314	767	1,081	46.72	Light
A3: None	None	None	None	None	None	None	None
A4: Quirino Hwy (W)	10.8m	226	420	NA	646	54.21	Light
Total		630	734	872	2,235		
Passenger Flows							

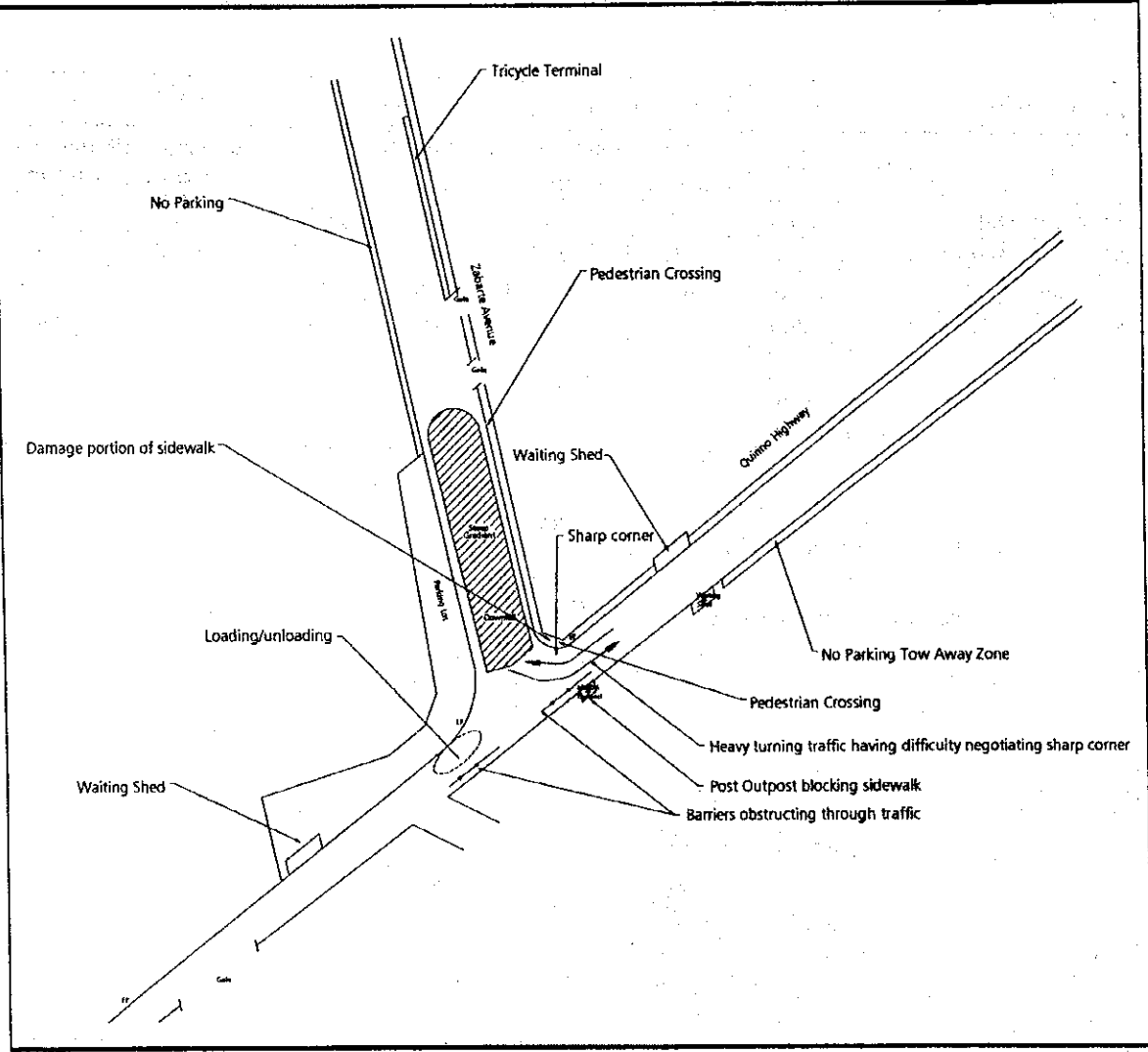


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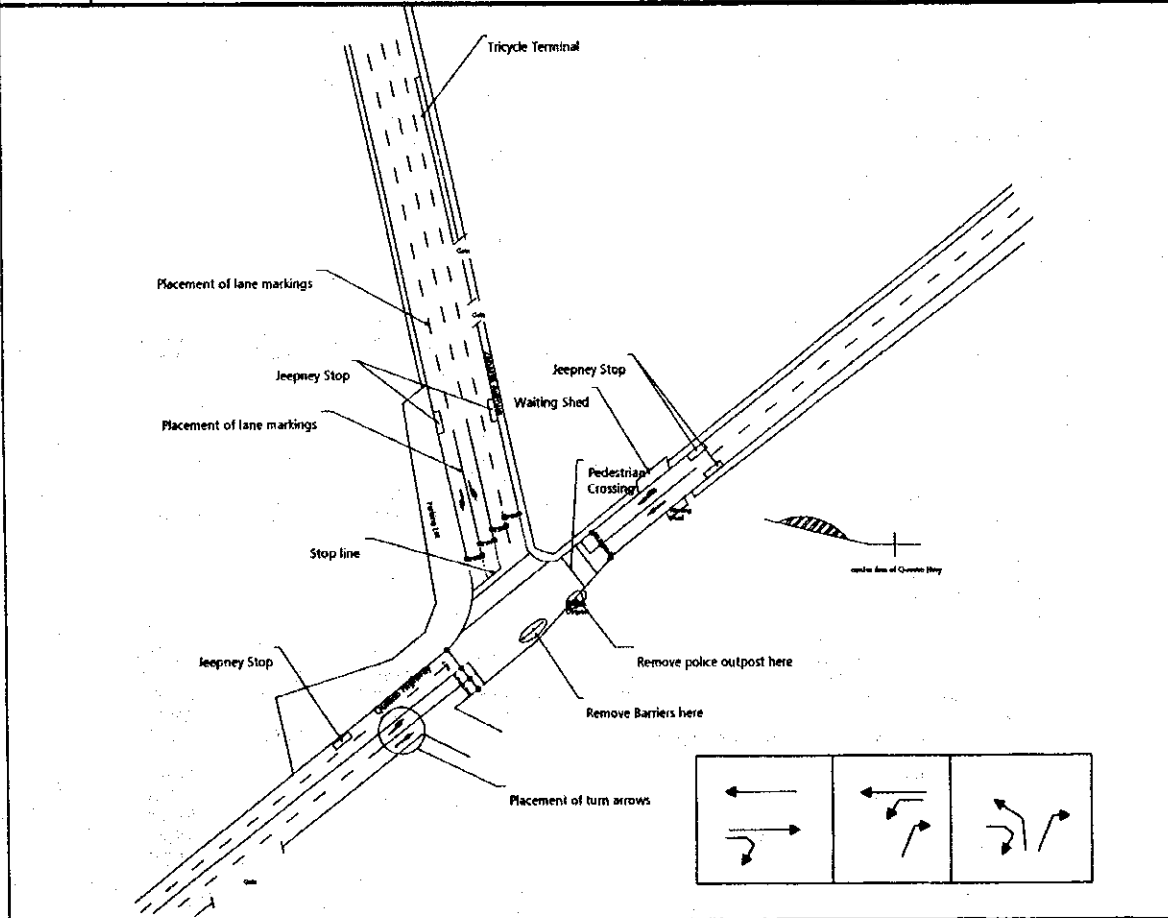
Small Scale Traffic Improvement Measures for Metro Manila

Name	Zabarte Rd. / Quirino Hwy	Code	QC-04
Sheet	Analysis	LGU	Quezon City

- 1) The turning movements (left turn from Zabarte to Quirino Highway and right turn from Quirino to Zabarte) are most problematic in this intersection. They account for the heaviest flow. Aside from this, the sharp turn compounded by the steep gradient of Zabarte Road, severely slows down the traffic movement.
- 2) The sharp curve may be difficult to modify because of the existence of numerous and huge concrete posts at the corner of the intersection (side of Sacred Heart Academy of Novaliches).
- 3) It is hard to understand why barriers are placed in front of the police outpost. These barriers are in direct path of the through traffic along Quirino Highway. It is also difficult to understand why the police outpost is situated there. The outpost occupies the whole width of the sidewalk leaving no space for pedestrians.
- 4) There is an observed laxity regarding the uncontrolled loading and unloading of passengers at the corner of the intersection. This practice causes blockage of through and turning traffic.



Name	Zabarte Rd. / Quirino Hwy	Code	QC-04
Sheet	Proposed Improvements	LGU	Quezon City
Engineering	<ol style="list-style-type: none"> 1) The most important engineering improvement that needs to be done is to level the approach of Zabarte Rd. This will be costly but will help a lot in easing up the congestion at the intersection. 2) Based on the directional vehicular volumes, signals will help in controlling traffic flow at the intersection. The installation of signals will also lessen the manpower demand on enforcers at this intersection. 3) The barriers placed on the carriageway should be removed. They are not only traffic hazards; they obstruct the traffic flow. 4) As to the police post, it is best to transfer it to another location. 5) Install pavement markings (double yellow lane, directional arrows, loading / unloading zone) 		
Enforcement	<ol style="list-style-type: none"> 1) Enforcers should give more attention to penalizing uncontrolled loading and unloading of passengers at the corner of the intersection. 2) Highest priority is to speed up flow on A2 (Quirino Highway) leg, which has the highest volume but narrowest width. 3) Deploy enforcers to oversee phasing, as shown below. 		

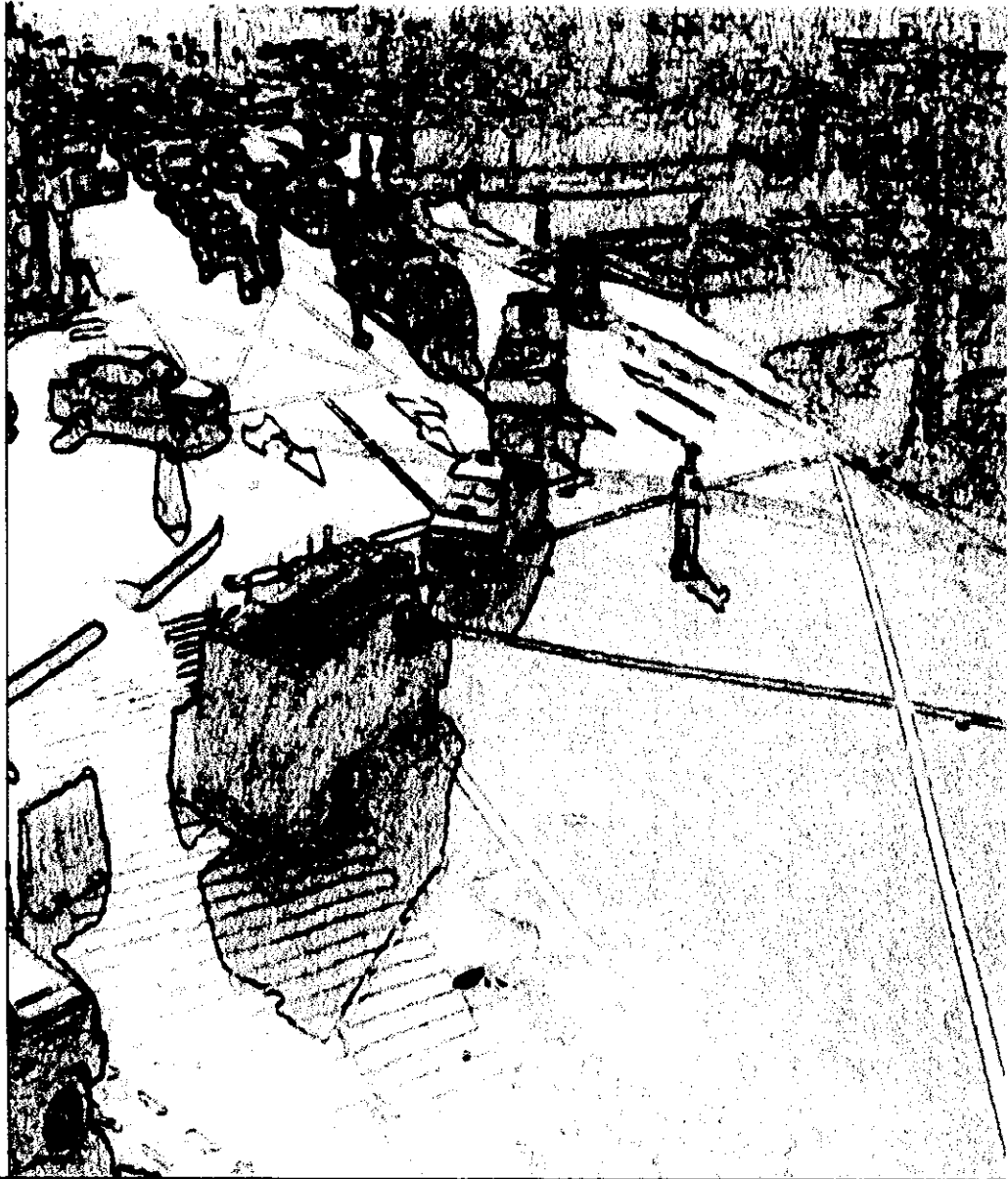


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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION: QC04, Zabarte Road / Quirino Highway (QUEZON CITY)
(cost summary)

