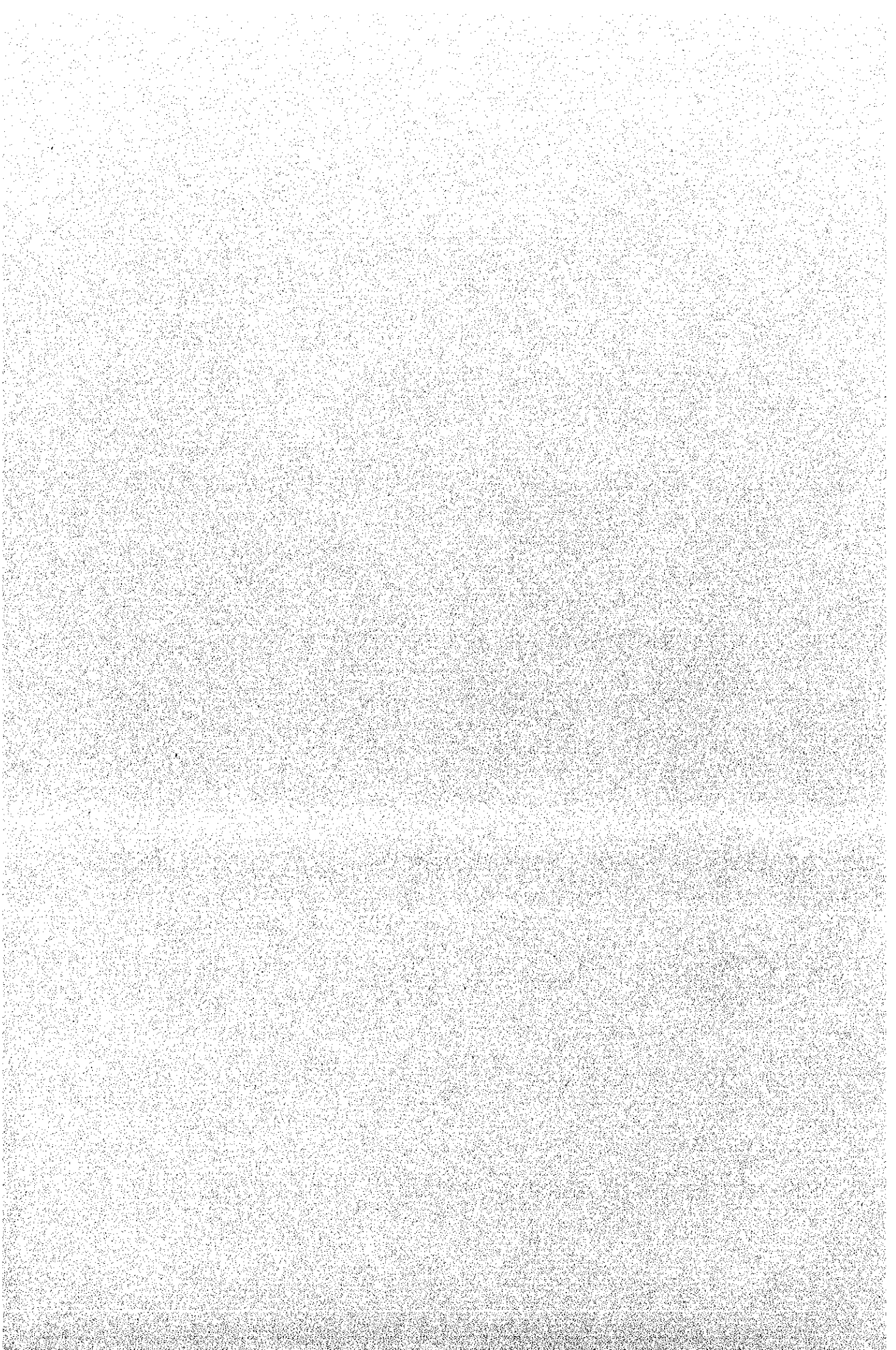


Makati

Individual Information Sheets for the Traffic Bottleneck Points

MK-01	Nicanor Garcia / Jupiter St	MK-10	Pasay Road / Evangelista
MK-02	Kamagong / Vito Cruz	MK-11	JP Rizal / Sampaguita
MK-03	Metropolitan Ave / Ayala Ave	MK-12	Kalayaan / JP Rizal
MK-04	Malugay / Ayala Ave	MK-13	JP Rizal @ Pamantasan ng Makati
MK-05	Makati Ave / Jupiter	MK-14	JP Rizal / Sgt Fabian Yabut
MK-06	Malugay / Mayapis	MK-15	Kalayaan / Sgt Fabian Yabut
MK-07	Kalayaan Ave / Makati Ave	MK-16	P Burgos / Sgt Fabian Yabut
MK-08	Dela Rosa St / Pasong Tamo	MK-17	JP Rizal / Cloverleaf
MK-09	Javier / Pasong Tamo		

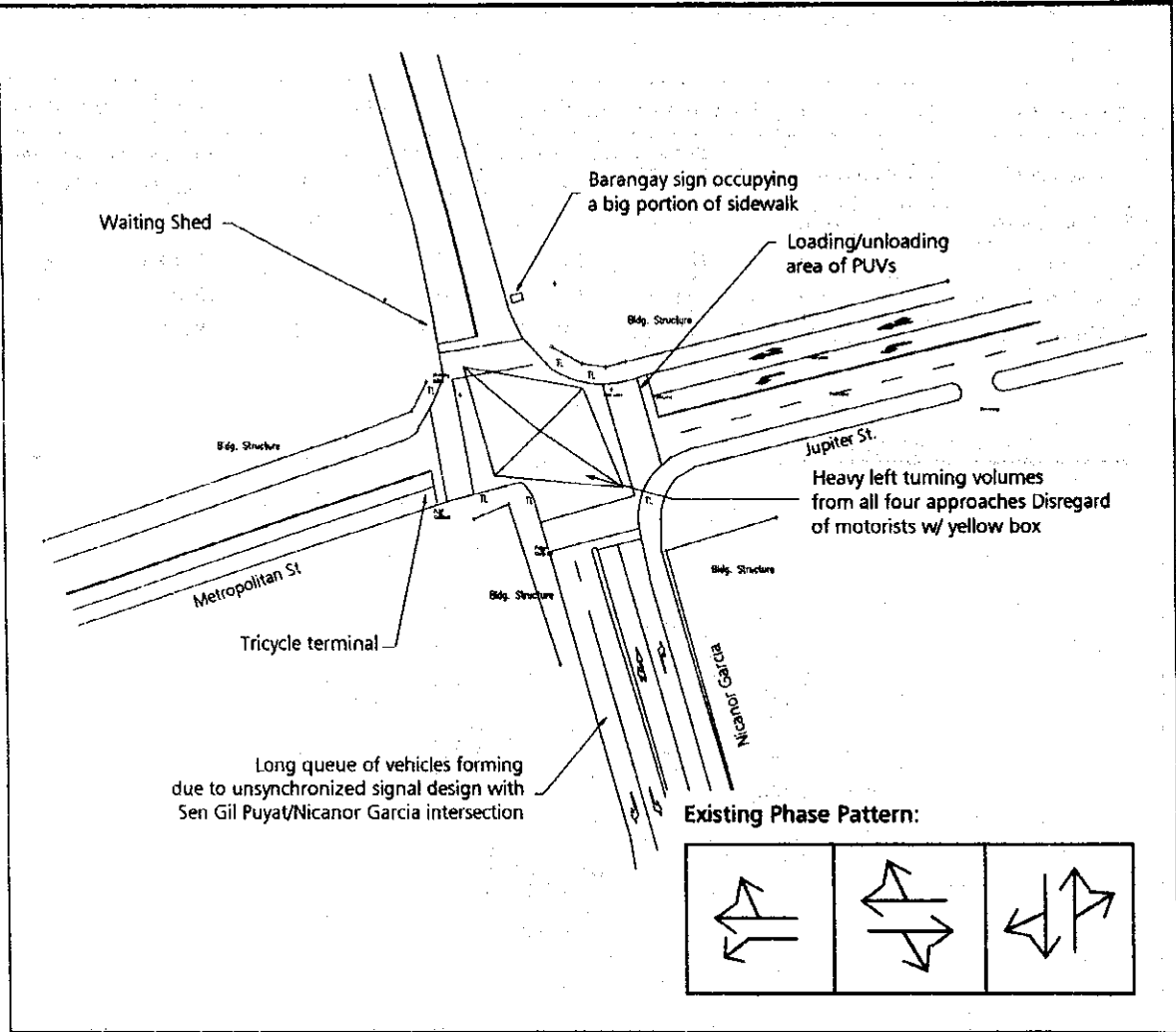


Name	Nicanor Garcia / Jupiter				Code	MK-01	
Sheet	Summary of Observations				LGU	Makati	
Traffic Conditions	<ol style="list-style-type: none"> 1) Heavy left turning vehicular volumes from all four approaches to the intersection; 2) Disregard of "yellow box" constricts flows from other approaches; 3) Long queue of vehicles on the south leg of N. Garcia is mainly due to unsynchronized signal timing with the intersection of N Garcia and Sen. Gil Puyat (offset has to be recalculated); 4) Tricycles are not supposed to have a terminal on the southwest corner, but they pop up whenever there are no enforcers. 						
Physical Conditions	<ol style="list-style-type: none"> 1) The intersection is signalized accommodating all directional traffic movements on the four legs. Jupiter St. has three lanes; whereas, Nicanor Garcia has four lanes on one section and substandard three lanes at approach reducing to two lanes on the other section. 2) The intersection is well paved with asphalt concrete. 3) Except for one, all the pavement edges were provided with adequate radius. 4) One physical restriction noted is that N. Garcia is offset at its northern segment. 5) The pavement edge at the northeast corner of the intersection has inadequate turning radius. 						
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: N Garcia (N)	10 m	151	250	108	509	39.41%	Light
A2: Jupiter St.	11.5 m	285	531	93	909	20.13%	Light
A3: N. Garcia (S)	13 m	21	528	435	984	18.66%	Light
A4: Metropark Ave	10 m	23	483	118	625	18.21%	Light
Total		481	1792	754	3,027		
Passenger Flows						7,400	
<p>Peak Hour Volumes (PCUs) Makati MK-01 Nicanor Garcia / Jupiter</p>							

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Small Scale Traffic Improvement Measures for Metro Manila

Name	Nicanor Garcia / Jupiter	Code	MK-01
Sheet	Analysis	LGU	Makati
<ol style="list-style-type: none"> 1) The road segment along N. Garcia between Sen Gil Puyat Ave. and Jupiter St. is too short to accommodate vehicles queuing at the approach towards Gil Puyat Avenue. Drivers easily get caught within the yellow box due to the short distance and the long cycle length at the G. Puyat junction. 2) The heavy left turn volume from Jupiter St coupled with the heavy right turn volume from Metropolitan Avenue exceeds the very limited capacity of N. Garcia St. 3) The tricycle terminal located on the west approach along Metropolitan Avenue constricts vehicular flow, although tricycles are on the curb, maneuvers to and from the terminal hampers smooth vehicular flow along Metropolitan Avenue, not to mention that the major flow is right turn towards Gil Puyat. 4) The barangay signpost located on sidewalk at the northeast corner of the intersection blocks pedestrian flow since it is practically occupying $\frac{3}{4}$ of the sidewalk space. 5) The current signal settings of the intersection will need reprogramming to cater to the current volume of vehicles passing through the intersection. More critical, however, would be its offset with the signal settings for the Gil Puyat/ N. Garcia intersection considering the geometric limitations of the intersection and its proximity to Gil Puyat. 6) Loading and unloading at the corner of the intersection should also be strictly prohibited. 7) This intersection has absorbed the problems induced by the G. Puyat / Ayala as well as G. Puyat / N. Garcia traffic schemes. Thus, volume on Metropolitan Avenue would decline if left turn on G. Puyat – Ayala is restored. 			



Name	Nicanor Garcia / Jupiter	Code	MK-01
Sheet	Proposed Improvements	LGU	Makati
Engineering	<ol style="list-style-type: none"> 1) Coordinate traffic signals (time offset) at N. Garcia / Jupiter with Sen. Gil Puyat Ave. / N. Garcia 2) Relocate tricycle terminal along Jupiter St. 3) Reposition barangay signboard to clear sidewalk of northeast corner. 4) Provision of loading / unloading facilities for public transport vehicles, far from intersection. 5) Redesign of signal phasing and timing, in accordance with the optimal offset from G. Puyat / N. Garcia junction at south end of N. Garcia. 		
Enforcement	<ol style="list-style-type: none"> 1) Strict enforcement of the yellow box rule, both on G. J. Puyat and on Jupiter. 2) Regulate tricycle movements; disallow indiscriminate crossing at the intersection. 3) Complement traffic signals, by stopping vehicles from crossing the junction, when a particular lane is already full / clogged. 		

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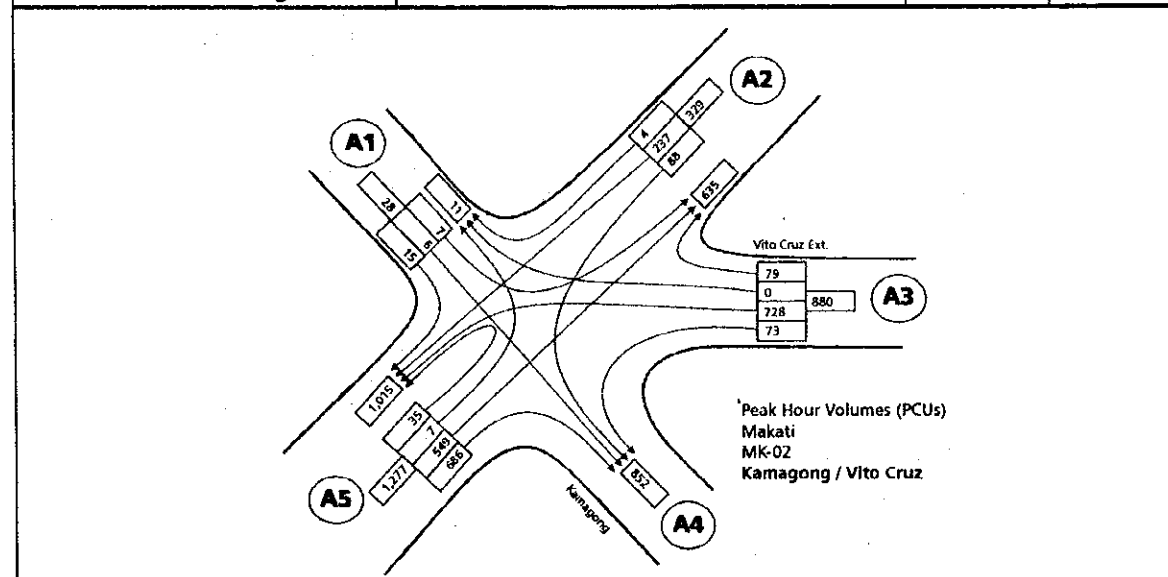
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MK-01: Nicanor Garcia / Jupiter St. (MAKATI)
(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, 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				
6. Transition Line				
<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.	-	-	-
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				
4. Bus and PUJ Lane Markings				
5. Channelized Junction Pavement Marking				
6. Yellow Box Line, w = 200mm				
<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.	51.00	200.64	10,232.64
<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.	-	-	-
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	-	-	-
c.) Numerals	-	-	-	-
B. Signs				
1. Loading/Unloading Sign	pcs.	1.00	3,850.00	3,850.00
2. No Loading/Unloading Sign	pcs.	2.00	3,850.00	7,700.00
3. Parking Area	pcs.	1.00	3,850.00	3,850.00
C. Other Works				
1. Reposition Barangay Signboard	l.s.	1.00	5,000.00	5,000.00
2. Synchronize Traffic Signal	l.s.	1.00	5,000.00	5,000.00
3. Relocate Tricycle Terminal	l.s.	1.00	2,000.00	2,000.00
TOTAL				37,632.64
Contingencies, 5%				1,881.63
CMS, 10%				3,763.26
Miscellaneous (fees, permits, etc.), 5%				1,881.63
Govt. Supervision, 2%				752.65
=====				=====
TOTAL COST				45,911.82

Name	Kamagong / Vito Cruz	Code	MK-02
Sheet	Summary of Observations	LGU	Makati
Traffic Conditions	1) Heavy left turn movements from Vito Cruz Extension to Zobel Roxas Avenue 2) Heavy right turn movements from Zobel Roxas Avenue to Kamagong St. 3) Loading and unloading of jeepneys along Zobel Roxas Avenue very near corner of Vito Cruz Ext and sometimes blocking through traffic (eastbound flow) along Zobel Roxas Avenue 4) U-turning vehicles observed along Zobel Roxas blocking through traffic (both westbound and eastbound flows) 5) Long queue along Zobel Roxas Avenue westbound approaching South Superhighway 6) Intersection also manned by traffic enforcer ignoring signal settings.		
	1) 5-legged intersection with Vito Cruz Extension being one way approaching intersection and Kamagong St being one way from the intersection outwards 2) Signalized intersection but oftentimes ignored by motorists and enforcer. 3) Zobel Roxas Avenue divided with elevated median island and two lanes per direction 4) Pedestrian lane crossing Zobel Roxas Avenue, east of Vito Cruz Extension is blocked at the center by median island; 5) Pavement markings applied, yellow box present.		

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: Agata St.	6.0m	7	6	15	28	3.33%	Light
A2: Zobel	13.8m	88	237	4	329	58.20%	Medium
A3: Vito Cruz	9.1m	801	0	79	880	28.86%	Light
A4: Kamagong	12.1m	NA	NA	NA	NA	NA	Light
A5: Zobel	15.9m	42	549	686	1,277	33.06%	Medium
Total		937	792	784	2,513		
Passenger Flows							

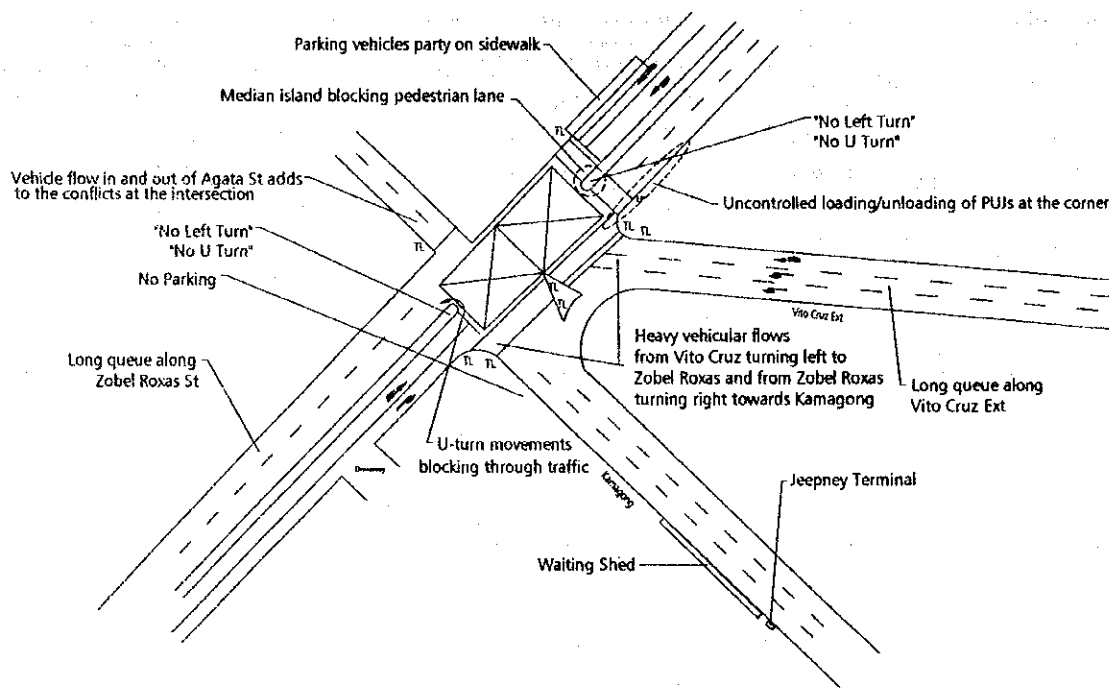


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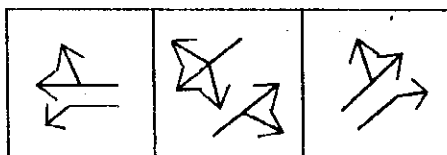
Small Scale Traffic Improvement Measures for Metro Manila

Name	Kamagong / Vito Cruz	Code	MK-02
Sheet	Analysis	LGU	Makati

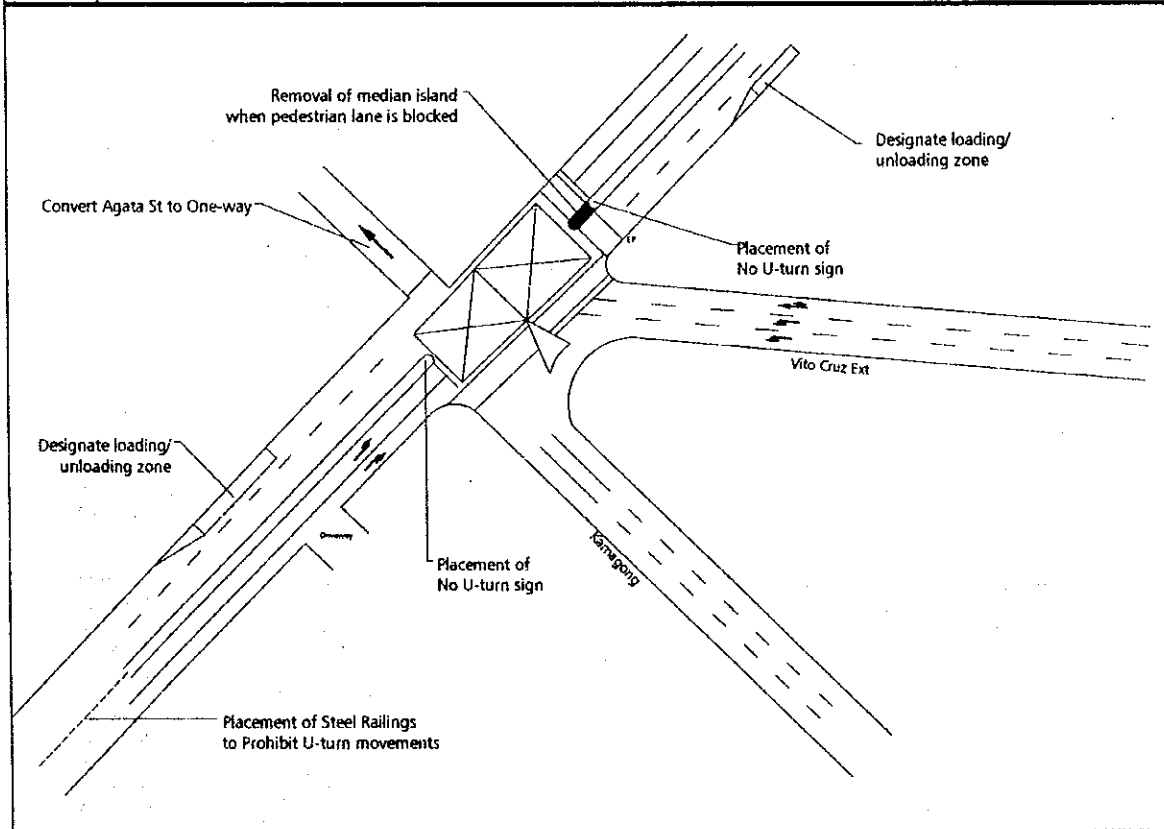
- 1) Vehicles parking along Zobel Roxas St on the east approach forces vehicles to use the inner lanes upon approach to the intersection. For jeepneys crossing the intersection, drivers tend to load/unload along the inner lane on the opposite side. This slows down left turning vehicles from Vito Cruz Ext causing them to form a long queue at the said approach.
- 2) With the median island blocking the pedestrian crossing, pedestrians cross Zobel Roxas St in a diagonal direction adding more conflict to vehicular flows.
- 3) Loading and unloading of passengers at the corners of the intersection compound the problem of blockage
- 4) Vehicular flow in and out of Agata St. further complicate the situation. Although volume may be relatively low, the optimization of the signal phasing and cycle time may be difficult to achieve with too many flow movements.
- 5) The tendency of drivers to ignore red indications in the signal may be due to the imbalance of distribution of green times.
- 6) Flow progression is also highly affected by the cycle length of the signal at the South Super Highway/ Zobel Roxas intersection.



