社会開発調査部報告書

Republic of the Philippines
Metro Manila Development Authority

SSTRIMM

The Study on the Formulation of
Small Scale Traffic Improvement Measures for Metro Manila

FINAL REPORT - Annexes
November 2001

Japan International Cooperation Agency

Transportas Consulting Co.
NCTS Foundation Inc.

Republic of the Philippines
Metro Manila Development Authority

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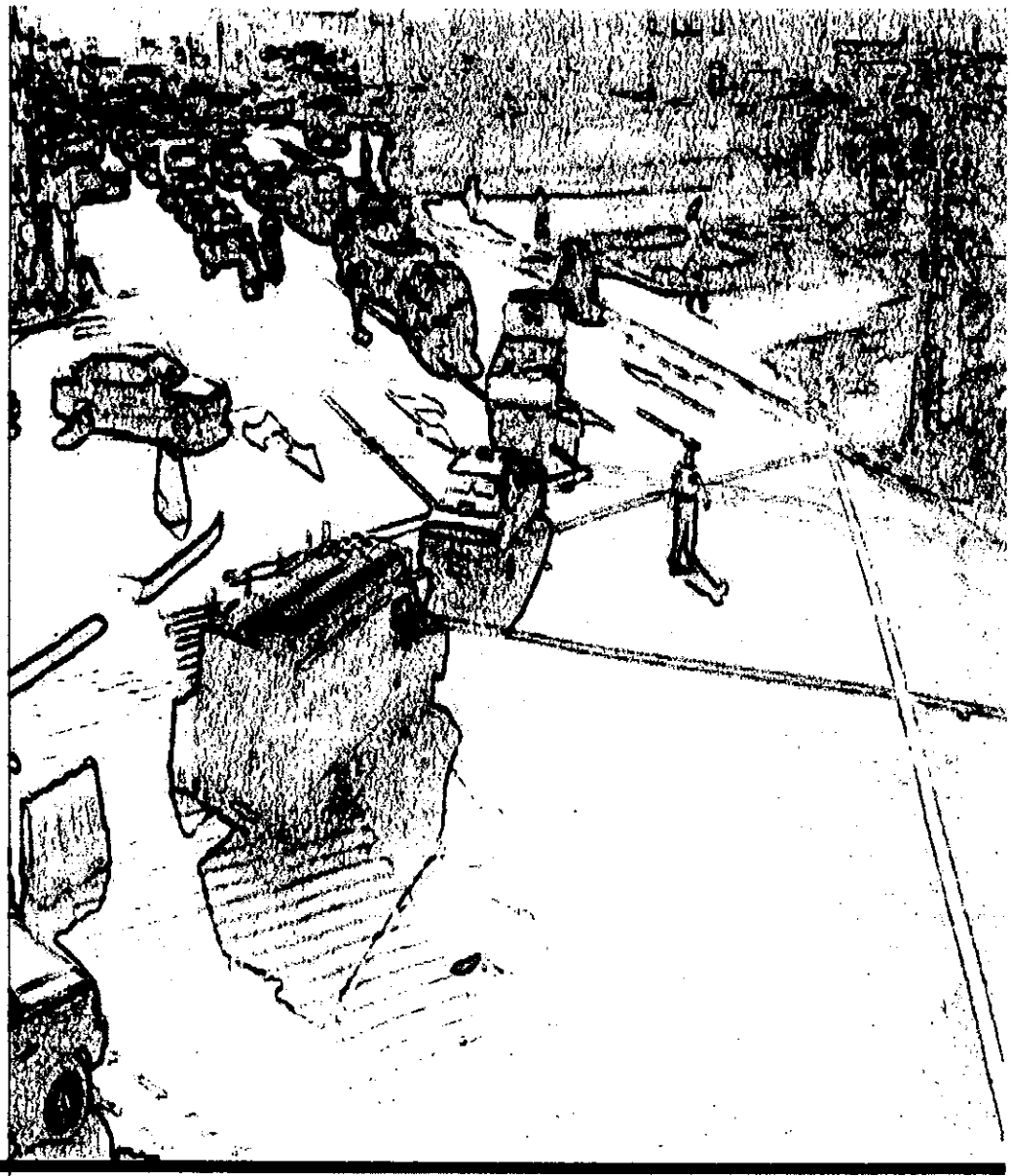

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SSTRIMM Final Report Annexes

November 2001

The Study on the Formulation of

Small-Scale Traffic Improvement Measures in Metro Manila

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VL-01	Karuhatan / A Pablo / MacArthur Hwy
TG-01	Gen Santos Ave / East Service Rd
PQ-01	Canaynay Avenue / Dr A Santos Ave

Annex 2

Individual Information Sheets for the 80 Traffic Bottleneck Points

Each of the 80 TBPs contain the following sheets:

1. Summary of Observations
2. Analysis
3. Proposed Improvements
4. Cost Estimates

Caloocan

CC-01	A Mabini / JP Rizal
CC-02	Rizal Avenue / 4th Avenue
CC-03	Baesa Road / Sta Quiteria

Las Piñas

LP-01	Marcos Alvarez Rd / Alabang-Zapote Road
LP-02	Zapote Junction / Alabang-Zapote Road
LP-03	CV Starr Avenue / Alabang-Zapote Road
LP-04	CAA Road / Alabang-Zapote Road
LP-05	Pilar Road / Alabang-Zapote Road

Makati

MK-01	Nicanor Garcia / Jupiter St
MK-02	Kamagong / Vito Cruz
MK-03	Metropolitan Ave / Ayala Ave
MK-04	Malugay / Ayala Ave
MK-05	Makati Ave / Jupiter
MK-06	Malugay / Mayapis
MK-07	Kalayaan Ave / Makati Ave
MK-08	Dela Rosa St / Pasong Tamo
MK-09	Javier / Pasong Tamo
MK-10	Pasay Road / Evangelista
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MK-14	JP Rizal / Sgt Fabian Yabut
MK-15	Kalayaan / Sgt Fabian Yabut
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Malabon

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

Mandaluyong

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

Manila

MN-01	Legarda / Bustillos
MN-02	Quintin Paredes / Dasmariñas / San Vicente
MN-03	P Casal / J Nepomuceno / Arlegui

Marikina

MR-01 BG Molina St / G del Pilar St
MR-02 J Sumulong Hwy / MacDonald's Dr
MR-03 J Sumulong Hwy / A Tuazon St

Muntinlupa

MT-01 Montillano St / Montillano Ext / National Road
MT-02 Muntinlupa City Hall / MCM Hospital / Bruger Subd
MT-03 Rizal St / Manila South Road
MT-04 Susana Heights / Manila South Road

Navotas

NV-01 M Naval / Tangos / F Pascual / L Santos / Gov Pascual

Parañaque

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

Pasay

PY-01 Burgos St / Libertad St
PY-02 Redemptorist Rd / Taft Ave Ext / Quirino Ave

Pasig

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

Pateros

PT-01 B Morcilla / P Herrera
PT-02 B Morcilla / M Almeda

Quezon City

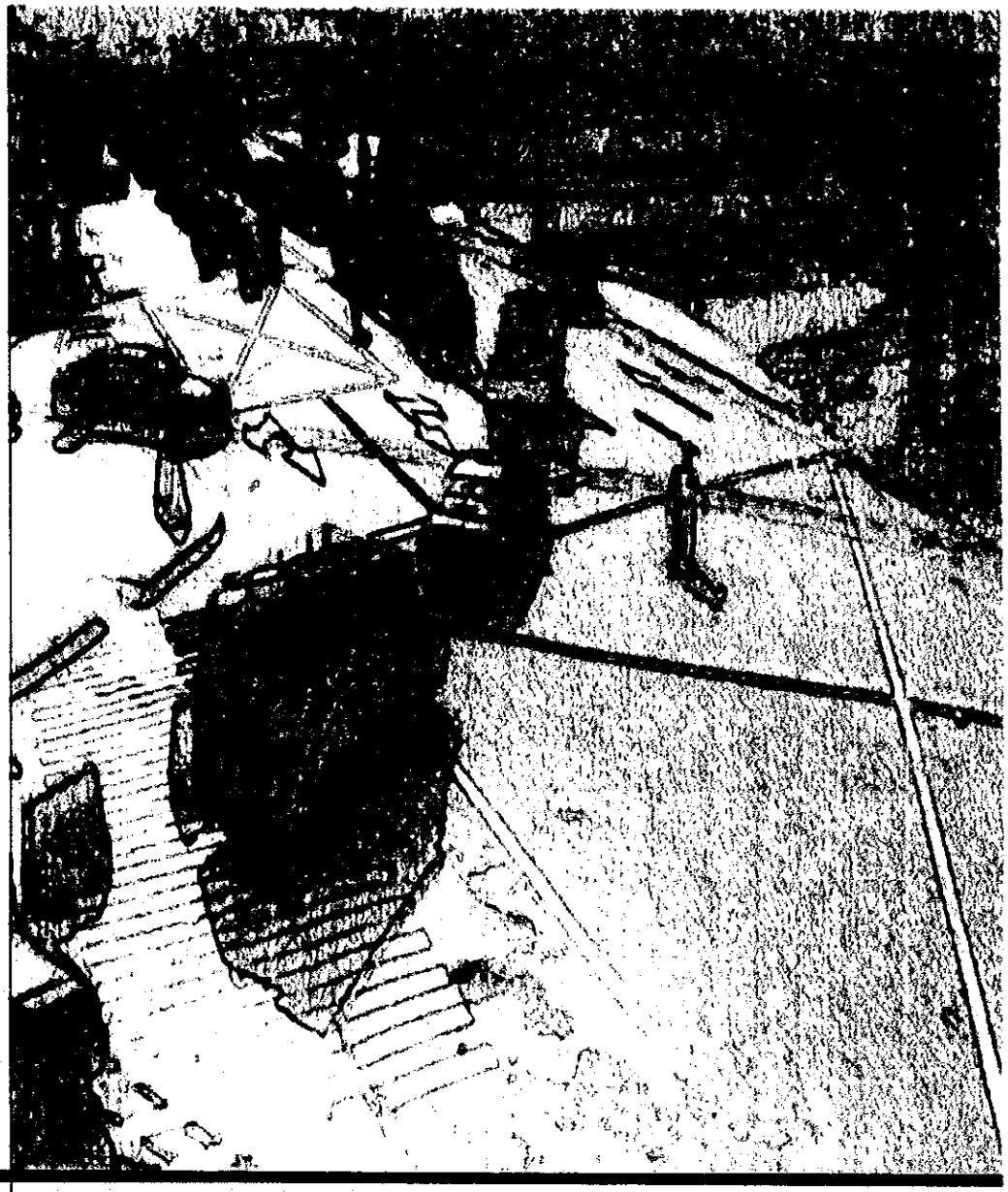
QC-01 Boni Serrano St / Benitez St / Valentina St
QC-02 Anonas St / Molave St
QC-03 Visayas Ave / Road 1
QC-04 Zabarte Road / Quirino Hwy

San Juan

SJ-01 Wilson St / P Guevarra St
SJ-02 Ortigas Ave / Xavier St / Madison St

Taguig

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



Pilot Project Construction Drawings

MT-01	Montillano St / Montillano Ext / National Road
MD-01	Shaw Blvd / Lee St / Wack-wack Rd / Old Wack-wack Rd
VL-01	Karuhatan / A Pablo / MacArthur Hwy
TG-01	Gen Santos Ave / East Service Rd
PQ-01	Canaynay Avenue / Dr A Santos Ave

Valenzuela

VL-01	Karuhatan / A Pablo / MacArthur Hwy
VL-02	MacArthur Hwy / A Fernando St
VL-03	MacArthur Hwy / P Valenzuela St
VL-04	MacArthur Hwy / Tamaraw Hills
VL-05	Fatima Ave / Serrano St
VL-06	MacArthur Hwy / Poblacion Road

METROPOLITAN MANILA DEVELOPMENT AUTHORITY

sstrimm

SMALL-SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA

(MUNTINLUPA NATIONAL HIGHWAY – MONTILLANO STREET)

transportas consulting

IN ASSOCIATION WITH

University of the Philippines
National Center for Transportation Studies Foundation, Inc.

RECOMMENDING APPROVAL:

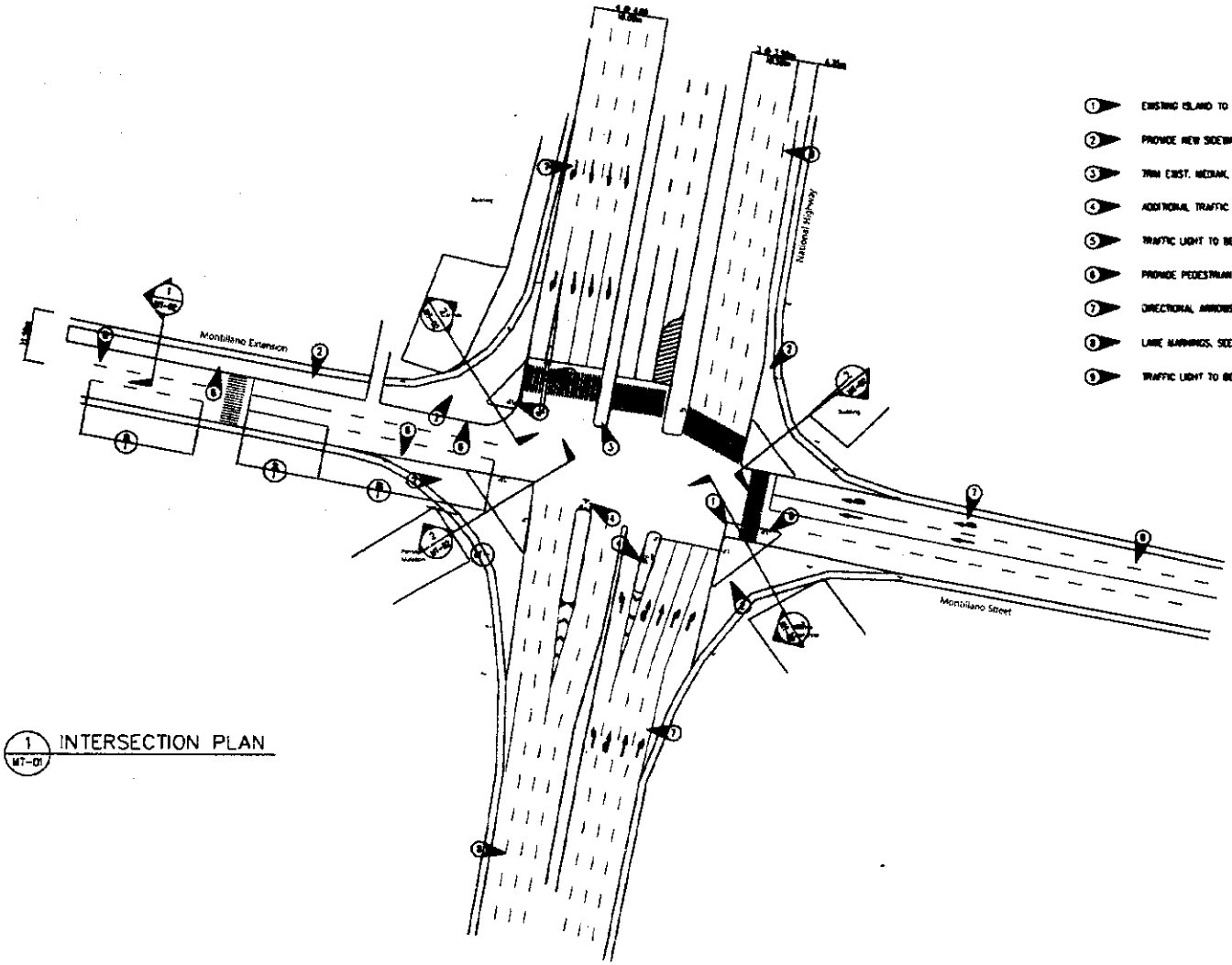
APPROVED BY:

RENE R. SANTIAGO
TEAM LEADER

JAIME R. FRESNEDI
MAYOR
CITY OF MUNTINLUPA

ERNESTO L. CAMARILLO
STRIMM PROJECT DIRECTOR

BENJAMIN S. ABALOS
MMDA, CHAIRMAN



1. EXISTING ISLAND TO BE RECONFIGURED
2. PROVIDE NEW SIDEWALK
3. TRIM EXIST. MEDIAN, SEE DETAIL 3/MT-02
4. ADDITIONAL TRAFFIC SIGNAGE, SEE DETAIL 6/MT-03
5. TRAFFIC LIGHT TO BE RELOCATED
6. PROVIDE PEDESTRIAN RAILINGS
7. DIRECTIONAL ARROWS, SEE DETAIL 1/MT-03
8. LANE MARKINGS, SEE DETAIL 4/MT-03
9. TRAFFIC LIGHT TO BE REMOVED

1/MT-01 INTERSECTION PLAN

CONSULTANT:
transportas consulting
RICARDO M. YUZON, JR.
University of the Philippines
Natural Center for Transportation Studies Foundation, INC.
RENE G. SANTIAGO

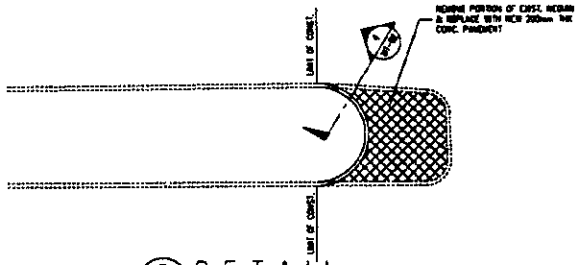
APPROVED BY:
METROPOLITAN MANILA DEVELOPMENT AUTHORITY

PROJECT TITLE:
SMALL SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA
MT-01 : MONTILLOPA BLVD., HIGHWAY/ MONTILLANO ST./MONTILLANO EXT.
LOCATION : ALABANG, MUNTINLUPA

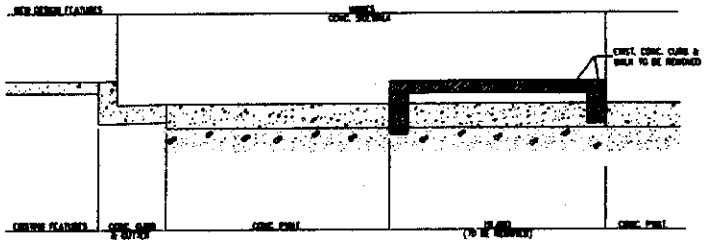
SCALE: -

SHEET CONTENTS: INTERSECTION PLAN

SHEET NO. MT-01



3 DETAIL
MT-02 SCALE: 1:100



2 SECTION
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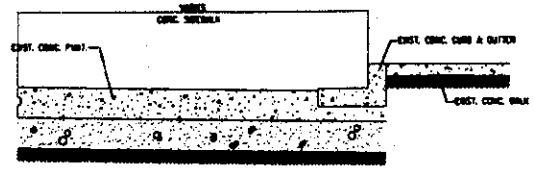

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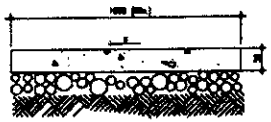
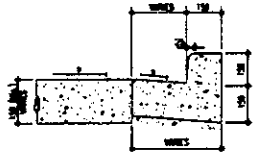
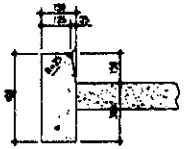


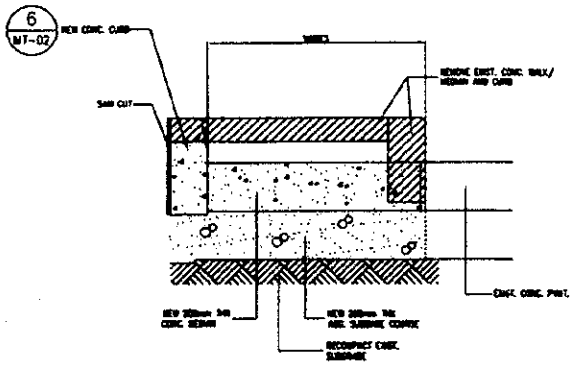
7 CONC. SIDEWALK DETAIL
MT-02



5 CONC. CURB & GUTTER DETAIL
MT-02



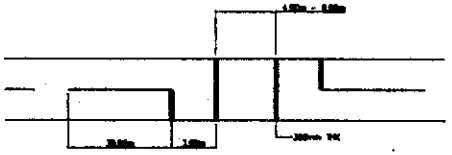
6 CONC. CURB DETAIL
MT-02



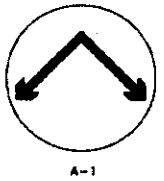
4 SECTION
MT-02 SCALE: 1:100

CONSULTANT: transportex consulting — RICARDO M. YUZON, JR. — University of the Philippines National Center for Transportation Studies Foundation, Inc. — EDDIE D. SANTIAGO	APPROVED BY: METROPOLITAN MANILA DEVELOPMENT AUTHORITY	PROJECT TITLE: SMALL SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA — MT-01 : NORTH LUPA NATL. HIGHWAY/ANONUEVO ST. — LOCATION : CAINTA, RIZAL	SCALE: AS SHOWN	SHEET CONTENTS: MISCELLANEOUS DETAILS	SHEET NO. MT-02

3A MT-03 ZEBRA TYPE (NON-SIGNALIZED CROSSING)

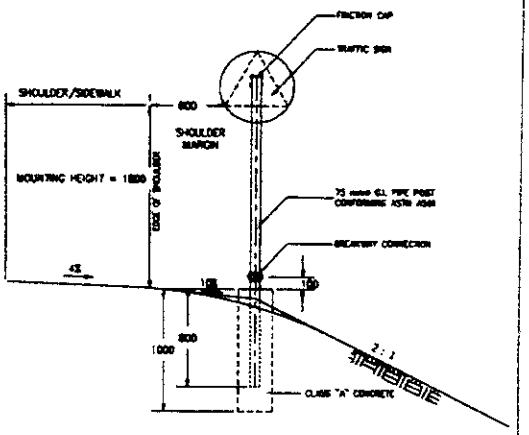


3B MT-03 CROSSWALKS (SIGNALIZED PEDESTRIAN CROSSING)



