

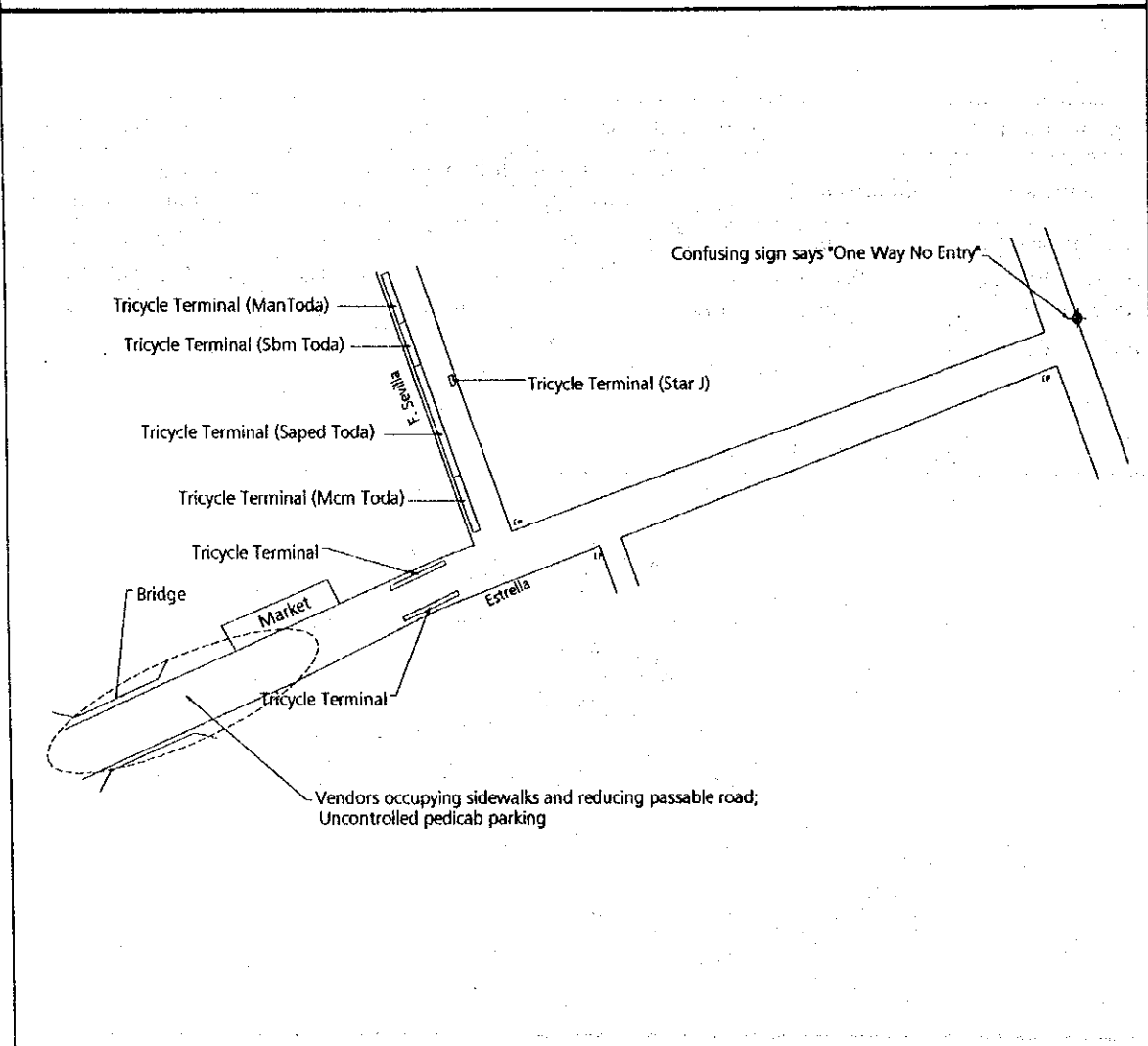
Name	Estrella St (Brgy Tañong)				Code	ML-03	
Sheet	Summary of Observations				LGU	Malabon	
Traffic Conditions	<ul style="list-style-type: none"> 1) A T-junction with virtually no traffic enforcement, creating a "free for all" situations. 2) Heavy pedestrian flows characterize the intersection. 3) Very slow vehicular movement due to numerous road side frictions. 4) Mixed traffic flow – pedestrians, vehicles, and pedicabs. 						
	<ul style="list-style-type: none"> 1) Vendors occupy the sidewalks, even though there is a designated market. 2) Usable roadway is very narrow. 						
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: F Sevilla (N)	7.0m	47	NA	149	196	55.58%	Moderate
A2: Estrella (E)	9.17m	NA	70	58	128	43.24%	Moderate
A3: None	None	None	None	None	None	None	None
A4: Estrella (W)	7.5m	141	127	NA	268	15.76%	Heavy
Total		188	197	207	592		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Malabon ML-03 Estrella St (Brgy Tañong)</p>							

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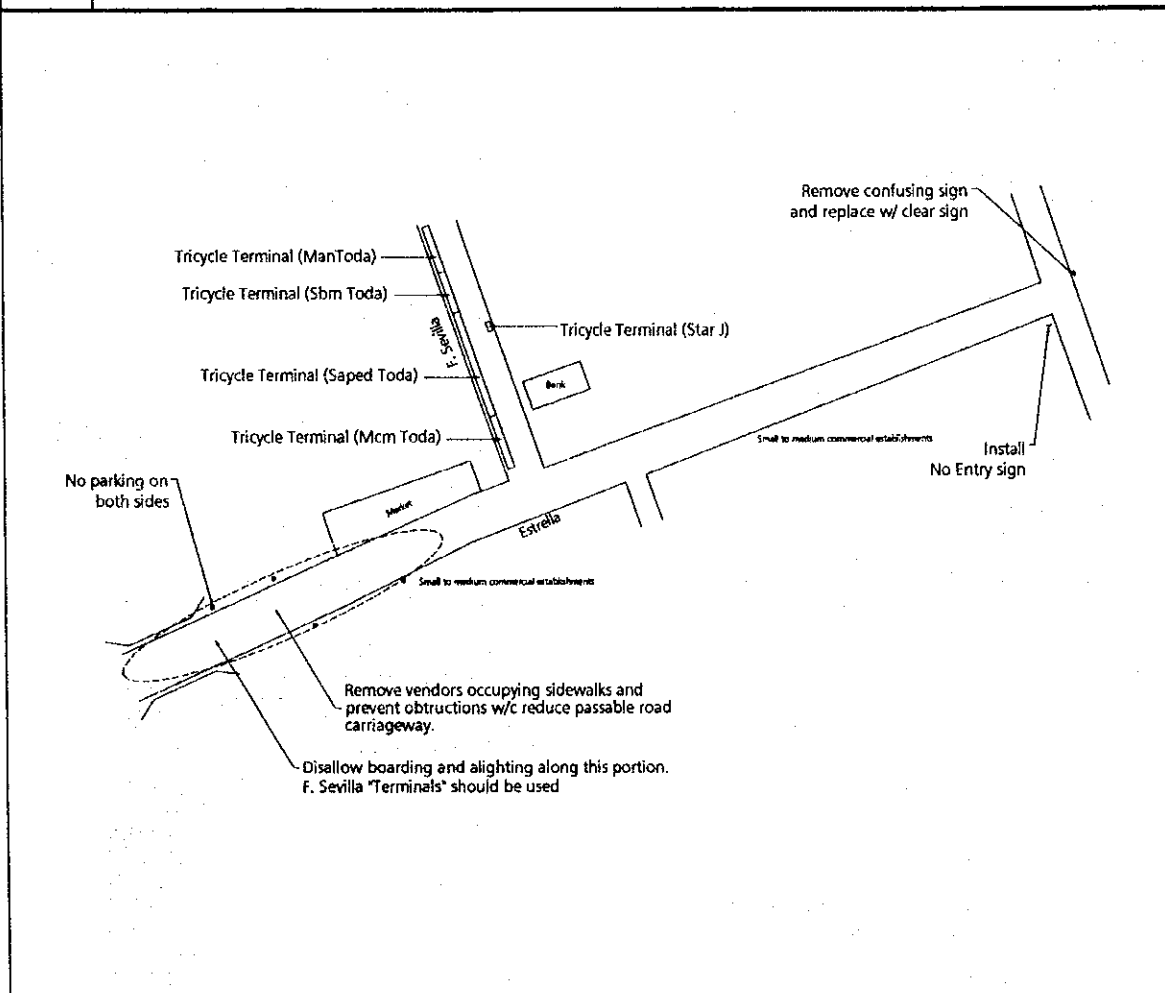
Small Scale Traffic Improvement Measures for Metro Manila

Name	Estrella St (Brgy Tañong)	Code	ML-03
Sheet	Analysis	LGU	Malabon

- 1) Encroachment of sidewalks and bridge by vendors forces pedestrians to use the road as well, thereby constricting further its capacity.
- 2) Pedicabs are undisciplined and often occupy lane in the opposing direction.
- 3) At the intersection of Estrella and Leoño, there is a confusing sign which says "No Entry, One way" with an arrow. The combination of messages in one sign gives a conflicting message, although it is signed.
- 4) The Market plus numerous small shops induce heavy pedestrian traffic, which cannot be accommodated on sidewalks. Intermixing of people, pedicabs, and on motorized vehicles on the street causes congestion.



Name	Estrella St (Brgy Tañong)	Code	ML-03
Sheet	Proposed Improvements	LGU	Malabon
Engineering	<ol style="list-style-type: none"> 1) Remove confusing sign at the end of Estrella (intersection with Leoño) and replace with two separately placed signs indicating "No Entry" and "One-way". 2) Reclaim sidewalks by clearing them of illegal stalls and surface improvements / delineation. Install pedestrian barriers at appropriate sections of Estrella Street. 3) Install pedestrian crossings / zebra markers. 4) Study feasibility of making F. Sevilla Street one-way in tandem with Leño Street. 		
Enforcement	<ol style="list-style-type: none"> 1) Remove vendors occupying sidewalks and prevent obstructions, which reduce passable road carriageway. Vendors on the roads should be removed as well, to facilitate the movement of vehicles. (Police action) 2) Control pedicab parking and passenger boarding and alighting along Estrella by designating areas where such activity is allowed. (Traffic enforcement action) 		



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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : ML-03: Estrella St. (Brgy. Tanong) (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.	-	-	-
b.) Solid White Lines, 150mm width	l.m.	140.00	150.00	21,000.00
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	-	-
b.) Broken Lines, w = 150mms, 200mm width	l.m.	-	-	-
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	-	-
b.) Single Yellow Line with broken White Lines (100-150mm)	l.m.	-	-	-
4. Edge Lines				
a.) Pavement Edge (Shoulders)	l.m.	-	-	-
b.) Median Edge	l.m.	-	-	-
5. Continuity Lines	l.m.	-	-	-
6. Transition Line	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	l.m.	-	-	-
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	-	-	-
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.	-	-	-
<i>Other Markings</i>				
1. Approach Markings to Island and Obstructions	l.m.	-	-	-
2. Chevron Markings	l.m.	-	-	-
3. Curb Markings to Parking Restrictions	l.m.	-	-	-
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines (w=200mm)	l.m.	-	-	-
<i>Messages and Symbols</i>				
1. Messages	pcs.	-	-	-
2. Symbols				
a.) Give Way Symbol	pcs.	-	-	-
b.) Pavement Arrows				
1.) Through Arrow = 1.21 sq.m. / each	pcs.	-	-	-
2.) Combined Arrow = 2.44 sq.m. / each	pcs.	-	-	-
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	-	-	-
c.) Numerals				
B. Signs				
1. No Entry Sign	pcs.	4.00	3,850.00	15,400.00
2. One Way Sign	pcs.	2.00	3,850.00	7,700.00
C. Other Works				
1. Removal of Existing Road Signs	ls	-	-	2,000.00
TOTAL				46,100.00
Contingencies, 5%				2,305.00
CMS, 10%				4,610.00
Miscellaneous (fees, permits, etc.), 5%				2,305.00
Govt. Supervision, 2%				922.00
TOTAL COST				56,242.00

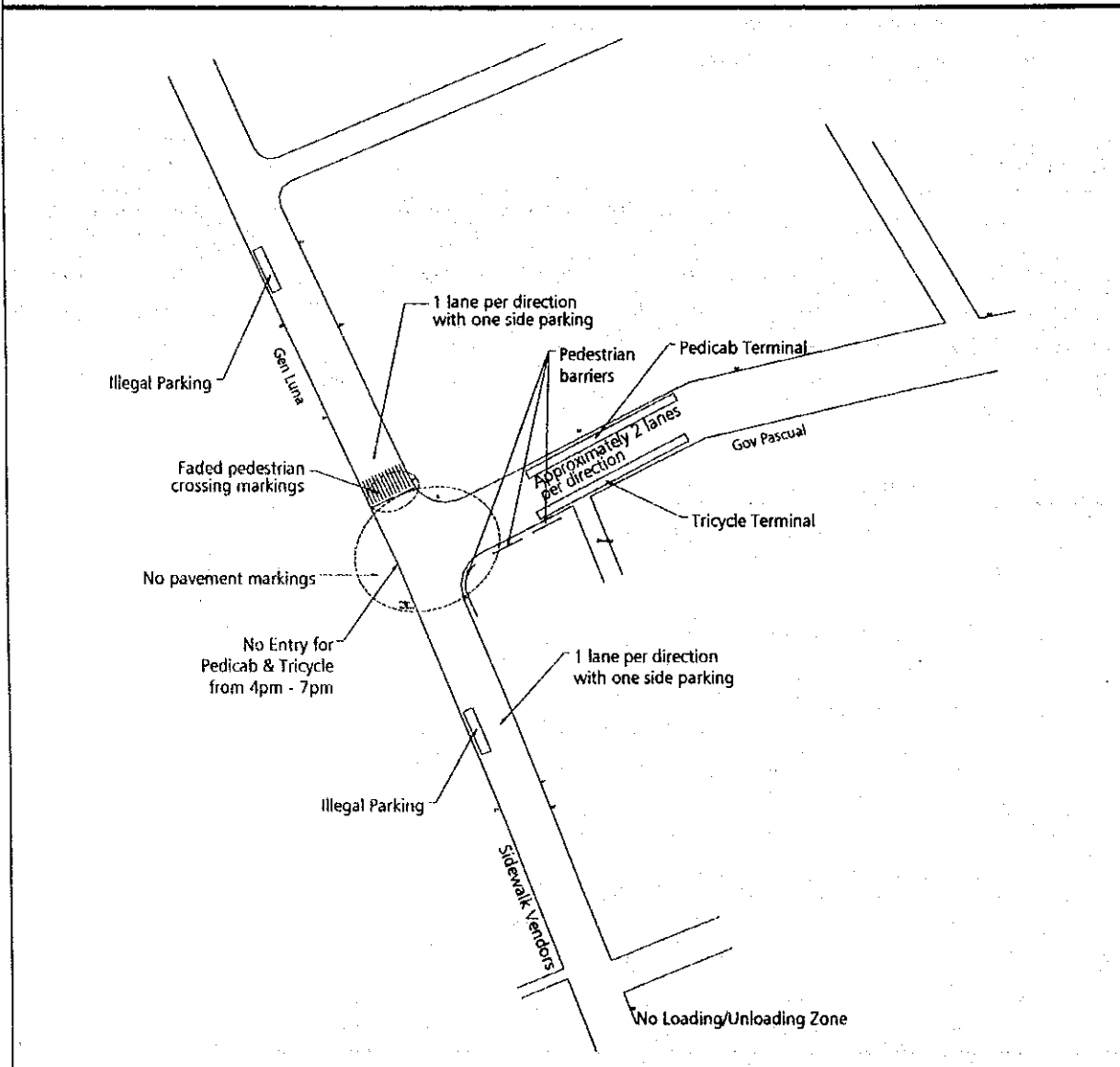
Name	Gen Luna St / Gov Pascual Ave				Code	ML-04	
Sheet	Summary of Observations				LGU	Malabon	
Traffic Conditions	<ul style="list-style-type: none"> 1) Unsignalized; no enforcer during off-peak hours. 2) Jeepneys and tricycles use both roads, mixing of traffic streams on Gov. Pascual. 						
	<ul style="list-style-type: none"> 1) T-intersection. 2) All approaches are more than adequate for 2 lanes but too tight for 3 lanes layout. 3) No traffic control signage. 4) No pavement markings (no lane markings etc. – although some faded pedestrian crossing markings do exist) 5) Pedestrian barriers along the Gov. Pascual approach (both sides). 6) Residential / Commercial Area. 						
Signalization	None		Pavement Markings	None		Peak	16:00-17:00
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: Gen Luna (N)	8.1m	257	361	NA	618	56.39%	Light
A2: Gov Pascual	9.2m	181	NA	325	506	47.27%	Light
A3: Gen Luna (S)	7.8m	NA	352	211	562	46.05%	Light
A4: None	None	None	None	None	None	None	None
Total		438	713	536	1,686		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Malabon ML-04 Gen Luna St / Gov Pascual Ave</p>							

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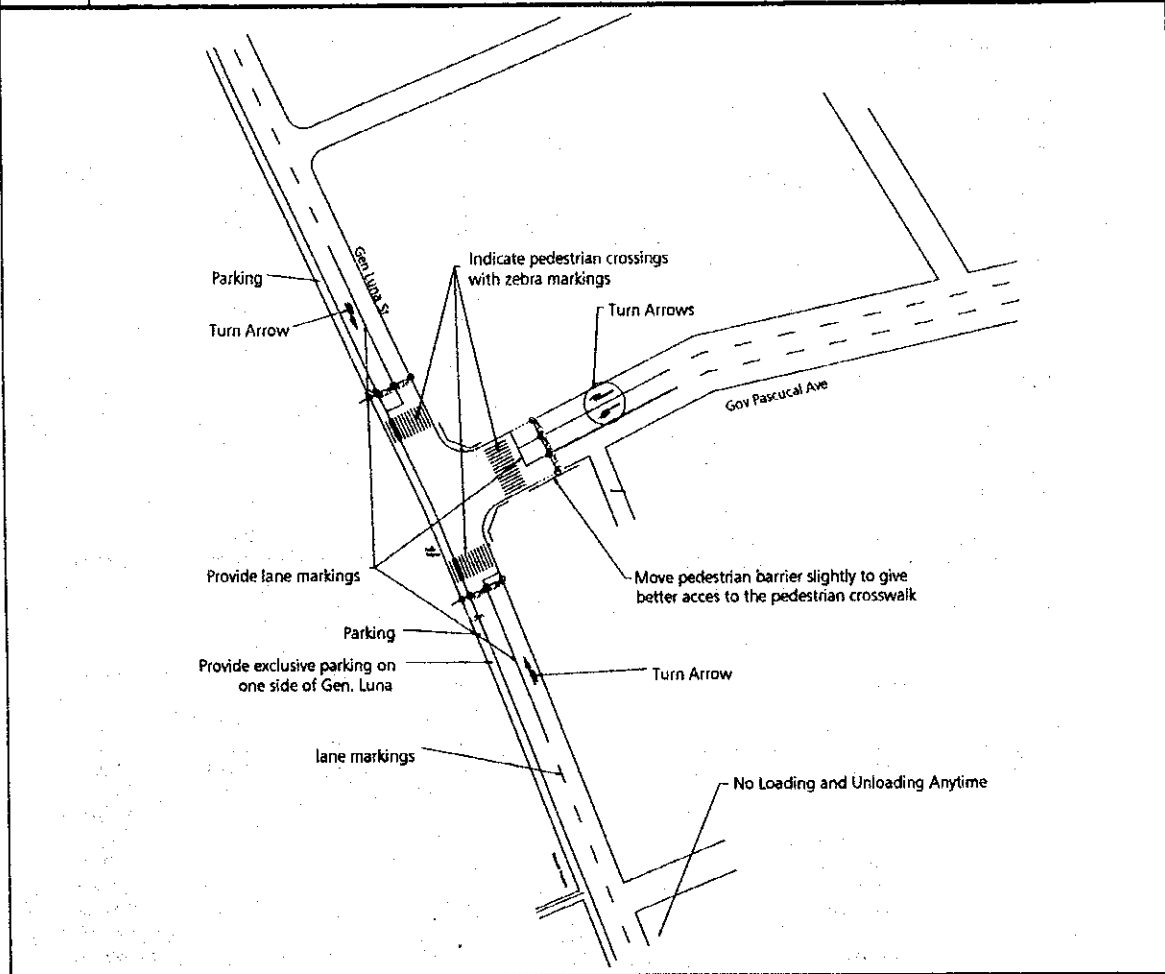
Small Scale Traffic Improvement Measures for Metro Manila

Name	Gen Luna St / Gov Pascual Ave	Code	ML-04
Sheet	Analysis	LGU	Malabon

- 1) Limited road width plus heavy traffic volumes point to banning of on-street parking during peak hours. However, this would likely be resisted by commercial establishments along the intersection, since some customers of this business might be using motor vehicles.
- 2) Lack of lane markings makes it difficult for drivers to judge the position that they should take, and invites vehicle to weave in and out of lanes.
- 3) As jeepneys and tricycles use both roads, their intermixing on the traffic streams of Gov. Pascual further slows traffic flow.



Name	Gen Luna St / Gov Pascual Ave	Code	ML-04
Sheet	Proposed Improvements	LGU	Malabon
Engineering	<ol style="list-style-type: none"> 1) Install lane markings to encourage lane discipline. 2) Install zebra crossings to limit pedestrian movements to designated crossings. 3) Provide markings for parking on one side of Gen. Luna and charge accordingly. 4) Adjust placement of pedestrian barriers to coincide with crosswalk markings. 		
Enforcement	<ol style="list-style-type: none"> 1) Enforce use of crosswalks and apprehend jaywalkers 2) The City may consider making pay-parking a means of controlling parking along one side of Gen. Luna. Enforcement of one-side parking can assure sufficient road width for traffic flow 		



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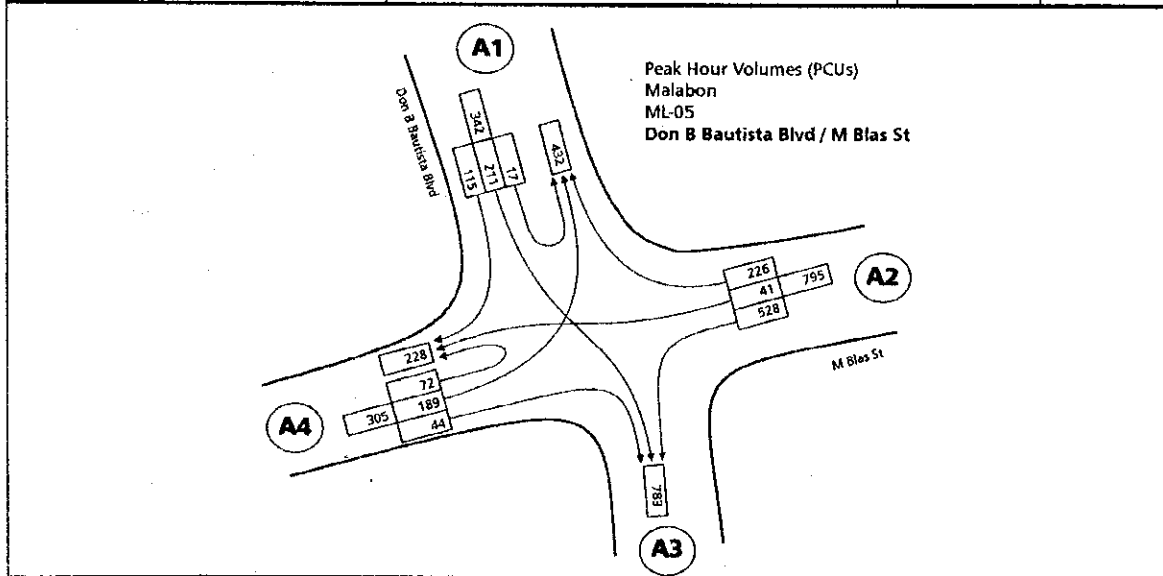
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : ML-04 Gen. Luns St. / Gov. Pascual Avenue (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.	210.00	45.00	9,450.00
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.	200.00	150.00	30,000.00
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.)	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.	128.00	225.00	28,800.00
b.) Cross Walks (Signalized), width = 300mm	l.m.	-	225.00	-
<i>Other Lines</i>				
1. Turn Lines (Broken Lines)	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	-
6. Parking Lines (w=200mm)	l.m.	200.00	45.00	9,000.00
<i>Messages and Symbols</i>				
1. Messages				
a.)	pcs.	-	-	-
2. Symbols				
a.) Give Way Symbol	pcs.	-	-	-
b.) Pavement Arrows				
1.) Through Arrow = 1.21 sq.m. / each	pcs.	-	907.50	-
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.	-	1,095.00	-
c.) Numerals				
B. Signs				
1. Pedestrian Crossing Sign	ps	3.00	3,850.00	11,550.00
C. Other Works				
1. Adjust Location of pedestrian barrier (Railings)	l.s.	1.00	3,500.00	3,500.00
2. Removal of Pavement Markings	l.m.	128.00	90.00	11,520.00
TOTAL				120,980.00
Contingencies, 5%				6,049.00
CMS, 10%				12,098.00
Miscellaneous (fees, permits, etc.), 5%				6,049.00
Govt. Supervision, 2%				2,419.60
TOTAL COST				147,595.60

Name	Don B Bautista Blvd / M Blas St	Code	ML-05
Sheet	Summary of Observations	LGU	Malabon
Traffic Conditions	1) Jeepney route passes through the intersection, although apparently a number are actually "colorum" 2) Pedicabs serve the direction of southern length of M. Blas 3) Jeepneys use an area near the intersection as the boarding/alighting area		
Physical Conditions	1) Four-legged intersection, offset, with uneven width. 2) Tricycle terminal on North Bautista 3) Pedicab stand on South Blas 4) No pavement markings 5) No traffic control signage 6) Residential area.		

