

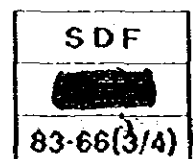
REPUBLIC OF THE PHILIPPINES  
MINISTRY OF PUBLIC WORKS & HIGHWAYS

**FEASIBILITY STUDY  
FOR  
THE METRO MANILA OUTER  
MAJOR ROADS PROJECT  
(NORTHERN PACKAGE)**

FINAL REPORT  
(APPENDIX)

JUNE, 1983

JAPAN INTERNATIONAL COOPERATION AGENCY





JICA LIBRARY



1031490[4]



REPUBLIC OF THE PHILIPPINES  
MINISTRY OF PUBLIC WORKS & HIGHWAYS

**FEASIBILITY STUDY  
FOR  
THE METRO MANILA OUTER  
MAJOR ROADS PROJECT  
(NORTHERN PACKAGE)**

FINAL REPORT  
(APPENDIX)

JUNE, 1983

JAPAN INTERNATIONAL COOPERATION AGENCY

No. 13959

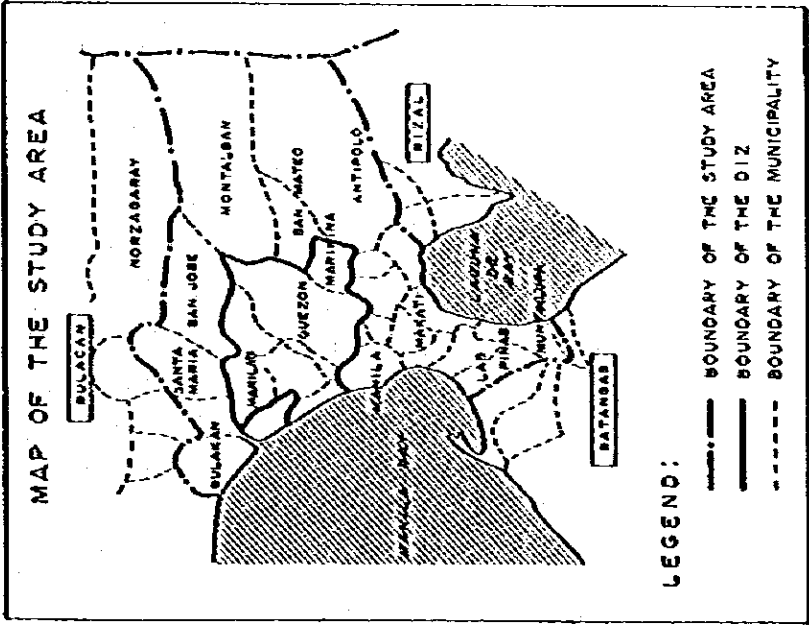
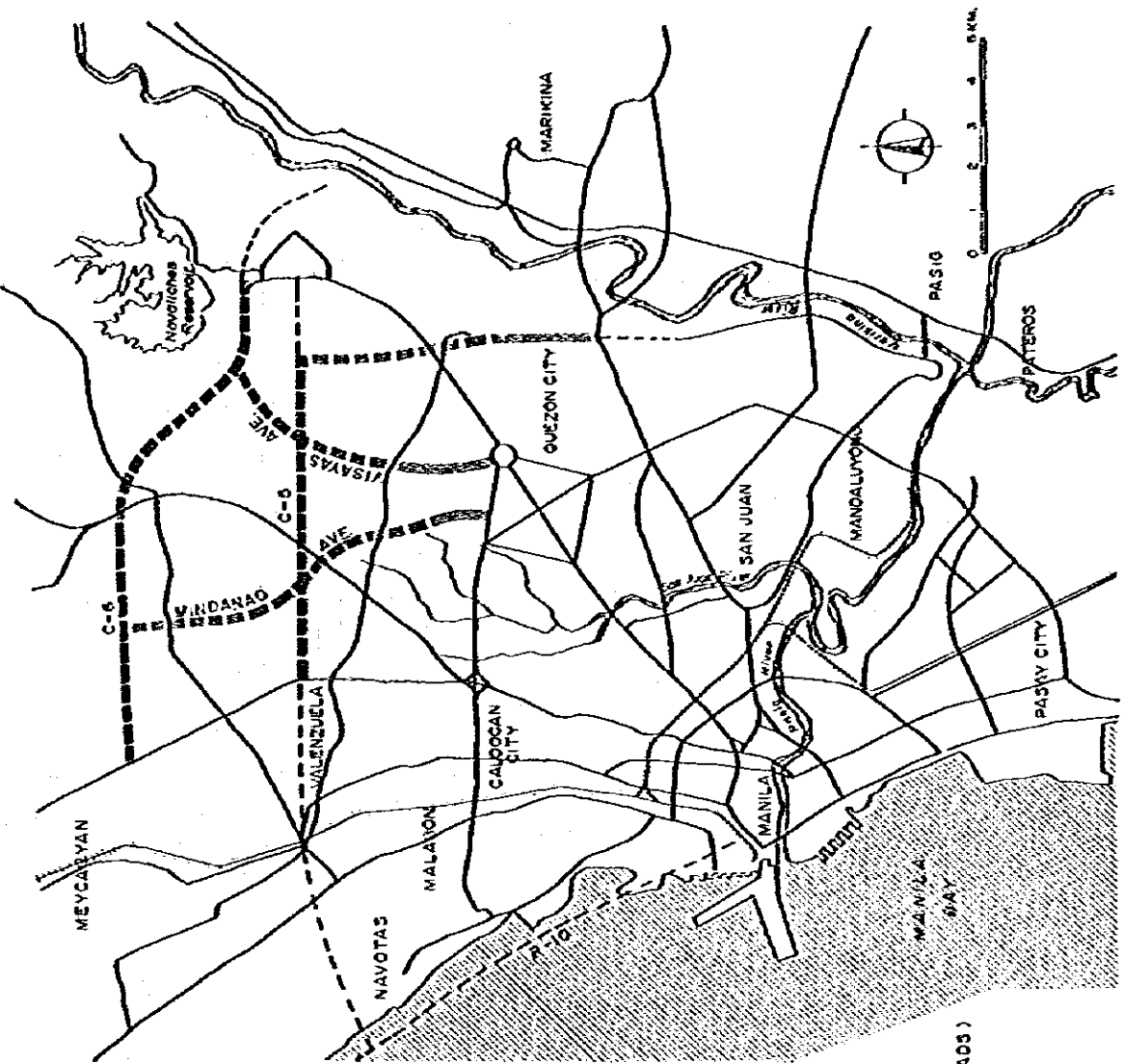
118

61.4

SDF

国際協力事業団	
納入 月日 84.9.23	1180
登録No. 097691	61.4
	SDF

# PROJECT LOCATION MAP



- LEGEND:**
- PROJECT ROADS (NEW CONSTRUCTION)
  - PROJECT ROADS (IMPROVEMENT OF EXISTING ROADS)
  - OTHER EXPECTED TRUNK ROADS
  - EXISTING ROADS





## TABLE OF CONTENTS

		Page
<b>APPENDICES FOR CHAPTER 3</b>		
<b>APPENDIX 3.2-1</b>	<b>SCREENLINE CHECK</b>	1
Figure A	Location of Screenline	2
Table B	Screenline Traffic Count	3
Table C	Screenline Check of MMUTIP O-D	4
<b>APPENDIX 3.2-2</b>	<b>TRAVEL TIME SURVEY</b>	5
Route 1	(MNE)	5
Route 2	(EDSA)	6
Route 3	(Don Mariano Marcos Avenue to Quezon Boulevard)	7
Route 4	(North Avenue to East Avenue to EDSA to Aurora Boulevard to Katipunan Avenue)	8
Route 5	(Quirino Highway)	9
Route 6	(Tandang Sora Avenue)	10
<b>APPENDIX 3.2-3</b>	<b>VEHICLE COMPOSITION ON TRUNK ROADS IN THE DIZ</b>	11
Station 1 to Station 6	(Screenline Traffic Count)	11
Station 7 to Station 11	(Screenline Traffic Count)	12
Station 1 to Station 3	(Cordonline Traffic Count)	13
<b>APPENDIX 3.2-4</b>	<b>HOURLY FLUCTUATION OF TRAFFIC</b>	14
Station 1, Station 2	(Screenline Traffic Count)	14
Station 3, Station 4	(Screenline Traffic Count)	15
Station 5, Station 6	(Screenline Traffic Count)	16
Station 7, Station 9	(Screenline Traffic Count)	17
Station 10, Station 11	(Screenline Traffic Count)	18
Station 1 to Station 3	(Cordonline Traffic Count)	19
<b>APPENDIX 3.2-5</b>	<b>TRAFFIC FLOW AT INTERSECTIONS</b>	20
Station 1, Station 2		20
Station 3, Station 4		21
<b>APPENDIX 3.2-6</b>	<b>ROADSIDE TRAFFIC COUNT IN 1982</b>	22
Station 1	(Gen. Luis Road - Screenline Traffic Count)	22
Station 2	(MNE - Screenline Traffic Count)	23

	Page
Station 3 (Quirino Highway - Screenline Traffic Count)	24
Station 4 (Tandang Sora Avenue - Screenline Traffic Count)	25
Station 5 (EDSA, Bago Bantay - Screenline Traffic Count)	26
Station 6 (Visayas Avenue - Screenline Traffic Count)	27
Station 7 (Don Mariano Marcos Avenue - Screenline Traffic Count)	28
Station 8 (East Avenue - Screenline Traffic Count)	29
Station 9 (EDSA, Kamias - Screenline Traffic Count)	30
Station 10 (Aurora Boulevard - Screenline Traffic Count)	31
Station 11 (Katipunan Avenue - Screenline Traffic Count)	32
Station 1 (MacArthur Highway - Cordonline Traffic Count)	33
Station 2 (MNE - Cordonline Traffic Count)	34
Station 3 (Quirino Highway) - Cordonline Traffic Count)	35
APPENDIX 3.2-7 LOCATION OF SURVEY STATIONS	36
APPENDICES FOR CHAPTER 4	
APPENDIX 4.6-1 LAND USE DISTRIBUTION	37
APPENDIX 4.7-1 POPULATION DISTRIBUTION TO TRAFFIC ZONES	38
APPENDIX 4.7-2 EMPLOYED PERSONS BY WORKPLACE	40
APPENDICES FOR CHAPTER 5	
APPENDIX 5.2-1 GROWTH FACTOR METHOD	43
APPENDIX 5.2-2 FUTURE O-D TABLES (1990, 2000)	44
Car + PUV Persons Trips in 1990	44
Taxi Vehicle Trips in 1990	51
Truck Vehicle Trips in 1990	58
Car + PUV Person Trips in 2000	65
Taxi Vehicle Trips in 2000	72
Truck Vehicle Trips in 2000	79

## APPENDICES FOR CHAPTER 6

APPENDIX 6.2-1	RELATED HIGHWAY PROJECTS	87
APPENDIX 6.5-1	FACTORS CONSIDERED IN THE ESTABLISHMENT OF CANDIDATE ROUTES	90
APPENDIX 6.5-2	EVALUATION OF CANDIDATE ROUTES	92
APPENDIX 6.7-1	QUANTITY AND VELOCITY CURVE	99
Figure A	Q-V Pattern as Road Restraint	99
Table B	Quantity-Velocity Factor	100
Figure C	Typical Cross-Section by Road Classification	101
APPENDIX 6.7-2	ROAD CAPACITY BY ROAD CLASSIFICATION	103

## APPENDICES FOR CHAPTER 7

APPENDIX 7.2-1	FINAL BOREHOLE LOG AND SUMMARY OF TEST RESULTS (MECHANICAL BORING)	105
APPENDIX 7.2-2	FINAL BOREHOLE AND SUMMARY OF TEST RESULTS (TEST PIT)	119
APPENDIX 7.2-3	FINAL BOREHOLE LOG AND SUMMARY OF TEST RESULTS (AUGER BORING)	124
APPENDIX 7.2-4	MOISTURE DENSITY RELATION/CALIFORNIA BEARING RATIO TEST RESULTS	133
APPENDIX 7.2-5	EXISTING BORING DATA ALONG LUZON AVENUE	142
APPENDIX 7.2-6	EXISTING AUGER BORING DATA ALONG DON MARIANO MARCOS AVENUE	144
APPENDIX 7.2-7	EXISTING AUGER BORING DATA ALONG VISAYAS AND TANDANG SORA AVENUES	147
APPENDIX 7.2-8	MATERIALS SOURCES MAP AND LISTS	150
APPENDIX 7.3-1	INTERSECTION TRAFFIC CAPACITY ANALYSIS	157
•	C-5/Mindanao Avenue Intersection	157
•	C-5/Quirino Highway Intersection	159
•	C-5/Visayas Avenue Intersection	161
•	Republic Avenue/Luzon Avenue Intersection	163
•	C-5/Don Mariano Marcos Avenue Intersection	165
•	C-5/Aurora Boulevard Intersection	167

	Page
* C-6/Mindanao Avenue Intersection	169
* C-6/Quirino Highway Intersection	171
* Location of C-6/Visayas/Regalado Intersection	173
* C-6/Visayas Avenue Intersection (1)	174
* C-6/Visayas Avenue Intersection (2)	176
* C-6/Luzon Avenue Extension Intersection	178
* C-6/Don Mariano Marcos Avenue Intersection	180
* Mindanao Avenue/North Avenue Intersection	182
* Mindanao Avenue/Congressional Avenue Intersection	184
* Mindanao Avenue/Tandang Sora Avenue Intersection	186
* Mindanao Avenue/Quirino Highway Intersection	188
* Visayas Avenue/Elliptical Road Intersection	190
* Visayas Avenue/Tandang Sora Avenue Intersection	192
APPENDIX 7.4-1 TRAFFIC LOAD	194
APPENDIX 7.4-2 EFFECT OF UNTREATED SUBBASE ON K VALUES	194
APPENDIX 7.5-1 RAINFALL, INTENSITY DURATION CURVE FOR PORT AREA, MANILA	195
APPENDIX 7.5-2 LOCATION OF DISCHARGE ESTIMATED POINTS	196
APPENDIX 7.5-3 MAXIMUM WATER DISCHARGE	197
APPENDIX 7.6-1 CONSTRUCTION COST PER SQUARE METER FOR SUPERSTRUCTURE	198
APPENDIX 7.6-2 LOCATION OF EXISTING STRUCTURES RELATING TO PROJECT ROADS	199
APPENDIX 7.6-3 INVENTORY OF EXISTING STRUCTURES ALONG PROPOSED ROADS	200
 APPENDICES FOR CHAPTER 8	
APPENDIX 8.2-1 ESTIMATED NOISE BY ROAD AND NECESSARY DISTANCE FOR ATTENUATION TO STANDARD NOISE LEVEL	201
1. Morning Time	201

	Page
2. Day Time	202
3. Evening Time	203
APPENDIX 8.2-2 AREA AFFECTED BY AIR POLLUTION (NO <sub>2</sub> )	204
APPENDIX 8.2-3 ESTIMATED CONCENTRATION OF AIR POLLUTANTS AND EVALUATION BY PROPOSED ROAD	205
APPENDIX 8.2-4 PREDICTION OF POLLUTION CAUSED BY TRAFFIC	206
 APPENDICES FOR CHAPTER 9	
APPENDIX 9.1-1 UNIT COST ANALYSIS	209
* Item 105 (1)	209
* Item 105 (2)	210
* Item 107 (1)	211
* Item 108	212
* Item 200	213
* Item 316	214
* Item 405 (1)	215
* Item 405 (6)	217
* Item 406	218
* Item 413 (3)	219
* Item 413 (5)	220
* Item 502 (4)	221
* SPL Pavement Marking	222
APPENDIX 9.1-2 UNIT COST ANALYSIS FOR PROCESSED MATERIALS	223
Reference 1 Fine Aggregate for Cement Concrete	223
Reference 2 Coarse Aggregate for Cement Concrete	224
Reference 3 Aggregate for Granular Sub-base Course	225
Reference 4 Aggregate for Base Course	226
Reference 5 Concrete Class A	227
Reference 6 Concrete Class B	228
Reference 7 Concrete Class D	229
Reference 8 Lean Concrete	230
Reference 10 RCPC 0.76 M. diameter	231
Reference 11 RCPC 1.07 M. diameter	232
Reference 12 Extra Strength RCPC 1.07 M. diameter	233