A. Pavement Markings	Unit	Quantity	Unit Cost	Total Cost
<i>Longitudinal Lines:</i>				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length, w = 150mm	l.m	230.00	45.00	10,350.00
b) Solid White Lines, 150mm width	l.m	70.00	112.50	7,875.00
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	510.00	45.00	22,950.00
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	12.00	337.50	4,050.00
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	41.00	225.00	9,225.00
<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	9.00	75.00	675.00
5. Channelized Junction Pavement Marking	l.m	-	-	-
6. Yellow Box Line, w= 150mm	l.m	-	-	-
7. Tricycle Stand Markings, width = 100mm	l.m	-	-	-
<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	-	-	-
4. Approach to Railroad Crossings	l.m	-	-	-
5. Diagonal Markings on Sealed Shoulders				
a) Outline, 150mm width	l.m	-	-	-
b) Diagonal Bars, 300mm width	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	2.00	907.50	1,815.00
2) Combined Arrow = 2.44 sq.m / each	pcs	1.00	1,830.00	1,830.00
3) Turn Arrow = 1.46 sq. m / each	pcs	3.00	1,095.00	3,285.00
c) Numerals	pcs	-	-	-
B. Signs				
1. No Parking Sign	Units	-	-	-
2. Pedestrian Crossing Sign	Units	4.00	3,850.00	15,400.00
3. Stop Sign	Units	-	-	-
4. Directional Sign, "Keep Right"	Units	-	-	-
5. PUJ Loading/Unloading Sign	Units	5.00	2,716.00	13,580.00
C. Other Works				
1. Reprogramming of Traffic Signal	l.s.	-	-	-
2. Pedestrian Steel Railing	l.m.	-	-	-
3. Removal of Plants on Median	l.s.	-	-	-
3. Leveling of Approach of Zabarte Road				
a) Breaking and Removal of existing Asphalt pavement	sq.m	100.00	85.00	8,500.00
b) Excavation and Leveling of Road	cu.m	61.56	50.00	3,078.00
c) Placing and compact base course material	cu.m	20.00	350.00	7,000.00
d) Asphalt Primer	Sq. m	100.00	36.00	3,600.00
e) Placement and compaction of new Asphalt pavement (100mm)	cu.m	10.00	6,712.00	67,120.00
TOTAL				190,458.00
Contingencies, 5%				9,522.90
CMS, 10%				19,045.80
Miscellaneous (fees, permits, etc), 5%				9,522.90
Govt. Supervision, 2%				3,809.16
TOTAL COST				232,358.76



San Juan

Individual Information Sheets for the Traffic Bottleneck Points

SJ-01 Wilson St / P Guevarra St

SJ-02 Ortigas Ave / Xavier St / Madison St



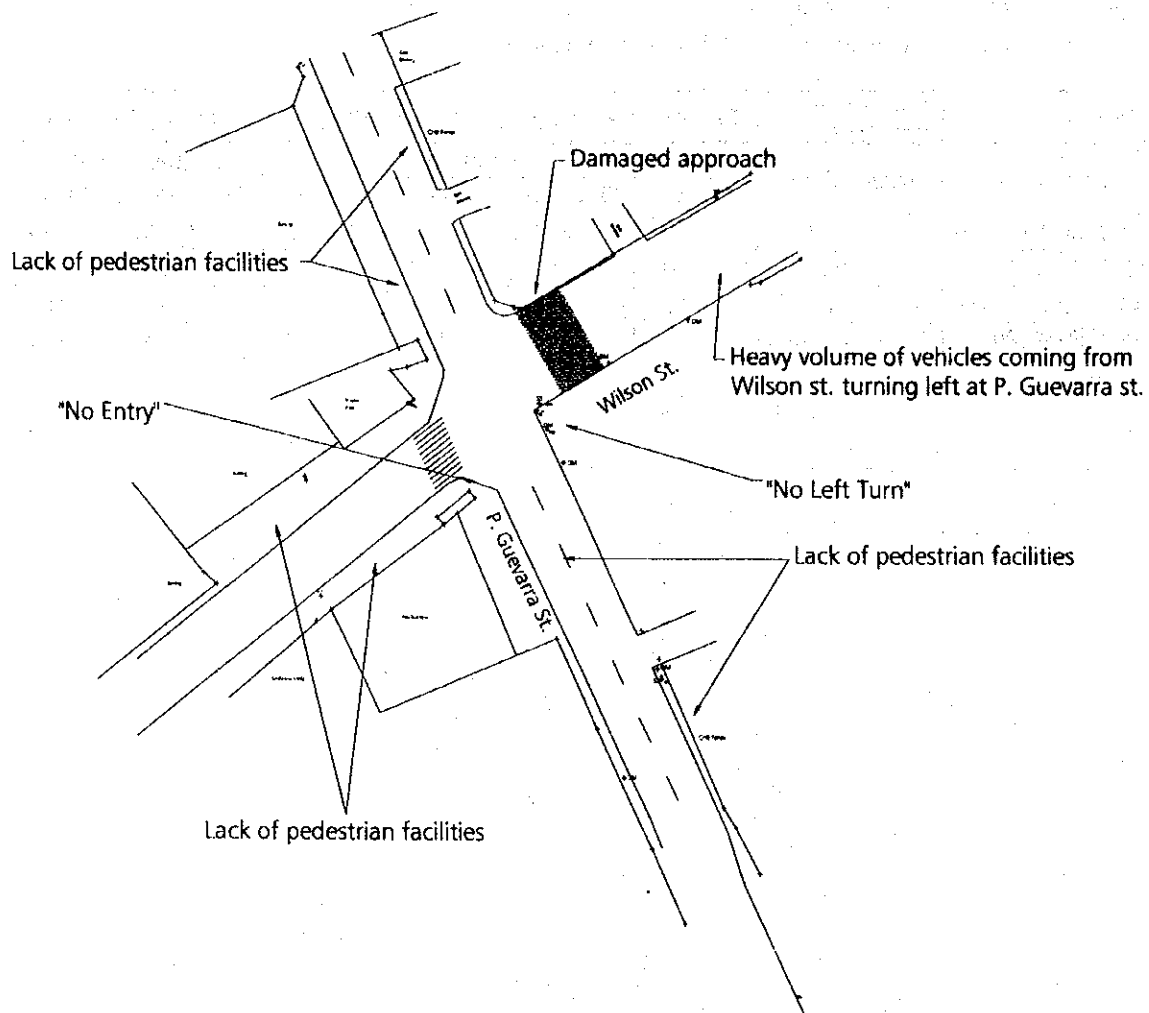
Name	Wilson St / P Guevarra				Code	SJ-01	
Sheet	Summary of Observations				LGU	San Juan	
Traffic Conditions	<p>1) A manhole near the center of the intersection is slightly lower than the pavement level. This causes some vehicles to slow down and experience a "bump" when crossing the intersection.</p> <p>2) Heavy volume of vehicles coming from Wilson St. turning left to P. Guevarra St.</p>						
Physical Conditions	<p>1) The bottleneck point consists of four intersecting roads, with skewed centerlines.</p> <p>2) Wilson St. has two sections with different road widths and number of lanes. One section has three lanes with a total width of 9.21 meters; whereas, the other has two lanes measuring 6.13 meters.</p> <p>3) P. Guevarra St., on the other hand, has only two lanes. Both roads have one section allowing one way movement. P. Guevarra St. is paved with asphalt concrete in fair condition; however, both approaches of Wilson St. have uneven surfaces, which affect the smooth flow of vehicles at the said intersection.</p> <p>4) All street corners have inadequate turning radius.</p>						
Signalization	None, but proposed under TEC	Pavement Markings	With markings		Peak	9:00-10:00	
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: P Guevarra (N)	8.0m	NA	605	30	635	18.87%	Light
A2: Wilson (E)	9.21m	618	851	574	2,043	28.68%	Light
A3: P Guevarra (S)	8.0m	NA	NA	NA	NA	NA	Light
A4: Wilson (W)	6.13m	137	NA	149	286	12.01%	Light
Total		755	1,456	753	2964		
Passenger Flows						6,600	
<p>Peak Hour Volumes (PCUs) San Juan SJ-01 Wilson St / P Guevarra</p>							

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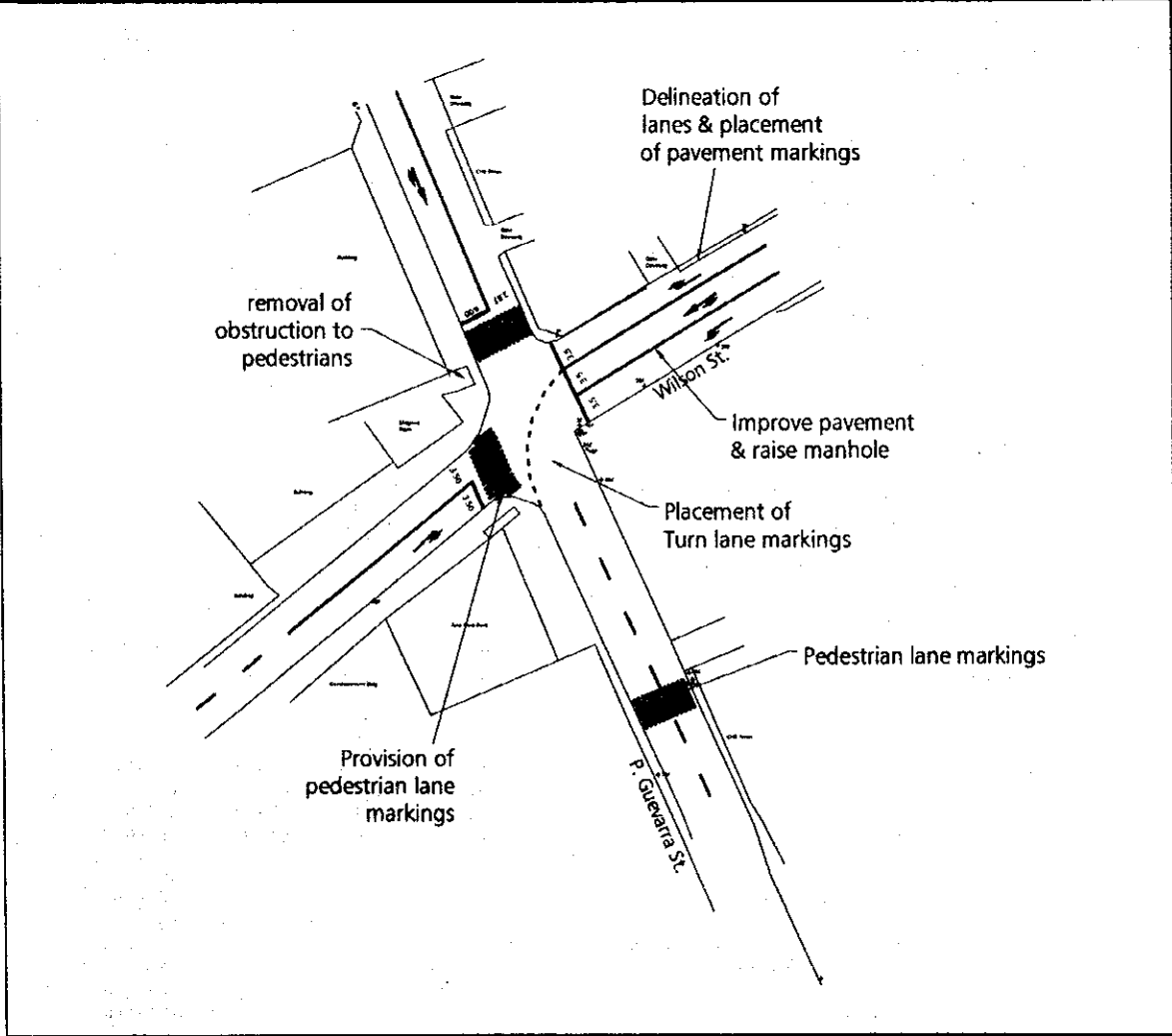
Small Scale Traffic Improvement Measures for Metro Manila

Name	Wilson St / P Guevarra	Code	SJ-01
Sheet	Analysis	LGU	San Juan

- 1) Poor facilities for pedestrians evidenced by sidewalks littered with debris, with many posts (electrical and otherwise) and advertisement board, which are obstacles to pedestrian movement. Also, sidewalks are narrow, exacerbated by parked vehicles which are on the walkway, forcing pedestrians to use the street instead. However, pedestrian volumes are very light.
- 2) No lane markings and directional arrows exist for guiding the directionality of flows.
- 3) Pavement on approach northeast from Wilson is strewn with dried concrete splatter. The uneven surface causes vehicles to slow down unnecessarily.
- 4) Approach on P. Guevarra has a portion of broken pavement next to the curb, which causes vehicles to avoid it, thus constricting the approach



Name	Wilson St / P Guevarra	Code	SJ-01
Sheet	Proposed Improvements	LGU	San Juan
Engineering	<ol style="list-style-type: none"> 1) Rehabilitate pavement to remove roughness, unwanted concrete splatter, depression at manhole. 2) Install pavement markings (lane, arrow guides). 3) Removal of obstructions on sidewalks. 4) Provide pedestrian lane markings. 		
Enforcement	<ol style="list-style-type: none"> 1) Until automatic signals are installed, assign traffic enforcers at the intersection to control phasing and timings. 2) Give 70% of ample time to traffic from Wilson Street (Northeast) 20% for vehicles from P. Guevarra, and 10% to vehicles coming from Wilson (Southwest). 		