Existing Phase Pattern:



Name	Kamagong / Vito Cruz	Code	MK-02
Sheet	Proposed Improvements	LGU	Makati
Engineering	<ol style="list-style-type: none"> 1) The opening of the median island along Zobel Roxas Avenue at the portion where the pedestrian lane is located. 2) Designate loading and unloading areas along Zobel Roxas at least 20 meters away from the intersection on both approaches. 3) Signal coordination of South Superhighway/Zobel Roxas intersection and the Vito Cruz/Kamagong/Zobel Roxas intersection is necessary. The current signal timings and phasing may require reprogramming since it is very apparent that the current settings are no longer valid. 4) Modification of lane markings 		
Enforcement	<ol style="list-style-type: none"> 1) Restrict loading and unloading of passengers at the corner. Loading and unloading point must be located at least 20 meters away from the intersection. 2) Parking along Zobel Roxas East approach close to the intersection must be prohibited. 3) When an enforcer is present to direct traffic flow, signals at the intersection must be switched off. It can be very confusing (not to mention, accident prone) to the motorist to have traffic signals and enforcers giving opposing flow directions. 4) Agata St. to be one-way inwards to reduce vehicle conflicts and simplify signal settings 		



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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MK-02: Kamagong / Vito Cruz (MAKATI)
(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.	-	150.00	-
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	150.00	-
b.) Broken Lines, w = 150mms, 200mm width	l.m.	-	45.00	-
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	150.00	-
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 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.	-	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				
4. Bus and PUJ Lane Markings	l.m.	-	-	-
5. Channelized Junction Pavement Marking				
6. Yellow Box Line, w = 200mm	l.m.	-	200.64	-
<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.	-	262.50	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines (200mm)	l.m.	110.00	200.64	22,070.40
<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	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				
B. Signs				
1. No U-Turn Sign	pcs.	2.00	3,850.00	7,700.00
2. No Loading/Unloading Sign	pcs.	2.00	3,850.00	7,700.00
3. Loading/Unloading Sign	pcs.	2.00	3,850.00	7,700.00
4. One Way Sign	pcs.	1.00	3,850.00	3,850.00
C. Other Works				
1. Removal of Pavement Markings along Agata St.	l.m.	30.00	90.00	2,700.00
2. Reprogram Traffic Signal Phasing and Timing	l.s.	1.00	30,000.00	30,000.00
3. Removal of Portion of Median Island	l.m.	6.00	1,500.00	9,000.00
TOTAL				91,627.90
Contingencies, 5%				4,581.40
CMS, 10%				9,162.79
Miscellaneous (fees, permits, etc.), 5%				4,581.40
Govt. Supervision, 2%				1,832.56
TOTAL COST				111,786.04

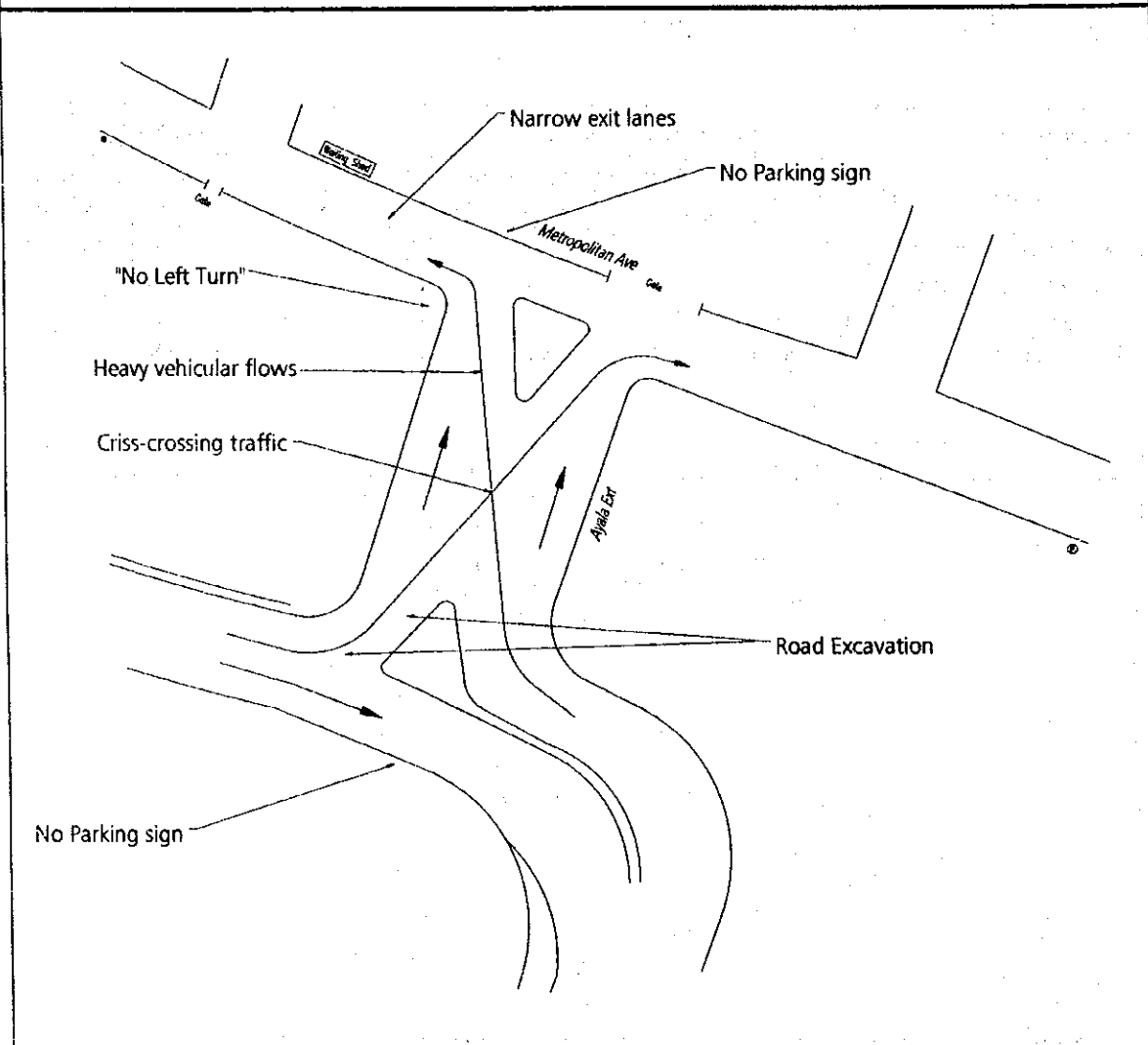
Name	Metropolitan / Ayala Ave.				Code	MK-03	
Sheet	Summary of Observations				LGU	Makati	
Traffic Conditions	<ol style="list-style-type: none"> 1) Heavy left-turn movements from Ayala Extension to Metropolitan Avenue. 2) Heavy build-up of vehicles converging from Kamagong St. and Ayala Extension. 3) There are only three exit lanes along Metropolitan Avenue. The narrow lanes constrict traffic flow. 4) Criss-crossing traffic due to vehicles from Ayala Extension mostly turn left at Metropolitan Avenue while vehicles from Kamagong mostly turn right at Metropolitan Avenue. 						
	<ol style="list-style-type: none"> 1) Basically a T-intersection with Metropolitan Avenue one-way from the intersection westbound. Segment of Metropolitan Avenue from the intersection eastbound is two-way. 2) No pavement markings 3) There are two traffic islands (one on each end) along the short stretch between Kamagong St. and Metropolitan Avenue. 4) Inadequate turning radius at corners. 						
Signalization	None	Pavement Markings	None		Peak	09:00-10:00	
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: Metropolitan (NW)	11.0m	NA	NA	NA	NA	NA	Medium
A2: Metropolitan (SE)	9.1m	NA	658	NA	658	28.25%	Light
A3: Ayala	29.25m	NA	1,275	414	1,689	32.76%	Light
A4: Kamagong	13.2m	77	632	1,419	2,127	39.27%	Light
Total		77	1,906	2,490	4,473		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Makati MK-03 Metropolitan Ave. / Ayala Ave..</p>							

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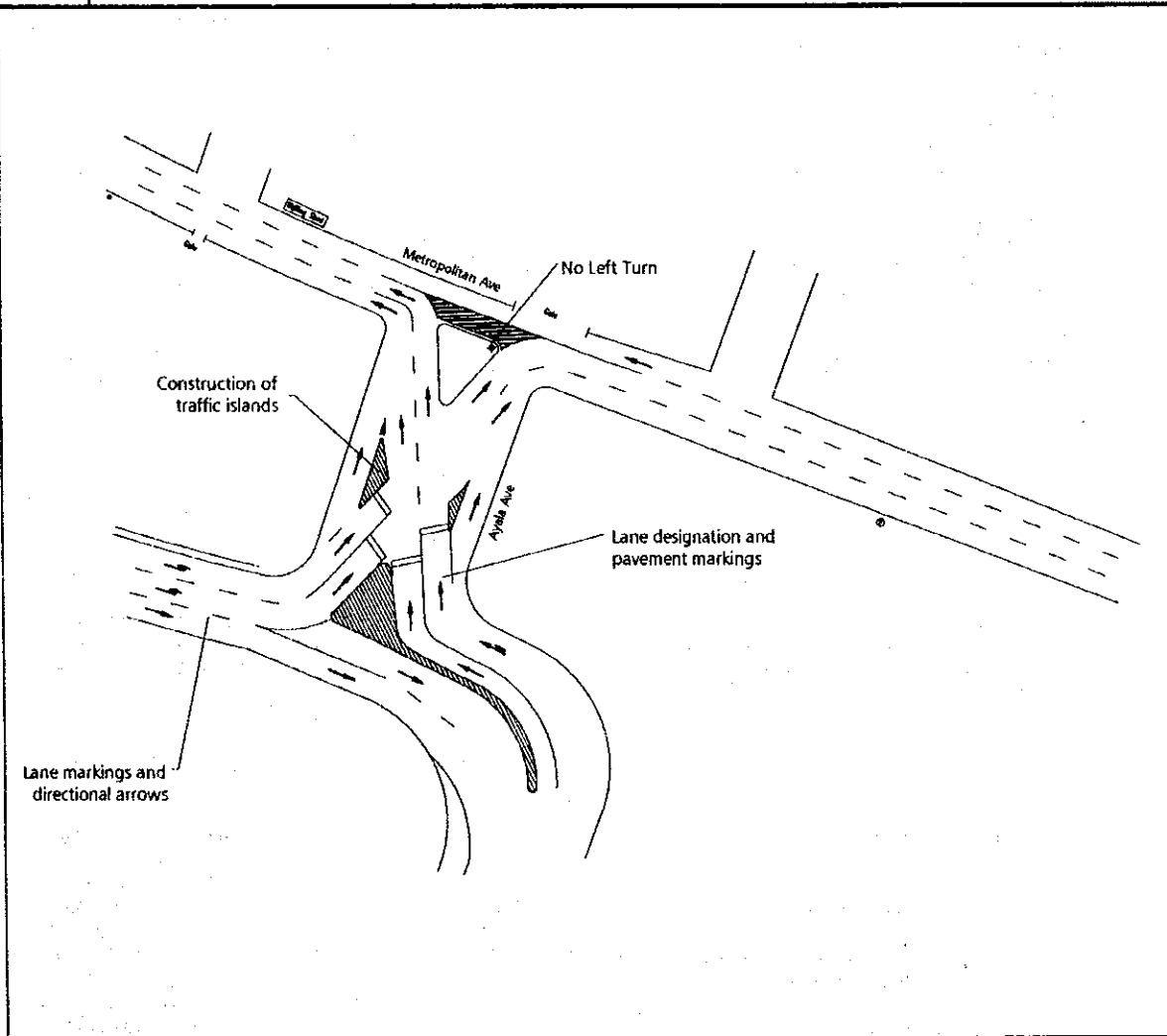
Small Scale Traffic Improvement Measures for Metro Manila

Name	Metropolitan / Ayala Ave.	Code	MK-03
Sheet	Analysis	LGU	Makati

- 1) Criss-crossing traffic is really a by-product of the paired one-way scheme at Kamagong – Vito Cruz and the no-left turn imposed on G. J. Puyat – Ayala Avenue.
- 2) The intersection becomes a bottleneck because of heavy flow from all approaches towards Metropolitan Avenue, which is one-way westward.
- 3) The traffic island located at the edge of Metropolitan Avenue (but at the center of the segment of Ayala Extension from Kamagong to Metropolitan), was precisely built to channelize movements. That short segment being four lanes divides the approach width to two lanes towards Metropolitan.
- 4) Without an enforcer, traffic flow at the intersection becomes chaotic since there is no weaving discipline; drivers insist on priority.
- 5) The one-way system of Metropolitan Avenue is in tandem with that of Kamagong St. Any changes in the circulation will require analysis to be carried out for both street systems.



Name	Metropolitan / Ayala Ave.	Code	MK-03
Sheet	Proposed Improvements	LGU	Makati
Engineering	<ol style="list-style-type: none"> 1) The area of approach towards Metropolitan shall be reduced by redesigning the geometry to channelize vehicle criss-crossing. 2) Lane designation and directional arrows should be placed to guide motorists. 3) Place No Left Turn sign facing Metropolitan Avenue from the eastern approach. 4) Placement of pavement markings 		
Enforcement	<ol style="list-style-type: none"> 1) Intersection must be manned by an enforcer especially during peak hours. 		



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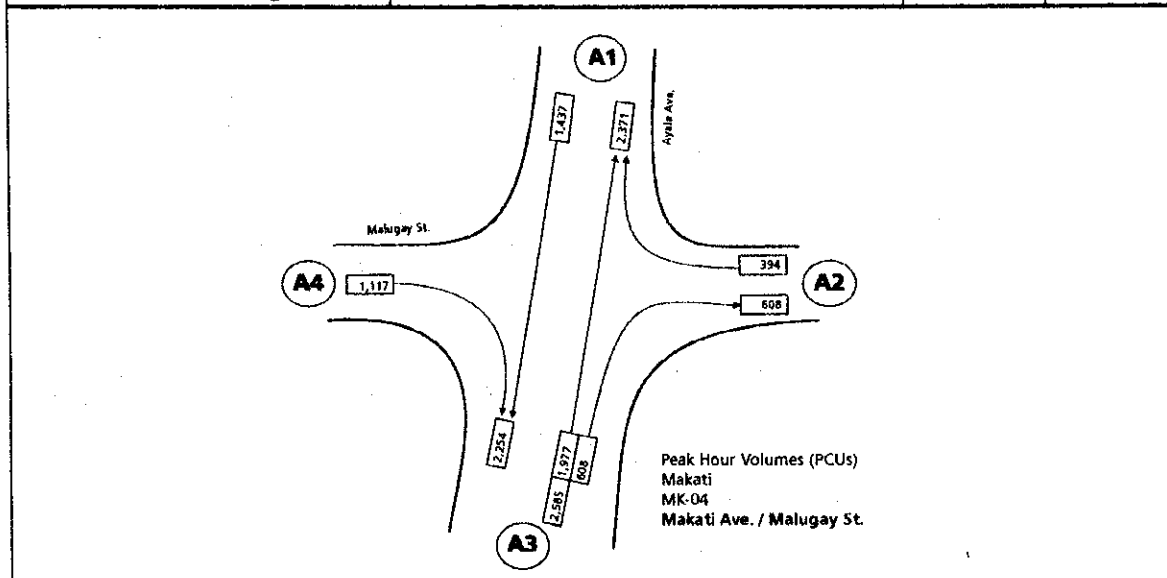
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MK-03 Metropolitan / Ayala Avenue (MAKATI)
(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.	140.00	45.00	6,300.00
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.	30.00	150.00	4,500.00
b.) Broken Lines, w = 150mms, 200mm width	l.m.	430.00	45.00	19,350.00
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	150.00	-
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 Lines				
a.)	l.m.	-	-	-
6. Transition Line				
a.)	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	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 = 200mm	l.m.	-	200.64	-
<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.	-	262.50	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines (w=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.	17.00	907.50	15,427.50
2.) Combined Arrow = 2.44 sq.m. / each	pcs.	2.00	1,830.00	3,660.00
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	2.00	1,095.00	2,190.00
c.) Numerals				
B. Signs				
1. No Left Turn Sign	pcs.	1.00	3,850.00	3,850.00
C. Other Works				
1. Construction of Traffic Island	sq.m	60.00	700.00	42,000.00
TOTAL				110,777.50
Contingencies, 5%				5,538.88
CMS, 10%				11,077.75
Miscellaneous (fees, permits, etc.), 5%				5,538.88
Govt. Supervision, 2%				2,215.55
TOTAL COST				135,148.55

Name	Malugay / Ayala Ave.	Code	MK-04
Sheet	Summary of Observations	LGU	Makati
Traffic Conditions	1) Due to the left turn prohibition at the Ayala Avenue/Sen Gil Puyat Ave intersections, vehicles are forced to cross G. Puyat towards Ayala Ave Ext, turn right at Malugay and right again at Geronimo to return to Gil Puyat Ave. towards the west, ("Malugay Loop").		
	2) Oftentimes, vehicles avoid the Malugay Loop by making U-turn at Yakal (despite the "No U-turn" prohibition).		
	3) Long queues during the peak hour are attributed to the sheer volume of traffic coming from Ayala Ext. southbound (fed by Kamagong traffic stream) towards Ayala Avenue. As well as the heavy flow from Malugay St. also towards Ayala Avenue.		
	4) Right turning vehicles from Malugay St. towards Gil Puyat merge with through traffic at several points.		
	5) Some vehicles were observed to be parking very near the corner of Malugay.		
Physical Conditions	1) Ayala Avenue Extension has a concrete median barrier at the intersection with Malugay St. only right turning movements are allowed at all approaches.		
	2) The Makati Fire Department is located at the corner of Malugay		
	3) At the time of the ocular inspection, several buses were seen parked along Malugay St. fronting the Fire Department and the Makati Post Office		

Signalization	None	Pavement Markings		Lane markings		Peak	08:00-09:00
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: Ayala Ave (N)	30.91m	NA	1,437	NA	1,437	31.92%	Light
A2: Malugay (E)	13.1m	NA	NA	394	394	31.71%	Light
A3: Ayala Ave. (S)	30.91m	NA	1,977	608	2,585	46.11%	Light
A4: Malugay (W)	12.9m	NA	NA	1,117	1,117	37.03%	Light
Total			3,414	2,119	5,532		
Passenger Flows							

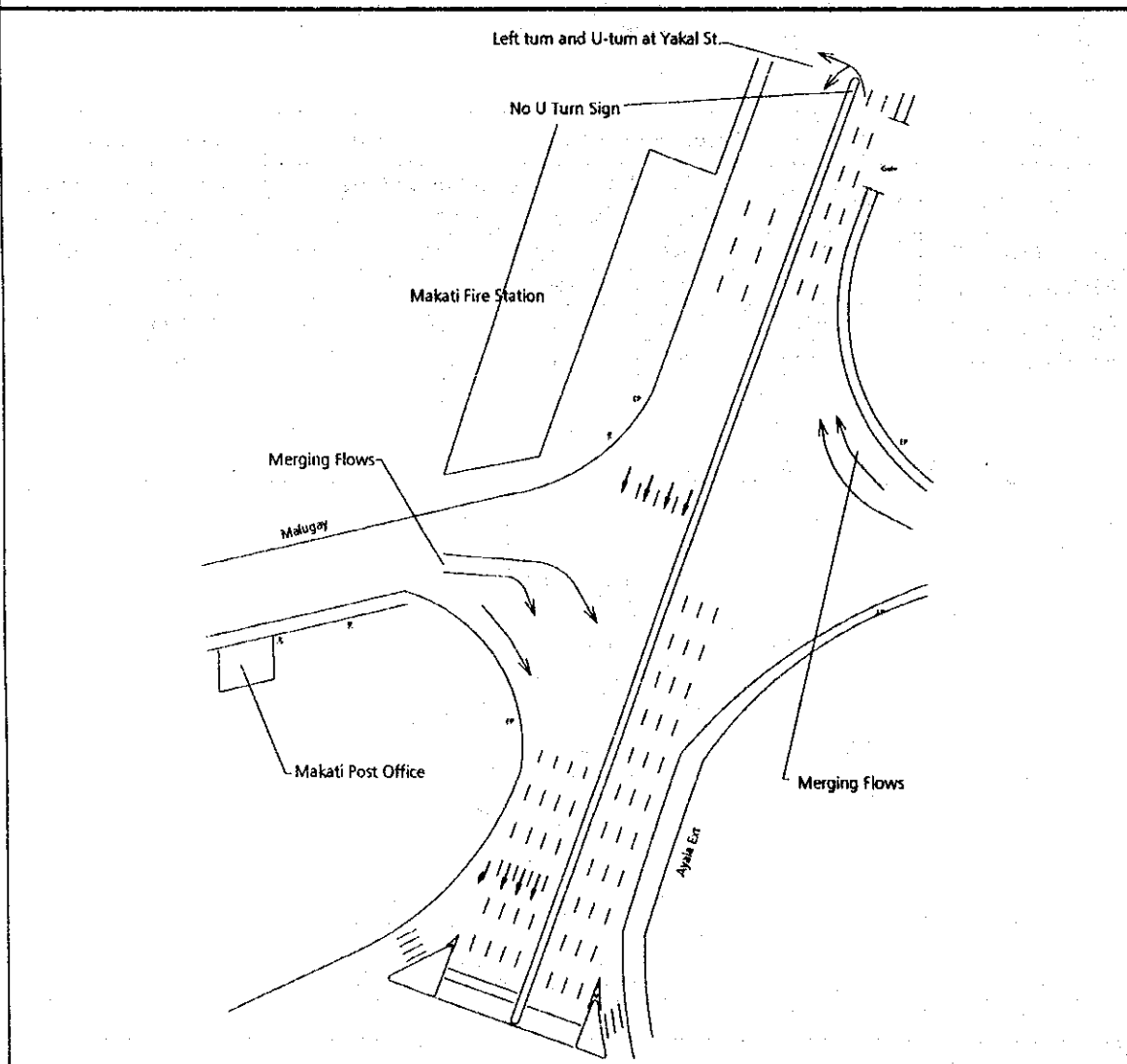


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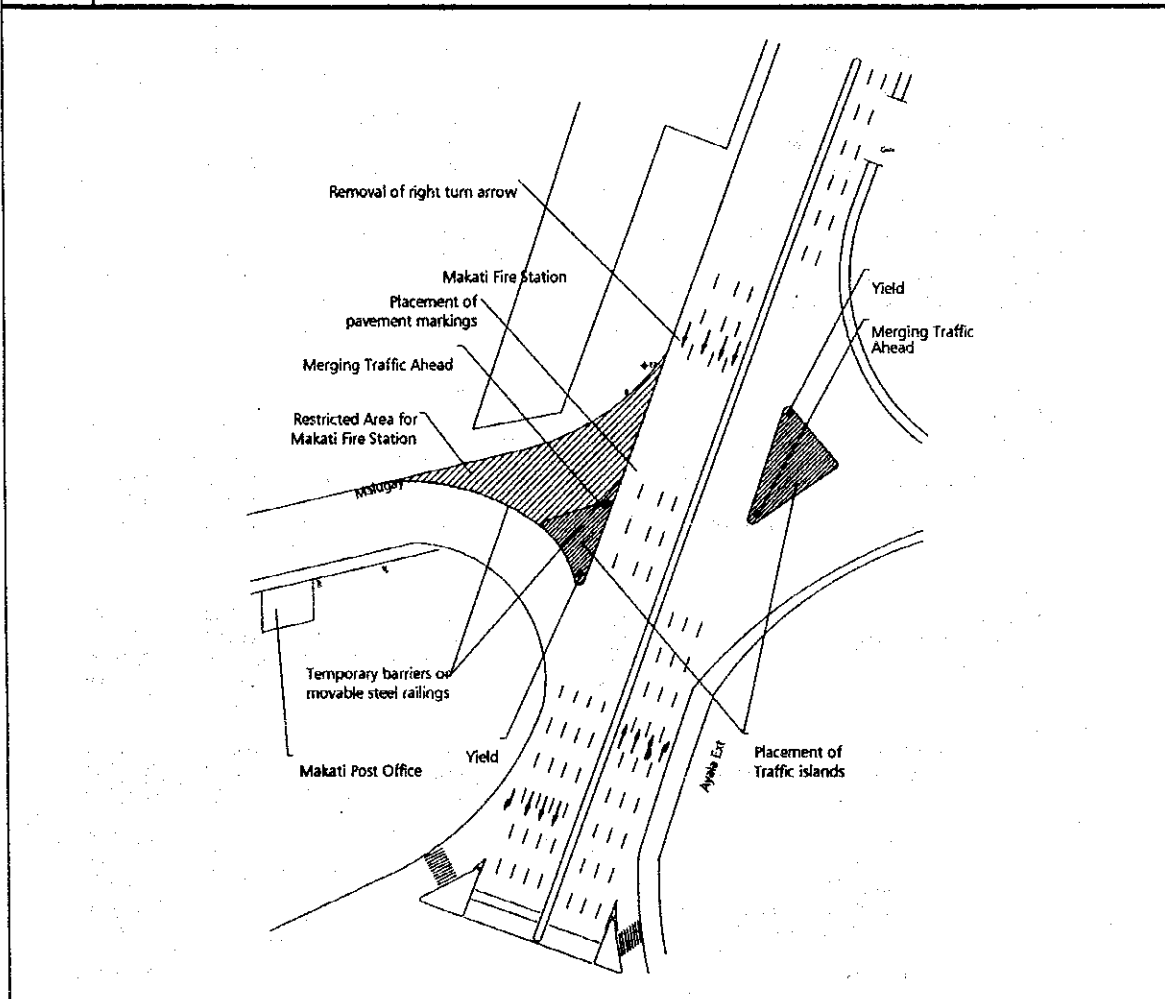
Small Scale Traffic Improvement Measures for Metro Manila

Name	Malugay / Ayala Ave.	Code	MK-04
Sheet	Analysis	LGU	Makati

- 1) The main cause of congestion is the no-left turn scheme adopted on G. Puyat – Ayala. Hence, this intersection has absorbed problem transferred from elsewhere. Hence, it is question of whether the problem is better handled at Malugay or at G. Puyat.
- 2) The long queues along Ayala Ave Extension may be attributable to the slow progression of flow at the intersection with Gil Puyat Avenue.
- 3) Delays to traffic flow are also caused by U-turn maneuvers and left-turns at Yakal St.
- 4) The wide area opening at the western approach allows merging of vehicles in a diagonal manner causing blockage to almost all of the through lanes along Ayala Avenue Extension (westside).
- 5) Although improvement of traffic flow at the Malugay/Ayala Ave Ext intersection is highly dependent on the improvement of throughput at the Sen Gil Puyat Avenue/ Ayala Avenue intersection, delays can be further minimized by controlling merging maneuvers at the intersection of Ayala Ave Ext with Malugay St.



Name	Malugay / Ayala Ave.	Code	MK-04
Sheet	Proposed Improvements	LGU	Makati
Engineering	<ol style="list-style-type: none"> 1) Placement of either temporary barriers or possible construction of a traffic island to control vehicular flow merging into Ayala Avenue Ext from Malugay St. 2) The area fronting the Makati Fire Department can be reserved for the Fire Department and restricted to other vehicular flows 3) Improve turning radius (at Malugay – east and west) to ease traffic flow movements. 4) Placement of Yield sign and Merging Traffic Ahead on the proposed island. 5) Pavement markings and directional arrows on Ayala Ave Extension as well as on Malugay Street. 6) Removal of right turn arrow at the western side of Ayala Ave Extension before Malugay (west segment). 		
Enforcement	<ol style="list-style-type: none"> 1) Strict enforcement of the No U-turn regulation along Ayala Avenue Ext at Yakal St. 2) Prohibit parking near the corner (Makati Post Office area) 3) Regulate swerving 		



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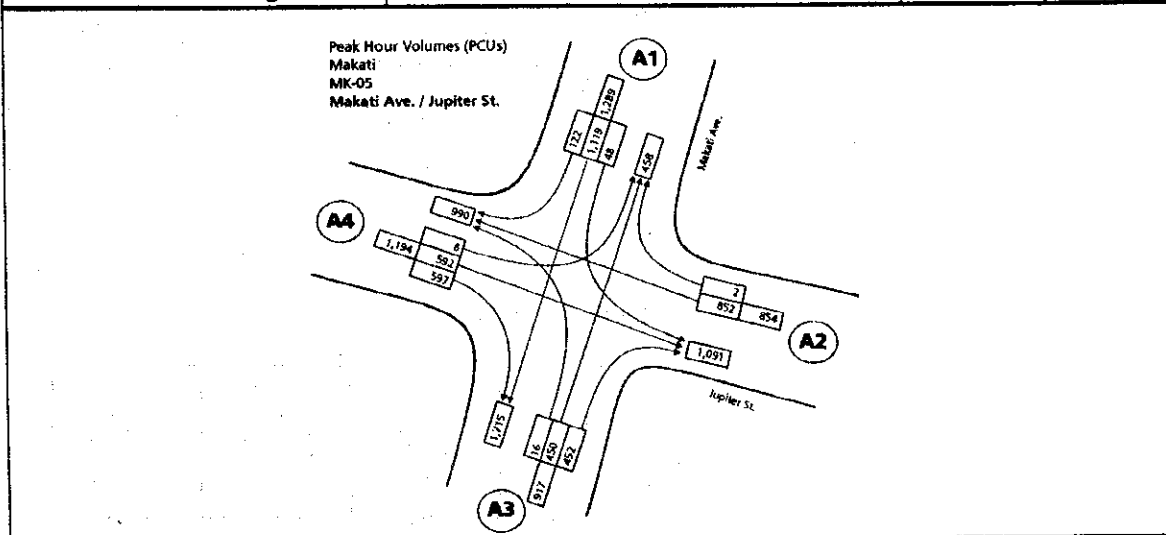
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MK-04: Malugay / Ayala Avenue (MAKATI)
(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.	-	45.00	-
b.) Solid White Lines, 150mm width	l.m.	-	150.00	-
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	150.00	-
b.) Broken Lines, w = 150mms, 200mm width	l.m.	210.00	45.00	9,450.00
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	150.00	-
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 Lines				
l.m.	-	-	-	-
6. Transition Line				
l.m.	-	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	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 = 200mm	l.m.	-	200.64	-
<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.	-	262.50	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines (w=200mm)	l.m.	-	200.64	-
<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.	1.00	1,830.00	1,830.00
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	2.00	1,095.00	2,190.00
c.) Numerals				
B. Signs				
1. Yield Sign	pcs.	2.00	3,850.00	7,700.00
2. Merging Traffic Ahead Sign	pcs.	2.00	3,850.00	7,700.00
3. No U-Turn Sign	pcs.	1.00	3,850.00	3,850.00
4. No Parking Sign	pcs.	1.00	3,850.00	3,850.00
C. Other Works				
1. Removal of Right Turn Arrow	pc.	1.00	350.00	350.00
2. Installation of Temporary Traffic Barriers (Steel Railing), 6m/pc	pcs.	14.00	7,500.00	105,000.00
3. Construction of Traffic Island	sq.m.	125.00	700.00	87,500.00
TOTAL				233,957.50
Contingencies, 5%				11,697.88
CMS, 10%				23,395.75
Miscellaneous (fees, permits, etc.), 5%				11,697.88
Govt. Supervision, 2%				4,679.15
TOTAL COST				285,428.15

Name	Makati Ave. / Jupiter	Code	MK-05
Sheet	Summary of Observations	LGU	Makati
Traffic Conditions	<ol style="list-style-type: none"> 1) Heavy build-up of traffic along Makati Avenue towards Senator Gil Puyat Avenue 2) Long queue of vehicles along Jupiter St from the west approach 3) Intersection is manned by traffic enforcer 4) Jeepneys and FX load and unload at the corner of the west approach of Jupiter St. causing delays to right turning vehicles. Vehicles cutting corners and entering the Petron gasoline station to exit to Makati Avenue 5) Heavy pedestrian flow on all approaches 		
Physical Conditions	<ol style="list-style-type: none"> 1) Very short road segment from Jupiter to Sen Gil Puyat Ave. unable to accommodate traffic queue waiting for green on G. Puyat / Makati Avenue. 2) A No Left-Turn sign on the east approach of Jupiter St. contradicts with directional arrows on the pavement of the inner lane. 3) The north exit lanes (2) from Makati Avenue south approach narrows down to one lane due to counterflow of left-turning vehicles to Jupiter St. 4) The double yellow center lines along Jupiter St. are being reinforced by chained steel posts (5-legged intersection with Vito Cruz Extension being one way approaching intersection and Kamagong St being one way from the intersection outwards). 5) Intersection is signalized under the SMART System but is presently not operational due to power connection problems. 6) Perpendicular parking at the McDonalds and Jollibee areas combined with double parking hinder traffic flow along Makati Avenue. 7) No sidewalk along Jupiter Street to heavy pedestrian flows. 8) Pavement markings applied, yellow box present. 		