	Page
APPENDICES FOR CHAPTER 10	
APPENDIX 10.1-1 BASIC TRAFFIC COSTS	235
APPENDIX 10.1-2 THE "d1" METHOD	244
APPENDIX 10.3-1 PRIMARY COMMERCIAL ENERGY DEMAND	246
APPENDIX 10.3-2 PETROLEUM PRODUCT CONSUMPTION	246
APPENDIX 10.3-3 CORRELATION OF TRADE AND IMPORTED PETROLEUM	247
APPENDIX 10.3-4 FOREIGN PORTION OF FUEL SAVINGS	248
APPENDIX 10.3-5 SAVINGS vs. CONSUMPTION	249
APPENDIX 10.3-6 FOREIGN PORTION vs. TRADE DEFICIT	249
OTHER APPENDICES	
APPENDIX A STUDY METHODOLOGY	251

## ABBREVIATIONS

<b>[A]</b>	<b>AASHTO:</b>	American Association of State Highway and Transportation Official
	<b>AACE:</b>	American Association of Civil Engineer
<b>[C]</b>	<b>CBD:</b>	Central Business District
	<b>C.B.R.:</b>	California Bearing Ratio
	<b>CIF:</b>	Capital Investment Folio
	<b>CO:</b>	Carbon Monoxide
<b>[D]</b>	<b>db:</b>	décibel
	<b>DIZ:</b>	Direct Influence Zone
<b>[E]</b>	<b>EDSA:</b>	Epifanio de los Santos Avenue
	<b>EMK:</b>	Equivalent Maintenance Kilometer
<b>[G]</b>	<b>GDP:</b>	Gross Domestic Product
	<b>GNP:</b>	Gross National Product
	<b>GOJ:</b>	Government of Japan
	<b>GOP:</b>	Government of the Philippines
	<b>GRDP:</b>	Gross Regional Domestic Product
<b>[I]</b>	<b>IBRD:</b>	International Bank for Reconstruction and Development
<b>[M]</b>	<b>MHS:</b>	Ministry of Human Settlements
	<b>MNC:</b>	Metro Manila Commission
	<b>MMETROPLAN:</b>	Metro Manila Transport, Land Use and Development Planning Project
	<b>MMUTIP:</b>	Metro Manila Urban Transportation Investment Project
	<b>MNDR:</b>	Manila North Diversion Road (= MNE)
	<b>MNE:</b>	Manila North Expressway
	<b>MOE:</b>	Ministry of Energy
	<b>MOTC:</b>	Ministry of Transportation and Communication
	<b>MWSS:</b>	Metro Manila Waterworks and Sewerage System

[N]	NCSSO:	National Census and Statistic Office
	NEDA:	National Economic Development Authority
[O]	OECD:	Organization of Economic Cooperation and Development
[P]	PCC:	Portland Cement Concrete
	PCEF:	Passenger Car Equivalent Factor
	PCU:	Passenger Car Unit
	psi:	pounds per square inch
	PT:	person trip
	PUV:	Public Utility Vehicle
[R]	RDFP:	Regional Development Framework Plan
	ROW:	Right-of-Way
[S]	SO <sub>2</sub> :	Sulfur Dioxide
	Sq.M:	Square Meter
[T]	TEAM:	Traffic Engineering and Management
[U]	UNDP:	United Nation Development Project
	UTSMA:	Urban Transportations Study for Metropolitan Manila
[V]	V/C Ratio:	Volume/Capacity ratio



## APPENDICES FOR CHAPTER 3

	Page
APPENDIX 3.2-1 SCREENLINE CHECK	1
Figure A Location of Screenline	2
Table B Screenline Traffic Count	3
Table C Screenline Check of MMUTIP O-D	4
APPENDIX 3.2-2 TRAVEL TIME SURVEY	5
Route 1 (MNE)	5
Route 2 (EDSA)	6
Route 3 (Don Mariano Marcos Avenue to Quezon Boulevard)	7
Route 4 (North Avenue to East Avenue to EDSA to Aurora Boulevard to Katipunan Avenue)	8
Route 5 (Quirino Highway)	9
Route 6 (Tandang Sora Avenue)	10
APPENDIX 3.2-3 VEHICLE COMPOSITION ON TRUNK ROADS IN THE DIZ	11
Station 1 to Station 6 (Screenline Traffic Count)	11
Station 7 to Station 11 (Screenline Traffic Count)	12
Station 1 to Station 3 (Cordonline Traffic Count)	13
APPENDIX 3.2-4 HOURLY FLUCTUATION OF TRAFFIC	14
Station 1, Station 2 (Screenline Traffic Count)	14
Station 3, Station 4 (Screenline Traffic Count)	15
Station 5, Station 6 (Screenline Traffic Count)	16
Station 7, Station 9 (Screenline Traffic Count)	17
Station 10, Station 11 (Screenline Traffic Count)	18
Station 1 to Station 3 (Cordonline Traffic Count)	19
APPENDIX 3.2-5 TRAFFIC FLOW AT INTERSECTIONS	20
Station 1, Station 2	20
Station 3, Station 4	21
APPENDIX 3.2-6 ROADSIDE TRAFFIC COUNT IN 1982	22
Station 1 (Gen. Luis Road - Screenline Traffic Count)	22
Station 2 (MNE - Screenline Traffic Count)	23
Station 3 (Quirino Highway - Screenline Traffic Count)	24

		Page
Station 4	(Tandang Sora Avenue - Screenline Traffic Count)	25
Station 5	(EDSA, Bago Bantay - Screenline Traffic Count)	26
Station 6	(Visayas Avenue - Screenline Traffic Count)	27
Station 7	(Don Mariano Marcos Avenue - Screenline Traffic Count)	28
Station 8	(East Avenue - Screenline Traffic Count)	29
Station 9	(EDSA, Kamias - Screenline Traffic Count)	30
Station 10	(Aurora Boulevard - Screenline Traffic Count)	31
Station 11	(Katipunan Avenue - Screenline Traffic Count)	32
Station 1	(MacArthur Highway - Cordonline Traffic Count)	33
Station 2	(MNS - Cordonline Traffic Count)	34
Station 3	(Quirino Highway - Cordonline Traffic Count)	35
APPENDIX 3.2-7	LOCATION OF SURVEY STATIONS	36

## APPENDIX 3.2-1 SCREENLINE CHECK

The adaptability of MMUTIP O-D in the preparation of the basic O-D table for this Study was studied through the comparison of the result of the screenline survey conducted by the Study Team last August with that of the corresponding aggregated screenline traffic from MMUTIP O-D. The location of the screenline survey and the result of screenline comparison were presented in Figure A and Tables B and C, respectively.

Direct comparison would be unreliable because of a two-year difference between the two (2) studies and the lack of traffic volume data on some collector and local roads, which were not surveyed during the Screenline Traffic Count Survey. However, the result of the screenline comparison shows a small discrepancy, MMUTIP data is a little bit higher than the result of the screenline survey. It is judged that MMUTIP O-D is accurate enough to prepare the basic O-D table.

Fig. A Location of Screenline

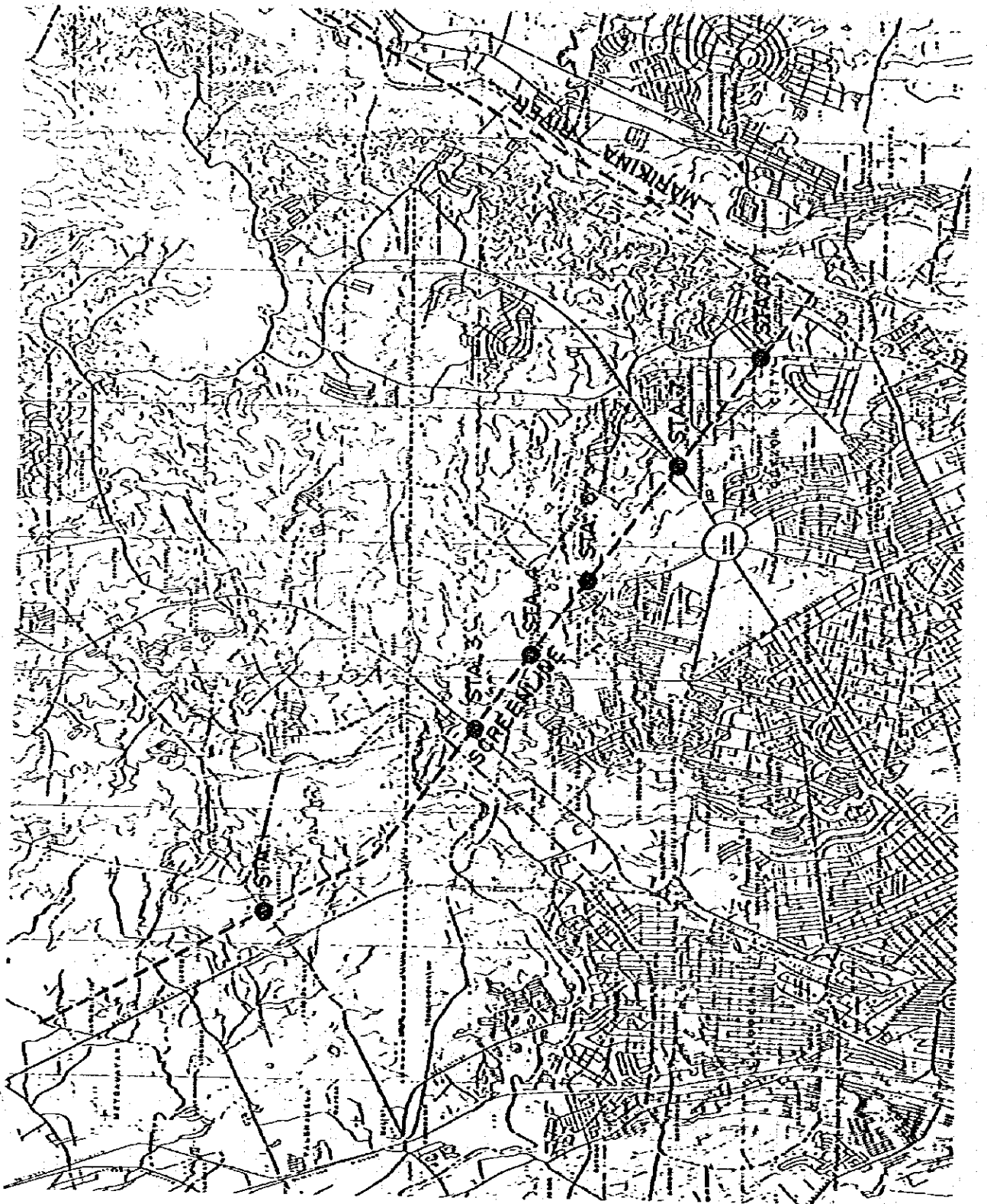


Table B SCREENLINE TRAFFIC COUNT

(Vehicle/16 hours)

	CAR JEEP	TAXI	P U J		VAN PICK-UP	TRUCK	MOTOR- CYCLE TRICYCLE	T O T A L
			JEEPNEY	BUS				
Sta. 1	3889	55	3290	41	1876	1070	808	11029
Sta. 3	5239	381	7361	783	2425	1100	517	17806
Sta. 4	2004	188	2805	471	1109	1046	2512	10135
Sta. 6	4193	429	321	264	1137	872	1350	8566
Sta. 7	17860	1225	8878	1313	3833	1228	859	35196
Sta. 11	7356	572	1996	987	1497	122	585	13115
Total	40541	2850	24651	3859	11877	5438	6631	95847

Note: 16 hours roadside traffic count

**Table C SCREENLINE CHECK OF MMUTIP O-D**

(Vehicle/day)

	MMUTIP (A)	SCREENLINE TOTAL (B)	A/B
Private Car, Taxi, Truck	77,700	68,600	1.13
PUJ (Jeepney, Bus)	32,400	32,200	1.01
T o t a l	110,100	100,800	1.09

**Note:** These factors were assumed based on MMUTIP and Southern Package.

**1. Average occupancy rate (Passenger/vehicle)**

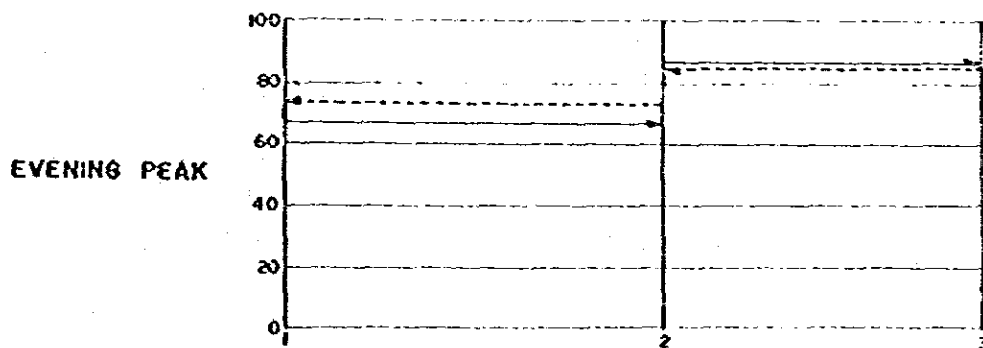
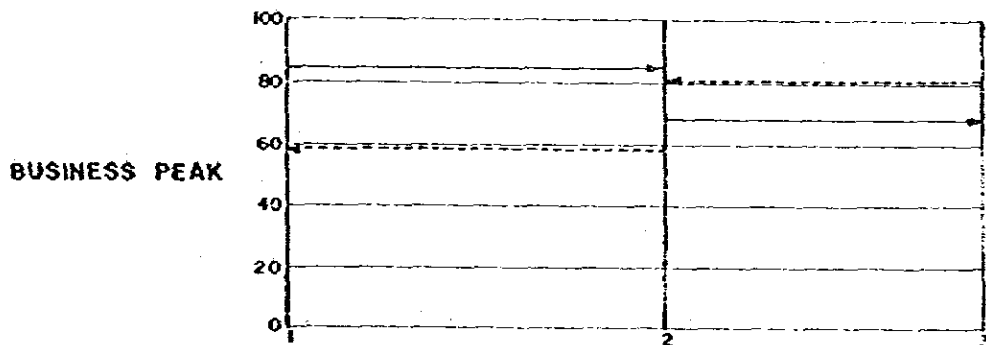
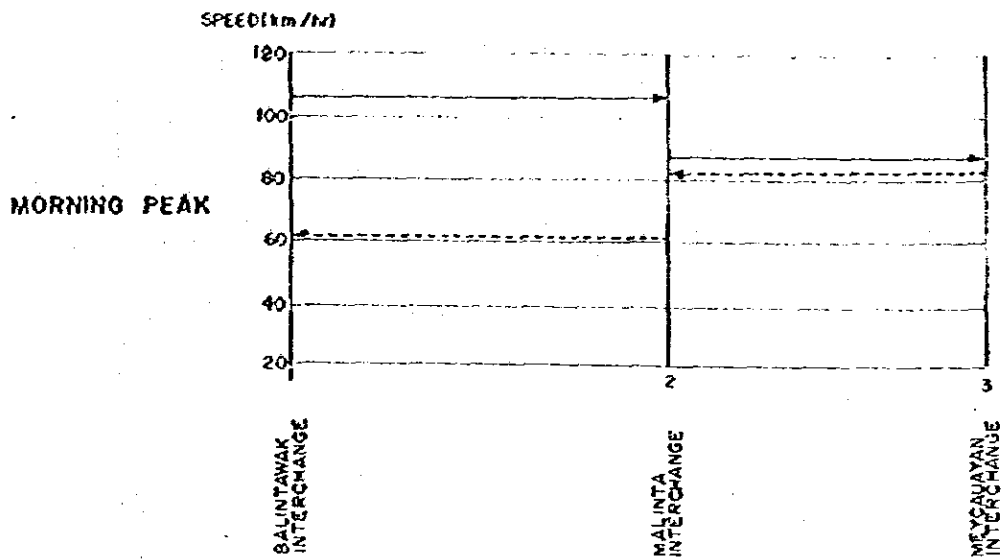
Jeepney - 9.0                      Bus - 29.0