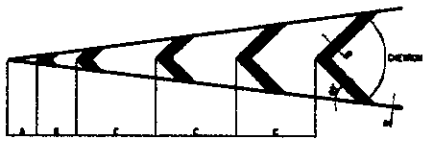
A-1

6 MT-03 DIRECTIONAL SIGN



8 MT-03 MOUNTING FOR WARNING AND REGULATORY SIGNS

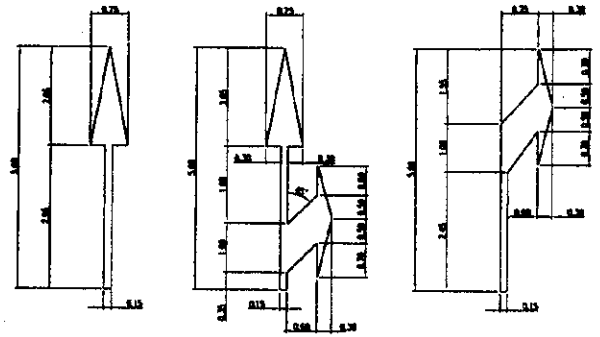
3 MT-03 PEDESTRIAN CROSSING MARKINGS



5 MT-03 APPROACH MARKING TO TRAFFIC ISLAND

2 MT-03 CENTER LINE AND EDGE LINE MARKING FOR A TYP. TWO-LANE ROAD

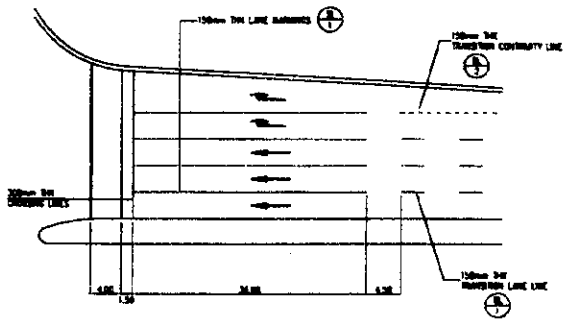
SCALE: 1:250



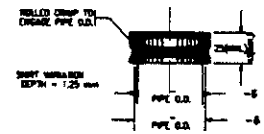
1. THROUGH ARROW 2. COMBINED ARROW 3. TURN ARROW

1 MT-03 STANDARD PAVEMENT ARROWS

SCALE: 1:50



4 MT-03 DETAIL – TYPICAL LINE MARKING



7 MT-03 FRICTION CAP DETAIL

GENERAL NOTES:

1. ALL SIGNS SHALL BE PLACED ON THE RIGHT HAND SIDE OF THE THOROUGHFARE, EXCEPT AS OTHERWISE INDICATED ON PLANS. SIGNS SHALL FACE THE DIRECTION OF TRAFFIC FLOW AND SHALL BE SUCH IN A MANNER THAT NO OTHER OBJECT SHALL OBSTRUCT THE VIEW OR LINE OF SIGHT OF THE MOTORIST.
2. THE PROPER LOCATION OF SIGN SHALL BE SUCH AS NOT TO OBSTRUCT THE DRIVEWAYS OF ADJOINING PROPERTIES.
3. UNLESS OTHERWISE SPECIFIED ON THE PLANS, ALL TRAFFIC SIGNS AND PAVEMENT MARKINGS SHALL CONFORM WITH THE REQUIREMENTS OF THE PHILIPPINE ROAD SIGNS AND PAVEMENT MARKINGS MANUALS OF DPWH SERIES OF 1989 AND 1992.
4. TRAFFIC SIGNS, SYMBOLS AND MESSAGES ARE SUBJECT TO CHANGE TO SUIT LOCAL NEEDS AND ACTUAL SITE CONDITIONS, THIS SHALL BE AS DIRECTED BY THE ENGINEER.
5. THE DIMENSIONS AND COLORS OF ADVANCE DIRECTION AND DIRECTION SIGNS SHALL BE ADAPTED TO THE PHILIPPINE STANDARD.

CONSULTANT: transportex consulting — RICARDO M. YUSON, JR.; University of the Philippine National Center for Transportation Studies Foundation, Inc. — RENE G. SANTIAGO

APPROVED BY: METROPOLITAN MANILA DEVELOPMENT AUTHORITY

PROJECT TITLE: SMALL SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA
MT-01 : MUNTINLUPA NATL. HIGHWAY/MONTILLANO STREET
LOCATION : ALABANG, MUNTINLUPA

SCALE: AS SHOWN

SHEET CONTENTS: TRAFFIC SIGN, PAVEMENT MARKINGS AND DETAILS

SHEET NO.: MT-03

METROPOLITAN MANILA DEVELOPMENT AUTHORITY

sstrimm

SMALL-SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA

(OLD WACK WACK – SHAW BLVD. – LEE STREET)

transportas consulting

IN ASSOCIATION WITH

University of the Philippines
National Center for Transportation Studies Foundation, Inc.

RECOMMENDING APPROVAL:

APPROVED BY:

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TEAM LEADER

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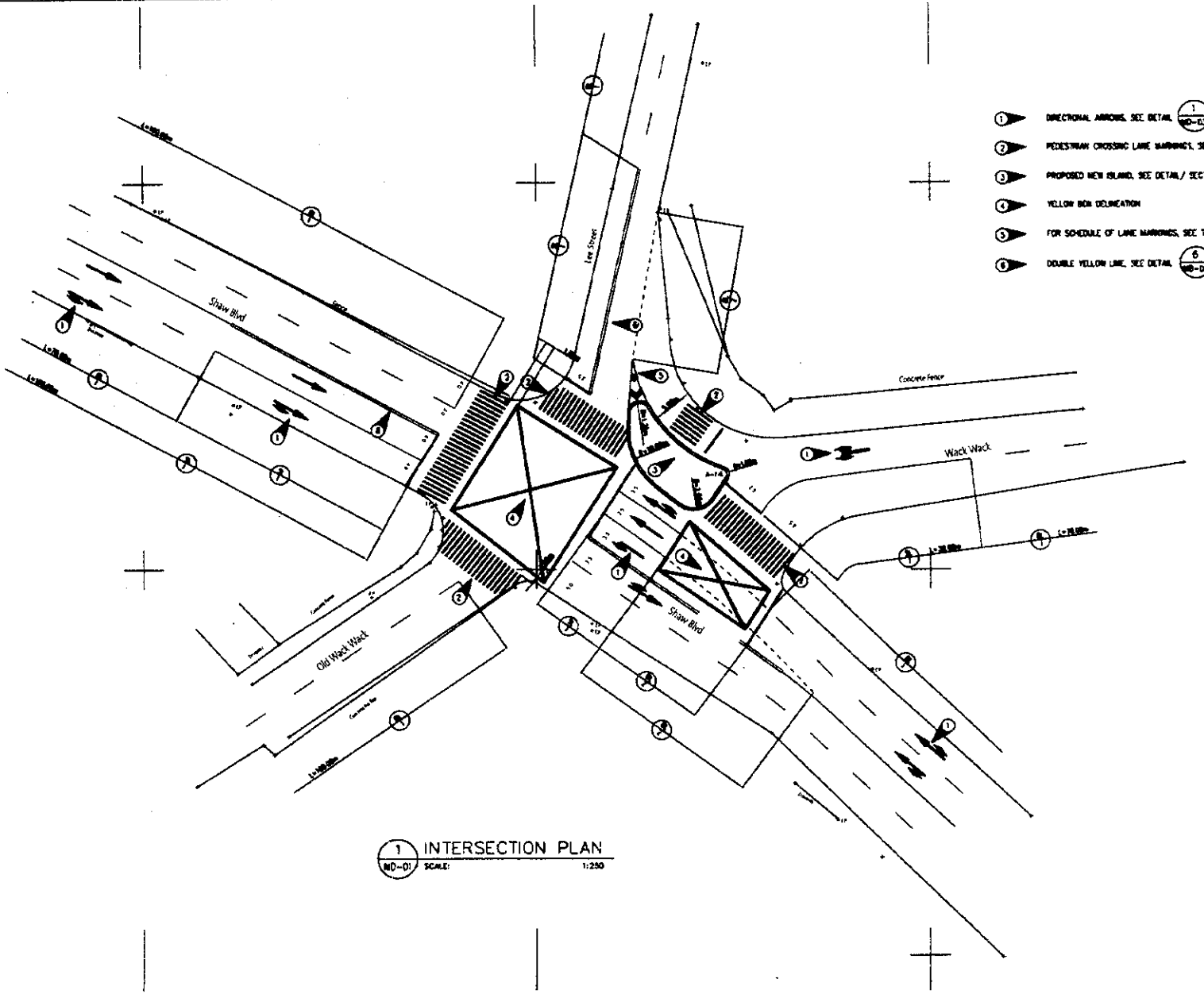
MAYOR
CITY OF MANDALUYONG

ERNESTO L. CAMARILLO
SSTRIMM PROJECT DIRECTOR

BENJAMIN S. ABALOS
MMDA, CHAIRMAN



1 MD-01 INTERSECTION PLAN
SCALE: 1:250

CONSULTANT :
transportex consulting
RICARDO B. YUZON, JR.
University of the Philippines
National Center for Transportation Studies Foundation, Inc.

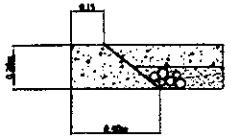
APPROVED BY:
METROPOLITAN MANILA DEVELOPMENT AUTHORITY

PROJECT TITLE :
SMALL SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA
MD-01 : OLD WACK WACK/ SHAW BLVD/ LEE ST.
LOCATION : MANDALUYONG CITY

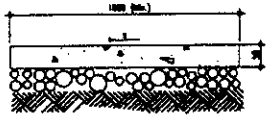
SCALE : 1:250

SHEET CONTENTS : INTERSECTION PLAN

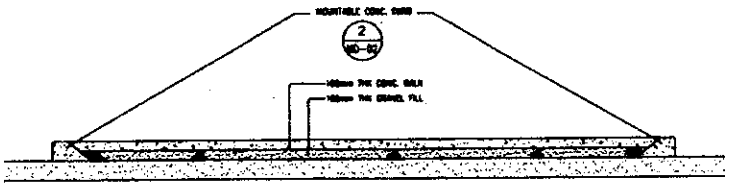
SHEET NO. MD-01



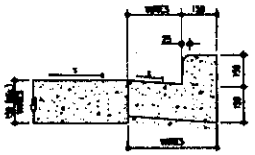
2 / MD-02 DETAIL – MOUNTABLE CONC. CURB



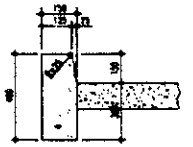
5 / MD-02 CONC. SIDEWALK DETAIL



1 / MD-02 SECTION – ISLAND



3 / MD-02 CONC. CURB & GUTTER DETAIL



4 / MD-02 CONC. CURB DETAIL

CONSULTANT :

transportex consulting

RICHARD M. TAYCO, JR.

University of the Philippines
National Center for Transportation Studies Foundation, INC.

APPROVED BY:

METROPOLITAN MANILA DEVELOPMENT AUTHORITY

PROJECT TITLE :

SMALL SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA

MD-01 : OLD WACK WACK/SHAW BLVD/ADX ST.

LOCATION : MANDALUYONG CITY

SCALE :

AS SHOWN

SHEET CONTENTS :

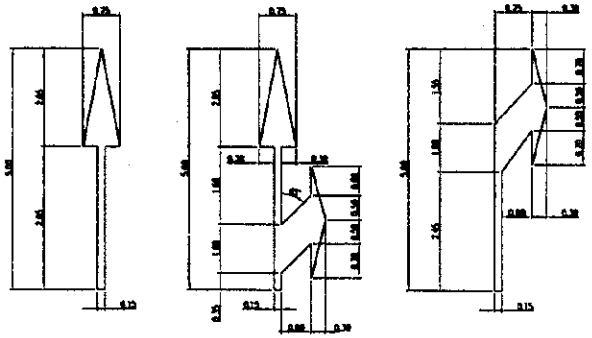
MISCELLANEOUS DETAILS

SHEET NO.

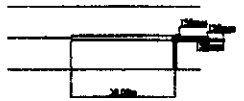
MD-02

3 MD-03 ZEBRA TYPE PEDESTRIAN CROSSING

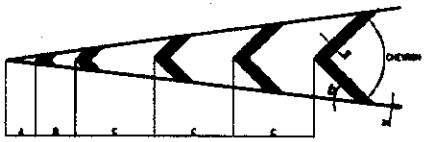
2 MD-03 CENTER LINE AND EDGE LINE MARKING FOR A TYP. TWO-LANE ROAD



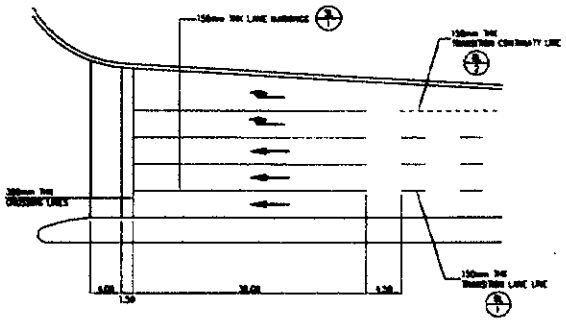
1 MD-03 STANDARD PAVEMENT ARROWS



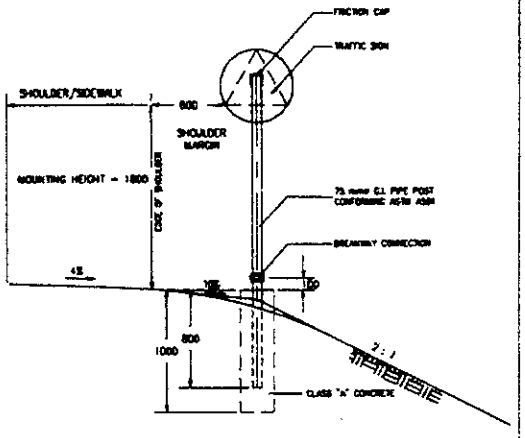
6 MD-03 DOUBLE YELLOW LINE MARKINGS



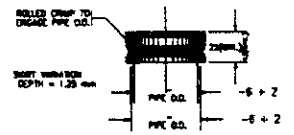
5 MD-03 APPROACH MARKING TO TRAFFIC ISLAND



4 MD-03 DETAIL – TYPICAL LINE MARKING



8 MD-03 MOUNTING FOR WARNING AND REGULATORY SIGNS



7 MD-03 FRICTION CAP DETAIL

GENERAL NOTES:

1. ALL SIGNS SHALL BE PLACED ON THE RIGHT HAND SIDE OF THE ROADWAY, EXCEPT AS OTHERWISE INDICATED ON PLAN. SIGNS SHALL FACE THE DIRECTION OF TRAFFIC FLOW AND SHALL BE SUCH AS A MANNER THAT NO OTHER OBJECT SHALL OBSTRUCT THE VIEW OR LINE OF SIGHT OF THE MOTORIST.
2. THE PROPER LOCATION OF SIGN SHALL BE SUCH, AS NOT TO OBSTRUCT THE DRIVEWAYS OF ABUTTING PROPERTIES.
3. UNLESS OTHERWISE SPECIFIED ON THE PLANS, ALL TRAFFIC SIGNS AND PAVEMENT MARKINGS SHALL CONFORM WITH THE REQUIREMENTS OF THE PHILIPPINE ROAD SIGNS AND PAVEMENT MARKINGS MANUALS OF OPEN SERICS OF 1988 AND 1992.
4. TRAFFIC SIGNS, SYMBOLS AND MESSAGES ARE SUBJECT TO CHANGE TO SUIT LOCAL NEEDS AND ACTUAL SITE CONDITIONS, THIS SHALL BE AS DIRECTED BY THE ENGINEER.
5. THE DIMENSIONS AND COLORS OF ADVANCE DIRECTION AND DIRECTION SIGNS SHALL BE ADOPTED TO THE PHILIPPINE STANDARD.

CONSULTANT: transportex consulting; RICARDO M. YUZON, JR.; University of the Philippines National Center for Transportation Studies Foundation, Inc.; ROSE E. SANTIAGO		APPROVED BY: METROPOLITAN MANILA DEVELOPMENT AUTHORITY	PROJECT TITLE: SMALL SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA; MD-01 : OLD SIKATUNA/SHAW BLVD./EDSA ST.; LOCATION : MANDALUYONG CITY	SCALE: AS SHOWN	SHEET CONTENTS: TRAFFIC SIGN, PAVEMENT MARKINGS AND DETAILS	SHEET NO. MD-03

METROPOLITAN MANILA DEVELOPMENT AUTHORITY

stride

SMALL-SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA

(KARUHATAN – A PABLO – MACARTHUR HWY)

transportex consulting

IN ASSOCIATION WITH

University of the Philippines
National Center for Transportation Studies Foundation, Inc.

RECOMMENDING APPROVAL:

APPROVED BY:

RENE R. SANTIAGO
TEAM LEADER

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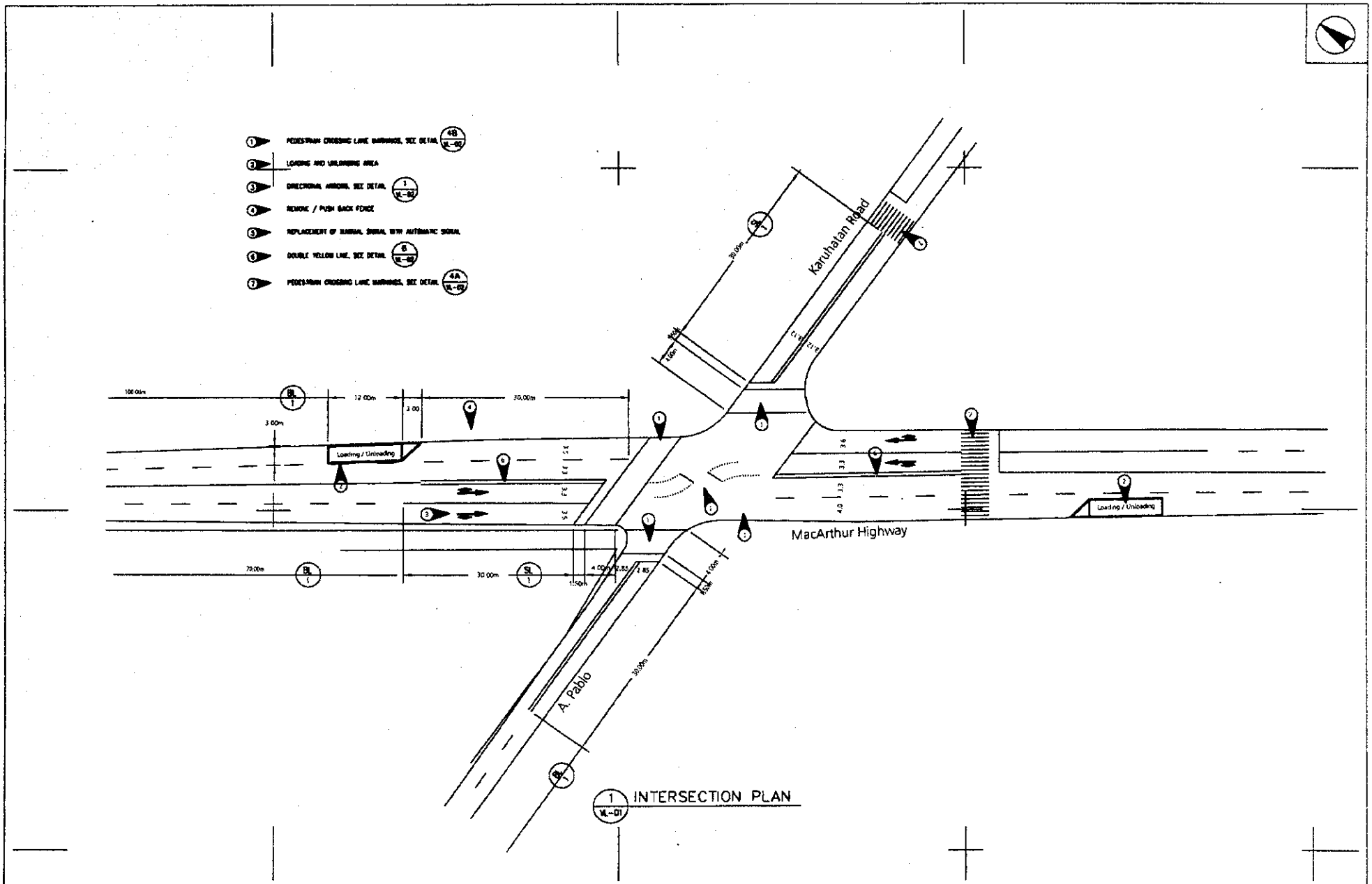
MAYOR
CITY OF MANDALUYONG

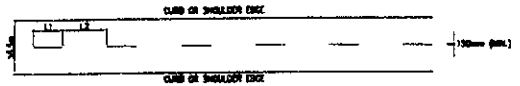
ERNESTO L. CANARILLO
STRIDE PROJECT DIRECTOR

BENJAMIN S. ABALOS
MMDA CHAIRMAN



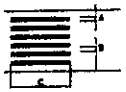
1 INTERSECTION PLAN
VL-01

CONSULTANT :		APPROVED BY:	PROJECT TITLE :	SCALE :	SHEET CONTENTS :	SHEET NO.
transportus consulting RICARDO M. YUZON, JR. University of the Philippines National Center for Transportation Studies Foundation, Inc. RENE R. SANTIAGO	PREPARED BY: CHECKED : OWNED : DATE :	METROPOLITAN MANILA DEVELOPMENT AUTHORITY	SMALL SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA VL-01 : KARUHATAN / A. PABLO STREET / MACARTHUR HIGHWAY LOCATION : VALENZUELA	-	INTERSECTION PLAN	VL-01



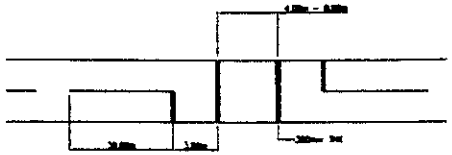
NOTE:
FOR [illegible] SPEED < 60 kph L1=3.0m L2=4.5m
FOR [illegible] SPEED > 60 kph L1=3.0m L2=6.0m
BARRIER LINES MAY BE USED AS CENTER LINES ONLY WHEN PASSING IS PROHIBITED

2 VL-02 CENTER LINE AND EDGE LINE MARKING FOR A TYP. TWO-LANE ROAD
SCALE: 1:250



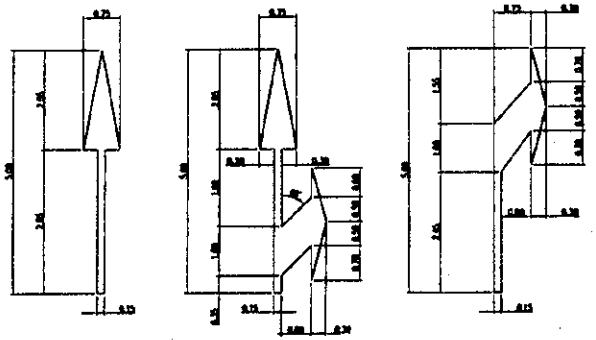
NOTE:
FOR [illegible] SPEED < 60 kph
A = B = 300 C = 2.5m - 4.0m
FOR [illegible] SPEED > 60 kph
A = B = 600mm C > 1.0m

4A VL-02 ZEBRA TYPE PEDESTRIAN CROSSING
N T S



4B VL-02 CROSSWALKS (SIGNALIZED PEDESTRIAN CROSSING)
N T S

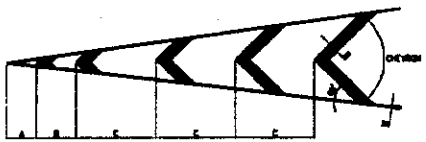
6 VL-02 DOUBLE YELLOW LINE MARKINGS
N T S



1. THROUGH ARROW 2. COMBINED ARROW 3. TURN ARROW

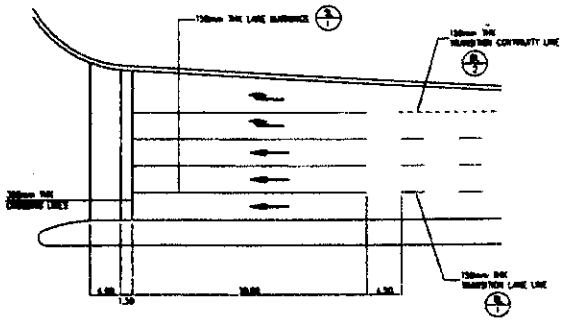
NOTE:
TO BE USED FOR ROADS WITH A SPEED LIMIT OF 60kph OR LESS

1 VL-02 STANDARD PAVEMENT ARROWS
SCALE: 1:50



NOTE:
FOR SPEED OF 60kph OR LESS USE:
A = 100mm
B = 300mm
a = 1.5m
b = 2.0m
c = 4.0m

3 VL-02 APPROACH MARKING TO TRAFFIC ISLAND
N T S



5 VL-02 DETAIL - TYPICAL LINE MARKING
N T S

CONSULTANT: transportation consulting; University of the Philippines National Center for Transportation Studies Foundation, Inc.	APPROVED BY: METROPOLITAN MANILA DEVELOPMENT AUTHORITY	PROJECT TITLE: SMALL SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA VL-01 : KARUHATAN/A. PABLO ST./MACARTHUR HIGHWAY LOCATION : VALENZUELA	SCALE: AS SHOWN	SHEET CONTENTS: TRAFFIC SIGN, PAVEMENT MARKINGS AND DETAILS	SHEET NO: VL-02

METROPOLITAN MANILA DEVELOPMENT AUTHORITY

sstrimm

SMALL-SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA

(GEN SANTOS AVENUE - EAST SERVICE ROAD)

transportas consulting

IN ASSOCIATION WITH

University of the Philippines
National Center for Transportation Studies Foundation, Inc.