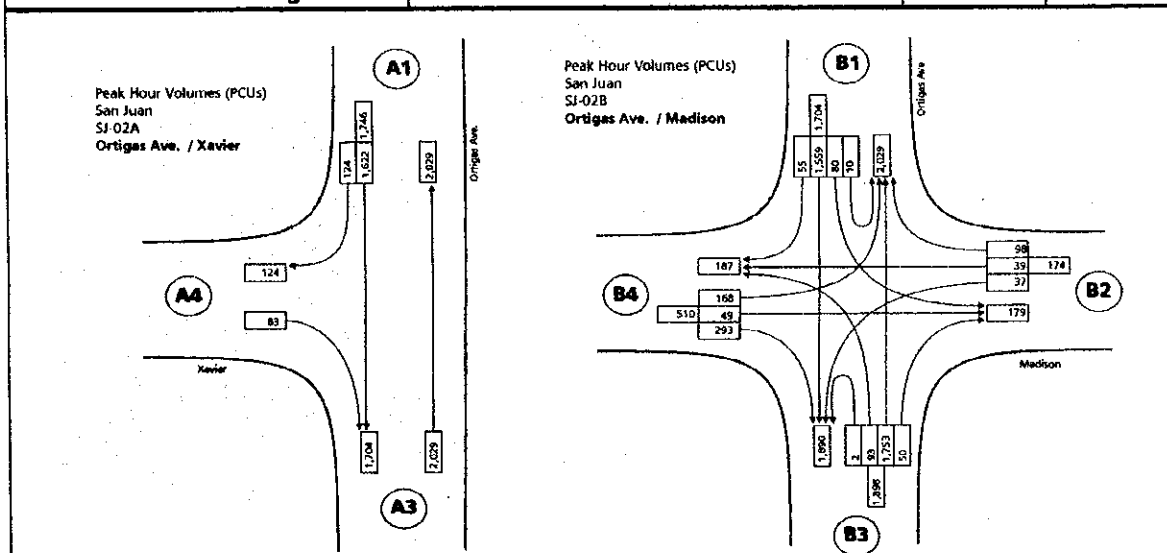
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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : SJ-01: Wilson St / P Guevarra (SAN JUAN)
(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	I.m.	-	-	-
b.) Solid White Lines, 150mm width	I.m.	-	-	-
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	I.m.	120.00	150.00	18,000.00
b.) Broken Lines, w = 150mms, 200mm width	I.m.	380.00	46.00	17,480.00
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	I.m.	-	-	-
b.) Single Yellow Line with broken White Lines (100-150mm)	I.m.	-	-	-
4. Edge Lines				
a.) Pavement Edge (Shoulders)	I.m.	-	-	-
b.) Median Edge	I.m.	-	-	-
5. Continuity Lines				
a.) Continuity Line	I.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid lines) white, width = 450mm	I.m.	18.50	337.50	6,243.75
2. Give Way (Yield lines)	I.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	I.m.	240.00	225.00	54,000.00
b.) Cross Walks (Signalized), width = 300mm	I.m.	-	-	-
<i>Other Lines</i>				
1. Turn Lines (Broken Lines)	I.m.	26.00	46.00	1,196.00
2. Parking Bay Lines				
a.) Parallel Bays, width = 100mm	I.m.	-	-	-
b.) Angle Bays	I.m.	-	-	-
3. Painted Median Islands	I.m.	-	-	-
4. Bus and PUJ Lane Markings	I.m.	-	-	-
5. Channelized Junction Pavement Marking	I.m.	-	-	-
6. Yellow Box Line, w = 200mm	I.m.	-	-	-
<i>Other Markings</i>				
1. Approach Markings to Island and Obstructions	I.m.	-	-	-
2. Chevron Markings	I.m.	-	-	-
3. Curb Markings to Parking Restrictions	I.m.	-	-	-
4. Approach to Railroad Crossings	I.m.	-	-	-
5. Loading/Unloading Zone Lines, (w=200mm)	I.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.	2.00	-	-
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	3.00	-	-
c.) Numerals				
B. Signs				
1. Loading/Unloading Sign	pcs.	-	-	-
2. No Loading/Unloading Sign	pcs.	-	-	-
3. Parking Area	pcs.	-	-	-
C. Other Works				
1. Surface Preparation	sq.m.	102.50	50.00	5,125.00
2. Seal Coat/AC Overlay	cu.m.	2.70	25,000.00	67,500.00
3. Tack Coat	ton	1.00	22,500.00	22,500.00
4. Removal of obstructions on sidewalks	l.s.	1.00	5,000.00	5,000.00
TOTAL				197,044.75
Contingencies, 5%				9,852.24
CMS, 10%				19,704.48
Miscellaneous (fees, permits, etc.), 5%				9,852.24
Govt. Supervision, 2%				3,940.90
TOTAL COST				240,394.60

Name	Ortigas Ave / Xavier / Madison			Code	SJ-02		
Sheet	Summary of Observations			LGU	San Juan		
Traffic Conditions	1) Traffic conditions at the intersections of Ortigas Avenue with Madison St and Xavier St are greatly influenced by the traffic generated by the nearby schools, namely Xavier School and ICA.						
	2) It was observed that the occupancy of most of the vehicles (predominantly private cars) entering and leaving the area was quite low.						
	3) The demand for parking in the vicinity of the school is quite high and parking duration was also long. Vehicles would double park while waiting for students' dismissal.						
	4) Vehicles loading and unloading at Xavier School would often block through traffic.						
Physical Conditions	1) Xavier St and Madison St are both private roads.						
	2) The intersection of Xavier St with Ortigas Avenue is basically a T-intersection since Ortigas Avenue is divided by a concrete barrier.						
	3) The North East approach of Madison St caters primarily to residents of North Greenhills Subdivision, which restricts entry into the subdivision. The South approach serves the nearby schools and access to vehicles from other parts of the city.						
Signalization	None	Pavement Markings	None	Peak	16:00-17:00		
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: Ortigas (N)	21.0m	NA	1,622	124	1,746	4.10%	Medium
A2: None	None	None	None	None	None	None	None
A3: Ortigas (S)	21.0m	NA	2,029	NA	2,029		Medium
A4: Xavier (W)	9.9m	NA	NA	83	83	8.64%	Medium
	Total		3,650	207	3,857		
B1: Ortigas (N)	21.4m	90	1,559	55	1,704	17.57%	Medium
B2: Madison (E)	10.0m	37	39	98	174	2.22%	Medium
B3: Ortigas (S)	20.7m	95	1,753	50	1,898	19.98%	Medium
B4: Madison (W)	10.0m	168	49	293	510	3.12%	Medium
	Total	390	3,400	496	4,285		
Passenger Flows							