**2. (24 hours traffic count/16 hours traffic count)-**

1.13

## APPENDIX 3.2-2 TRAVEL SPEED

### ROUTE 1 (MANILA NORTH EXPRESSWAY) BALINTAWAK - MEYCAUYAN

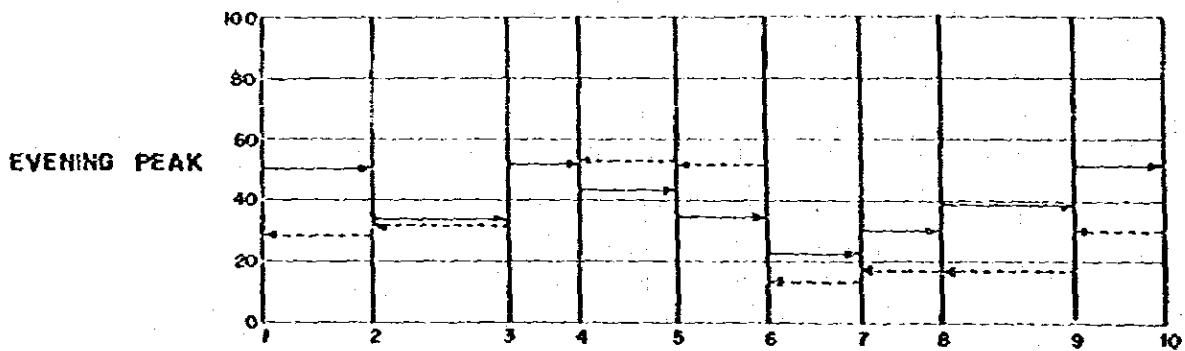
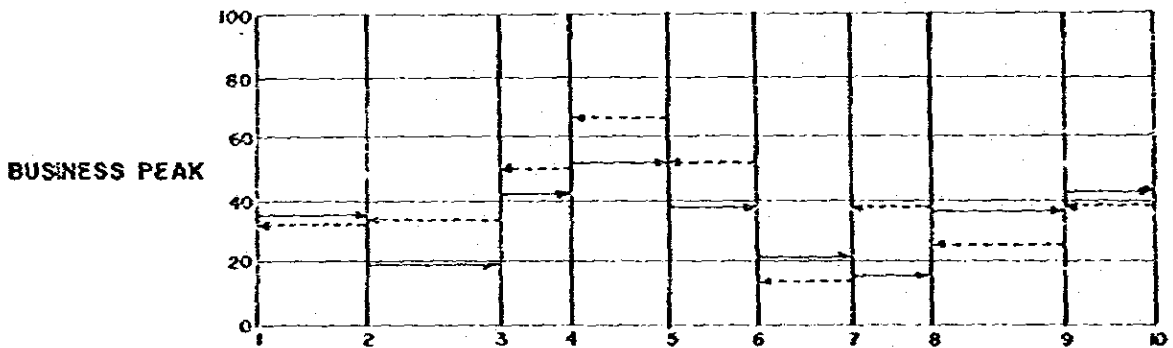
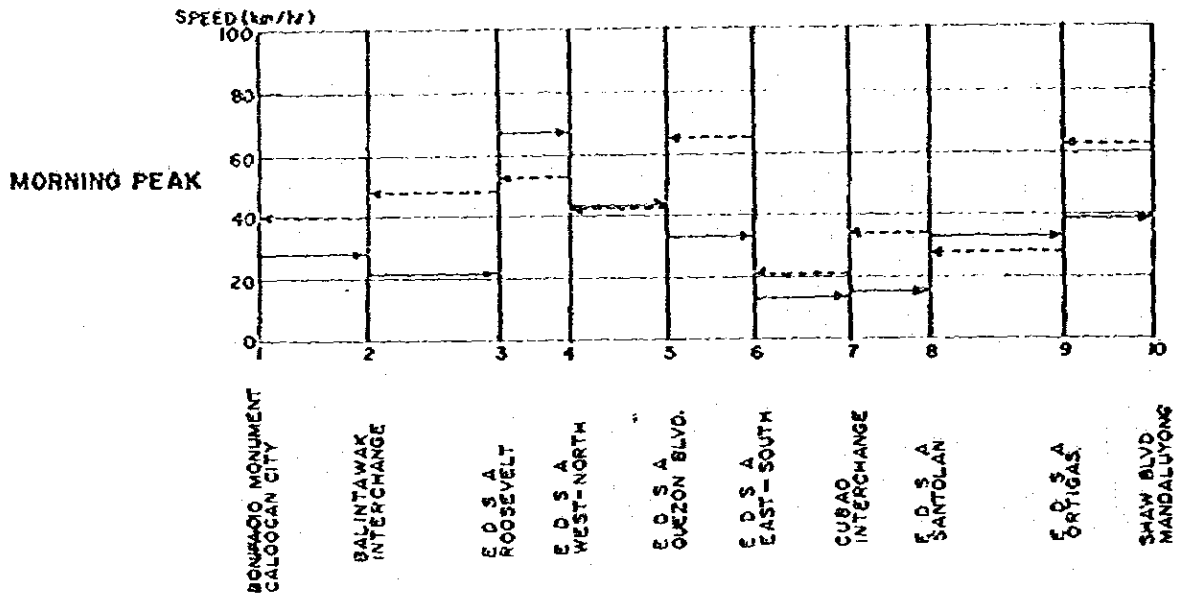


**LEGEND:**

- PRIVATE CAR
- - - ← OPPOSITE DIRECTION

## TRAVEL SPEED

**ROUTE 2 (EDSA)  
MON. CALOOCAN - SHAW BLVD MAND.**



**LEGEND:**

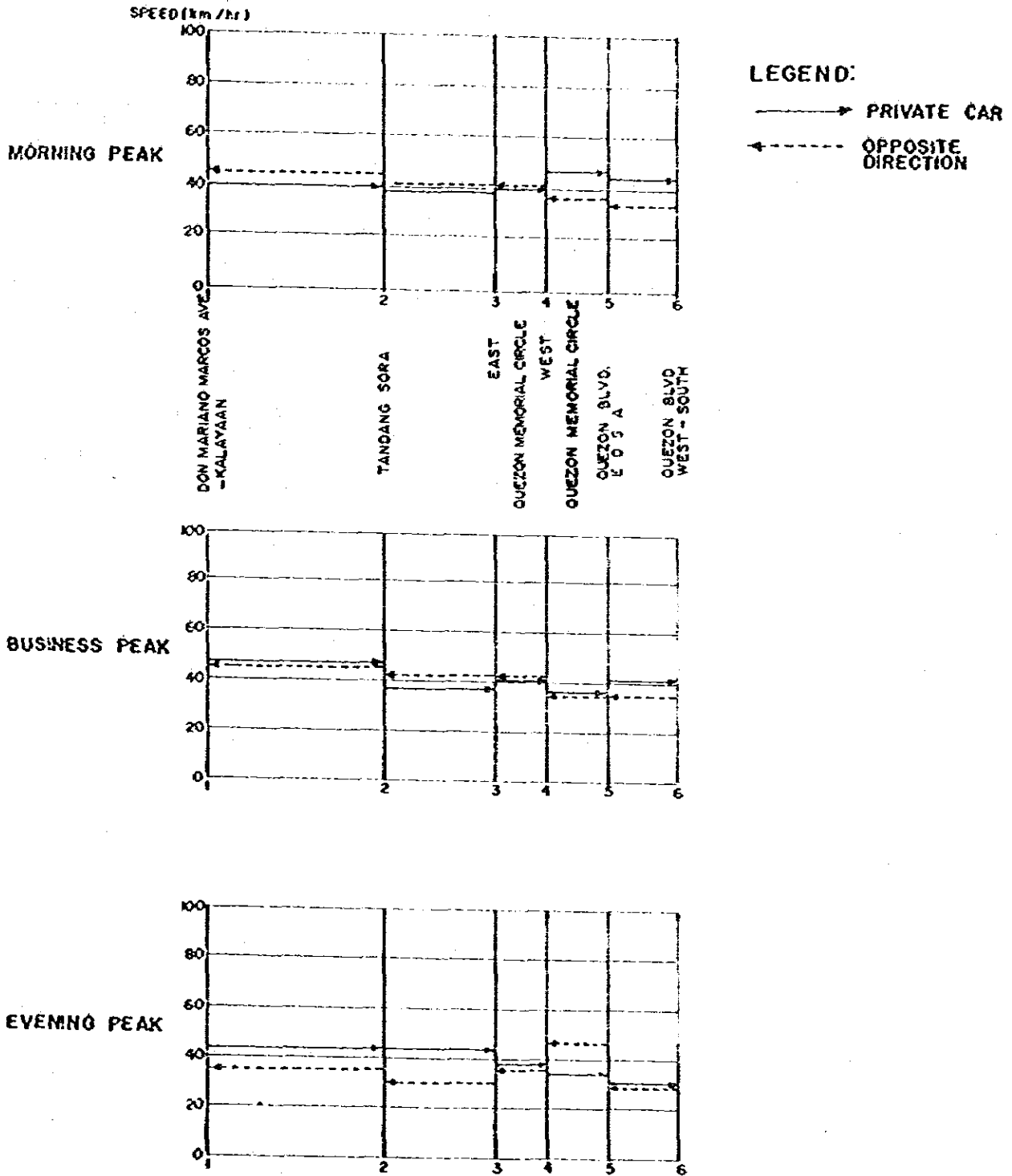
- PRIVATE CAR
- - -•- OPPOSITE DIRECTION



## TRAVEL SPEED

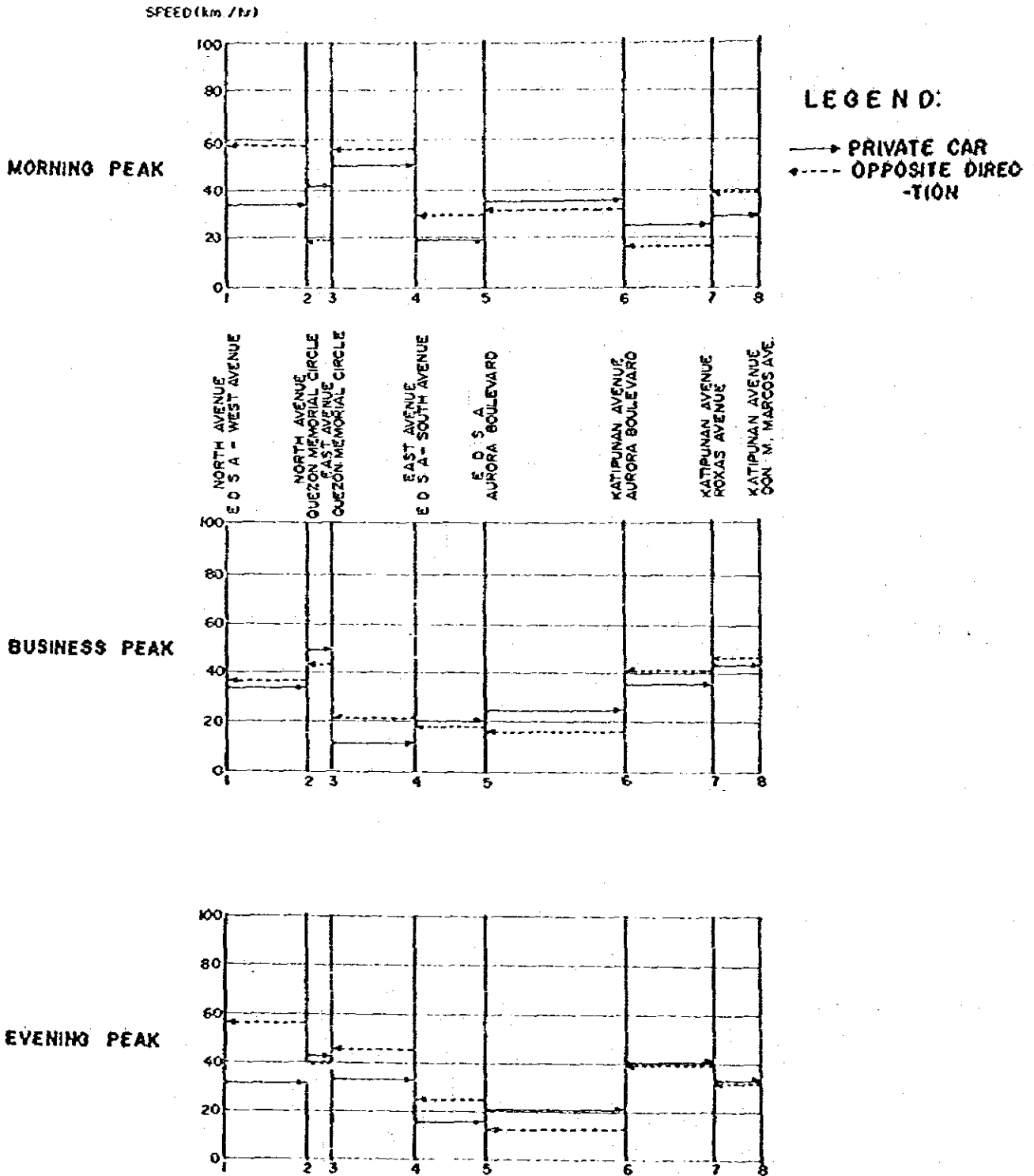
### ROUTE 3

**DON MARIANO MARCOS AVE.-  
KALAYAAN - Q. BLVD. WEST - SOUTH**



## TRAVEL SPEED

**ROUTE 4** NORTH AVE. - EAST AVE. - EDSA - AURORA BLVD. - KATIPUNAN AVE.

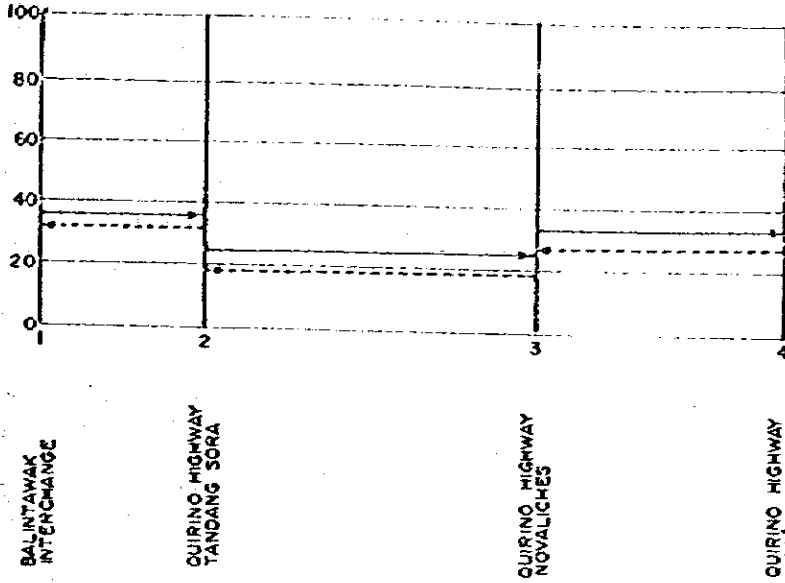


# TRAVEL SPEED

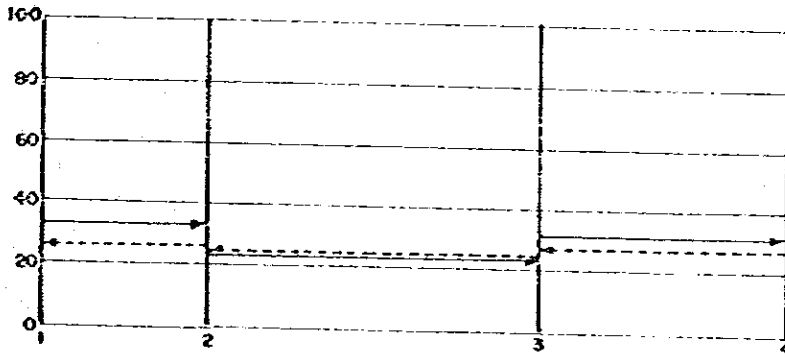
**ROUTE 5  
QUIRINO HIGHWAY  
LAGRO-BALINTAWAK INTERCHANGE**