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: Makati Ave (N)	19.5m	48	1,119	122	1,289	30.89%	Medium
A2: Jupiter (E)	14.0m	NA	852	2	854	29.60%	Medium
A3: Makati Ave (S)	19.5m	13	450	452	917	53.34%	Medium
A4: Jupiter (W)	14.0m	6	592	597	1,194	37.69%	Medium
Total		70	3,012	1,172	4,254		
Passenger Flows							

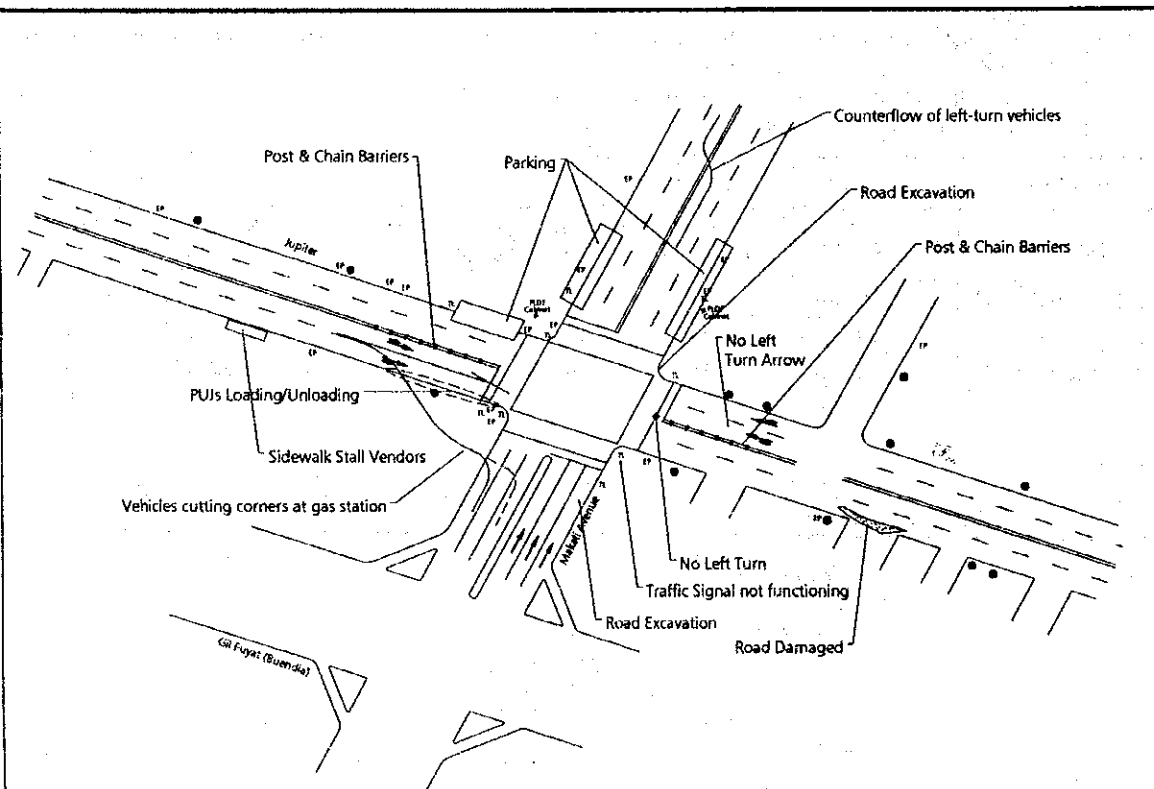


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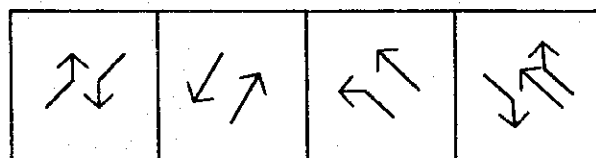
Small Scale Traffic Improvement Measures for Metro Manila

Name	Makati Ave. / Jupiter	Code	MK-05
Sheet	Analysis	LGU	Makati

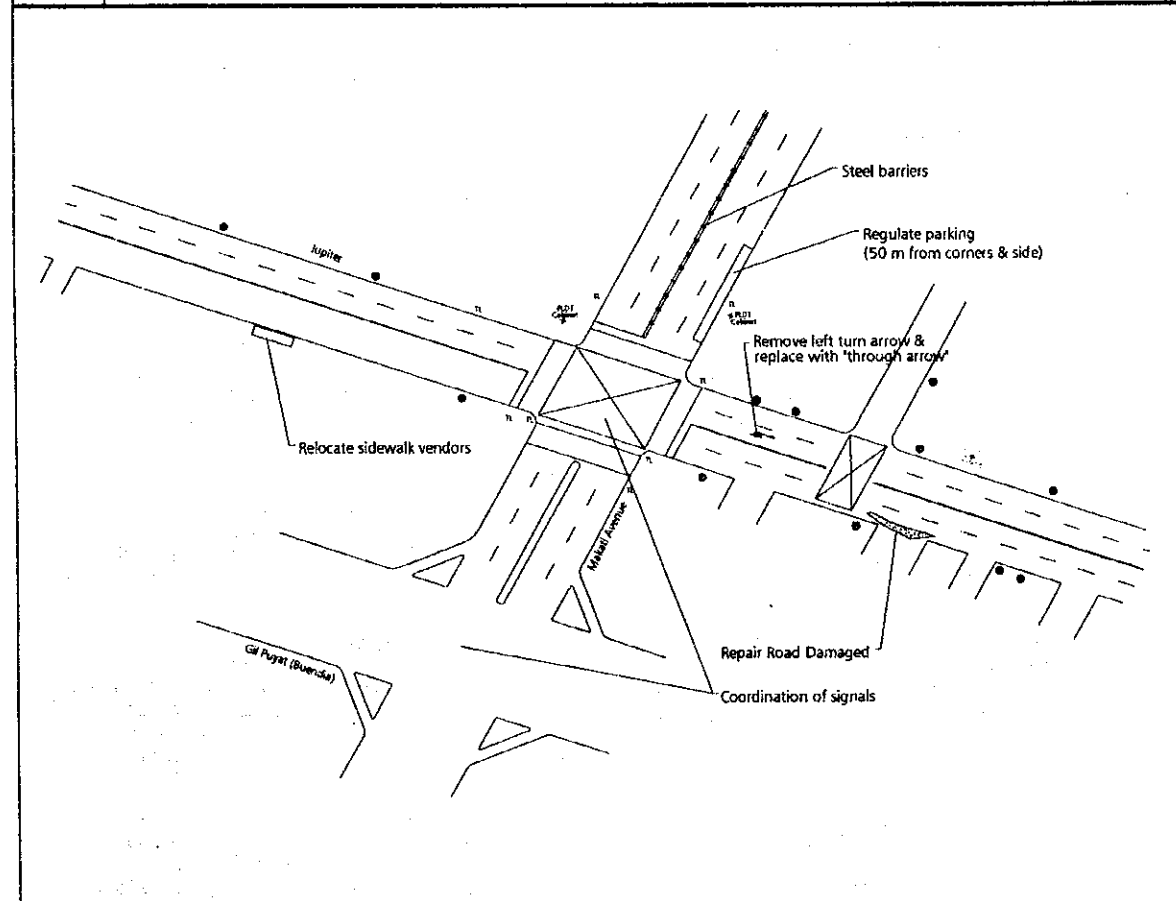
- 1) The counterflow of left-turning vehicles along Makati Avenue towards Jupiter St block the opposite northbound lanes causing vehicles to queue in the center and slowing down flow.
- 2) The traffic problem here is fundamentally induced by the ripple on the main G. J. Puyat – Makati Avenue intersection. The signal timing at the Sen Gil Puyat/Makati Avenue intersection caters more to the heavy vehicular flow along Sen Gil Puyat Avenue. The short segment between Jupiter St and Senator Gil Puyat Avenue leaves very little space for queuing vehicles along Makati Avenue
- 3) The major flow of traffic during the peak hour is towards the Makati CBD (Southbound). Due to the slow progression and the heavy right-turning volume at Jupiter St towards Makati CBD as well, queues propagate along Makati Avenue affecting almost all the intersections along Makati Avenue.
- 4) The vehicles turning right through the gasoline station constraint Makati Avenue as it nears Gil Puyat intersection. Thus, through traffic from the north approach of Makati Avenue are hindered.
- 5) Without an enforcer, drivers tend to ignore the yellow box.
- 6) The adjoining McDonalds fastfood at the corner has very few parking spaces that many vehicles have to use the carriageway. With perpendicular parking, the rear of the cars protrude beyond the curb line. Rampant double parking worsens the situation leaving very little space left along Jupiter St.



Existing Phase Pattern:



Name	Makati Ave. / Jupiter	Code	MK-05
Sheet	Proposed Improvements	LGU	Makati
Engineering	<ol style="list-style-type: none"> 1) Removal of the obsolete left turn arrow on the pavement of Jupiter St east approach, in keeping with new scheme. 2) Placement of median barriers to prohibit counterflow along Makati Avenue. 3) Immediate repair of the traffic signals 4) Signal timing and phasing of the Sen Gil Puyat/Makati Avenue and the Makati Ave/Jupiter intersections should be coordinated to ensure good progression of traffic flow. 5) Barriers should be placed at the gasoline station to discourage vehicles from "cutting corners" or taking shortcuts. 		
Enforcement	<ol style="list-style-type: none"> 1) Strict enforcement of "No Parking" and "No Double Parking" 50 meters the corner's curb side. 2) Loading and unloading of jeepneys and FXs at the corner should be strictly prohibited so as to eliminate blockage of vehicle flow along Jupiter St. 3) Enforcers should not tolerate counterflow traffic in order to clear the way for through traffic. 		



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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MK-05: Makati Avenue / Jupiter (MAKATI)
(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.	-	45.00	-
b.) Solid White Lines, 150mm width	l.m.	-	150.00	-
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	150.00	-
b.) Broken Lines, w = 150mms, 200mm width	l.m.	-	45.00	-
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	150.00	-
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 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.	-	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 = 200mm	l.m.	-	200.64	-
<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.	-	262.50	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines (w=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.	1.00	907.50	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				
B. Signs				
1. No Parking Sign	pcs.	3.00	3,850.00	11,550.00
2. No Double Parking Sign	pcs.	3.00	3,850.00	11,550.00
3. No Loading/Unloading Sign	pcs.	3.00	3,850.00	11,550.00
1. No Parking Sign	pcs.	1.00	3,850.00	3,850.00
C. Other Works				
1. Installation of Median Barriers (Steel Railing) 6m/pc	l.s.	12.00	7,500.00	90,000.00
2. Removal of Turn Arrow Pavement Arrow	l.s.	1.00	450.00	450.00
3. Repair of Damaged Road (Pavement)	sq.m.	18.00	700.00	12,600.00
4. Reprogram Traffic Signal Phasing and Timing	l.s.	1.00	30,000.00	30,000.00
TOTAL				172,457.50
Contingencies, 5%				8,622.88
CMS, 10%				17,245.75
Miscellaneous (fees, permits, etc.), 5%				8,622.88
Govt. Supervision, 2%				3,449.15
TOTAL COST				210,398.15

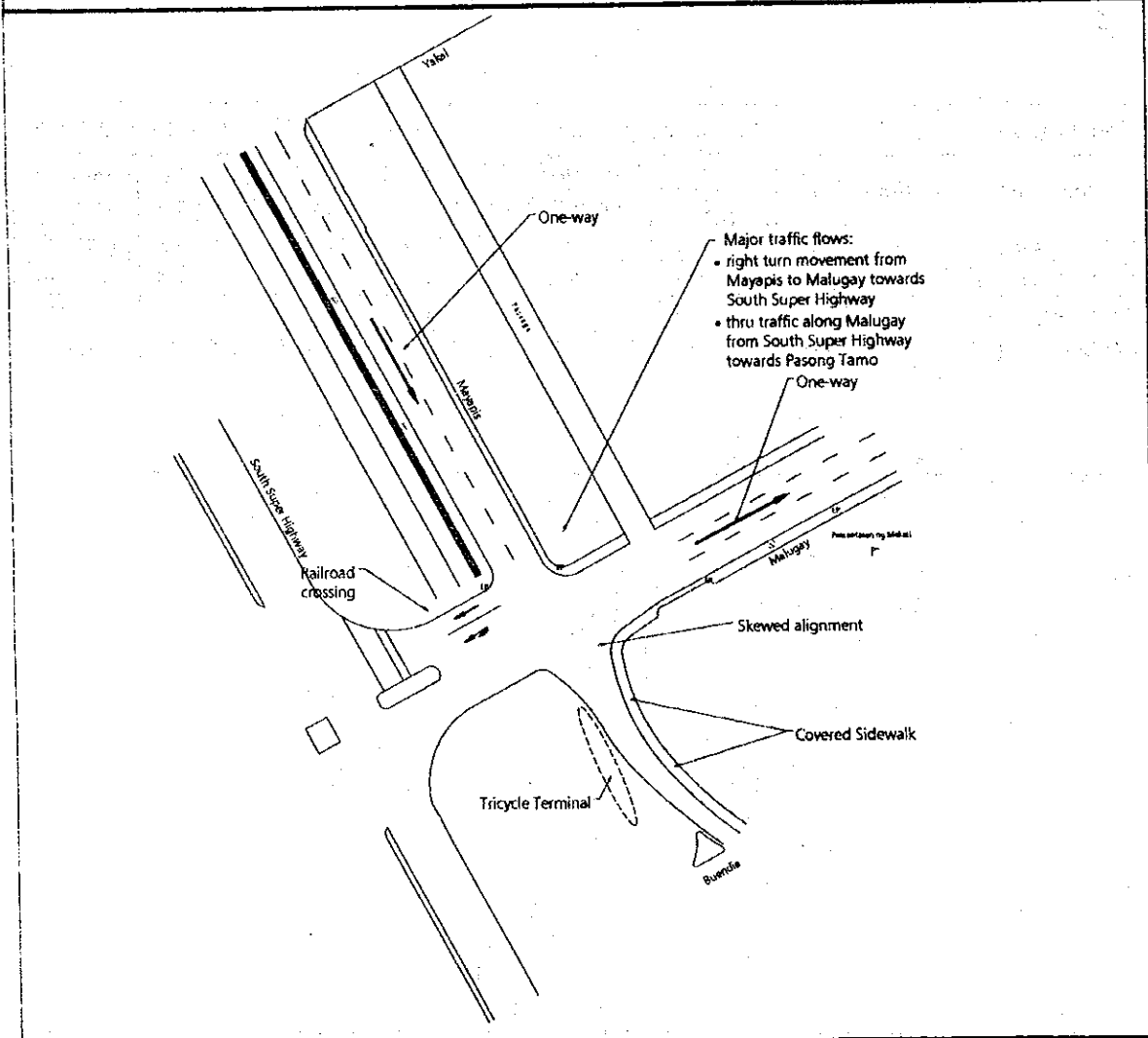
Name	Malugay / Mayapis			Code	MK-06		
Sheet	Summary of Observations			LGU	Makati		
Traffic Conditions	<p>1) Major flow of traffic is right - turn movement from Mayapis towards South Superhighway and through South Superhighway to Malugay St.</p> <p>2) Malugay St is one-way eastbound while Mayapis St. is one-way southbound. The one way system serves as an alternate route to Sen Gil Puyat Avenue to/from South Superhighway up to Ayala Avenue Extension.</p> <p>3) Tricycles cross the intersection and operate around the area.</p>						
Physical Conditions	<p>1) A 4-legged intersection with a slightly skewed alignment very close to the South Superhighway</p> <p>2) The railroad crossing is located west of Mayapis St. and east of the South Superhighway.</p> <p>3) Unsignalized intersection.</p> <p>4) A tricycle terminal is located southwest of the intersection.</p> <p>5) The old Pamantasan ng Makati campus is in the vicinity.</p>						
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: Mayapis (N)	8.8m	175	75	1,108	1,357	30.34%	Medium
A2: Malugay (E)	11.7m	NA	NA	NA	NA	NA	NA
A3: Mayapis (S)	8.9m	NA	NA	NA	NA	NA	NA
A4: Malugay (W)	17.0m	NA	1,191	NA	1,191	33.02%	Medium
Total		175	1,266	1,108	2,548		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Makati MK-06 Malugay St. / Mayapis St..</p>							

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Small Scale Traffic Improvement Measures for Metro Manila

Name	Malugay / Mayapis	Code	MK-06
Sheet	Analysis	LGU	Makati

- 1) The Malugay / South Superhighway intersection is signalized and dictates the tempo of traffic at the Malugay / Mayapis intersection.
- 2) Vehicles turning right at the north approach of Mayapis St. have to slow down a second time due to the railroad crossing and the slight difference in gradient.
- 3) The distance of the intersection from South Superhighway, being very close, is quite short so during long cycle length, vehicles clog up to stay clear of the railroad crossing.
- 4) The skewed alignment and the difference in gradient slows down through traffic flow at the intersection.
- 5) Tricycles crossing the intersection also cause some delay to the other vehicles due to their uncontrolled maneuvers.



Name	Malugay / Mayapis	Code	MK-06
Sheet	Proposed Improvements	LGU	Makati
Engineering	<ol style="list-style-type: none"> 1) Review / update the signal timing at the Malugay / South Superhighway intersection. Phasing on Malugay / Mayapis needs to be coordinated with the main intersection. 2) Not much re-engineering works can be further done. 		
Enforcement	<ol style="list-style-type: none"> 1) Prohibit tricycles on the congested segments - (along Malugay Street). 		

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Small Scale Traffic Improvement Measures for Metro Manila

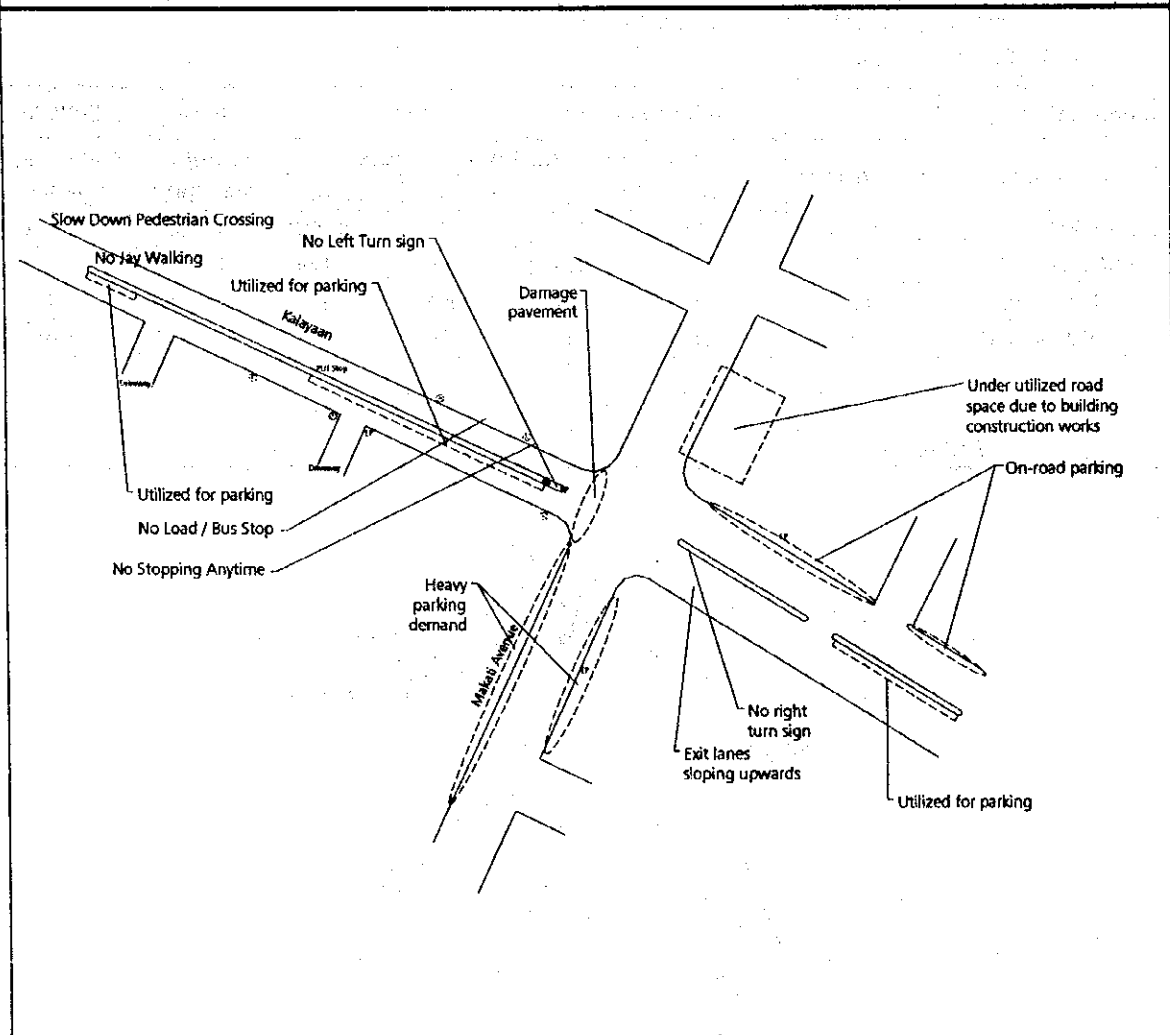
LOCATION : MK-06: Malugay / Mayapis (MAKATI)
(cost summary)

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, 150mm width	l.m.	-	-	-
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	60.00	150.00	9,000.00
b.) Broken Lines, w = 150mms, 200mm width	l.m.	140.00	45.00	6,300.00
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.)	l.m.	-	-	-
6. Transition Line				
a.)	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.	-	-	-
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				
a.)	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.	1.00	1,095.00	1,095.00
c.) Numerals				
B. Signs				
1. One Way Sign	pcs.	2.00	3,850.00	7,700.00
2. No Double Parking Sign	pcs.	4.00	3,850.00	15,400.00
3. No Loading/Unloading Sign	pcs.	2.00	3,850.00	7,700.00
C. Other Works				
1. Reprogram Traffic Signal Phasing and Timing	l.s.	1.00	5,000.00	5,000.00
TOTAL				70,897.24
Contingencies, 5%				3,544.86
CMS, 10%				7,089.72
Miscellaneous (fees, permits, etc.), 5%				3,544.86
Govt. Supervision, 2%				1,417.94
TOTAL COST				86,494.63

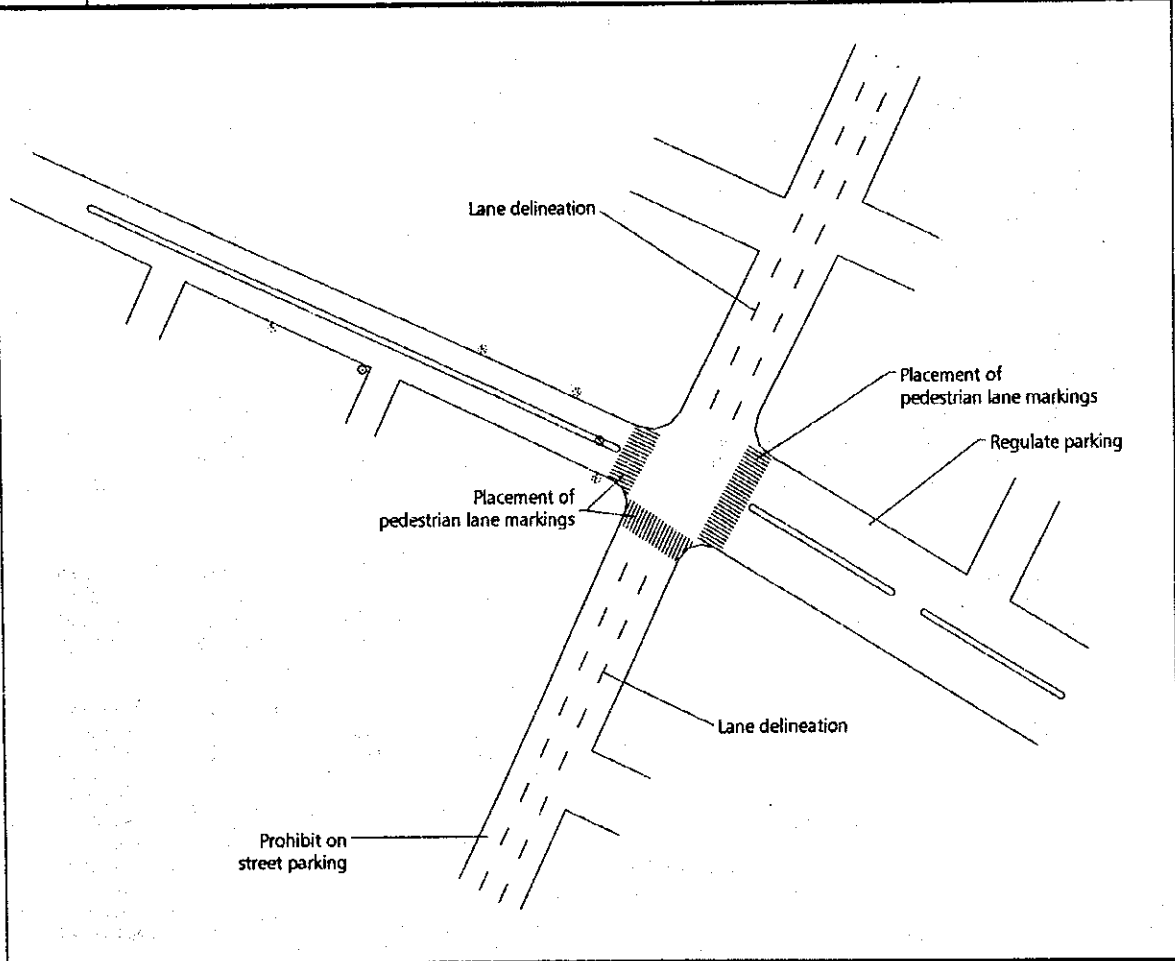
Name	Kalayaan / Makati Ave.				Code	MK-07		
Sheet	Summary of Observations				LGU	Makati		
Traffic Conditions	<ol style="list-style-type: none"> 1) Heavy through traffic along Makati Avenue (one way southbound) and Kalayaan Avenue eastbound. 2) Although Kalayaan Avenue is two way, an imbalance in directional flow is apparent. 3) Traffic flows very slowly resulting in long queues from all directions. 4) Construction equipment utilizing part of the roadway blocking traffic flow along Makati Avenue. 5) Rampant parking (perpendicular and on-road) along Makati Avenue. 6) No lane designation so drivers tend to switch lanes in order to jump the queue. 							
	Physical Conditions	<ol style="list-style-type: none"> 1) Intersection is being manned by traffic enforcers 2) No pavement markings 3) Kalayaan Avenue eastbound is sloping upwards. 4) Damaged pavement with puddles mainly along Makati Avenue up to 20 meters from the intersection 5) Ongoing building construction works near corner 6) Bad pavement conditions reduce roadway capacity 7) The exit lanes on the east approach of Kalayaan Avenue are generally being utilized for parking since very few vehicles actually use the lanes. 8) Constricted sidewalk 						
Signalization		None	Pavement Markings	None	Peak	07:00-08:00		
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume	
		Left	Through	Right	Total			
A1: Makati Ave (N)	10.9m	18	1,220	NA	1,238	40.02%	Heavy	
A2: Kalayaan (E)	8.9m	278	NA	NA	278	24.81%	Light	
A3: Makati Ave (S)	10.6m	NA	NA	NA	NA	NA	NA	
A4: Kalayaan (W)	16.6m	NA	943	30	973	30.35%	Light	
Total		296	2,163	30	2,489			
Passenger Flows								

Name	Kalayaan / Makati Ave.	Code	MK-07
Sheet	Analysis	LGU	Makati

- 1) The road capacity of Makati Avenue is greatly reduced due to several factors: i.e parking, poor pavement conditions, pedestrians on the roadway, vehicle maneuvers in and out the parking spaces of the commercial establishments. Makati Avenue, is a major access route to the Makati CBD There is heavy parking demand close to the intersection. The adjoining commercial establishments have very few parking spaces so that many vehicles have to use the carriageway. With perpendicular parking, the rear of the cars protrude beyond the curb line. Rampant double parking worsens the situation leaving very little space on the carriageway for through traffic flow.
- 2) The ongoing construction works along Makati Avenue also very near the corner affects smooth traffic flow due to the operation of heavy equipment, scattered construction debris, water puddles, etc.
- 3) The constricted sidewalks force pedestrians to use the roadway. Most of the commercial establishments and buildings do not have proper setbacks and adequate parking. Frequent vehicle maneuvers disrupt traffic flow and hamper pedestrian movements.
- 4) The absence of lane designations allow drivers to position their vehicles such that they can advance in a manner most advantageous to them but not necessarily with consideration to the other vehicles in the roadway. Because of this, lane capacity is not being optimized.