RECOMMENDING APPROVAL:

APPROVED BY:

RENE R. SANTIAGO
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MAYOR
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ERNESTO L. CAMARILLO
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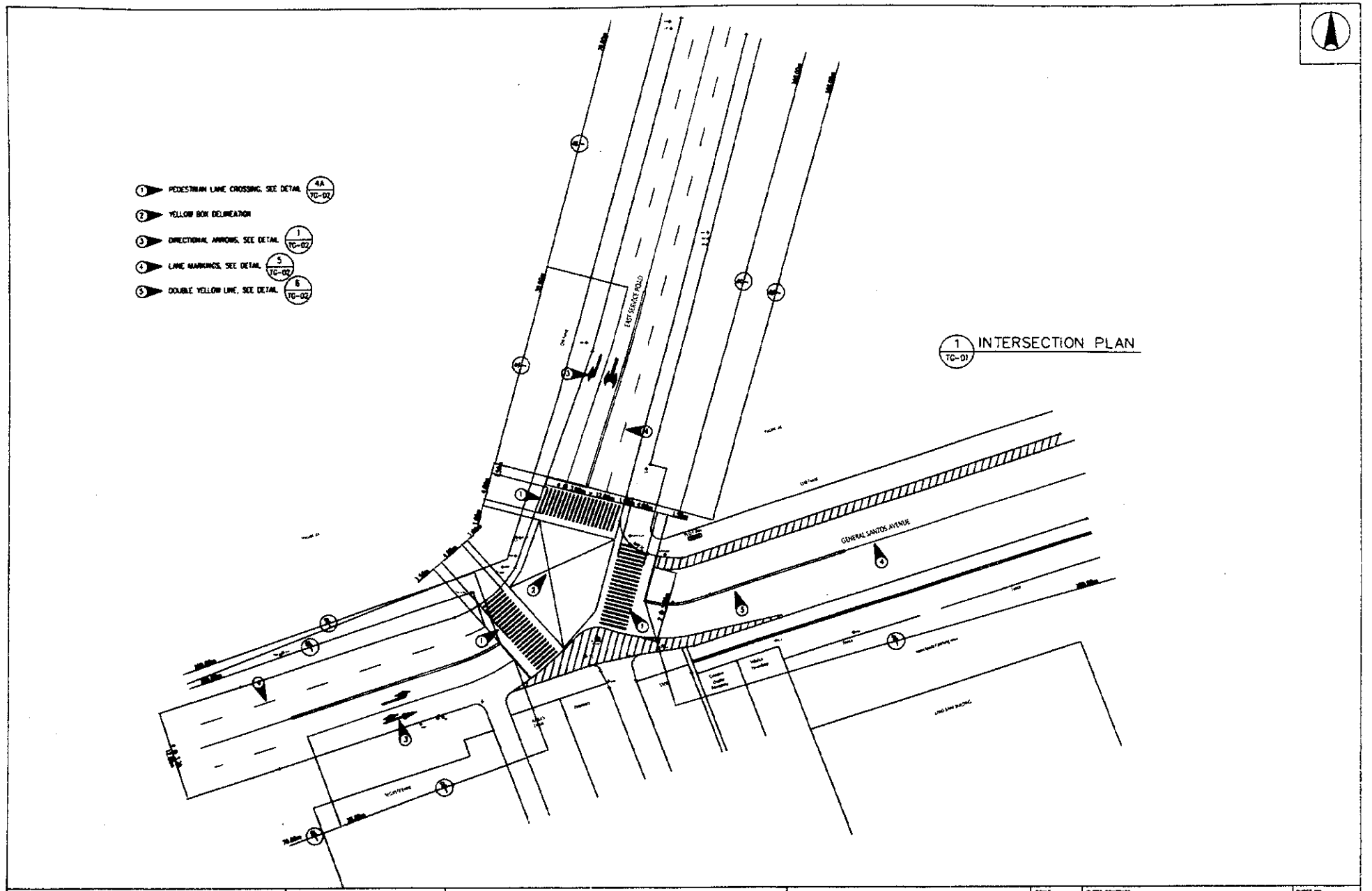
BENJAMIN S. ABALOS
MMDA, CHAIRMAN



1 / TC-01 INTERSECTION PLAN

CONSULTANT :

transportation consulting

RICARDO M. YUSON, JR.

University of the Philippines
National Center for Transportation Studies Foundation, INC.

RENE B. SANTIAGO

APPROVED BY:

METROPOLITAN MANILA DEVELOPMENT AUTHORITY

PROJECT TITLE :

SMALL SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA

TC-01 : COR. SANTOS AVENUE/EAST SERVICE ROAD

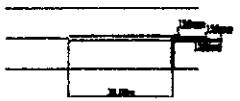
LOCATION : TAGUIG

SCALE : -

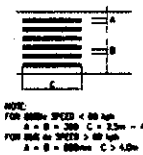
SHEET CONTENTS : INTERSECTION PLAN

SHEET NO. TC-01

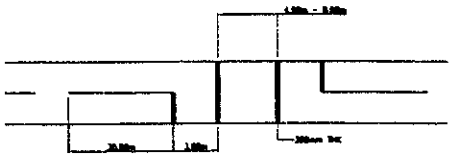
2 TC-02 CENTER LINE AND EDGE LINE MARKING FOR A TYP. TWO-LANE ROAD
SCALE: 1:250



6 TC-02 DOUBLE YELLOW LINE MARKINGS
N T S

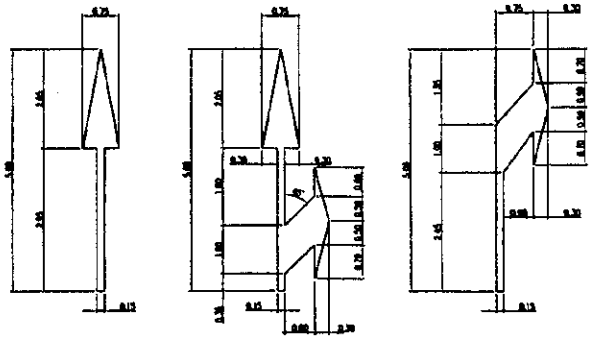


4A TC-02 ZEBRA TYPE (NON-SIGNALIZED CROSSING)
N T S



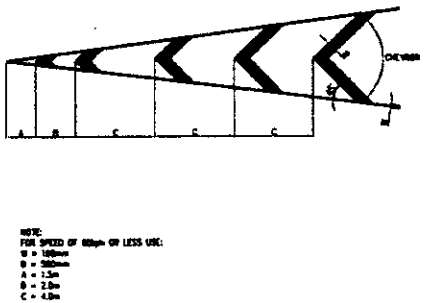
4B TC-02 CROSSWALKS (SIGNALIZED PEDESTRIAN CROSSING)
N T S

4 TC-02 PEDESTRIAN CROSSING MARKINGS
N T S

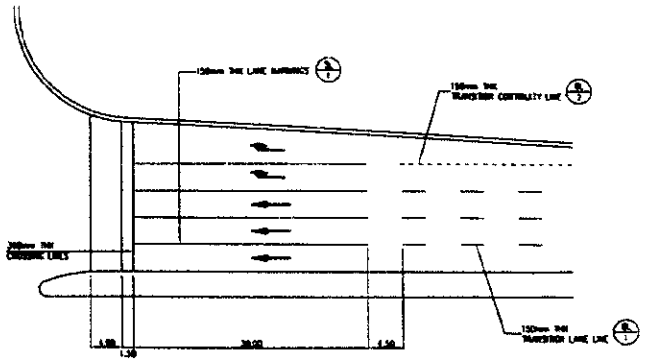


1. THROUGH ARROW 2. COMBINED ARROW 3. TURN ARROW

1 TC-02 STANDARD PAVEMENT ARROWS
SCALE: 1:30



3 TC-02 APPROACH MARKING TO TRAFFIC ISLAND
N T S



5 TC-02 DETAIL – TYPICAL LINE MARKING
N T S

CONSULTANT: transportex consulting; RICARDO M. YUZON, JR.; ADRIE N. SANTIAGO; University of the Philippines National Center for Transportation Studies Foundation, Inc.		APPROVED BY: METROPOLITAN MANILA DEVELOPMENT AUTHORITY	PROJECT TITLE: SMALL SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA TC-01 : GEN. SANTOS AVENUE/EAST SERVICE ROAD LOCALE : TAGUIG	SCALE: AS SHOWN	SHEET CONTENTS: PAVEMENT MARKINGS AND DETAILS	SHEET NO. TG-02

METROPOLITAN MANILA DEVELOPMENT AUTHORITY

sstrimm

SMALL-SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA

(CANAYNAY AVENUE – DR. A. SANTOS AVENUE)

transportas consulting

IN ASSOCIATION WITH

University of the Philippines
National Center for Transportation Studies Foundation, Inc.

RECOMMENDING APPROVAL:

APPROVED BY:

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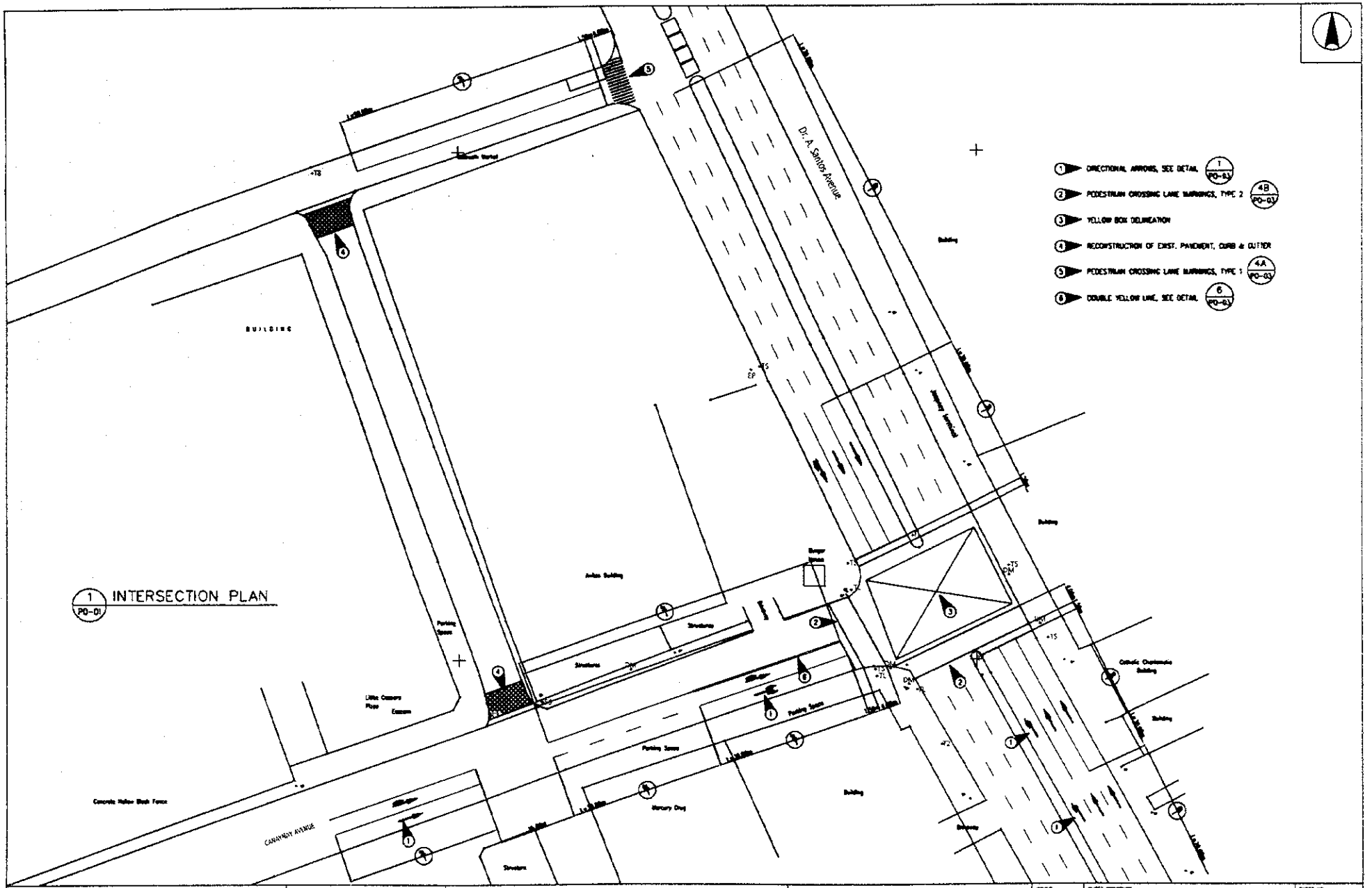
Team Leader

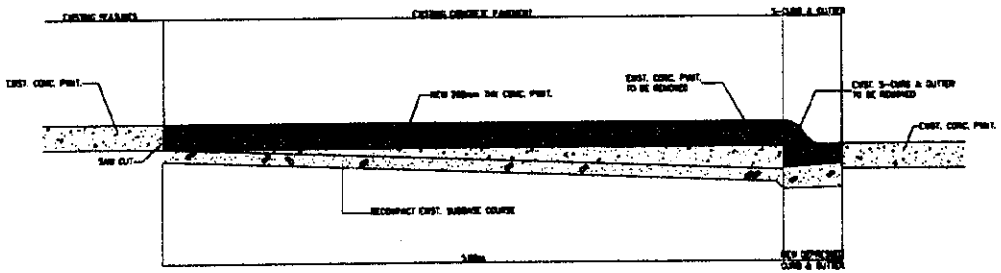
JOEY P. MARQUEZ
Mayor
City of Parañaque

ERNESTO L. CAMARILLO
SSTRIMM Project Director

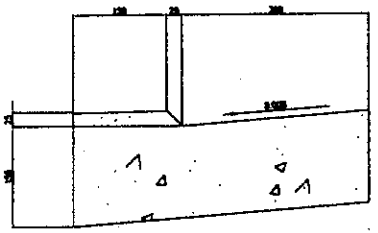
BENJAMIN S. ABALOS
MMDA, Chairman



CONSULTANT: transportex consulting services — RICARDO M. YUZON, JR. — University of the Philippines National Center for Transportation Studies Foundation, INC. — RENE B. SANTIAGO	APPROVED BY: METROPOLITAN MANILA DEVELOPMENT AUTHORITY	PROJECT TITLE: SMALL SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA PQ-01 : CANAYNAY AVENUE/ DR. A. SANTOS AVENUE LOCATION : PARANAQUE	SCALE: -	SHEET CONTENTS: INTERSECTION PLAN	SHEET NO: PQ-01

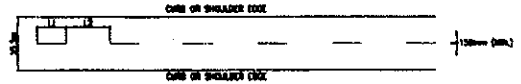


1 / PQ-02 SECTION/ DETAIL – RECONSTRUCTION OF EXIST. PVMT./CURB & GUTTER



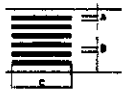
1 / PQ-02 DEPRESSED CONC. CURB & GUTTER DETAIL

CONSULTANT: transportation consulting; University of the Philippines National Center for Transportation Studies Foundation, Inc.	APPROVED BY: METROPOLITAN MANILA DEVELOPMENT AUTHORITY	PROJECT TITLE: SMALL SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA PQ-01 : CAMAYNAY AVENUE/ DR. A. SANTOS AVENUE LOCATION : PARANAQUE	SCALE: NTS	SHEET CONTENTS: SECTION AND DETAIL	SHEET NO. PQ-02

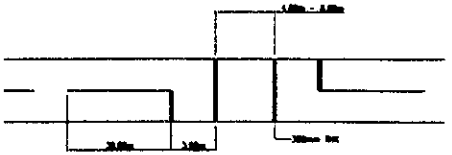


2 PO-03 CENTER LINE AND EDGE LINE MARKING FOR A TYP. TWO-LANE ROAD
SCALE: 1:250

6 PO-03 DOUBLE YELLOW LINE MARKINGS
N T S

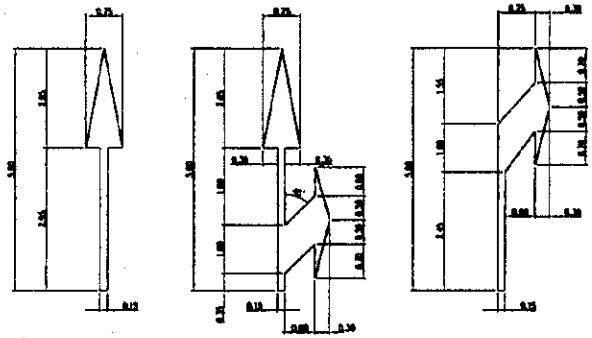


4A PO-03 ZEBRA TYPE (NON-SIGNALIZED CROSSING)
N T S



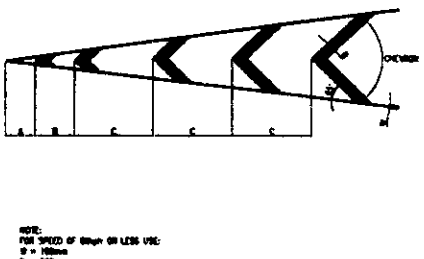
4B PO-03 CROSSWALKS (SIGNALIZED PEDESTRIAN CROSSING)
N T S

4 PO-03 PEDESTRIAN CROSSING MARKINGS
N T S

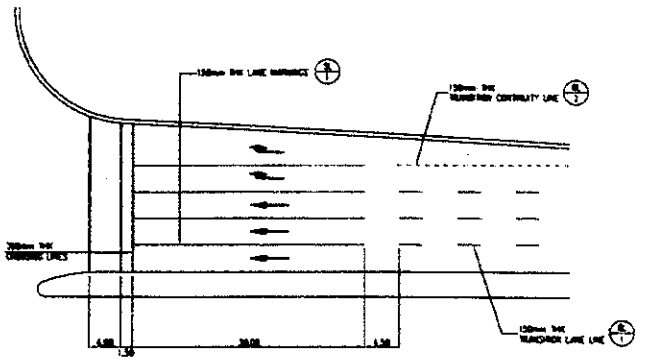


1. THROUGH ARROW 2. COMBINED ARROW 3. TURN ARROW

1 PO-03 STANDARD PAVEMENT ARROWS
SCALE: 1:50



3 PO-03 APPROACH MARKING TO TRAFFIC ISLAND
N T S



5 PO-03 DETAIL - TYPICAL LINE MARKING
N T S

CONSULTANT: transportex consulting; RICARDO M. YUZON, JR.; RENE R. SANTIAGO; University of the Philippines, National Center for Transportation Studies Foundation, Inc.	APPROVED BY: METROPOLITAN MANILA DEVELOPMENT AUTHORITY	PROJECT TITLE: SMALL SCALE TRAFFIC IMPROVEMENT MEASURES FOR METRO MANILA — PO-01 : CAMAYAN AVENUE/DR. A. SANTOS AVENUE — LOCATION : PARANAQUE	SCALE: AS SHOWN	SHEET CONTENTS: PAVEMENT MARKINGS AND DETAILS	SHEET NO. PO-03

Caloocan

Individual Information Sheets for the Traffic Bottleneck Points

CC-01 A Mabini / JP Rizal
CC-02 Rizal Avenue / 4th Avenue
CC-03 Baesa Road / Sta Quiteria

Name	**A Mabini / JP Rizal**	Code	**CC-01**
Sheet	**Summary of Observations**	LGU	**Caloocan**

Traffic Conditions

1) Heavy pedestrian movement, especially to and from Maypajo market, along J.P. Rizal.
2) Uncontrolled entry of pedicabs on Mabini St. coming from J.P. Rizal.
3) Jeepneys, when allowing passengers to board & alight, do so at middle lane, thus blocking through traffic.
4) Congested road section due to vendor occupancy of sidewalk.
5) Rampant parking along Mabini and J.P. Rizal.