SPEED (km/hr)

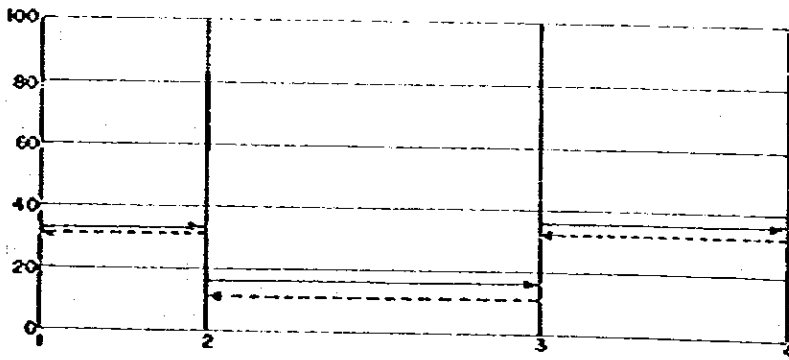
**MORNING PEAK**



**BUSINESS PEAK**



**EVENING PEAK**

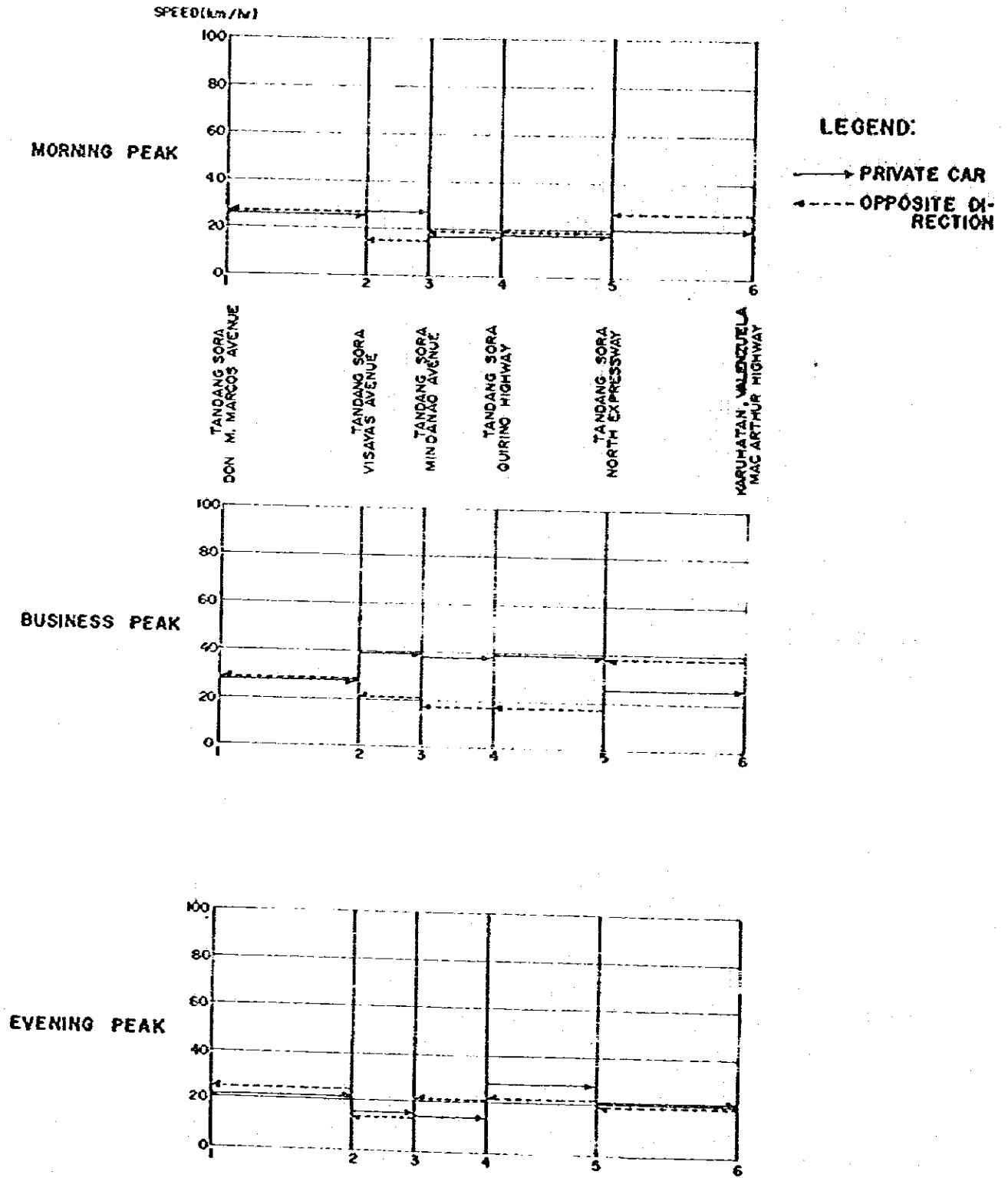


**LEGEND:**

- > PRIVATE CAR
- - -> OPPOSITE DIRECTION

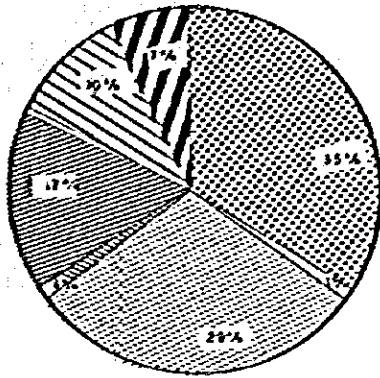
## TRAVEL SPEED

**ROUTE 6**  
**TANDANG SORA AVE.**  
**KARUHATAN - DON M. MARCOS AVE.**

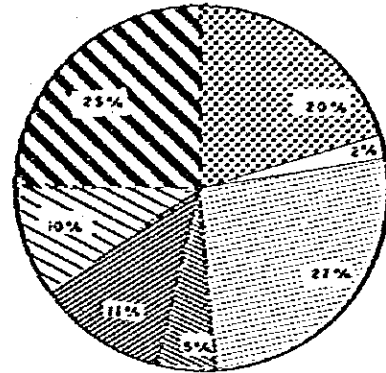


APPENDIX 3.2-3 VEHICLE COMPOSITION ON TRUNK ROADS IN DIZ

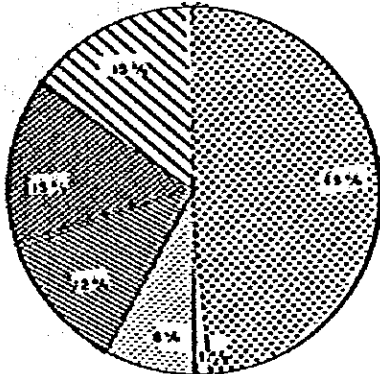
STA. NO. 1 MALINTA ROAD



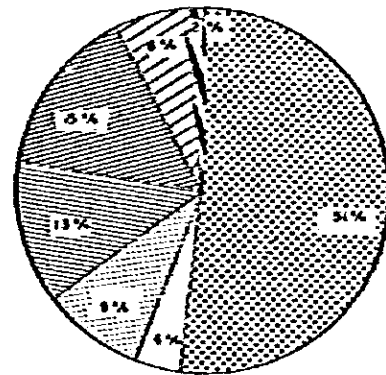
STA. NO. 4 TANDANG SORA



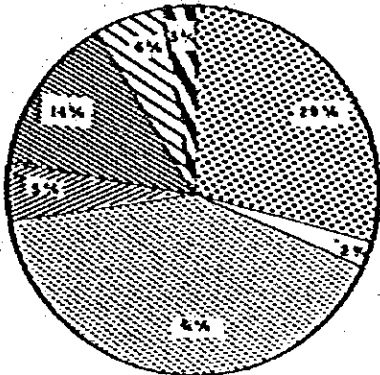
STA. NO. 2 NORTH EXPRESSWAY



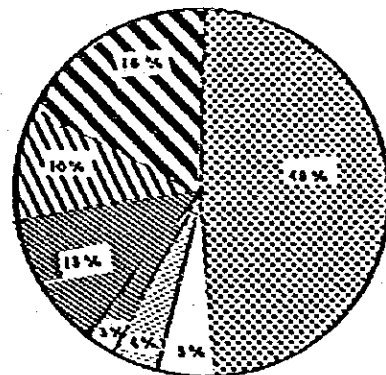
STA. NO. 5 E O S A, BAGO BANTAY



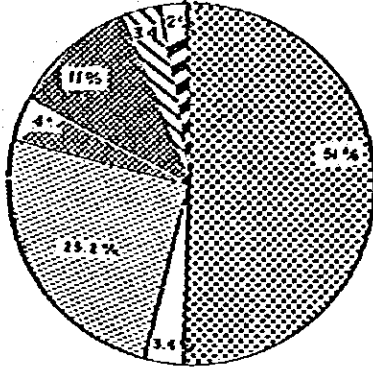
STA. NO. 3 QUIRINO HIGHWAY (Legro)



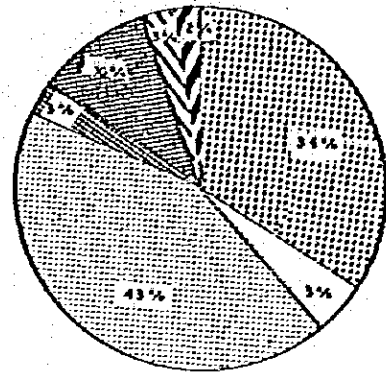
STA. NO. 6 VISAYAS AVENUE



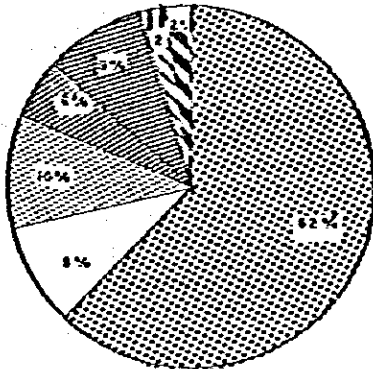
STA. NO. 7 DON MARIANO MARCÓS AVENUE



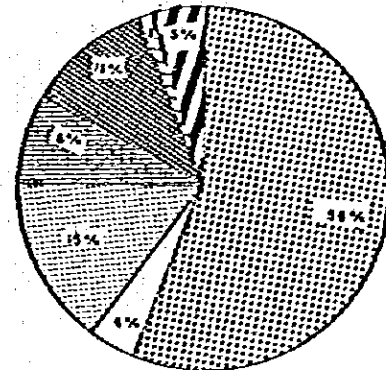
STA. NO. 10 AURORA BOULEVARD



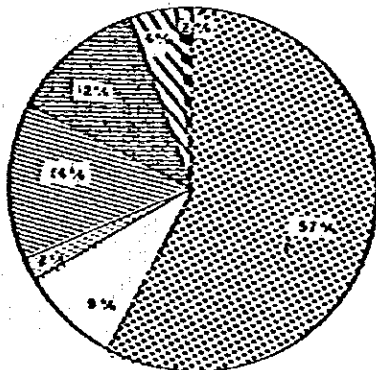
STA. NO. 8 EAST AVENUE



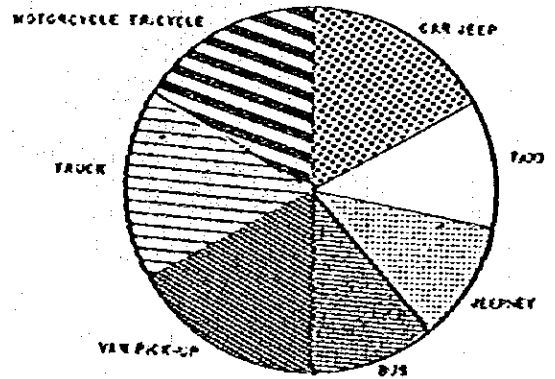
STA. NO. 11 KATIPUNAN



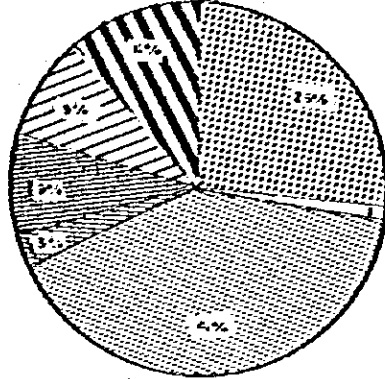
STA. NO. 9 EDSA (KAWAS)



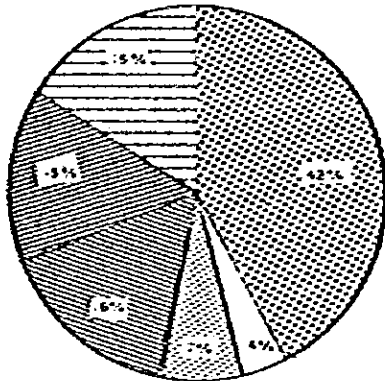
LEGEND:



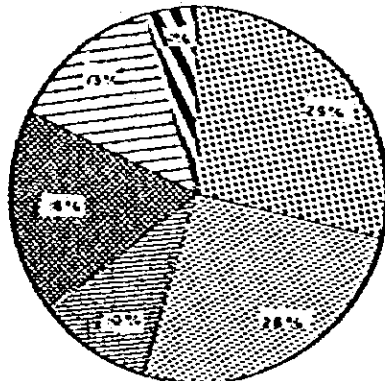
STA. NO. 1 MARLAO (MC. ARTHUR HI-WAY)



STA. NO. 2 NORTH EXPRESSWAY

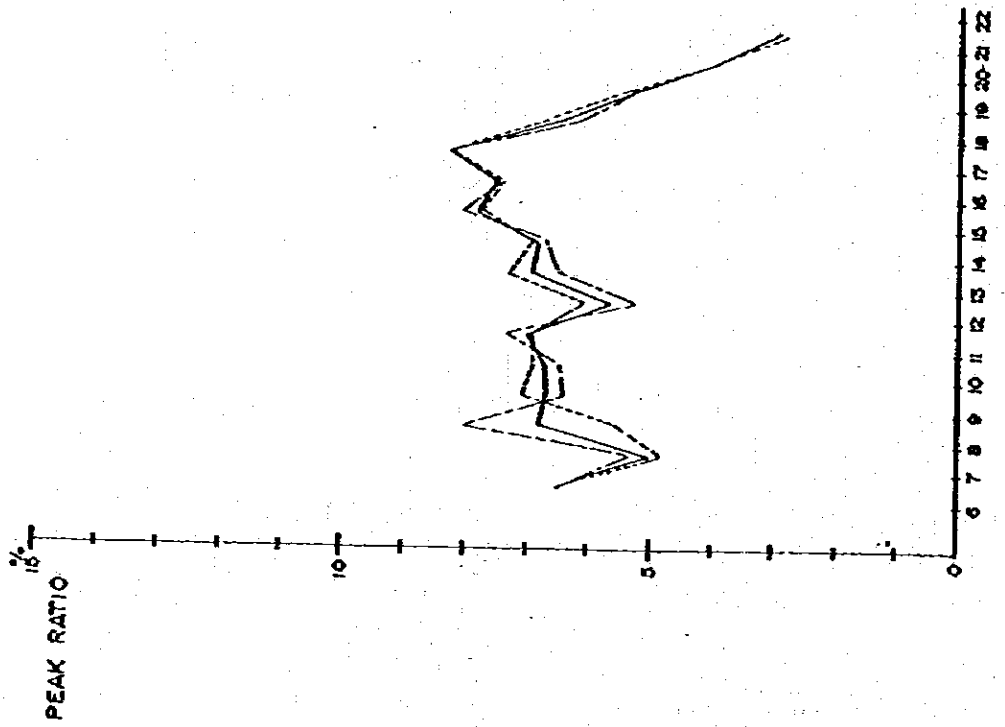


STA. NO. 3 QARNO HIGHWAY (LAGRO)