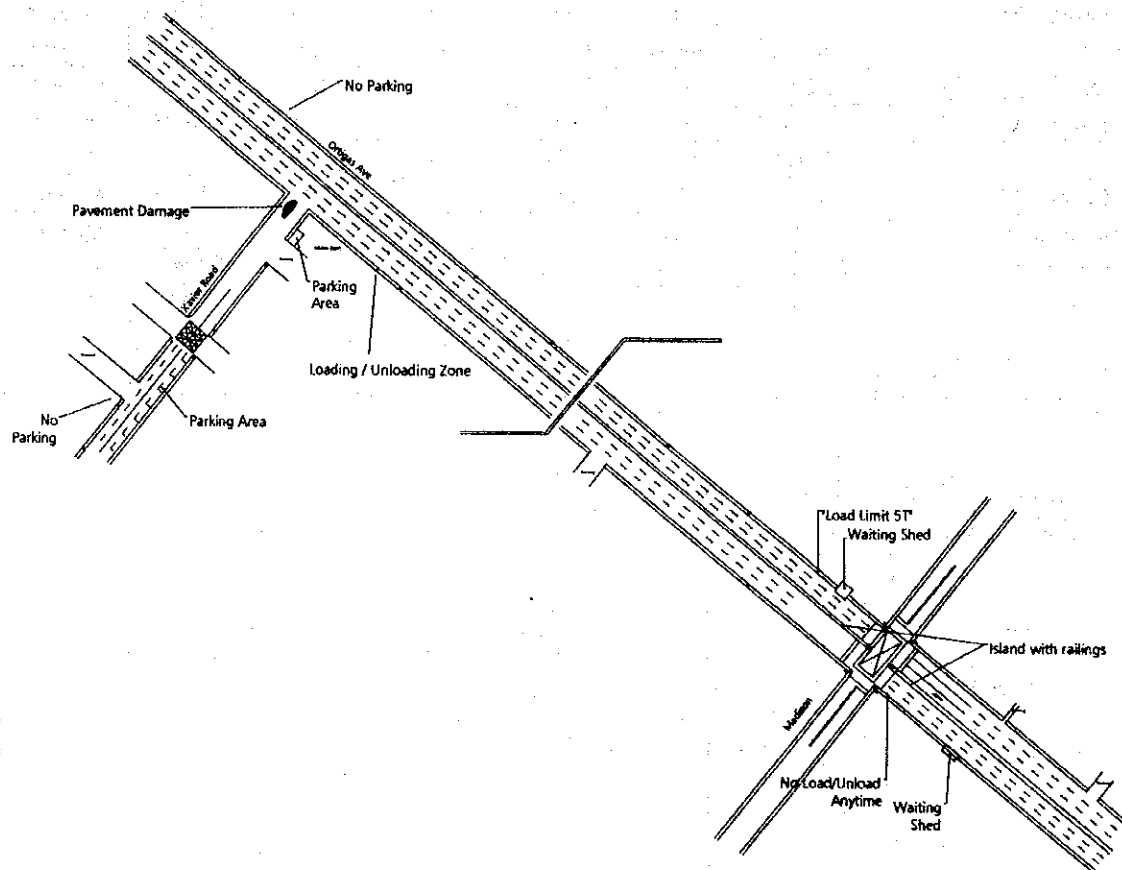


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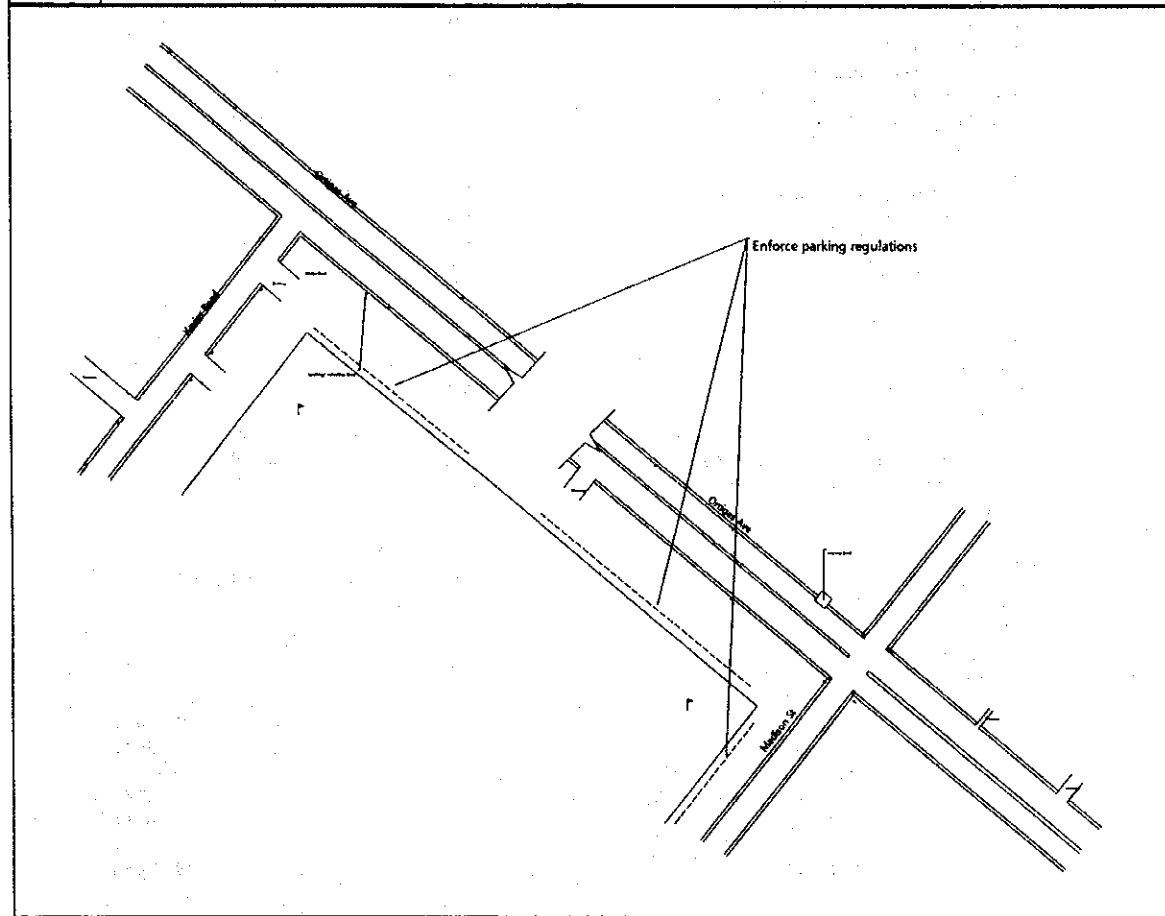
Small Scale Traffic Improvement Measures for Metro Manila

Name	Ortigas / Madison	Code	SJ-02
Sheet	Analysis	LGU	San Juan

- 1) Traffic congestion is brought about by schools in the area with no internal provisions for parking. Although, majority of the cars were chauffeur-driven, the vehicles were observed to be parked on adjoining roads for the duration of school hours during the day.
- 2) At start of classes and during dismissal, a number of vehicles would clog up the exit lanes of Xavier and Madison while vehicles were loading and unloading at the school entrance. As a consequence, queue propagation spills to Ortigas Avenue (even reaching up to Santolan Road); thereby affecting traffic flow all the way north to Pinaglabanan.
- 3) Extend and scale of traffic is too big for the few traffic enforcers deployed in the area. Although security guards of the village have been deputized, the extent of assistance offered by them is limited to the areas immediately surrounding the subdivision.
- 4) No substantial improvement is possible without the cooperation or active participation of the schools in the area.



Name	Ortigas / Madison	Code	SJ-02
Sheet	Proposed Improvements	LGU	San Juan
Engineering	<ol style="list-style-type: none"> 1) Considering the nature of the problem in the area, small-scale engineering improvements will have little impact. 2) The San Juan LGU (with the affected schools therein) should identify/develop parking facility to cater to the demands of the schools and the nearby establishments. 3) Placement of barriers to delineate no-parking zones and tow-away zones. 4) Request Xavier University to add another gate for loading / unloading, as present system is concentrated at one point. 		
Enforcement	<ol style="list-style-type: none"> 1) It is that the Local Government Unit strongly consider imposing stricter penalties for violations on parking regulations. 2) Incentives for carpooling should be identified and pursued by the LGU and schools. 3) Additional manpower for traffic enforcement should be deployed and trained to function in a coordinate manner. 4) Strict implementation of No Parking and Tow Away Zone regulations. 5) Work-out one-way system for Xavier and Madison. 		



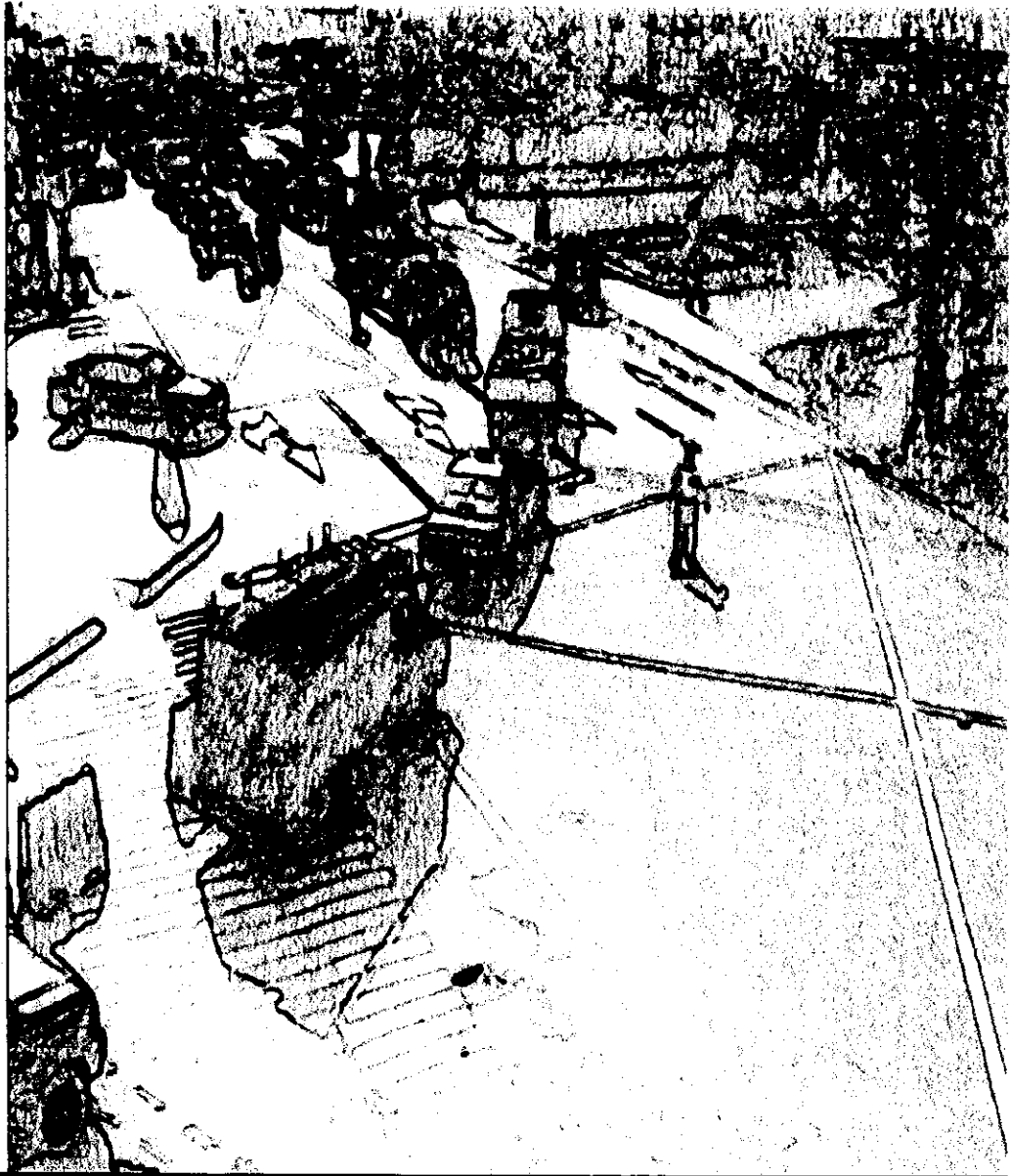
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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION: SJ-02 : Ortigas Avenue / Xavier St. / Madison St. (SAN JUAN)
(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	-	112.50	-
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	-	-	-
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	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				
a) Painted Median Islands	l.m	-	-	-
4. BUS and PUJ Lane Markings				
a) BUS and PUJ Lane Markings	l.m	-	-	-
5. Channelized Junction Pavement Marking				
a) 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				
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 Parking Sign	pcs	6.00	3,850.00	23,100.00
2. Tow Away Zone Sign				
C. Other Works				
1. Barriers				

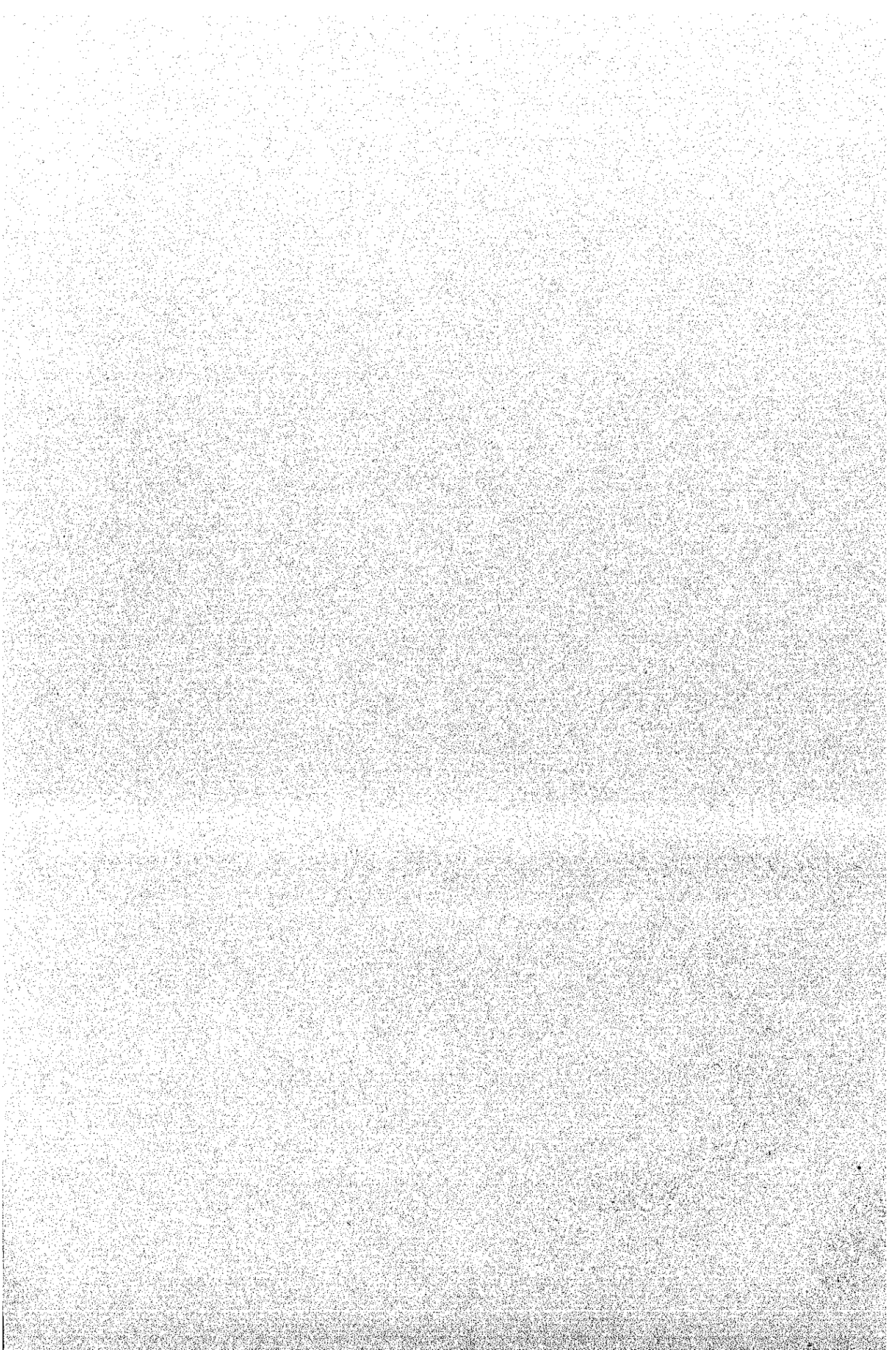
TOTAL				23,100.00
Contingencies, 5%				1,155.00
CMS, 10%				2,310.00
Miscellaneous (fees, permits, etc), 5%				1,155.00
Govt. Supervision, 2%				462.00
				=====
TOTAL COST				28,182.00