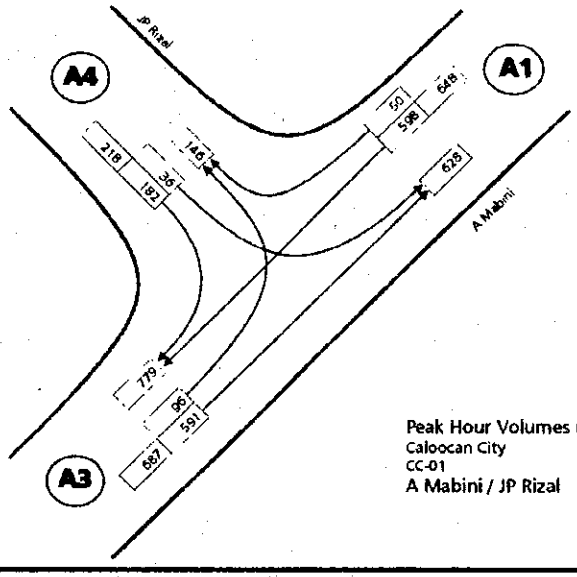
Physical Conditions

The intersection is a T-type, with its main road having four undivided lanes and measuring 12.20 meters average. The intersecting road measures 10.35 meters sufficient for three (3) lanes. Both roads are concrete paved in fair to good condition. Physical constraints observed on the intersection are as follows:

1) Constricted right lane of J.P. Rizal St. due to the presence of a traffic outpost, and a concrete walk/ramp, at the edge of the road pavement.
2) Both edges of the pavement of J.P. Rizal St. intersecting the main road, A. Mabini, have insufficient radius restricting further the turning movements at the intersection.
3) Not too far from the intersection, the other lane of J.P.Rizal St. is occupied by pedicab terminals.
4) No provision for sight distance since both corners of the intersection are fully occupied by building structures.

Signalization	None	**Pavement Markings**	None	**Peak**	06:00-07:00

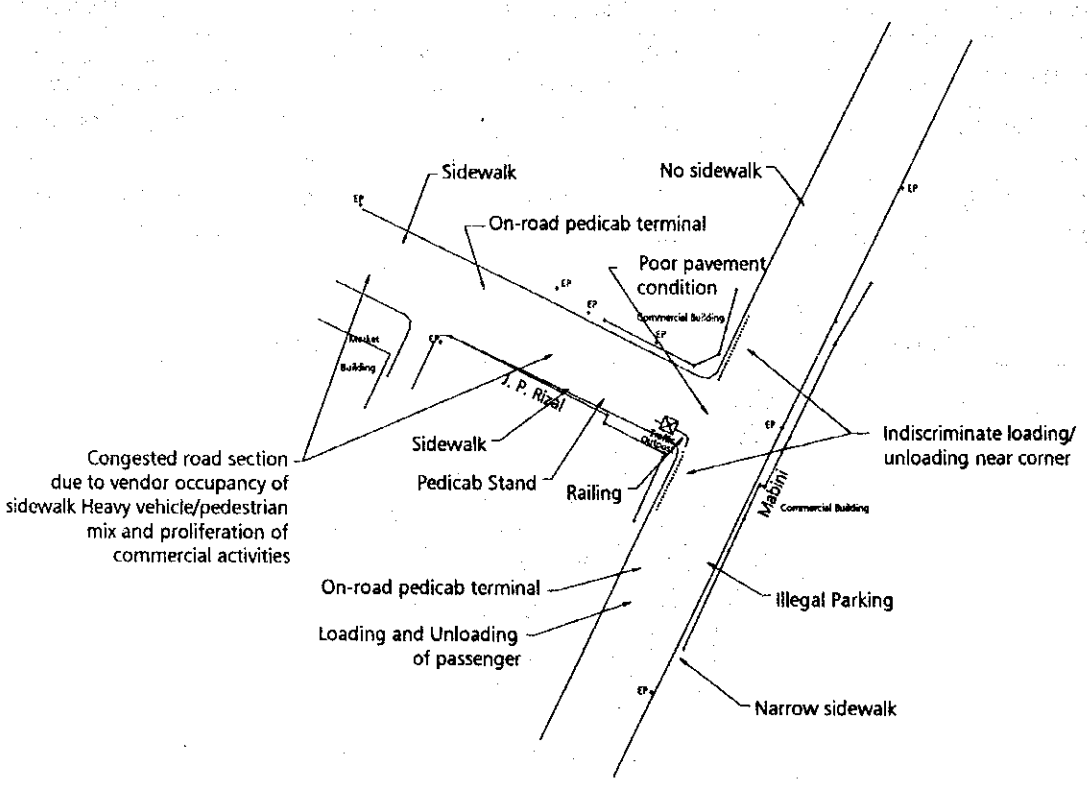
Approach	**Dimensions**	**Peak Hour Traffic Volumes (PCUs)**				**% Public Transport**	**Pedestrian Volume**
		Left	**Through**	**Right**	**Total**		
A1: A Mabini (N)	12.2 m	NA	598	50	**648**	**73.31%**	Moderate
A2: None	None	None	None	None	**None**	**None**	None
A3: A Mabini (S)	12.2 m	**96**	591	NA	**687**	**69.11%**	Moderate
A4: JP Rizal	10.35 m	36	NA	182	**218**	**48.73%**	Heavy
	Total	132	1189	232	**1553**		
	Passenger Flows				8,600		



Peak Hour Volumes (PCUs)
Caloocan City
CC-01
A Mabini / JP Rizal

Name	**A Mabini / JP Rizal**	Code	**CC-01**
Sheet	**Analysis**	LGU	**Caloocan**

1) The indiscriminate loading / unloading of public utility jeeneys near the corner blocks – are stream right turning traffic from J.P. Rizal, the second stream passing through A. Mabini – constrain the intersection and block other traffic flow movements.
2) The inter-mixing pedicabs on Mabini with the jeepneys - both of which have negative street behavior – compound the congestion.
3) Heavy pedestrian flow adds to the chaotic traffic flow along both A. Mabini and J.P. Rizal. The narrow sidewalks and proliferation of sidewalk vendors forces pedestrians to utilize the road instead.
4) Poor geometry, as well as physical obstruction at southern corner of intersection, inhibits vehicle turning movements.



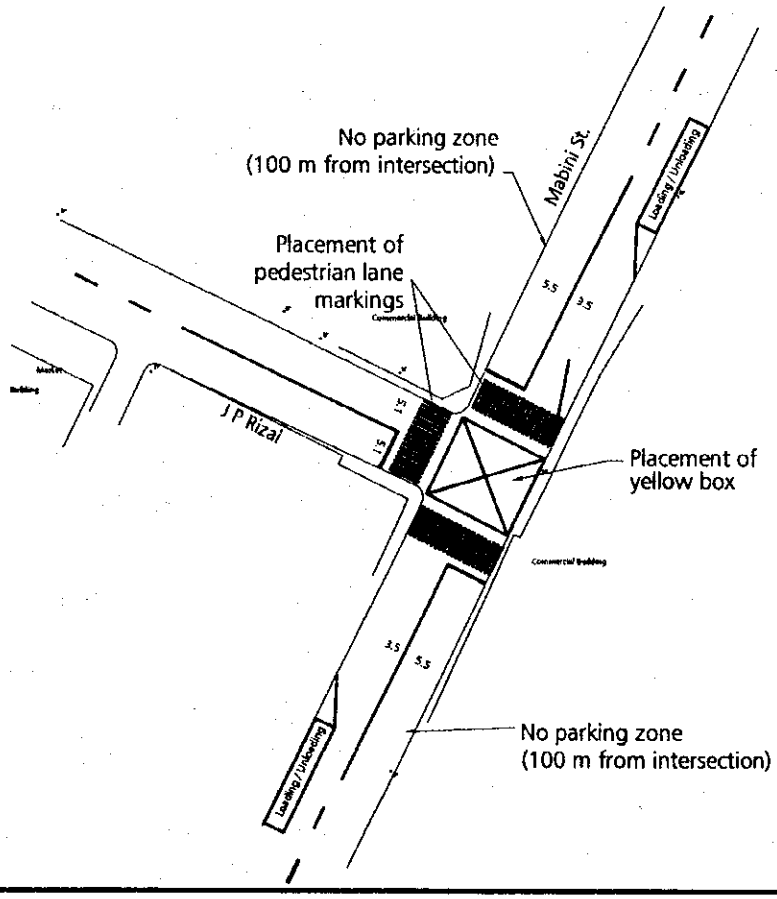
Name	**A Mabini / JP Rizal**	Code	**CC-01**
Sheet	**Proposed Improvements**	LGU	**Caloocan**

Engineering

1) Placement of pedestrian lane markings to control pedestrian movements across the roadways.
2) Install Yellow Box markings.
3) Designate loading /unloading areas, at least 20 m. (away) from the intersection's curbs.
4) Relocate pedicab terminal at A. Mabini at least 50 m. from intersection.
5) Rehabilitation of pavement surface of the intersection.
6) Remove or relocate traffic outpost at southern corner.

Enforcement

1) Clear sidewalk of vendors, and confine commercial activities in the market area (Police action).
2) Prohibit loading/unloading near the intersection and impose penalties for violation (traffic action).
3) Regulate pedicab movements – through education of pedicab drivers and outright ban along A. Mabini.
4) Pressure of traffic enforcers (2 to 3 pax) during peak hours needed to make enforcement effective.



LOCATION : CC-01: M.Mabini / JP Rizal (CALOOCAN)
(cost summary)

A. Pavement Markings	Unit	Quantity	Unit Cost	Total Cost
Longitudinal Lines				
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	112.50	10,125.00
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.	-	-	-
Transverse Lines				
1. Stop Lines (Solid Lines) white, width = 450mm	l.m.	16.50	337.50	5,568.75
2. Give Way (Yield Lines)	l.m.	-		-
3. Pedestrian Crossing Markings				
a.) Zebra Crossing (Non-Signalized), width = 300mm	l.m.	248.00	225.00	55,800.00
b.) Cross Walks (Signalized), width = 300mm	l.m.	-	-	-
Other Lines				
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.	90.00	112.50	10,125.00
Other Markings				
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.	109.00	150.00	16,350.00
5. Loading/Unloading Zone Lines , (w=200mm)	l.m.	-	-	-
Messages and Symbols				
1. Messages	pcs.	-	-	-
2. Symbols				
a.) Give Way Symbol	pcs.	-	-	-
b.) Pavement Arrows				
1.) Through Arrow = 1.21 sq.m. / each	pcs.	2.00	907.50	1,815.00
2.) Combined Arrow = 2.44 sq.m. / each	pcs.	-	-	-
3.) Turn Arrow = 1.46 sq.m. / each	pcs.	1.00	1,095.00	1,095.00
c.) Numerals				
B. Signs				
1. No Parking Sign	pcs.	2.00	2,716.00	5,432.00
2. No Loading/Unloading Sign	pcs.	2.00	3,850.00	7,700.00
3. Parking Area	pcs.	-	-	-
TOTAL				139,210.75
Contingencies, 5%				6,960.54
CMS, 10%				13,921.08
Miscellaneous (fees, permits, etc.), 5%				6,960.54
Govt. Supervision, 2%				2,784.22
TOTAL COST				**169,837.12**

Name	**Rizal Ave / 4th Avenue**	Code	**CC-02**
Sheet	**Summary of Observations**	LGU	**Caloocan**

Traffic Conditions

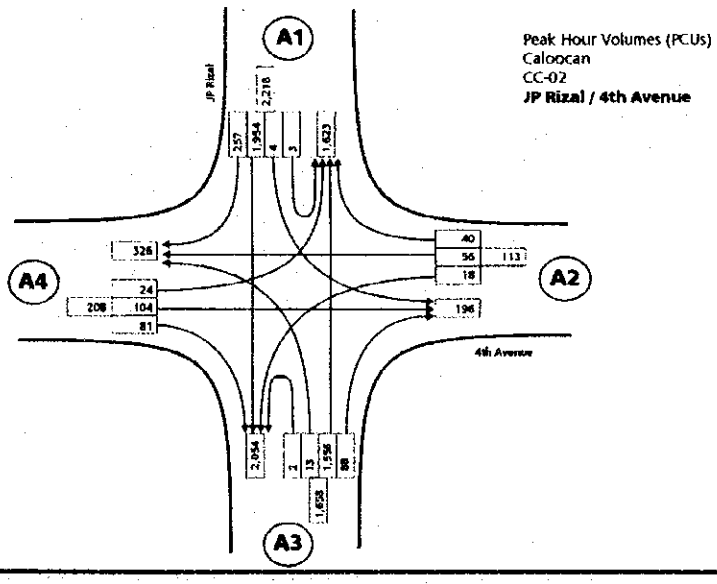
1) Signalized, with MMDA personnel manning the intersection
2) Low pedestrian volumes
3) All movements are allowed on 4th Avenue approaches
4) Rizal Avenue has several jeepney routes
5) Tricycles cross Rizal Avenue.
6) Rizal Avenue is congested having heavy volumes
7) Violation of "keep intersection open" or Yellow Box
8) Boarding and alighting within yellow box

Physical Conditions

1) Yellow Box
2) Fairly complete set of lane markings
3) Many guide and warning signs
4) Raised median (approximately 1 meter high) on Rizal Avenue, under the LRT line.
5) Signs indicating "No Left Turn", and "No U-turn" for traffic on Rizal,
6) Pedestrian signals are not aligned with the pedestrian walkway and path, and thus are not in the line-of-sight of the crossing pedestrians

Signalization	Signalized	**Pavement Markings**	Complete	**Peak**	15:00-16:00

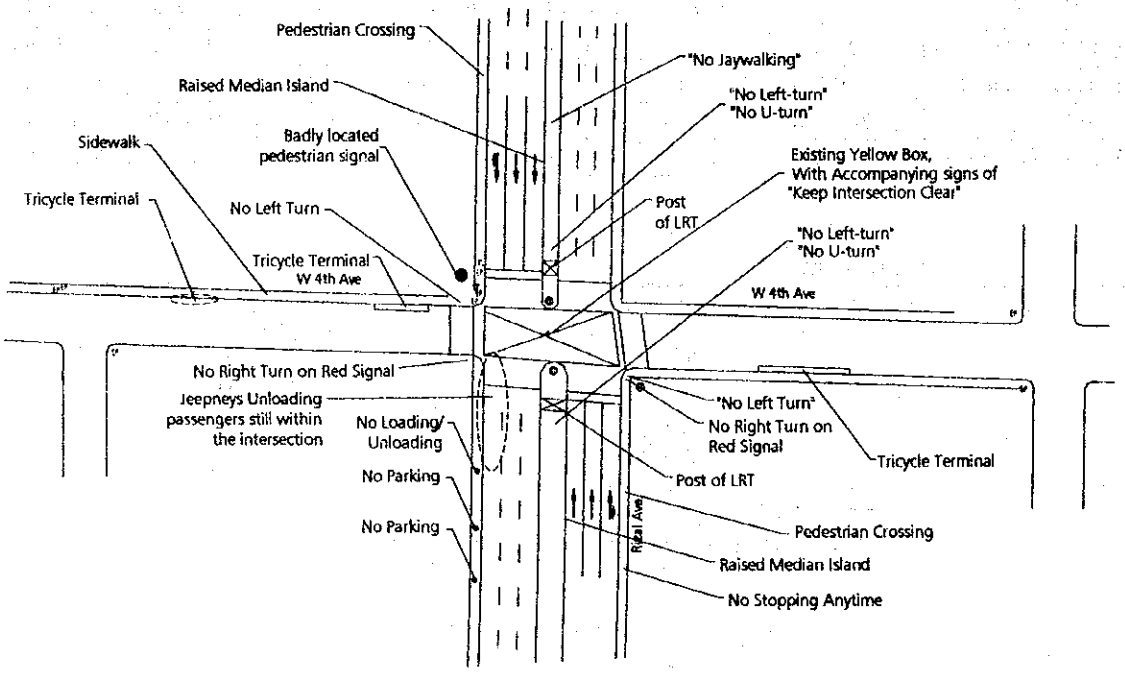
Approach	**Dimensions**	**Peak Hour Traffic Volumes (PCUs)**				**% Public Transport**	**Pedestrian Volume**
		Left	**Through**	**Right**	**Total**		
A1: JP Rizal (N)	22.1m	7	1,954	257	2,218	39.57%	Moderate
A2: 4th Avenue (E)	9.5m	18	56	40	113	8.94%	Moderate
A3: JP Rizal (S)	24.01m	15	1,556	88	1,658	42.68%	Moderate
A4: 4th Avenue (W)	9.5m	24	104	81	208	23.26%	Moderate
	Total	64	3,669	465	4,197		
	Passenger Flows						



Peak Hour Volumes (PCUs)
Caloocan
CC-02
JP Rizal / 4th Avenue

Name	**Rizal Ave / 4th Avenue**	Code	**CC-02**
Sheet	**Analysis**	LGU	**Caloocan**

1) Indiscriminate boarding/alighting by jeepney passengers at location immediately after the intersection, causing following vehicles to be stuck in the intersection. Sometimes passengers even get down when the jeepney is still within the yellow box



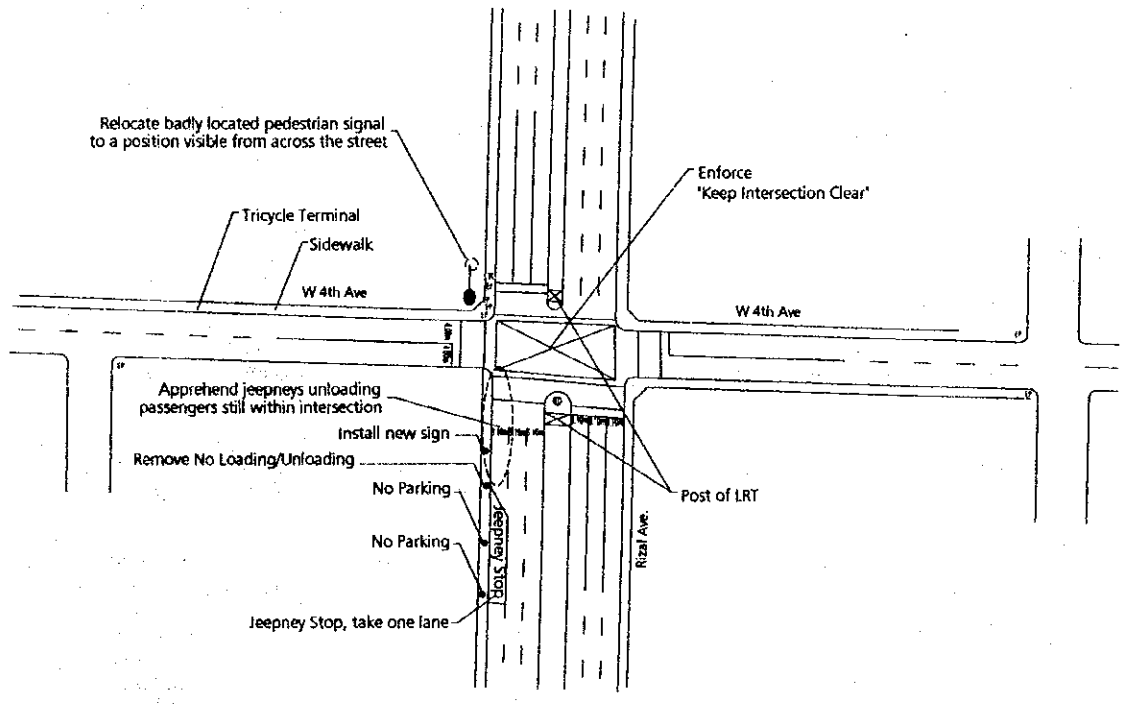
Name	**Rizal Ave / 4th Avenue**	Code	**CC-02**
Sheet	**Proposed Improvements**	LGU	**Caloocan**

Engineering

1) Relocate pedestrian signal into the line of sight of crossing pedestrians

Enforcement

1) Enforce Yellow Box / " Keep Intersection Clear"
2) Require jeepneys to properly pull to the side of the road before letting their passengers off; passengers who get off at areas not designated for boarding/alighting can be charged with jaywalking



LOCATION: CC-02 : Rizal Ave. / 4th Avenue (CALOOCAN)
(cost summary)

A. Pavement Markings:	Unit	Quantity	Unit Cost	Total Cost
Longitudinal Lines:				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length	l.m	-	45	-
b) Solid White Lines, 150 width	l.m	-	112.5	-
2. Lane Lines (100mm or 150mm width)				
a) Solid Lines, w = 150 mm	l.m	180.00	112.5	20,250.00
b) Broken Lines w= 150mm	l.m	280.00	45	12,600.00
3. Barrier Lines				
a) Unbroken Double Yellow Lines (100 or 150mm width)	l.m	-	-	-
b) Single Yellow Line with broken White Lines (100-150mm)	l.m	-	-	-
4. Edge Lines				
a) Pavement Edge (Shoulders)	l.m	-	-	-
b) Median Edge	l.m	-	-	-
5. Continuity Line	l.m	-	-	-
6. Transition Line	l.m	-	-	-
Transverse Lines:				
1. Stop Lines (Solid Lines) white, width = 450 mm	l.m	24	337.5	8,100.00
2. Give Way (Yield Lines)	l.m	-	-	-
3. Pedestrian Crossing Markings				
a) Zebra Crossing (Non-Signalized), width = 300mm	l.m	200	225	45,000.00
b) Cross Walks (Signalized), width = 300mm	l.m	-	225	-
Other Lines:				
1. Turn Lines (broken Lines)	l.m	-	-	-
2. Parking Bay Lines				
a) Parallel Bays, width = 100mm	l.m	-	75	-
b) Angle Bays	l.m	-	-	-
3. Painted Median Islands	l.m	-	-	-
4. BUS and PUJ Lane Markings	l.m	-	-	-
5. Channelized Junction Pavement Marking	l.m	-	-	-
6. Yellow Box Line, w= 150mm	l.m	64	112.5	7,200.00
Other Markings:				
1. Approach Markings to Islands and Obstructions	l.m	-	-	-
2. Chevron Markings	l.m	-	-	-
3. Curb Markings for Parking Restrictions	l.m	-	262.5	-
4. Loading/Unloading Line Zone (200mm)	l.m	-	150	-
Messages and Symbols:				
1) Messages	pcs	-	-	-
2) Symbols				
a) Give Way symbol	pcs	-	-	-
b) Pavement Arrows				
1) Through Arrow = 1.21 sq.m / each	pcs	-	907.5	-
2) Combined Arrow = 2.44 sq.m / each	pcs	-	1830	-
3) Turn Arrow = 1.46 sq. m / each	pcs	-	1095	-
c) Numerals	pcs	-	-	-
B. Signs				
1. No Parking Sign	Units	2	2716	5,432.00
2. No Loading/Unloading Sign	Units	2	3850	7,700.00
C. Other Works				
1. Removal of Pavement Markings	l.m.	764	75	57,300.00
2. Relocate pedestrian signal	pc.	1	1500	1,500.00
TOTAL				165,082.00
Contingencies, 5%				8,254.10
CMS, 10%				16,508.20
Miscellaneous (fees, permits, etc), 5%				8,254.10
Govt. Supervision, 2%				3,301.64
TOTAL COST				**201,400.04**