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: Bautista (N)	17m	17	211	115	342	38.88%	Light
A2: M Blas (E)	10.4m	528	41	226	795	59.78%	Light
A3: Bautista (S)	12.5m	NA	NA	NA	NA	NA	NA
A4: M Blas (W)	15.27m	261	NA	44	305	23.50%	Light
Total		806	252	385	1,442		
Passenger Flows							

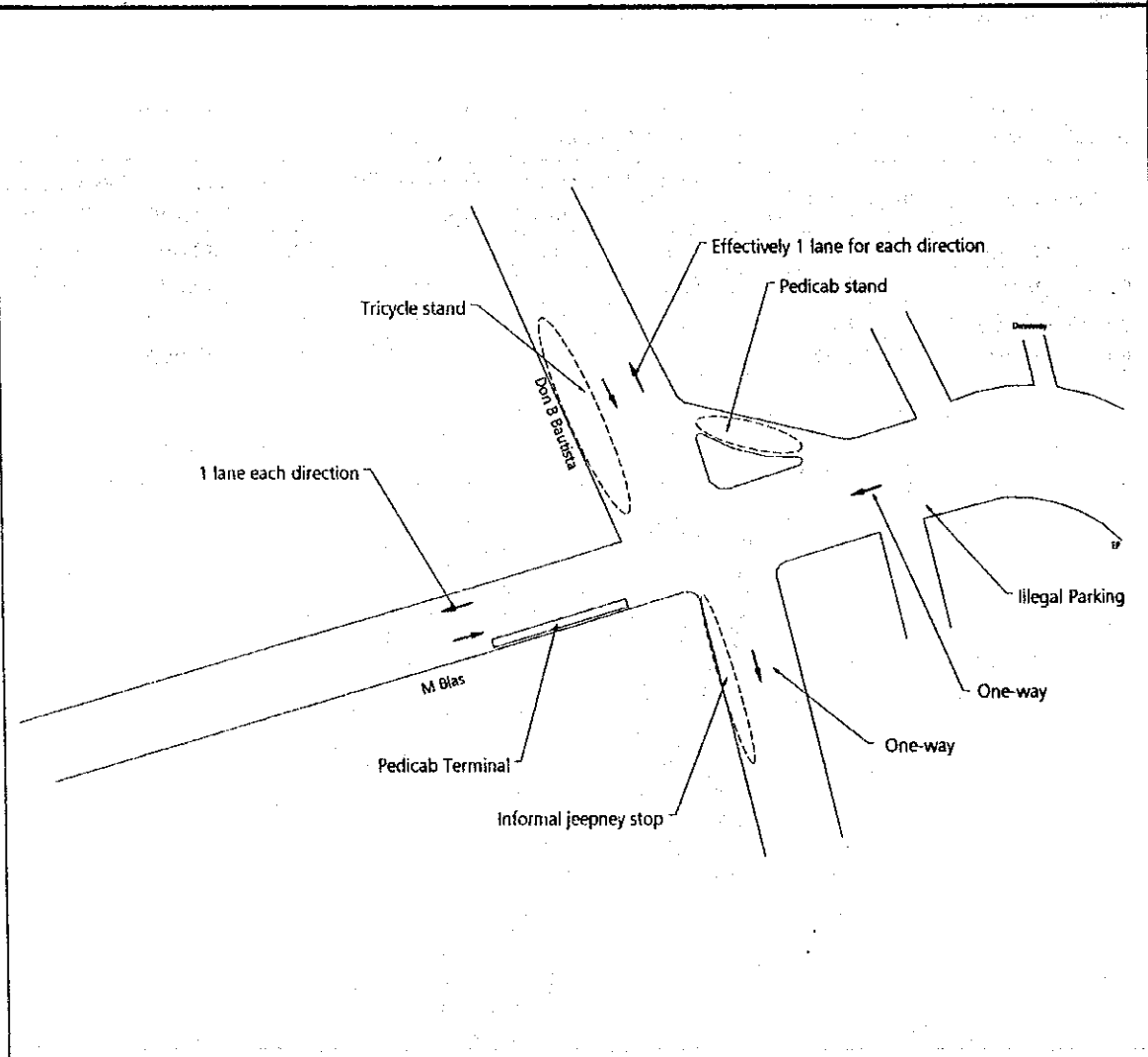


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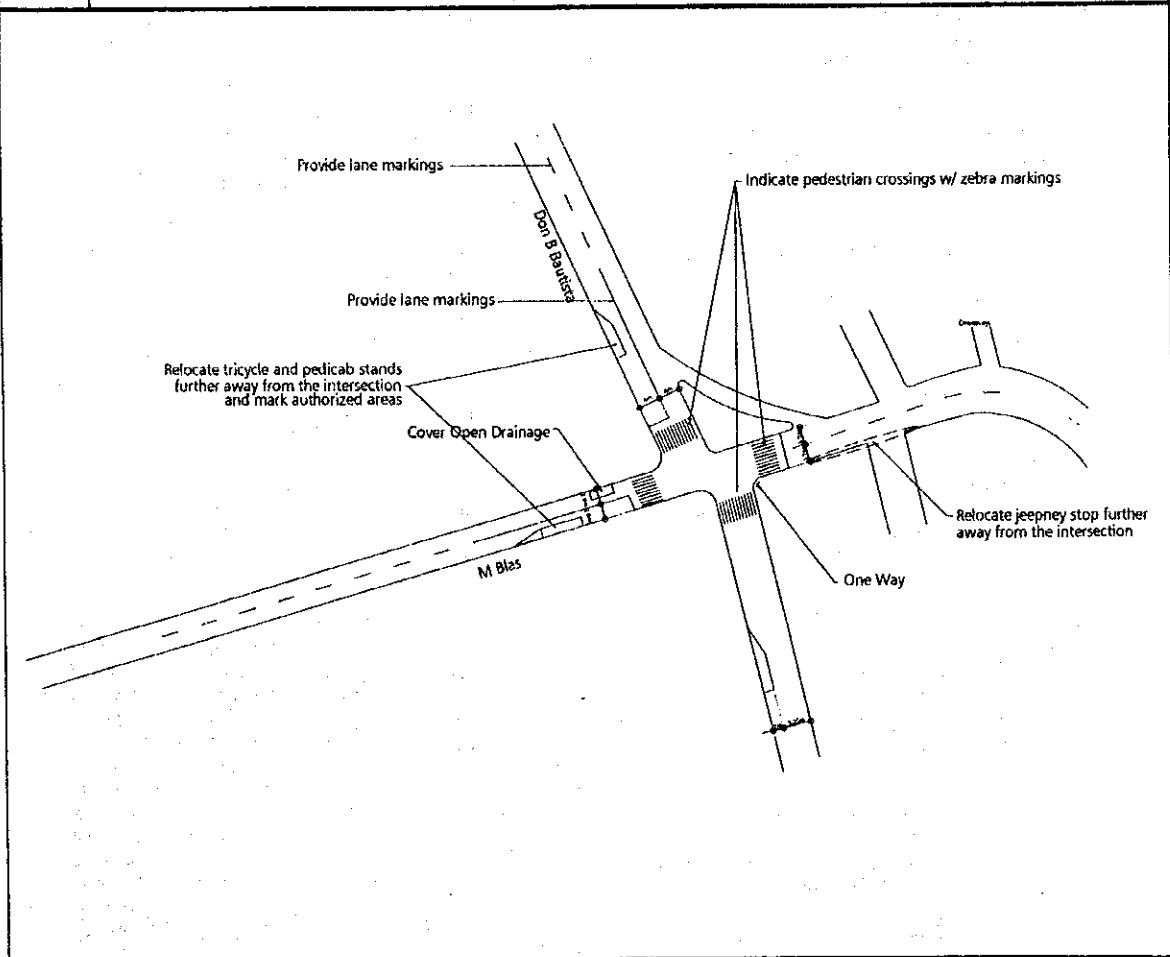
Small Scale Traffic Improvement Measures for Metro Manila

Name	Don B Bautista Blvd / M Blas St	Code	ML-05
Sheet	Analysis	LGU	Malabon

- 1) Boarding and alighting of jeepneys occur at the narrowest approach of the intersection. However, as volumes are low for most of the day, this problem may not be as problematic as during peak hours.
- 2) Pedicab stands as well as tricycle stand at the corners complicate the situation.
- 3) Heavy left turning volume from A-4 to A-1. System of one-way already in place on the two narrow legs of intersection.



Name	Don B Bautista Blvd / M Blas St	Code	ML-05
Sheet	Proposed Improvements	LGU	Malabon
Engineering	<ol style="list-style-type: none"> 1) Install lane markings 2) Install zebra markings for pedestrians. 3) Adjust placement of tricycle and pedicab stands and indicate with pavement markings 4) Designate jeepney stop with suitable pavement markings 		
Enforcement	<ol style="list-style-type: none"> 1) Enforce adjusted locations of tricycle and pedicab to avoid obstruction of crosswalks. 2) Segregate pedicab / tricycle from other vehicle to avoid adverse intermixing. 		



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Small Scale Traffic Improvement Measures for Metro Manila

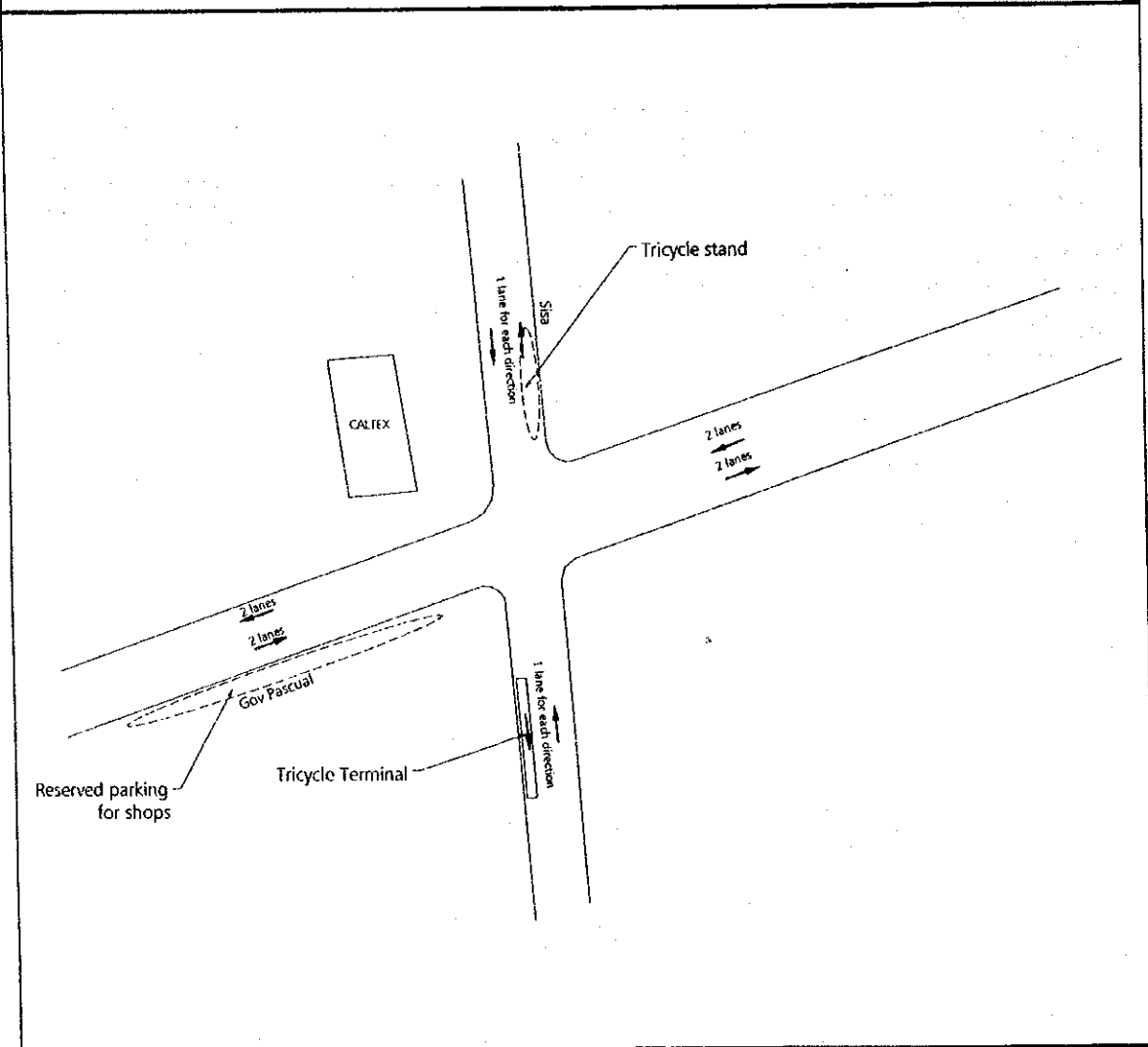
LOCATION : ML-05: Don B. Bautista Blvd. / M. Blas St. (MALABON)
(cost summary)

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.	-	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	l.m.	-	-	-
6. Transition Line	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	l.m.	12.25	337.50	4,134.38
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	132.00	225.00	29,700.00
b.) Cross Walks (Signalized), width = 300mm	l.m.	-	225.00	-
<i>Other Lines</i>				
1. Turn Lines (Broken Lines)	l.m.	-	-	-
2. Parking Bay Lines				
a.) Parallel Bays, width = 100mm	l.m.	-	75.00	-
b.) Angle Bays	l.m.	-	-	-
3. Painted Median Islands	l.m.	-	-	-
4. Bus and PUJ Lane Markings	l.m.	-	-	-
5. Channelized Junction Pavement Marking	l.m.	-	-	-
6. Yellow Box Line, w = 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.	115.00	150.00	17,250.00
<i>Messages and Symbols</i>				
1. Messages	pcs.	-	-	-
2. Symbols				
a.) Give Way Symbol	pcs.	-	-	-
b.) Pavement Arrows				
1.) Through Arrow = 1.21 sq.m. / each	pcs.	-	907.50	-
2.) Combined Arrow = 2.44 sq.m. / each	pcs.	-	1,830.00	-
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	-	1,095.00	-
c.) Numerals				
B. Signs				
1. Pedestrian Crossing Sign	pcs.	4.00	3,850.00	15,400.00
2. PUJ Loading / Unloading Sign	pcs.	1.00	3,850.00	3,850.00
3. Pedicab Loading / Unloading Sign	pcs.	1.00	3,850.00	3,850.00
4. Tricycle Loading / Unloading Sign	pcs.	1.00	3,850.00	3,850.00
5. No Loading/Unloading Sign	pcs.	4.00	3,850.00	15,400.00
TOTAL				124,034.38
Contingencies, 5%				6,201.72
CMS, 10%				12,403.44
Miscellaneous (fees, permits, etc.), 5%				6,201.72
Govt. Supervision, 2%				2,480.69
TOTAL COST				151,321.94

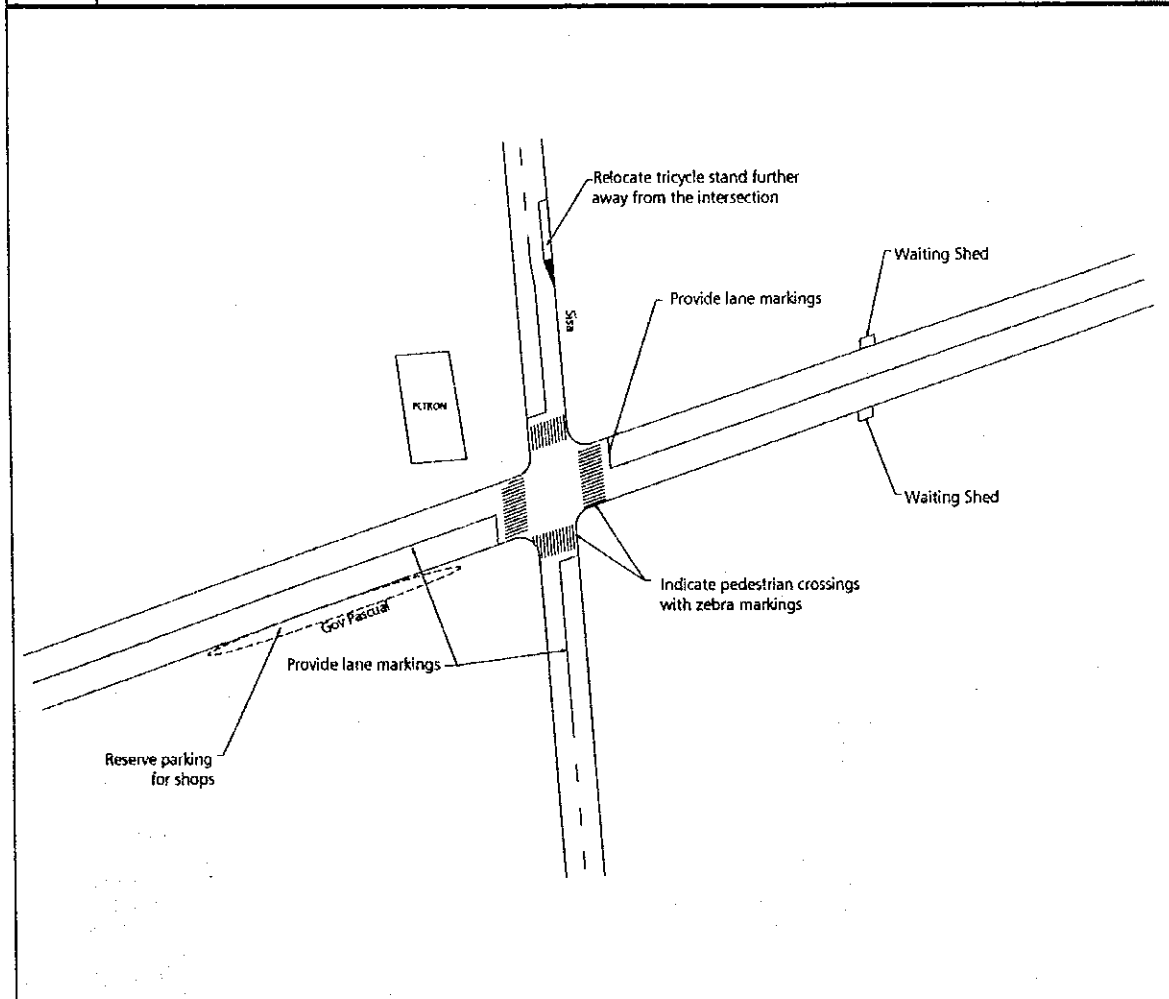
Name	Gov. Pascual Ave / Sisa St			Code	ML-06		
Sheet	Summary of Observations			LGU	Malabon		
Traffic Conditions	1) ML06 is a four-legged, unsignalized intersection. 2) Tricycles on Sisa St. (north). 3) Two-lanes on both approaches along Sisa St. 4) Three or four lanes along Gov. Pascual Ave. 5) A rail track crosses the eastern leg of Gov. Pascual Ave. some 50 m or so away from the intersection.						
Physical Conditions	1) Pavement of Fair to Good quality with no potholes observed. 2) Commercial area 3) No lane markings 4) No traffic control signals 5) Moderate or few pedestrians						
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: Sisa (N)	8.0m	94	27	65	186	20.06%	Light
A2: Gov Pascual (E)	8.9m	160	744	122	1,025	35.48%	Light
A3: Sisa (S)	8.2m	7	6	136	148	19.59%	Light
A4: Gov Pascual (W)	12.5m	78	1,412	19	1,509	60.80%	Light
Total		338	2,189	341	2,867		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Muntinlupa ML-06 Gov. Pascual Ave. / Sisa St.</p>							

Name	Gov. Pascual Ave / Sisa St	Code	ML-06
Sheet	Analysis	LGU	Malabon

- 1) Lack of lane markings may make drivers take too much of adjacent lanes, forcing vehicles to slow down unnecessarily. By clearly marking the available lanes, drivers may be guided and the capacity of the approaches subsequently increased.
- 2) Tricycles too near the intersection may interfere with vehicles exiting the intersection via the north leg of Sisa. Therefore, their influence to the intersection can be reduced by relocating them farther from the intersection.



Name	Gov. Pascual Ave / Sisa St	Code	ML-06
Sheet	Proposed Improvements	LGU	Malabon
Engineering	<ol style="list-style-type: none"> 1) Install lane markings 2) Install crosswalk markings 		
Enforcement	<ol style="list-style-type: none"> 1) Relocate tricycle stand further away from the intersection. 2) Occasional presence of enforcers to ensure that lane discipline among motorists and that tricycles stop at their designated areas 		



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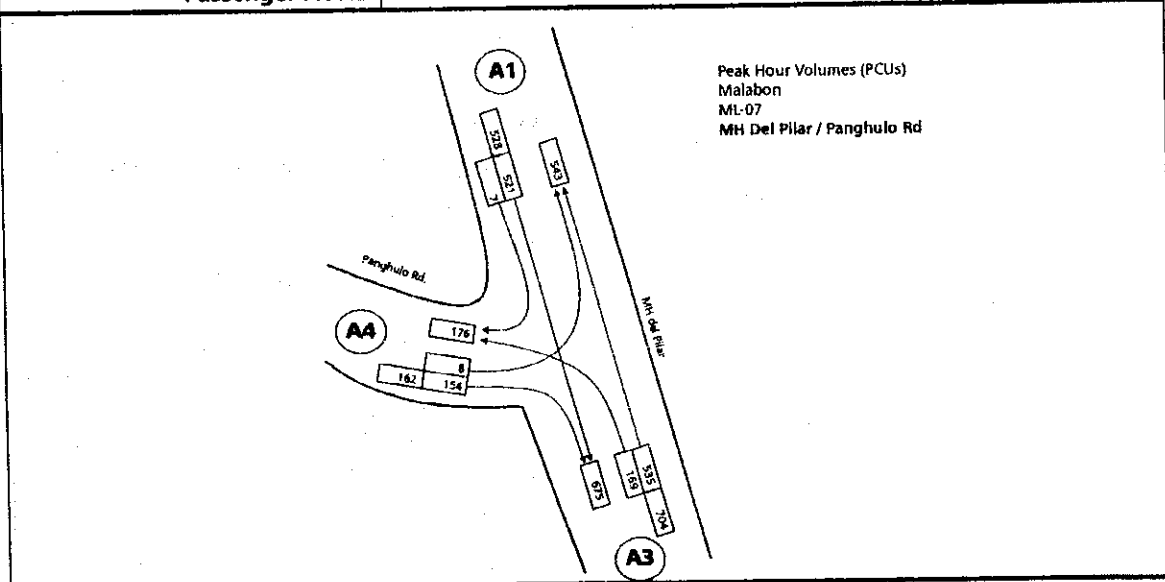
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : ML-06: Gov. Pascual. / Sisa St. (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.	60.00	150.00	9,000.00
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.	340.00	45.00	15,300.00
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	120.00	150.00	18,000.00
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.	18.50	337.50	6,243.75
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	204.00	225.00	45,900.00
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.	34.50	150.00	5,175.00
<i>Messages and Symbols</i>				
1. Messages				
pcs.	-	-	-	-
2. Symbols				
a.) Give Way Symbol				
pcs.	-	-	-	-
b.) Pavement Arrows				
1.) Through Arrow = 1.21 sq.m. / each	pcs.	-	907.50	-
2.) Combined Arrow = 2.44 sq.m. / each	pcs.	-	1,830.00	-
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	-	1,095.00	-
c.) Numerals				
B. Signs				
1. Pedestrian Crossing Sign	pcs.	4.00	3,850.00	15,400.00
2. PUJ Loading / Unloading Sign	pcs.	1.00	3,850.00	3,850.00
3. Pedicab Loading / Unloading Sign	pcs.	1.00	3,850.00	3,850.00
4. Tricycle Loading / Unloading Sign	pcs.	1.00	3,850.00	3,850.00
5. No Loading/Unloading Sign	pcs.	4.00	3,850.00	15,400.00
TOTAL				163,568.75
Contingencies, 5%				8,178.44
CMS, 10%				16,356.88
Miscellaneous (fees, permits, etc.), 5%				8,178.44
Govt. Supervision, 2%				3,271.38
TOTAL COST				199,553.88