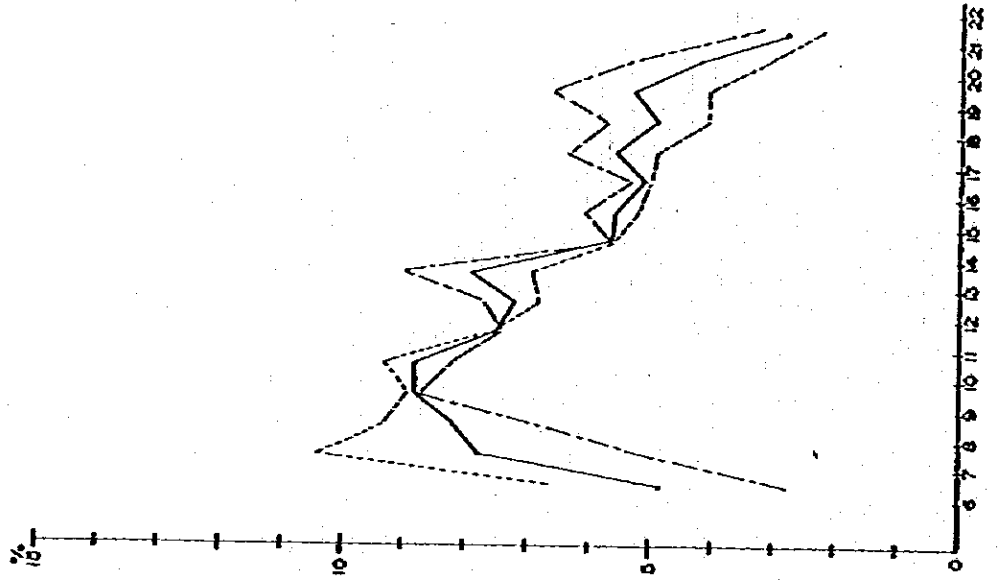


APPENDIX 3.2-4 HOURLY FLUCTUATION OF TRAFFIC

STA. 1 MALINTA ROAD

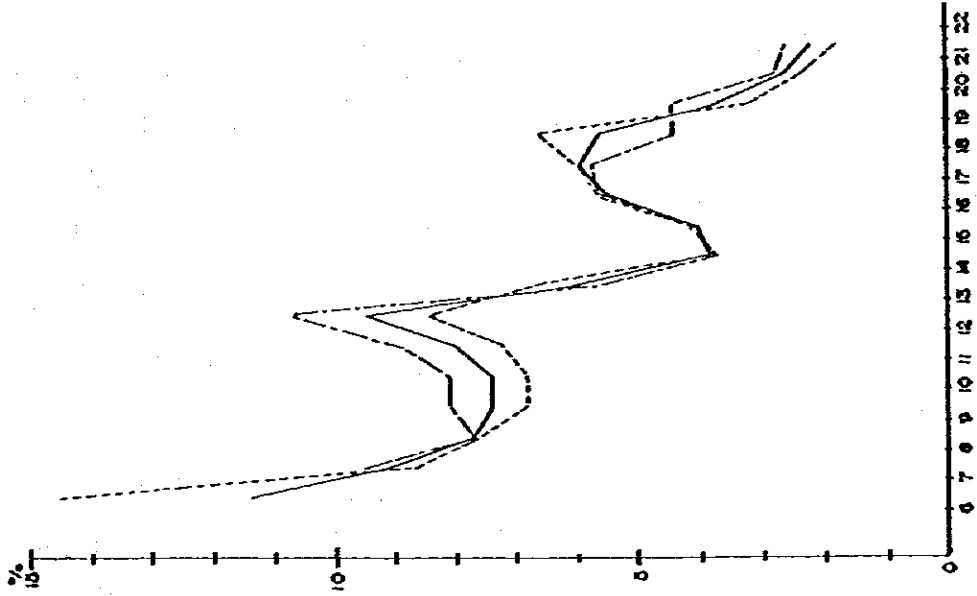


STA. 2 NORTH EXPRESSWAY

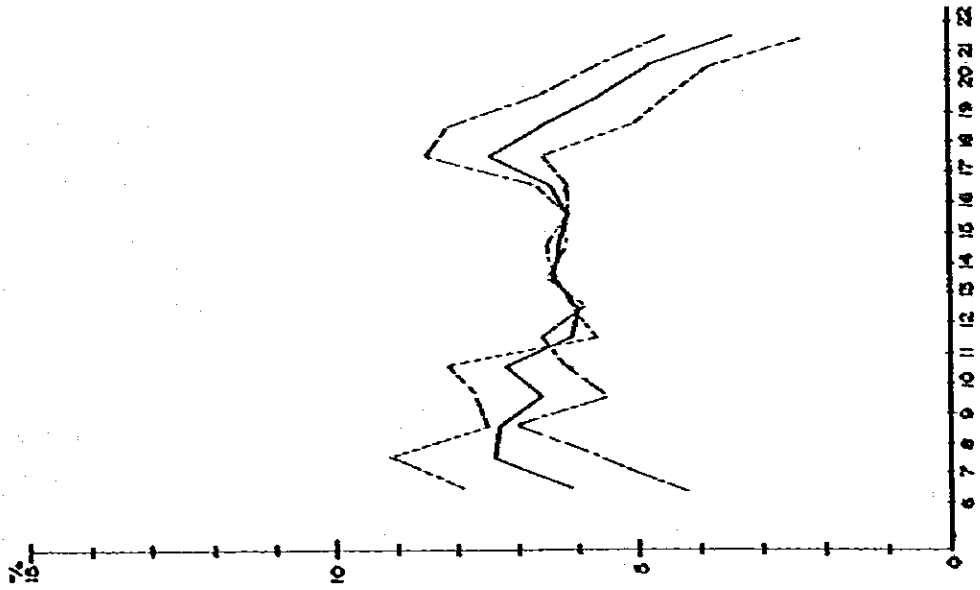




STA. 4 TANDANG SORA

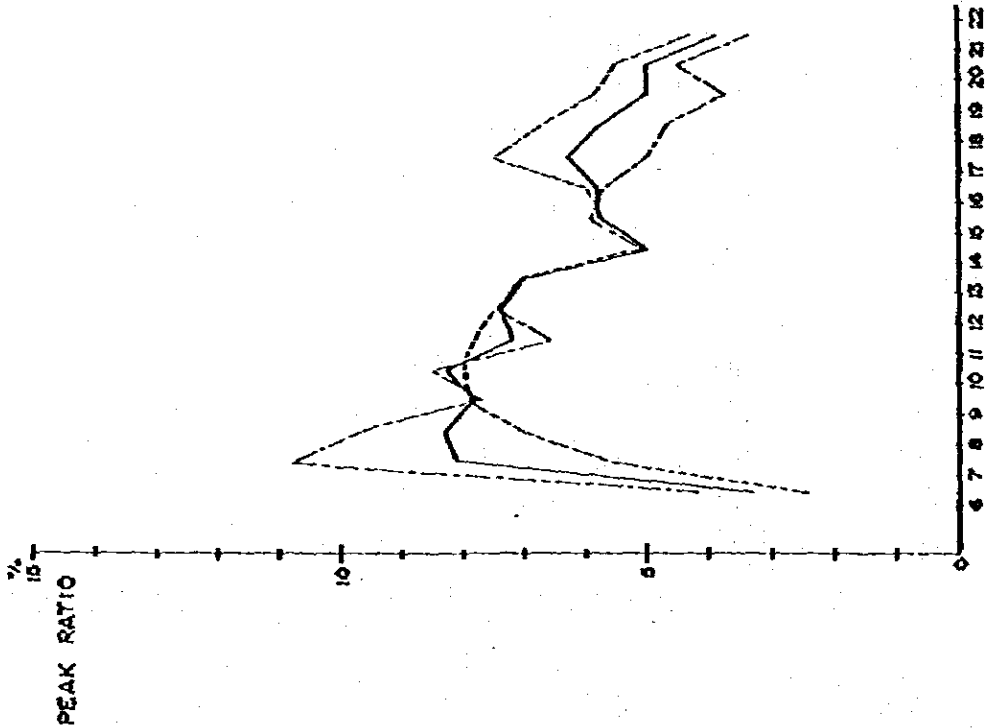


STA. 3 QUIRINO HIGHWAY

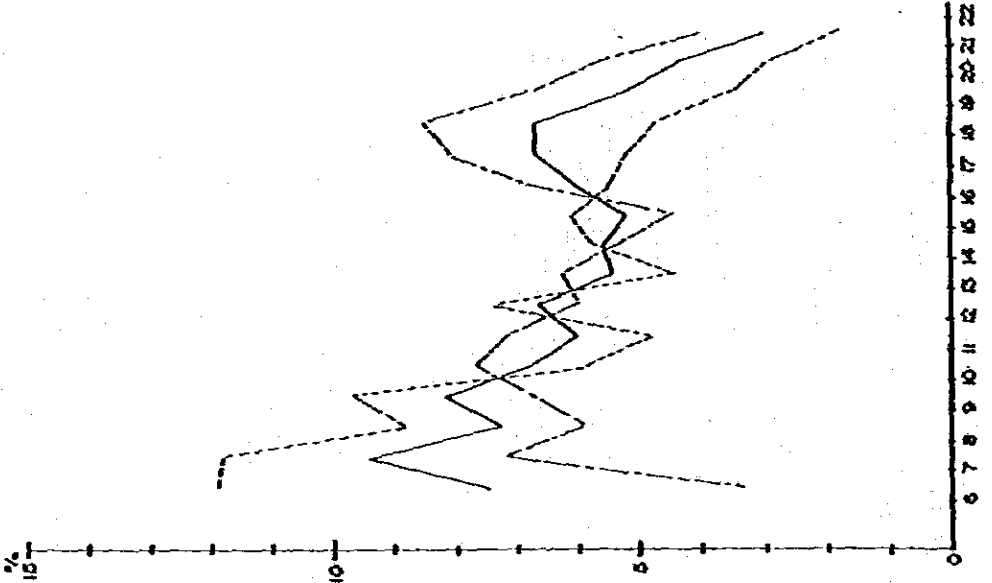


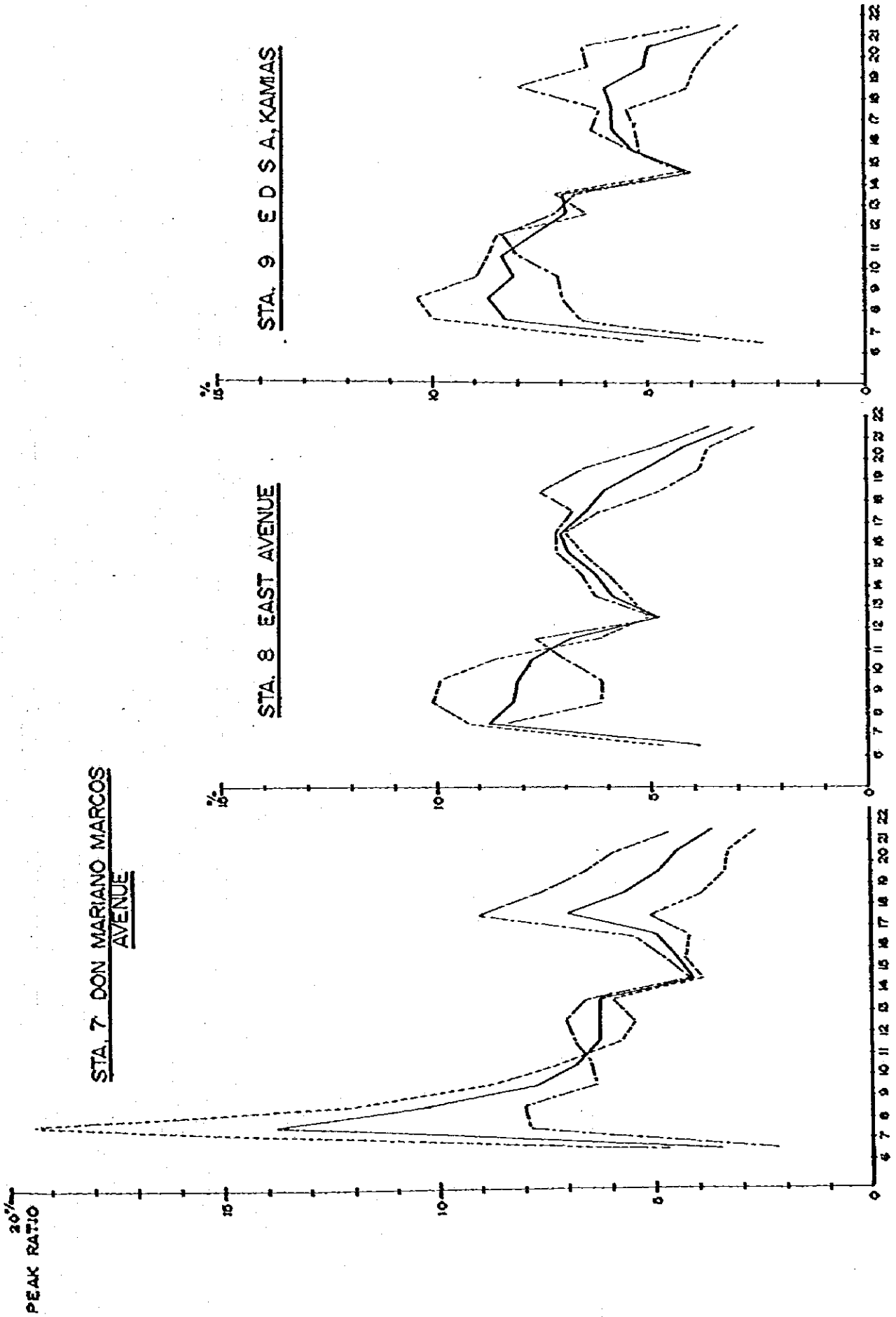
PEAK RATIO

STA. 5 EDSA, SAGO BANTAY

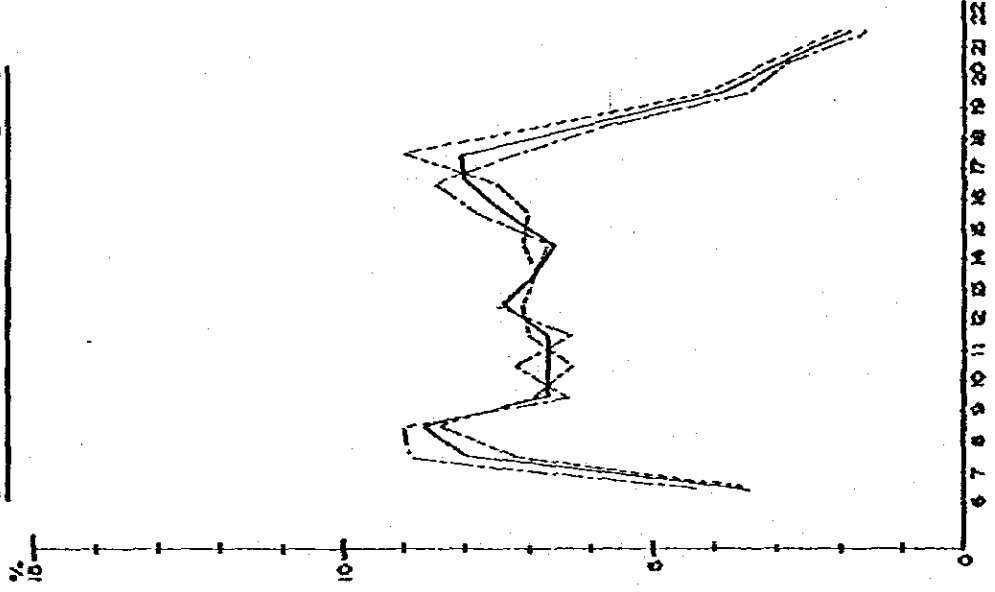


STA. 6 VISAYAS AVENUE

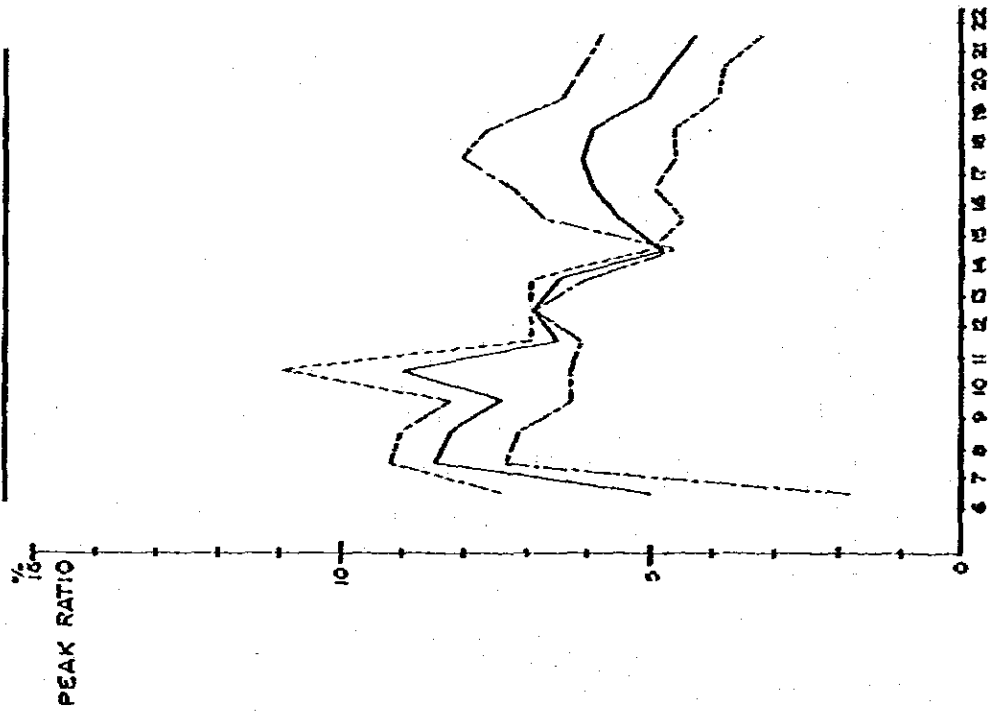




STA. 11 KATIPUNAN AVENUE