Name	**Baesa Road / Sta Quiteria**	Code	**CC-03**
Sheet	**Summary of Observations**	LGU	**Caloocan**

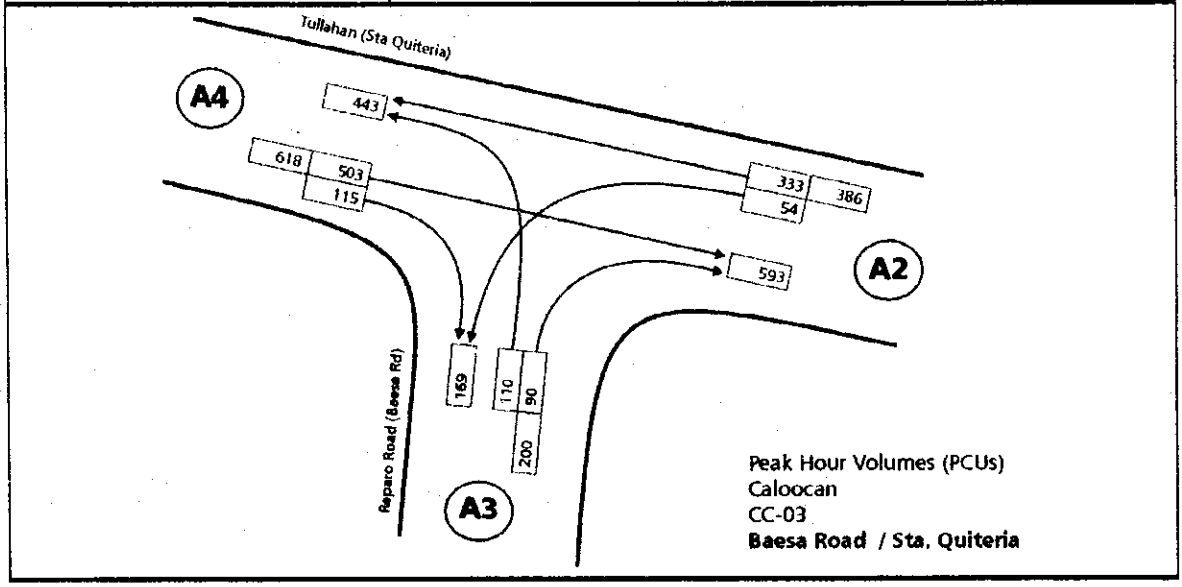
Traffic Conditions

1) Unsignalized intersection
2) Moderate pedestrian volume
3) Sta. Quiteria Road is a major jeepney route
4) Tricycle terminal fronting the mouth of Baesa Road

Physical Conditions

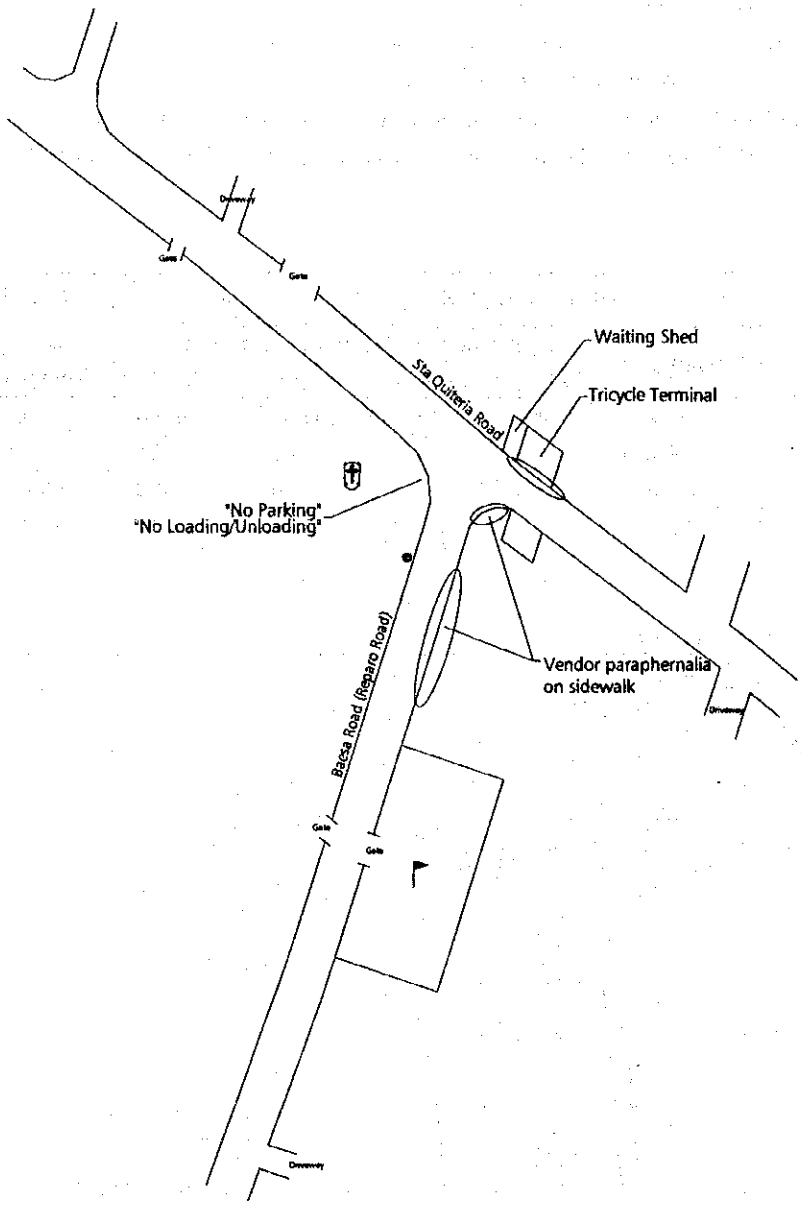
1) Only two lanes available for each approach
2) "No Parking" signs next to the church on Baesa Road approach
3) Few or virtually non-existent road markings.
4) Sta. Quiteria Road sloping downwards toward the Tandang Sora direction.
5) Available sidewalks occupied by vendor paraphernalia especially on Baesa Road

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: None	None	None	None	None	**None**	**None**	None
A2: Tullahan	8.7m	54	333	NA	**386**	**37.40%**	Light
A3: Reparo Rd	7.0m	110	NA	90	**593**	**36.70%**	Light
A4: Tullahan	8.7m	NA	503	115	**618**	**54.03%**	Light
	Total	164	836	205	**1,204**		
	Passenger Flows						



Name	**Baesa Road / Sta. Quiteria**	Code	**CC-03**
Sheet	**Analysis**	LGU	**Caloocan**

1) Vendor paraphernalia makes for narrow or unusable sidewalks on Baesa approach. This forces pedestrians on to the road and hampers smooth movement of vehicles at the approach.
2) Along Baesa, narrowness, exacerbated by indiscriminate roadside parking. The arrow approach along Baesa Road constricting traffic flow is exacerbated by indiscriminate roadside parking.



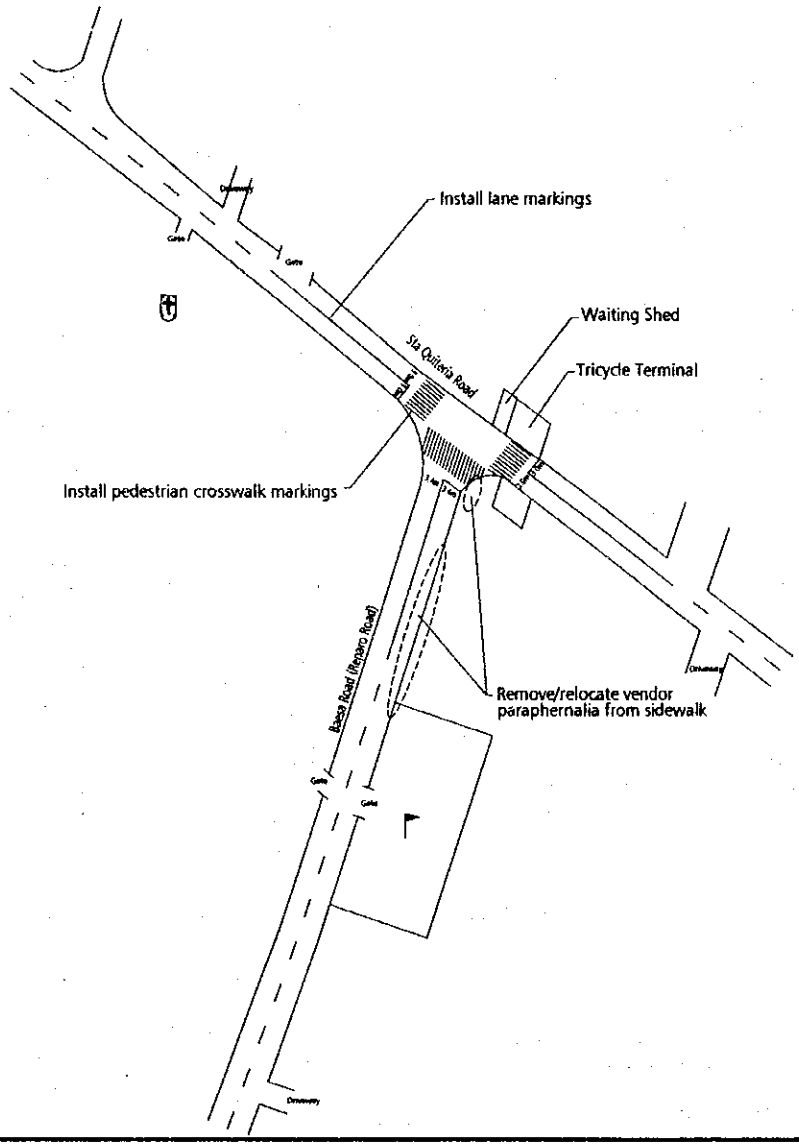
Name	**Baesa Road / Sta. Quiteria**	Code	**CC-03**
Sheet	**Proposed Improvements**	LGU	**Caloocan**

Engineering

1) Install lane markings
2) Install zebra markings for pedestrian crosswalk

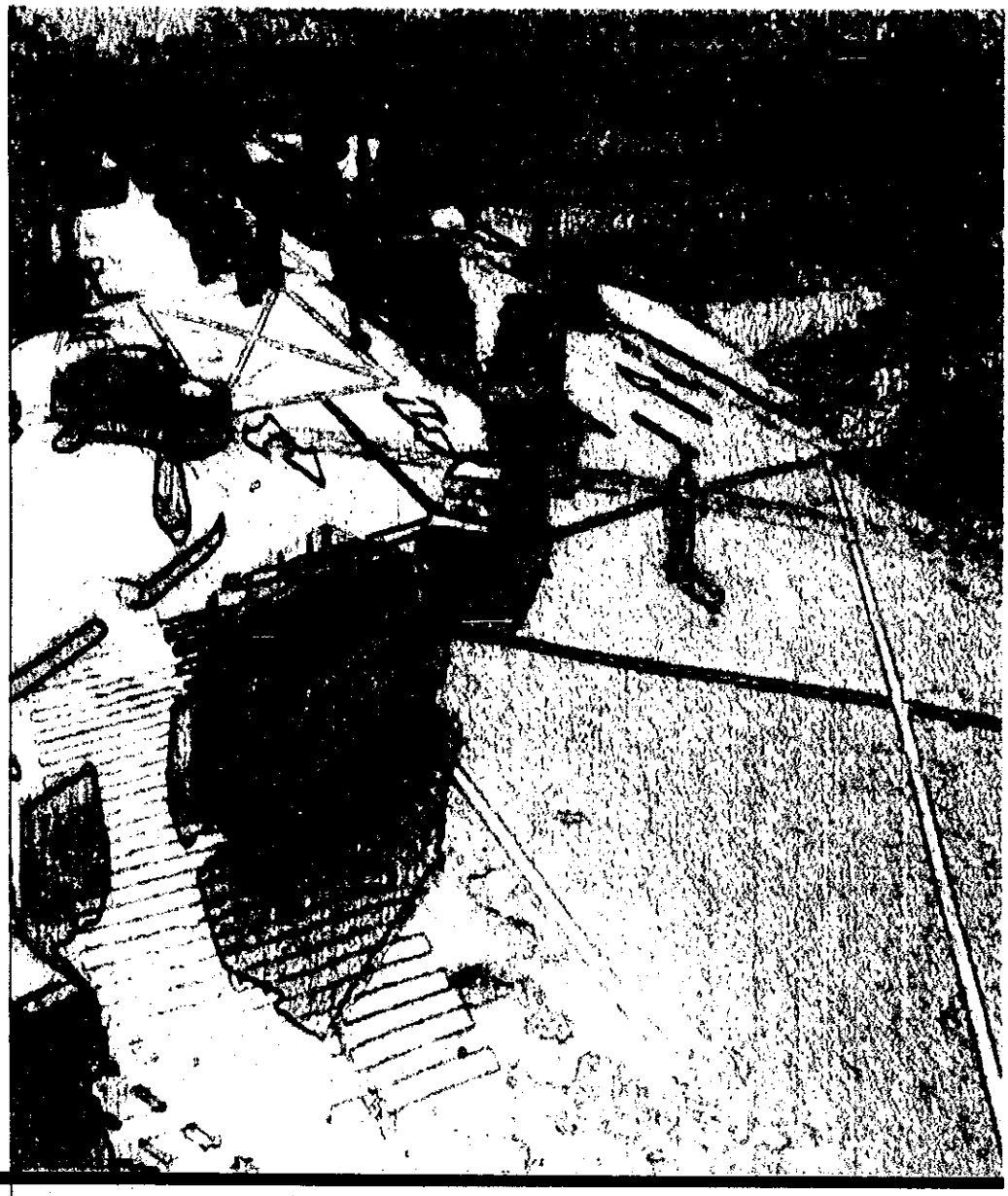
Enforcement

1) Remove obstructive vendor paraphernalia



LOCATION: CC-03 : Baesa Road / Sta. Quiteria (CALOOCAN)
(cost summary)

A. Pavement Markings:	Unit	Quantity	Unit Cost	Total Cost
Longitudinal Lines:				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length	l.m	81.00	45	3,645.00
b) Solid White Lines, 150 width	l.m	90.00	112.5	10,125.00
2. Lane Lines (100mm or 150mm width)				
a) Solid Lines, w = 150 mm	l.m	-	112.5	-
b) Broken Lines w= 150mm	l.m	-	45	-
3. Barrier Lines				
a) Unbroken Double Yellow Lines (100 or 150mm width)	l.m	-	-	-
b) Single Yellow Line with broken White Lines (100-150mm)	l.m	-	-	-
4. Edge Lines				
a) Pavement Edge (Shoulders)	l.m	-	-	-
b) Median Edge	l.m	-	-	-
5. Continuity Line	l.m	-	-	-
6. Transition Line	l.m	-	-	-
Transverse Lines:				
1. Stop Lines (Solid Lines) white, width = 450 mm	l.m	-	337.5	-
2. Give Way (Yield Lines)	l.m	-	-	-
3. Pedestrian Crossing Markings				
a) Zebra Crossing (Non-Signalized), width = 300mm	l.m	176	225	39,600.00
b) Cross Walks (Signalized), width = 300mm	l.m	-	225	-
Other Lines:				
1. Turn Lines (broken Lines)	l.m	-	-	-
2. Parking Bay Lines				
a) Parallel Bays, width = 100mm	l.m	-	75	-
b) Angle Bays	l.m	-	-	-
3. Painted Median Islands	l.m	-	-	-
4. BUS and PUJ Lane Markings	l.m	-	-	-
5. Channelized Junction Pavement Marking	l.m	-	-	-
6. Yellow Box Line, w= 150mm	l.m	-	112.5	-
Other Markings:				
1. Approach Markings to Islands and Obstructions	l.m	-	-	-
2. Chevron Markings	l.m	-	-	-
3. Curb Markings for Parking Restrictions	l.m	-	262.5	-
4. Loading/Unloading Line Zone (200mm)	l.m	-	150	-
Messages and Symbols:				
1) Messages	pcs	-	-	-
2) Symbols				
a) Give Way symbol	pcs	-	-	-
b) Pavement Arrows				
1) Through Arrow = 1.21 sq.m / each	pcs	-	907.5	-
2) Combined Arrow = 2.44 sq.m / each	pcs	-	1830	-
3) Turn Arrow = 1.46 sq. m / each	pcs	-	1095	-
c) Numerals	pcs	-	-	-
B. Signs				
1. Remove / Relocate vendor paraphernalia from sidewalk	l.s.	1	3000	3,000.00
TOTAL				56,370.00
Contingencies, 5%				2,818.50
CMS, 10%				5,637.00
Miscellaneous (fees, permits, etc), 5%				2,818.50
Govt. Supervision, 2%				1,127.40
TOTAL COST				**68,771.40**



Las Piñas

Individual Information Sheets for the Traffic Bottleneck Points

LP-01 Marcos Alvarez Rd / Alabang-Zapote Road
LP-02 Zapote Junction / Alabang-Zapote Road
LP-03 CV Starr Avenue / Alabang-Zapote Road
LP-04 CAA Road / Alabang-Zapote Road
LP-05 Pilar Road / Alabang-Zapote Road

Name	**Marcos Alvarez / Alabang-Zapote Rd**	Code	**LP-01**
Sheet	**Summary of Observations**	LGU	**Las Piñas**

Traffic Conditions

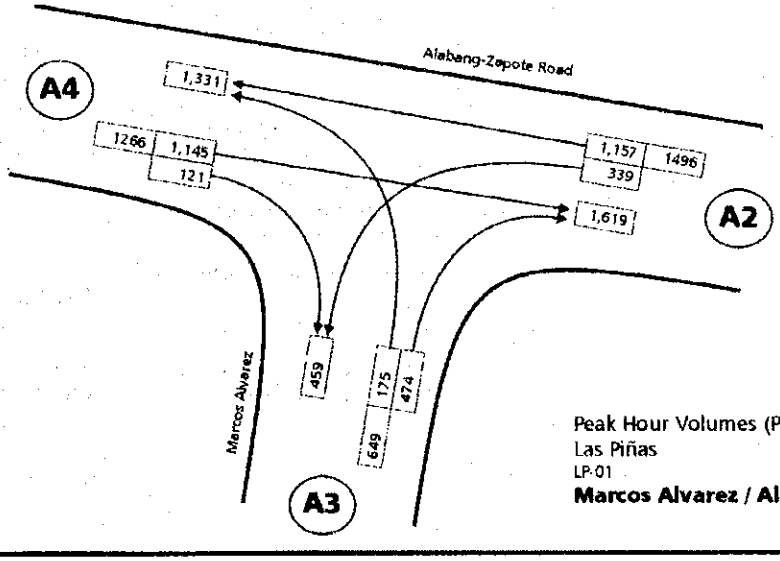
1) Narrow sidewalks along Alabang-Zapote Road and along Marcos Alvarez Road.
2) Presence of ambulant vendors or narrow sidewalk constrict further pedestrian flow.
3) Pedestrian barriers present.
4) Loading / unloading by jeepneys and buses occur at the junction, thereby exacerbating congestion.

Physical Conditions

1) A T- type intersection with its main road having four undivided lanes and its leg having three lanes, measuring 14.50 meters and 10.83 meters in width, respectively. The main road, Alabang Zapote Road, has concrete paved surface in fair to good condition; whereas, Marcos Alvarez is overlain with asphalt concrete surfacing, in fair condition and it is provided with right turn lane.
2) Physical constraints identified at the intersection are as follows:
   a. While the right side corner of the intersection has adequate turning radius, the other corner, on the other hand, lacks adequate curb radius.
   b. Along Alabang-Zapote Road, approaching the intersection towards the East, traffic movement is slightly affected by an unrestored trench at the edge of the pavement.