Taguig

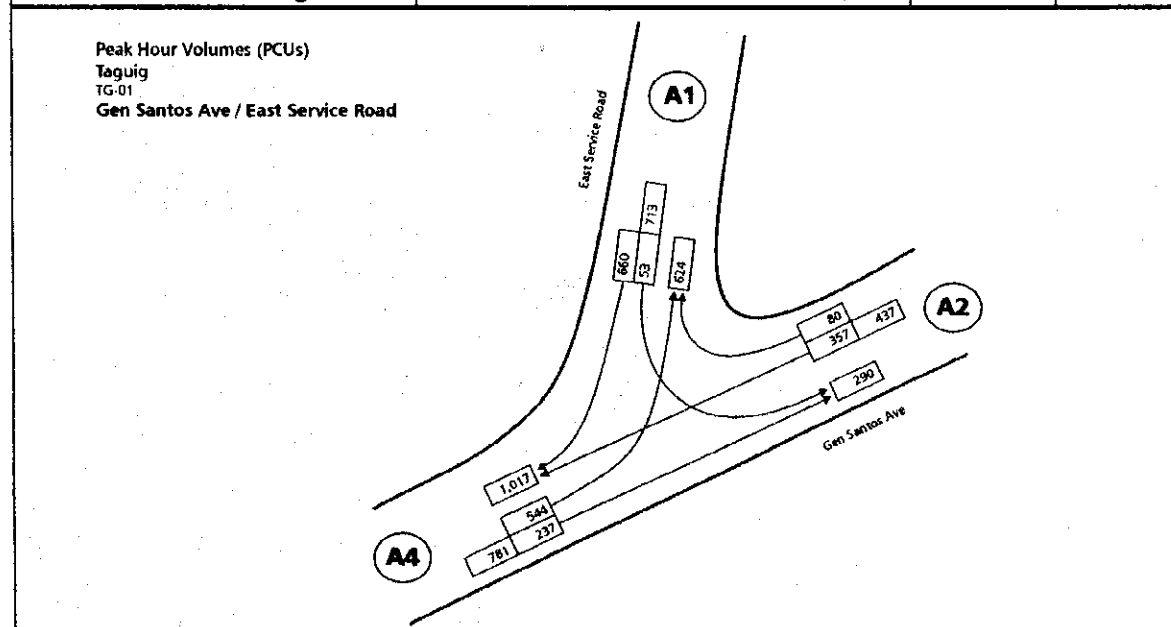
Individual Information Sheets for the Traffic Bottleneck Points

- TG-01 Gen Santos Ave / East Service Road
- TG-02 Gen Santos Ave / ML Quezon
- TG-03 Bagong Tanyag / East Service Road
- TG-04 ML Quezon @ Bagumbayan – Sucat Boundary



Name	Gen Santos Ave / East Service Road	Code	TG-01
Sheet	Summary of Observations	LGU	Taguig
Traffic Conditions	1) Junction operation highly dependent on control at Bicutan junction with South Luzon expressway.		
	2) Control of intersection difficult to be independent from Bicutan junction; problems associated are line of sight of enforcers for these two junctions, plus the fact that the other junction is outside jurisdiction of Taguig;		
	3) Presence of numerous vendors occupying sidewalk and even carriageway reduce drastically intersection capacity;		
	4) Heavy pedestrian volume as area is near market and schools.		
Physical Conditions	1) A T-type intersection paved with asphalt concrete in fair condition. Gen Santos Ave has four undivided lanes; whereas the SLEx East Service Road has three lanes.		
	2) The area becomes flooded during heavy rains due to a clogged local drainage system. Traffic condition at the said intersection is further aggravated by the presence of the railway crossing which lacks adequate surfacing. Vehicles tend to slow down at this area.		
	3) Traffic signal system is not functioning and the lack of pedestrian facilities aside from proliferation of sidewalk vendors aggravate the condition of the bottleneck point during peak hours.		

Signalization	With signal, but inoperative	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: East Service Rd	10.0 m	53	NA	660	713	31.08%	Heavy
A2: Gen Santos Ave	12.5 m	NA	357	80	437	17.40%	Heavy
A3: None	None	None	None	None	None	None	None
A4: East Service Rd	13.0 m	544	237	NA	781	26.35%	Heavy
Total		597	594	740	1931		
Passenger Flows						4,600	

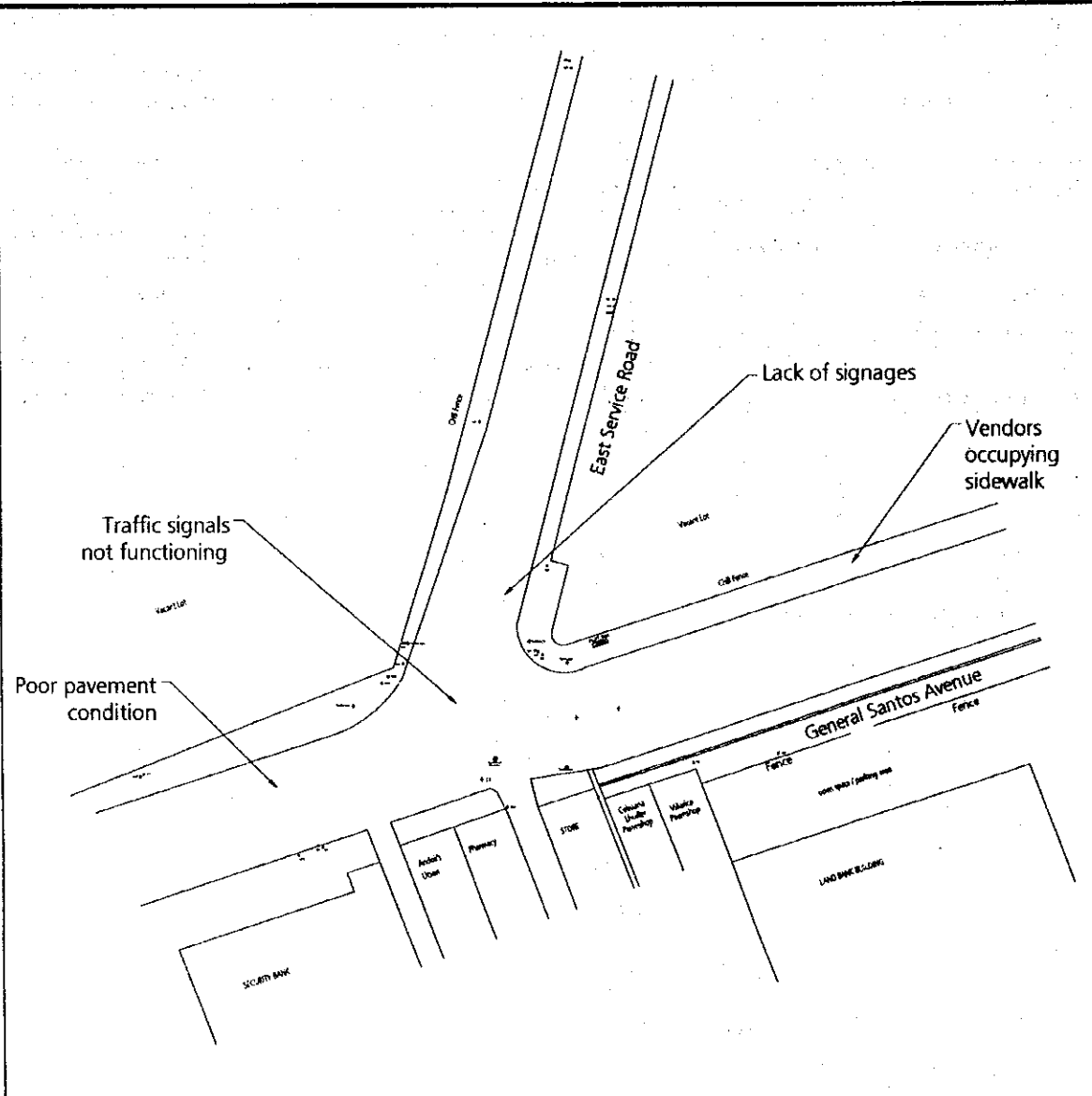


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Small Scale Traffic Improvement Measures for Metro Manila

Name	Gen Santos Ave / East Service Road	Code	TG-01
Sheet	Analysis	LGU	Taguig

- 1) The three-legged junction is configured in such a way that the major flows are along the East Service Road (A1 - A4, but is geometrically not in a straight line). As such, intersection operation tends to favor the flows from A4 to A2, which is not as heavy as the other flows.
- 2) Area is also host to numerous activities which create high levels of roadside friction: sidewalk vending, tricycle terminals, unpaved paths, etc.
- 3) Any proposed improvement has to recognize the dominant traffic stream, i.e., along East Service Road.
- 4) Control of the intersection could not be done in isolation from the Bicutan Interchange, which is jurisdictionally under Parañaque and not Taguig. Comprehensive solution is suggested, without regard to political boundary.



Name	Gen Santos Ave / East Service Road	Code	TG-01
Sheet	Proposed Improvements	LGU	Taguig
Engineering	<ol style="list-style-type: none"> 1) Pavement markings to delineate lanes, as well as to emphasize dominant flow along East Service Road. 2) Sidewalk improvements: pave East Service Road portion of sidewalk (right side of A1). 3) Pedestrian railings along A4 and A2. 4) Rehab/repair of signals, reset signal timing, so that it can operate again in accordance with volumes. 5) Passenger waiting area along portion of East Service Road north of the junction (DOST Property). 		
	Enforcement	<ol style="list-style-type: none"> 1) Clearing of sidewalks from vendors, particularly East approach to intersection and along East Service road. 2) Enforce anti-jaywalking measures. 3) Enforce proper loading/unloading practices. 4) Deploy at least 3 Enforcers to oversee proper phasing of conflicting movements, until such time that automatic signals are re-install. 	

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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : TG-01: General Santos Avenue/East Service Road (TAGUIG)
(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.	263.00	90.00	23,670.00
b.) Solid White Lines, 150mm width	l.m.	-	-	-
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	60.00	-
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				
a.) Pavement Edge (Shoulders)	l.m.	-	-	-
6. Transition Line				
a.) Pavement Edge (Shoulders)	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid lines) white, width = 450mm	l.m.	32.00	270.00	8,640.00
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.	232.50	180.00	41,850.00
<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.	109.00	120.00	13,080.00
<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				
a.) Give Way Symbol	pcs.	-	-	-
2. Symbols				
a.) Pavement Arrows	pcs.	-	-	-
1.) Through Arrow = 1.21 sq.m. / each	pcs.	-	-	-
2.) Combined Arrow = 2.44 sq.m. / each	pcs.	1.00	1,575.00	1,575.00
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	1.00	1,165.00	1,165.00
c.) Numerals	pcs.	-	-	-
B. Signs				
1. PUJ Loading/Unloading Sign	pcs.	-	-	-
2. No Loading/Unloading Sign	pcs.	-	3,910.00	-
3. Tricycle Loading/Unloading Sign	pcs.	-	-	-
4. No Double Parking Area	pcs.	-	-	-
C. Other Works				
1. Installation of Signal Controller	l.s.	-	75,000.00	-
2. Provide Pedestrian Railing (Steel Railing) 6m/pc	l.m.	-	-	-
TOTAL				89,980.00
TOTAL COST				89,980.00