Name	Kalayaan / Makati Ave.	Code	MK-07
Sheet	Proposed Improvements	LGU	Makati
Engineering	<ol style="list-style-type: none"> 1) The present level of traffic volume at the intersection may warrant the installation of traffic signals. However, coordination of the signals along the stretch of Makati Avenue is very critical to ensure smooth progression of traffic flows. 2) Repair or rehabilitation of the pavement on Makati Avenue. 3) Regulate commercial establishments, to reduce parking demands. 4) The capacity of Kalayaan Avenue may still be increased by reducing the width of the center island, but recommended if the capacity of Makati Avenue can also be increased- through traffic management measures. 5) Pavement markings for lane delineation and pedestrian crossings should be established 		
Enforcement	<ol style="list-style-type: none"> 1) Prohibit on-street parking along Makati Avenue. 2) Regulate construction-related activities which can impede traffic flow, such as delivery of construction materials, etc. 		



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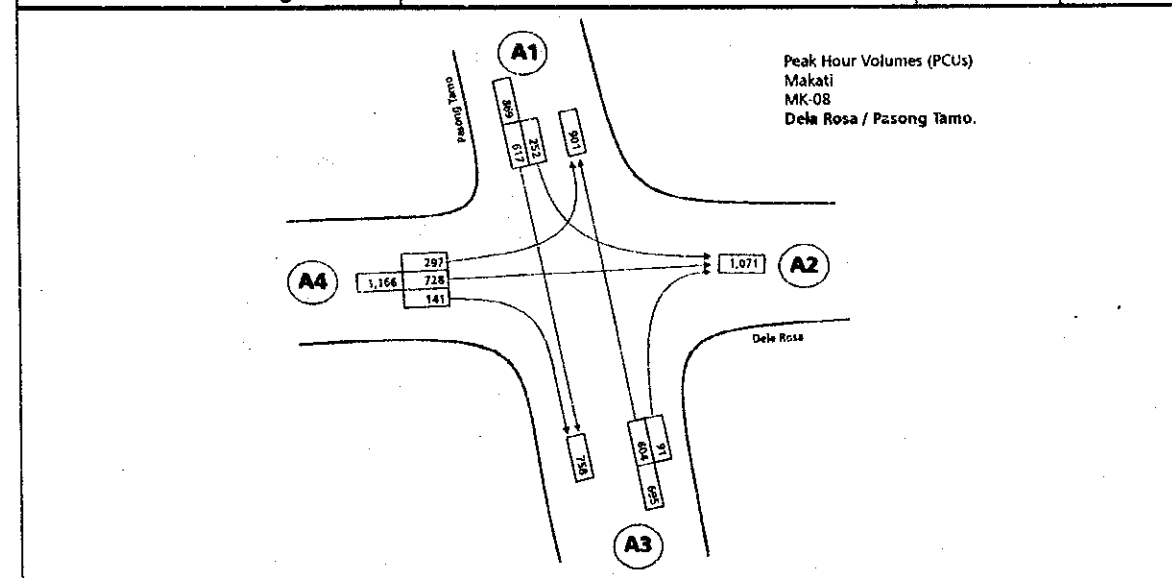
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MK-07: Kalayaan Avenue / Jupiter (MAKATI)
(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.	-	45.00	-
b.) Solid White Lines, 150mm width	l.m.	-	150.00	-
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	150.00	-
b.) Broken Lines, w = 150mms, 200mm width	l.m.	600.00	45.00	27,000.00
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	150.00	-
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 Lines				
l.m.	-	-	-	-
6. Transition Line				
l.m.	-	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	l.m.	-	337.50	-
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	192.00	225.00	43,200.00
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 = 200mm	l.m.	-	200.64	-
<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.	-	262.50	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines (w=200mm)	l.m.	-	200.64	-
<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.	3.00	1,830.00	5,490.00
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	3.00	1,095.00	3,285.00
c.) Numerals				
B. Signs				
1. No Parking Sign	pcs.	3.00	3,850.00	11,550.00
2. No Stopping Anytime	pcs.	2.00	3,850.00	7,700.00
3. No Loading/Unloading Sign	pcs.	2.00	3,850.00	7,700.00
4. Pedestrian Crossing Sign	pcs.	3.00	3,850.00	11,550.00
C. Other Works				
1. Install Traffic Signal	l.s.	1.00	1,417,115.70	1,417,115.70
2. Repair of Damaged Road (Pavement)	sq.m.	77.00	700.00	53,900.00
3. Reduction of Width of Center Island	sq.m.	60.00	250.00	15,000.00
TOTAL				1,605,305.70
Contingencies, 5%				80,265.29
CMS, 10%				160,530.57
Miscellaneous (fees, permits, etc.), 5%				80,265.29
Govt. Supervision, 2%				32,106.11
TOTAL COST				1,958,472.95

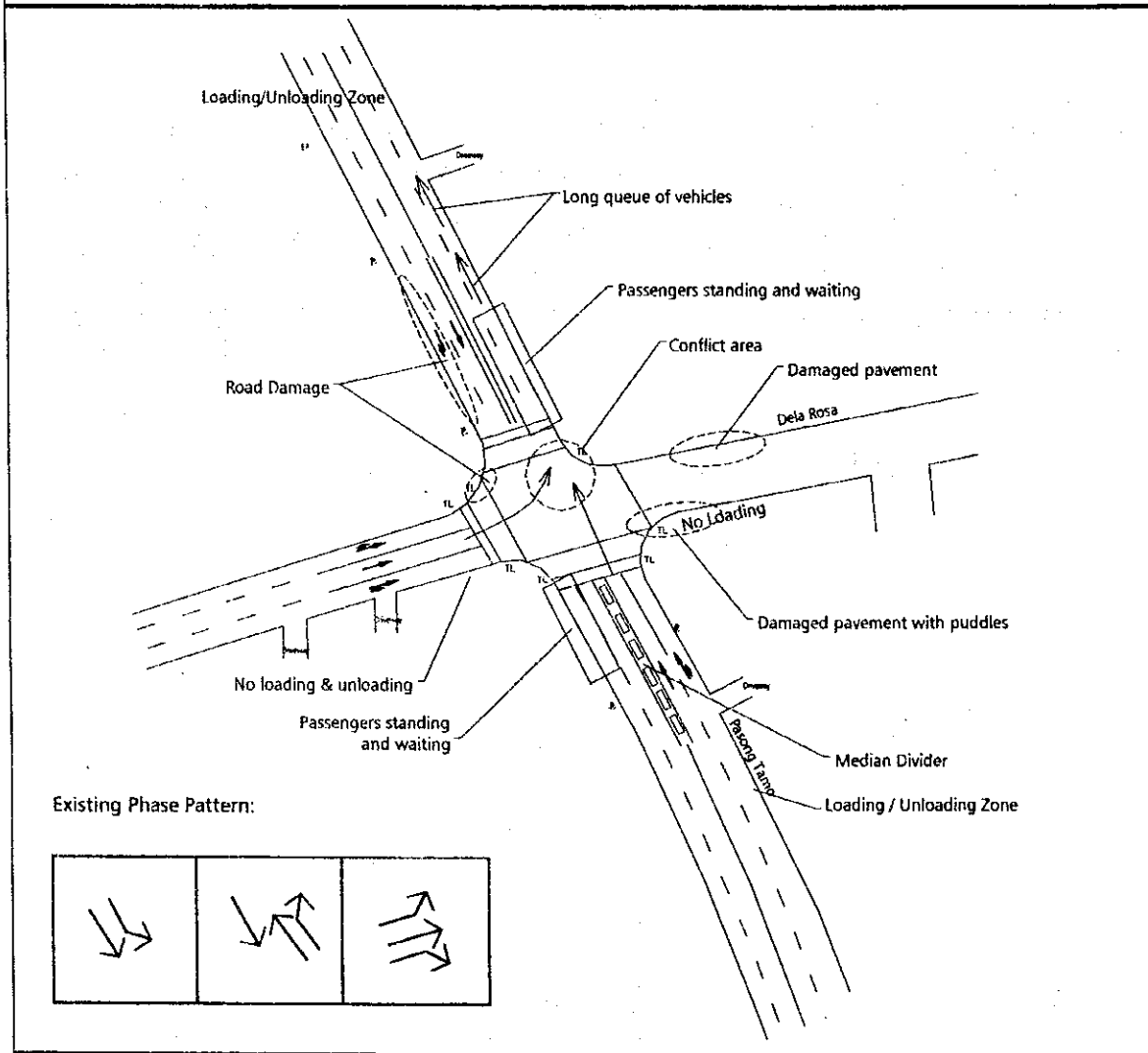
Name	Dela Rosa / Pasong Tamo	Code	MK-08
Sheet	Summary of Observations	LGU	Makati
Traffic Conditions	1) Dela Rosa St is one-way eastbound 2) Vehicles turning right from Pasong Tamo to Dela Rosa St. avoid the damaged pavement and take the leftmost lane thereby requiring a wide area when turning. 3) Public utility jeepneys load and unload at the corners so passengers are generally standing and waiting at the corners 4) Heavy build-up of traffic due to the traffic signal at Gil Puyat / Pasong Tamo intersection 5) Intersection is signalized but enforcers manually control traffic		
	1) A four-legged intersection with Dela Rosa St. being one-way towards the Makati CBD (eastbound). Pasong Tamo has two lanes per direction while Dela Rosa has three lanes eastbound. 2) Damaged pavement with puddles at the exit lanes of Dela Rosa east approach. A portion is temporarily covered with a metal sheet. 3) The intersection has pavement markings with double yellow line at the center.		

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: Pasong Tamo(N)	12.2m	252	617	NA	869	40.03%	Heavy
A2: Dela Rosa (E)	9.4m	NA	NA	NA	NA	NA	Moderate
A3: Pasong Tamo(S)	18.1m	NA	604	91	695	40.64%	Heavy
A4: Dela Rosa (W)	9.4m	297	728	141	1,166	44.21%	Moderate
Total		549	1,949	232	2,729		
Passenger Flows							

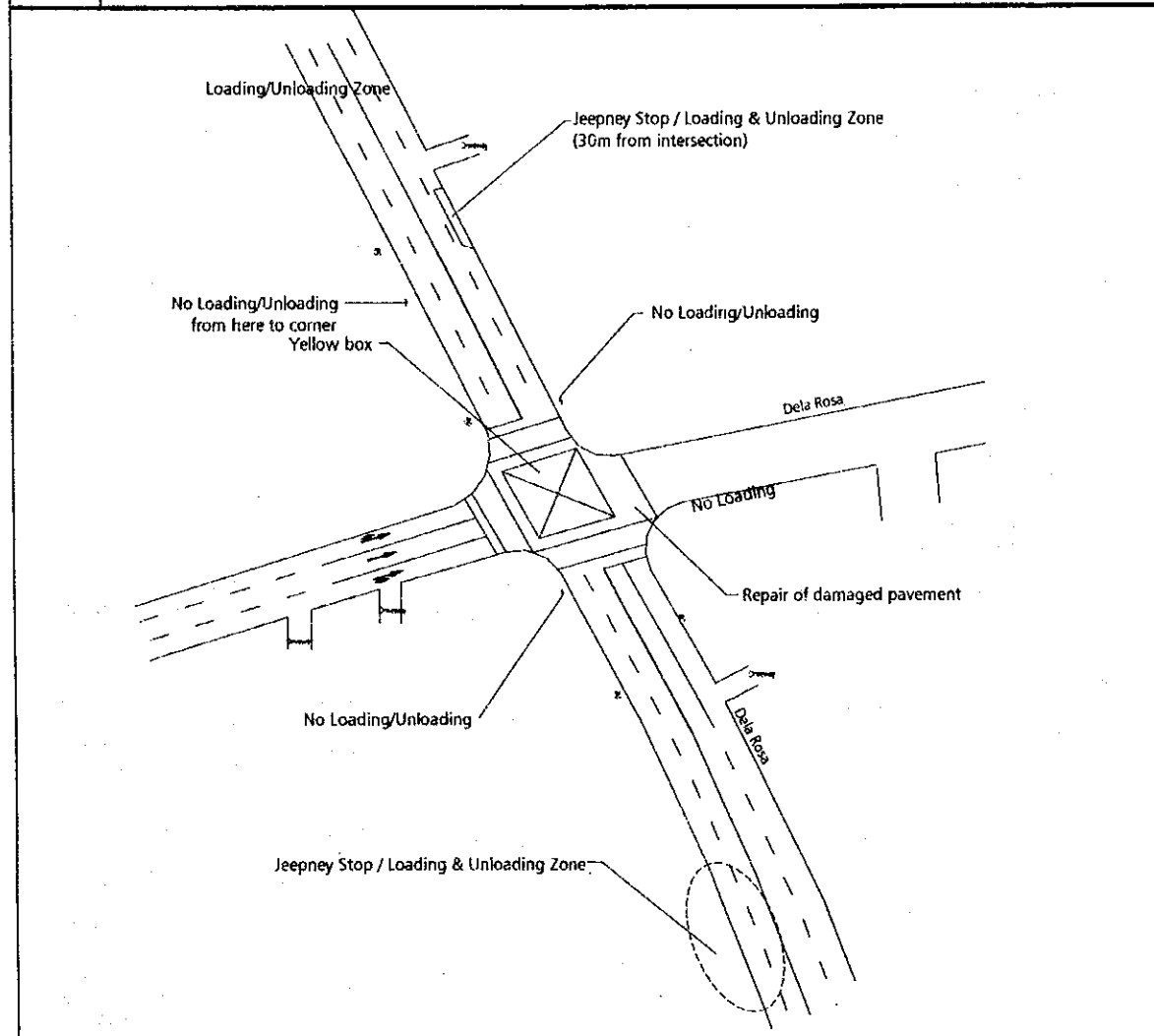


Name	Dela Rosa / Pasong Tamo	Code	MK-08
Sheet	Analysis	LGU	Makati

- 1) The left turning volume from Dela Rosa St from the west approach can not usually be accommodated at the north exit lanes of Pasong Tamo due to the long queue brought about by the congestion also being experienced at the intersection north of Dela Rosa St.
- 2) There are indications that the main cause of the problem is uncoordinated signal phasings along the immediate stretch of Pasong Tamo.
- 3) Traffic enforcers have to override the signal settings to manage traffic flow.
- 4) The damaged condition of the pavement reduces the capacity of the roadway. Since vehicles avoid the area with the damaged pavement, they all crowd on one side to use the other lanes.
- 5) Indiscriminate loading and unloading of passengers by the public utility jeepneys cause delays to traffic flow. Drivers tend to just stop in the center mindless of vehicles at the rear. There is an observed laxity on the enforcement side of proper loading and unloading practices.



Name	Dela Rosa / Pasong Tamo	Code	MK-08
Sheet	Proposed Improvements	LGU	Makati
Engineering	<ol style="list-style-type: none"> 1) Repair of damaged pavement 2) Signal phasing design of the Pasong Tamo / Dela Rosa intersection 3) Signal coordination with the nearby intersections along the stretch of Pasong Tamo 4) Designation of loading and unloading zones (at least 30 meters away from the intersection) 5) Placement of yellow box markings 6) Traffic signs (no Loading/unloading) should be installed 		
Enforcement	<ol style="list-style-type: none"> 1) Enforcers should strictly regulate loading and unloading of public utility jeepneys at the corner 2) Enforcement of yellow box rule 		



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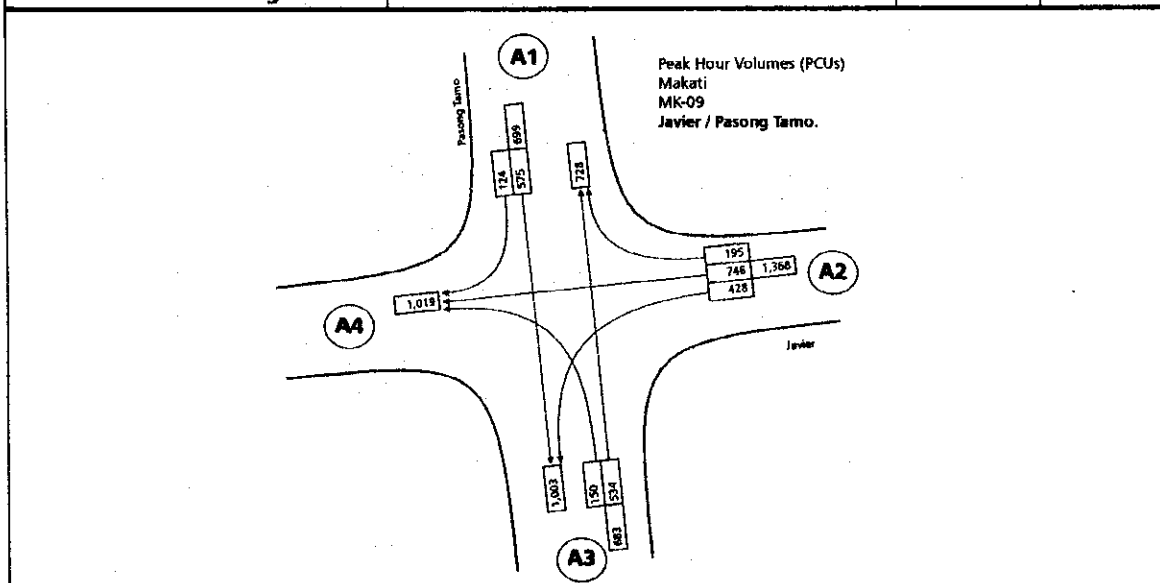
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MK-08: Dela Rosa / Pasong Tamo (MAKATI)
 (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.	-	45.00	-
b.) Solid White Lines, 150mm width	l.m.	-	150.00	-
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	150.00	-
b.) Broken Lines, w = 150mms, 200mm width	l.m.	-	45.00	-
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	150.00	-
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 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.	-	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 = 200mm	l.m.	84.00	200.64	16,853.76
<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.	-	262.50	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines (200mm)	l.m.	110.00	200.64	22,070.40
<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.	3.00	907.50	2,722.50
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. Jeepney Stop / Loading & Unloading Sign	pcs.	2.00	3,850.00	7,700.00
2. No Stopping Anytime	pcs.	2.00	3,850.00	7,700.00
3. No Loading/Unloading Sign	pcs.	2.00	3,850.00	7,700.00
4. Pedestrian Crossing Sign	pcs.	3.00	3,850.00	11,550.00
C. Other Works				
1. Repair of Damaged Road (Pavement)	sq.m.	84.00	700.00	58,800.00
TOTAL				138,021.66
Contingencies, 5%				6,901.08
CMS, 10%				13,802.17
Miscellaneous (fees, permits, etc.), 5%				6,901.08
Govt. Supervision, 2%				2,760.43
=====				=====
TOTAL COST				168,386.43

Name	Javier / Pasong Tamo	Code	MK-09
Sheet	Summary of Observations	LGU	Makati
Traffic Conditions	1) Passengers waiting on the road 2) Traffic enforcer manning the intersection 3) Uncontrolled loading and unloading of public utility jeepneys at the corner 4) High parking demand around the corner due to office/commercial establishments having access very close to the curb 5) Parking of several taxis along the south approach of Pasong Tamo very near (roughly 3 meters) the intersection. Apparently, due to the presence of food stalls where the drivers take their meals. 6) Enforcers are busy directing traffic. There is an observed laxity in controlling loading and unloading at the intersection		
	1) A four-legged intersection. Pasong Tamo is an undivided road in the north-south direction with two lanes each direction while Javier St. is a narrow two-lane street with one way flow westbound. 2) No pedestrian crossings 3) No lane markings 4) Very narrow sidewalk		

Signalization	None	Pavement Markings	None	Peak	09:00-10:00		
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: Pasong Tamo (N)	12.4m	NA	575	124	699	49.97%	Moderate
A2: Javier (E)	13.0m	428	746	195	1,368	46.22%	Light
A3: Pasong Tamo (S)	12.4m	150	534	NA	683	46.02%	Moderate
A4: Javier (W)	6.5m	NA	NA	NA	NA	NA	Light
Total		577	1,854	318	2,749		
Passenger Flows							

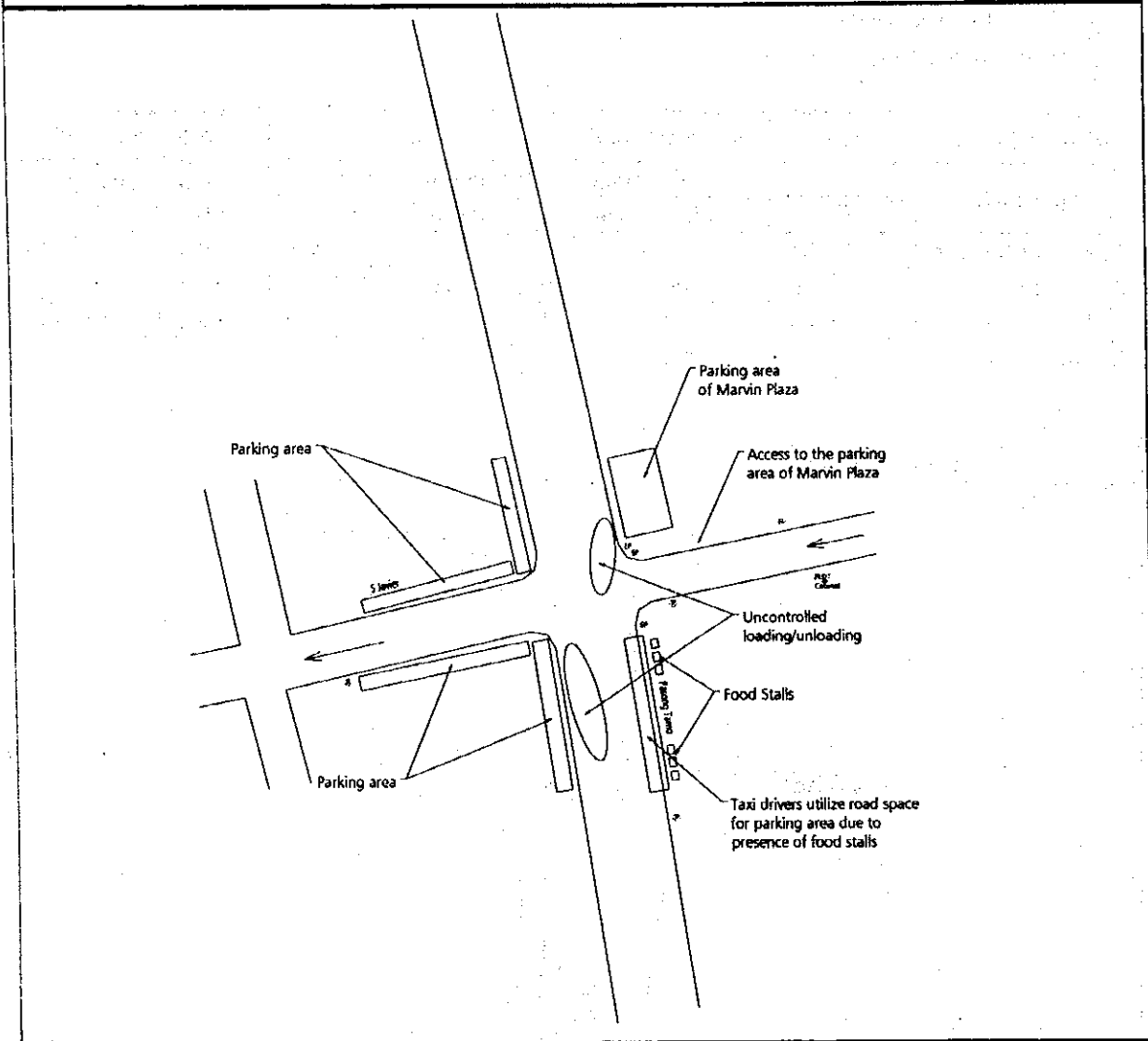


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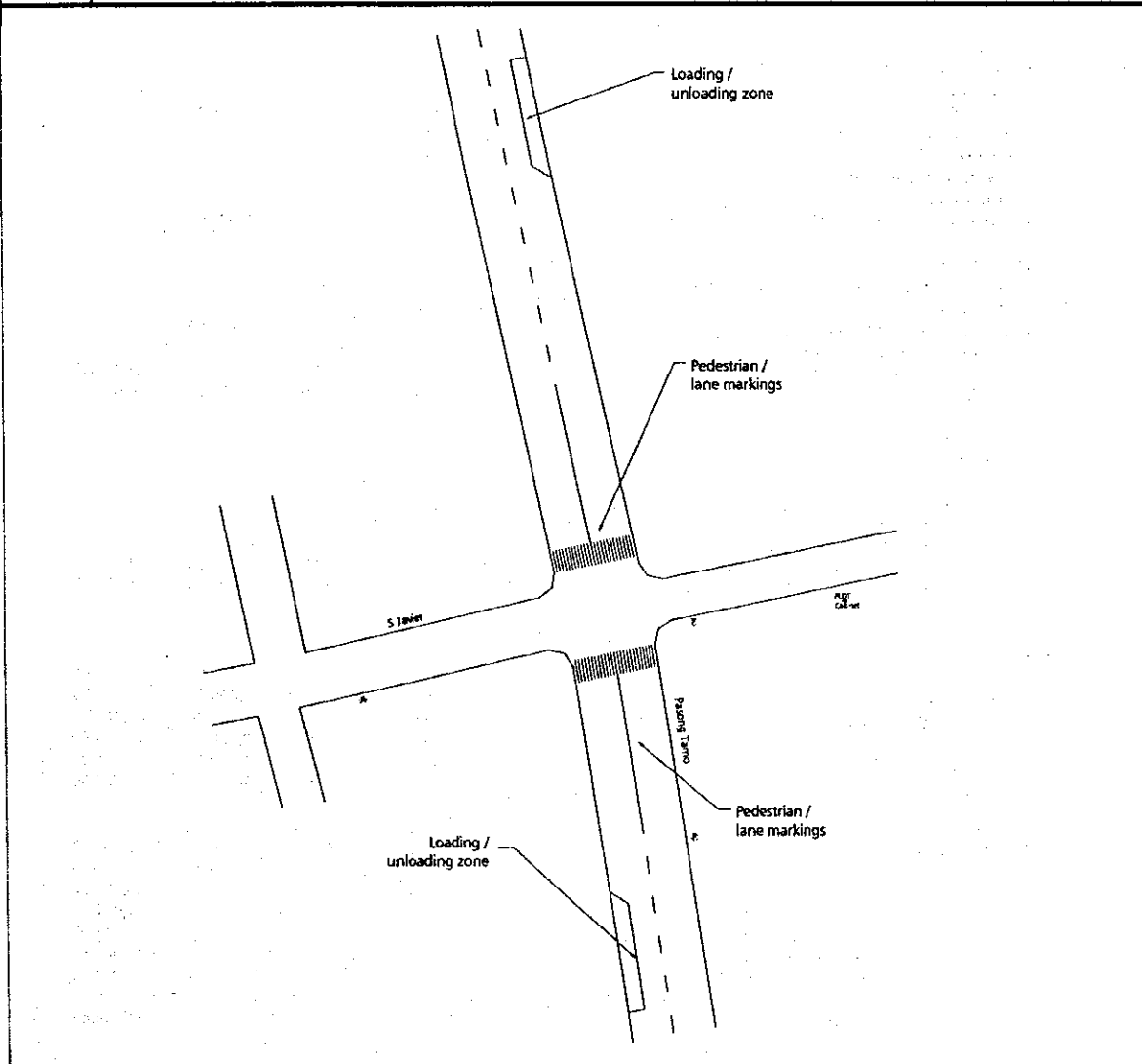
Small Scale Traffic Improvement Measures for Metro Manila

Name	Javier / Pasong Tamo	Code	MK-09
Sheet	Analysis	LGU	Makati

- 1) The uncontrolled loading and unloading of public utility jeepneys along Pasong Tamo causes blockage to through and right turning traffic flow from Javier St.
- 2) The presence of the enforcers do not deter drivers from stopping at the intersection to load and unload. In many instances, it was even observed that the jeepneys wait at the corner for passengers.
- 3) The taxi parking uses up already one lane of the south approach thereby reducing approach capacity.
- 4) Perpendicular parking around the corner is disadvantageous because of the necessary vehicle maneuvers to get in and out of the parking space. In most cases, the rear of the vehicles protrude beyond the edge of the curb so it occupies a portion of the roadway. Double parking vehicles worsen the situation.
- 5) The parking area in front of Marvin Plaza (located at the northeast corner of the intersection) has a driveway along Javier St, very near the corner and is also open to vehicle access along Pasong Tamo. This allows vehicle maneuvers into and out of the parking whenever a slot is vacant.