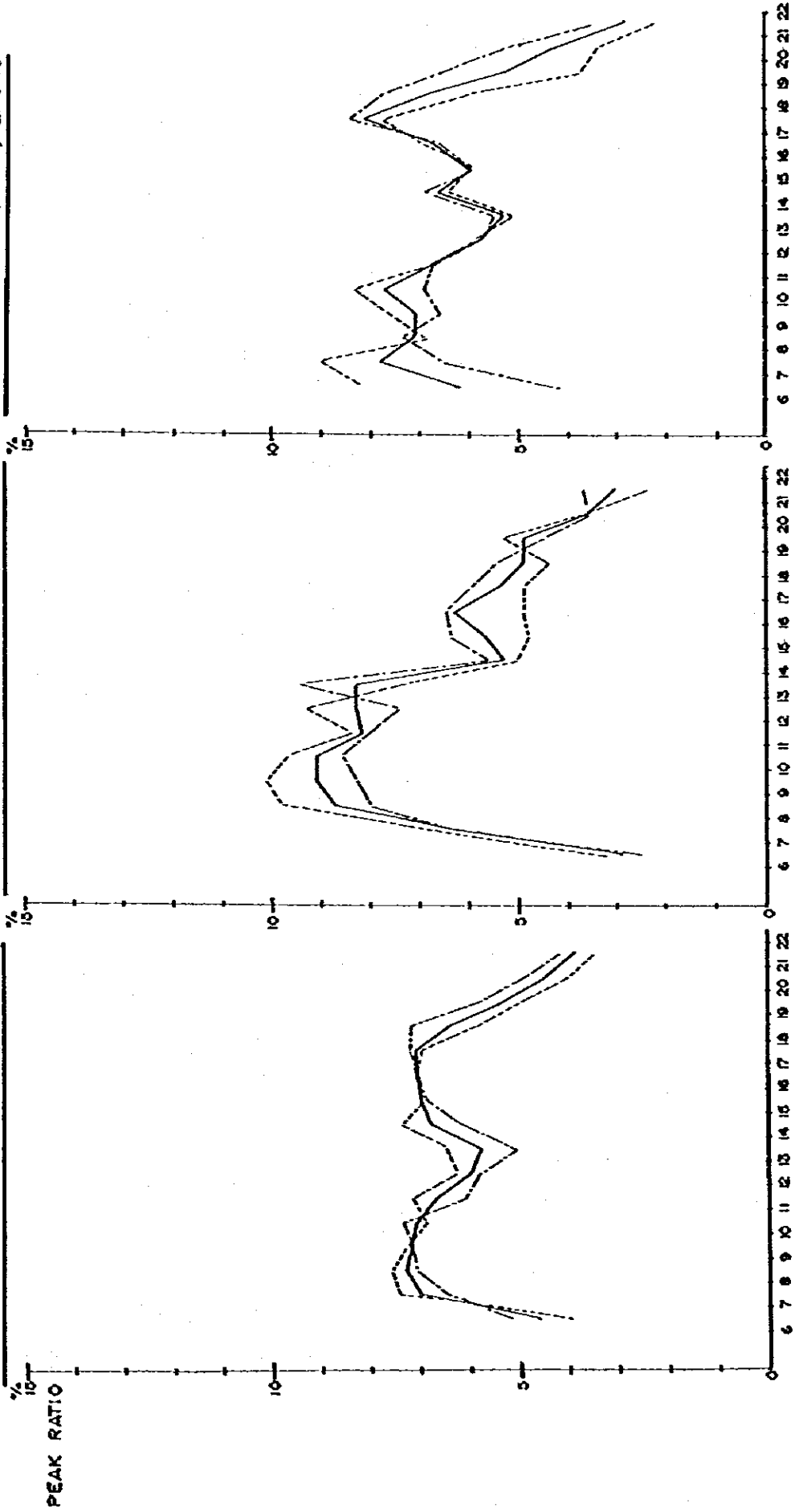
STA. 10 AURORA BOULEVARD



STA. 1 MAC ARTHUR HIGHWAY, MARILAO

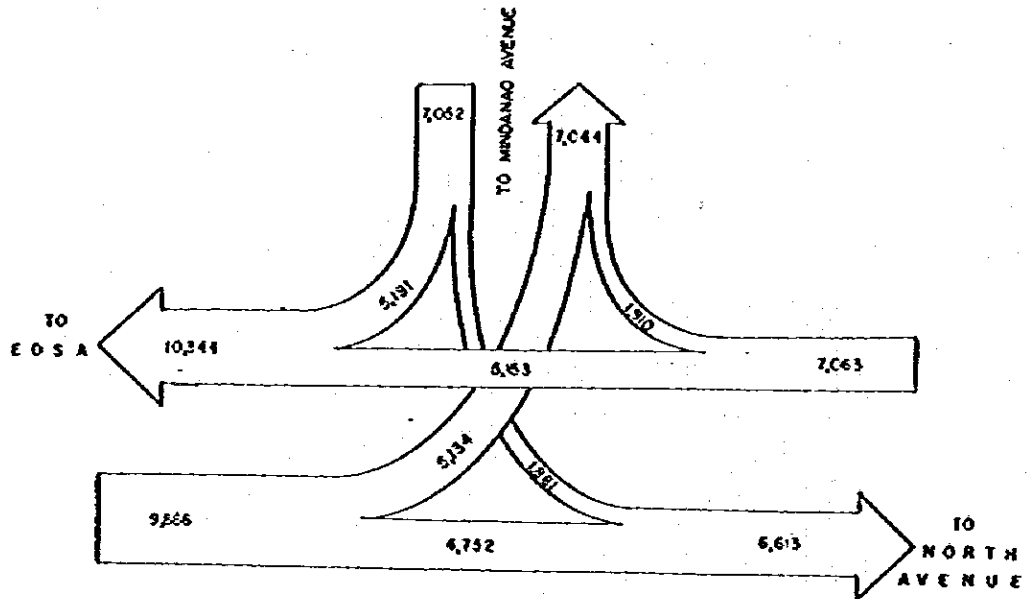
STA. 2 NORTH EXPRESSWAY, MARLAO

STA. 3 QUIRINO HIGHWAY, LAGRO

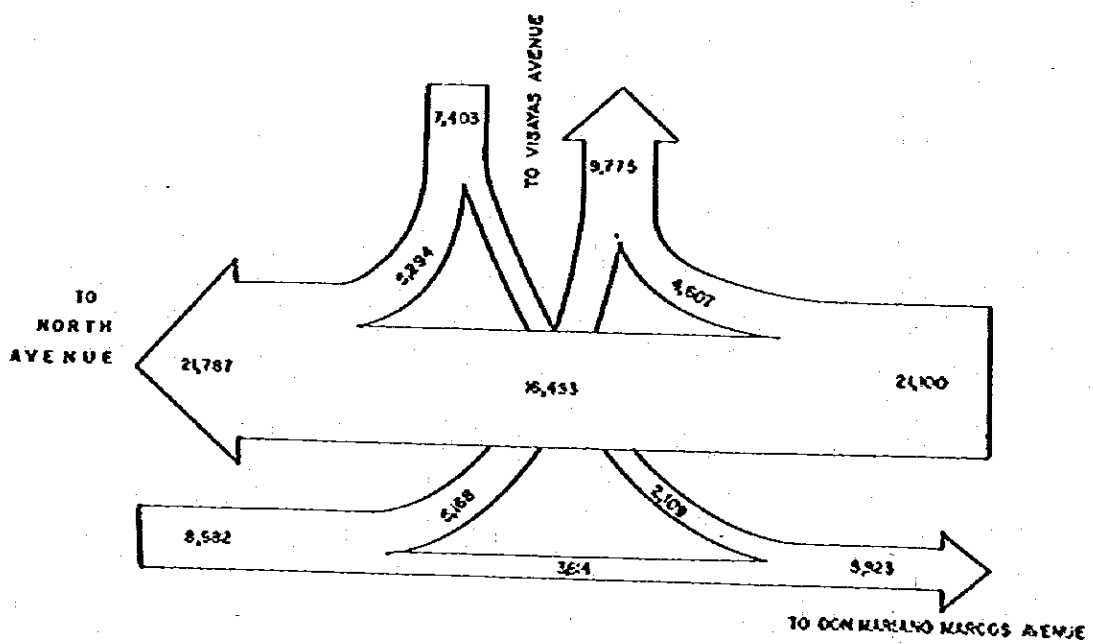


APPENDIX 3.2-5 TRAFFIC FLOW AT INTERSECTIONS

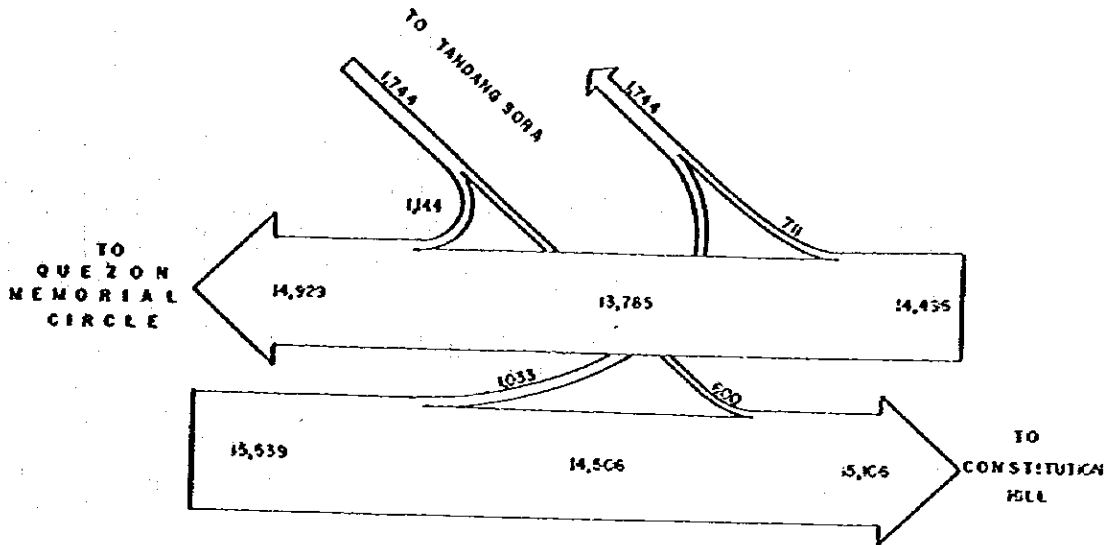
STA. 1. MINDANAO AVE / NORTH AVE.



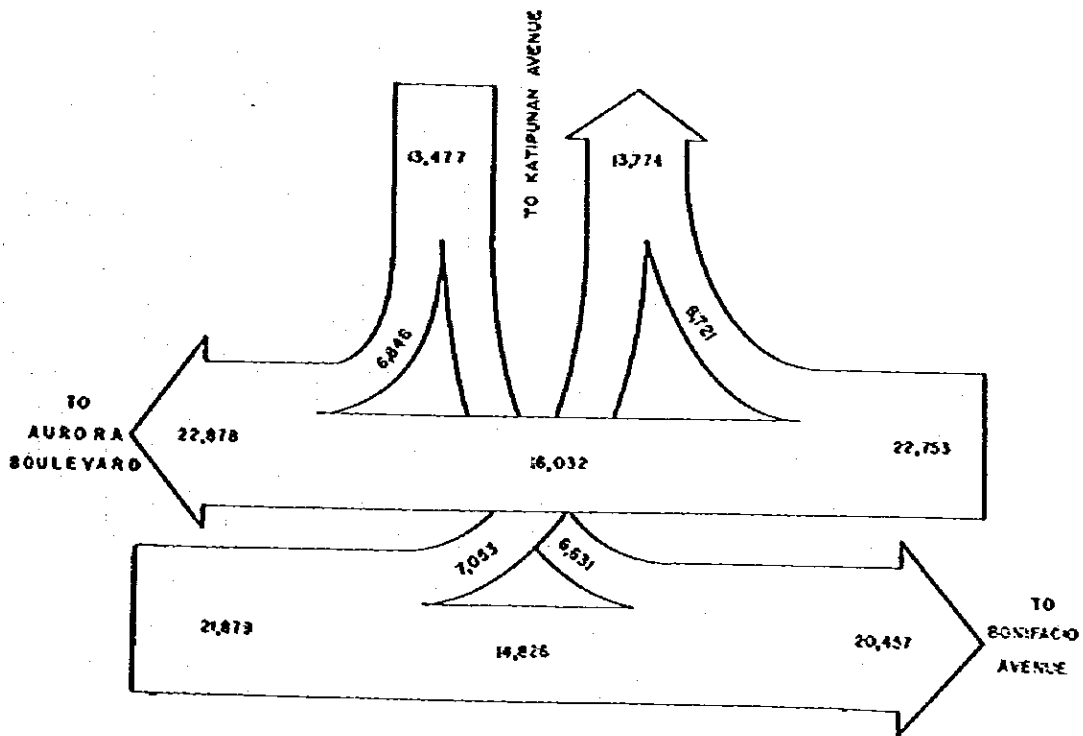
STA. 2 VISAYAS AVE. / QUEZON MEMORIAL CIRCLE



STA. 3 DON MARIANO MARCOS AVE. / TANDANG SORA



STA. 4 KATIPUNAN AVE. / AURORA BLVD.