Signalization	Signalized	**Pavement Markings**	Needs replacement	**Peak**	08:00-09:00

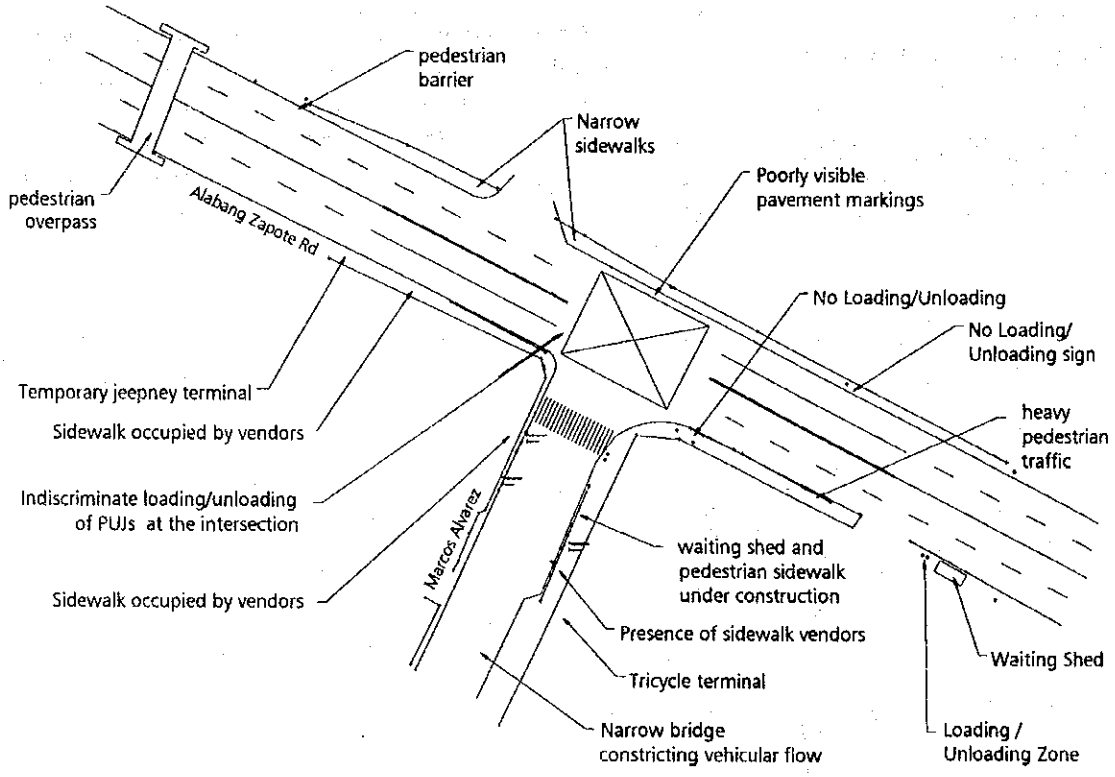
Approach	**Dimensions**	**Peak Hour Traffic Volumes (PCUs)**				**% Public Transport**	**Pedestrian Volume**
		Left	**Through**	**Right**	**Total**		
A1: None	None	None	None	None	**None**	**None**	None
A2: Alabang-Zapote	14.5m	339	1157	NA	**1496**	**42.69%**	Heavy
A3: M Alvarez	10.83 m	175	NA	474	**649**	**33.40%**	Heavy
A4: Alabang-Zapote	14.5 m	NA	1145	121	**1266**	**49.87%**	Heavy
Total		514	2,302	595	**3,411**		
Passenger Flows					14,000		



Peak Hour Volumes (PCUs)
Las Piñas
LP-01
Marcos Alvarez / Alabang-Zapote Road

Name	**Marcos Alvarez / Alabang-Zapote Rd**	Code	**LP-01**
Sheet	**Analysis**	LGU	**Las Piñas**

1) While the intersection is signalized, operational control usually reverts to manual since the signal cycle time is not optimized, and enforcers prefer to override.
2) Pedestrian flows, particularly along the southern side of the western leg of Alabang-Zapote Road (A4) are severely hampered by obstructing sidewalk vendors. The opposite side is very narrow to accommodate pedestrian flows.
3) Jeepneys and tricycles terminating at Marcos Alvarez hampers flow of through traffic, particularly during peak periods.
4) Along Alabang-Zapote Road, jeepneys and buses load/unload passengers very near the intersection, adding to the congestion.



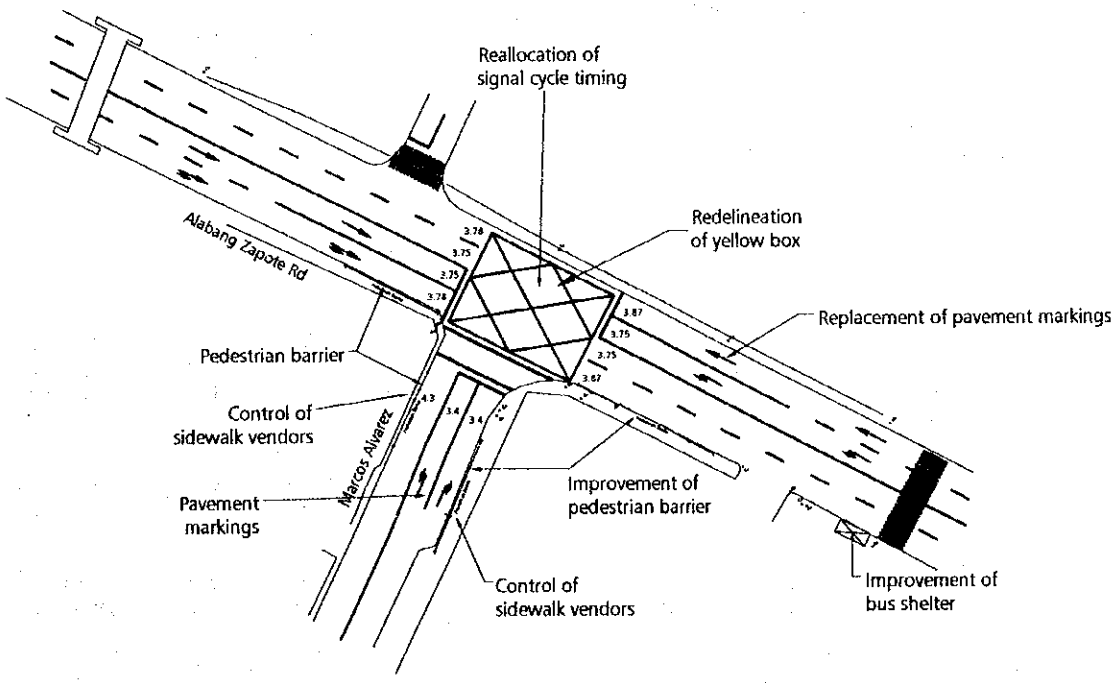
Name	**Marcos Alvarez / Alabang-Zapote Rd**	Code	**LP-01**
Sheet	**Proposed Improvements**	LGU	**Las Piñas**

Engineering

1) Application of new lane markings, stop lines, "yellow box", turn arrows and pedestrian crossings.
2) Recalculate signal timing, and reprogram the controller (TEC action).
3) Improve pedestrian barriers, simultaneously with sidewalks paving.
4) Improve waiting shed along Alabang-Zapote Road.
5) Widen sidewalks by reclaiming easements

Enforcement

1) Remove sidewalk vendors, particularly along south-west corner.
2) Enforce tricycle ban along national highway (Alabang-Zapote Road).
3) Prohibit loading / unloading at junction; penalize violators.
4) Relocate tricycle terminal, further into Marcos Alvarez, preferably before the bridge.
5) Find another terminal for jeepneys, instead of Marcos Alvarez, or a less congested turning point.



LOCATION: LP-01 Marcos Alvarez / Alabang-Zapote Road (LAS PINAS)
(cost summary)

A. Pavement Markings	Unit	Quantity	Unit Cost	Total Cost
Longitudinal Lines:				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length	l.m	200	45	9,000.00
b) Solid White Lines, 200 width	l.m	200	150	30,000.00
2. Lane Lines (100mm or 150mm width)				
a) Solid Lines, w = 150 mm	l.m	190	112.5	21,375.00
b) Broken Lines w= 150mm	l.m	340	45	15,300.00
3. Barrier Lines				
a) Unbroken Double Yellow Lines (100 or 150mm width)	l.m	-	-	-
b) Single Yellow Line with broken White Lines (100-150mm)	l.m	-	-	-
4. Edge Lines				
a) Pavement Edge (Shoulders)	l.m	-	-	-
b) Median Edge	l.m	-	-	-
5. Continuity Line	l.m	-	-	-
6. Transition Line	l.m	-	-	-
Transverse Lines:				
1. Stop Lines (Solid Lines) white, width = 450 mm	l.m	54	337.5	18,225.00
2. Give Way (Yield Lines)	l.m	-	-	-
3. Pedestrian Crossing Markings				
a) Zebra Crossing (Non-Signalized), width = 300mm	l.m	156	225	35,100.00
b) Cross Walks (Signalized), width = 300mm	l.m	0	225	-
Other Lines:				
1. Turn Lines (broken Lines)	l.m	-	-	-
2. Parking Bay Lines				
a) Parallel Bays, width = 100mm	l.m	0	75	-
b) Angle Bays	l.m	-	-	-
3. Painted Median Islands	l.m	-	-	-
4. BUS and PUJ Lane Markings	l.m	-	-	-
5. Channelized Junction Pavement Marking	l.m	-	-	-
6. Yellow Box Line, w= 150mm	l.m	146	112.5	16,425.00
Other Markings:				
1. Approach Markings to Islands and Obstructions	l.m	-	-	-
2. Chevron Markings	l.m	-	-	-
3. Curb Markings for Parking Restrictions	l.m	0	262.5	-
4. Loading/Unloading Line Zone (200mm)	l.m	0	150	-
Messages and Symbols:				
1) Messages	pcs	-	-	-
2) Symbols				
a) Give Way symbol	pcs	-	-	-
b) Pavement Arrows				
1) Through Arrow = 1.21 sq.m / each	pcs	4	907.5	3,630.00
2) Combined Arrow = 2.44 sq.m / each	pcs	2	1830	3,660.00
3) Turn Arrow = 1.46 sq. m / each	pcs	4	1095	4,380.00
c) Numerals	pcs	-	-	-
B. Signs				
1. No Parking Sign	Units	2	2716	5,432.00
2. Loading/Unloading Sign	Units	2	3850	7,700.00
C. Other Works				
1. Improvement of Bus Shelter	L.S.	1	30000	30,000.00
2. Installation of Pedestrian Railing (Steel Railing) 6m/unit	unit	14	7500	105,000.00
TOTAL				305,227.00
Contingencies, 5%				15,261.35
CMS, 10%				30,522.70
Miscellaneous (fees, permits, etc), 5%				15,261.35
Govt. Supervision, 2%				6,104.54
TOTAL COST				**372,376.94**

Name	**Zapote Junction / Alabang-Zapote Road / Quirino Avenue**	Code	**LP-02**
Sheet	**Summary of Observations**	LGU	**Las Piñas**

Traffic Conditions

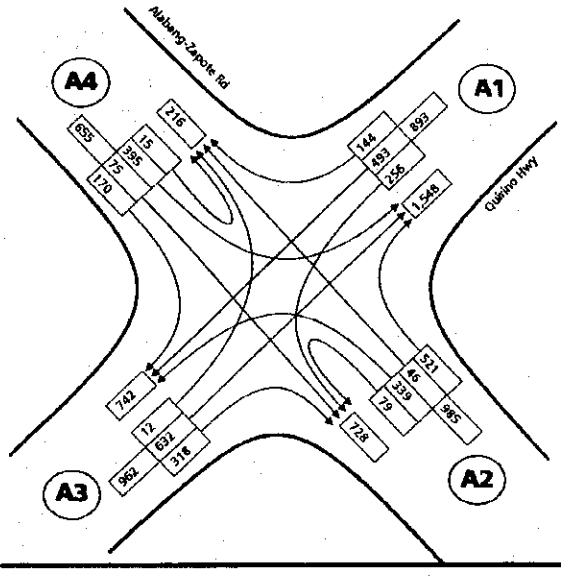
1) Vehicles use Tramo area and other areas approaching the junction as parking spaces.
2) Presence of public transport (jeepney/tricycle) terminals near the junction causes congestion
3) Congestion at junction prevalent during market day at Zapote Kabila.
4) Uncontrolled loading and unloading of jeepneys and buses coming from the Baclaran Area / Coastal Road flyover.
5) Bus loading/unloading, particularly at JP Rizal, obstructs flow of through traffic.
6) Public transport vehicles load/unload passengers very near junction. Some routes also terminate at Zapote and use the portion under the flyover as turnaround / terminal.

Physical Conditions

1) Identified TBP is at the junction of two major arterial roads, with local road (Tramo / Fruto Santos Ave) feeding into the junction from the north.
2) Potholes along Alabang-Zapote Road (in front of Cuevas Bldg) hamper smooth flow of vehicles.
3) Presence of traffic generating land uses such as retail shops and institutional centers (barangay hall) at the approach to the junction.

Signalization	None	**Pavement Markings**	With markings	**Peak**	08:00-09:00

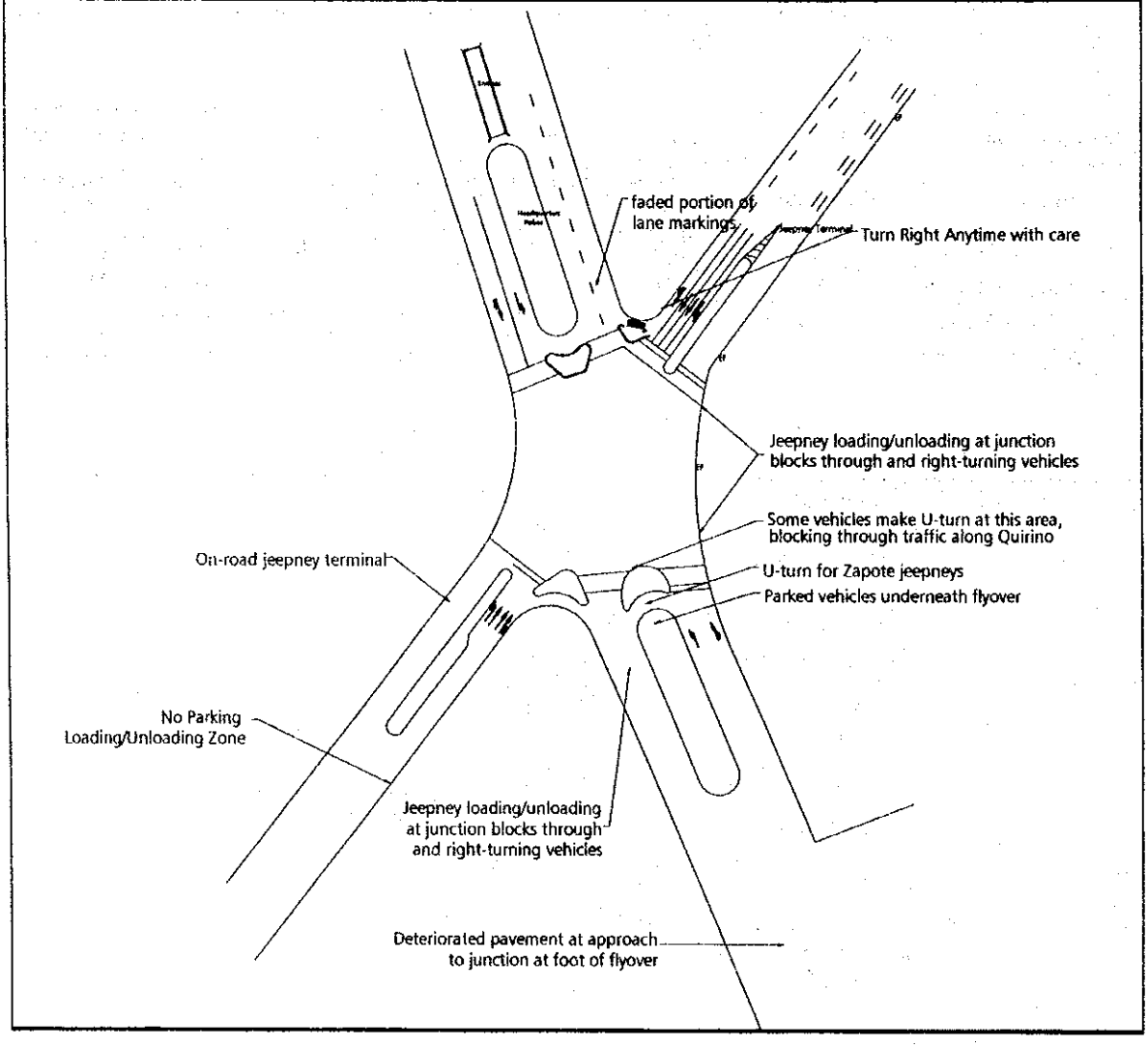
Approach	**Dimensions**	**Peak Hour Traffic Volumes (PCUs)**				**% Public Transport**	**Pedestrian Volume**
		Left	**Through**	**Right**	**Total**		
A1: Quirino Ave (NE)	11.55m	256	493	144	**893**	**58.73%**	Moderate
A2: Alabang Zapote	22.00m	418	46	521	**985**	**57.58%**	Moderate
A3: Quirino Ave (SW)	11.50m	12	632	318	**962**	**40.16%**	Moderate
A4: Alabang Zapote	22.00m	410	75	170	**655**	**14.60%**	Moderate
Total		1,096	2,072	1,153	**4,320**		
Passenger Flows							



Peak Hour Volumes (PCUs)
Las Piñas
LP-02
Alabang - Zapote Road / Quirino Highway

Name	**Zapote Junction / Alabang-Zapote Road / Quirino Avenue**	Code	**LP-02**
Sheet	**Analysis**	LGU	**Las Piñas**

1) Quirino Ave – Alabang-Zapote Road junction is a major turnaround point for jeepneys which approach the junction from Las Piñas, as well as jeepneys approaching junction from Bacoor, Cavite.
2) Due to heavy vehicle volumes and high levels of congestion, as well as the function of the intersecting roads in the regional transport network, grade separated facilities have been constructed in the last few years.
3) Even though the junction is grade separated, the at-grade sections and the approaches to flyover generate a high level of commuter and pedestrian traffic due to its commercial land uses.
4) High turning volumes, particularly from Alabang-Zapote Road, presents conflicts for Quirino Ave through traffic.
5) resence of parked vehicles at junction approaches further constricts available roadway.



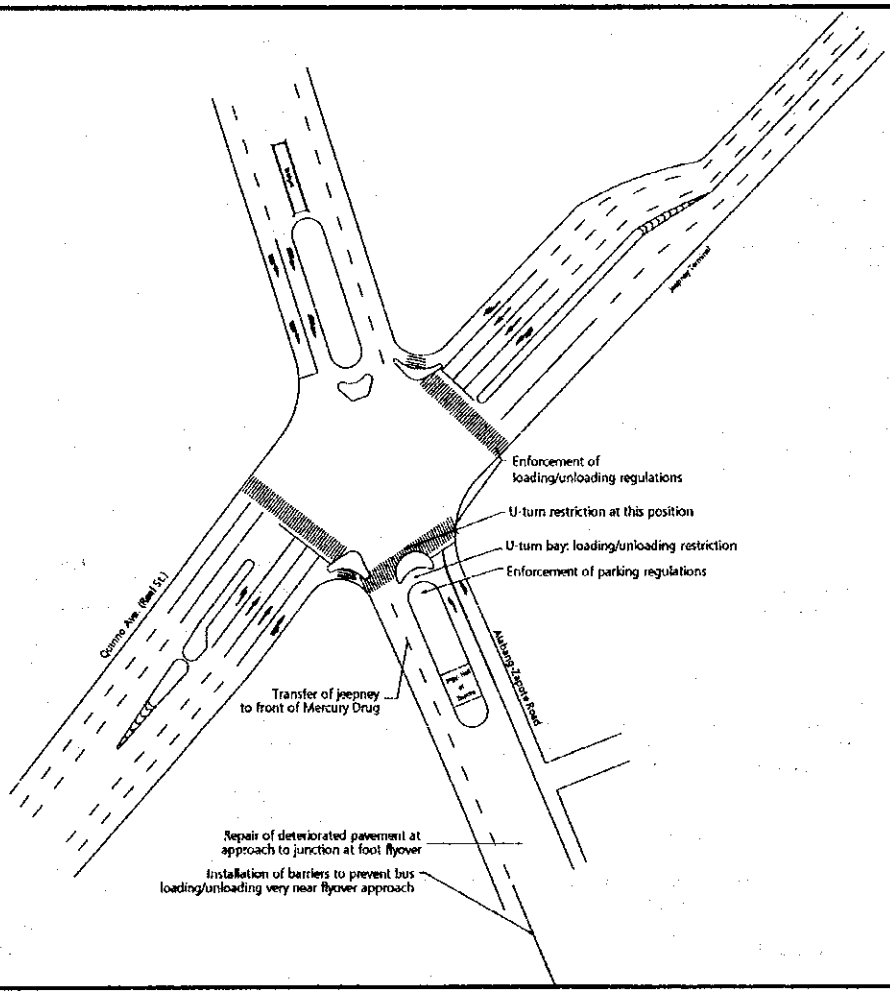
Name	**Zapote Junction / Alabang-Zapote Road / Quirino Avenue**	Code	**LP-02**
Sheet	**Proposed Improvements**	LGU	**Las Piñas**

Engineering

1) Transfer of loading/unloading area along Alabang-Zapote Road (Alabang-bound) from Jollibee to front of Mercury Drug.
2) Repair of deteriorated pavement at approach to flyover (bound for Coastal Road)
3) Transfer of bus loading/unloading at foot of flyover (Alabang-bound) to area near Pamplona Clinic.
4) Transfer of bus loading/unloading area at approach to flyover to front of Cuevas Bldg, to avoid public transport vehicles blocking vehicles exiting from Tramo Road.
5) Installation of barrier at approach to flyover (Coastal Road-bound) to force buses to load/unload passengers prior to reaching Tramo Road.

Enforcement

1) Regulation of parking of vehicles, in line with existing provisions of city ordinances.
2) Establishment of mechanisms for proper traffic coordination with Bacoor enforcers (in charge of Zapote Kabila).
3) Strict enforcement of loading/unloading regulations.