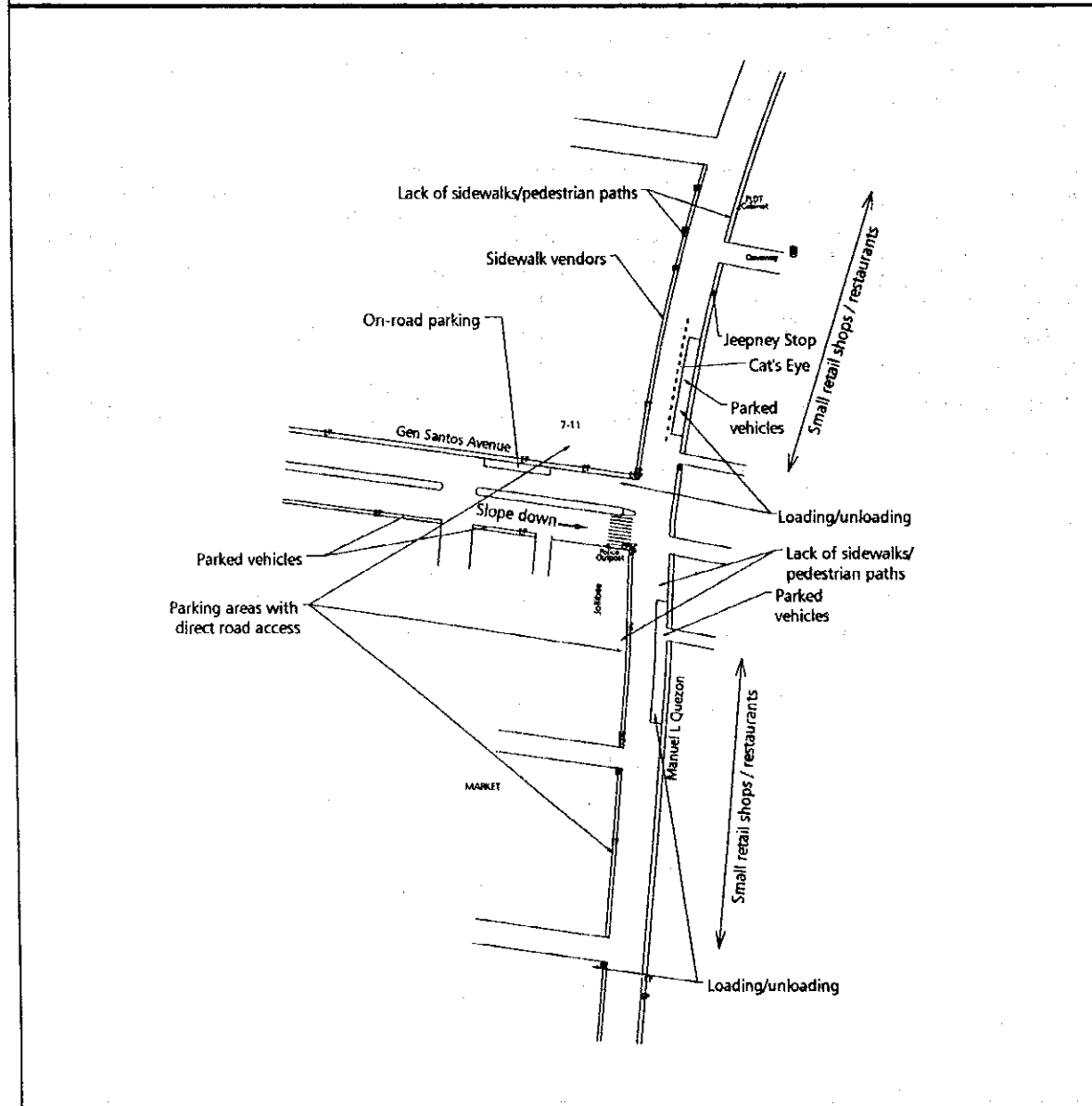
Name	Gen Santos Ave / ML Quezon				Code	TG-02	
Sheet	Summary of Observations				LGU	Taguig	
Traffic Conditions	<ol style="list-style-type: none"> 1) Intersection is a major junction linking the north-south ML Quezon Avenue to Gen Santos Ave. 2) Numerous retail establishments and the presence of the Taguig Municipal market in the vicinity generate a high level of vehicular and pedestrian traffic. 3) Sidewalks are very narrow, leaving little room for pedestrian flows in the areas around the intersection. 4) Peak hour volumes are less than 1,000 pcu per leg of the T-intersection. 						
	<ol style="list-style-type: none"> 1) Junction is a T-intersection at end of Gen Santos Ave. 2) ML Quezon is a two-lane concrete road which runs parallel to the Laguna lakeshore. It links Muntinlupa with Pateros passing through Taguig. 3) Area around the intersection is flood prone, as evident in the high entrances and ground floor levels of the retail establishments in the area. 						
Signalization	None	Pavement Markings	None		Peak	08:00-09:00	
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: ML Quezon (N)	10.6m	NA	307	199	506	53.34%	Moderate
A2: None	None	None	None	None	None	None	None
A3: ML Quezon (S)	9.7m	139	303	NA	442	48.63%	Moderate
A4: Gen Santos Ave	16.4m	99	NA	125	224	24.35%	Moderate
Total			238	610	324	1,172	
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Taguig TG-02 Gen Santos Ave / ML Quezon</p>							

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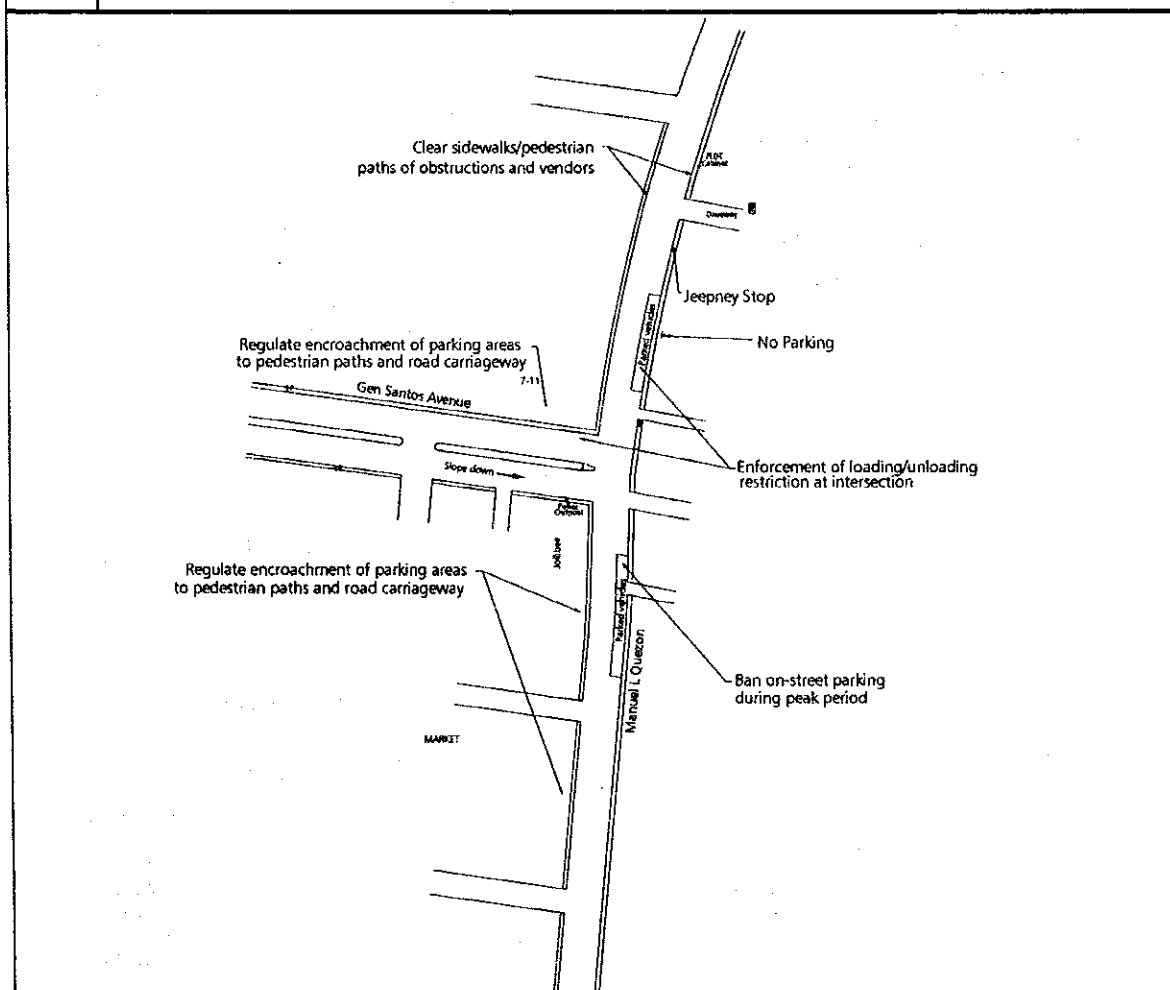
Small Scale Traffic Improvement Measures for Metro Manila

Name	Gen Santos Ave / ML Quezon	Code	TG-02
Sheet	Analysis	LGU	Taguig

- 1) The intersection is at a major crossroad, which has attracted a number of retail establishments, eateries and other service facilities in the area. The presence of the municipal market exacerbates the traffic situation roadside friction.
- 2) The junction is flood prone, with an evident lack of drainage facilities; its proximity to Laguna de Bay poses additional possibilities for flooding. This is evident in the elevation of entrances to the retail establishments in the area, often reachable only through a short flight of steps.
- 3) Parking, both on and off street, is prevalent. Where there are off-street spaces, they encroached on sidewalks or obstruct pedestrian movements.



Name	Gen Santos Ave / ML Quezon	Code	TG-02
Sheet	Proposed Improvements	LGU	Taguig
Engineering	<ol style="list-style-type: none"> 1) Rearrange parking layouts (from perpendicular to diagonal) for those establishments with separate parking bays, in order to provide wider pedestrian paths and preclude protrusion of vehicles on roadway. 2) Repair of drainage facilities, to minimize congestion due to flooding. 3) Application of pavement markings such as pedestrian crossings and stop lines, to guide vehicles as well as pedestrians. 		
Enforcement	<ol style="list-style-type: none"> 1) On-street parking restrictions need to be enforced within 10-meter stretches at the approaches to the junction. This should include the parking area of Jollibee and 7-11, where parked vehicles often encroach on the carriageway, forcing pedestrians to walk along the carriageway. 2) Proper loading/unloading should be observed. No loading and/or unloading should be allowed at the approaches to the junction within a 20-meter distance. 3) Clear of sidewalks, particularly at the north portion of the junction, and along Gen Santos Ave. from vendors. 		



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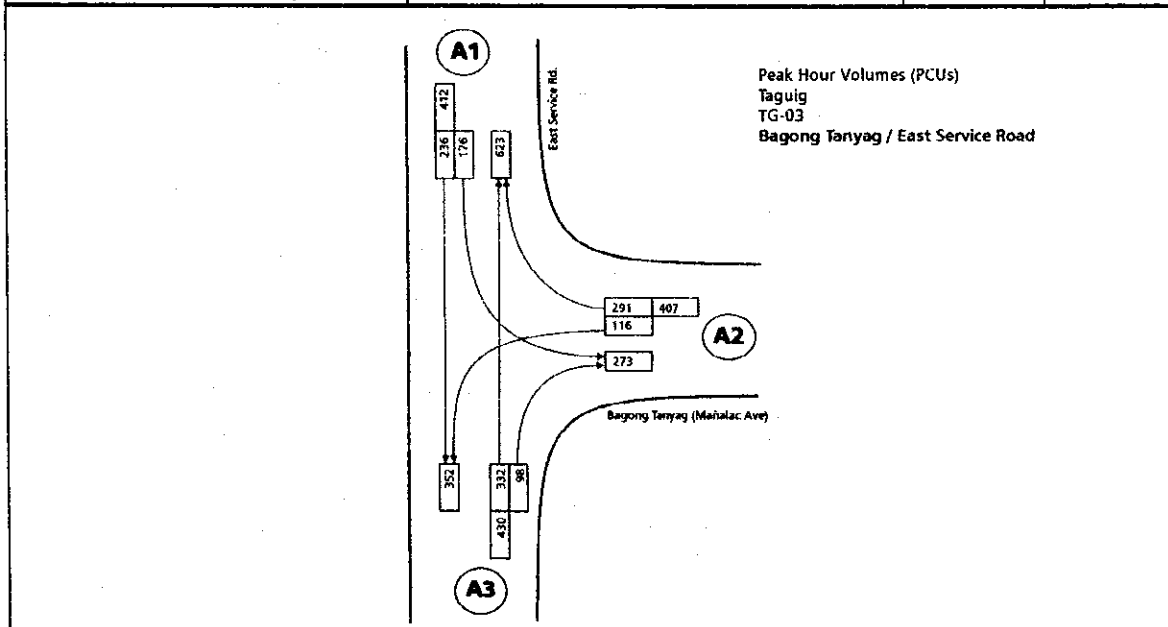
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION: TG-02, Gen. Santos Ave. / M. L. Quezon (TAGUIG)
(cost summary)