APPENDIX 3.2-6 ROADSIDE TRAFFIC COUNT IN 1982

SCREENLINE TRAFFIC COUNT SURVEY

STATION NO. 1

ROAD/STREET GEN. LUIS ROAD

Hour \ Vehicle Type	(1) Car Jeep	(2) Taxi	(3) Jeepney	(4) Bus	(5) Van Pick-up	(6) Truck	(7) Motor- cycle Tricycle	TOTAL
6:00- 7:00	232	4	320	7	58	42	51	714
7:00- 8:00	183	5	244	1	38	30	59	560
8:00- 9:00	258	4	252	4	88	78	64	748
9:00-10:00	325	1	177	0	81	113	48	745
10:00-11:00	357	2	160	0	103	89	29	740
11:00-12:00	367	4	160	0	121	79	52	783
12:00-13:00	226	3	166	5	84	86	51	621
13:00-14:00	289	6	146	4	189	78	47	759
SUB-TOTAL	2237	29	1625	21	762	595	401	5670
14:00-15:00	216	1	185	4	208	81	53	748
15:00-16:00	286	5	211	2	228	85	46	863
16:00-17:00	227	2	242	2	206	83	63	825
17:00-18:00	284	2	311	4	166	72	68	907
18:00-19:00	224	4	270	1	108	54	50	711
19:00-20:00	192	3	202	0	87	38	51	573
20:00-21:00	132	5	140	5	66	32	48	428
21:00-22:00	101	4	104	2	45	30	28	314
SUB-TOTAL	1662	26	1665	20	1114	475	407	5369
TOTAL	3899	55	3290	41	1876	1070	808	11039



SCREENLINE TRAFFIC COUNT SURVEY

STATION NO. 2

ROAD/STREET MANILA NORTH EXPRESSWAY

Hour \ Vehicle Type	(1) Car Jeep	(2) Taxi	(3) Jeepney	(4) Bus	(5) Van Pick-up	(6) Truck	(7) Motor- cycle Tricycle	TOTAL
6:00- 7:00	1079	10	330	323	184	162	0	2088
7:00- 8:00	2051	27	318	482	443	124	0	3445
8:00- 9:00	1993	32	255	418	643	252	0	3593
9:00-10:00	2077	8	241	230	565	738	0	3859
10:00-11:00	1879	14	233	406	651	658	0	3841
11:00-12:00	1370	15	192	411	621	684	0	3293
12:00-13:00	1259	22	188	443	513	741	2	3168
13:00-14:00	1474	12	246	381	621	747	0	3481
SUB-TOTAL	13182	140	2003	3094	4241	4106	2	26768
14:00-15:00	1083	8	143	267	478	485	0	2464
15:00-16:00	1104	4	167	300	410	480	0	2465
16:00-17:00	1084	11	183	269	393	316	0	2256
17:00-18:00	1289	15	221	324	381	241	0	2471
18:00-19:00	1140	16	241	251	349	140	0	2137
19:00-20:00	1179	23	226	298	350	247	0	2323
20:00-21:00	806	20	183	193	212	421	0	1835
21:00-22:00	532	7	76	112	131	360	0	1218
SUB-TOTAL	8217	104	1440	2014	2704	2690	0	17169
T O T A L	21399	244	3443	5108	6945	6796	2	43937

SCREENLINE TRAFFIC COUNT SURVEY

STATION NO. 3

ROAD/STREET Quirino Highway

Hour \ Vehicle Type	(1) Car Jeep	(2) Taxi	(3) Jeepney	(4) Bus	(5) Van Pick-up	(6) Truck	(7) Motor- cycle Tricycle	TOTAL
6:00- 7:00	383	21	510	35	83	20	34	1086
7:00- 8:00	445	25	639	51	96	38	46	1310
8:00- 9:00	435	40	527	45	144	66	34	1291
9:00-10:00	371	18	435	47	173	84	38	1166
10:00-11:00	403	14	445	64	215	97	41	1279
11:00-12:00	304	26	406	62	150	101	43	1092
12:00-13:00	280	27	429	64	151	89	29	1069
13:00-14:00	302	11	459	54	165	109	41	1141
SUB-TOTAL	2893	182	3850	422	1177	604	306	9434
14:00-15:00	277	23	426	62	220	92	28	1128
15:00-16:00	256	26	434	50	215	99	28	1108
16:00-17:00	268	19	518	34	196	73	41	1149
17:00-18:00	374	24	604	31	210	69	30	1342
18:00-19:00	364	28	506	55	141	55	28	1177
19:00-20:00	317	17	421	58	121	32	25	991
20:00-21:00	287	24	352	41	82	42	19	847
21:00-22:00	203	38	250	30	63	34	12	630
SUB-TOTAL	2346	199	3511	361	1248	496	211	8372
TOTAL	5239	381	7361	783	2425	1100	517	17806

SCREENLINE TRAFFIC COUNT SURVEY

STATION NO. 4

ROAD/STREET Tandang Sora Avenue

Vehicle Type Hour	(1) Car Jeep	(2) Taxi	(3) Jeepney	(4) Bus	(5) Van Pick-up	(6) Truck	(7) Motor- cycle Tricycle	TOTAL
6:00- 7:00	162	14	748	70	52	32	78	1156
7:00- 8:00	254	15	253	72	100	51	174	919
8:00- 9:00	184	13	178	38	80	71	212	776
9:00-10:00	176	10	151	16	98	106	194	751
10:00-11:00	160	9	152	11	110	113	195	750
11:00-12:00	168	20	145	4	124	105	243	809
12:00-13:00	172	13	187	108	112	97	273	962
13:00-14:00	107	11	138	16	87	84	175	618
SUB-TOTAL	1383	105	1952	335	763	659	1544	6741
14:00-15:00	88	8	115	4	46	48	77	386
15:00-16:00	57	8	91	7	69	72	117	421
16:00-17:00	95	7	104	6	54	85	210	561
17:00-18:00	108	12	136	5	63	72	197	593
18:00-19:00	84	16	197	7	42	35	186	567
19:00-20:00	83	14	93	17	38	36	98	379
20:00-21:00	60	8	59	31	21	25	60	264
21:00-22:00	46	10	58	59	13	14	23	223
SUB-TOTAL	621	83	853	136	346	387	968	3394
TOTAL	2004	188	2805	471	1109	1046	2512	10135

SCREENLINE TRAFFIC COUNT SURVEY

STATION NO. 5

ROAD/STREET EDSA, Bago Bantay

Hour \ Vehicle Type	(1) Car Jeep	(2) Taxi	(3) Jeepney	(4) Bus	(5) Van Pick-up	(6) Truck	(7) Motor- cycle Tricycle	TOTAL
6:00- 7:00	1320	106	139	573	291	12	49	2490
7:00- 8:00	3742	216	101	1019	807	13	174	6072
8:00- 9:00	3679	330	177	918	892	53	144	6193
9:00-10:00	3021	187	164	716	1023	592	105	5808
10:00-11:00	2872	197	463	731	1115	681	99	6158
11:00-12:00	2393	251	159	810	1039	610	122	5384
12:00-13:00	2797	252	159	788	893	592	66	5547
13:00-14:00	2440	164	159	766	1026	618	66	5239
SUB-TOTAL	22264	1703	1521	6321	7086	3171	825	42891
14:00-15:00	1699	155	317	458	704	360	67	3760
15:00-16:00	2036	202	317	523	827	331	97	4333
16:00-17:00	2169	258	368	602	730	116	102	4345
17:00-18:00	2544	231	562	528	689	29	126	4709
18:00-19:00	7157	242	455	585	519	20	62	4331
19:00-20:00	2003	244	393	553	368	25	64	3655
20:00-21:00	1946	202	363	502	332	342	39	3726
21:00-22:00	1211	187	260	371	577	267	28	2901
SUB-TOTAL	16056	1721	3040	4122	4746	1490	585	31760
TOTAL	38320	3424	4561	10443	11832	4661	1410	74651

SCREENLINE TRAFFIC COUNT SURVEY

STATION NO. 6

ROAD/STREET Visayas Avenue

Vehicle Type Hour	(1) Car Jeep	(2) Taxi	(3) Jeepney	(4) Bus	(5) Van Pick-up	(6) Truck	(7) Motor- cycle Tricycle	TOTAL
6:00- 7:00	288	26	35	14	91	68	120	642
7:00- 8:00	403	104	12	17	76	37	157	806
8:00- 9:00	350	29	9	18	30	23	166	625
9:00-10:00	331	17	20	12	80	90	151	701
10:00-11:00	268	13	38	12	71	93	86	581
11:00-12:00	283	17	8	13	50	61	82	514
12:00-13:00	211	13	24	24	87	63	149	571
13:00-14:00	183	12	15	14	73	94	68	459
SUB-TOTAL	2317	231	161	124	558	529	979	4899
14:00-15:00	205	15	16	24	103	54	58	475
15:00-16:00	189	19	14	15	90	68	48	444
16:00-17:00	244	27	22	22	97	53	61	526
17:00-18:00	332	33	14	16	59	45	72	571
18:00-19:00	325	33	17	24	93	34	46	572
19:00-20:00	240	26	26	14	69	31	41	447
20:00-21:00	200	30	32	10	44	32	29	377
21:00-22:00	141	15	19	15	24	26	15	255
SUB-TOTAL	1876	198	160	140	579	343	371	3667
T O T A L	4193	429	321	264	1137	872	1350	8566

SCREENLINE TRAFFIC COUNT SURVEY

STATION NO.   7  

ROAD/STREET Don Mariano Marcos Ave.

Hour \ Vehicle Type	(1) Car Jeep	(2) Taxi	(3) Jeepney	(4) Bus	(5) Van Pick-up	(6) Truck	(7) Motor- cycle Tricycle	TOTAL
6:00- 7:00	688	60	313	38	119	12	10	1240
7:00- 8:00	3125	115	878	141	447	47	109	4862
8:00- 9:00	2014	90	725	196	361	86	80	3552
9:00-10:00	1288	60	713	92	332	139	69	2693
10:00-11:00	1132	65	641	70	301	122	78	2409
11:00-12:00	964	93	592	64	308	115	82	2218
12:00-13:00	964	79	702	63	266	101	26	2201
13:00-14:00	948	49	600	133	325	128	34	2217
SUB-TOTAL	11123	611	5164	797	2459	750	488	21392
14:00-15:00	606	64	423	50	155	105	21	1424
15:00-16:00	688	109	447	54	203	87	33	1591
16:00-17:00	817	59	452	52	209	74	43	1706
17:00-18:00	1089	77	825	115	242	43	60	2451
18:00-19:00	1022	110	506	67	197	46	73	2021
19:00-20:00	981	78	413	56	139	22	45	1734
20:00-21:00	877	56	364	70	134	30	58	1589
21:00-22:00	657	61	314	52	95	71	38	1288
SUB-TOTAL	6737	614	3714	516	1374	478	371	13804
T O T A L	17860	1225	8878	1313	3833	1228	859	35196

SCREENLINE TRAFFIC COUNT SURVEY

STATION NO. 8

ROAD/STREET East Avenue

Vehicle Type Hour	(1) Car Jeep	(2) Taxi	(3) Jeepney	(4) Bus	(5) Van Pick-up	(6) Truck	(7) Motor- cycle Fricycle	TOTAL
6:00- 7:00	749	103	219	126	117	9	17	1639
7:00- 8:00	2486	200	379	162	335	88	46	3696
8:00- 9:00	2501	279	316	167	134	33	34	3464
9:00-10:00	2206	311	399	189	186	78	45	3414
10:00-11:00	2049	357	313	185	284	63	49	3300
11:00-12:00	1775	315	284	187	243	46	56	2906
12:00-13:00	1138	278	239	146	198	37	46	2082
13:00-14:00	1456	225	322	177	219	43	41	2483
SUB-TOTAL	14660	2068	2471	1339	1716	397	334	22985
14:00-15:00	1441	245	291	176	370	39	84	2646
15:00-16:00	1641	229	347	164	388	48	79	2896
16:00-17:00	1681	257	340	157	401	73	77	2986
17:00-18:00	1683	195	295	179	289	18	63	2722
18:00-19:00	1619	212	246	186	262	14	48	2587
19:00-20:00	1402	190	187	158	124	9	31	2201
20:00-21:00	1131	164	148	149	155	35	32	1814
21:00-22:00	795	157	119	75	83	53	21	1303
SUB-TOTAL	11393	1649	1973	1244	2172	289	435	19155
T O T A L	26053	3717	4444	2583	3888	686	769	42140

SCREENLINE TRAFFIC COUNT SURVEY

STATION NO. 9

ROAD/STREET EDSA (Kamias)

Hour \ Vehicle Type	(1) Car Jeep	(2) Taxi	(3) Jeepney	(4) Bus	(5) Van Pick-up	(6) Truck	(7) Motor- cycle Tricycle	TOTAL
6:00- 7:00	1961	196	132	766	348	10	59	3472
7:00- 8:00	4935	347	245	1066	837	19	165	7614
8:00- 9:00	5085	511	215	1108	901	29	147	7996
9:00-10:00	4124	526	196	991	967	427	187	7418
10:00-11:00	4153	538	153	1073	1130	451	208	7706
11:00-12:00	4164	620	157	1103	1119	415	162	7740
12:00-13:00	3030	627	123	1038	981	422	110	6331
13:00-14:00	3264	590	168	915	935	383	115	6370
SUB-TOTAL	30716	3955	1389	8060	7218	2156	1153	54647
14:00-15:00	2159	410	53	488	381	247	19	3757
15:00-16:00	2623	413	80	620	701	273	126	4836
16:00-17:00	3068	495	85	647	825	44	160	5324
17:00-18:00	3285	445	113	653	636	40	171	5343
18:00-19:00	3887	461	93	479	506	26	97	5549
19:00-20:00	2989	480	84	657	415	13	87	4725
20:00-21:00	2255	974	90	556	320	347	46	4588
21:00-22:00	1729	387	78	421	287	119	41	3062
SUB-TOTAL	21995	4065	676	4521	4071	1109	747	37184
TOTAL	52711	8020	2065	12581	11289	3265	1900	91831



SCREENLINE TRAFFIC COUNT SURVEY

STATION NO. 10

ROAD/STREET Aurora Boulevard

Hour \ Vehicle Type	(1) Car Jeep	(2) Taxi	(3) Jeepney	(4) Bus	(5) Van Pick-up	(6) Truck	(7) Motor- cycle Tricycle	TOTAL
6:00- 7:00	632	75	1032	68	153	7	31	2098
7:00- 8:00	1519	86	1481	129	248	25	53	3541
8:00- 9:00	1297	204	1303	195	337	44	57	3437
9:00-10:00	1072	135	1266	73	342	141	68	3097
10:00-11:00	1040	121	1950	109	381	116	86	3803
11:00-12:00	965	109	1047	78	361	102	85	2747
12:00-13:00	1040	136	1116	115	326	95	80	2908
13:00-14:00	958	113	1059	104	218	132	64	2748
SUB-TOTAL	8623	979	10254	871	2466	662	524	24379
14:00-15:00	679	86	839	64	221	82	32	2023
15:00-16:00	681	90	1067	66	242	98	59	2303
16:00-17:00	742	111	1196	72	308	43	79	2479
17:00-18:00	854	114	1163	99	225	12	96	2563
18:00-19:00	816	118	1149	94	239	10	52	2478
19:00-20:00	641	152	955	81	242	5	29	2105
20:00-21:00	634	163	869	53	124	120	38	2001
21:00-22:00	563	177	823	52	95	55	39	1804
SUB-TOTAL	5610	1011	8061	581	1624	425	44	17756
T O T A L	14233	1990	18315	1452	4090	1687	968	42135

SCREENLINE TRAFFIC COUNT SURVEY

STATION NO. 11

ROAD/STREET Katipunan Avenue

Hour \ Vehicle Type	(1) Car Jeep	(2) Taxi	(3) Jeepney	(4) Bus	(5) Van Pick-up	(6) Truck	(7) Motor- cycle Tricycle	TOTAL
6:00- 7:00	275	16	104	45	35	1	33	506
7:00- 8:00	683	22	143	54	124	3	22	1051
8:00- 9:00	631	40	196	76	133	8	53	1147
9:00-10:00	406	45	146	85	126	11	57	876
10:00-11:00	440	67	125	63	116	24	46	881
11:00-12:00	468	50	137	53	100	16	56	880
12:00-13:00	565	49	147	77	88	8	33	967
13:00-14:00	487	45	141	71	101	21	41	907
SUB-TOTAL	3955	334	1136	524	823	92	341	7205
14:00-15:00	488	32	144	65	134	5	36	864
15:00-16:00	527	22	133	62	170	10	45	969
16:00-17:00	597	33	157	72	144	6	37	1046
17:00-18:00	641	57	179	49	90	3	47	1066
18:00-19:00	486	46	121	48	60	4	34	799
19:00-20:00	309	16	61	77	30	0	13	506
20:00-21:00	224	15	43	59	24	1	18	384
21:00-22:00	179	17	22	31	22	1	14	236
SUB-TOTAL	3401	238	860	463	674	30	244	5910
TOTAL	7356	572	1996	987	1497	122	585	13115