Name	Javier / Pasong Tamo	Code	MK-09
Sheet	Proposed Improvements	LGU	Makati
Engineering	<ol style="list-style-type: none"> 1) Placement of controlled access to the parking spaces at Marvin Plaza – perhaps post and rope type of barrier 2) Jeepney stops to be located at least 20 meters from the corner of the intersection. Designate loading and unloading zones. 3) Placement of pedestrian markings, lane markings, and road signages 4) Perpendicular parking around the establishments at the corner should not be allowed. Parallel or oblique parking instead can be regulated. 		
Enforcement	<ol style="list-style-type: none"> 1) Regulate loading and unloading at the corner 2) Enforcement of tow-away zones to limit parking on the roadway 3) Regulate parking maneuvers 		



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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MK-09: Javier / Pasong Tamo (MAKATI)
(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.	280.00	45.00	12,600.00
b.) Solid White Lines, 150mm width	l.m.	120.00	150.00	18,000.00
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	150.00	-
b.) Broken Lines, w = 150mm, 200mm width	l.m.	800.00	45.00	36,000.00
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	150.00	-
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 Lines	l.m.	-	-	-
6. Transition Line	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	l.m.	-	337.50	-
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	235.00	225.00	52,875.00
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 = 200mm	l.m.	-	200.64	-
<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.	-	262.50	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines (200mm)	l.m.	110.00	200.64	22,070.40
6. Tow Away Zone Line (200mm)	l.m.	120.00	200.64	24,076.80
<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.	3.00	907.50	2,722.50
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.	1.00	1,095.00	1,095.00
c.) Numerals				
B. Signs				
1. Loading & Unloading Sign	pcs.	2.00	3,850.00	7,700.00
2. No Double Parking Sign	pcs.	2.00	3,850.00	7,700.00
3. No Loading/Unloading Sign	pcs.	2.00	3,850.00	7,700.00
4. Pedestrian Crossing Sign	pcs.	4.00	3,850.00	15,400.00
5. No Perpendicular Parking Sign	pcs.	2.00	3,850.00	7,700.00
6. Tow Away Zone Sign	pcs.	2.00	3,850.00	7,700.00
C. Other Works				
1. Install Pedestrian Barrier (Post and Rope)	l.m.	50.00	350.00	17,500.00
TOTAL				248,159.70
Contingencies, 5%				12,407.99
CMS, 10%				24,815.97
Miscellaneous (fees, permits, etc.), 5%				12,407.99
Govt. Supervision, 2%				4,963.19
TOTAL COST				302,754.83

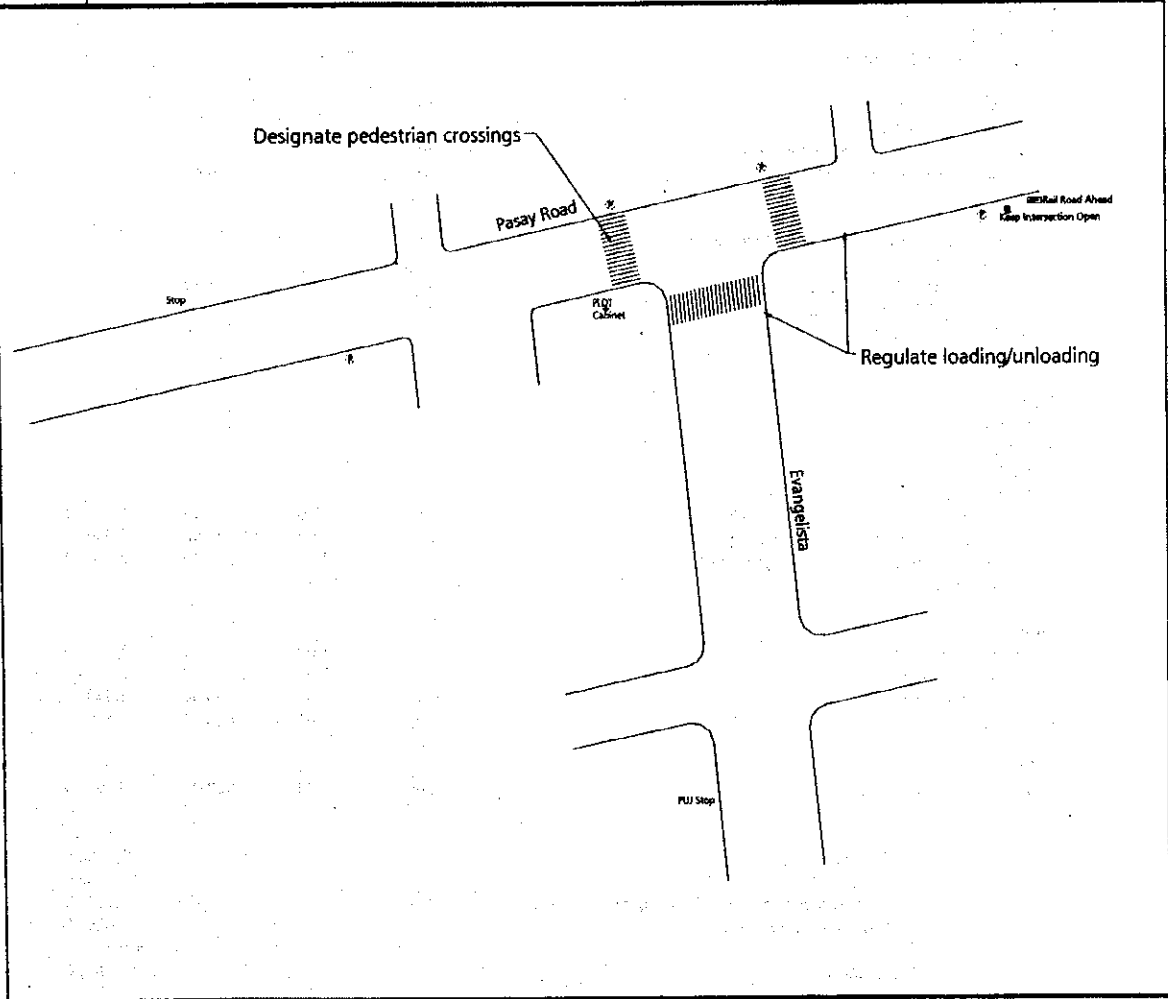
Name	Pasay Road / Evangelista				Code	MK-10	
Sheet	Summary of Observations				LGU	Makati	
Traffic Conditions	<ol style="list-style-type: none"> Moderate to heavy pedestrian movements observed in the area of the intersection. Sidewalks generally occupied by vendors so the pedestrians use the carriageway instead. Major flow of traffic is through along Pasay Road. Traffic turning to/from Evangelista St are mostly jeepneys. Loading and unloading at the corner is also rampant Various commercial activities around the area, sometimes encroaching on the pavement. 						
Physical Conditions	<ol style="list-style-type: none"> Inadequate turning radius for Evangelista St. Unsignalized intersection with no pedestrian crossings nor lane markings MWSS diggings along Pasay road westbound lane. 						
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: None	None	None	None	None	None	None	None
A2: Pasay Rd (E)	11.7m	2	617	NA	619	58.36%	Moderate
A3: Evangelista	13.9m	11	NA	280	326	44.39%	Moderate
A4: Pasay Rd (W)	10.1m	NA	451	281	734	57.57%	Moderate
Total		13	1,067	561	1,641		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Makati MK-10 Pasay Rd. / Evangelista</p>							

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Small Scale Traffic Improvement Measures for Metro Manila

Name	Pasay Road / Evangelista	Code	MK-10
Sheet	Analysis	LGU	Makati
<ol style="list-style-type: none">1) Pedestrians were observed to be crossing anywhere and sometimes in a diagonal direction at the intersection2) Due to the inadequate turning radius to/from Evangelista St, jeepneys tend to turn right to Pasay Road using the inner lane and sometimes stopping to load and unload passengers causing blockage to through traffic.3) Traffic flow is also affected by the conditions at the nearby Pasay Road / South Superhighway intersection, which is signalized. At times when the cycle length is too long, a long queue results along Pasay Road towards South Superhighway, with vehicles from Evangelista St. merging into the flow.4) The absence of adequate sidewalks and the presence of vendors force pedestrians to use the carriageway thereby causing roadside friction and reducing road capacity.5) Terminal activities at the corner also cause blockage and further delay to other vehicles			
<p>The diagram illustrates the intersection of Pasay Road and Evangelista Street. Key features and issues identified include:</p> <ul style="list-style-type: none">Pedestrian flow: Indicated by arrows showing pedestrians crossing the intersection in various directions, including diagonally.Inadequate turning radius: Two labels point to the sharp curves at the intersection, specifically where Evangelista Street turns onto Pasay Road.Pasay Road: The main road running horizontally, with a 'Stop' sign and a 'No Left Turn sign' indicated.Evangelista: The street running vertically, with a 'PU Stop' marked at the bottom.Illegal Jeepney Terminal: A specific area on the corner of Evangelista Street is labeled as an illegal terminal for jeepneys.Various commercial activities: Indicated by arrows pointing to the area around the intersection.Rail Road Ahead Keep Intersection Open: A sign is shown on the right side of the intersection.Loading/unloading and right turn maneuver: A label points to the area where vehicles are turning right from Evangelista onto Pasay Road.			

Name	Pasay Road / Evangelista	Code	MK-10
Sheet	Proposed Improvements	LGU	Makati
Engineering	<ol style="list-style-type: none"> 1) Clear sidewalks of vendors and makeshift structures 2) Designate pedestrian crossings 3) Placement of road signages 		
Enforcement	<ol style="list-style-type: none"> 1) Regulate loading and unloading at the corners of the intersection 2) Regulate terminal activities at the corners 		



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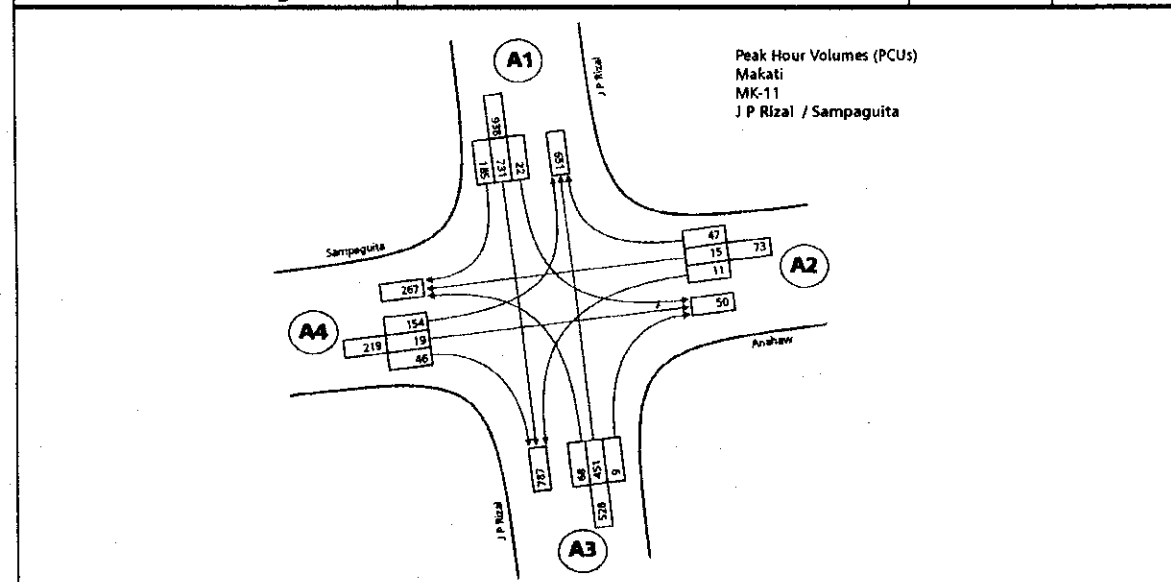
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MK-10: Pasay Road / Evangelista (MAKATI)
(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.	70.00	45.00	3,150.00
b.) Solid White Lines, 150mm width	l.m.	30.00	150.00	4,500.00
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	150.00	-
b.) Broken Lines, w = 150mms, 200mm width	l.m.	200.00	45.00	9,000.00
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	150.00	-
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 Lines	l.m.	-	-	-
6. Transition Line	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	l.m.	-	337.50	-
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	196.00	225.00	44,100.00
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 = 200mm	l.m.	-	200.64	-
<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.	-	262.50	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines (200mm)	l.m.	-	200.64	-
6. Tow Away Zone Line (200mm)	l.m.	-	200.64	-
<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.	2.00	1,830.00	3,660.00
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	2.00	1,095.00	2,190.00
c.) Numerals				
B. Signs				
1. Loading & Unloading Sign	pcs.	3.00	3,850.00	11,550.00
2. No Loading/Unloading Sign	pcs.	2.00	3,850.00	7,700.00
3. Pedestrian Crossing Sign	pcs.	3.00	3,850.00	11,550.00
4. No Parking Sign	pcs.	3.00	3,850.00	11,550.00
C. Other Works				
1. Rehabilitate Damage Pavement	sq.m.	80.00	500.00	40,000.00
TOTAL				150,765.00
Contingencies, 5%				7,538.25
CMS, 10%				15,076.50
Miscellaneous (fees, permits, etc.), 5%				7,538.25
Govt. Supervision, 2%				3,015.30
TOTAL COST				183,933.30

Name	JP Rizal / Sampaguita	Code	MK-11
Sheet	Summary of Observations	LGU	Makati
Traffic Conditions	<ol style="list-style-type: none"> 1) Practically one lane is left in each direction along JP Rizal due to loading and unloading of jeepneys close to the intersection; 2) Long queuing of vehicles on both approaches of JP Rizal; 3) An LPG delivery truck occasionally parks in front of an LPG store close to the intersection, thereby worsening problem along JP Rizal. 4) All turning movements allowed. 		
Physical Conditions	<ol style="list-style-type: none"> 1) Unsignalized intersection. 2) JP Rizal 4 lanes; Anahaw (Sampaguita) 2 lane. 3) Pavement in good condition; steel barriers serve as median along JP Rizal 4) Very narrow pedestrian crossing (1m.-width) in between steel barriers. 		

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: JP Rizal (N)	11.2m	22	731	185	938	58.48%	Light
A2: Anahaw	5.0m	11	15	47	73	49.51%	Heavy
A3: JP Rizal (S)	11.2m	68	451	9	528	65.99%	Light
A4: Sampaguita	5.0m	154	19	46	219	49.42%	Heavy
Total		255	1,216	287	1,758		
Passenger Flows							

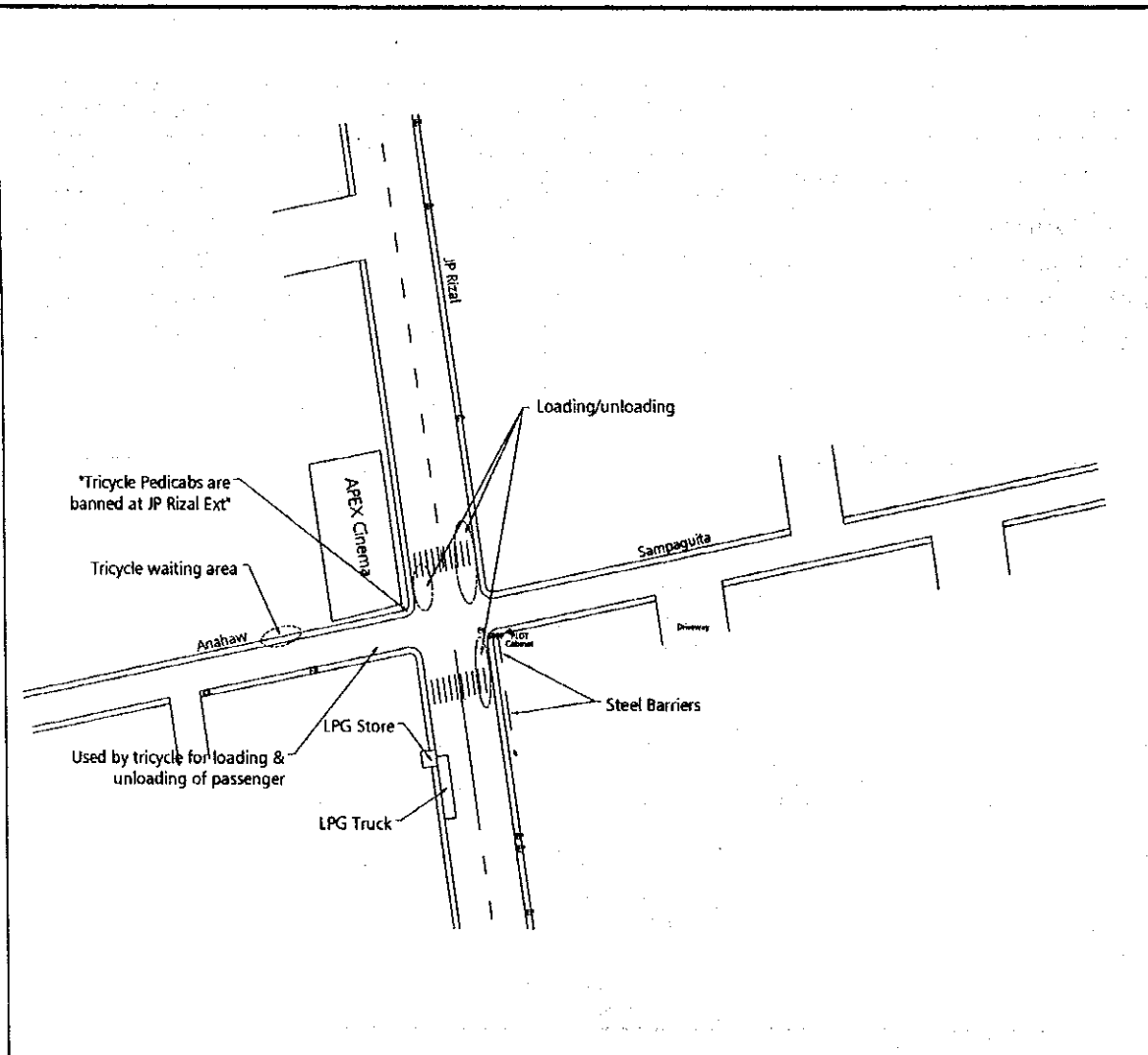


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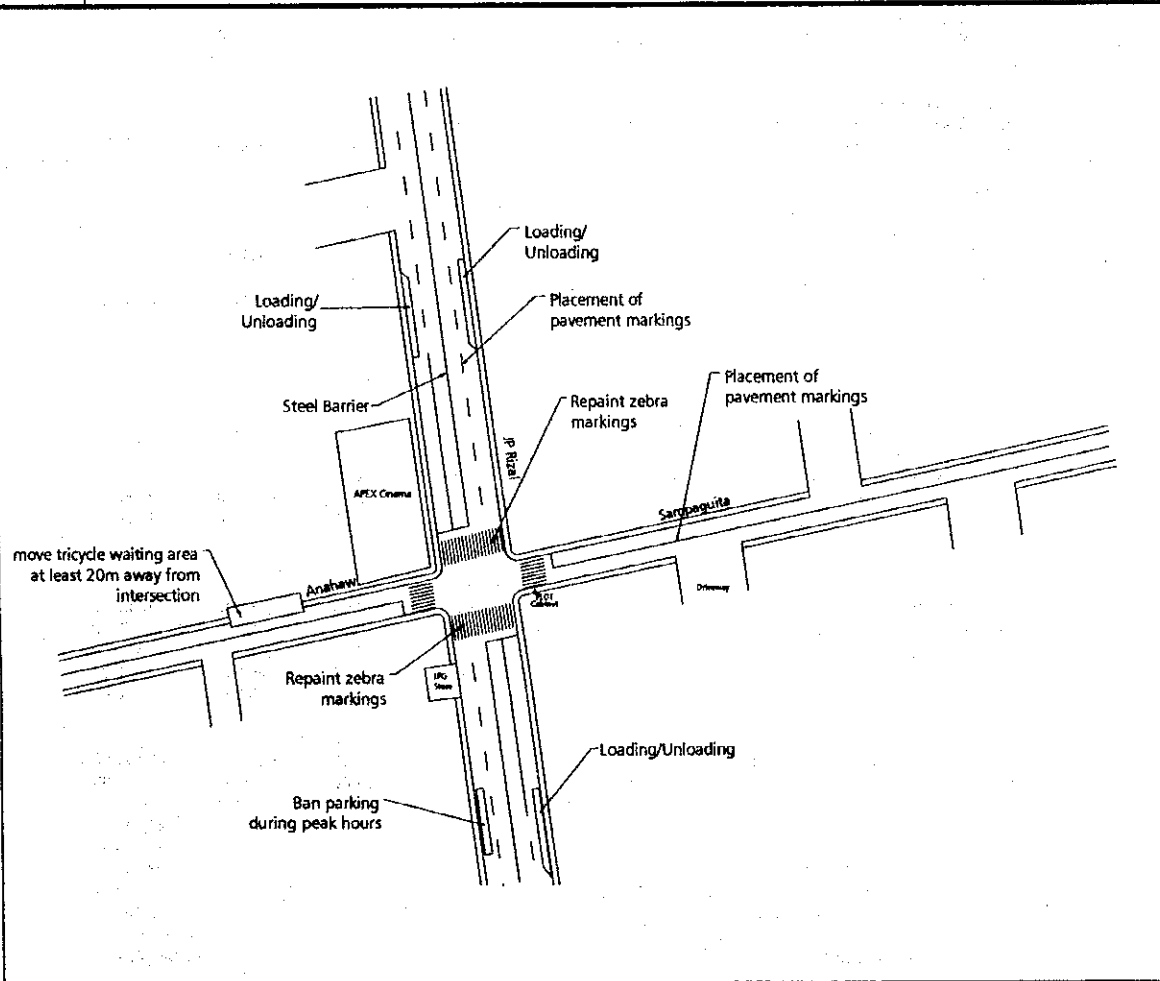
Small Scale Traffic Improvement Measures for Metro Manila

Name	JP Rizal / Sampaguita	Code	MK-11
Sheet	Analysis	LGU	Makati

- 1) The major cause of congestion is the uncontrolled loading and unloading of jeepneys right at the corners of the intersection.
- 2) The narrow pedestrian crossings (about 1 m.) are about 10 to 15 meters away from the intersection.
- 3) Parked LPG truck, though occasionally, contributes to constriction of flow along JP Rizal after the intersection.
- 4) Added friction is brought about by a tricycle terminal located on the side of APEX Cinema
- 5) The steel barrier is not continuous; pedestrians can cross anywhere thereby creating vehicle pedestrian conflicts in many areas.