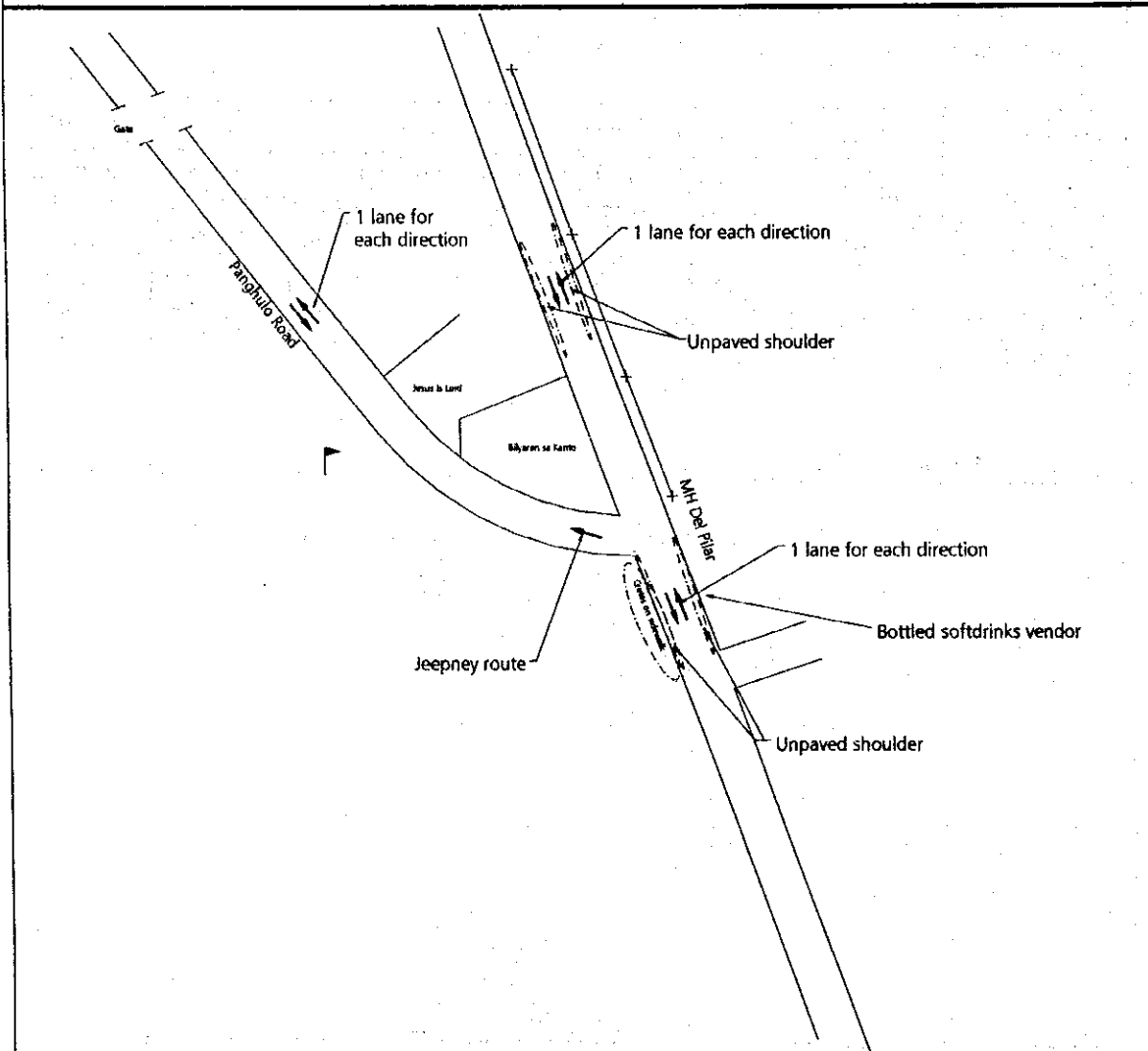
Name	MH del Pilar / Panghulo Rd	Code	ML-07
Sheet	Summary of Observations	LGU	Malabon
Traffic Conditions	1) Light pedestrian movement 2) Jeepneys use Panghulo, coming from and going to the southern leg of M.H.Del Pilar 3) Generally, traffic volumes are light		
Physical Conditions	1) A Y-Intersection, although another road (Romy I) intersects M.H. Del Pilar as a T-intersection less than 20 meters from the Y-intersection; if traffic volume from that road becomes great in the future, analysis may have to consider Romy I as part of the intersection. At present, it may be disregarded. 2) No pavement markings 3) No traffic control signage 4) Effectively no sidewalk on west side of M.H. Del Pilar, due to some obstructions 5) Sidewalks being used as storage by softdrinks supplier on both sides 6) Unpaved areas along the shoulder of M.H. Del Pilar		

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: MH del Pilar (N)	6.7m	NA	521	7	528	50.74%	Light
A2: None	None	None	None	None	None	None	None
A3: MH del Pilar (S)	6.7m	169	535	NA	704	36.81%	Light
A4: Panghulo Rd	6.0m	8	NA	154	162	27.83%	Light
Total		177	1,056	161	1,394		
Passenger Flows							



Name	MH del Pilar / Panghulo Rd	Code	ML-07
Sheet	Analysis	LGU	Malabon

- 1) Currently, unpaved parts of the road, which are the shoulders, are being used by pedestrians – a dangerous condition since the road is essentially a highway. At the moment, pedestrian volumes are low. However, it will be increasingly necessary to clear the sidewalk, especially when traffic volumes along Del Pilar increase. Since part of the sidewalk is being used by a private enterprise, it is the right of the City to clear it of obstructions.
- 2) With respect to traffic volumes, the right of way of the unpaved shoulders will be needed to accommodate increase in traffic flow. This is in conjunction with the concern for pedestrian facilities.
- 3) At present, the conflict of the vehicles from the southern leg of Del Pilar turning left to Panghulo and traffic coming from the northern leg of Del Pilar is apparently the greatest conflict. However, it is not yet of serious concern.



Name	MH del Pilar / Panghulo Rd	Code	ML-07
Sheet	Proposed Improvements	LGU	Malabon
Engineering	<ol style="list-style-type: none"> 1) Pave unpaved portions of the road/shoulder 2) Clarify/define sidewalks 3) Install lane markings on the road 4) Install crosswalk markings for increased pedestrian safety 		
Enforcement	<ol style="list-style-type: none"> 1) Remove crates on sidewalk and clear obstructions on sidewalks which are public domain. This action will complement / coincide with the improvements to pedestrian walkways and the roadway. 		

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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : ML-07: M. H. Pilar / Panghulo Road (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.	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.	-	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				
6. Transition Line	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	l.m.	7.00	337.50	2,362.50
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	104.00	225.00	23,400.00
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.	-	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. Pedestrian Crossing Sign	pcs.	3.00	3,850.00	11,550.00
C. Other Works				
1. Remove crates and clear obstruction on sidewalks	l.s.	1.00	10,000.00	10,000.00
2. Paved unpaved portions of the road / shoulder	sq.m.	144.00	700.00	100,800.00
TOTAL				163,412.50
Contingencies, 5%				8,170.63
CMS, 10%				16,341.25
Miscellaneous (fees, permits, etc.), 5%				8,170.63
Govt. Supervision, 2%				3,268.25
TOTAL COST				199,363.25

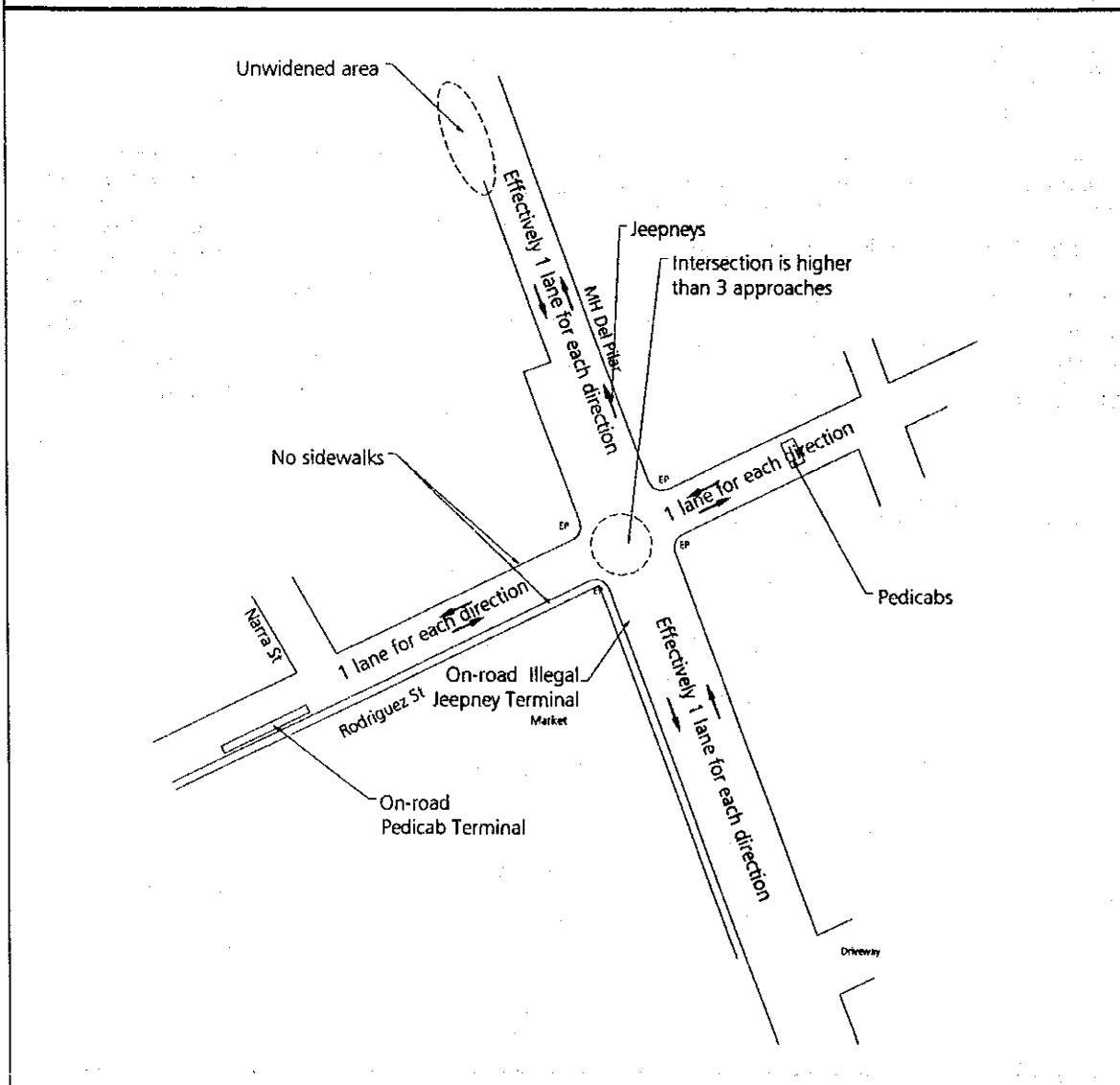
Name	MH del Pilar / Rodriguez St			Code	ML-08		
Sheet	Summary of Observations			LGU	Malabon		
Traffic Conditions	<ul style="list-style-type: none"> 1) Four-legged intersection 2) Jeepney routes along MH Del Pilar 3) Some pedicabs in operation 						
Physical Conditions	<ul style="list-style-type: none"> 1) No pavement markings 2) No traffic control signage hence no movement restrictions 3) Market on west E. Rodriguez 4) No definite sidewalks 5) Vendor paraphernalia on M.H. Del Pilar 6) West and north approaches are lower than intersection 						
Signalization	None	Pavement Markings	None	Peak	16:00-17:00		
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: MH del Pilar	7.2m	49	339	12	400	59.45%	Light-Moderate
A2: Rodriguez Ave	6.6m	165	63	37	264	14.78%	Light
A3: MH del Pilar	10.7m	15	365	179	559	41.52%	Light
A4: Rodriguez Ave	66.3m	13	45	16	73	13.05%	Light
Total		241	812	243	1,295		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Malabon ML-08 MH del Pilar / Rodriguez St</p>							

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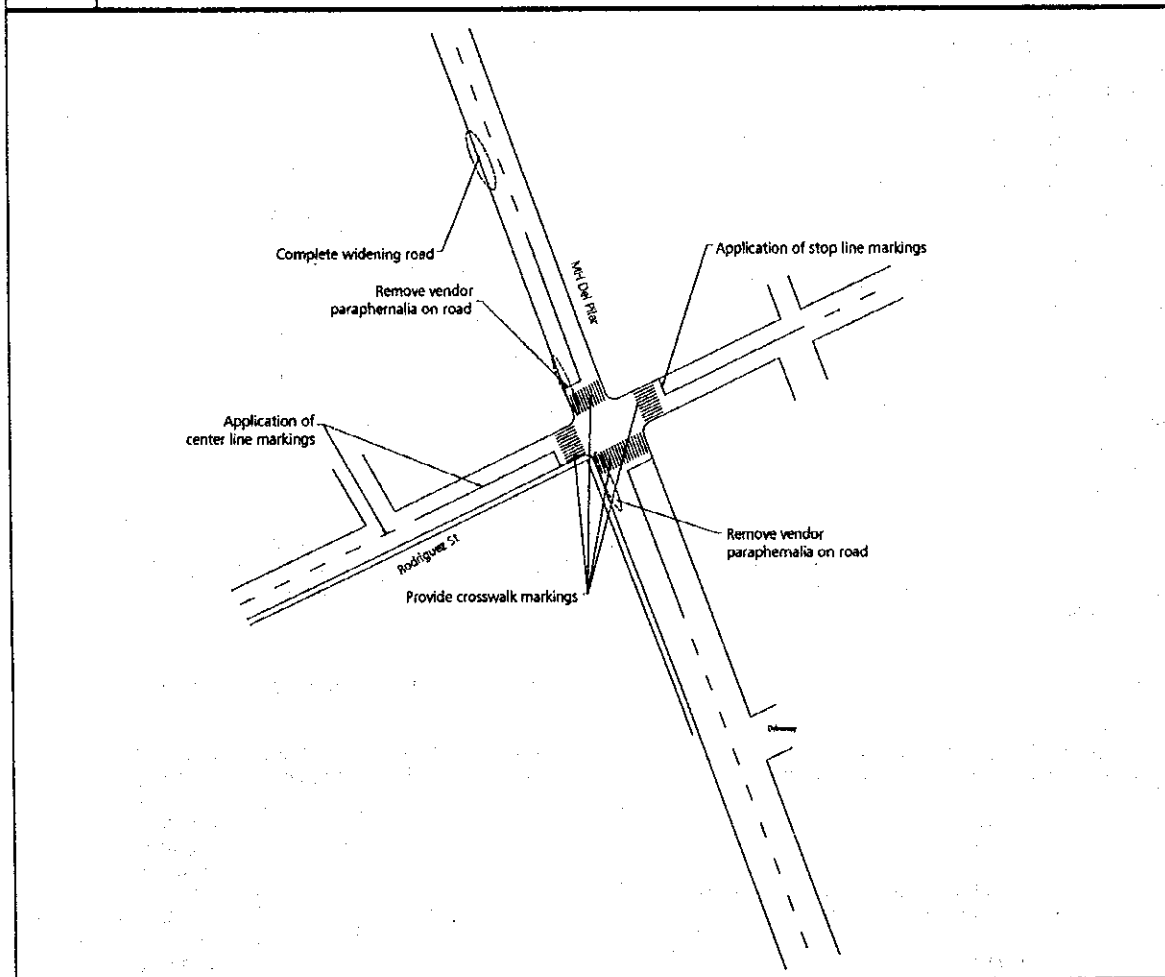
Small Scale Traffic Improvement Measures for Metro Manila

Name	MH del Pilar / Rodriguez St	Code	ML-08
Sheet	Analysis	LGU	Malabon

- 1) Vendor paraphernalia on road restricts traffic flows; use of the road may be partly because of the unevenness in the level of completion of the upgrading of pavement or widening of the roadway, especially along M.H. Del Pilar.
- 2) Absence of well defined sidewalks in combination with the obstructions from vendor paraphernalia may be forcing pedestrians closer or even into traffic flow. This increases the danger level for pedestrians, while decreasing the available clear roadway for vehicles, subsequently decreasing the vehicle speed that can be achieved when clearing/crossing the intersection.



Name	MH del Pilar / Rodriguez St	Code	ML-08
Sheet	Proposed Improvements	LGU	Malabon
Engineering	<ol style="list-style-type: none"> 1) Install lane markings 2) Install crosswalk markings 3) Complete widening of the MH Del Pilar 4) Upgrade the quality of pedestrian facilities by construction of proper sidewalks. This is a medium to long term measure that should complement the widening or improvement of the roads. 		
Enforcement	<ol style="list-style-type: none"> 1) Remove vendor paraphernalia on road or other obstructions 2) Since traffic volumes coming from Rodriguez are much smaller that those on Del Pilar, the presence of enforcers will only be needed when traffic volume have increased. 		



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Small Scale Traffic Improvement Measures for Metro Manila

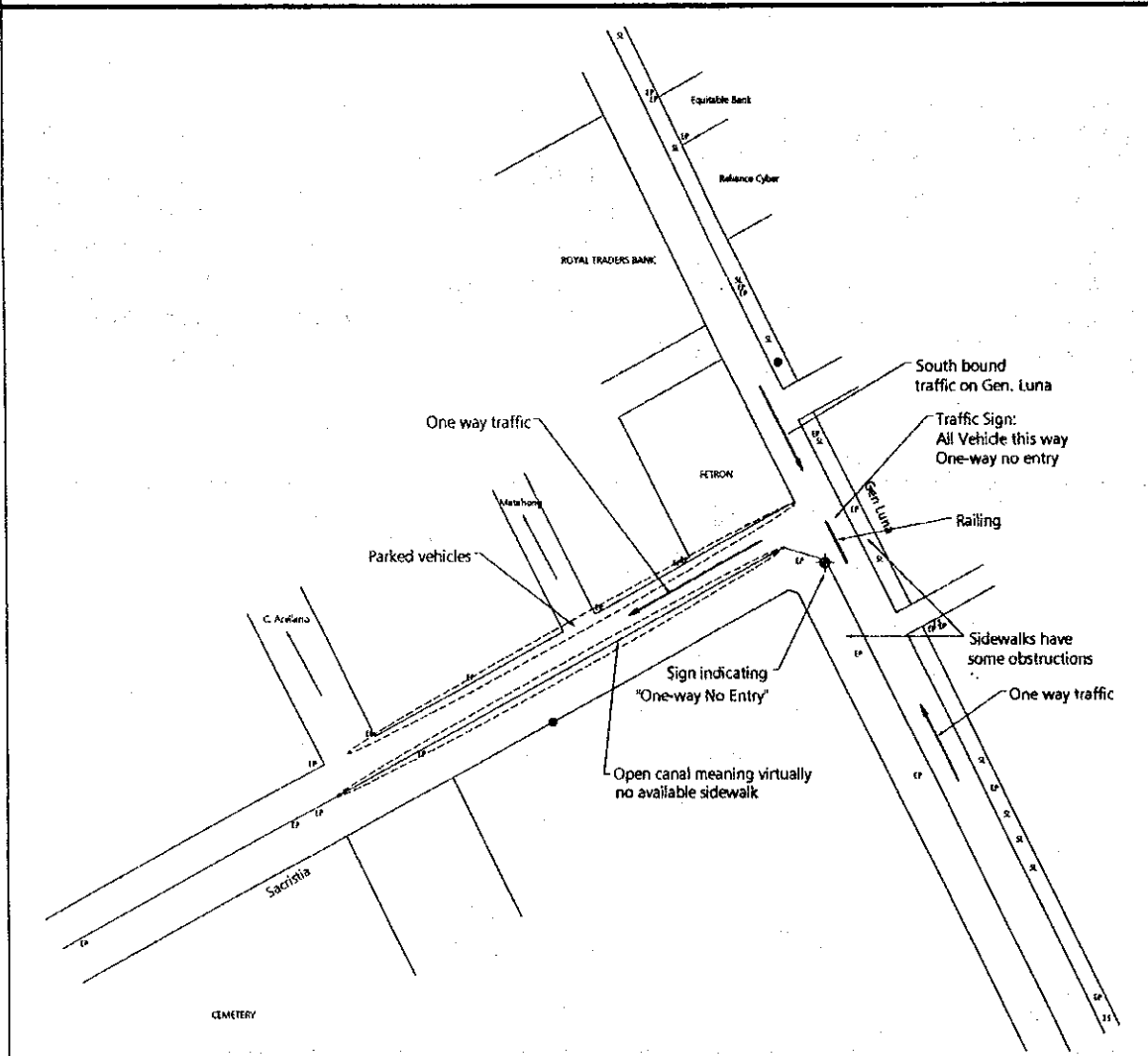
LOCATION : ML-08: M. H. del Pilar / Rodriguez St. (MALABON)
(cost summary)

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.	210.00	45.00	9,450.00
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.	-	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	l.m.	-	-	-
6. Transition Line	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	l.m.	11.70	337.50	3,948.75
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	132.00	225.00	29,700.00
b.) Cross Walks (Signalized), width = 300mm	l.m.	-	225.00	-
<i>Other Lines</i>				
1. Turn Lines (Broken Lines)	l.m.	-	-	-
2. Parking Bay Lines				
a.) Parallel Bays, width = 100mm	l.m.	-	75.00	-
b.) Angle Bays	l.m.	-	-	-
3. Painted Median Islands	l.m.	-	-	-
4. Bus and PUJ Lane Markings	l.m.	-	-	-
5. Channelized Junction Pavement Marking	l.m.	-	-	-
6. Yellow Box Line, w = 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.	-	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. Pedestrian Crossing Sign	pcs.	3.00	3,850.00	11,550.00
C. Other Works				
1. Complete widening of M. H. del Pilar	sq.m.	150.00	700.00	105,000.00
2. Remove vendor paraphernalia on road and other obstructions	ls.	1.00	15,000.00	15,000.00
TOTAL				188,148.75
Contingencies, 5%				9,407.44
CMS, 10%				18,814.88
Miscellaneous (fees, permits, etc.), 5%				9,407.44
Govt. Supervision, 2%				3,762.98
TOTAL COST				229,541.48

Name	Gen Luna / Sacristia		Code	ML-09			
Sheet	Summary of Observations		LGU	Malabon			
Traffic Conditions	<ul style="list-style-type: none"> 1) Unsignalized intersection 2) There are some south bound traffic along Gen.Luna 3) Two major movements are coming from the south leg of Gen. Luna going north and turning left to Sacristia, during morning and evening peak. 4) Most traffic flows entering Sacristia apparently funnel into F. Sevilla at the back of the Municipio. 						
Physical Conditions	<ul style="list-style-type: none"> 1) No pavement markings 2) No traffic control signage, except for "One-way No Entry" sign on Gen. Luna indicating that the south leg of Gen. Luna is one-way northbound. 3) Sidewalks along Gen. Luna approaches have many obstructions but provide some refuge to pedestrians from on-street traffic 4) No sidewalks on Sacristia – an open canal is on one side of the road while building encroach the roadway on the other side. 						
Signalization	None	Pavement Markings	None	Peak	16:00-17:00		
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: Gen Luna (N)	7.2m	NA	112	164	276	27.66%	Moderate
A2: None	None	None	None	None	None	None	None
A3: Gen Luna (S)	7.0m	482	739	NA	1,221	47.60%	Moderate
A4: Sacristia	6.1m	NA	NA	NA	NA	NA	Light
Total		482	851	164	1,496		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Malabon ML09 Gen Luna / Sacristia</p>							

Name	Gen Luna / Sacristia	Code	ML-09
Sheet	Analysis	LGU	Malabon

- 1) Lack of pedestrian facilities is one of the main problems of this intersection. Since there are no sidewalks along Sacristia, for example, the pedestrians would be forced to use the roadway and thus, the available road width would be further lessened which in turn would reduce the possible vehicle throughput.
- 2) Because it is unsignalized, traffic may be most conflicted when Sacristia is filled up with vehicles up to F. Sevilla. This would indicate that an areal re-design of the network of permitted directions of flows may need to be reviewed.