CORDONLINE TRAFFIC COUNT SURVEY

STATION NO. 1

ROAD/STREET Marilao (MacArthur Highway)

Hour \ Vehicle Type	(1) Car Jeep	(2) Taxi	(3) Jeepney	(4) Bus	(5) Van Pick-up	(6) Truck	(7) Motor- cycle Tricycle	TOTAL
6:00- 7:00	110	0	322	8	32	32	100	604
7:00- 8:00	200	4	433	0	48	76	150	911
8:00- 9:00	273	1	405	2	64	83	128	956
9:00-10:00	283	0	368	1	71	93	126	942
10:00-11:00	242	4	358	2	108	125	94	933
11:00-12:00	214	0	351	6	87	101	113	872
12:00-13:00	225	4	297	2	87	94	81	790
13:00-14:00	261	3	285	2	67	74	67	759
SUB-TOTAL	1808	16	2819	23	564	678	859	6767
14:00-15:00	230	0	342	2	112	104	99	889
15:00-16:00	237	0	384	5	124	89	73	912
16:00-17:00	238	1	398	1	125	85	74	922
17:00-18:00	219	0	416	7	111	82	87	922
18:00-19:00	234	2	365	1	80	61	111	854
19:00-20:00	190	0	280	0	75	40	121	706
20:00-21:00	159	1	243	2	56	46	77	584
21:00-22:00	124	4	219	4	46	55	53	505
SUB-TOTAL	1631	8	2647	22	729	562	695	6294
TOTAL	3439	24	5466	45	1293	1240	1554	13061

CORDONLINE TRAFFIC COUNT SURVEY

STATION NO. 2

ROAD/STREET North Expressway

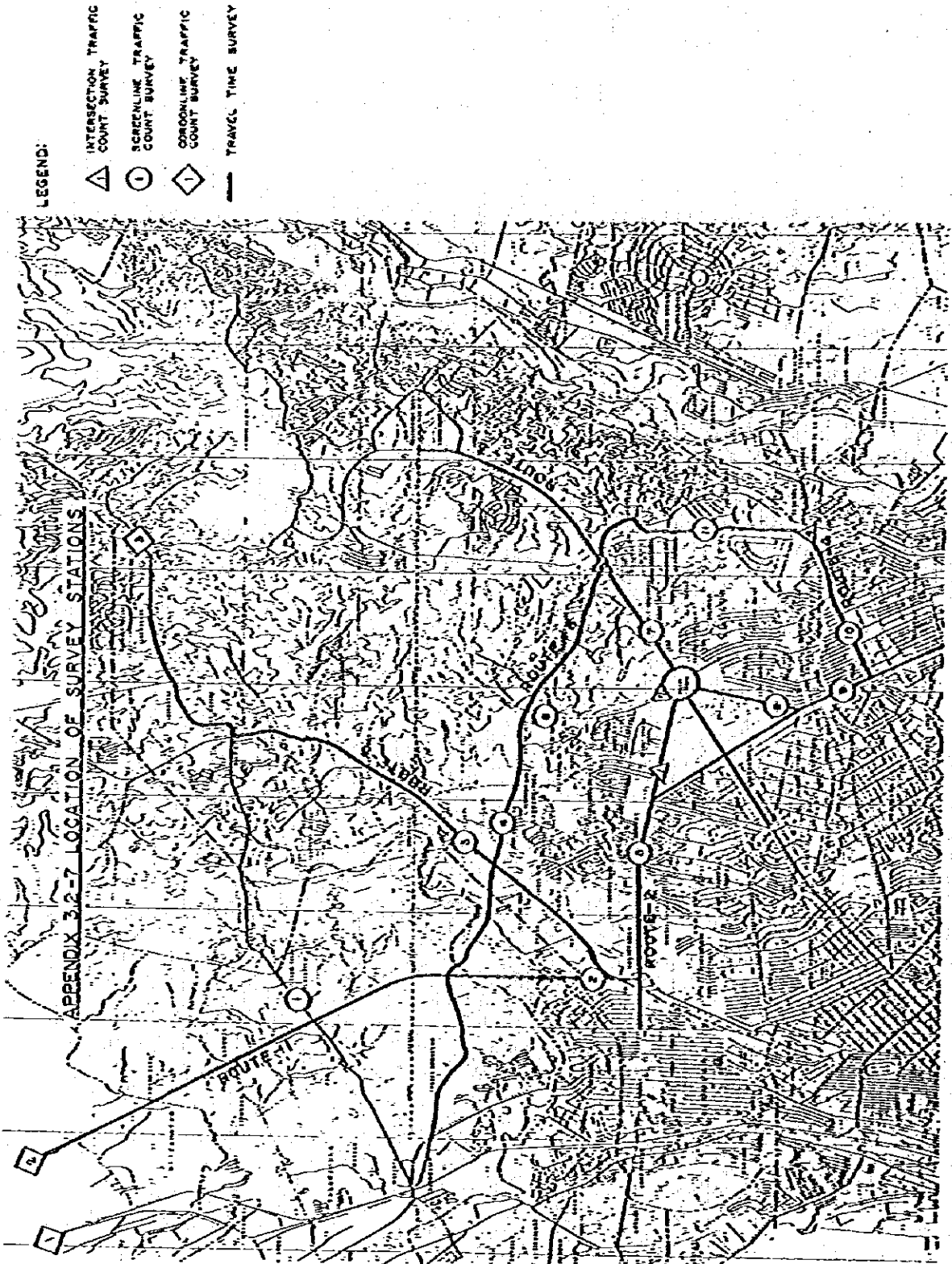
Hour \ Vehicle Type	(1) Car Jeep	(2) Taxi	(3) Jeepney	(4) Bus	(5) Van Pick-up	(6) Truck	(7) Motor- cycle Tricycle	TOTAL
6:00- 7:00	275	0	85	206	138	73	0	777
7:00- 8:00	833	21	163	312	268	119	0	1716
8:00- 9:00	1131	8	188	355	361	311	0	2354
9:00-10:00	1053	7	200	349	429	438	0	2476
10:00-11:00	1011	5	168	429	394	468	0	2475
11:00-12:00	913	8	139	333	297	525	0	2215
12:00-13:00	1055	12	89	311	370	407	0	2244
13:00-14:00	700	14	84	486	505	471	0	2260
SUB-TOTAL	6971	75	1116	2781	2762	2812	0	16517
14:00-15:00	637	3	89	225	193	286	0	1433
15:00-16:00	659	4	147	231	203	265	0	1509
16:00-17:00	858	12	183	260	237	197	0	1747
17:00-18:00	697	9	167	244	184	170	0	1471
18:00-19:00	652	5	153	220	173	135	0	1338
19:00-20:00	604	5	112	152	167	287	0	1327
20:00-21:00	275	2	106	125	137	340	0	985
21:00-22:00	298	4	74	68	72	307	0	823
SUB-TOTAL	4680	44	1031	1525	1366	1987	0	10633
T O T A L	11651	119	2147	4306	4128	4799	0	27150

CORDONLINE TRAFFIC COUNT SURVEY

STATION NO.   3  

ROAD/STREET   Quirino Highway (Legro)  

Hour \ Vehicle Type	(1) Car Jeep	(2) Taxi	(3) Jeepney	(4) Bus	(5) Van Pick-up	(6) Truck	(7) Motor- cycle Tricycle	TOTAL
6:00- 7:00	90	0	121	35	38	7	6	297
7:00- 8:00	122	0	139	40	38	13	20	372
8:00- 9:00	108	0	93	41	50	37	11	340
9:00-10:00	75	2	87	38	49	70	17	338
10:00-11:00	86	0	77	29	66	93	12	363
11:00-12:00	101	3	73	33	45	47	19	321
12:00-13:00	78	0	66	34	68	35	6	277
13:00-14:00	73	3	54	32	40	40	12	254
SUB-TOTAL	733	8	700	282	394	342	103	2562
14:00-15:00	77	1	63	29	76	59	12	317
15:00-16:00	71	5	72	33	62	34	8	285
16:00-17:00	94	2	79	26	68	36	16	321
17:00-18:00	114	1	107	34	83	25	22	386
18:00-19:00	77	2	90	29	81	33	14	326
19:00-20:00	81	2	53	26	48	24	6	250
20:00-21:00	65	2	52	20	32	26	6	203
21:00-22:00	46	0	40	12	19	14	5	136
SUB-TOTAL	625	15	556	209	469	251	89	2214
TOTAL	1358	23	1256	491	863	593	192	4776



## APPENDICES FOR CHAPTER 4

	Page
APPENDIX 4.6-1 LAND USE DISTRIBUTION	37
APPENDIX 4.7-1 POPULATION DISTRIBUTION TO TRAFFIC ZONES	38
APPENDIX 4.7-2 EMPLOYED PERSONS BY WORKPLACE	40





APPENDIX 4.6-1 LAND USE DISTRIBUTION

	EXISTING LAND USE PLAN (Ha.)			FUTURE LAND USE PLAN (Ha.)			LAND AREA (Ha.)	
	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	SUB-TOTAL	RESIDENTIAL	COMMERCIAL		INDUSTRIAL
Quezon City	8,349	917	1,349	10,615	9,549	1,232	1,070	11,851
	78%	9%	13%	100%	81%	10%	9%	100%
Caloocan City	3,612	490	65	4,167	3,973	442	824	5,239
	87%	12%	1%	100%	76%	8%	16%	100%
Valenzuela	2,180	161	566	2,907	3,177	304	778	4,259
	75%	6%	19%	100%	75%	7%	18%	100%
Malabon and Navotas	1,017	139	382	1,538	2,044	182	254	2,480
	66%	9%	25%	100%	83%	7%	10%	100%
Marikina	1,527	118	260	1,905	2,823	239	333	3,395
	80%	6%	14%	100%	83%	7%	10%	100%
Meycauayan	994	28	73	1,095	897	107	361	1,365
	91%	2%	7%	100%	66%	8%	26%	100%
Marilao	366	123	0	489	289	82	238	609
	75%	25%	-	100%	47%	14%	39%	100%
TOTAL	18,045	1,976	2,695	22,716	22,752	2,588	3,858	29,198
	79%	9%	12%	100%	78%	9%	13%	100%

Source: MMC - OCP Land Resource Management Division } Existing  
 MHS - Comprehensive Development Plan }

Study Team

- Future

APPENDIX 4.7-1 POPULATION DISTRIBUTION TO TRAFFIC ZONES

Direct Influence Zone	ZONE NO.	1980	1990	2000
	1	16,400	20,500	23,000
	2	23,500	29,400	32,900
	3	18,800	23,500	26,300
	4	22,000	27,500	30,800
	5	21,200	26,500	29,700
	6	35,400	44,300	49,600
	7	18,900	53,500	107,000
	8	14,900	32,600	48,900
	9	9,800	12,300	13,700
	10	14,000	17,500	19,600
	11	11,800	25,800	38,500
	12	22,800	78,500	113,700
	13	52,900	66,100	74,100
	14	57,800	72,300	80,900
	15	33,500	41,900	46,900
	16	17,400	21,800	24,400
	17	203,100	254,200	284,900
	18	195,700	244,600	274,000
	19	128,600	160,800	180,000
	20	14,300	17,900	20,000
	21	193,300	241,600	270,600
	22	14,700	18,400	20,600
	23	29,300	36,600	41,000
	24	18,100	34,400	50,700
	25	7,800	14,800	21,800
	26	14,200	27,000	39,800
	27	17,400	33,100	48,700
	28	14,200	28,400	42,600
	29	26,400	37,000	55,400
	30	90,700	108,800	117,900
	31	280,900	316,400	321,100
	32	6,000	24,800	44,200
	33	3,600	13,300	23,300
34	4,700	8,900	13,700	

APPENDIX 4.7-1 POPULATION DISTRIBUTION TO TRAFFIC ZONES (Cont'd.)

	ZONE NO.	1980	1990	2000
Direct Influence Zone	35	16,500	31,400	47,900
	36	41,300	78,400	119,800
	37	127,400	203,700	316,300
	38	13,700	26,000	39,800
	39	70,500	119,900	137,500
	40	221,800	254,200	311,500
	41	26,100	44,400	50,900
	42	148,400	181,500	230,800
	43	64,100	120,500	153,900
	44	54,300	68,900	85,400
	45	29,800	45,900	56,900
	46	28,500	39,000	48,500
	47	6,800	9,300	11,600
	Study Area	48	798,900	892,000
49		445,200	497,200	516,500
50		392,800	438,700	455,700
51		336,800	402,500	443,200
52		107,900	7,800	206,100
53		161,800	236,800	309,100
54		374,100	453,900	505,700
55		175,100	321,700	517,600
56		635,300	980,900	1,390,800
57		137,200	232,200	342,800
58		39,900	48,200	53,800
59		144,300	179,300	205,500
60		91,300	149,900	217,300
61		94,600	123,200	141,300
62		202,100	326,600	455,000
External Zone		63	682,100	784,700
	64	26,200	29,900	31,900
	65	10,200,200	12,317,700	13,980,400
	66	263,900	320,200	351,400
	67	777,200	1,059,200	1,300,400
	68	4,504,500	5,852,200	6,965,200
	69	22,116,700	27,377,500	31,683,700

APPENDIX 4.7-2 EMPLOYED PERSONS BY WORKPLACE

Direct Influence Zone	ZONE NO.	1980	1990	2000	
	1	}		7,400	10,400
	2		8,100	5,900	8,200
	3			2,800	3,900
	4	}		10,000	13,900
	5		9,900	7,400	10,400
	6			5,300	7,400
	7	}	7,400	42,300	58,900
	8			19,200	26,900
	9	}	5,400	5,400	7,500
	10			2,100	2,900
	11	}	5,300	12,900	17,900
	12			44,700	62,500
	13		21,100	23,800	33,300
	14		8,400	8,700	12,100
	15		13,500	11,700	16,400
	16		14,200	9,600	13,400
	17		77,300	112,200	156,700
	18		76,700	108,000	150,700
	19		70,700	83,800	117,000
	20		12,200	9,600	13,000
	21		98,200	125,900	175,900
	22		9,800	75,900	13,400
	23		18,900	19,900	26,700
	24	}	10,500	12,700	17,700
	25				5,400
	26	}		7,200	10,000
	27		2,600	5,200	7,300
	28	}		7,700	10,700
	29		9,000	10,000	13,900
	30		20,200	38,000	53,100
31		85,200	126,500	176,700	

APPENDIX 4.7-2 EMPLOYED PERSONS BY WORKPLACE (Cont'd.)

	ZONE NO.	1980	1990	2000
Direct Influence Zone	32	6,400	12,400	17,300
	33		7,500	10,500
	34	4,800	4,300	6,000
	35		12,000	16,800
	36	19,900	30,000	41,900
	37	38,600	102,000	142,300
	38	2,400	4,300	6,000
	39	9,300	44,300	61,900
	40	64,600	100,400	140,200
	41	12,000	16,400	22,900
	42	29,700	74,400	103,900
	43	32,100	16,500	23,100
	44	10,800	21,800	30,400
	45	4,000	6,100	8,500
	46	5,600	12,200	17,000
	47	1,400	2,100	2,900
	Study Area	48	303,400	299,000
49		92,900	166,400	232,400
50		251,000	146,900	205,100
51		134,800	142,800	199,400
52		46,700	51,600	72,100
53		74,500	99,600	139,100
54		224,900	199,100	278,100
55		20,300	166,800	232,900
56		160,700	448,100	625,900
57		53,000	85,900	120,000
58		-	13,500	18,800
59		-	36,800	51,400
60		-	23,000	32,600
61		-	15,200	21,200
62		-	114,100	159,300

Source: 1980 Data: NHUTIP