Name	JP Rizal / Sampaguita	Code	MK-11
Sheet	Proposed Improvements	LGU	Makati
Engineering	<ol style="list-style-type: none"> 1) Loading and unloading points for jeepneys must be located 20-30 meters away from the intersection; 2) Steel barrier must be continuous to fully discourage jaywalking; 3) Re-paint pedestrian crosswalks to be wider and closer to the intersection 		
Enforcement	<ol style="list-style-type: none"> 1) Enforcers must strictly control loading and unloading at the designated points only; 2) The LPG delivery truck/s must not be allowed to load and unload directly in front of the store, during peak hours. 3) The tricycles' waiting area must be relocated at least 20m. away from the intersection 		



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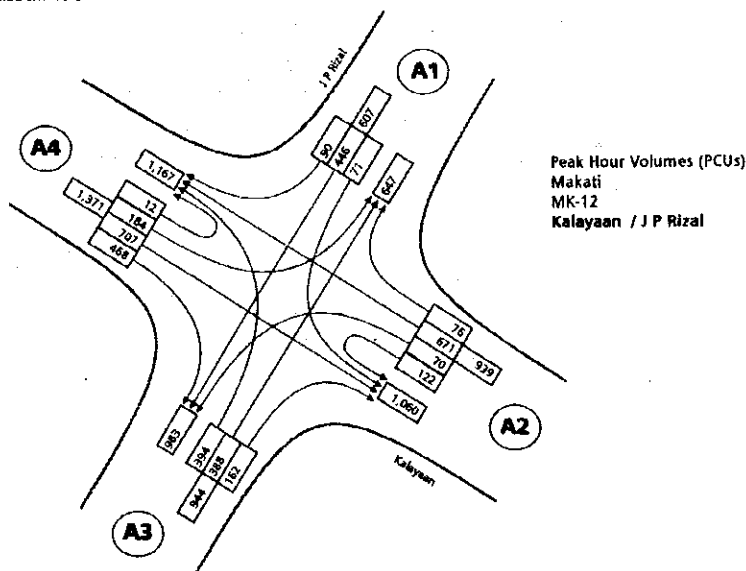
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MK-11 : J. P. Rizal / Sampaguita (MAKATI)
(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.	-	45.00	-
b.) Solid White Lines, 150mm width	l.m.	340.00	150.00	51,000.00
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	200.00	150.00	30,000.00
b.) Broken Lines, w = 150mms, 200mm width	l.m.	200.00	45.00	9,000.00
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	150.00	-
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 Lines				
a.)	l.m.	-	-	-
6. Transition Line				
a.)	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	l.m.	-	337.50	-
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	194.00	225.00	43,650.00
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 = 200mm	l.m.	-	200.64	-
<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.	-	262.50	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines (200mm)	l.m.	160.00	200.64	32,102.40
6. Tow Away Zone Line (200mm)	l.m.	-	200.64	-
<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.	2.00	907.50	1,815.00
2.) Combined Arrow = 2.44 sq.m. / each	pcs.	2.00	1,830.00	3,660.00
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	2.00	1,095.00	2,190.00
c.) Numerals				
B. Signs				
1. Loading & Unloading Sign	pcs.	4.00	3,850.00	15,400.00
2. No Loading/Unloading Sign	pcs.	4.00	3,850.00	15,400.00
3. Pedestrian Crossing Sign	pcs.	4.00	3,850.00	15,400.00
4. No Parking Sign	pcs.	3.00	3,850.00	11,550.00
5. Tricycle Waiting Area Sign	pcs.	1.00	3,850.00	3,850.00
C. Other Works				
1. Install Pedestrian Barrier (Steel Barrier) 6m / pc	pc.	6.00	7,500.00	45,000.00
2. Removal of Pavement Markings	l.m.	194.00	90.00	17,460.00
TOTAL				280,017.40
Contingencies, 5%				14,000.87
CMS, 10%				28,001.74
Miscellaneous (fees, permits, etc.), 5%				14,000.87
Govt. Supervision, 2%				5,600.35
TOTAL COST				341,621.23

Name	Kalayaan / JP Rizal	Code	MK-12
Sheet	Summary of Observations	LGU	Makati
Traffic Conditions	<ol style="list-style-type: none"> 1) Intersection is manned by a traffic enforcer, who directs traffic in lieu of signals. 2) Long queuing in all approaches, probably due to long cycle times. 3) Very heavy left turn (mostly jeepneys) from Kalayaan (C-5 side) to JP Rizal; this flow is blocked by stopping jeepneys at the corner; tricycles terminal close to the corner of the intersection (tricycle maneuvering pose obstacles to right turning vehicles) 		
Physical Conditions	<ol style="list-style-type: none"> 1) A major intersection close to C-5. 2) Unsignalized, condition may warrant automatic signals. 3) Channelized with corner islands and about 1m. median on all approaches. 		

Signalization	None	Pavement Markings	Incomplete	Peak	18:00-19:00		
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: JP Rizal (N)	18.9m	71	446	90	607	67.15%	Heavy
A2: Kalayaan (E)	18.9m	192	671	76	939	51.08%	Heavy
A3: JP Rizal (S)	16.6m	394	388	162	944	52.44%	Heavy
A4: Kalayaan (W)	17.8m	196	707	468	1,371	32.71%	heavy
Total		853	2,212	796	3,861		
Passenger Flows							

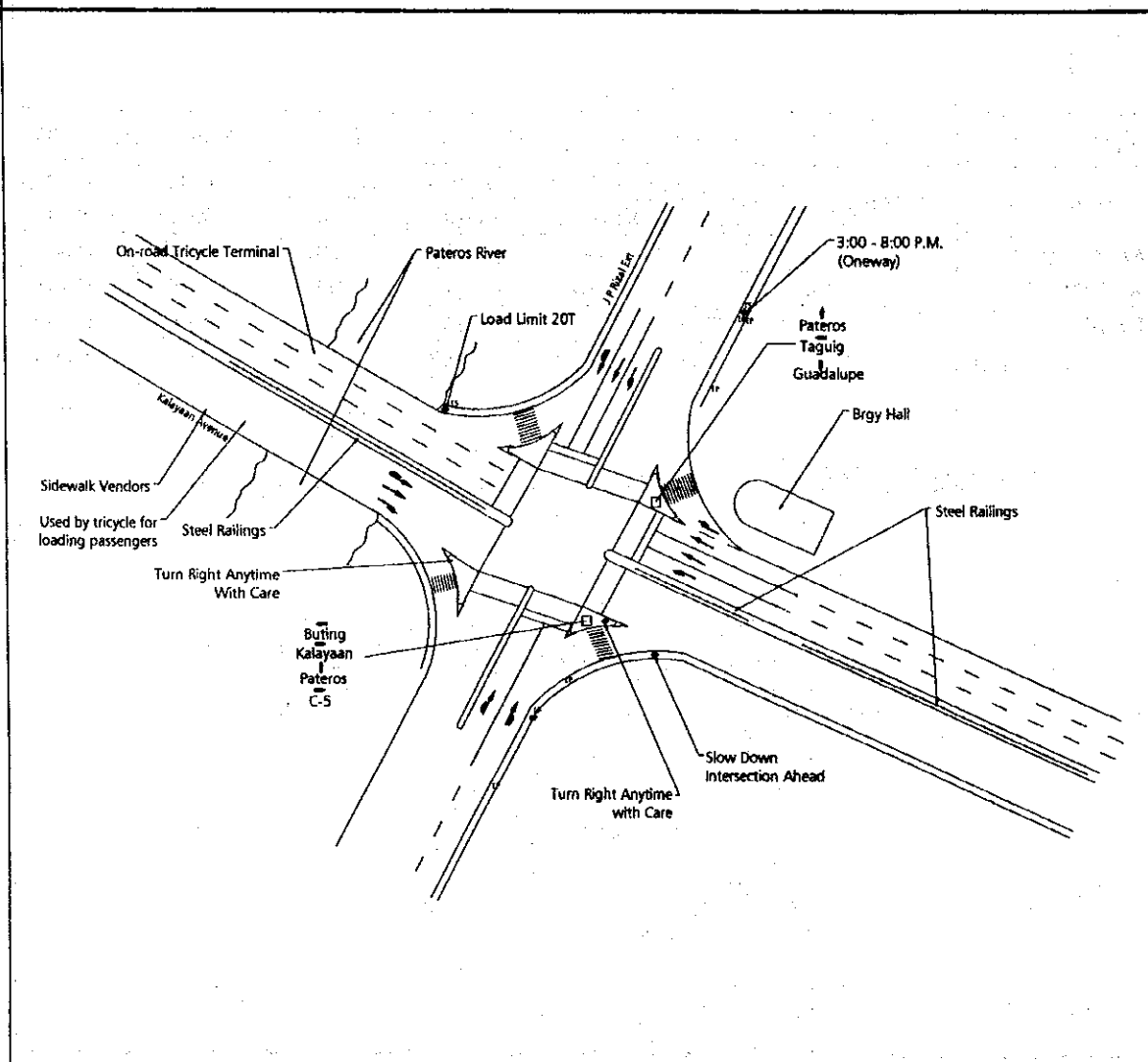


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Small Scale Traffic Improvement Measures for Metro Manila

Name	Kalayaan / JP Rizal	Code	MK-12
Sheet	Analysis	LGU	Makati

- 1) The intersection can be considered as a major one due to its size and heavy traffic flows in almost all directions. Long queuing is observed in all directions. Jeepneys greatly affect the traffic flow.
- 2) The enforcer manning the intersection concentrates mainly in directing traffic. The uncontrolled loading and unloading by jeepneys at the corner of the intersection, one major cause of the congestion, remains unchecked.



Name	Kalayaan / JP Rizal	Code	MK-12
Sheet	Proposed Improvements	LGU	Makati
Engineering	<ol style="list-style-type: none"> 1) The current heavy traffic volume at the intersection warrants the installation of traffic signals. 2) Pavement markings must be applied to complement channelization (already existing) and proposed signalization. 		
Enforcement	<ol style="list-style-type: none"> 1) Enforce prohibition against loading and unloading of passengers at the corners of the intersection. 		

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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MK-12 : Kalayaan / J. P. Rizal (MAKATI)
(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.	-	45.00	-
b.) Solid White Lines, 150mm width	l.m.	-	150.00	-
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	460.00	150.00	69,000.00
b.) Broken Lines, w = 150mms, 200mm width	l.m.	840.00	45.00	37,800.00
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	150.00	-
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 Lines				
a.)	l.m.	-	-	-
6. Transition Line				
a.)	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	l.m.	33.00	337.50	11,137.50
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	368.00	225.00	82,800.00
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				
a.)	l.m.	-	-	-
4. Bus and PUJ Lane Markings				
a.)	l.m.	-	-	-
5. Channelized Junction Pavement Marking				
a.)	l.m.	-	-	-
6. Yellow Box Line, w = 200mm	l.m.	-	200.64	-
<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.	-	262.50	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines (200mm)	l.m.	80.00	200.64	16,051.20
6. Tow Away Zone Line (200mm)	l.m.	-	200.64	-
<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.	7.00	907.50	6,352.50
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.	7.00	1,095.00	7,665.00
c.) Numerals				
B. Signs				
1. Loading & Unloading Sign	pcs.	4.00	3,850.00	15,400.00
2. No Loading/Unloading Sign	pcs.	4.00	3,850.00	15,400.00
3. Pedestrian Crossing Sign	pcs.	4.00	3,850.00	15,400.00
C. Other Works				
1. Install Traffic Signal	unit	1.00	1,417,115.70	1,417,115.70
2. Removal of Pavement Markings	l.m.	368.00	90.00	33,120.00
TOTAL				1,705,101.90
Contingencies, 5%				85,255.10
CMS, 10%				170,510.19
Miscellaneous (fees, permits, etc.), 5%				85,255.10
Govt. Supervision, 2%				34,102.04
TOTAL COST				2,080,224.32

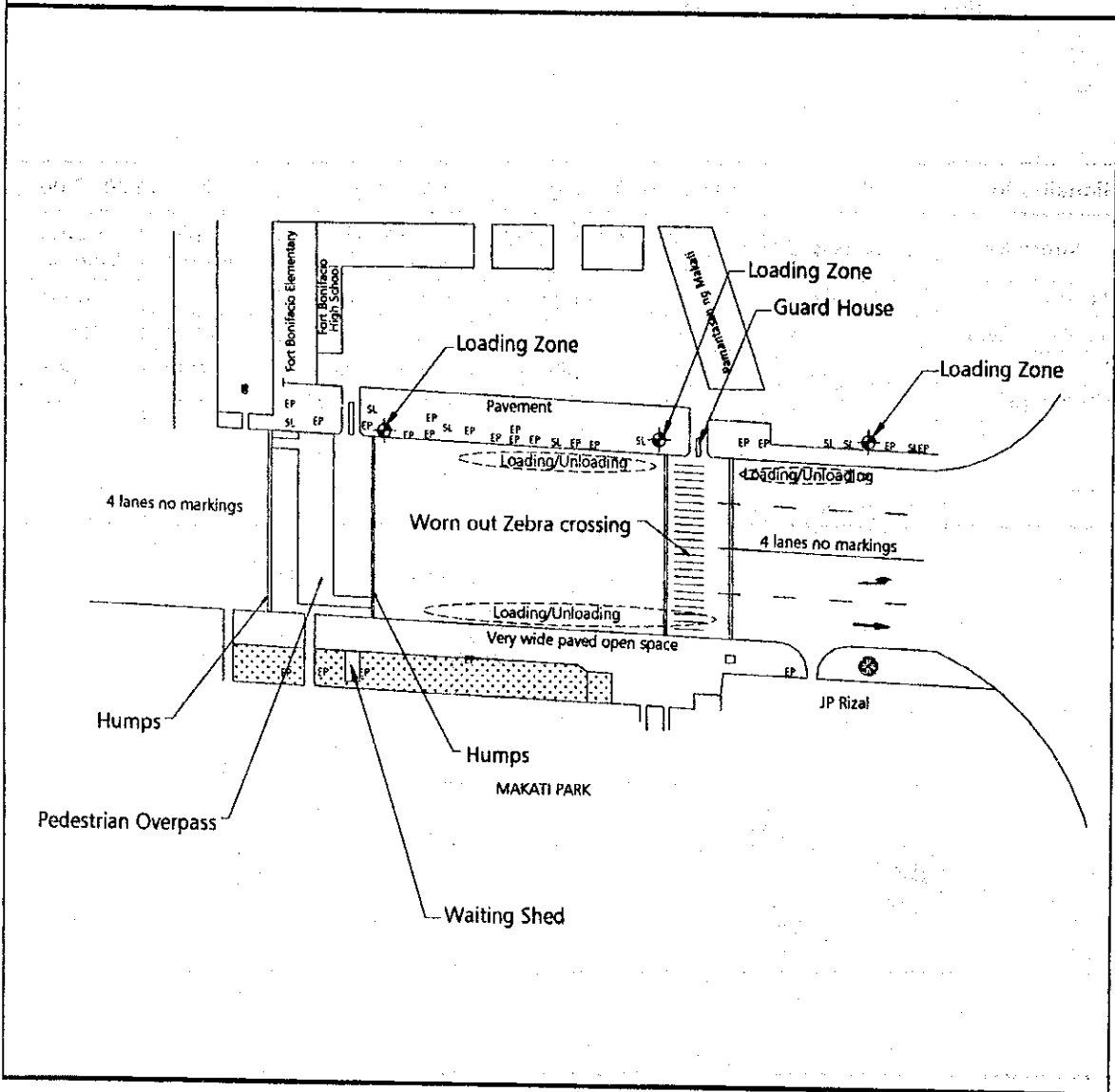
Name	JP Rizal @ Pamantasan ng Makati				Code	MK-13	
Sheet	Summary of Observations				LGU	Makati	
Traffic Conditions	<p>1) Heavy through traffic along JP Rizal.</p> <p>2) Heavy pedestrian demand in the early morning (6:00 am to 7:00 am) and during lunch time (11:00 am to 12nn.).</p>						
Physical Conditions	<p>1) A midblock section far from intersections.</p> <p>2) JP Rizal is a substandard 4-lane, 2-way road without median separator.</p> <p>3) Humps are constructed close to the gates to regulate speed.</p>						
Signalization	None	Pavement Markings	Worn out		Peak	16:00-17:00	
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: Pamantasan	15.7m	NA	1,295	NA	1,295	59.64%	Heavy
A3: None	None	None	None	None	None	None	None
A4: JP Rizal	15.7m	NA	673	NA	673	97.06%	Heavy
Total			1,968		1,968		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Makati MK-13 JP Rizal @ Pamantasan ng Makati</p> <p style="text-align: center;">front of Pamantasan ng Makati</p>							

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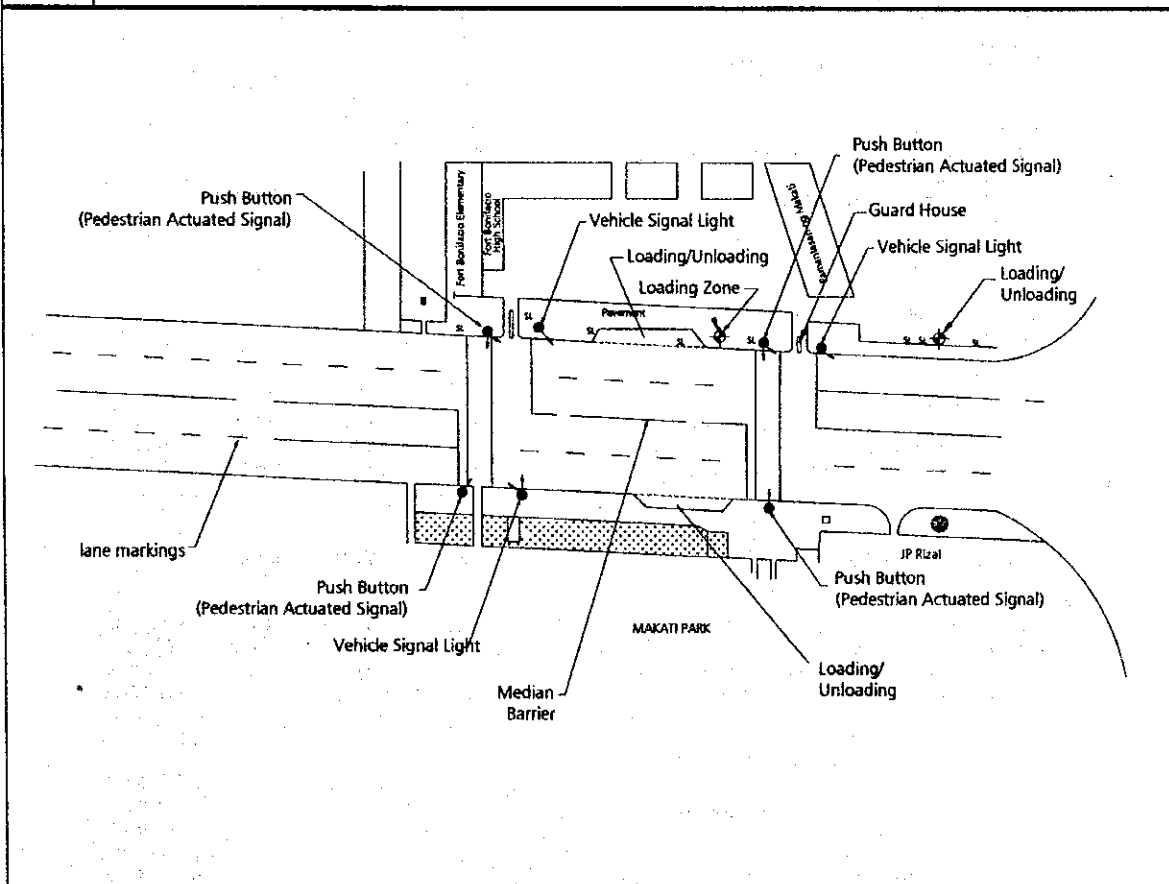
Small Scale Traffic Improvement Measures for Metro Manila

Name	JP Rizal @ Pamantasan ng Makati	Code	MK-13
Sheet	Analysis	LGU	Makati

- 1) As a mid-block, congestion should not happen had there been no uncontrolled loading and unloading in front of the entry/exit gates of the school; this causes long queuing of vehicles in both directions;
- 2) Students, in particular elementary school students, are exposed to risks in crossing the 4-lane road (JP Rizal) without median. At present, the humps are effectively controlling the speeds of vehicles in this section of JP Rizal; however, they induce heavy smoke of vehicles (mainly jeepneys) when accelerating.



Name	JP Rizal @ Pamantasan ng Makati	Code	MK-13
Sheet	Proposed Improvements	LGU	Makati
Engineering	<ol style="list-style-type: none"> 1) Pedestrian push button actuated signals must be installed in the middle location of the section, preferably closer to elementary and high school gates. Another signal may be located in front of the University. 2) Barriers must be placed as divider to discourage crossing anywhere on JP Rizal. 3) A separate loading/unloading bay will help minimize conflicts between stopping jeepneys and through vehicles; one possible location is in front of the park (opposite the University); it has a very wide area adjacent to the carriageway. On the university's front, the sidewalk measures about 3.2m in width. A substandard bay may be achieved. Readjustment of lane widths for vehicles may be done to accommodate the bay; 4) Another option to consider is a pedestrian overpass. Similarly, barriers must be placed in the median to discourage crossing elsewhere 		
Enforcement	<ol style="list-style-type: none"> 1) While there are still no signals or overpass, police/enforcers must assist the students (especially the children) to cross JP Rizal. 2) The jeepneys' stopping/waiting time has to be regulated, so that waiting for passengers is penalized and dwell-times reduced 		



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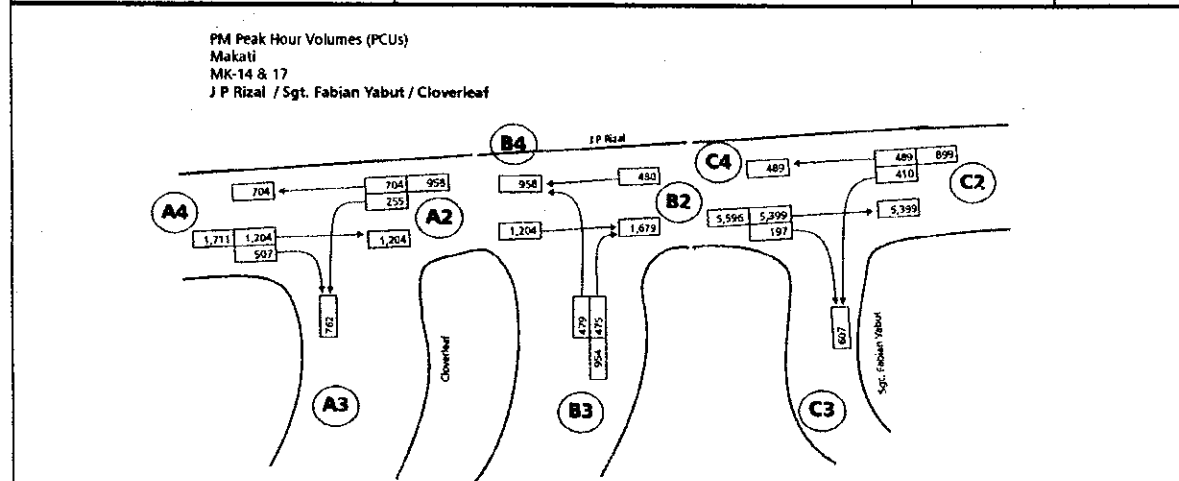
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MK-13 : J. P. Rizal @ Pamantasan (MAKATI)
(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.	-	45.00	-
b.) Solid White Lines, 150mm width	l.m.	100.00	150.00	15,000.00
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	460.00	150.00	69,000.00
b.) Broken Lines, w = 150mms, 200mm width	l.m.	390.00	45.00	17,550.00
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	150.00	-
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 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.	30.00	337.50	10,125.00
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	168.00	225.00	37,800.00
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. Bus and PUJ Lane Markings	l.m.	-	-	-
5. Channelized Junction Pavement Marking	l.m.	-	-	-
6. Yellow Box Line, w = 200mm	l.m.	-	200.64	-
<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.	-	262.50	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines (200mm)	l.m.	80.00	200.64	16,051.20
6. Tow Away Zone Line (200mm)	l.m.	-	200.64	-
<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.	7.00	907.50	6,352.50
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.	7.00	1,095.00	7,665.00
c.) Numerals	-	-	-	-
B. Signs				
1. Loading & Unloading Sign	pcs.	2.00	3,850.00	7,700.00
C. Other Works				
1. Install Pedestrian Push Button Actuated Signals	unit	4.00	350,000.00	1,400,000.00
2. Removal of Pavement Markings	l.m.	168.00	90.00	15,120.00
3. Installation of Pedestrian Railing (Steel Railing) 6m / pc.	pcs.	12.00	7,500.00	90,000.00
4. Construction of Loading / Unloading Area	sq.m.	362.50	700.00	253,750.00
TOTAL				1,598,223.70
Contingencies, 5%				79,911.19
CMS, 10%				159,822.37
Miscellaneous (fees, permits, etc.), 5%				79,911.19
Govt. Supervision, 2%				31,964.47
TOTAL COST				1,949,832.91

Name	JP Rizal / Sgt Fabian Yabut / Cloverleaf	Code	MK-14 & 17
Sheet	Summary of Observations	LGU	Makati
Traffic Conditions	1) Traffic along JP Rizal; heavy turning movements towards Yabut and from the cloverleaf ramp to JP Rizal. 2) Enforcers often implement counterflows, thereby encouraging queue jumping and disregard of rules.		
Physical Conditions	1) One quadrant of the cloverleaf for EDSA-JP Rizal. 2) Basically a T-intersection. 3) The adjacent intersection of JP Rizal-Burgos complicates the overall geometry of the area.		