LOCATION: LP-02 Zapote Junction / Alabang-Zapote Road / Quirino Avenue (LAS PINAS)
(cost summary)

A. Pavement Markings	Unit	Quantity	Unit Cost	Total Cost
Longitudinal Lines:				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length	l.m	0	45	-
b) Solid White Lines, 200 width	l.m	0	150	-
2. Lane Lines (100mm or 150mm width)				-
a) Solid Lines, w = 150 mm	l.m	0	112.5	-
b) Broken Lines w= 150mm	l.m	0	45	-
3. Barrier Lines				
a) Unbroken Double Yellow Lines (100 or 150mm width)	l.m	-	-	-
b) Single Yellow Line with broken White Lines (100-150mm)	l.m	-	-	-
4. Edge Lines				
a) Pavement Edge (Shoulders)	l.m	-	-	-
b) Median Edge	l.m	-	-	-
5. Continuity Line	l.m	-	-	-
6. Transition Line	l.m	-	-	-
Transverse Lines:				
1. Stop Lines (Solid Lines) white, width = 450 mm	l.m	0	337.5	-
2. Give Way (Yield Lines)	l.m	-	-	-
3. Pedestrian Crossing Markings				
a) Zebra Crossing (Non-Signalized), width = 300mm	l.m	0	225	-
b) Cross Walks (Signalized), width = 300mm	l.m	0	225	-
Other Lines:				
1. Turn Lines (broken Lines)	l.m	-	-	-
2. Parking Bay Lines				
a) Parallel Bays, width = 100mm	l.m	0	75	-
b) Angle Bays	l.m	-	-	-
3. Painted Median Islands	l.m	-	-	-
4. BUS and PUJ Lane Markings	l.m	-	-	-
5. Channelized Junction Pavement Marking	l.m	-	-	-
6. Yellow Box Line, w= 150mm	l.m	0	112.5	-
Other Markings:				
1. Approach Markings to Islands and Obstructions	l.m	-	-	-
2. Chevron Markings	l.m	-	-	-
3. Curb Markings for Parking Restrictions	l.m	0	262.5	-
4. Loading/Unloading Line Zone (200mm)	l.m	0	150	-
Messages and Symbols:				
1) Messages	pcs	-	-	-
2) Symbols				
a) Give Way symbol	pcs	-	-	-
b) Pavement Arrows				
1) Through Arrow = 1.21 sq.m / each	pcs	0	907.5	-
2) Combined Arrow = 2.44 sq.m / each	pcs	0	1830	-
3) Turn Arrow = 1.46 sq. m / each	pcs	0	1095	-
c) Numerals	pcs	-	-	-
B. Signs				
1. No U - Turn Sign	Units	1	2716	2,716.00
2. No Loading/Unloading Sign	Units	1	3850	3,850.00
3. Loading/Unloading Sign	Units	3	3850	11,550.00
2. Parking Area Sign	Units	1	3850	3,850.00
C. Other Works				
1. Improvement of Bus Shelter	L.S.	1	30000	30,000.00
2. Installation of Pedestrian Railing (Steel Railing) 6m/unit	unit	5	7500	37,500.00
3. Repair of Deteriorated Pavement at approach of flyover including base preparation, and sub-base course	sq.m.	40	700	28,000.00
TOTAL				117,466.00
Contingencies, 5%				5,873.30
CMS, 10%				11,746.60
Miscellaneous (fees, permits, etc), 5%				5,873.30
Govt. Supervision, 2%				2,349.32
TOTAL COST				**143,308.52**

Name	**CV Starr Ave / Alabang-Zapote Road**	Code	**LP-03**
Sheet	**Summary of Observations**	LGU	**Las Piñas**

Traffic Conditions

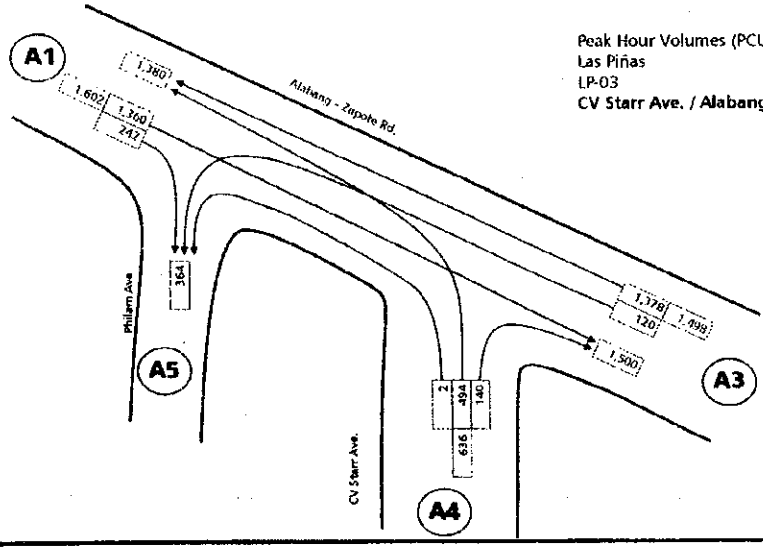
1) Presence of public high school near junction generates heavy pedestrian crossing volumes. Several thousand students get dismissed from classes for each dismissal period, with three dismissal times each school day.
2) Pedestrian barriers along center of Alabang-Zapote Road no longer present to control pedestrians crossing.
3) Uncontrolled passenger loading/unloading particularly during school dismissal periods. Queuing jeepneys obstruct flow of through vehicles, as well as vehicles from direction of Zapote turning right to PhilAm Ave.
4) CV Starr Avenue converted to one way leading to Alabang-Zapote Road. Parallel PhilAm Avenue also one-way from Alabang-Zapote Road, to form tandem one-way streets.
5) Parking area in front of Fernando's Supermart poses difficulty for one-way operation of CV Starr and PhilAm Avenues
6) Uncontrolled turning movements at junction of Alabang-Zapote Road and Gemini Street (west of CV Starr Ave) also poses problems, particularly with regard to road safety.

Physical Conditions

1) Narrow sidewalks and pedestrian barriers along Fernando's Supermart portion of Alabang-Zapote Road do not facilitate pedestrian flows. Some pedestrians just disregard and walk along carriageway on roadway side of barrier.
2) Presence of billboards at center of CV Starr Avenue blocks pedestrian crossing.
3) No loading/unloading bays along Alabang-Zapote Road. Public transport vehicles commonly block through flow of vehicles.

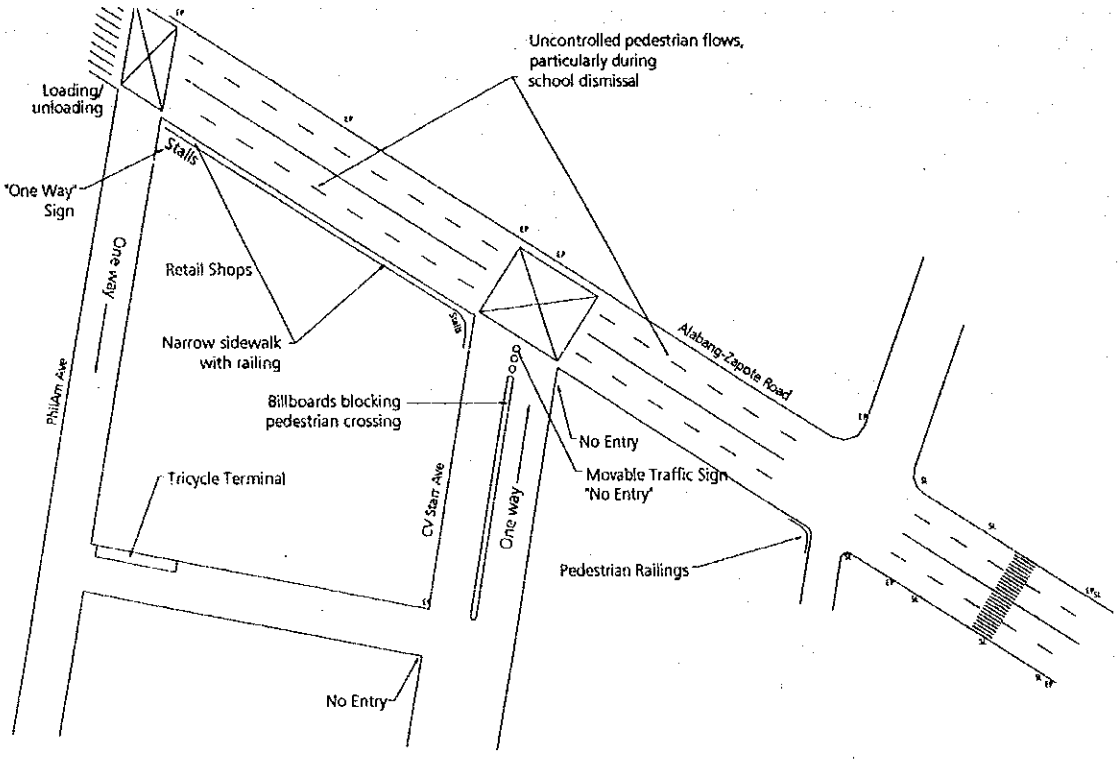
Signalization	None	**Pavement Markings**	With markings	**Peak**	08:00-09:00

Approach	**Dimensions**	**Peak Hour Traffic Volumes (PCUs)**				**% Public Transport**	**Pedestrian Volume**
		Left	**Through**	**Right**	**Total**		
A1: Alabang Zapote	15.6m	NA	1,360	242	**1,602**	**39.65%**	Moderate
A2: None	None	None	None	None	**None**	**None**	None
A3: Alabang Zapote	15.6m	120	1,378	NA	**1,498**	**46.10%**	Moderate
A4: CV Starr Ave.	15.6m	496	NA	140	**636**	**6.61%**	Light
A5: Philam Ave							
	Total	616	2,738	382	**3,736**		
	Passenger Flows						



Name	**CV Starr Ave / Alabang-Zapote Road**	Code	**LP-03**
Sheet	**Analysis**	LGU	**Las Piñas**

1) Junction control has been eased with designation of CV Starr Ave and PhilAm Ave as one-way streets.
2) Pedestrian flow, particularly students being dismissed from school, hampers vehicular flows. Narrow sidewalks, particularly around parking area of Fernando's Supermart, aggravates traffic situation.
3) Control of pedestrian flow is key to increasing capacity of junction. Makeshift string barriers used to be present along center of Alabang-Zapote Road, but has since been removed, due to road safety considerations.



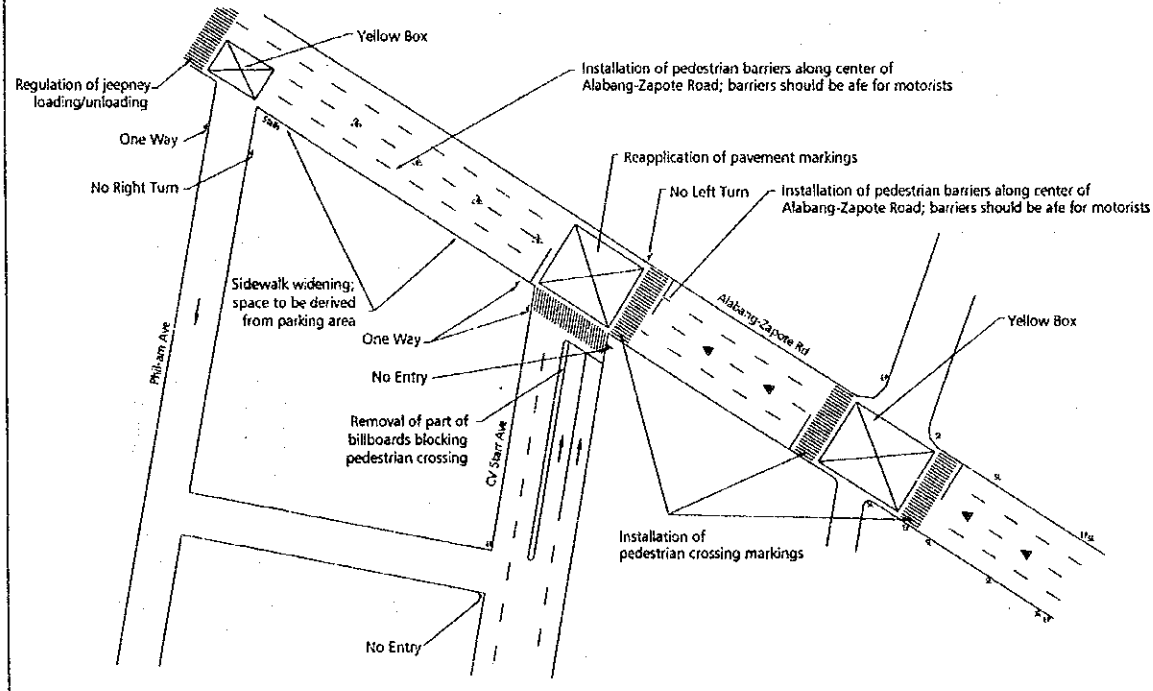
Name	**CV Starr Ave / Alabang-Zapote Road**	Code	**LP-03**
Sheet	**Proposed Improvements**	LGU	**Las Piñas**

Engineering

1) Installation of pedestrian barriers along center of Alabang-Zapote road in order to control pedestrian flows / crossings. Design of pedestrian barrier should take into consideration road safety along Alabang-Zapote Road.
2) Installation of "No Left Turn", "No Right Turn", "One Way", and "No Entry" signs visible from either approach of Alabang-Zapote Road to CV Starr Avenue and to PhilAm Avenue.
3) Designation of loading/unloading zone near McDonald's.

Enforcement

1) Conduct of education campaign with public high school students about benefits of orderly pedestrian flows.
2) Strict enforcement of loading/unloading regulations, as well as anti-jaywalking regulations
3) Banning of U-turns along Alabang-Zapote Road.



LOCATION: LP-03 CV Starr Ave. / Alabang-Zapote Road (LAS PINAS)
(cost summary)

A. Pavement Markings:	Unit	Quantity	Unit Cost	Total Cost
Longitudinal Lines:				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length	l.m	0	45	-
b) Solid White Lines, 200 width	l.m	0	150	-
2. Lane Lines (100mm or 150mm width)				
a) Solid Lines, w = 150 mm	l.m	0	112.5	-
b) Broken Lines w= 150mm	l.m	0	45	-
3. Barrier Lines				
a) Unbroken Double Yellow Lines (100 or 150mm width)	l.m	-	-	-
b) Single Yellow Line with broken White Lines (100-150mm)	l.m	-	-	-
4. Edge Lines				
a) Pavement Edge (Shoulders)	l.m	-	-	-
b) Median Edge	l.m	-	-	-
5. Continuity Line	l.m	-	-	-
6. Transition Line	l.m	-	-	-
Transverse Lines:				
1. Stop Lines (Solid Lines) white, width = 450 mm	l.m	0	337.5	-
2. Give Way (Yield Lines)	l.m	-	-	-
3. Pedestrian Crossing Markings				
a) Zebra Crossing (Non-Signalized), width = 300mm	l.m	144	225	32,400.00
b) Cross Walks (Signalized), width = 300mm	l.m	0	225	-
Other Lines:				
1. Turn Lines (broken Lines)	l.m	-	-	-
2. Parking Bay Lines				
a) Parallel Bays, width = 100mm	l.m	0	75	-
b) Angle Bays	l.m	-	-	-
3. Painted Median Islands	l.m	-	-	-
4. BUS and PUJ Lane Markings	l.m	-	-	-
5. Channelized Junction Pavement Marking	l.m	-	-	-
6. Yellow Box Line, w= 150mm	l.m	0	112.5	-
Other Markings:				
1. Approach Markings to Islands and Obstructions	l.m	-	-	-
2. Chevron Markings	l.m	-	-	-
3. Curb Markings for Parking Restrictions	l.m	0	262.5	-
4. Loading/Unloading Line Zone (200mm)	l.m	0	150	-
Messages and Symbols:				
1) Messages	pcs	-	-	-
2) Symbols				
a) Give Way symbol	pcs	-	-	-
b) Pavement Arrows				
1) Through Arrow = 1.21 sq.m / each	pcs	0	907.5	-
2) Combined Arrow = 2.44 sq.m / each	pcs	0	1,830	-
3) Turn Arrow = 1.46 sq. m / each	pcs	0	1,095	-
c) Numerals	pcs	-	-	-
B. Signs:				
1. No Left Turn Sign	Units	2	2,716	5,432.00
2. No Right Turn Sign	Units	1	3,850	3,850.00
3. Loading/Unloading Sign	Units	2	3,850	7,700.00
4. No entry Sign	Units	1	3,850	3,850.00
5. One Way Sign	Units	2	3,850	7,700.00
C. Other Works:				
1. Removal of part of billboard blocking pedestrian crossing	lot	1	5,000	5,000.00
2. Installation of Pedestrian Railing (Steel Railing) 6m/unit	unit	20	7,500	150,000.00
3. Widening of Sidewalk including base preparation, and sub-base course	sq.m.	50	700	35,000.00
TOTAL				250,932.00
Contingencies, 5%				12,546.60
CMS, 10%				25,093.20
Miscellaneous (fees, permits, etc), 5%				12,546.60
Govt. Supervision, 2%				5,018.64
TOTAL COST				**306,137.04**

Name	**CAA Road / Alabang-Zapote Road**	Code	**LP-04**
Sheet	**Summary of Observations**	LGU	**Las Piñas**

Traffic Conditions

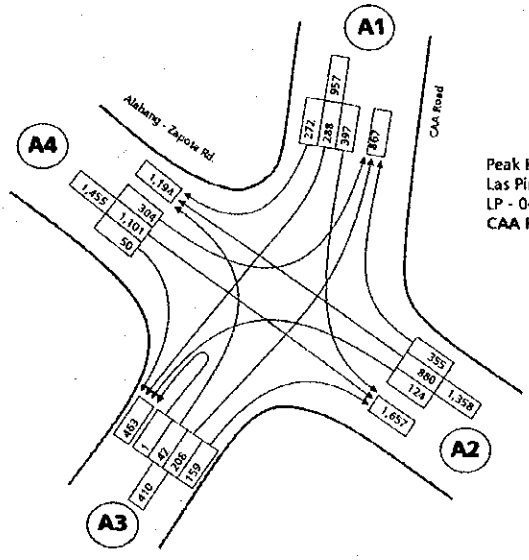
1) More than 4,000 pcu per peak hour entering intersection, with all turning maneuvers allowed.
2) Retail parking around Casimiro Commercial at northeast portion of junction occupies space intended for pedestrian sidewalk. Thus, pedestrians are forced to walk on carriageway.
3) Delivery trucks for retail establishments park illegally along Alabang-Zapote Road, obstructing traffic flow.
4) Tricycle terminal along the narrow BF Resort Drive (south leg) obstructs vehicular traffic flow.
5) Passenger boarding/alighting at junction poses obstructions to through vehicles.
6) Phasing of turning movements hardly facilitates pedestrian crossing.
7) Prevalence of counterflow maneuvers obstructs opposing traffic flow.

Physical Conditions

1) Alabang-Zapote Road accommodates two lanes per direction, BF Resort Drive one lane per direction, and CAA Road two lanes per direction.
2) Pavement in fair condition; pavement markings visible but some need reapplication.
3) Turning maneuvers affected by junction geometry.
4) Sidewalks are narrow, obstructed by vendors or reallocated for vehicle parking.
5) Intersection has traffic signal, but operation often reverts to manual control.

Signalization	Signalized	**Pavement Markings**	With markings	**Peak**	08:00-09:00

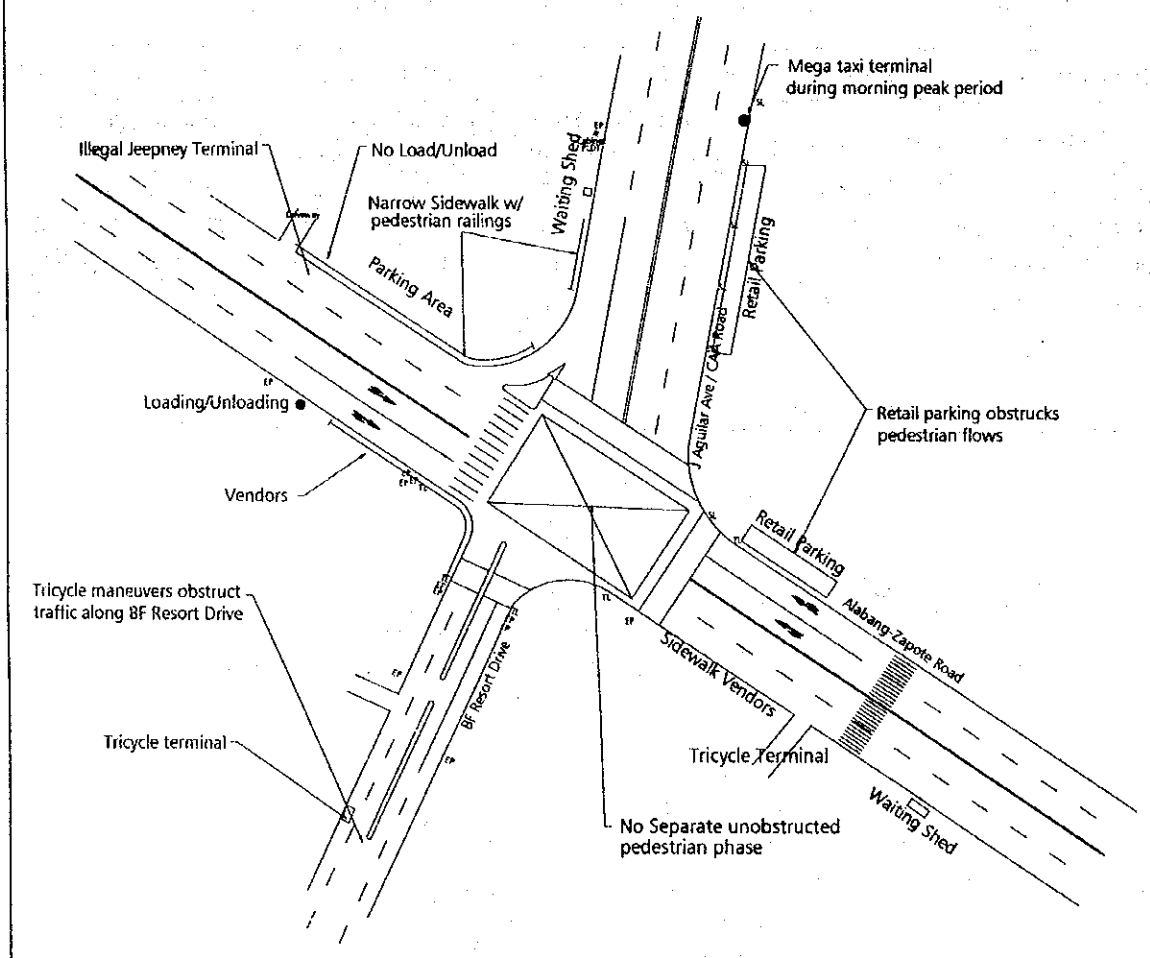
Approach	**Dimensions**	**Peak Hour Traffic Volumes (PCUs)**				**% Public Transport**	**Pedestrian Volume**
		Left	**Through**	**Right**	**Total**		
A1: CAA Road	10.62m	397	288	272	**957**	**23.30%**	Moderate
A2: Alabang Zapote	17.6m	124	880	355	**1,358**	**47.26%**	Moderate
A3: BF Resort Drive	22.2m	43	208	159	**410**	**15.74%**	Moderate
A4: Alabang Zapote	17.6m	304	1,101	50	**1,455**	**44.06%**	Moderate
	Total	868	2,477	836	**4,180**		
	Passenger Flows						



Peak Hour Volumes (PCUs)
Las Piñas
LP - 04
CAA Road / Alabang - Zapote Road

Name	**CAA Road / Alabang-Zapote Road**	Code	**LP-04**
Sheet	**Analysis**	LGU	**Las Piñas**

1) CAA Road is a major link between Alabang-Zapote Road and Dr. A. Santos Ave. in Parañaque. Thus, the junction layout should allow for these flows.
2) The movement of left turning vehicles from Zapote (approach 4) are hampered by vehicles in queue along CAA Road. Solution would be to advance the stop line of the CAA Road approach to give more space for turning maneuvers
3) Presence of retail establishments around the junction, plus the interchange of trips generates heavy pedestrian traffic, as well as high levels of passenger mode transfers. Loading/unloading zones with separate bays have been provided for on Approach 4, but are hardly utilized. Stricter enforcement of loading/unloading and jaywalking regulations needs to be implemented.
4) The phasing / signal timing of the junction signal lights needs to be re-examined.