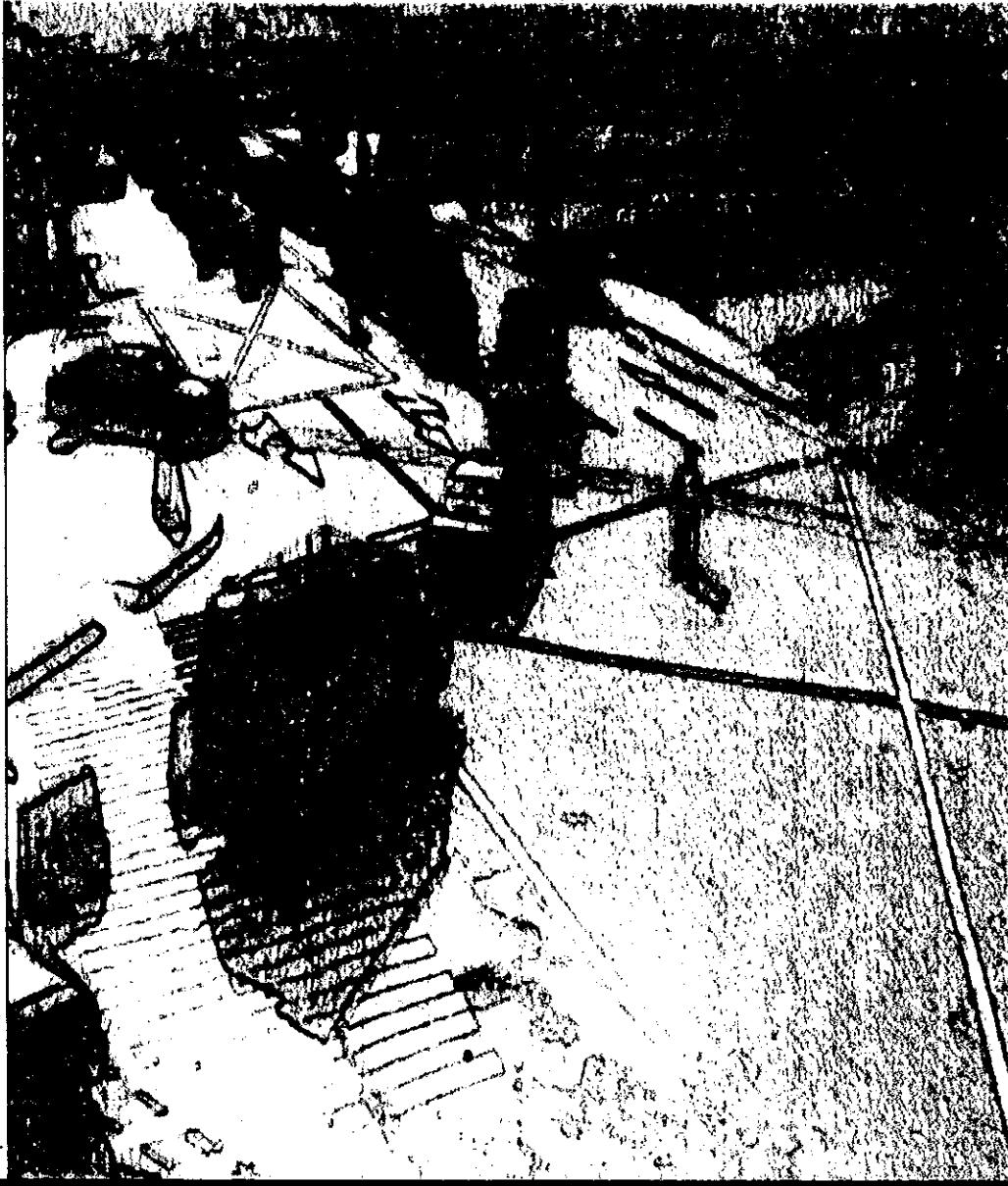
Name	Gen Luna / Sacristia	Code	ML-09
Sheet	Proposed Improvements	LGU	Malabon
Engineering	<ol style="list-style-type: none"> 1) Cover (not fill) open canals to provide some sidewalks to pedestrians 2) Provide lane markings 3) Provide pedestrian crosswalk markings 4) Remove sign which is not enforced anyway 5) Remove sidewalk obstructions 		
Enforcement	<ol style="list-style-type: none"> 1) Maintain one side parking on Sacristia 2) Provide traffic aide during peak hours to untangle conflicts 		

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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : ML-09: Gen Luna / Sacristia (MALABON)
(cost summary)

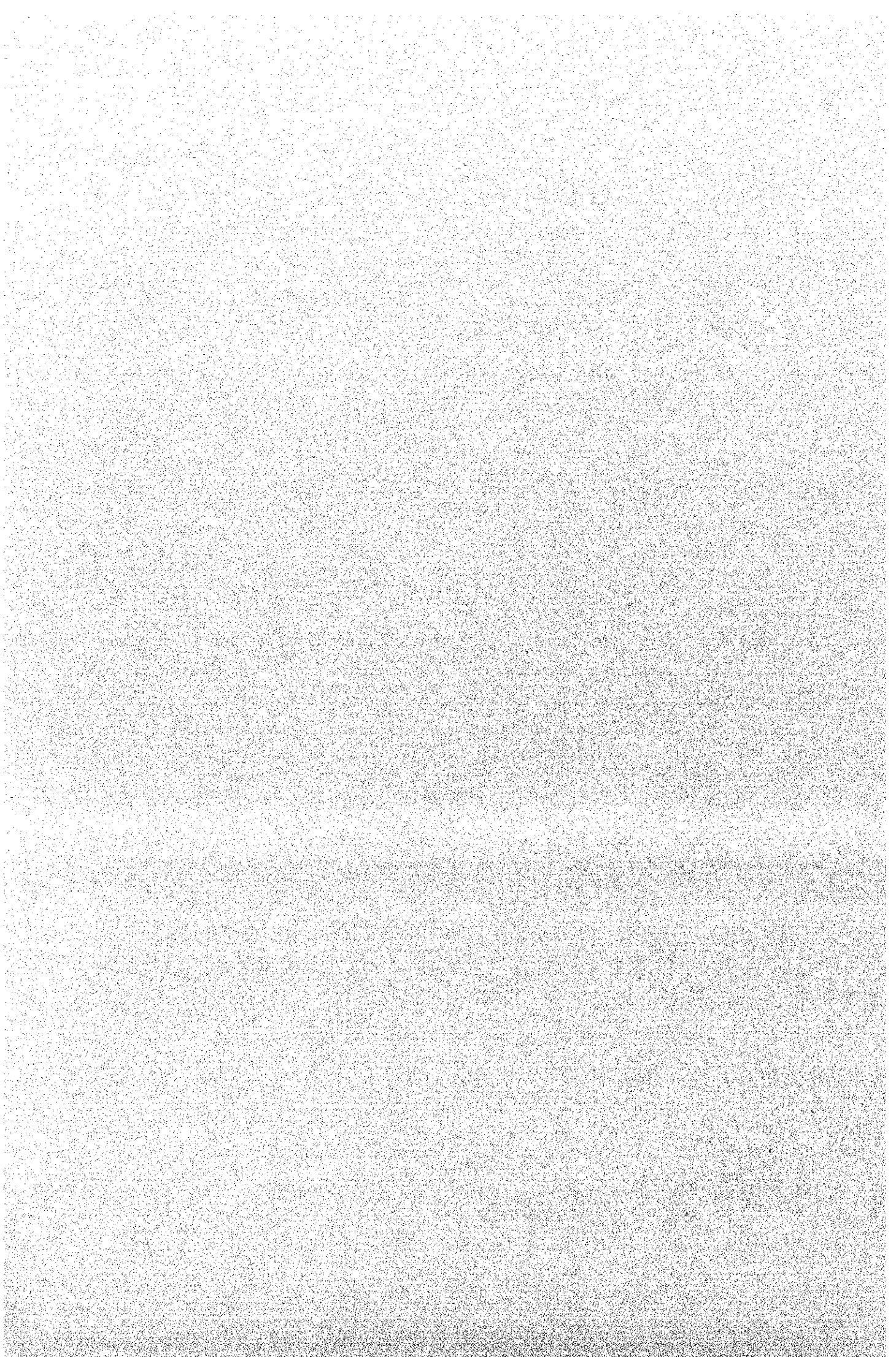
A. Pavement Markings	Unit	Quantity	Unit Cost	Total Cost
<i>Longitudinal Lines</i>				
1. Center Lines				
a.) Broken Lines, 100 or 150 mm width, 3m length 4.50 m gaps	l.m.	140.00	45.00	6,300.00
b.) Solid White Lines, 150mm width	l.m.	60.00	150.00	9,000.00
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	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.)	l.m.	-	-	-
6. Transition Line				
a.)	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	l.m.	7.00	337.50	2,362.50
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	108.00	225.00	24,300.00
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.)	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. Pedestrian Crossing Sign	pcs.	3.00	3,850.00	11,550.00
C. Other Works				
1. Remove sidewalk obstruction	sq.m.	150.00	700.00	105,000.00
2. Remove road signs	pcs.	2.00	500.00	1,000.00
3. Remove sidewalk obstructions	l.s.	1.00	5,000.00	5,000.00
4. Provide concrete cover for open canals to act as sidewalks	l.m.	100.00	350.00	35,000.00
TOTAL				199,512.50
Contingencies, 5%				9,975.63
CMS, 10%				19,951.25
Miscellaneous (fees, permits, etc.), 5%				9,975.63
Govt. Supervision, 2%				3,990.25
TOTAL COST				243,405.25



Mandaluyong

Individual Information Sheets for the Traffic Bottleneck Points

- MD-01 Shaw Blvd / Lee St / Wack-wack Rd / Old Wack-wack Rd
- MD-02 Shaw Blvd / Sheridan St / San Miguel Ave
- MD-03 Boni Ave / Barangka Dr
- MD-04 Libertad St / Calbayog St
- MD-05 Boni Ave / P Cruz St
- MD-06 Coronado St / San Francisco
- MD-07 Libertad St / Arayat St / Bonifacio Dr

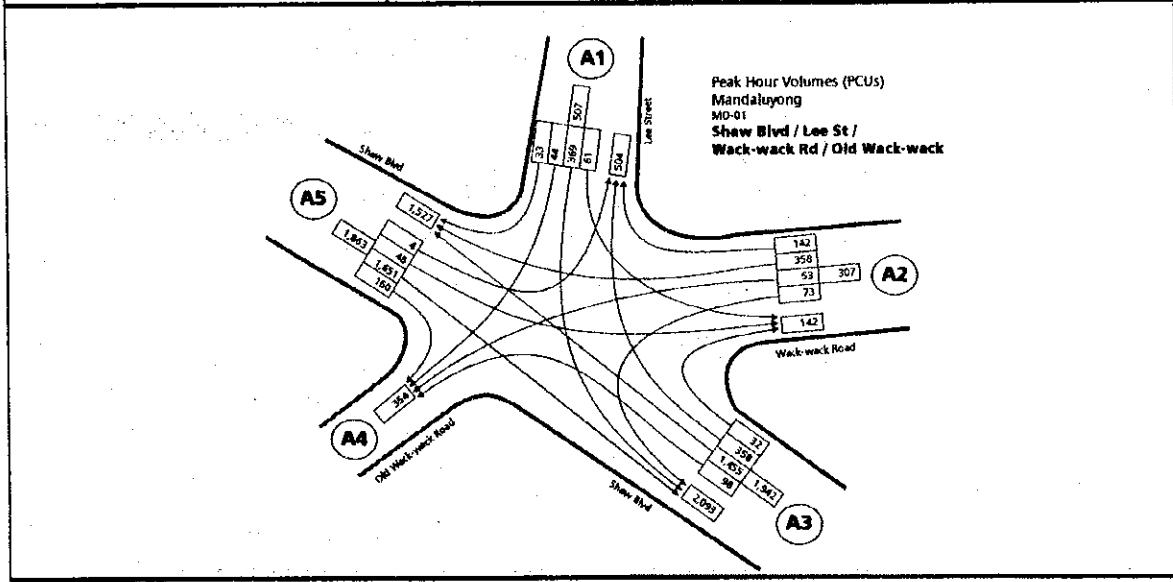


Name	Shaw Blvd / Lee Rd / Wack-Wack Rd / Old Wack-Wack Rd	Code	MD-01
Sheet	Summary of Observations	LGU	Mandaluyong

Traffic Conditions	<ol style="list-style-type: none"> Five-legged intersection with almost all turning movements allowed present numerous traffic conflicts. Heavy vehicles parked along Lee St due to ongoing construction activities. Lee St being utilized as an alternative route by vehicles coming from San Juan and Kalentong. Vehicles turning left from Shaw (EDSA side) into Old Wack-wack Road occupy the exit lane of the northbound approach.
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Physical Conditions	<ol style="list-style-type: none"> A multi-legged unsignalized intersection with five intersecting roads accommodating traffic movements from all directions is what characterized this bottleneck point located in Mandaluyong City. The main road, Shaw Blvd. could accommodate five lanes; whereas, the other intersecting roads have only two lanes each with width varying from 6.15 meters to 7.52 meters. Shaw Blvd. is presently asphalt paved in good condition and the pavement edges have curb and gutter. The other roads are paved with concrete in good condition. The physical condition of the existing intersection is adequate in terms of geometric standards as all of the pavement corners have adequate turning radius. The existing pavement surface is smooth which provides unrestricted vehicle movement. While the geometric conditions of the existing intersection meet standards, still the area is continuously being subjected to heavy congestion due to uncontrolled traffic movements.
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Signalization	None	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: Lee	6m	430	44	33	507	11.09%	Light
A2: Wack-Wack	10m	73	53	500	626	26.91%	Light
A3: Shaw Blvd (S)	15m	390	1455	98	1942	34.51%	Light
A4: Old Wack-Wack	7m	NA	NA	NA	NA	NA	NA
A5: Shaw Blvd (W)	15.5m	52	1651	160	1863	16.40%	Light
Total		945	3203	791	4,939		
Passenger Flows						21,000	

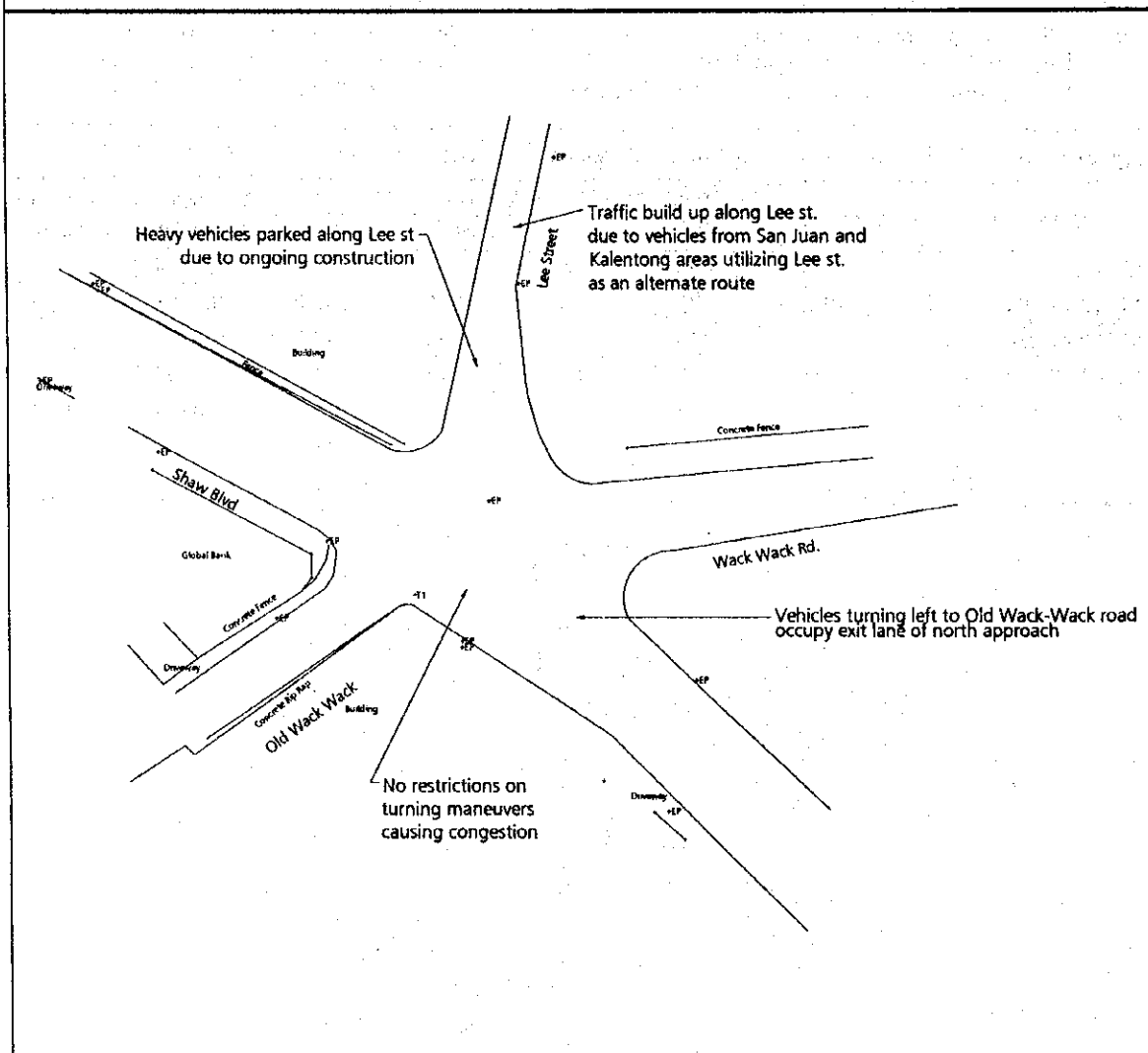


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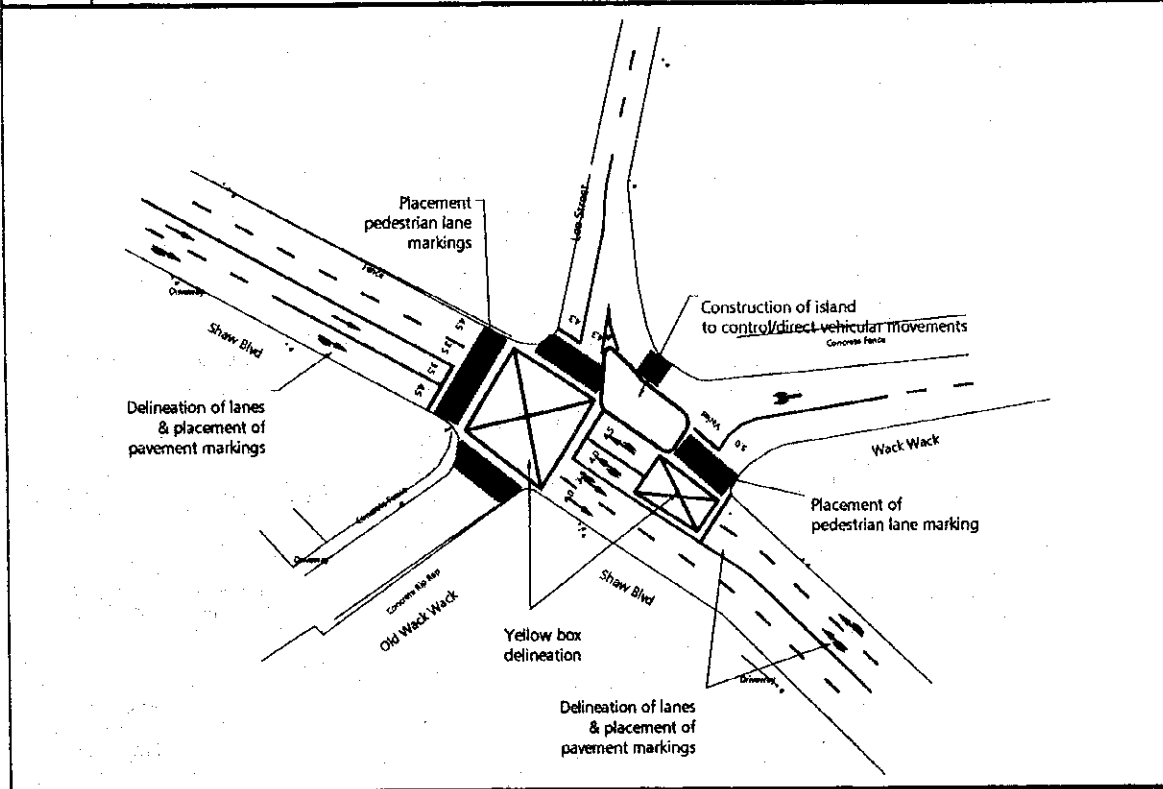
Small Scale Traffic Improvement Measures for Metro Manila

Name	Shaw Blvd / Lee Rd / Wack-Wack Rd / Old Wack-Wack Rd	Code	MD-01
Sheet	Analysis	LGU	Mandaluyong

- 1) The dominant traffic streams are those on Shaw Boulevard followed by Lee Street. These should take precedence over the others.
- 2) Left turn movements from Shaw Boulevard to Lee St (A1) and Wack Wack Road (A2) are very few and could either be banned or synchronized with the others to reduce conflicts
- 3) Basic solution to reduce conflicts is to channelize the intersection so that the cross-traffics occur at specified points that can be managed, rather than anywhere. This would mean reducing the degrees of freedom of the motorists
- 4) Usually a 4-legged intersection with even traffic streams lead to 4 signal phases (2 through + 2 left turns). In this particular intersection, there are five conceivable phases. This can be reduced to four with channelization.
- 5) Converting Lee Street (A1) into a one way street and/or reversing the one way pattern of Old Wack Wack Rd (A4) leads to more complications.



Name	Shaw Blvd / Lee Rd / Wack-Wack Rd / Old Wack-Wack Rd	Code	MD-01
Sheet	Proposed Improvements	LGU	Mandaluyong
Engineering	1) Two yellow boxes, first at the Lee St. (A1) / Old Wack Wack Rd (A4) and second at the Wack Wack / Shaw Boulevard (A3) zone.		
	2) Construction of islands near the corner of Lee St. and Wack Wack Road (A1-A2) to prevent short cuts by vehicles moving from Lee St. to Shaw Boulevard (A1-A3), Shaw Boulevard to Lee St. (A3-A1) and also prevent short cuts for vehicles moving from Wack Wack Road to Shaw Boulevard (A2-A3).		
	3) Zebra markings for pedestrians across Shaw Boulevard, Lee St, Wack Wack Road and Old Wack-Wack.		
	4) Lane markings on pavements of Shaw Boulevard, Lee St, Wack Wack Road and Old Wack Wack Road to guide motorists on acceptable movements.		
	5) Signages to be installed at designated spots.		
Enforcement	1) Strictly enforce "Yellow Box Rule", except when the movement is next on phase and will not obstruct current traffic streams		
	2) Until traffic signals are installed, adopt and execute a regular pattern of 4 phases, giving longer green time to through traffic along Shaw Boulevard, second priority only to the simultaneous movements of left turn from Lee St to Shaw Boulevard and through from Lee St. to Old Wack Wack.		
	3) Ban left turns from Shaw Boulevard to Lee St, can be merged with left turns from Shaw Boulevard to Wack Wack Road at the smaller junction.		
	4) Restrict tricycles, ban them on Shaw Boulevard, including crossing from Lee St. (A1) to Old Wack Wack Road (A4).		
	5) Direct vehicles on Wack Wack Road (A2) to Old Wack Wack Road (A4) to wait in front of second (smaller) yellow box, before executing their movements. Similarly and simultaneously, for Lee St left turn movements to Wack Wack Road (A2 to A3).		