A. Pavement Markings:	Unit	Quantity	Unit Cost	Total Cost
<i>Longitudinal Lines:</i>				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length, w = 150mm	l.m	-	-	-
b) Solid White Lines, 200mm width	l.m	300.00	150.00	45,000.00
2. Lane Lines (100mm or 150mm width)				
a) Solid Lines, w = 150 mm	l.m	60.00	112.50	6,750.00
b) Broken Lines w= 150mm	l.m	340.00	45.00	15,300.00
3. Barrier Lines				
a) Unbroken Double Yellow Lines (100 or 150mm width)	l.m	60.00	112.50	6,750.00
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	8.00	337.50	2,700.00
2. Give Way (Yield Lines)	l.m	-	-	-
3. Pedestrian Crossing Markings				
a) Zebra Crossing (Non-Signalized), width = 300mm	l.m	156.00	225.00	35,100.00
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	-	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	-	-	-
4. Approach to Railroad Crossings	l.m	-	-	-
5. Diagonal Markings on Sealed Shoulders				
a) Outline, 150mm width	l.m	-	112.50	-
b) Diagonal Bars, 300mm width	l.m	-	225.00	-
<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	-	-	-
2) Combined Arrow = 2.44 sq.m / each	pcs	3.00	1,830.00	5,490.00
3) Turn Arrow = 1.46 sq. m / each	pcs	4.00	1,095.00	4,380.00
c) Numerals	pcs	-	-	-
B. Signs				
1. No Loading / Unloading Sign	Units	2.00	3,850.00	7,700.00
2. No Parking Sign	Units	2.00	3,850.00	7,700.00
C. Other Works				
1. Clear Sidewalk Obstruction	L.S.	1.00	3,500.00	3,500.00
TOTAL				140,370.00
Contingencies, 5%				7,018.50
CMS, 10%				14,037.00
Miscellaneous (fees, permits, etc), 5%				7,018.50
Govt. Supervision, 2%				2,807.40
TOTAL COST				171,251.40

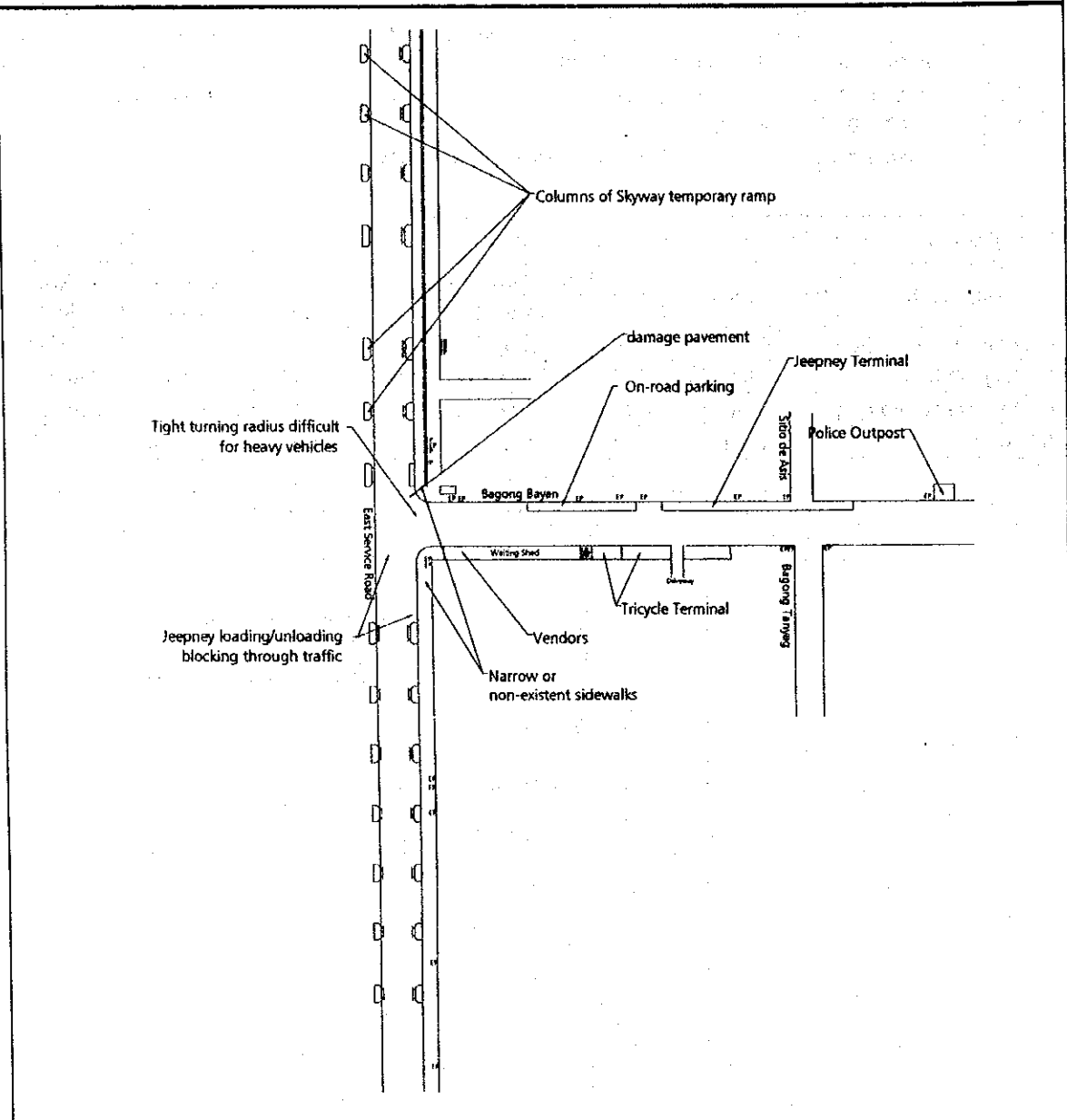
Name	Bagong Tanyag / East Service Road	Code	TG-03
Sheet	Summary of Observations	LGU	Taguig
Traffic Conditions	<ol style="list-style-type: none"> 1) Heavy vehicles coming from Bagong Tanyag have difficulty turning to the East Service Road because of the presence of columns of the Skyway temporary ramp. 2) Lack of pedestrian facilities along Bagong Bayan Road and along East Service Road forces pedestrians to the carriageway and further constricts road capacity. 3) Jeepney loading and unloading at the southeast corner of the junction, and at the junction itself for the southbound direction exacerbates traffic congestion. 		
Physical Conditions	<ol style="list-style-type: none"> 1) East service road is a two-lane (one per direction) concrete road. Temporary ramps of the Manila South Skyway have been constructed over this junction, and the columns have narrowed down the available road width. 2) Bagong Bayan Road is a wide two-lane concrete road leading to residential and industrial areas in Bagong Tanyag, Taguig. 3) There are no pavement markings to delineate vehicle flows. 		

Signalization	None	Pavement Markings	None	Peak	17:00-18:00		
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: East Service Rd (N)	8.2m	176	236	NA	412	23.62%	Light
A2: Bagong Bayan	8.0m	116	NA	291	407	18.91%	Moderate
A3: East Service Rd (S)	8.4m	NA	332	98	430	43.51%	Moderate
A4: None	None	None	None	None	None	None	None
Total		292	568	389	1,249		
Passenger Flows							

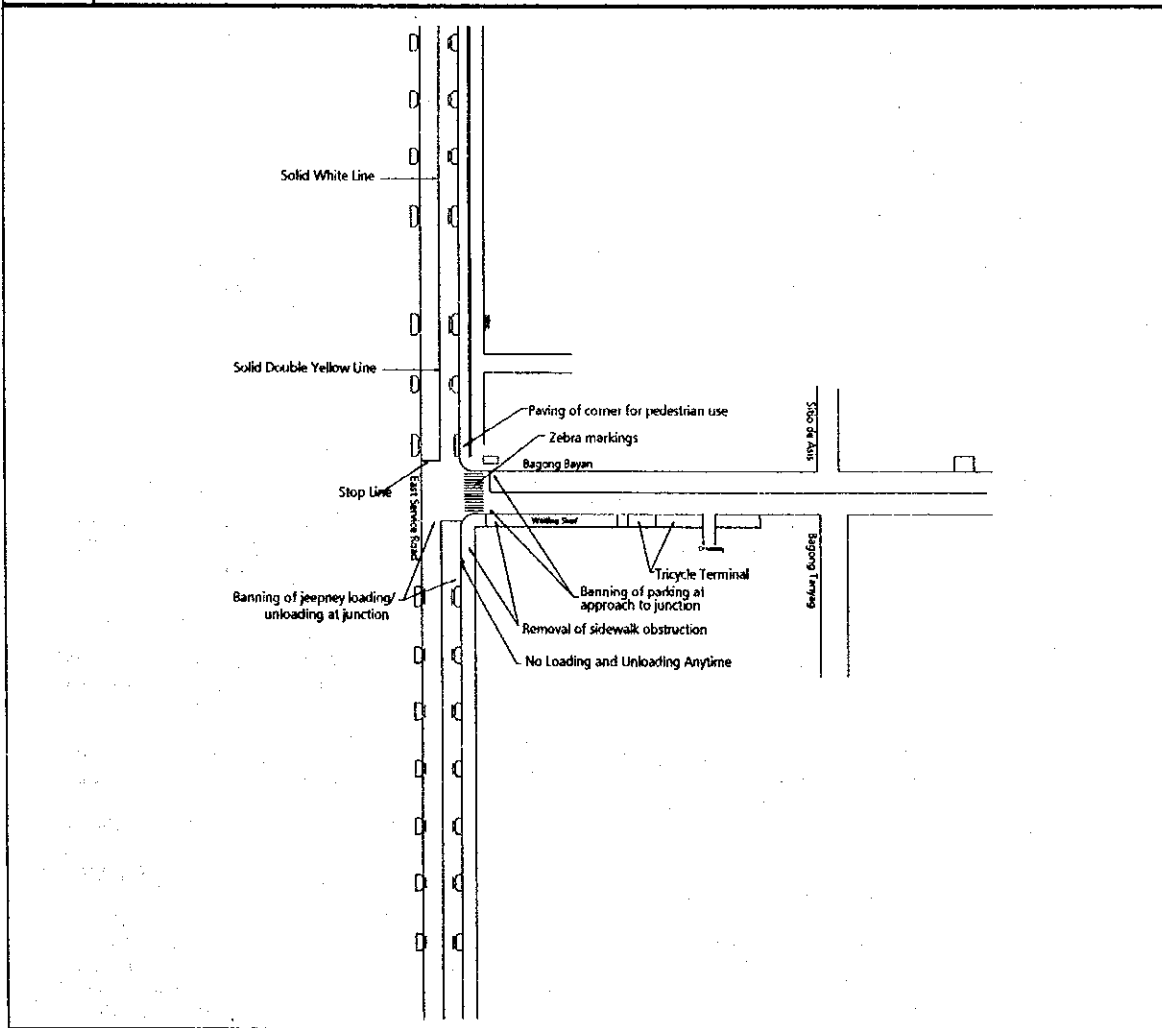


Name	Bagong Tanyag / East Service Road	Code	TG-03
Sheet	Analysis	LGU	Taguig

- 1) The East Service Road caters to local traffic along the South Luzon Expressway. It was already congested long before the columns of the Skyway temporary ramp were built, but later made it worse.
- 2) Sidewalks and pedestrian paths are occupied by vendors / eateries.
- 3) Queue propagation from Bicutan exit often reaches this intersection.
- 4) Left turning volume to/from Bagong Bayan Road is substantial.



Name	Bagong Tanyag / East Service Road	Code	TG-03
Sheet	Proposed Improvements	LGU	Taguig
Engineering	<ol style="list-style-type: none"> 1) Remove sidewalk obstructions along Bagong Bayan Road; pave sidewalk near Burger Machine outlet. 2) Pave portion of corner near Burger Machine outlet for pedestrian use. 3) Zebra crossing for pedestrians. 		
Enforcement	<ol style="list-style-type: none"> 1) Ban parking at the approaches to the junction. This will also facilitate maneuvers for heavy vehicles. 2) Ban loading/unloading at the junction itself. Designate areas (50 meters away from the junction) for this purpose. 3) Deploy enforcers to oversee phasing of conflicting movements. 		