Signalization	Signalized	Pavement Markings	None	Peak	18:00-19:00		
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: JP Rizal	13.9	225	704	NA	956	32.25%	Medium
A3: Cloverleaf	19.6	NA	NA	NA	NA	NA	Light
A4: JP Rizal	13.9	NA	1,204	507	1,711	36.40%	Medium
	Total	225	3,816	507	4,578		
B2: JP Rizal	15.69	NA	480	NA	480	20.33%	Medium
B3: Cloverleaf	18.28	479	NA	475	954	NA	Light
B4: JP Rizal	13.9	NA	1,204	NA	1,204	30.32%	Medium
	Total	479	1,684	475	2,638		
C2: JP Rizal	13.9m	410	489	NA	899	59.64%	Medium
C3: Sgt Yabut	7.5m	NA	NA	NA	NA	NA	Medium
C4: JP Rizal	13.9m	NA	5,399	197	5,596	97.76%	Light
	Total	410	5,888	197	6,495		
Passenger Flows							

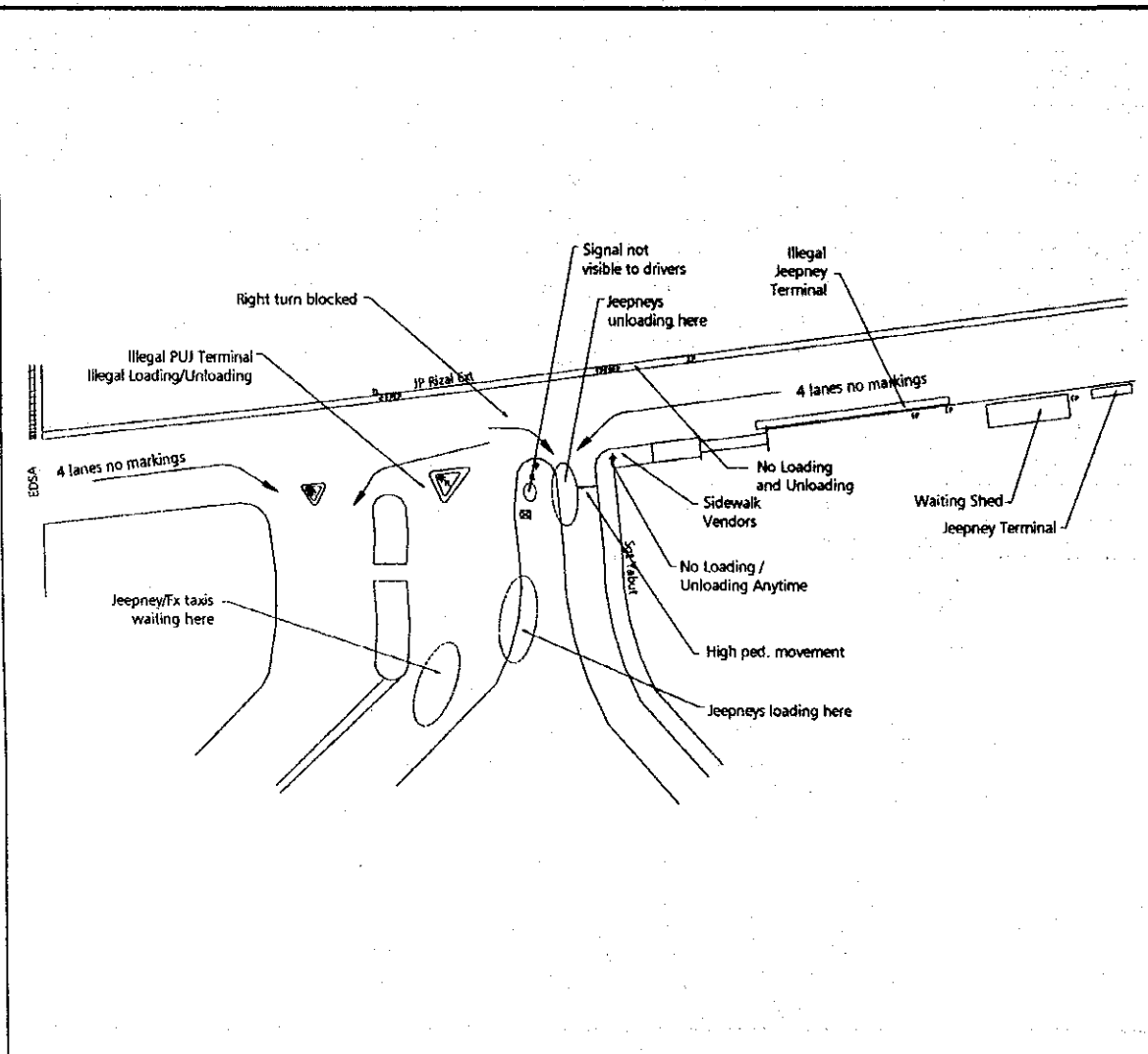


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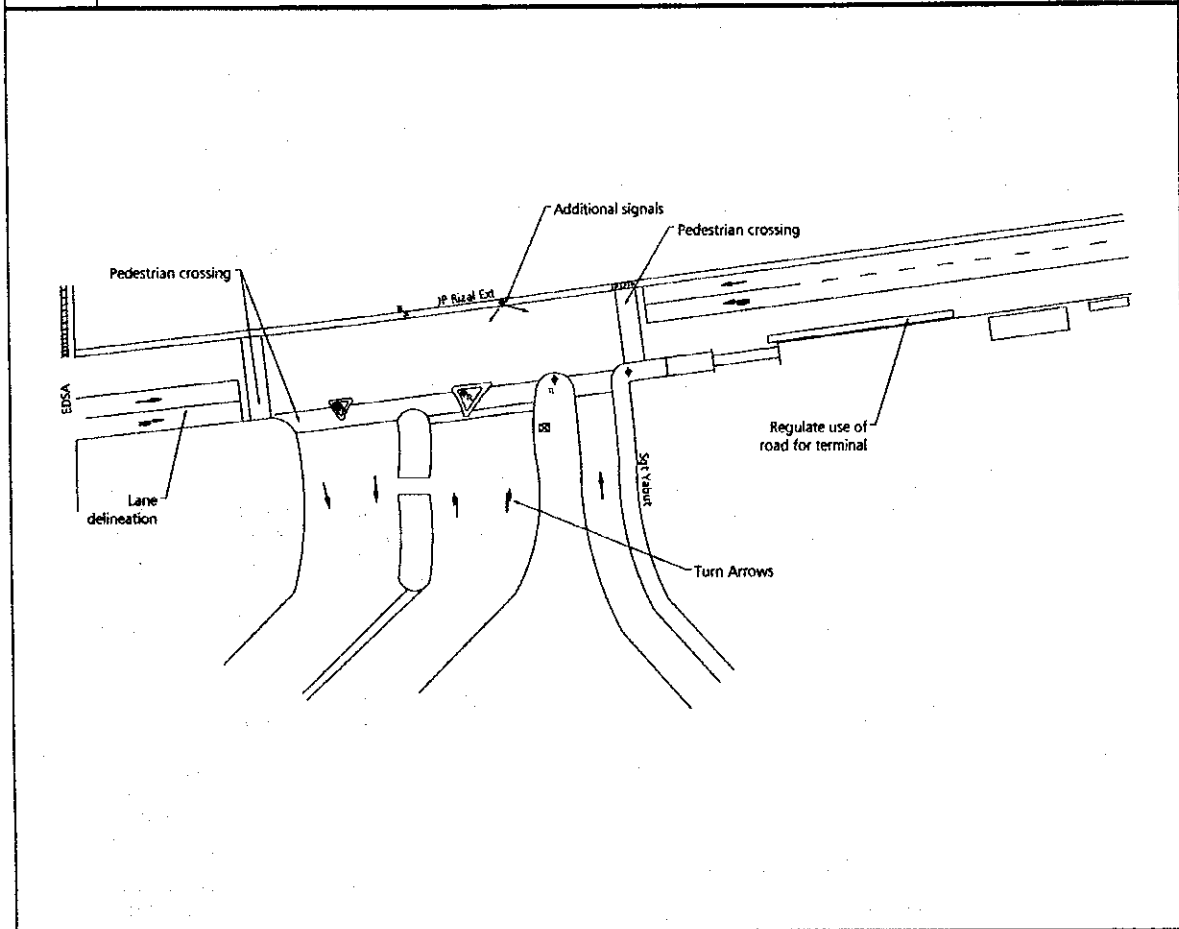
Small Scale Traffic Improvement Measures for Metro Manila

Name	JP Rizal / Sgt Fabian Yabut / Cloverleaf	Code	MK-14 &17
Sheet	Analysis	LGU	Makati

- 1) The intersection of JP Rizal and Yabut and the T-intersection formed by one quadrant of the cloverleaf must be considered as one intersection area;
- 2) The signalized intersection is backed up by police/enforcers; however, the signal control is effective only for the cloverleaf portion; the control of signal at Yabut portion is not clear;
- 3) There is serious problem of unregulated waiting/stopping of jeepneys and FX taxis at the intersection approach; these vehicles stay at intersection even during green signal, thus blocking traffic flow;
- 4) There is severe conflict between vehicles and pedestrians at Yabut approach;
- 5) The signal at Yabut portion is often ignored by drivers; the signal lantern is actually not visible to the drivers;
- 6) The approach of Yabut is often blocked by jeepneys unloading passengers right after turning.



Name	JP Rizal / Sgt Fabian Yabut / Cloverleaf	Code	MK-14 &17
Sheet	Proposed Improvements	LGU	Makati
Engineering	<ol style="list-style-type: none"> 1) Additional traffic signal heads must be installed (and synchronized with the existing areas) in order to regulate turning movements of vehicles towards Yabut; 2) Pedestrian crossing at Yabut approach must be clearly marked; 		
Enforcement	<ol style="list-style-type: none"> 1) Loading and unloading of passengers must be strictly controlled at the corners of the intersection, so that these occur farther away. 2) Jeepneys and FX taxis waiting at the cloverleaf ramp should be penalized 3) Pedestrians crossing should be confined to designated pedestrian crossings. 		



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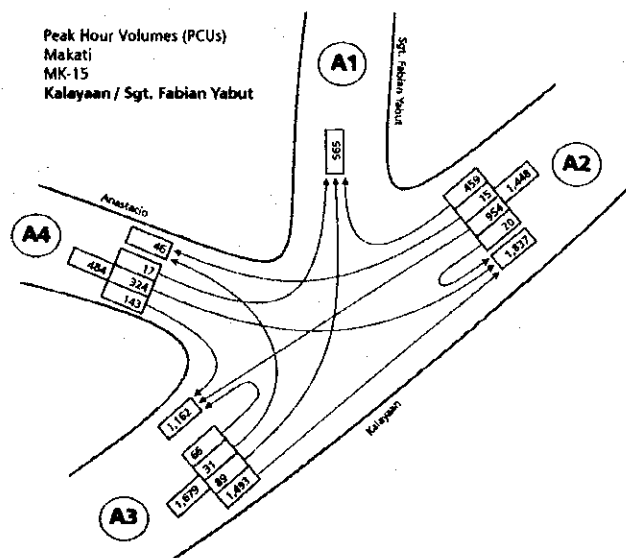
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MK-14 & 17 : J. P. Rizal / Sgt. Fabian Yabut / Cloverleaf (MAKATI)
(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.	-	45.00	-
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.	60.00	150.00	9,000.00
b.) Broken Lines, w = 150mms, 200mm width	l.m.	140.00	45.00	6,300.00
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	150.00	-
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 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.	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.	354.00	225.00	79,650.00
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 = 200mm				
a.) Yellow Box Line, w = 200mm	l.m.	-	200.64	-
<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.	-	262.50	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines (200mm)	l.m.	80.00	200.64	16,051.20
6. Tow Away Zone Line (200mm)	l.m.	-	200.64	-
<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.	5.00	907.50	4,537.50
2.) Combined Arrow = 2.44 sq.m. / each	pcs.	2.00	1,830.00	3,660.00
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	2.00	1,095.00	2,190.00
c.) Numerals				
B. Signs				
1. No Loading & Unloading Sign	pcs.	7.00	3,850.00	26,950.00
C. Other Works				
1. Install Traffic Signals	unit	1.00	1,417,115.70	1,417,115.70
2. Removal of Pavement Markings	l.m.	354.00	90.00	31,860.00
TOTAL				1,599,504.40
Contingencies, 5%				79,975.22
CMS, 10%				159,950.44
Miscellaneous (fees, permits, etc.), 5%				79,975.22
Govt. Supervision, 2%				31,990.09
=====				=====
TOTAL COST				1,951,395.37

Name	Kalayaan / Sgt Fabian Yabut	Code	MK-15
Sheet	Summary of Observations	LGU	Makati
Traffic Conditions	1) Heavy through traffic on both directions of Kalayaan. 2) Heavy left turn movements from Kalayaan to Sgt. Yabut. 3) Loading and unloading of jeepneys at the corner of Kalayaan-Yabut. 4) stopping of jeepneys at the corner block one lane at Kalayaan leaving a single lane for through traffic. 5) Intersection manned by traffic enforcer.		
Physical Conditions	1) 4-leg intersection with irregular geometry (2 legs, namely Sgt. Yabut and Anastacio, are on Y-shaped same side of Kalayaan). 2) Kalayaan, a divided road with 4 lanes total on one side of the intersection and 5 lanes on the other. 3) Unsignalized; post office tower located at median. 4) MWSS diggings along Sgt. Yabut (considered temporary).		

Signalization	None	Pavement Markings	None	Peak	18:00-19:00		
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: Sgt Fabian	6.2m	NA	NA	NA	NA	NA	Light
A2: Kalayaan (E)	24.6m	20	954	474	1,448	48.00%	Medium
A3: Sgt Yabut	6.2m	97	89	1,493	1,679	31.22%	Light
A4: Kalayaan (s)	21.2m	17	324	143	484	58.64%	Light
Total		134	1,367	2,110	3,611		
Passenger Flows							

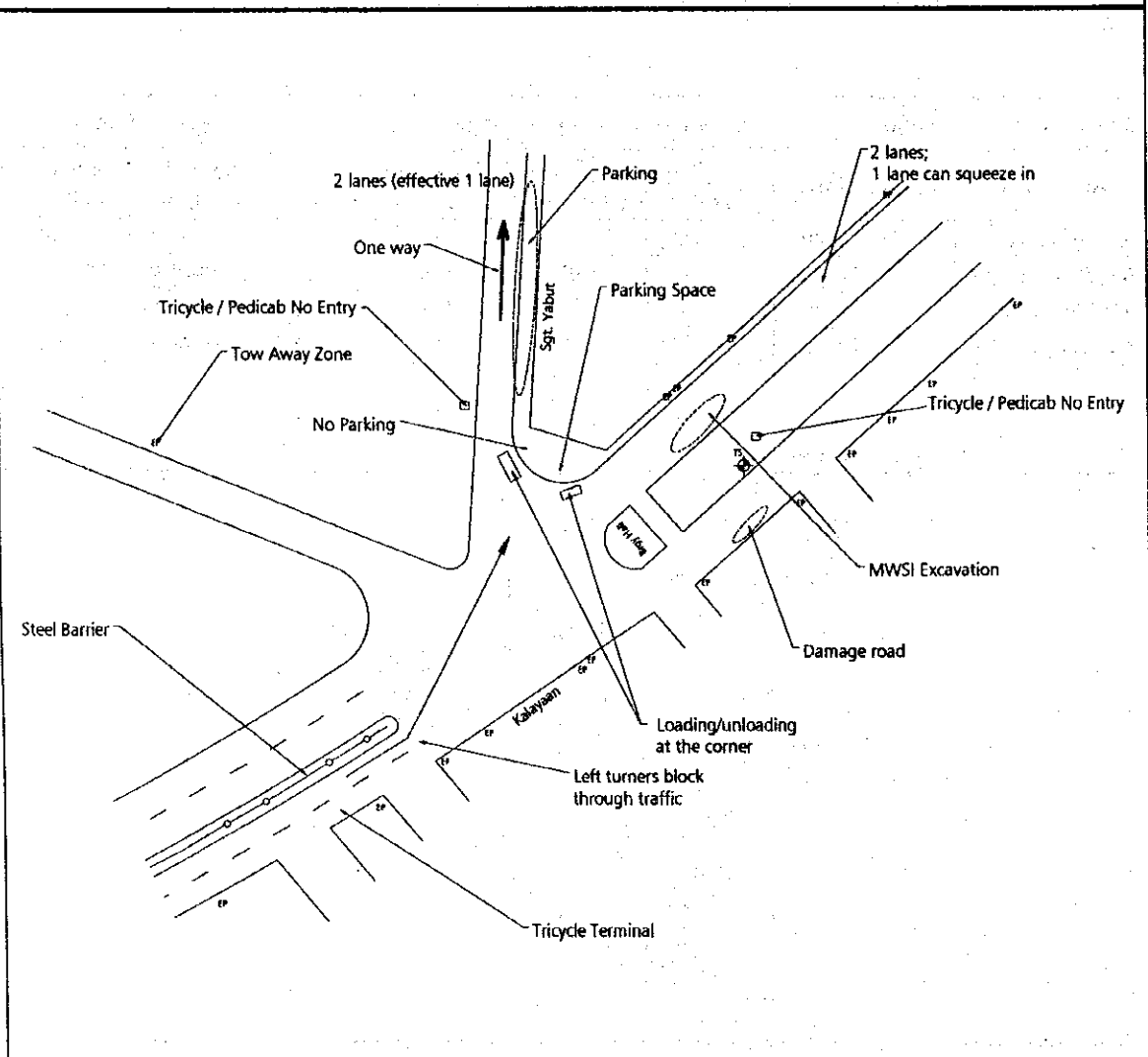


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Small Scale Traffic Improvement Measures for Metro Manila

Name	Kalayaan / Sgt Fabian Yabut	Code	MK-15
Sheet	Analysis	LGU	Makati

- 1) The sharp right turns from Kalayaan to Sgt. Yabut (mostly jeepneys) slows down turning movement at Kalayaan approach. This leads to long queuing of traffic at the said approach.
- 2) Aside from the sharp turn, jeepneys stop directly at the corner to unload passengers. This blocks not only the through traffic along Kalayaan but also the heavy left movement coming from the opposite side.
- 3) At the time of ocular observation, diggings are still going on along Sgt. Yabut. This together with parking on the other side greatly restrict flow along Sgt. Yabut. Effectively 1 lane is left for this one way road.
- 4) The post office tower located at the median of Kalayaan limits the number of lanes to 4.



Name	Kalayaan / Sgt Fabian Yabut	Code	MK-15
Sheet	Proposed Improvements	LGU	Makati
Engineering	<ol style="list-style-type: none"> 1) The removal/relocation of the post office tower can increase the number of lanes of Kalayaan by at least one and possibly 2. This will greatly improve the capacity of the intersection. 2) Considering the heavy left turn from Kalayaan to Sgt. Yabut, the median must be moved inward. This will increase the number of lanes by 1 for the left turners. 3) The heavy traffic (both through and left turn) warrants the signalization of the intersection. 		
Enforcement	<ol style="list-style-type: none"> 1) The loading and unloading of passengers right at the corner (sharp turn) must be prohibited and penalized. Loading and unloading point must be located after jeepneys have negotiated the turn and at least 20 meters away from the intersection. 2) Parking along Sgt. Yabut close to the intersection must be prohibited. 		

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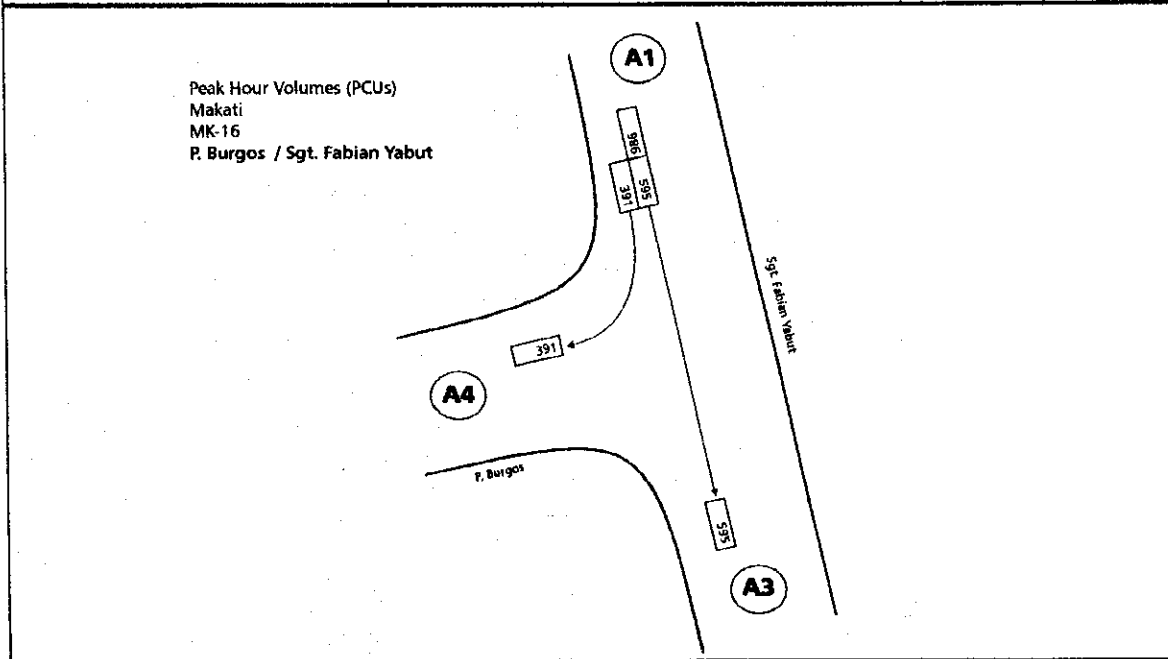
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MK-15 : Kalayaan / Sgt. Fabian Yabut (MAKATI)
 (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.	140.00	45.00	6,300.00
b.) Solid White Lines, 150mm width	l.m.	60.00	150.00	9,000.00
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.	555.00	45.00	24,975.00
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	150.00	-
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 Lines				
a.) Pavement Edge (Shoulders)	l.m.	-	-	-
b.) Median Edge	l.m.	-	-	-
6. Transition Line				
a.) Pavement Edge (Shoulders)	l.m.	-	-	-
b.) Median Edge	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	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 = 200mm	l.m.	-	200.64	-
<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.	-	262.50	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines (200mm)	l.m.	52.00	200.64	10,433.28
6. Tow Away Zone Line (200mm)	l.m.	50.00	200.64	10,032.00
<i>Messages and Symbols</i>				
1. Messages				
a.) Give Way Symbol	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.	-	1,830.00	-
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	4.00	1,095.00	4,380.00
c.) Numerals				
B. Signs				
1. No Loading & Unloading Sign	pcs.	4.00	3,850.00	15,400.00
2. Loading & Unloading Sign	pcs.	4.00	3,850.00	15,400.00
3. No Parking Sign	pcs.	1.00	3,850.00	3,850.00
4. Tricycle / Pedicab No Entry Sign	pcs.	2.00	3,850.00	7,700.00
5. Tow Away Sign	pcs.	1.00	3,850.00	3,850.00
C. Other Works				
1. Removal/Relocation of Post Office tower	sq.m.	600.00	80.00	48,000.00
TOTAL				180,950.28
Contingencies, 5%				9,047.51
CMS, 10%				18,095.03
Miscellaneous (fees, permits, etc.), 5%				9,047.51
Govt. Supervision, 2%				3,619.01
TOTAL COST				220,759.34

Name	P Burgos / Sgt Fabian Yabut	Code	MK-16
Sheet	Summary of Observations	LGU	Makati
Traffic Conditions	1) A major unloading point for jeepneys bound for Guadalupe 2) Heavy flow of jeepneys turning right from Yabut to Burgos; 3) No control of jeepney unloading at the intersection; 4) Very high pedestrian movements; most pedestrians use the carriageway		
Physical Conditions	1) A T-intersection located in a market area 2) Narrow sidewalk along Yabut; vendors occupy sidewalks along Burgos 3) One side of Burgos has become practically a jeepney terminal up to the corner of the intersection; 4) Steeper gradient along Burgos		

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: Sgt Yabut (N)	6.8m	NA	595	391	986	87.82%	Light
A2: None	None	None	None	None	None	None	None
A3: Sgt Yabut (S)	6.6m	NA	NA	NA	NA	NA	Light
A4: P Burgos	6.6m	NA	NA	NA	391	96.21%	Heavy
Total			595	391	986		
Passenger Flows							

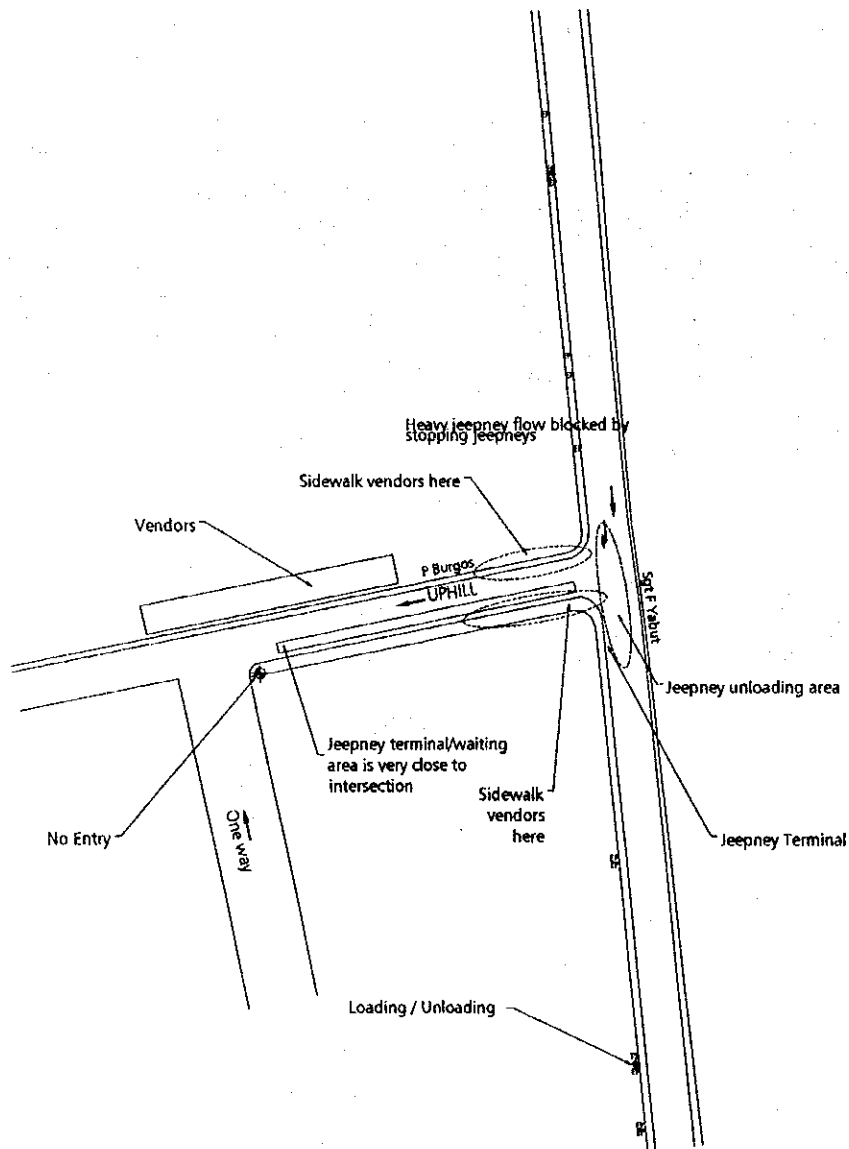


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Small Scale Traffic Improvement Measures for Metro Manila

Name	P Burgos / Sgt Fabian Yabut	Code	MK-16
Sheet	Analysis	LGU	Makati

- 1) Congestion occurs at the intersection due to intentional or deliberate slow moving jeepneys along Burgos St. This is compounded by the steep gradient of Burgos St.
- 2) Jeepneys stopping at the intersection to unload passengers cause blockage of the intersection.