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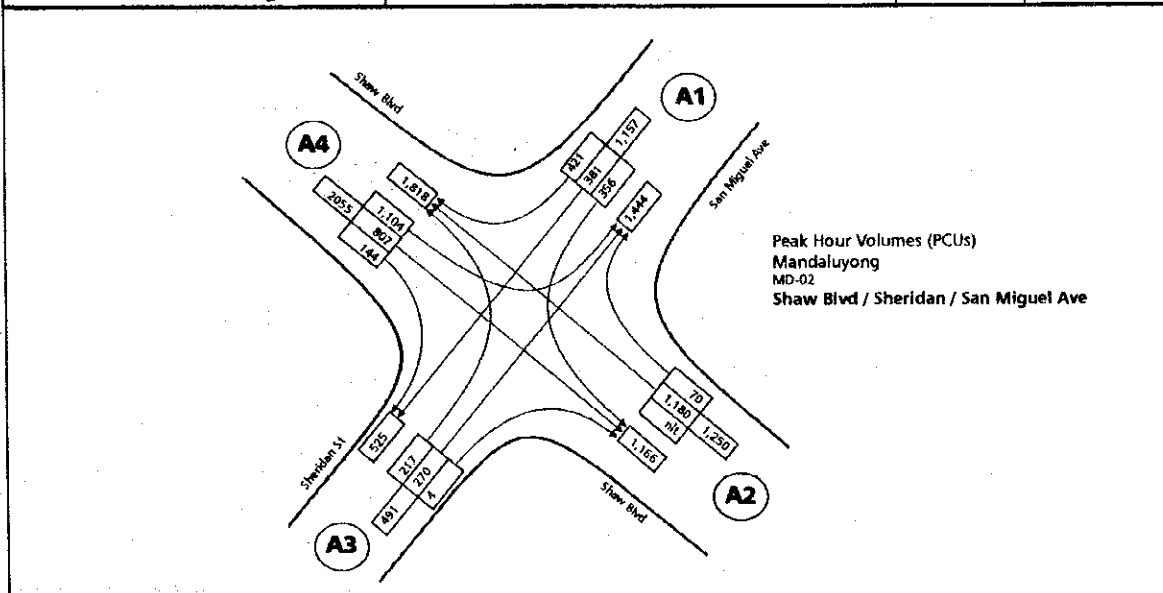
Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MD-01: Shaw Blvd. / Lee Road / Wack-Wack Road / Old Wack-Wack Road (MANDALUYONG)
 (cost summary based on actual implementaton)

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.	562.00	90.00	50,580.00
b.) Solid White Lines, 150mm width	l.m.	-	-	-
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	-	-
b.) Broken Lines, w = 150mms, 200mm width	l.m.	-	-	-
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	-	-	-
b.) Single Yellow Line with broken White Lines (100-150mm)	l.m.	-	-	-
4. Edge Lines				
a.) Pavement Edge (Shoulders)	l.m.	-	-	-
b.) Median Edge	l.m.	-	-	-
5. Continuity Lines				
a.) 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.	39.90	270.00	10,773.00
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	320.00	180.00	57,600.00
b.) Cross Walks (Signalized), width = 300mm	l.m.	-	-	-
<i>Other Lines</i>				
1. Turn Lines (Broken Lines)	l.m.	-	-	-
2. Parking Bay Lines				
a.) Parallel Bays, width = 100mm	l.m.	-	-	-
b.) Angle Bays	l.m.	-	-	-
3. Painted Median Islands	l.m.	-	-	-
4. Bus and PUJ Lane Markings	l.m.	-	-	-
5. Channelized Junction Pavement Marking	l.m.	-	-	-
6. Yellow Box Line, w = 200mm	l.m.	157.00	120.00	18,840.00
<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.	3.00	945.00	2,835.00
2.) Combined Arrow = 2.44 sq.m. / each	pcs.	8.00	1,575.00	12,600.00
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	-	-	-
c.) Numerals	pcs.	-	-	-
<i>Temporary Markings</i>				
1. Symbols				
a.) Give Way Symbol	pcs.	-	-	-
b.) Pavement Arrows				
1.) Through Arrow = 1.21 sq.m. / each	pcs.	4.00	700.00	2,800.00
2.) Combined Arrow = 2.44 sq.m. / each	pcs.	2.00	700.00	1,400.00
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	-	-	-
B. Signs				
1. Loading/Unloading Sign	pcs.	-	-	-
2. No Loading/Unloading Sign	pcs.	-	-	-
3. One Way Sign	pcs.	1.00	4,780.00	4,780.00
4. No Left Turn Sign	pcs.	-	-	-
C. Other Works				
1. Paint removal of existing markings	l.s.	1.00	50,268.00	50,268.00
2. Construction of Island	l.s.	1.00	57,575.00	57,575.00
TOTAL				270,051.00
TOTAL COST				270,051.00

Name	Shaw Blvd / Sheridan St / San Miguel Ave	Code	MD-02
Sheet	Summary of Observations	LGU	Mandaluyong
Traffic Conditions	<p>1) Heavy left-turn volume from west approach of Shaw Boulevard towards San Miguel Avenue, larger than through traffic eastbound. Traffic attraction of the Ortigas Business District induces this volume.</p> <p>2) Through traffic from San Miguel Ave. to Sheridan (peak=381pcu), flowing from 3 to 1 narrow lane.</p>		
Physical Conditions	<p>1) A four-legged signalized major intersection.</p> <p>2) The main road, Shaw Blvd, has six lanes with three lanes in each direction separated by a median. The intersecting road, Sheridan St. has three lanes; whereas, San Miguel Ave. has three lanes in each direction except that the southbound carriageway has an additional turning lane; hence, each lane measures 2.75 meters. The carriageway is also separated by a 0.5m median. Shaw Blvd. has asphalt concrete surfacing while the two intersecting roads are both concrete paved, all of which are in good condition.</p> <p>3) A small area at the northbound approach of Sheridan St. is partially deteriorated such that vehicles tend to slow down after crossing Shaw Blvd. In addition, the alignment of Sheridan St. is slightly offset from San Miguel Ave. further aggravating the situation. The turning radius of the corners at San Miguel Ave. is slightly below standards, but the deficiency is compensated by the number of lanes of the said road. Likewise, the southwest corner of the intersection has a substandard radius.</p>		

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: San Miguel (N)	20.5 m	356	381	421	1157	30.86%	Moderate
A2: Shaw (E)	21.5 m	NLT	1180	70	1250	51.72%	Moderate
A3: Sheridan (S)	10.0 m	217	270	4	491	17.17%	Light
A4: Shaw (W)	21.5 m	1104	807	144	2055	33.48%	Moderate
Total		1677	2638	639	4953		
Passenger Flows		20,800					

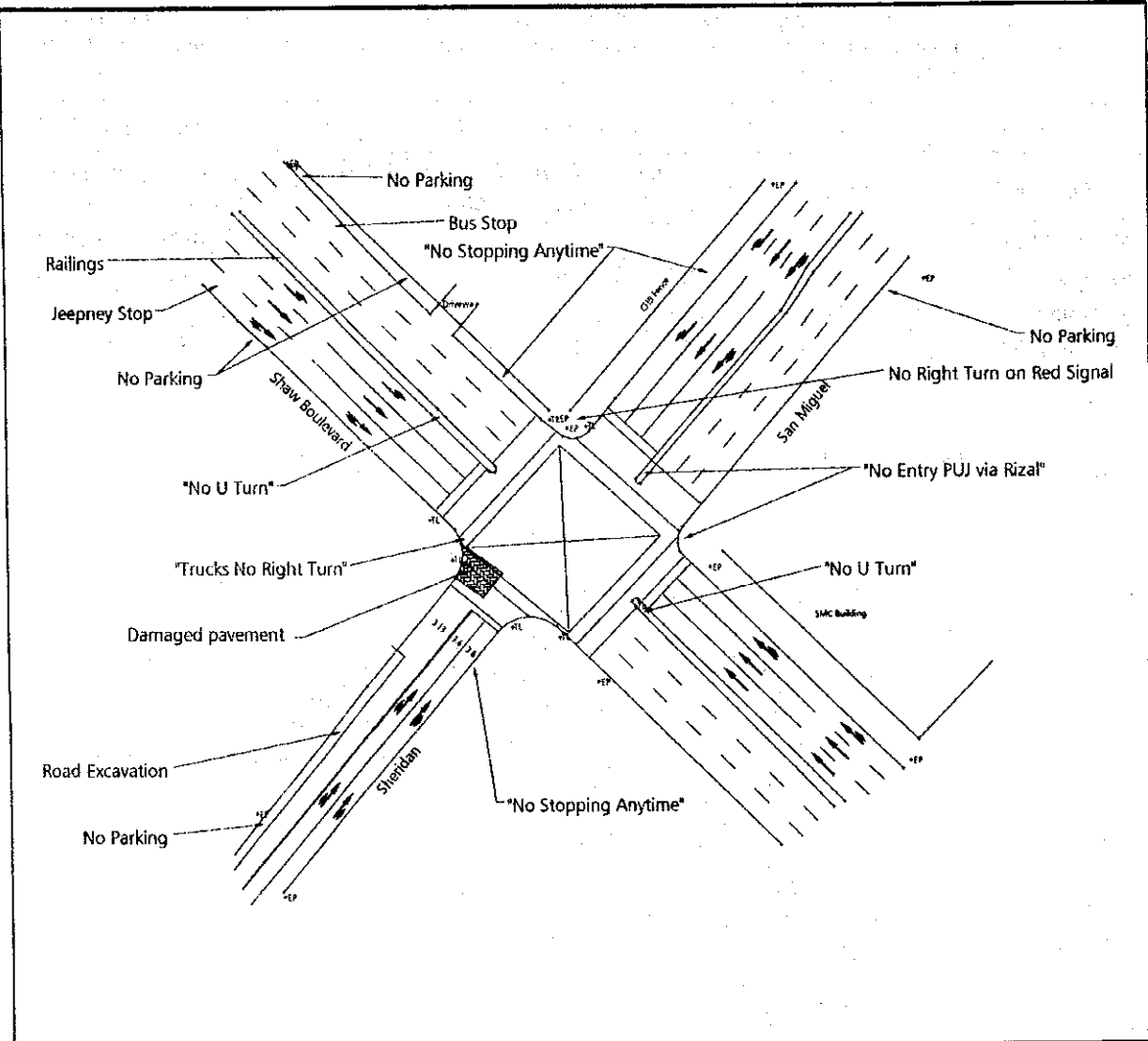


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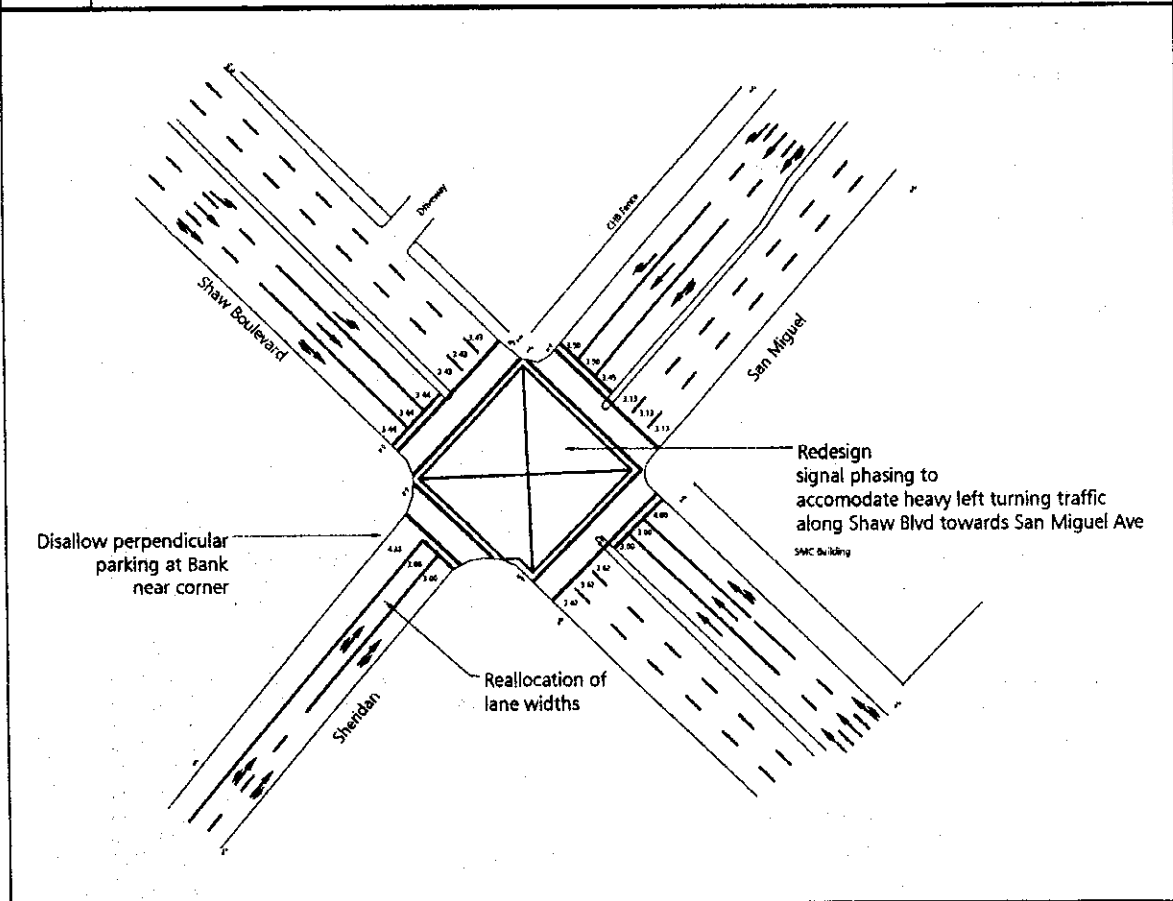
Small Scale Traffic Improvement Measures for Metro Manila

Name	Shaw Blvd / Sheridan St / San Miguel Ave	Code	MD-02
Sheet	Analysis	LGU	Mandaluyong

- 1) Lane configuration of Sheridan Street is 3 lanes: two approach lanes to the intersection and only exit lane. Lane width assignments constrict the single exit lane, with more space provided per lane to the two approach lanes.
- 2) The bank at the corner of Shaw Boulevard / Sheridan has perpendicular parking for bank clients. Vehicle maneuvers into and out of the parking area causes blockage to traffic flow along Sheridan. Especially when green time is given to San Miguel Avenue for through traffic, a queue slowly builds up when a vehicle is allowed to make maneuvers into and out of the bank's parking area.
- 3) The slightly poor condition of the pavement causes minor delays to the vehicles along Sheridan.
- 4) Although the intersection is signalized, traffic enforcers are on site to direct traffic flow. This is deemed necessary since traffic flow at the intersection is prone to gridlock due to its proximity to the EDSA/Shaw intersection, whose congestion propagates the queue to San Miguel Avenue.
- 5) Close to this intersection is the Shaw Boulevard /Pioneer St. intersection where traffic flow is also heavy.
- 6) The skewed alignment of San Miguel Avenue and Sheridan St. is one of the causes of slow progression for through traffic, not to mention the limited lane width coupled with roadside friction at the corner.



Name	Shaw Blvd / Sheridan St / San Miguel Ave	Code	MD-02
Sheet	Proposed Improvements	LGU	Mandaluyong
Engineering	<ol style="list-style-type: none"> 1) Re-allocation of lane widths along Sheridan St. to increase capacity of through traffic from San Miguel Avenue to Sheridan St. Reduce the 2 northeast bound lanes to 3.0 meters each, and increase the single southwest bound lane from 3.13 to 4.33 meters width. 2) Re-design of signal phasing and timing to accommodate heavy left-turning traffic from Shaw Boulevard towards San Miguel Avenue. Simultaneous 'green' for left and through traffic advisable. 3) Coordination of signals along Shaw Boulevard to ensure continuous progression of traffic flow. 4) Repair of damaged pavement, on Sheridan 		
Enforcement	<ol style="list-style-type: none"> 1) Regulate parking at corner establishment. Seek cooperation of bank security guard, so that exit from parking occurs only when Shaw Blvd. is on green (red for San Miguel). Orientation of personnel of these establishments with regard to traffic flow priorities at the intersection. 2) Loading / unloading of PUJs along Shaw Blvd. (in front of St. Francis Church) should not be allowed to block vehicles coming from Sheridan St. and Pasig. 		



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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MD-02: Shaw Blvd. / Sheridan St. / San Miguel Avenue (MANDALUYONG)
(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.	310.00	150.00	46,500.00
b.) Broken Lines, w = 150mms, 200mm width	l.m.	1,090.00	45.00	49,050.00
3. Barrier Lines				
a.) Unbroken Double Yellow Lines (100 or 150mm width)	l.m.	36.20	150.00	5,430.00
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				
6. 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.	-	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.	-	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. Loading/Unloading Sign	pcs.	1.00	3,850.00	3,850.00
2. No Loading/Unloading Sign	pcs.	1.00	3,850.00	3,850.00
3. Parking Area	pcs.	-	3,850.00	-
C. Other Works				
1. Removal of Pavement Marking	l.m.	726.00	90.00	65,340.00
2. Repair of damaged pavement	sq.m	300.00	700.00	210,000.00
TOTAL				419,345.00
Contingencies, 5%				20,967.25
CMS, 10%				41,934.50
Miscellaneous (fees, permits, etc.), 5%				20,967.25
Govt. Supervision, 2%				8,386.90
TOTAL COST				511,600.90

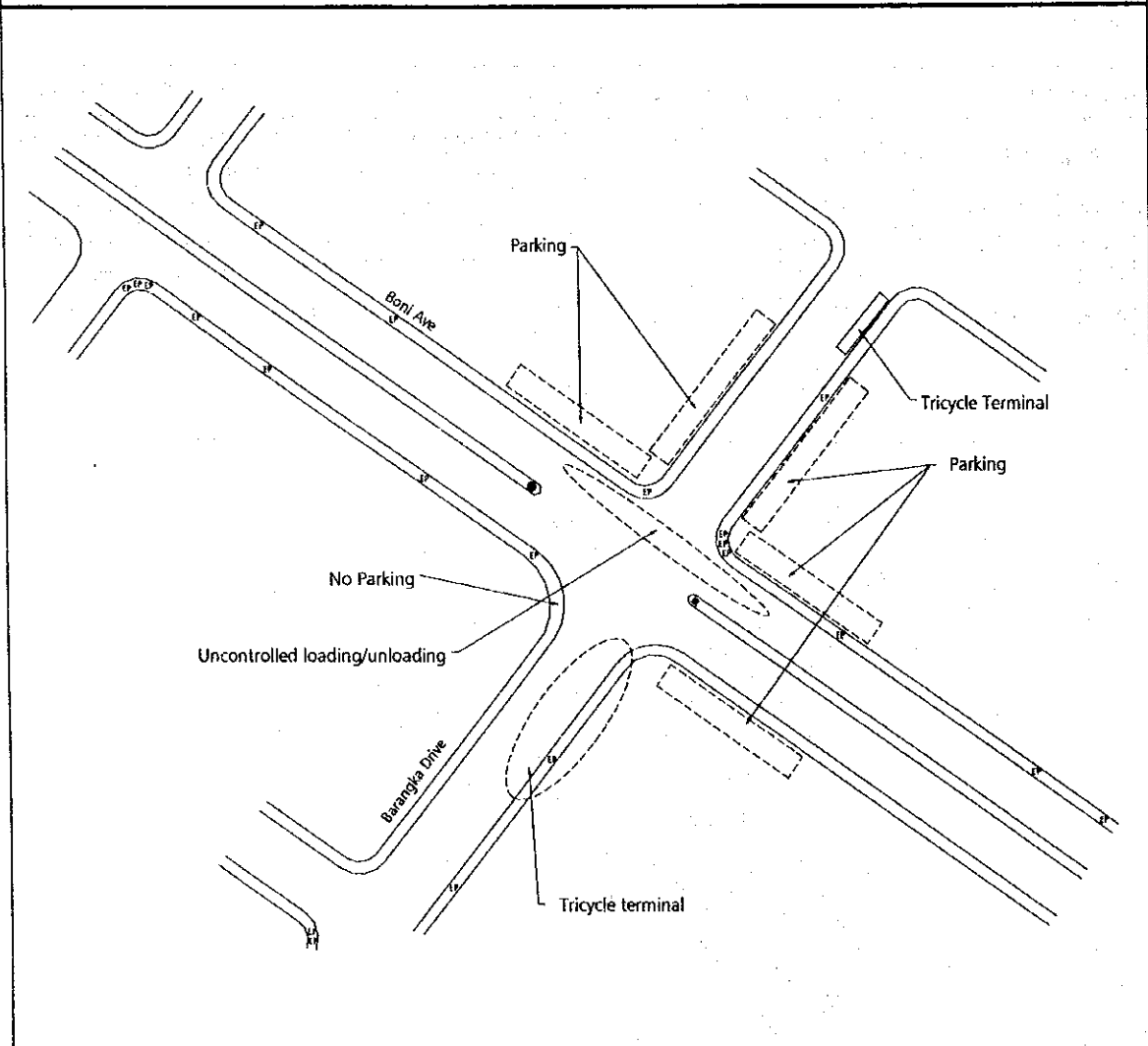
Name	Boni Ave. / Barangka Drive			Code	MD-03		
Sheet	Summary of Observations			LGU	Mandaluyong		
Traffic Conditions	1) Rampant parking along Barangka Drive and even along Boni Avenue especially fronting McDonalds and Goldilocks 2) Ambulant vendors with makeshift stalls along Barangka Drive and very near the corner obstruct traffic flow 3) Uncontrolled loading and unloading of public utility jeepneys at the corner. Drivers often wait in the middle lane without regard to vehicles waiting at the rear.						
	1) Intersection is a regular 4-legged intersection; unsignalized and with no pavement markings. 2) Boni Avenue is two lanes per direction with median barrier while Barangka Drive is wide enough to accommodate a total of three lanes, but effectively is one lane per direction. 3) A tricycle terminal on the southwest approach of Barangka Drive.						
Physical Conditions	1) Intersection is a regular 4-legged intersection; unsignalized and with no pavement markings. 2) Boni Avenue is two lanes per direction with median barrier while Barangka Drive is wide enough to accommodate a total of three lanes, but effectively is one lane per direction. 3) A tricycle terminal on the southwest approach of Barangka Drive.						
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: Barangka (N)	9.7m	69	153	114	336	51.49%	Moderate
A2: Boni Ave (E)	15.7m	78	931	29	1,038	52.06%	Moderate
A3: Barangka (S)	15.8m	41	145	101	287	34.95%	Moderate
A4: Boni Ave (W)	10.1m	74	22	4	100	49.12%	Moderate
Total		262	1,251	248	1,761		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Mandaluyong MD-03 Boni Ave. / Barangka Drive</p>							

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Small Scale Traffic Improvement Measures for Metro Manila

Name	Boni Ave. / Barangka Drive	Code	MD-03
Sheet	Analysis	LGU	Mandaluyong

- 1) Perpendicular parking maneuvers at establishments around the corners create considerable delays to traffic. It was observed that vehicles often have their rear protruding at the edge of the curb, compounded by double parking vehicles parallel to the curb.
- 2) High tolerance or permissive enforcers who turn a blind eye on the loading and unloading practice of the public utility jeepneys.
- 3) The presence of sidewalk vendors forces pedestrians to use the roadway, in addition to ambulant vendors competing the roadway themselves.
- 4) Although tricycles are not allowed to ply along Boni Avenue, it was observed that they not only cross Boni Avenue but actually ply (although short distances) along Boni Avenue. The uncontrolled maneuvers of the tricycles also cause blockage to through and right turning vehicles towards Boni Avenue.
- 5) The excavation works at the center lane of Boni Drive cause temporary bottleneck.