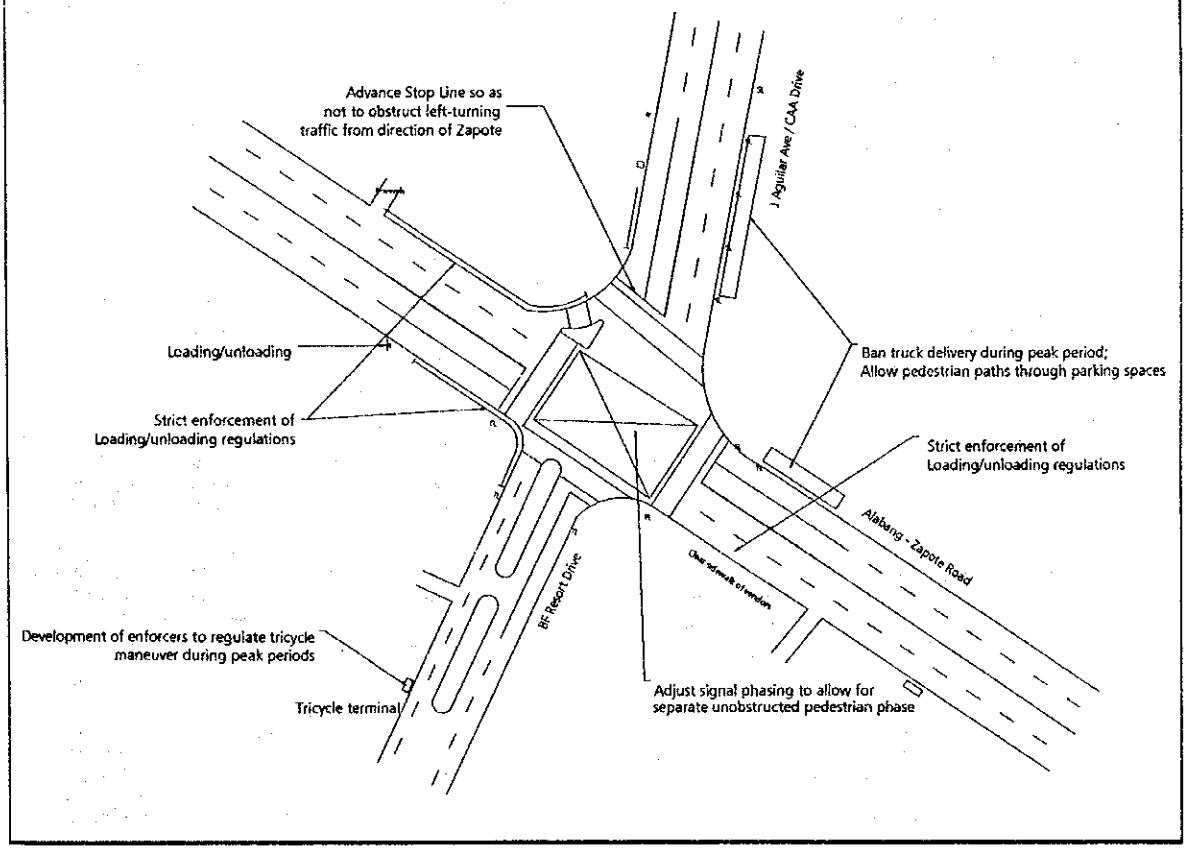
Name	**CAA Road / Alabang-Zapote Road**	Code	**LP-04**
Sheet	**Proposed Improvements**	LGU	**Las Piñas**

Engineering

1) Reapplication of pavement markings: center line (double-yellow) for 30 meters along all approaches; pedestrian crossing markings, stop lines, lane division markings.
2) Installation of traffic signages for public transport loading and unloading.
3) Installation of traffic signages for pedestrian crossings / prohibition of jaywalking.
4) Installation of "No Parking" signs along J Aguilar Ave, Alabang-Zapote Road and BF Resort Drive.
5) Stop line for CAA Road approach needs to be advanced to facilitate left turn movement from Zapote.
6) Regulate parking for retail establishments such that parked vehicles do not obstruct pedestrian flows.

Enforcement

1) Stricter enforcement of loading/unloading regulations.
2) Banning of commercial deliveries and parking along Alabang-Zapote Road between 9:00 to 11:00 and 14:00 to 16:00.



LOCATION: LP-04 CAA Road / Alabang-Zapote Road (LAS PINAS)
(cost summary)

A. Pavement Markings	Unit	Quantity	Unit Cost	Total Cost
Longitudinal Lines:				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length	l.m	0	45	-
b) Solid White Lines, 200 width	l.m	210	150	31,500.00
c) Double Yellow Line, 150 width	l.m	180	150	27,000.00
2. Lane Lines (100mm or 150mm width)				
a) Solid Lines, w = 150 mm	l.m	90	112.5	10,125.00
b) Broken Lines w= 150mm	l.m	510	45	22,950.00
3. Barrier Lines				
a) Unbroken Double Yellow Lines (100 or 150mm width)	l.m	-	-	-
b) Single Yellow Line with broken White Lines (100-150mm)	l.m	-	-	-
4. Edge Lines				
a) Pavement Edge (Shoulders)	l.m	-	-	-
b) Median Edge	l.m	-	-	-
5. Continuity Line	l.m	-	-	-
6. Transition Line	l.m	-	-	-
Transverse Lines:				
1. Stop Lines (Solid Lines) white, width = 450 mm	l.m	0	337.5	-
2. Give Way (Yield Lines)	l.m	-	-	-
3. Pedestrian Crossing Markings				
a) Zebra Crossing (Non-Signalized), width = 300mm	l.m	288	225	64,800.00
b) Cross Walks (Signalized), width = 300mm	l.m	0	225	-
Other Lines:				
1. Turn Lines (broken Lines)	l.m	-	-	-
2. Parking Bay Lines				
a) Parallel Bays, width = 100mm	l.m	0	75	-
b) Angle Bays	l.m	-	-	-
3. Painted Median Islands	l.m	-	-	-
4. BUS and PUJ Lane Markings	l.m	-	-	-
5. Channelized Junction Pavement Marking	l.m	-	-	-
6. Yellow Box Line, w= 150mm	l.m	134	112.5	15,075.00
Other Markings:				
1. Approach Markings to Islands and Obstructions	l.m	-	-	-
2. Chevron Markings	l.m	-	-	-
3. Curb Markings for Parking Restrictions	l.m	0	262.5	-
4. Loading/Unloading Line Zone (200mm)	l.m	0	150	-
Messages and Symbols:				
1) Messages	pcs	-	-	-
2) Symbols				
a) Give Way symbol	pcs	-	-	-
b) Pavement Arrows				
1) Through Arrow = 1.21 sq.m / each	pcs	0	907.5	-
2) Combined Arrow = 2.44 sq.m / each	pcs	0	1,830	-
3) Turn Arrow = 1.46 sq. m / each	pcs	0	1,095	-
c) Numerals	pcs	-	-	-
B. Signs				
1. Pedestrian Crossing Sign	Units	3	2,716	8,148.00
2. No Jaywalking Sign	Units	3	3,850	11,550.00
3. Loading/Unloading Sign	Units	3	3,850	11,550.00
4. No Parking Sign	Units	3	3,850	11,550.00
C. Other Works				
1. Adjust signal pHasing	lot	1	5,000	5,000.00
2. Installation of Pedestrian Railing (Steel Railing) 6m/unit	unit	20	7,500	150,000.00
3. Widening of Sidewalk including base preparation, and sub-base course	sq.m.	50	700	35,000.00
TOTAL				404,248.00
Contingencies, 5%				20,212.40
CMS, 10%				40,424.80
Miscellaneous (fees, permits, etc), 5%				20,212.40
Govt. Supervision, 2%				8,084.96
TOTAL COST				**493,182.56**

Name	**Pilar Road / Alabang-Zapote Road**	Code	**LP-05**
Sheet	**Summary of Observations**	LGU	**Las Piñas**

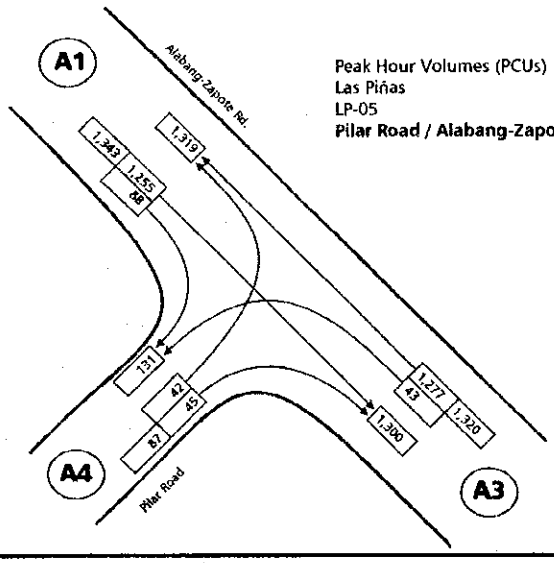
Traffic Conditions

1) T-junction: Pilar Road leading to a number of residential subdivisions, schools and churches, with heavy small-scale commercial development along its length
2) Jeepney and bus loading / unloading right at junction obstructs smooth flow of vehicular traffic
3) Retail activities generate high levels of commuter and pedestrian traffic
4) Tricycle terminals along Pilar Road near junction, as well as sidewalk vendors, prevent smooth pedestrian flow.

Physical Conditions

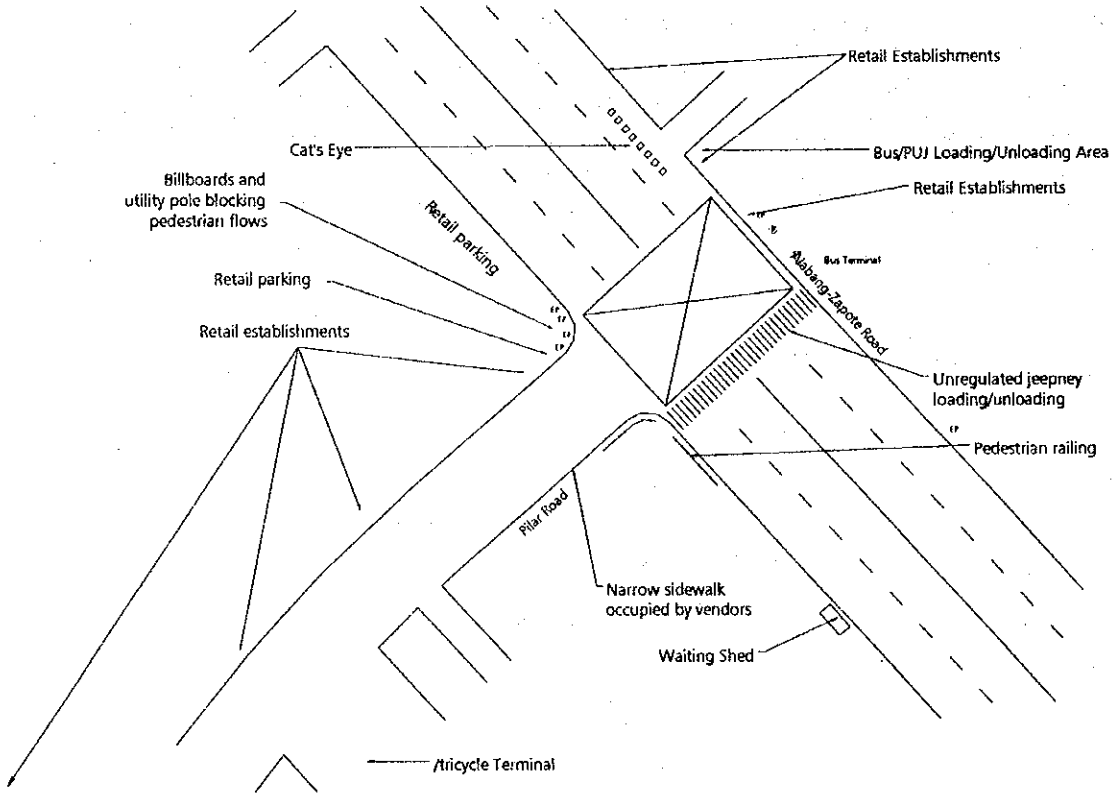
1) Pilar road a narrow 2-lane road (both directions), with no sidewalk provisions
2) Pilar road is asphalt-paved, in fair condition
3) Alabang Zapote Road a 4-lane arterial road with high public transport component
4) Alabang-Zapote Road at this junction is concrete-paved in fair condition
5) No traffic signals are present.
6) Pavement markings such as yellow box and pedestrian zebra crossing are present, but need reapplication
7) Pedestrian railing at south quadrant (7-11) is present, although sidewalk width around this corner is less than 1 meter, with the condition exacerbated by sidewalk vendors.
8) Retail parking encroaching on pedestrian areas, forcing pedestrians to use carriageway of Pilar Road

Signalization	None	**Pavement Markings**	Needs reapplication		**Peak**	17:00-18:00
Approach	**Dimensions**	**Peak Hour Traffic Volumes (PCUs)**				**% Public Transport**	**Pedestrian Volume**
		Left	**Through**	**Right**	**Total**		
A1: Alabang-Zapote	32.8m	NA	1,255	88	**1,343**	39.93%	Moderate
A2: None	None	None	None	None	**None**	None	None
A3: Alabang-Zapote	32.8m	43	1,277	NA	**1,320**	41.73%	Moderate
A4: Pilar Road	15.6m	42	NA	45	**87**	20.34%	Moderate
	Total	85	2,532	133	**2,750**		
	Passenger Flows						



Name	**Pilar Road / Alabang-Zapote Road**	Code	**LP-05**
Sheet	**Analysis**	LGU	**Las Piñas**

1) Main cause of traffic congestion along Alabang-Zapote Road is unregulated public transport loading and unloading.
2) Commuters transferring rides from Alabang-Zapote Road to tricycles along Pilar Road adds to the number of pedestrian traffic generated by the retail establishments near the junction.
3) Along Pilar Road, road right of way does not allow for ample pedestrian facilities. The Jollibee outlet at one side of Pilar Road has no pedestrian paths around it, with access to its parking area running along the length of its property. It has provided for a narrow pedestrian path between the building and the parking area, but is inadequate and cumbersome for pedestrians. On the opposite side of Pilar Road, the 7-11 outlet does not have a wide sidewalk, and whatever narrow portion is there, is occupied by vendors.



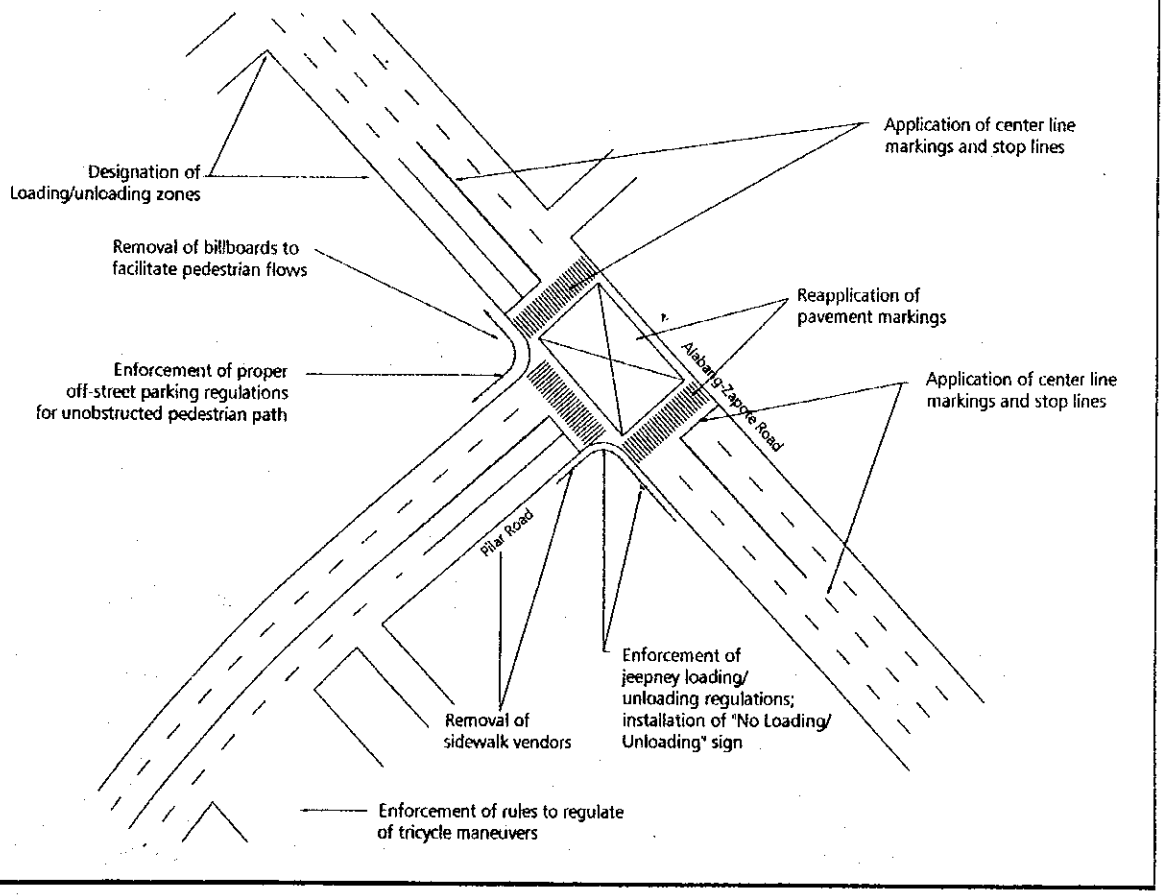
Name	**Pilar Road / Alabang-Zapote Road**	Code	**LP-05**
Sheet	**Proposed Improvements**	LGU	**Las Piñas**

Engineering

1) Reapplication of pedestrian zebra crossing.
2) Reapplication of "Yellow Box".
3) Application of centerline markings (double solid yellow for 30 meters; single solid for another 70 meters) along Alabang-Zapote Road.
4) Application of "stop line" markings.
5) Application of solid white centerline marking along Pilar Road.
6) Designation of Loading/unloading areas along Alabang-Zapote Road, with proper signages.
7) Removal / transfer of billboards to facilitate pedestrian flows along Pilar Road side of Alabang-Zapote Road.

Enforcement

1) Control of sidewalk vendors along Pilar Road, side of 7-11.
2) Strict enforcement of jeepney loading/unloading regulations, particularly in front of 7-11.
3) Control of tricycle area: should not be allowed past designated terminal.
4) Enforcement of parking regulations.



LOCATION: LP-05, Pilar Road / Alabang-Zapote Road (LAS PINAS)
(cost summary)

	Unit	Quantity	Unit Cost	Total Cost
A. Pavement Markings				
Longitudinal Lines:				
1. Center Lines				
a) Broken Line, 100 or 150mm width, 3m length	l.m	0	-	-
b) Solid White Lines, 200 width	l.m	240	150	36,000.00
c) Double Yellow Line, 150 width	l.m	60	150	9,000.00
2. Lane Lines (100mm or 150mm width)				
a) Solid Lines, w = 150 mm	l.m	-	-	-
b) Broken Lines w= 150mm	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 Line	l.m	-	-	-
6. Transition Line	l.m	-	-	-
Transverse Lines:				
1. Stop Lines (Solid Lines) white, width = 450 mm	l.m	32	337.5	10,800.00
2. Give Way (Yield Lines)	l.m	-	-	-
3. Pedestrian Crossing Markings				
a) Zebra Crossing (Non-Signalized), width = 300mm	l.m	80	225	18,000.00
b) Cross Walks (Signalized), width = 300mm	l.m	-	-	-
Other Lines:				
1. Turn Lines (broken Lines)	l.m	-	-	-
2. Parking Bay Lines				
a) Parallel Bays, width = 100mm	l.m	0	-	-
b) Angle Bays	l.m	-	-	-
3. Painted Median Islands	l.m	-	-	-
4. BUS and PUJ Lane Markings	l.m	-	-	-
5. Channelized Junction Pavement Marking	l.m	-	-	-
6. Yellow Box Line, w= 150mm	l.m	165.8	112.5	18,652.50
Other Markings:				
1. Approach Markings to Islands and Obstructions	l.m	-	-	-
2. Chevron Markings	l.m	-	-	-
3. Curb Markings for Parking Restrictions	l.m	0	-	-
4. Loading/Unloading Line Zone (200mm)	l.m	80	150	12,000.00
Messages and Symbols:				
1) Messages	pcs	-	-	-
2) Symbols				
a) Give Way symbol	pcs	-	-	-
b) Pavement Arrows				
1) Through Arrow = 1.21 sq.m / each	pcs	0	-	-
2) Combined Arrow = 2.44 sq.m / each	pcs	0	-	-
3) Turn Arrow = 1.46 sq. m / each	pcs	0	-	-
c) Numerals	pcs	-	-	-
B. Signs				
1. Pedestrian Crossing Sign	Units	2	2,716	5,432.00
2. No Jaywalking Sign	Units	-	-	-
3. Loading/Unloading Sign	Units	4	3,850	15,400.00
4. No Parking Sign	Units	6	3,850	23,100.00
B. Other Works				
1. Removal / transfer of Billboards	l.s	-	-	12,000.00
TOTAL				160,384.50
Contingencies, 5%				8,019.23
CMS, 10%				16,038.45
Miscellaneous (fees, permits, etc), 5%				8,019.23
Govt. Supervision, 2%				3,207.69
TOTAL COST				**195,669.09**