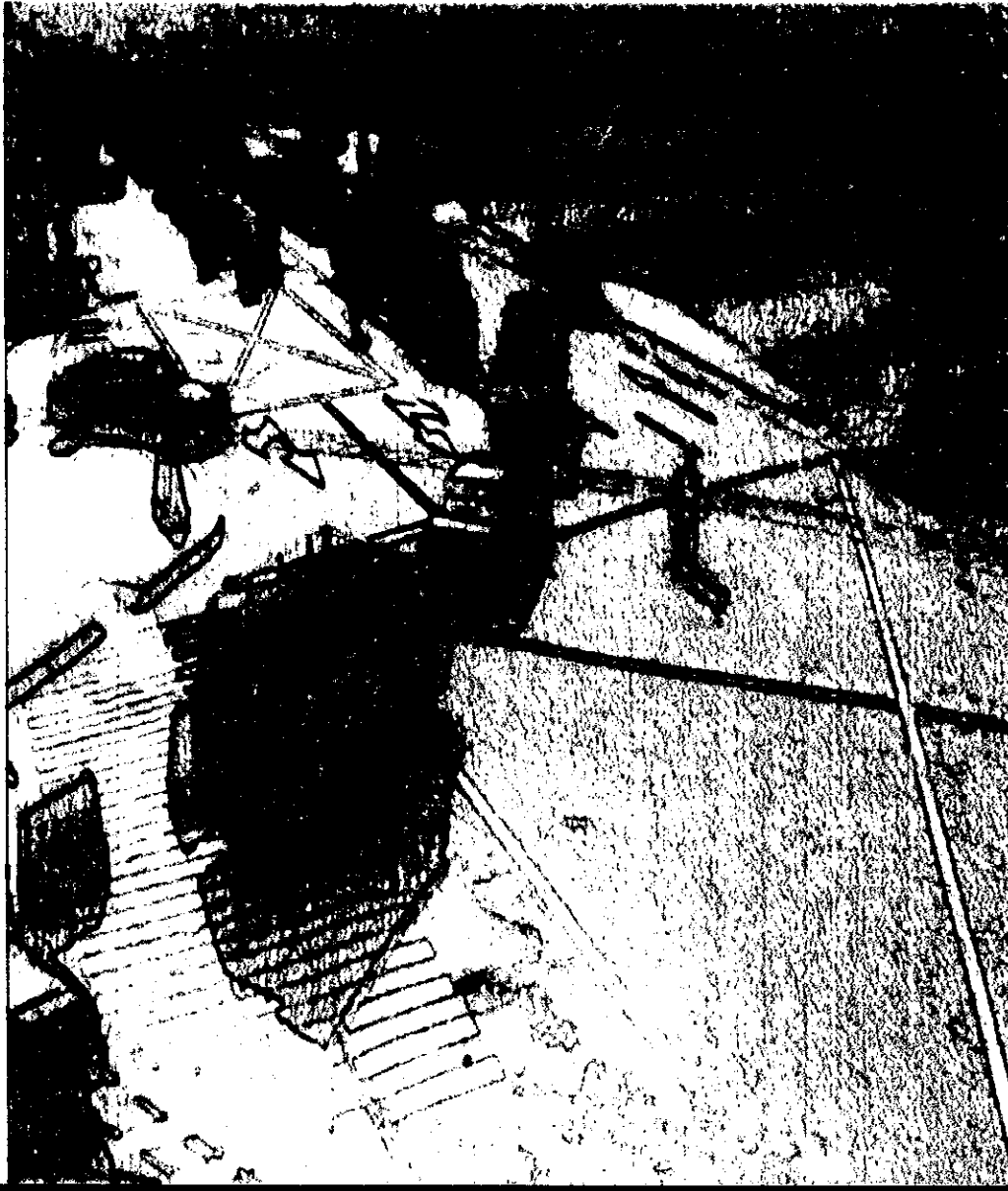
Name	P Burgos / Sgt Fabian Yabut	Code	MK-16
Sheet	Proposed Improvements	LGU	Makati
Engineering	<p>1) Installation of traffic signs (for jeepney stop and waiting area) may be justified, so that enforcers can focus on control of loading/unloading.</p>		
Enforcement	<p>1) Strictly regulate loading and unloading of passengers at the intersection. 2) The location of waiting area for jeepneys must be moved 25m away from the intersection.</p>		

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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MK-16: P. Burgos / Sgt. Fabian Yabut (MAKATI)
(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.	307.00	45.00	13,815.00
b.) Solid White Lines, 150mm width	l.m.	-	150.00	-
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	150.00	-
b.) Broken Lines, w = 150mms, 200mm width	l.m.	-	45.00	-
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	150.00	-
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 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.	-	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 = 200mm	l.m.	-	200.64	-
<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.	-	262.50	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines (200mm)	l.m.	54.00	200.64	10,834.56
6. Tow Away Zone Line (200mm)	l.m.	-	200.64	-
<i>Messages and Symbols</i>				
1. Messages				
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				
B. Signs				
1. No Loading & Unloading Sign	pcs.	2.00	3,850.00	7,700.00
2. PUJ Loading & Unloading Sign	pcs.	2.00	3,850.00	7,700.00
3. Jeepney Terminal / Waiting Area Sign	pcs.	1.00	3,850.00	3,850.00
C. Other Works				
1. Relocate Jeepney Terminal / Waiting Area	lot	1.00	25,000.00	25,000.00
TOTAL				68,899.56
Contingencies, 5%				3,444.98
CMS, 10%				6,889.96
Miscellaneous (fees, permits, etc.), 5%				3,444.98
Govt. Supervision, 2%				1,377.99
TOTAL COST				84,057.46



Malabon

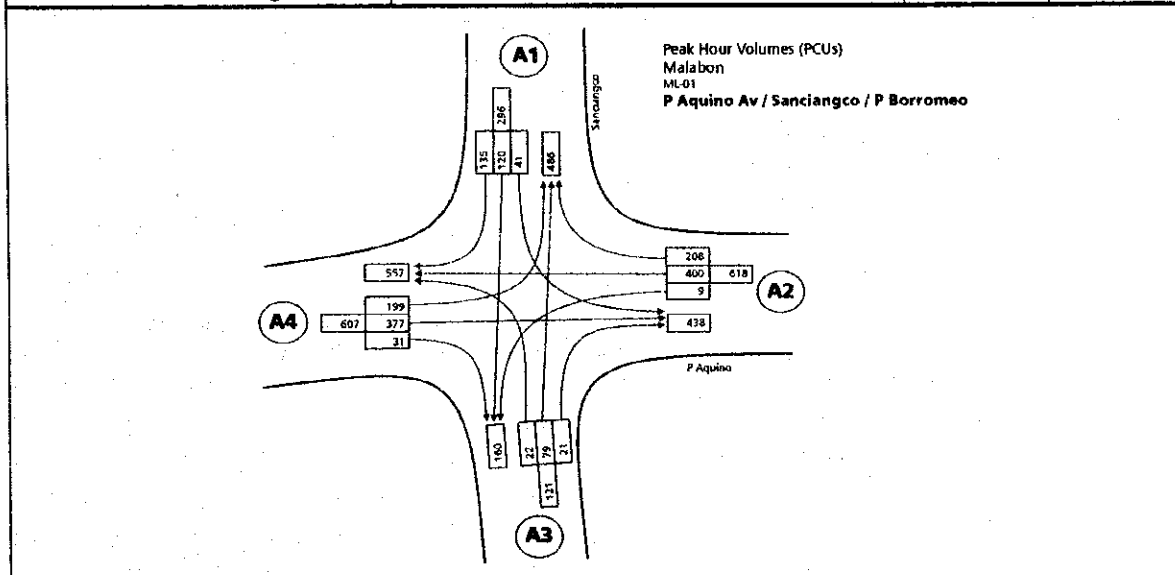
Individual Information Sheets for the Traffic Bottleneck Points

- ML-01 P Aquino Ave / Sanciangco / P Borromeo
- ML-02 F Sevilla Blvd
- ML-03 Estrella St (Bgy Tañong)
- ML-04 Gen Luna St / Gov Pascual Ave
- ML-05 Don B Bautista Blvd / M Blas St
- ML-06 Gov Pascual Ave / Sisa St
- ML-07 MH del Pilar / Panghulo Rd
- ML-08 MH del Pilar / Rodriguez St
- ML-09 Gen Luna / Sacristia



Name	P Aquino Ave / Sanciangco / P Borromeo	Code	ML-01
Sheet	Summary of Observations	LGU	Malabon
Traffic Conditions	<ol style="list-style-type: none"> 1) Heavy left turning volume from west approach of P. Aquino to Sanciangco St. 2) Light pedestrian movement. 3) Parking of delivery vehicles at the corner usually occur. 4) Intersection is manned by traffic enforcer 5) All legs have bi-directional travel way, though P Borromeo (A3) is made one way southbound during peak hours. 		
Physical Conditions	<ol style="list-style-type: none"> 1) This bottleneck point is a four-leg intersection, with average width of 6.25 meters per approach. 2) The intersection is paved with asphalt concrete in fair condition and almost all of the pavement edges are provided with curb and gutter. Sections without curb/gutter have open drainage canal adjacent to the pavement edge. Some section suffers from puddling. 3) Three pavement corners lack adequate turning radius. The area is heavily built up and also lacks sufficient space for pedestrian sidewalks. 4) No lane markings 5) Presence of tricycle terminal along Sanciangco to the north. 6) Manhole on P Aquino approach A2 is lower than the pavement, causing speed slowdown. 		

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: Sanciangco (N)	7.5m	41	120	135	296	58.66%	Light	
A2: P Aquino (E)	6.5m	9	400	208	618	50.39%	Light	
A3: Borromeo (S)	5.0m	22	79	21	121	57.53%	Light	
A4: P Aquino (W)	7.5m	199	377	31	607	69.35%	Light	
Total		271	976	395	1642			
Passenger Flows		5,700						

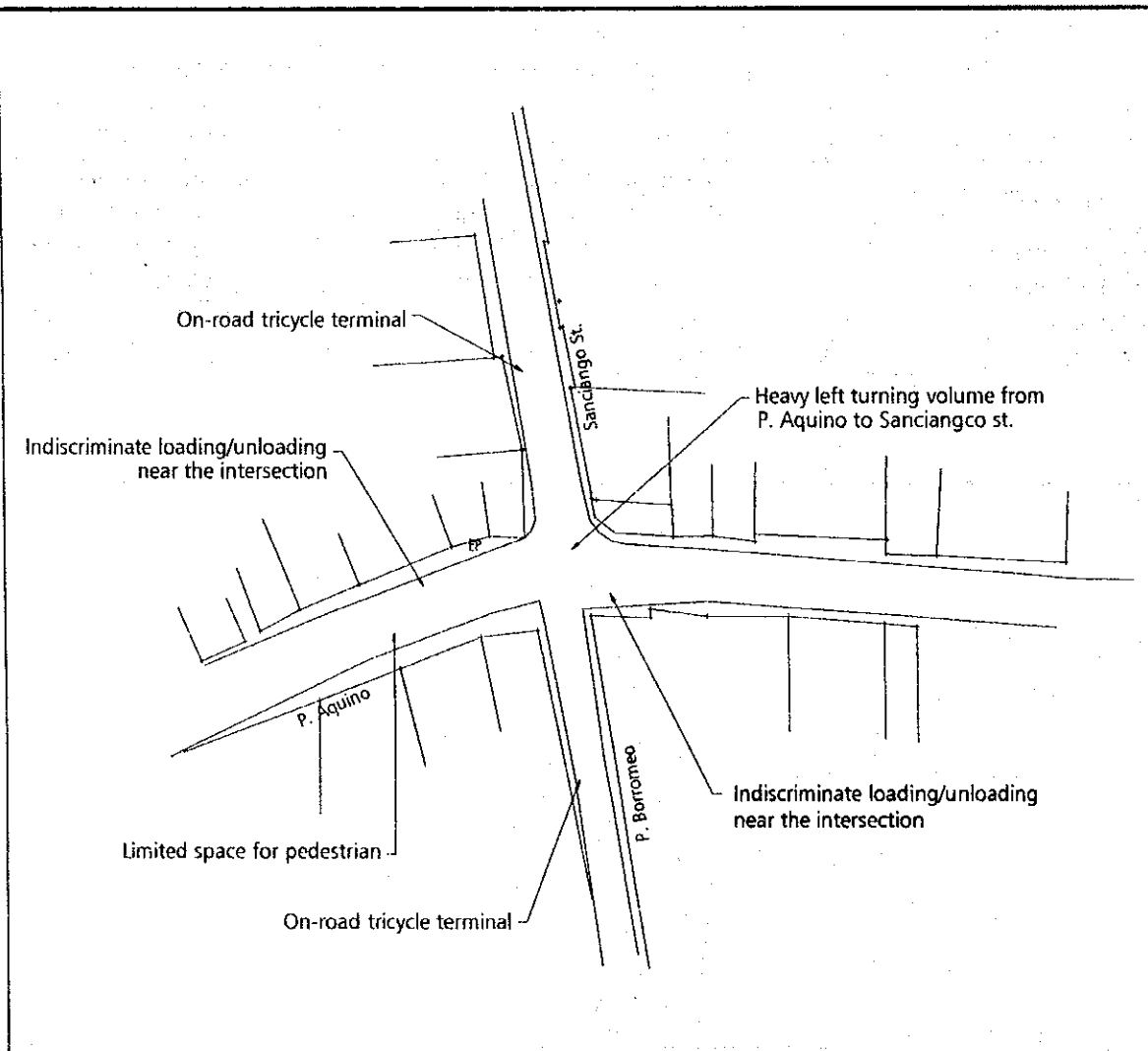


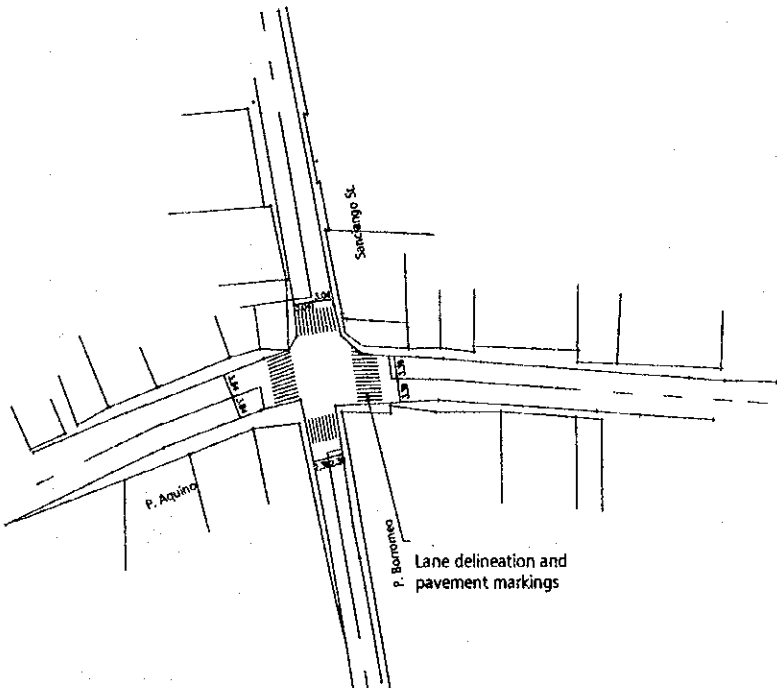
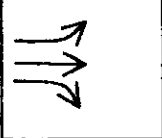
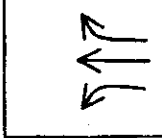
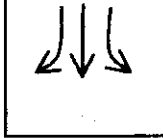

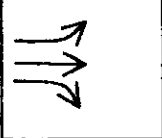
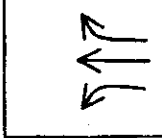
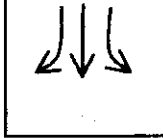

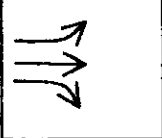
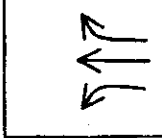
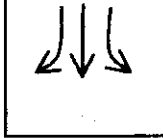

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Small Scale Traffic Improvement Measures for Metro Manila

Name	P Aquino Ave / Sanciangco / P Borrromeo	Code	ML-01
Sheet	Analysis	LGU	Malabon

- 1) Narrow approach to Borrromeo St. makes it a candidate for one-way flow, but not feasible due to network limitation. However, at present it is made one way at certain times of the day. This practice seems reasonable to compromise.
- 2) A portion of the sidewalk along P. Aquino is blocked by parked vehicles. Also unpaved areas are prone to having puddles. These puddles and parked vehicles force pedestrians to use the roadway instead thus constricting / slowing the movement of vehicles. Fortunately, there are few pedestrians.
- 3) A manhole on one approach of P. Aquino is lower than the pavement level and causes vehicles to experience a "pothole".
- 4) Delivery vehicles of a lumberyard load / unload at the intersection, thus hampering a right turn from P. Aquino going to Borrromeo.
- 5) Chaotic flow of vehicles due to the absence of lane designation, vehicles tend to wait at the intersection.



Name	P Aquino Ave / Sanciangco / P Borromeo	Code	ML-01												
Sheet	Proposed Improvements	LGU	Malabon												
Engineering	<ol style="list-style-type: none"> 1) Provision of pedestrian crosswalk markings could help, especially on Sanciangco. 2) Provision of lane markings more important than zebra crossings, because of existing situation. 3) Improvement of unpaved portions which are prone to puddling. Removal of these puddles will provide pedestrian additional usable sidewalk, lessening interference with vehicle flows. 4) Re-layout curbs at the 3 corners, to make turning radius more convenient, simultaneous with sidewalk rehab. 														
Enforcement	<ol style="list-style-type: none"> 1) Prohibit parking near corners of intersection. Loading and unloading may be allowed at off peak times. 2) Traffic enforcer should direct traffic flow especially during peak hours, in the absence of signals. 3) Force PUJ & tricycle to load/unload properly, as close to the curb side of the road. Also, boarding and alighting should not be allowed within 10 meters (bare minimum) of the intersection. 														
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		0.07 12.6"													

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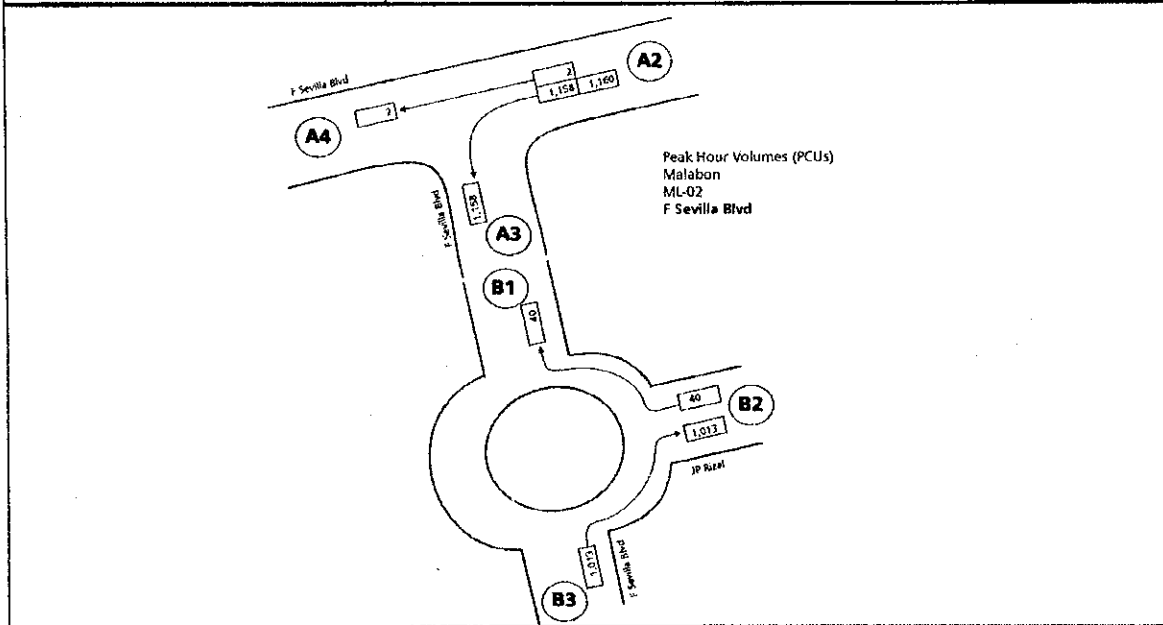
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : ML-01: P Aquino Avenue / Sanclangco / P. Borromeo (MALABON)
(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.	280.00	45.00	12,600.00
b.) Solid White Lines, 150mm width	l.m.	120.00	150.00	18,000.00
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	150.00	-
b.) Broken Lines, w = 150mms, 200mm width	l.m.	-	46.00	-
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	150.00	-
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 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.	14.00	337.50	4,725.00
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	140.00	225.00	31,500.00
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 = 200mm	l.m.	-	200.64	-
<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.	-	262.50	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines, (w=200mm)	l.m.	102.00	200.64	20,465.28
<i>Messages and Symbols</i>				
1. Messages				
a.) Messages	pcs.	-	-	-
2. Symbols				
a.) Give Way Symbol	pcs.	-	-	-
b.) Pavement Arrows	pcs.	-	-	-
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.	4.00	1,830.00	7,320.00
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	4.00	1,095.00	4,380.00
c.) Numerals	-	-	-	-
B. Signs				
1. Loading/Unloading Sign	pcs.	2.00	3,850.00	7,700.00
2. No Loading/Unloading Sign	pcs.	2.00	3,850.00	7,700.00
3. Parking Area	pcs.	4.00	3,850.00	15,400.00
C. Other Works				
1. Improvement of Unpaved Portions	sq.m.	96.00	700.00	67,200.00
TOTAL				200,620.28
Contingencies, 5%				10,031.01
CMS, 10%				20,062.03
Miscellaneous (fees, permits, etc.), 5%				10,031.01
Govt. Supervision, 2%				4,012.41
TOTAL COST				244,756.74

Name	F Sevilla Blvd	Code	ML-02
Sheet	Summary of Observations	LGU	Malabon
Traffic Conditions	1) Municipal building is in the center of a rotonda-like street configuration with one quadrant apparently being used as a parking area. 2) Pedicabs comprise a large part of the traffic along F. Sevilla, with several terminal stations located on the southern end of F. Sevilla 3) Unsignalized intersections at both ends.		
Physical Conditions	1) F. Sevilla fronts the Municipio and Plaza while its southern part is fronted by a Shopping Mall, and wet markets. All of which are major traffic generators, with no adequate provision for off-street parking facilities.		

Signalization	None	Pavement Markings	None	Peak	09:00-10:00		
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: F Sevilla (E)	10.1m	1,158	2	NA	1,160	50.12%	Light
A3: F Sevilla (S)	6.9m	NA	NA	NA	NA	52.20%	Light
A4: F Sevilla (W)	10.1m	NA	NA	NA	NA	NA	NA
Total		1,158	2		1,160		
B1: F Sevilla (N)	6.9m	NA	NA	NA	NA	NA	NA
B2: JP Rizal	7.0m	NA	NA	40	40	35.66%	Light
B3: F Sevilla (S)	7.0m	NA	NA	1,013	1,013	53.82%	Moderate
Total				1,053	1,053		
Passenger Flows							

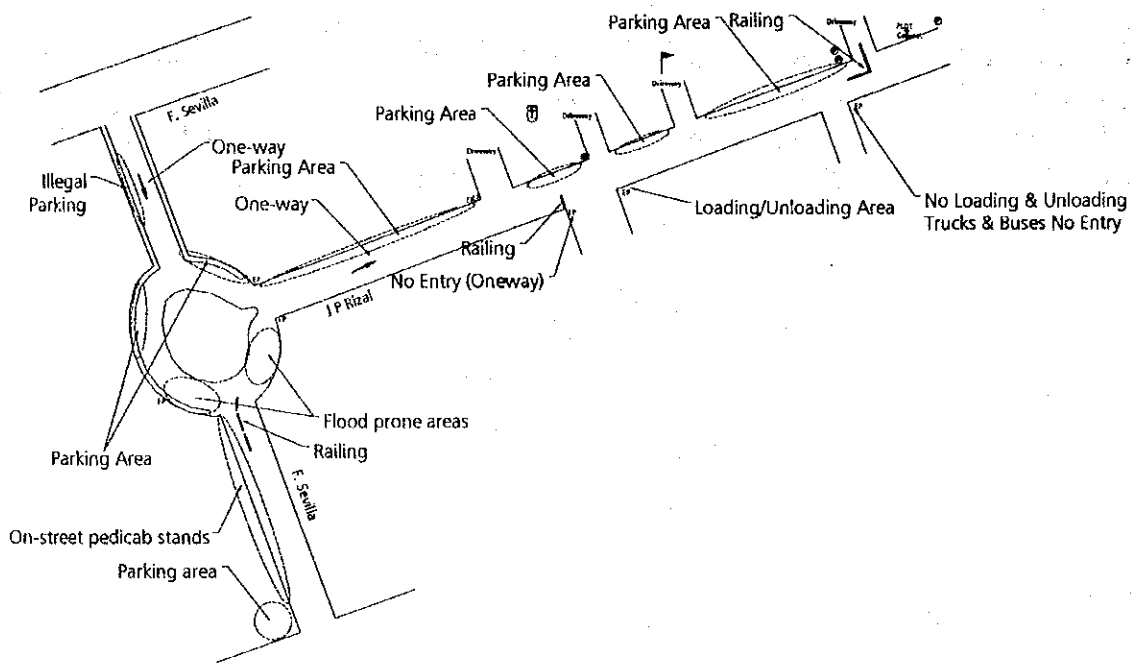


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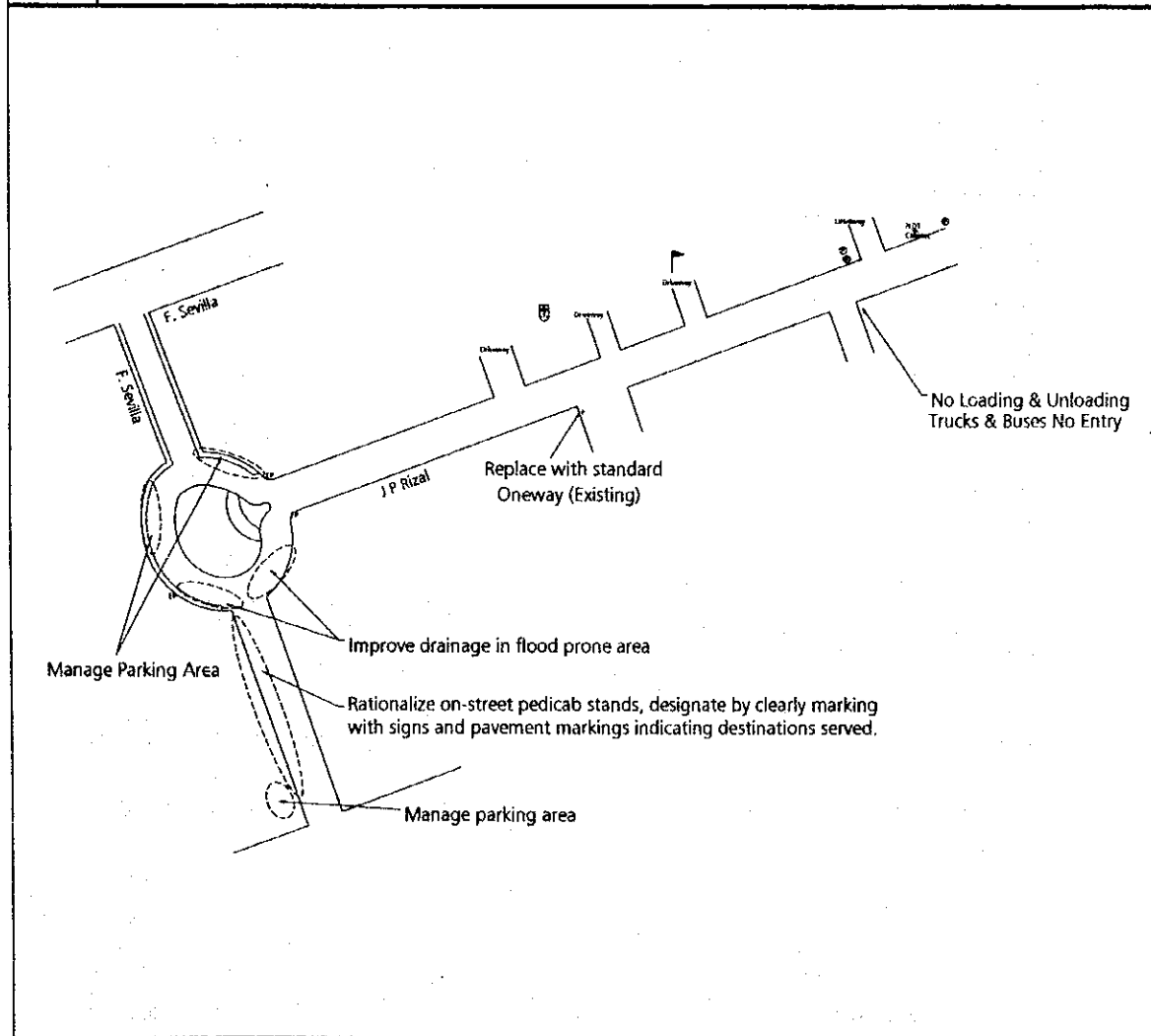
Small Scale Traffic Improvement Measures for Metro Manila

Name	F Sevilla Blvd	Code	ML-02
Sheet	Analysis	LGU	Malabon

- 1) Flooding is a perennial condition that prevents motorized vehicles to negotiate the road. Because of this, pedicabs are seen as a necessary "evil".
- 2) Disorderly parking around the rotonda compounds shortage of parking spaces.
- 3) Construction work (on Plaza) with its materials encroaching on roadway reduces farther roadway capacity.



Name	F Sevilla Blvd	Code	ML-02
Sheet	Proposed Improvements	LGU	Malabon
Engineering	<ol style="list-style-type: none"> 1) Short-term engineering measures are quite limited. 2) Markers to guide proper parking orientations may be justified in the short-term. 3) Long-term solution is to improve the drainage system (i.e. solve flooding) which wreaks havoc to traffic, as well as build off street pay parking facilities. 		
Enforcement	<ol style="list-style-type: none"> 1) Traffic aides should be deployed to supervise proper parking. Double-charge the errant ones. 2) Organize the on-street pedicabs, through their association, to minimize traffic disorder. 		



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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : ML-02: F. Sevilla Boulevard (MALABON)
(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.	-	-	-
b.) Solid White Lines, 150mm width	l.m.	-	150.00	-
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	150.00	-
b.) Broken Lines, w = 150mms, 200mm width	l.m.	-	45.00	-
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	150.00	-
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 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.	-	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 = 200mm	l.m.	-	200.64	-
<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.	-	262.50	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines (200mm)	l.m.	-	200.64	-
<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				
B. Signs				
1. No Loading/Unloading Sign	pcs.	1.00	3,850.00	3,850.00
2. Loading/Unloading Sign	pcs.	1.00	3,850.00	3,850.00
C. Other Works				
1. Improve drainage system in flood prone areas.	l.m.	50.00	3,500.00	175,000.00
TOTAL				182,700.00
Contingencies, 5%				9,135.00
CMS, 10%				18,270.00
Miscellaneous (fees, permits, etc.), 5%				9,135.00
Govt. Supervision, 2%				3,654.00
TOTAL COST				40,194.00