Name	Boni Ave. / Barangka Drive	Code	MD-03
Sheet	Proposed Improvements	LGU	Mandaluyong
Engineering	<ol style="list-style-type: none"> 1) Designate jeepney stop and tricycle stop 2) Provide railings to restrict pedestrians on roadway 3) Place crosswalks or zebra markings for pedestrians 		
Enforcement	<ol style="list-style-type: none"> 1) Clear roadway and sidewalks of vendors. 2) Compel jeepney and tricycle to keep designating loading / unloading zones. 3) Establish tow away zones for parking and illegal waiting. 		
<p>The diagram illustrates the intersection of Boni Ave. and Barangka Drive. Key features include: <ul style="list-style-type: none"> PUJ Stop: Designated stops for jeepneys and tricycles on both Boni Ave. and Barangka Drive. Pedestrian railings: Proposed along the sidewalks of both streets to restrict pedestrian access to the roadway. Stop sign: Located at the intersection of the two streets. Tow Away Zones: Shaded areas along the sidewalks, labeled 'Tow Away Zone from here to corner' and 'Establish tow-away zone', intended for clearing illegal parking and waiting. </p>			

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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MD-03: Boni Avenue / Barangka Drive (MANDALUYONG)
(cost summary)

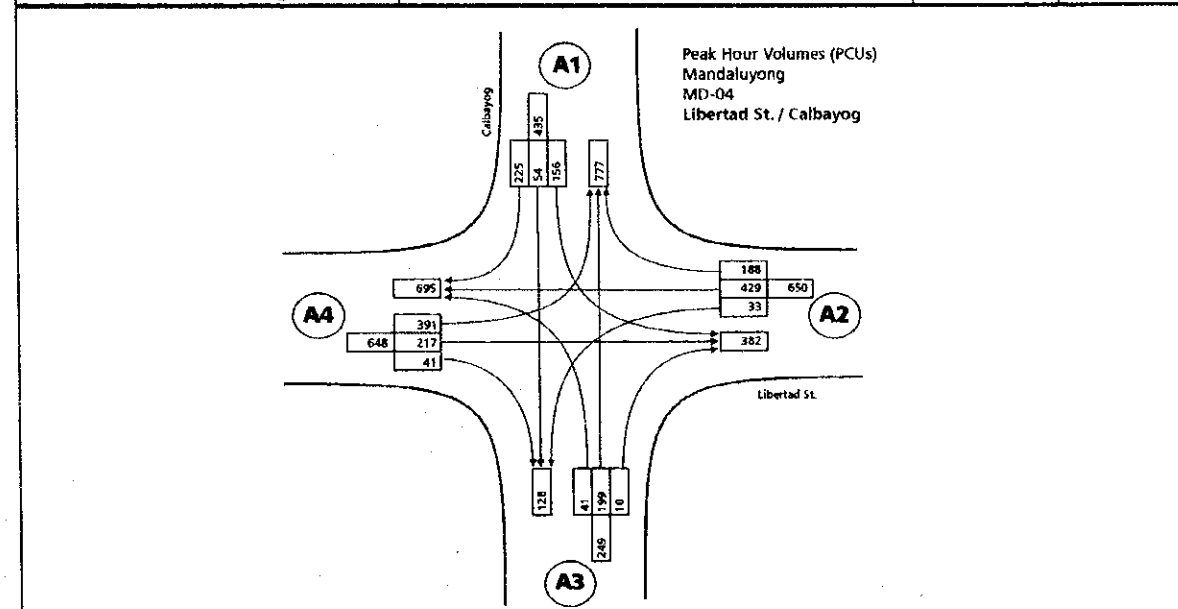
A. Pavement Markings	Unit	Quantity	Unit Cost	Total Cost
<i>Longitudinal Lines</i>				
1. Center Lines				
a.) Broken Lines, 100 or 150 mm width, 3m length 4.50 m gaps	l.m.	140.00	45.00	6,300.00
b.) Solid White Lines, 150mm width	l.m.	60.00	150.00	9,000.00
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	60.00	150.00	9,000.00
b.) Broken Lines, w = 150mms, 200mm width	l.m.	340.00	45.00	15,300.00
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				
l.m.	l.m.	-	-	-
6. Transition Line				
l.m.	l.m.	-	-	-
<i>Transverse Lines</i>				
1. Stop Lines (Solid Lines) white, width = 450mm	l.m.	22.00	337.50	7,425.00
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	264.00	225.00	59,400.00
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.	60.00	262.50	15,750.00
4. Approach to Railroad Crossings	l.m.	-	-	-
5. Loading/Unloading Zone Lines , (w=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.	6.00	907.50	5,445.00
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. PUJ 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. Tricycle Loading/Unloading Sign	pcs.	1.00	3,850.00	3,850.00
4. No Double Parking Area	pcs.	1.00	3,850.00	3,850.00
C. Other Works				
1. Clearing of vendors on roadway	l.s.	1.00	5,000.00	5,000.00
2. Provide Pedestrian Railing (Steel Railing) 6m/pc	l.m.	10.00	7,500.00	75,000.00
TOTAL				260,640.40
Contingencies, 5%				13,032.02
CMS, 10%				26,064.04
Miscellaneous (fees, permits, etc.), 5%				13,032.02
Govt. Supervision, 2%				5,212.81
TOTAL COST				317,981.29

Name	Libertad St. / Calbayog	Code	MD-04
Sheet	Summary of Observations	LGU	Mandaluyong

Traffic Conditions	<ol style="list-style-type: none"> 1) Traffic volumes observed at Libertad St/ Calbayog intersection are relatively light to moderate. 2) Tricycle operation in the vicinity of the intersection 3) There are no restrictions on turning movements from all approaches 4) Perpendicular parking observed for establishments located at the corners.
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Physical Conditions	<ol style="list-style-type: none"> 1) A 4-legged intersection, unsignalized and with no pavement markings 2) Three corners of the intersection have inadequate turning radius.
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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: Calbayog (N)	8.8m	156	54	225	435	48.49%	Light
A2: Libertad (E)	10.2m	33	429	188	650	59.08%	Light
A3: Calbayog (S)	8.7m	41	199	10	249	50.49%	Light
A4: Libertad (W)	10.4m	391	217	41	648	56.81%	Light
Total		620	898	463	1,981		
Passenger Flows							

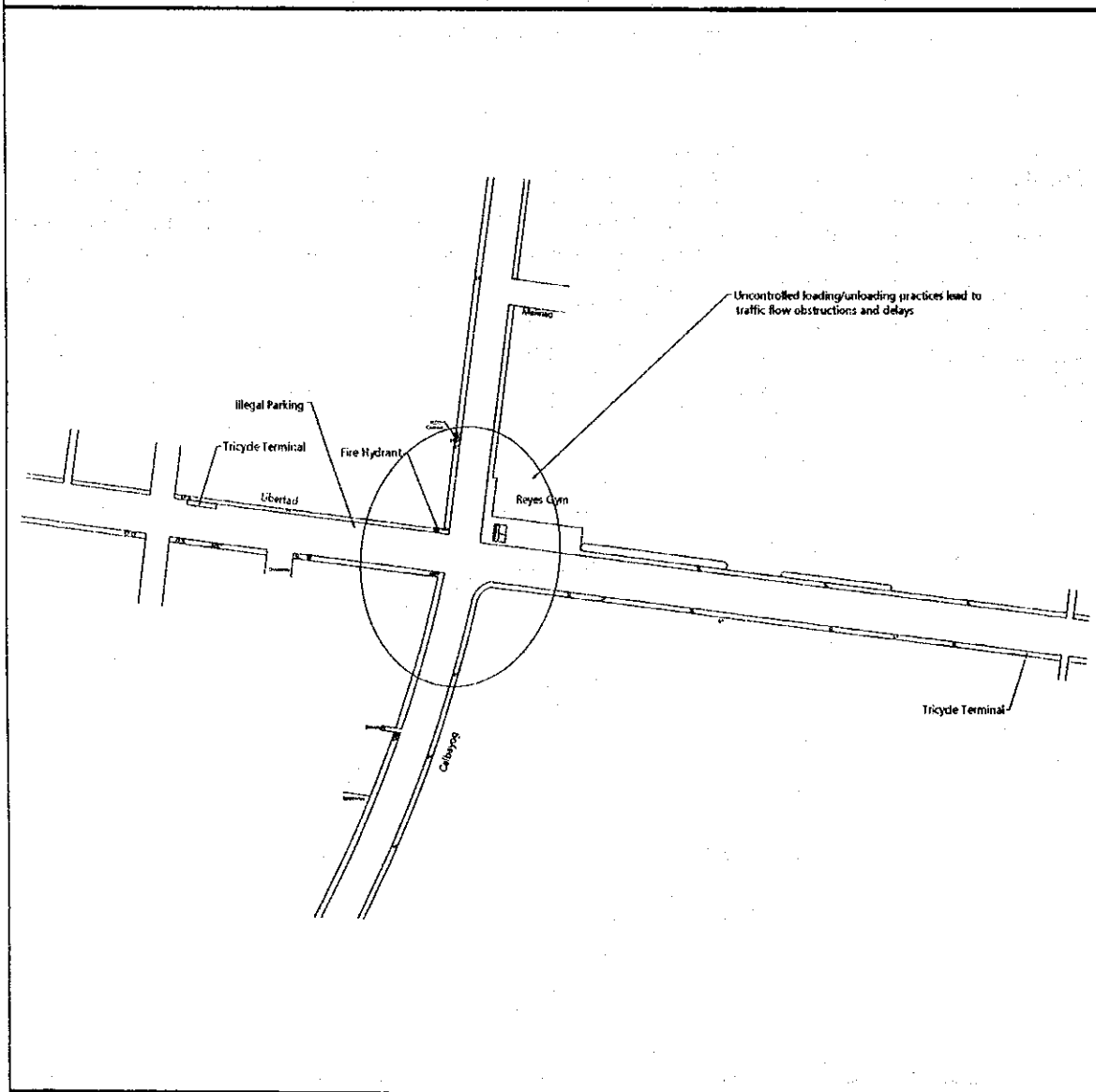


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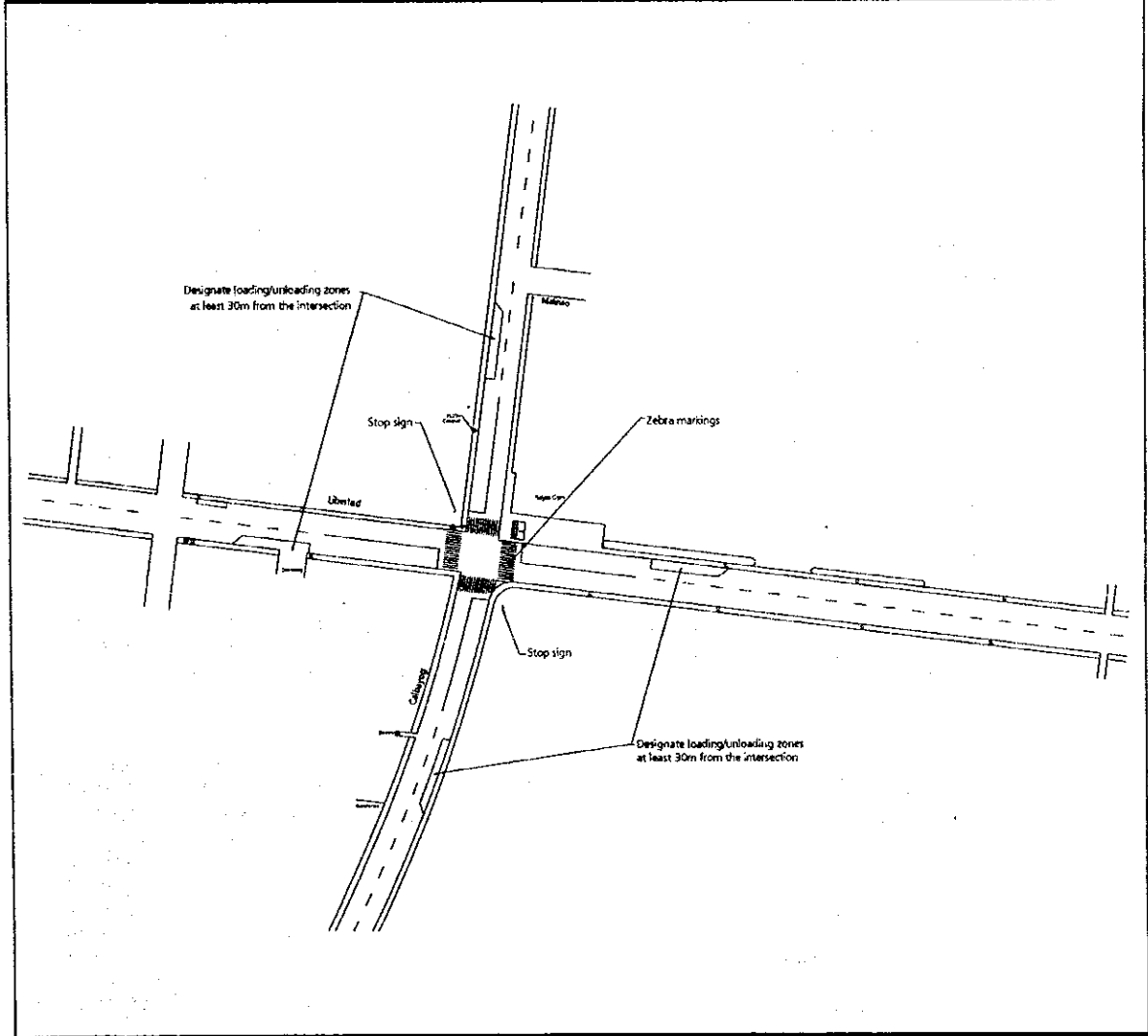
Small Scale Traffic Improvement Measures for Metro Manila

Name	Libertad St. / Calbayog	Code	MD-04
Sheet	Analysis	LGU	Mandaluyong

- 1) Traffic conditions at the intersection appear to be very tolerable since volumes are manageable with respect to the available capacities of the roads.
- 2) It was observed, however, that there were uncontrolled maneuver of tricycles and even other vehicles when turning left. The relatively open intersection area invites drivers to cut corners or approach the intersection from a counterflow lane just to minimize the distance. When volumes are low, above practice may be tolerable, but should be disallowed for consistency.
- 3) The area was once heavily congested due to the location of jeepney terminals along Calbayog St. Since the transfer of the terminals, traffic has eased up considerably.
- 4) Nevertheless, loading and unloading of tricycles and other public utility vehicles need to be supervised to avoid flow stoppage. Libertad St. and Calbayog St. are major public transport routes in the area.



Name	Libertad St. / Calbayog	Code	MD-04
Sheet	Proposed Improvements	LGU	Mandaluyong
Engineering	<ol style="list-style-type: none"> 1) Designate loading and unloading zones, as shown in the drawing below, at least 30 meters away from intersection. 2) Placement of zebra crossings for pedestrians. 3) Application of pavement markings. 		
Enforcement	<ol style="list-style-type: none"> 1) Direct / supervise loading / unloading away from intersection and middle lanes. 2) Get establishments to cooperate on their parking arrangement, to avoid intrusion into roadway and sidewalk. 		



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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MD-04: Libertad St. / Calbayog (MANDALUYONG)
(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.	-	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.)	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.	208.00	225.00	46,800.00
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, (w=200mm)	l.m.	162.00	200.64	32,503.68
<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.	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.	4.00	3,850.00	15,400.00
2. No Loading/Unloading Sign	pcs.	4.00	3,850.00	15,400.00
3. No Double Parking Area	pcs.	1.00	3,850.00	3,850.00
TOTAL				159,883.68
Contingencies, 5%				7,994.18
CMS, 10%				15,988.37
Miscellaneous (fees, permits, etc.), 5%				7,994.18
Govt. Supervision, 2%				3,197.67
TOTAL COST				195,058.09

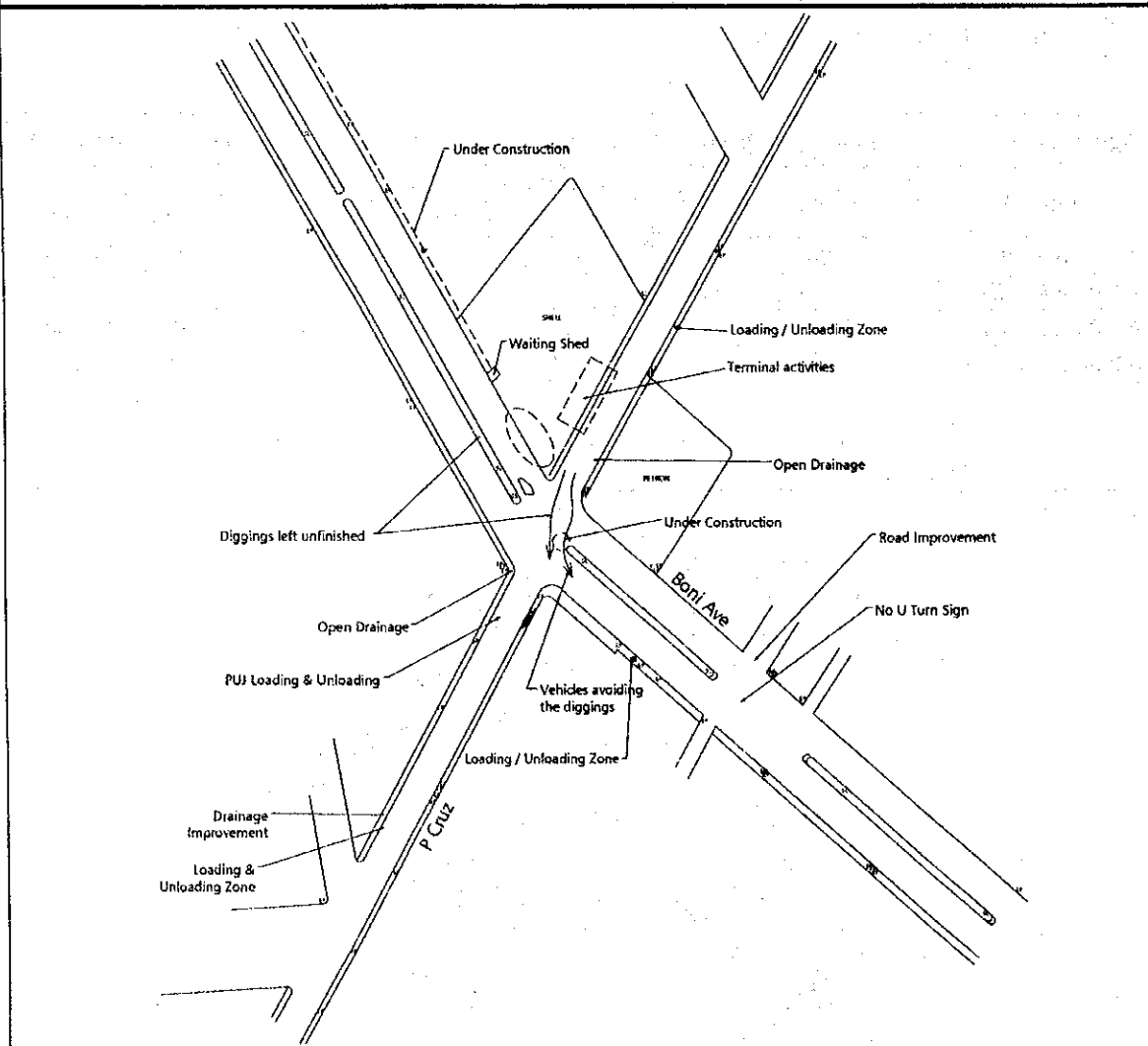
Name	Boni Ave. / P. Cruz St.			Code	MD-05		
Sheet	Summary of Observations			LGU	Mandaluyong		
Traffic Conditions	<ol style="list-style-type: none"> 1) Loading and unloading of public utility jeepsneys at the corner of P. Cruz. Drivers intentionally delay crossing the intersection even when intersection is clear so that they can pick up passengers. 2) Heavy volume of vehicles from Primo Cruz turning left to Boni Avenue towards Mandaluyong City Hall. Vehicles usually cut corners to avoid the MWSS diggings. 3) Drivers on all approaches insist on having priority over the others, with no regard to who has priority. 4) A considerable number of tricycle traffic was observed along Boni Avenue. 						
Physical Conditions	<ol style="list-style-type: none"> 1) Boni Avenue with median separator 2) MWSS diggings left unfinished in the middle of the intersection and along the side of Boni Avenue corner P. Cruz towards New Panaderos 3) No designated pedestrian crossing; no pavement markings 4) Unsignalized intersection 						
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: P Cruz (NE)	7.0m	458	149	32	638	47.58%	Medium
A2: Boni Ave (SE)	16.4m	151	767	455	1,373	40.02%	Medium
A3: P Cruz (SW)	7.0m	135	124	79	338	38.44%	Medium
A4: Boni Ave (NW)	16.6m	4	691	10	704	47.50%	Medium
Total		747	1,730	576	3,052		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Mandaluyong MD-05 Boni Ave. / P. Cruz St.</p>							

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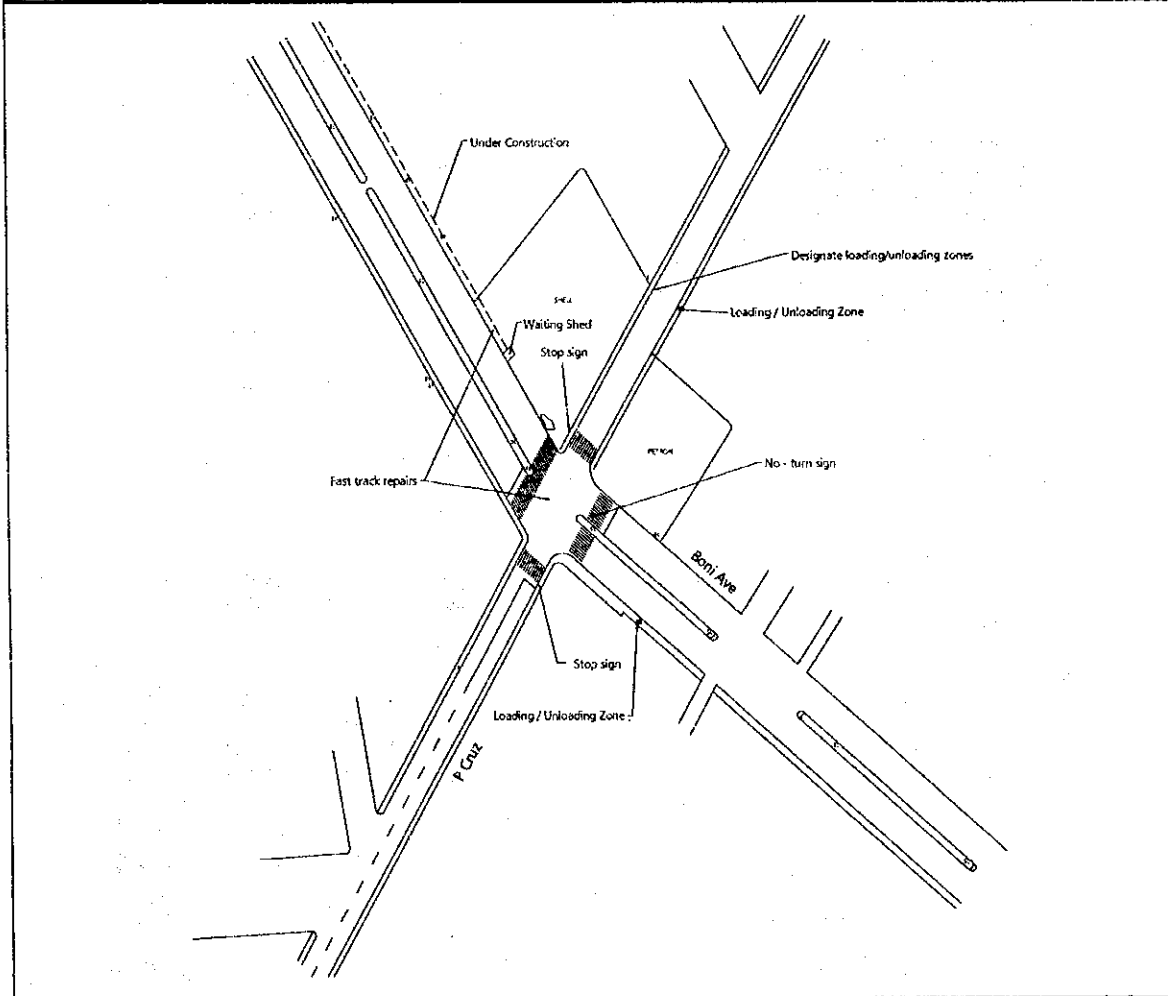
Small Scale Traffic Improvement Measures for Metro Manila

Name	Boni Ave. / P. Cruz St.	Code	MD-05
Sheet	Analysis	LGU	Mandaluyong

- 1) It was observed that P. Cruz was being utilized as an on-road PUJ terminal especially during the morning from 6:30 a.m. to 10:00 a.m.
- 2) Although the major traffic stream is through along Boni Avenue, vehicle traffic from Primo Cruz turning left southbound was observed to be heavy as well.
- 3) In the absence of enforcers to oversee phasing, minor traffic streams attempt to exact priority over the dominant flow.
- 4) Uncontrolled loading and unloading of public utility vehicles at the corner also obstructs traffic flow at the intersection.
- 5) The enforcer manning the intersection is kept busy directing traffic and may not have time to supervise loading / unloading.
- 6) The unfinished diggings (although temporary) constrict traffic flow and forces vehicles to cut corners to avoid the area.
- 7) A "No U-turn" sign for vehicles for the south approach of Shaw Boulevard should also be placed before the intersection.



Name	Boni Ave. / P. Cruz St.	Code	MD-05
Sheet	Proposed Improvements	LGU	Mandaluyong
Engineering	<ol style="list-style-type: none"> 1) Fast track or hasten the completion of the construction works along Boni Avenue. 2) No U-turn sign should also be placed before the intersection for the south approach of Shaw Boulevard. 3) Designate loading / unloading zone, at least 30 meters from intersection. 		
Enforcement	<ol style="list-style-type: none"> 1) Prevent loading and unloading at the corners, direct them to designated loading and unloading zones. (at least 30 meters away from intersection). 2) Adopt correct phasing, consistent with volumes. 		