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Small Scale Traffic Improvement Measures for Metro Manila

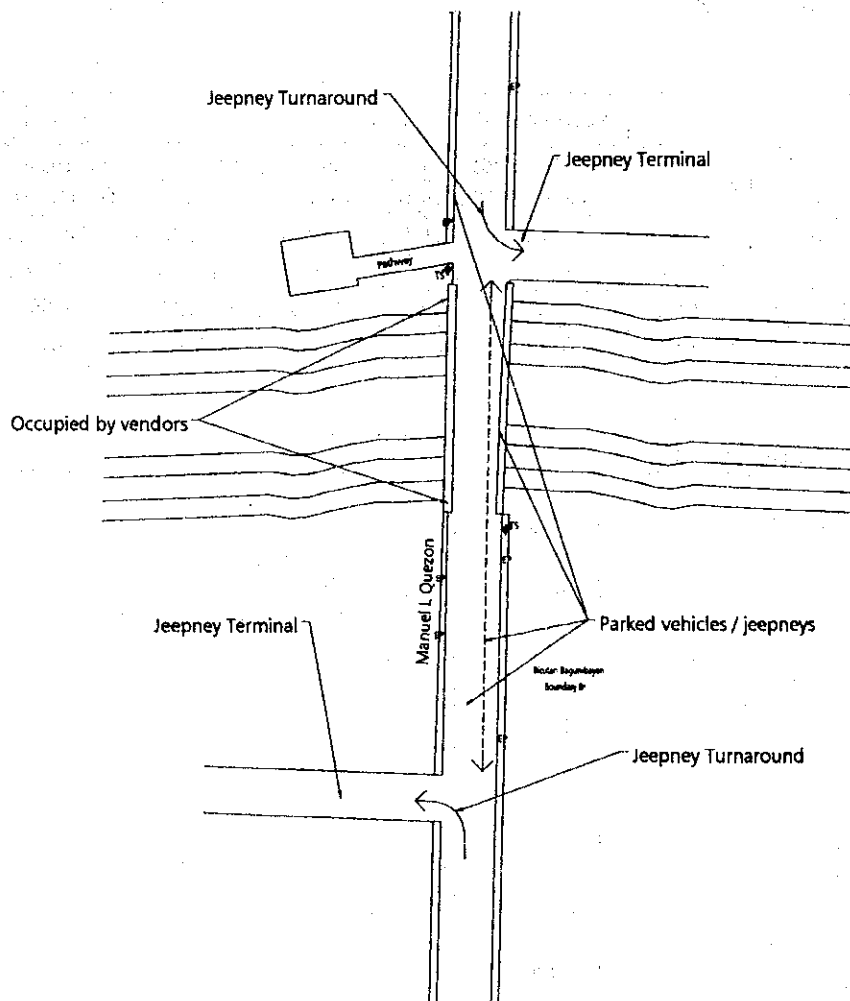
LOCATION: TG-03, Bagong Tanyag / East Service Road (TAGUIG)
(cost summary)

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, w = 150mm	l.m	-	45.00	-
b) Solid White Lines, 200mm width	l.m	-	150.00	-
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	-	-	-
b) Cross Walks (Signalized), width = 300mm	l.m	82.00	225.00	18,450.00
<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= 150mm	l.m	-	-	-
<i>Other Markings:</i>				
1. Approach Markings to Islands and Obstructions	l.m	-	262.50	-
2. Chevron Markings	l.m	-	-	-
3. Curb Markings for Parking Restrictions	l.m	-	-	-
4. Approach to Railroad Crossings	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	8.00	907.50	7,260.00
2) Combined Arrow = 2.44 sq.m / each	pcs	8.00	1,830.00	14,640.00
3) Turn Arrow = 1.46 sq. m / each	pcs	2.00	1,095.00	2,190.00
c) Numerals	pcs	-	-	-
B. Signs				
1. No Loading / Unloading Sign	Units	2.00	3,850.00	7,700.00
2. No Parking Sign	Units	2.00	3,850.00	7,700.00
C. Other Works				
1. Removal of Sidewalk Obstruction along Bagong Bayan Road	l.s.	1.00	3,500.00	3,500.00
2. Paving of Sidewalk near Buyer Machine Outlet	sq.m.	30.00	750.00	22,500.00
3. Paving of Portion at corner near Buyer Machine Outlet for Pedestrian Use	sq.m.	15.00	750.00	11,250.00
TOTAL				61,440.00
Contingencies, 5%				3,072.00
CMS, 10%				6,144.00
Miscellaneous (fees, permits, etc), 5%				3,072.00
Govt. Supervision, 2%				1,228.80
TOTAL COST				74,956.80

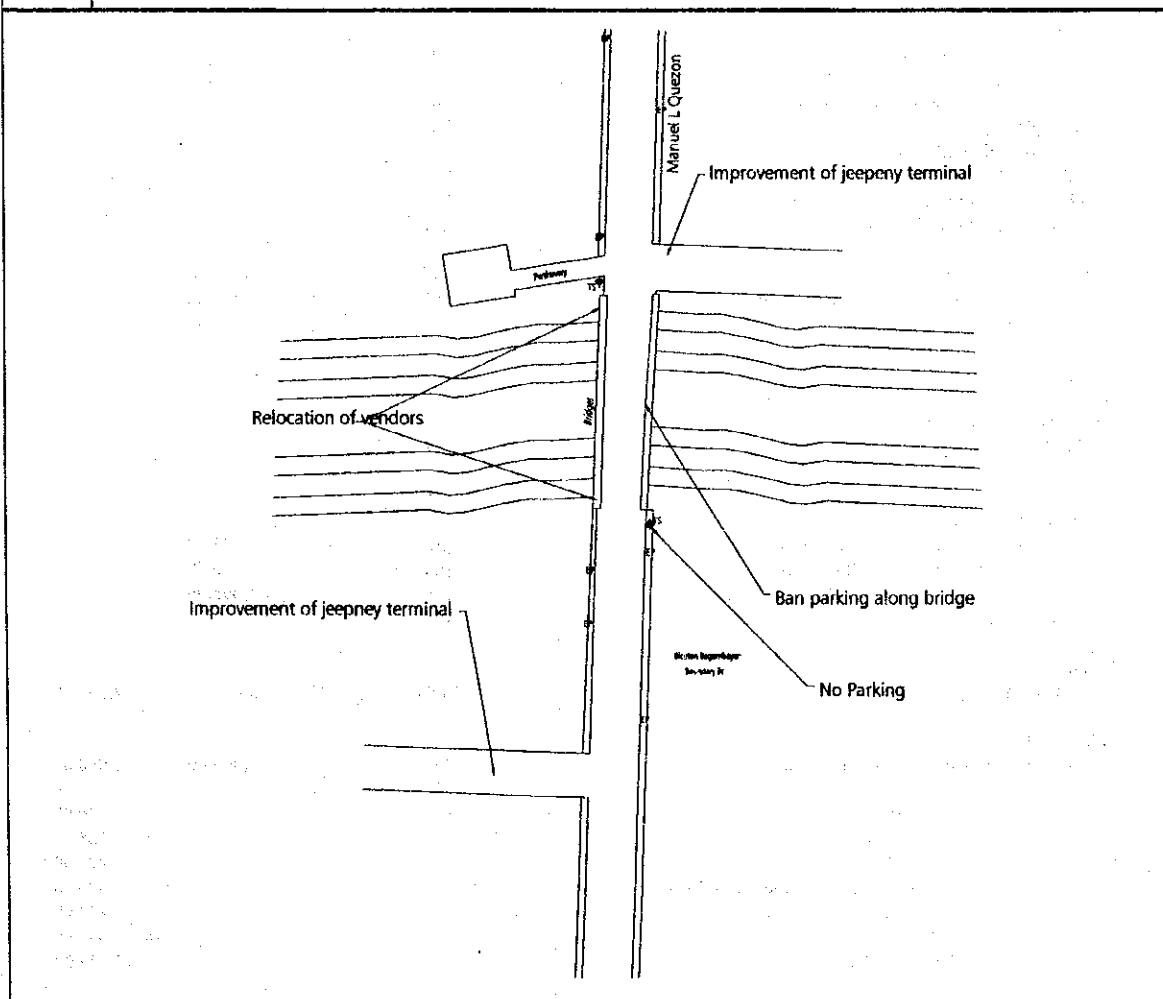
Name	ML Quezon @ Bagumbayan-Sucac Boundary				Code	TG-04	
Sheet	Summary of Observations				LGU	Taguig	
Traffic Conditions	<ol style="list-style-type: none"> 1) Bottleneck area is at the approaches to the bridge at the boundary of Bgy. Bagumbayan in Taguig and Bgy. Sucac in Muntinlupa. 2) ML Quezon is a narrow 2-lane (both directions) road with little space for pedestrian sidewalks. Sidewalks, where available, are occupied by ambulant vendors, or encroached upon by establishments. 3) Jeepney routes terminate at the boundary, but there is not enough room for jeepney turnaround on either side of the bridge, or jeepneys waiting to make a left turn will have to block through traffic. 4) Passengers on longer trips have to walk one side of the bridge to another, in order to transfer. 5) Bridge is used as parking area for idle jeepneys. 						
	Physical Conditions	<ol style="list-style-type: none"> 1) Bridge is at the boundary of Taguig and Muntinlupa. It is a 7.2-meter wide RCDG bridge which can carry two traffic lanes. Ambulant vendors occupy narrow sidewalks. 2) ML Quezon Ave is a two-lane road, concrete paved in good condition. Road carriageway width is around 7 meters. 					
Signalization			Pavement Markings			Peak	18:00-19:00
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: ML Quezon (N)	7.6m	NA	156	NA	156	24.09%	Moderate
A2: None	None	None	None	None	None	None	None
A3: ML Quezón (S)	7.9m	NA	124	NA	124	22.66%	Moderate
A4: None	None	None	None	None	None	None	None
Total			280		280		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Taguig TG-04 ML Quezon / Bagumbayan-Sucac Boundary</p>							

Name	ML Quezon @ Bagumbayan-Sucat Boundary	Code	TG-04
Sheet	Analysis	LGU	Taguig

- 1) The high volume of jeepneys which terminate their routes at the boundary, and which have to turnaround, mainly causes the bottleneck. A number of off-street makeshift terminals have been accommodated in private lots, but there is not enough space to park all terminating jeepneys. Some of those in queue have to park on the street, which has no available space (no shoulders, not even sidewalks wide enough for pedestrians).
- 2) These jeepneys have to turn around by making a left turn to their terminal, or make a U-turn. With the narrow right of way width, jeepneys are not able to make the U-turn in one maneuver. Rather, most of them have to make a three-point turn.
- 3) Passengers getting off the jeepneys on either side of the bridge are forced to transfer to another jeepney on the opposite side. The bridge is just a two-lane bridge, and at times, vehicles are parked on the sides. The sidewalks are narrow and the approaches have been occupied by ambulant vendors.



Name	ML Quezon @ Bagumbayan-Sucacat Boundary	Code	TG-04
Sheet	Proposed Improvements	LGU	Taguig
Engineering	<ol style="list-style-type: none"> 1) Engineering improvements to the area are limited, given the available space. Engineering improvements may be limited to physical improvements of the terminal. 2) Paving the jeepney terminals would enhance turnaround and arrival/departure of vehicles, as well as benefit pedestrians 3) Extend the jeepney route either farther north or south of bridge where a suitable turnaround can be handled more conveniently. This would also minimize the number of passengers transferring, and would decrease opportunities for attracting ambulant vendors. 		
Enforcement	<ol style="list-style-type: none"> 1) Ban parking on the bridge, to facilitate vehicle and pedestrian flows. 2) Relocate ambulant vendors; clear sidewalks of obstructions. 		



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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION: TG-04, M. L. Quezon @ Bagumbayan - Sucat Boundary (TAGUIG)
(cost summary)

A. Pavement Markings	Unit	Quantity	Unit Cost	Total Cost
<i>Longitudinal Lines:</i>				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length, w = 150mm	l.m	-	45.00	-
b) Solid White Lines, 200mm width	l.m	-	150.00	-
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	l.m	-	337.50	-
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	-	225.00	-
<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				
a) Painted Median Islands	l.m	-	-	-
4. BUS and PUJ Lane Markings				
a) BUS and PUJ Lane Markings	l.m	-	-	-
5. Channelized Junction Pavement Marking				
a) Channelized Junction Pavement Marking	l.m	-	-	-
6. Yellow Box Line, w= 150mm				
a) Yellow Box Line, w= 150mm	l.m	-	-	-
<i>Other Markings:</i>				
1. Approach Markings to Islands and Obstructions	l.m	-	262.50	-
2. Chevron Markings	l.m	-	-	-
3. Curb Markings for Parking Restrictions	l.m	-	-	-
4. Approach to Railroad Crossings	l.m	-	-	-
<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 Parking Sign	Units	2.00	3,850.00	7,700.00
C. Other Works				
1. Clearing of Sidewalk of Obstruction	l.s.	1.00	5,000.00	5,000.00
TOTAL				12,700.00
Contingencies, 5%				635.00
CMS, 10%				1,270.00
Miscellaneous (fees, permits, etc), 5%				635.00
Govt. Supervision, 2%				254.00
TOTAL COST				15,494.00