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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MD-05: Boni Avenue / P. Cruz St. (MANDALUYONG)
(cost summary)

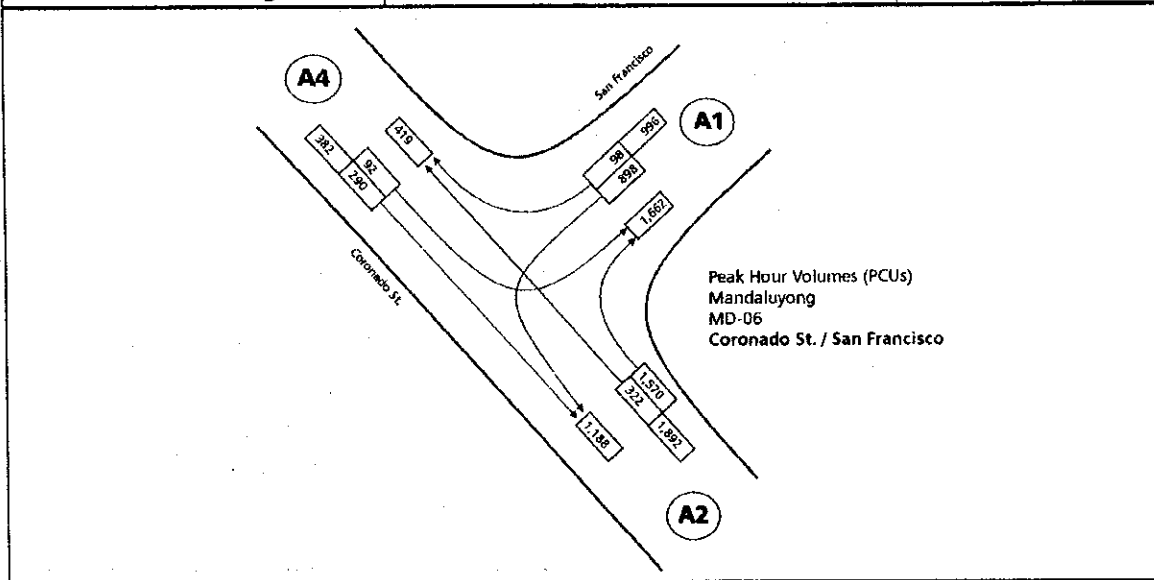
A. Pavement Markings	Unit	Quantity	Unit Cost	Total Cost
<i>Longitudinal Lines</i>				
1. Center Lines				
a.) Broken Lines, 100 or 150 mm width, 3m length 4.50 m gaps	l.m.	-	45.00	-
b.) Solid White Lines, 150mm width	l.m.	-	150.00	-
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	-	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.	275.00	225.00	61,875.00
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				
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	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.	162.00	200.64	32,503.68
<i>Messages and Symbols</i>				
1. Messages	pcs.	-	-	-
2. Symbols				
a.) Give Way Symbol	pcs.	-	-	-
b.) Pavement Arrows				
1.) Through Arrow = 1.21 sq.m. / each	pcs.	-	907.50	-
2.) Combined Arrow = 2.44 sq.m. / each	pcs.	-	1,830.00	-
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	-	1,095.00	-
c.) Numerals	-	-	-	-
B. Signs				
1. Loading/Unloading Sign	pcs.	2.00	3,850.00	7,700.00
2. No Loading/Unloading Sign	pcs.	4.00	3,850.00	15,400.00
3. No U - Turn Sign	pcs.	1.00	3,850.00	3,850.00
4. No Left Turn Sign	pcs.	1.00	3,850.00	3,850.00
TOTAL				125,178.68
Contingencies, 5%				6,258.93
CMS, 10%				12,517.87
Miscellaneous (fees, permits, etc.), 5%				6,258.93
Govt. Supervision, 2%				2,503.57
TOTAL COST				152,717.99

Name	Coronado St. / San Francisco	Code	MD-06
Sheet	Summary of Observations	LGU	Mandaluyong

Traffic Conditions	<ol style="list-style-type: none"> 1) Traffic flow at the intersection is generally manageable with the major flows being right turn movements from Coronado St to San Francisco St. and left turn movements from San Francisco to Coronado St. 2) Peak hour traffic was observed to be around 8:00 – 9:00 a.m. and 5:00 – 6:00 p.m. mainly because this intersection is along the alternate route to the Makati City. Coronado St. provides the link with the Makati-Mandaluyong Bridge. 3) The general condition of traffic is somehow linked with the degree of congestion in the JP Rizal/ P. Burgos intersection in Makati.
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Physical Conditions	<ol style="list-style-type: none"> 1) A T – intersection, unsignalized and with no pavement markings whatsoever 2) The road pavement in the area is generally in good condition although there are concrete culverts left on the carriageway along Coronado St. 3) San Francisco St. has a wide 3-lane per direction carriageway but divided with a 1.2 meter concrete median 4) Land use in the vicinity of the intersection is mostly residential mixed with small commercial establishments.
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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: San Francisco	20.5m	898	NA	98	996	23.80%	Light
A2: Coronado (SE)	24.7m	NA	322	1,570	1,892	24.94%	Light
A3: None	None	None	None	None	None	None	None
A4: Coronado (NW)	22.2m	92	290	NA	382	46.79%	Light
Total		990	612	1,668	3,269		
Passenger Flows							

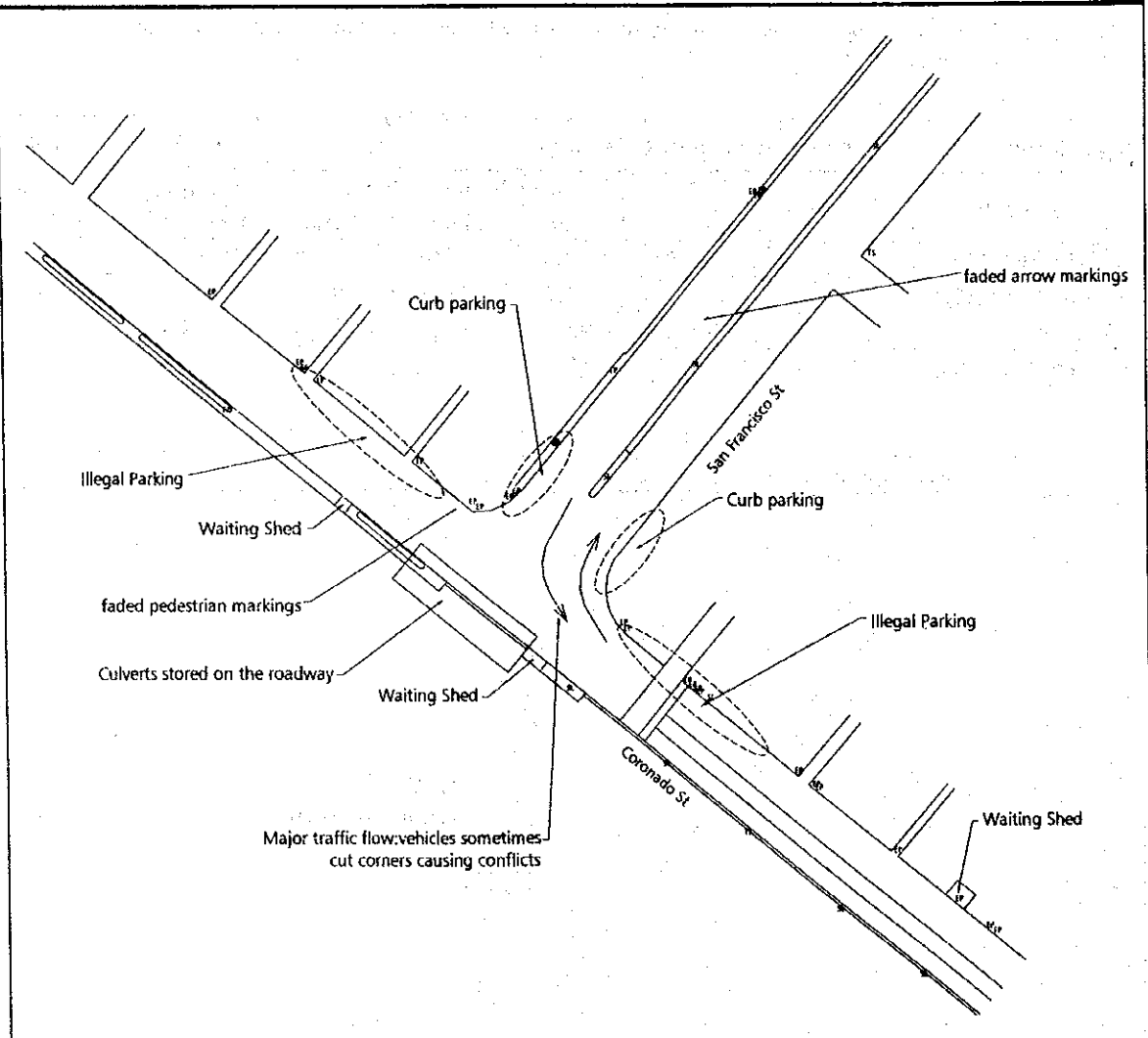


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Small Scale Traffic Improvement Measures for Metro Manila

Name	Coronado St. / San Francisco	Code	MD-06
Sheet	Analysis	LGU	Mandaluyong

- 1) Most of the residential/commercial lots in the vicinity of the intersection do not have individual parking spaces within their premises so they resort to curb parking along San Francisco St and Coronado St. Thus, hampers the general flow of traffic close to the intersection, especially of the northeast corner where heavy turning volumes are observed.
- 2) Not only are vehicles being parked, but roadway space is also being used for vehicle repair works. This factor greatly reduces the capacity of the road causing blockage and constricting flow.
- 3) The presence of the culverts was probably intentionally placed there to serve as temporary barriers since Coronado St. is at the edge of the Pasig River. However, it was observed that somehow, some pieces have strayed around the area. This may cause of accidents, aside from obstructing traffic.
- 4) Whenever traffic along JP Rizal / P. Burgos Extension up to the Makati-Mandaluyong bridge gets clogged up, the queue can reach all the way up to Coronado St. When that happens, left turning vehicles often get stucked at the intersection, thereby preventing through traffic.
- 5) The inadequate turning radius at the intersection also contributes to slow right-turn movement. Left-turning vehicles have the habit of cutting corners.



Name	Coronado St. / San Francisco	Code	MD-06
Sheet	Proposed Improvements	LGU	Mandaluyong
Engineering	<ol style="list-style-type: none"> 1) Install half "yellow-box", to protect the flow of through traffic along Coronado. 2) Pavement markings (lane delineation, directional arrows). 3) Traffic signage (No Parking at corners of San Francisco) 		
Enforcement	<ol style="list-style-type: none"> 1) Prohibit parking and exact compliance thereto, within 50 meters of corners of San Francisco. 2) Deploy enforcers periodically, to ensure compliance with "yellow-box rule" and protect priority of the dominant traffic streams (left turning). 		

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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MD-06: Coronado St. / San Francisco (MANDALUYONG)
(cost summary)

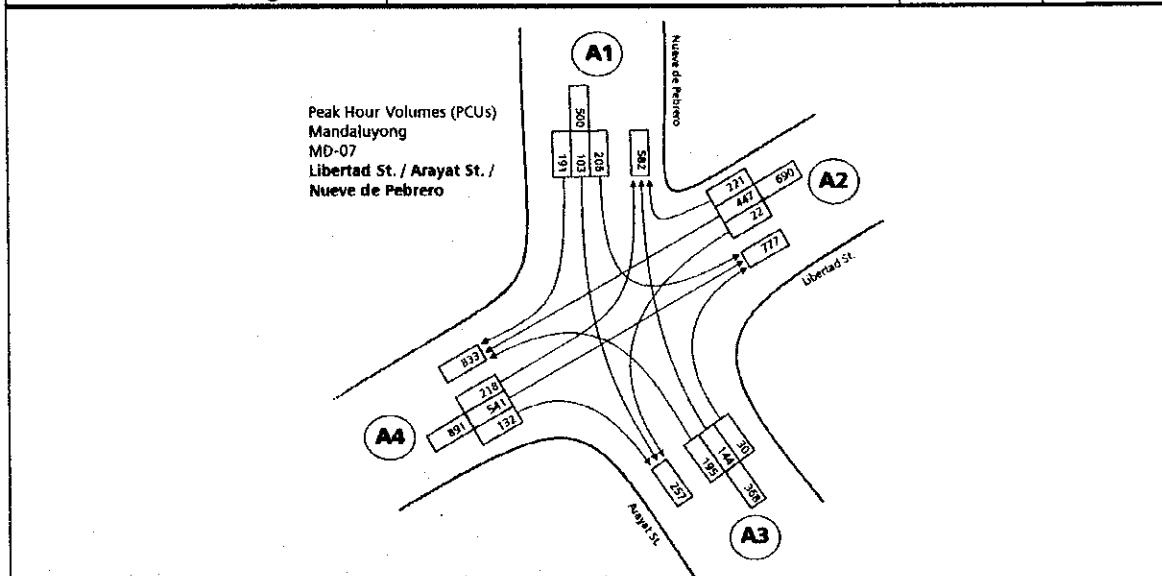
A. Pavement Markings	<u>Unit</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Total Cost</u>
<i>Longitudinal Lines</i>				
1. Center Lines				
a.) Broken Lines, 100 or 150 mm width, 3m length 4.50 m gaps	l.m.			
b.) Solid White Lines, 150mm width	l.m.	300.00	150.00	45,000.00
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	90.00	150.00	13,500.00
b.) Broken Lines, w = 150mms, 200mm width	l.m.	210.00	46.00	9,660.00
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.	200.00	225.00	45,000.00
<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.	11.00	200.64	2,207.04
<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.	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 Parking Sign	pcs.	2.00	3,850.00	7,700.00
C. Other Works				
1. Clearing of Sidewalk	l.s.	1.00	3,000.00	3,000.00
2. Concrete Barriers	l.s.	1.00	10,000.00	10,000.00
TOTAL				144,077.04
Contingencies, 5%				7,203.85
CMS, 10%				14,407.70
Miscellaneous (fees, permits, etc.), 5%				7,203.85
Govt. Supervision, 2%				2,881.54
TOTAL COST				175,773.99

Name	Libertad St. / Arayat St. / Nueve de Pebrero	Code	MD-07
Sheet	Summary of Observations	LGU	Mandaluyong

Traffic Conditions	<ol style="list-style-type: none"> 1) Traffic flow at the intersection is generally moderate except during the afternoon peak when many motorists utilize Libertad - Nueve de Pebrero an alternate route to Shaw Boulevard or Boni Avenue. This route is almost parallel to both roads. 2) Aside from public utility jeepneys, and FXs, there are tricycles operating in the vicinity of the intersection.
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Physical Conditions	<ol style="list-style-type: none"> 1) The intersection is a 4-legged unsignalized intersection, one of which is slanted to form a Y-pair. 2) Pedestrian crosswalks (faded, though) have been established on all four approaches, although there are no other pavement markings (i.e. lane markings or directional arrows) 3) There are narrow sidewalks but along Arayat St. on the east side (along the side of Easy Call), low metal posts have been placed serving as pedestrian barriers. 4) The pavement condition is fair and made of concrete. 5) In the vicinity of the intersection, there is a major government institution. 6) Loading and unloading zones have been established with waiting sheds already in place
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Signalization	None	Pavement Markings	Faded zebra marking	Peak	17:00-18:00		
Approach	Dimensions	Peak Hour Traffic Volumes (PCUs)				% Public Transport	Pedestrian Volume
		Left	Through	Right	Total		
A1: N de Pebrero (N)	11.6m	206	103	191	500	44.00%	Light
A2: Libertad (E)	9.4m	22	447	221	690	58.76%	Light
A3: Arayat (S)	11.9m	195	144	30	368	37.63%	Light
A4: Libertad (W)	9.8m	218	541	132	891	48.29%	Light
Total		640	1,235	574	2,448		
Passenger Flows							

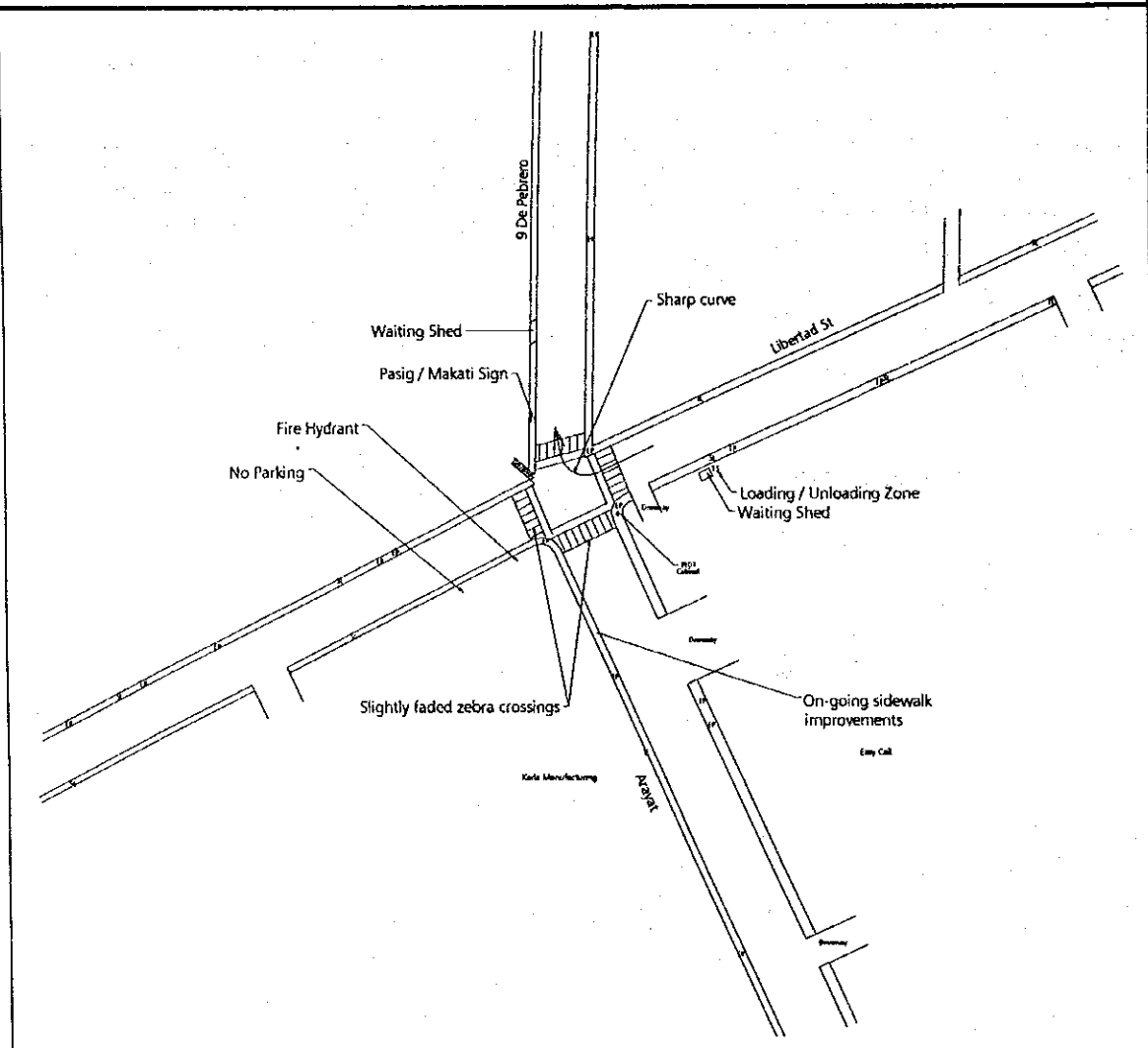


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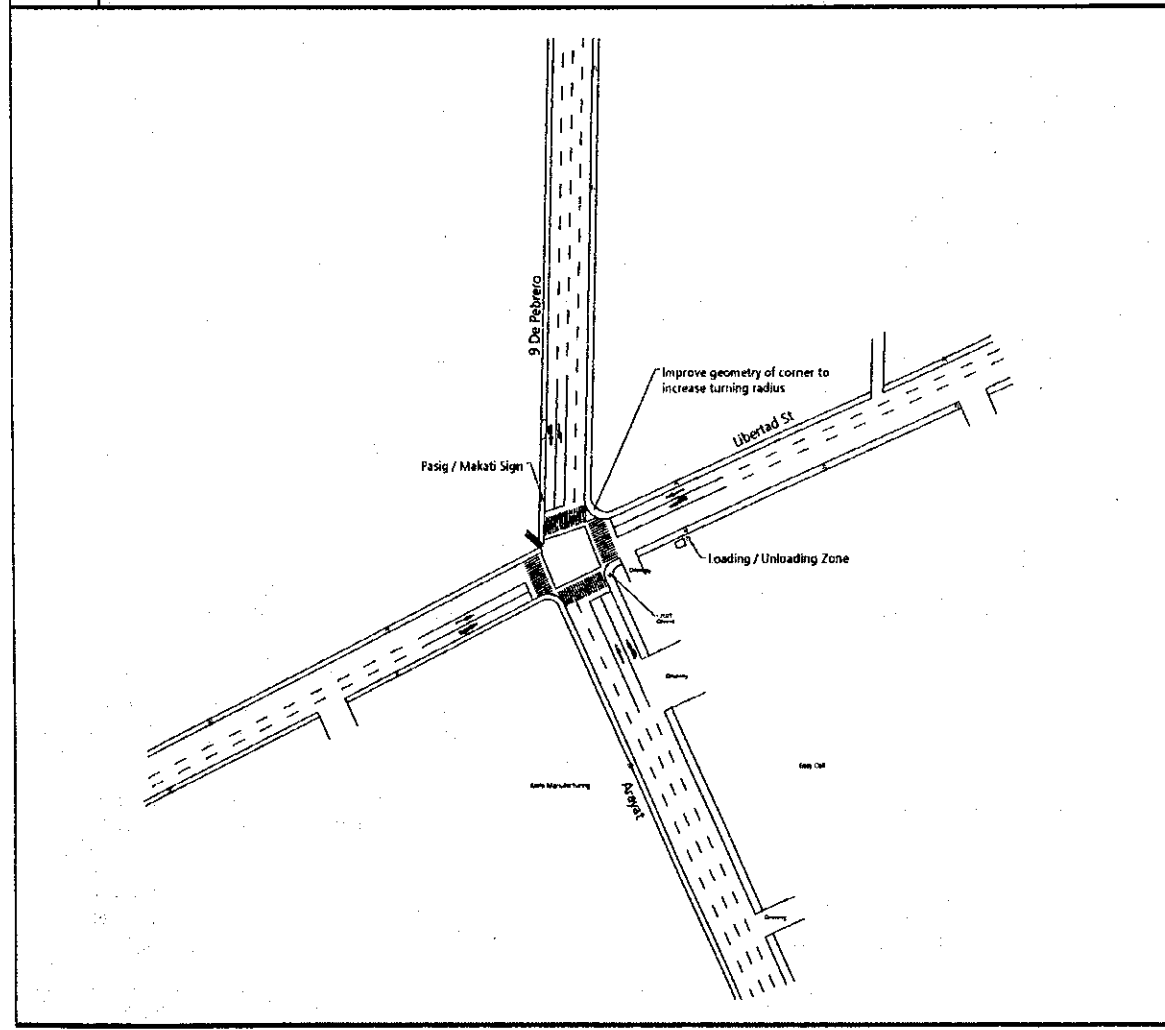
Small Scale Traffic Improvement Measures for Metro Manila

Name	Libertad St. / Arayat St. / Nueve de Pebrero	Code	MD-07
Sheet	Analysis	LGU	Mandaluyong

- 1) It was observed that traffic at the intersection flows smoothly for most periods of the day. Route gets clogged up during the afternoon peak when most employees of the offices/businesses in the area leave their premises. Pedestrian traffic was also observed to increase during this time.
- 2) It is also usually during this time when EDSA, Shaw Boulevard and Boni Avenue are congested that diversion to Libertad or Nueve de Pebrero occurs.
- 3) The operation of tricycles in the area also contribute to congestion during peak hours, especially due to their negative street behavior.
- 4) The dominant traffic stream is along Libertad St., which is narrower than Arayat or Nueve de Pebrero Streets.
- 5) The sharp angle at the corner of Libertad St. and Nueve de Pebrero causes right turning vehicles to occupy a wider area to negotiate the curve. This maneuver tends to pre-empt the middle lane for through traffic.
- 6) Left-turn volumes from Nueve de Pebrero to Libertad is twice that of through traffic.



Name	Libertad St. / Arayat St. / Nueve de Pebrero	Code	MD-07
Sheet	Proposed Improvements	LGU	Mandaluyong
Engineering	<ol style="list-style-type: none"> 1) Re-configure geometry of corner of Nueve de Pebrero with Libertad St., to improve the turning radius. 2) Pavement markings (lane delineations and directional arrows, zebra crossings) especially on Libertad St. and Nueve de Pebrero. 		
Enforcement	<ol style="list-style-type: none"> 1) Deploy enforcer during the afternoon peak (from 1650 to 1800 hours) to direct phasing and traffic priority. 2) Direct loading / unloading to the designated waiting sheds. 		

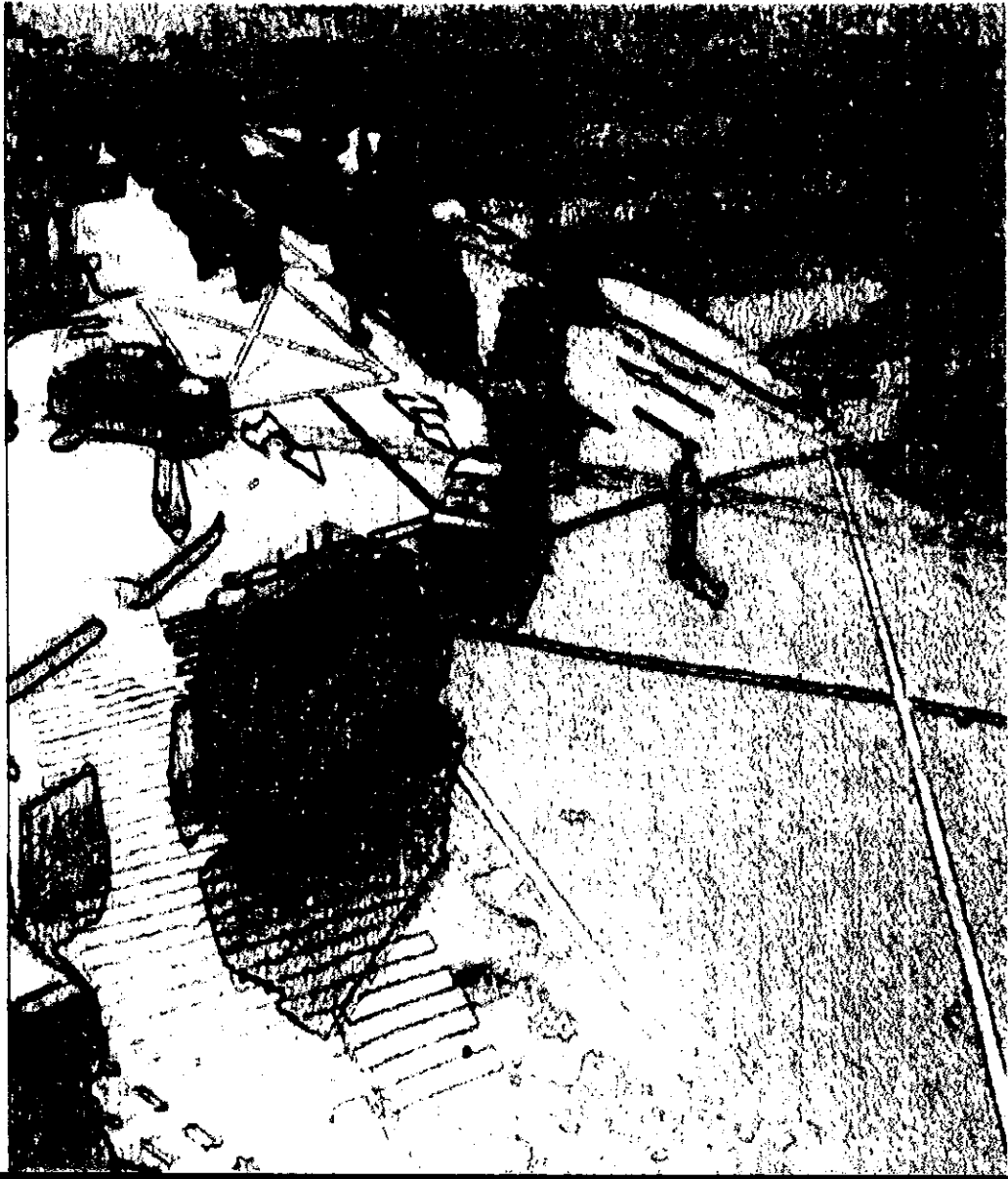


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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MD-07: Libertad St. / Arayat St. / Nueve de Pebrero (MANDALUYONG)
(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.	-	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.	-	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.)	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.	228.00	225.00	51,300.00
<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				
a.)	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. Parking for Tricycle Sign	pcs.	2.00	3,850.00	7,700.00
2. No Entry for Tricycle Sign	pcs.	2.00	3,850.00	7,700.00
C. Other Works				
1. Removal of Pavement Marking	l.m.	228.00	90.00	20,520.00
2. Improvement of Geometry	l.s.	1.00	20,000.00	20,000.00
TOTAL				107,220.00
Contingencies, 5%				5,361.00
CMS, 10%				10,722.00
Miscellaneous (fees, permits, etc.), 5%				5,361.00
Govt. Supervision, 2%				2,144.40
TOTAL COST				130,808.40



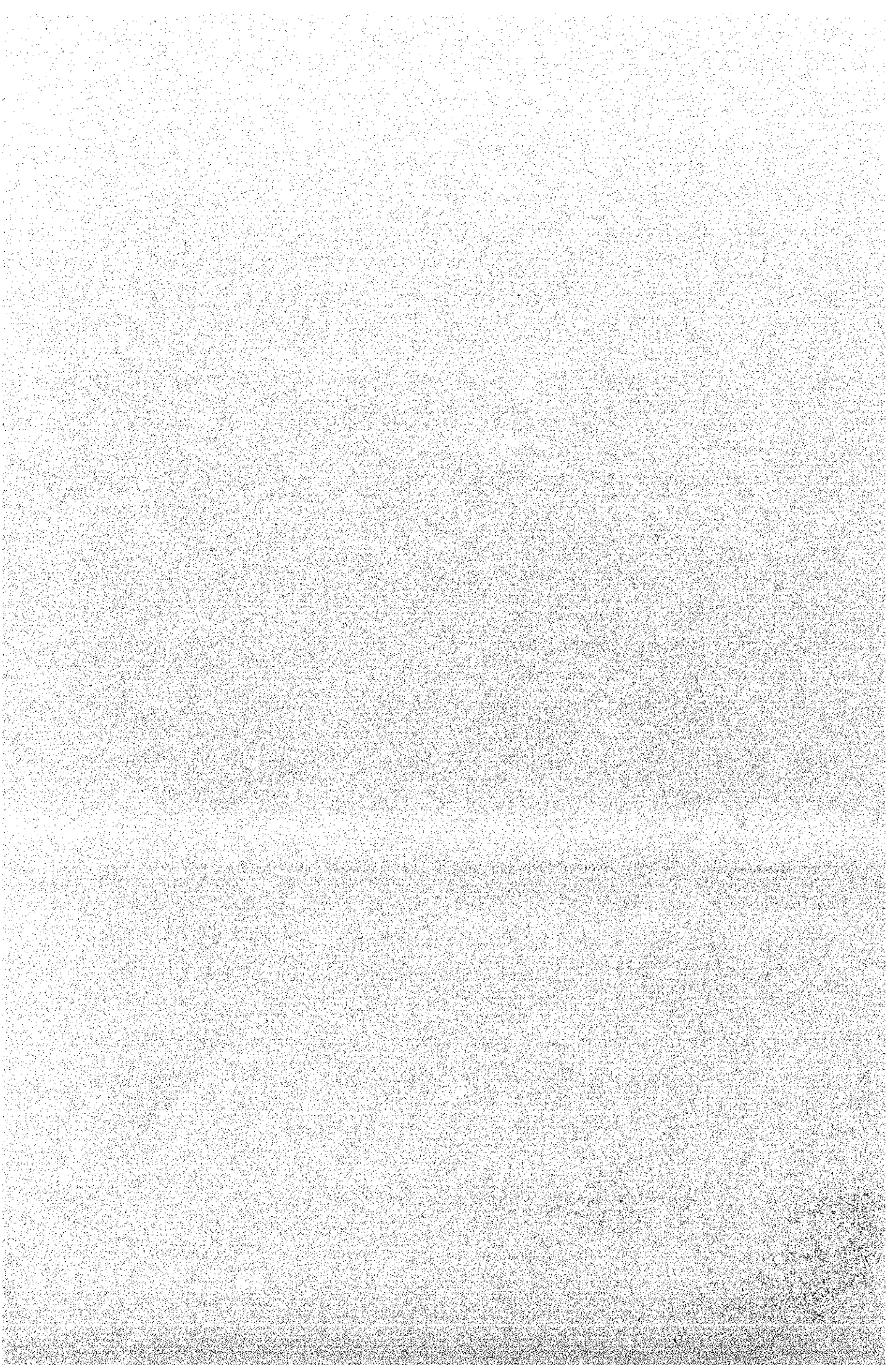
Manila

Individual Information Sheets for the Traffic Bottleneck Points

MN-01 Legarda / Bustillos

MN-02 Quintin Paredes / Dasmariñas / San Vicente

MN-03 P Casal / J Nepomuceno / Arlegui



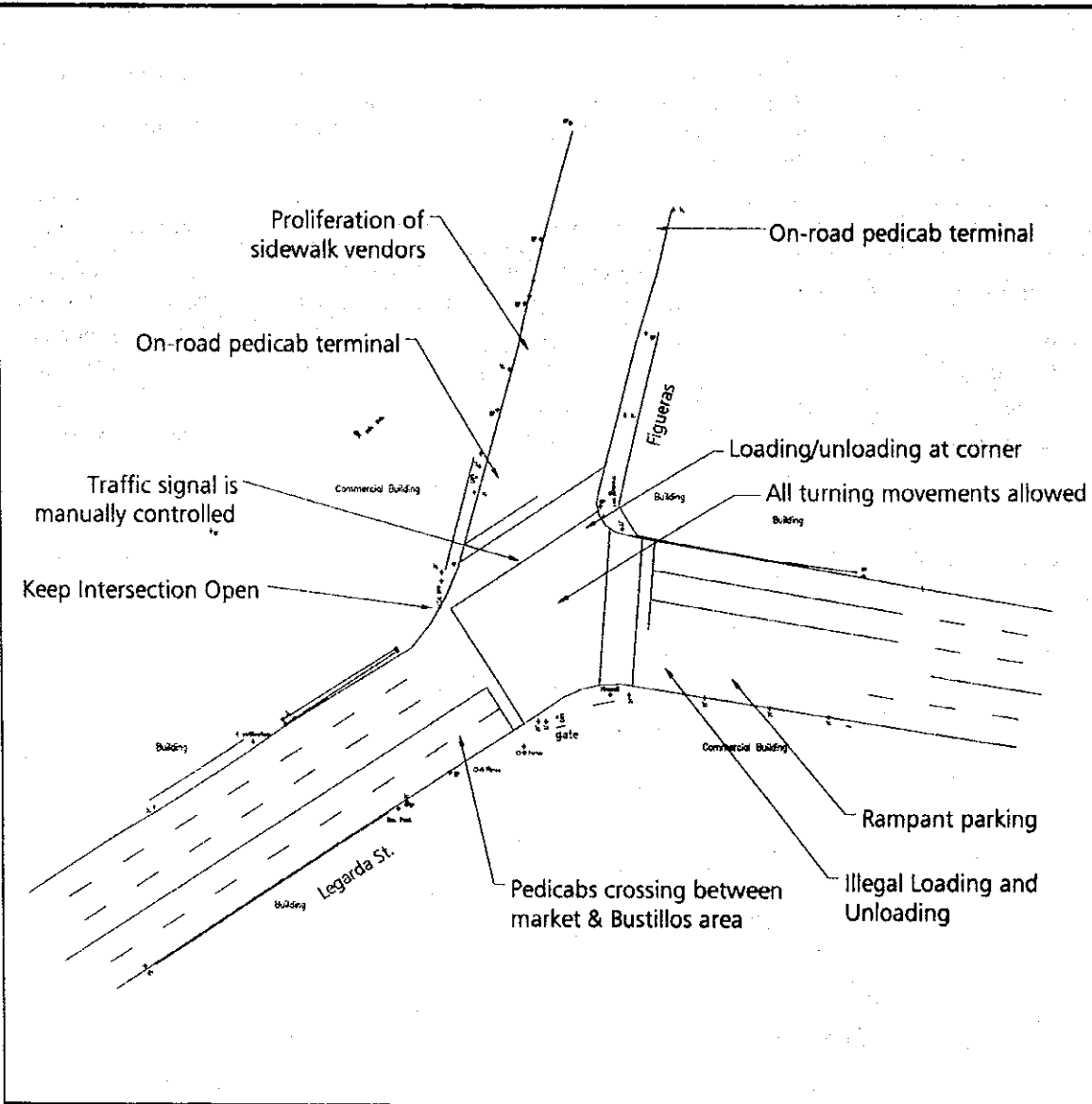
Name	Legarda / Bustillos			Code	MN-01		
Sheet	Summary of Observations			LGU	Manila		
Traffic Conditions	<ol style="list-style-type: none"> 1) Main jeepney route along Legarda intersecting with Bustillos, which is another jeepney route 2) High level of passenger loading and unloading; 3) Narrow sidewalks against large pedestrian flow; 4) Future MRT line to have station at Legarda, near where the present public market is positioned. 5) Presence of pedicab terminals utilizing roadway. 6) Rampant parking at establishments near northeast corner of Bustillos. 						
Physical Conditions	<ol style="list-style-type: none"> 1) A three-legged intersection along a curve alignment and the intersecting road connects with the main road at a skewed angle of about 30 degrees. 2) The main road, Legarda St., has 6 lanes with a total width of 17.32 meters on one section and narrows to 15.09 meters at the other section right after crossing the intersection. The intersecting road, Bustillos St. on the other hand, has 4 lanes and measures 14.08 meters in width. 3) The intersection is paved with concrete surfacing with no pavement markings. However, the intersection is signalized and accommodates all turning movements. One corner has inadequate turning radius and this condition is further aggravated by the acute angle of the pavement edge intersection. 						
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: Bustillos	14.08 m	25	NA	233	259	47.00%	Moderate
A2: Legarda (E)	17.32 m	NA	858	33	891	75.00%	Moderate
A3: None	None	None	None	None	None	None	None
A4: Legarda (W)	15.09 m	423	840	NA	1263	54.58%	Moderate
Total			448	1698	266	2413	
Passenger Flows						10,500	
<p>Peak Hour Volumes (PCUs) Manila MN-01 Legarda / Bustillos</p>							

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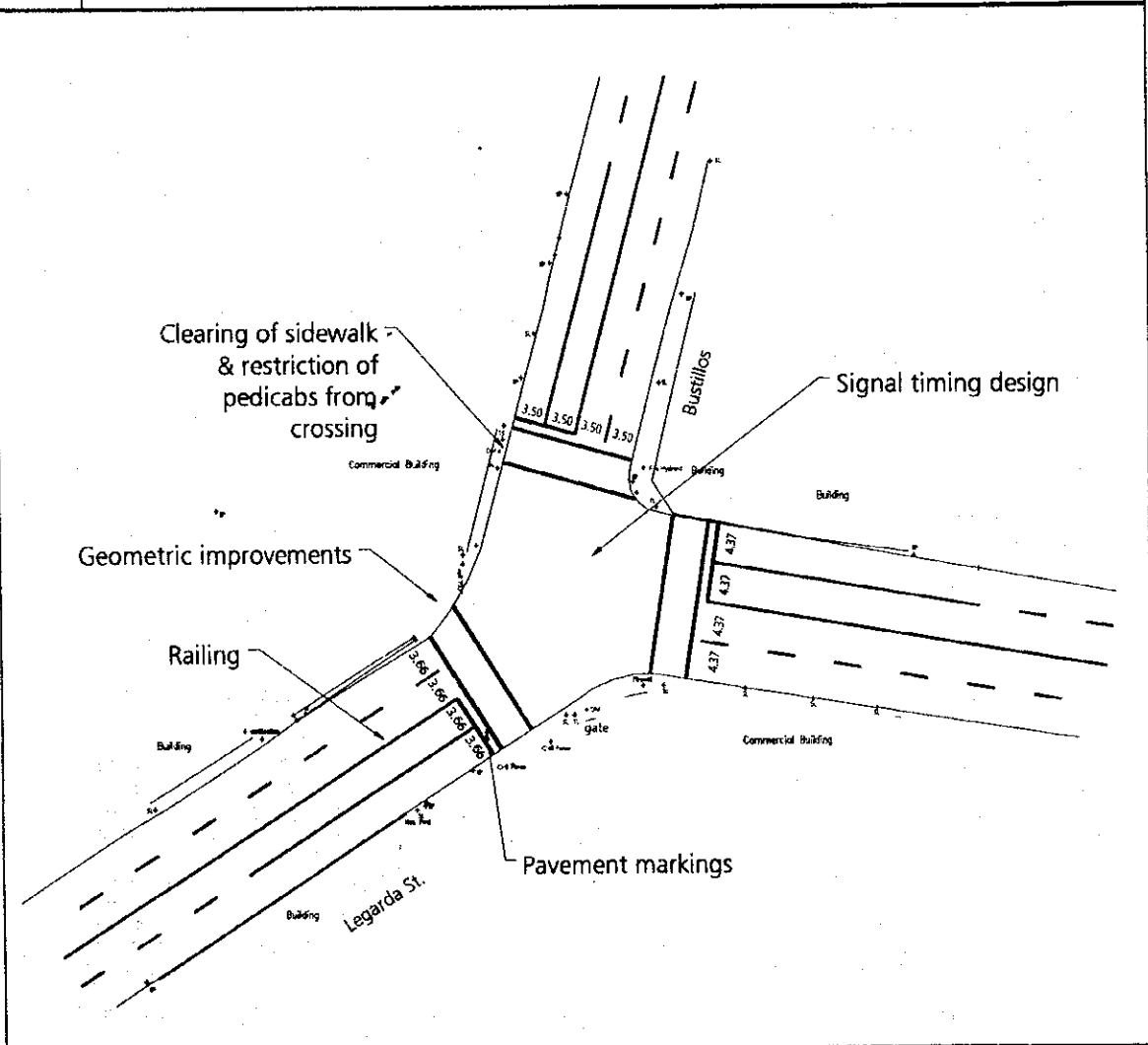
Small Scale Traffic Improvement Measures for Metro Manila

Name	Legarda / Bustillos	Code	MN-01
Sheet	Analysis	LGU	Manila

- 1) Presence of Sampaloc public market on south side of junction generates high pedestrian, commuter and non-motorized traffic, mainly pedicabs.
- 2) Church on north side of intersection also generates a high level of commuter and pedestrian traffic, especially on mass days.
- 3) Commercial activities all around the intersection spill over/encroach on sidewalks, forcing pedestrians to walk on carriageway;



Name	Legarda / Bustillos	Code	MN-01
Sheet	Proposed Improvements	LGU	Manila
Engineering	<ol style="list-style-type: none"> 1) Provision of railings at center line on the west approach of Legarda St. to prevent uncontrolled pedestrian crossings 2) Geometric improvements. 3) Reapplication of pavement markings. 		
Enforcement	<ol style="list-style-type: none"> 1) Clear sidewalk of vendors and restrict pedicabs from crossing Legarda. 		



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Small Scale Traffic Improvement Measures for Metro Manila

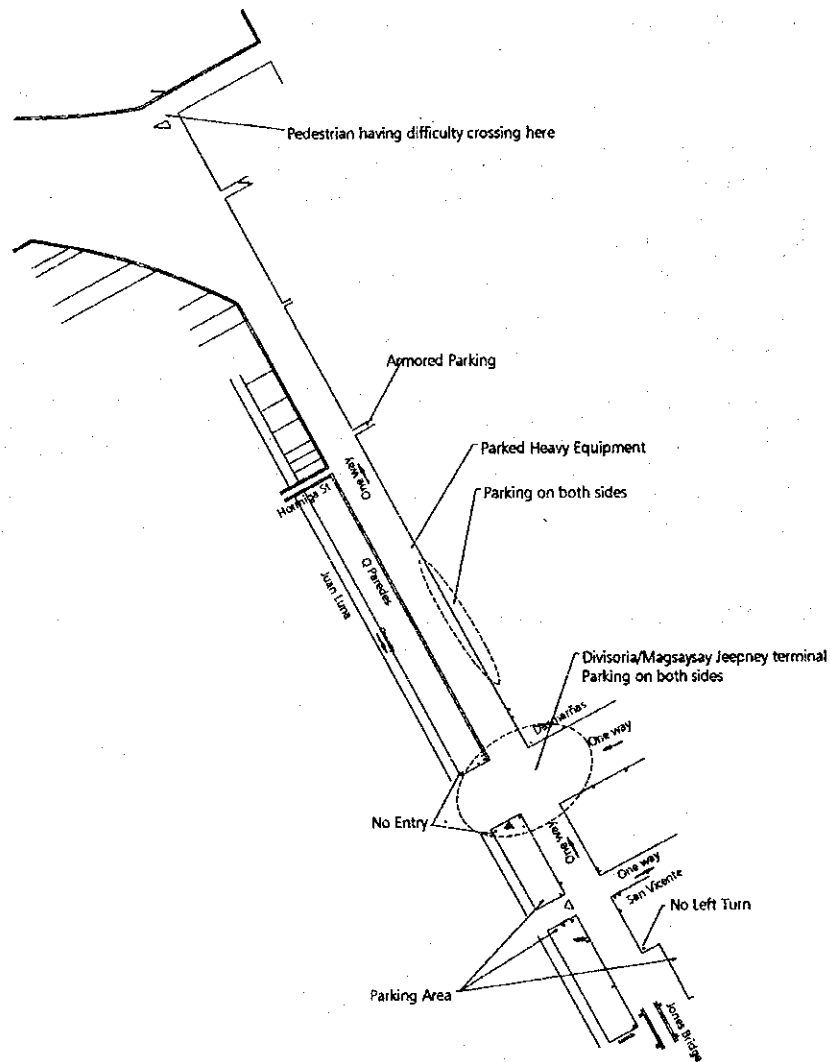
LOCATION : MN-01: Legarda / Bustillos (MANILA)
(cost summary)

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.	300.00	150.00	45,000.00
2. Lane Lines (100 or 150mm width)				
a.) Solid Lines, w = 150mm	l.m.	90.00	150.00	13,500.00
b.) Broken Lines, w = 150mms, 200mm width	l.m.	510.00	46.00	23,460.00
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.	24.00	337.50	8,100.00
2. Give Way (Yield Lines)	l.m.	-	-	-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	229.00	225.00	51,525.00
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.	-	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 entry for Pedicab	pcs.	1.00	3,850.00	3,850.00
C. Other Works				
1. Removal of Pavement Markings	l.m.	710.00	90.00	63,900.00
2. Synchronize Traffic Signal	l.s.	1.00	30,000.00	30,000.00
3. Provide Pedestrian Railing (Steel Railing) 6m / each	l.m.	10.00	7,500.00	75,000.00
4. Cleaning of Sidewalk	l.s.	1.00	5,000.00	5,000.00
TOTAL				173,900.00
Contingencies, 5%				8,695.00
CMS, 10%				17,390.00
Miscellaneous (fees, permits, etc.), 5%				8,695.00
Govt. Supervision, 2%				3,478.00
TOTAL COST				212,158.00

Name	Quintin Paredes / Dasmarinas / San Vicente				Code	MN-02	
Sheet	Summary of Observations				LGU	Manila	
Traffic Conditions	<ol style="list-style-type: none"> 1) Traffic flow moves very slowly along the stretch of Quintin Paredes because of vehicle volume. 2) Almost all spaces on the left side of the road are occupied by on-street parking. 3) The right side of the road is being used for parking, loading/unloading of light trucks, pedicab terminal, etc. 4) Heavy pedestrian movement near Plaza Ruiz (crossing Reina Regente). 						
Physical Conditions	<ol style="list-style-type: none"> 1) A one way road lined with commercial establishments; located within the Chinatown. 2) Most of the major intersections located along this road are signalized under the SMART signalization project. 3) Two adjoining intersections crossing Q. Paredes, paired one-way. 						
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: Quintin Paredes	18.1m	NA	NA	NA	NA	NA	Heavy
A2: San Vicente	17.78m	NA	NA	NA	NA	NA	Moderate
A3: Quintin Paredes	18.1m	NA	888	100	988	33.41%	Heavy
A4: San Gabriel	7.0m	113	171	1,609	1,893	21.02%	Heavy
Total		113	1,059	1,709	2,881		
B1: Quintin Paredes	18.1m	NA	NA	NA	NA	NA	Moderate
B2: Dasmarinas	12.1m	NA	521	107	628	38.84%	Moderate
B3: Quintin Paredes	18.1m	279	1,123	NA	1,402	34.86%	Heavy
B4: Dasmarinas	12.1m	NA	NA	NA	NA	NA	Heavy
Total		279	1,644	107	2,030		
Passenger Flows							
<p>Peak Hour Volumes (PCUs) Manila MN-02 Quintin Paredes / Dasmarinas / San Vicente</p>							

Name	Quintin Paredes / Dasmariñas / San Vicente	Code	MN-02
Sheet	Analysis	LGU	Manila

- 1) Despite being a 4-lane one-way road, the road's capacity has been reduced to that of a 2-lane road due to parking on both sides;
- 2) Side roads are also transformed to narrow one way roads due to parking on both sides.
- 3) Commercial establishments along Q. Paredes have no provision for visitor parking, much less for building occupants



Name	Quintin Paredes / Dasmariñas / San Vicente	Code	MN-02
Sheet	Proposed Improvements	LGU	Manila
Engineering	<ol style="list-style-type: none"> 1) Parking lanes must be delineated by pavement markings; other lane markings will have to be adjusted; 2) 'No Parking' signs must be installed on the right side of Quintin Paredes; to increase the capacity of the intersections, one side parking must be implemented along side roads. 		
Enforcement	<ol style="list-style-type: none"> 1) Allow parking on left side of Dasmariñas; right side shall be for loading and unloading; terminal must be 20-30m. away from intersection. 2) Strict enforcement of 'No Parking' regulation 		

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Small Scale Traffic Improvement Measures for Metro Manila

LOCATION : MN-02: Quintin Paredes / Dasmarinas / San Vicente (MANILA)
(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.	-	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.	200.00	46.00	9,200.00
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. Parking Lane Lines	l.m.	90.00	262.50	23,625.00
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.	9.00	907.50	8,167.50
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 entry for Pedicab	pcs.	1.00	3,850.00	3,850.00
2. Loading/Unloading Sign	pcs.	2.00	3,850.00	7,700.00
3. Parking Sign	pcs.	3.00	3,850.00	11,550.00
4. No Parking Sign	pcs.	4.00	3,850.00	15,400.00
5. One Way Sign	pcs.	2.00	3,850.00	7,700.00
TOTAL				87,192.50
Contingencies, 5%				4,359.63
CMS, 10%				8,719.25
Miscellaneous (fees, permits, etc.), 5%				4,359.63
Govt. Supervision, 2%				1,743.85
TOTAL COST				106,374.85