

MMARAS

Metro Manila Accident Reporting and Analysis System

Annual Report
January to December 2006

Produced by the Road Safety Unit (RSU)
Traffic Operations Center (TOC)
Metropolitan Manila Development Authority (MMDA)

Introduction

The Metro Manila Accident Reporting and Analysis System (MMARAS) is operated by the Road Safety Unit (RSU) of the MMDA-Traffic Operations Center (TOC), with the cooperation and assistance of the Traffic Enforcement Group under National Capital Regional Police Office (TEG-NCRPO) Philippine National Police (PNP).

The objective is to compile and maintain an ongoing database of 'Fatal' and 'Non Fatal' including the 'Damage to Property' road accidents, which can indicate areas where safety improvements need to be made. The system will also allow the impact of improvement measures to be monitored.

This report is intended to be an annual analysis of 'Fatal', "Non Fatal' and 'Damage to Property' road accidents that have been recorded by the PNP Traffic Accident Investigators for the year 2006. The information is presented in graphical and tabular form, which provides a readily identifiable pattern of accident locations and causation patterns. Annual comparisons of traffic accident statistics are also included in this report.

The Road Safety Unit currently has 9 data researchers who gather traffic accident data from different traffic offices and stations of the Traffic Enforcement Group (TEG-NCRPO) within Metro Manila. Previously, only those incidences involving Fatal and Non Fatal are gathered and encoded at the MMARAS database. But for the year 2005 up to present, we included the Damage to Property incidence so that we can see the significance and the real picture of what really is happening in our roads and also it gives us additional information in analyzing the causes of accident.

Although influx of traffic accident data increases tremendously, the Road Safety Unit managed to store this damage to property incidences to our MMARAS database and now included in the analysis for the formulation of remedial measures that would be introduced on the identified black spots.

The assistance and cooperation of the traffic investigators will be necessary to maintain an accurate record of the facts surrounding every traffic accident within Metro Manila, since a truly significant picture will only develop over time. The work of the Road Safety Unit will be crucial in providing an appropriate directional thrust in the fight to make the roads of Metro Manila a safer place for everyone.

The Metropolitan Road Safety Unit can be contacted for further information or assistance on Tel: 882-4151-57 loc. 297.

Compilation of January to December Reports for the Year 2006

Data Sources

Two data sources are available to the RSU:

- Individual report forms for each accident, gathered by Data Researchers Group of the RSU from different stations and Districts Offices of the Traffic Enforcement Group; and
- Clippings of road traffic accident from different newspapers and tabloids that is available at the office of the Public Affairs Service (PAS) of the MMDA.

We cut-off clippings of road traffic accident from different newspapers and tabloids for compilation of the same and reference for under reported incidences. However, only the first are entered into MMARAS, and only these provide the basis for the statistics presented in this report.

Overall Statistics

Table 1. Shows the number of road accident reports gathered and compiled from January to December 2006, also classified by month.

Month	Fatal	Non Fatal Injury	Damage to Property	Grand Total
January	30	968	4412	5,410
February	28	879	3884	4,791
March	42	951	4204	5,197
April	28	912	3947	4,887
May	28	905	4066	4,999
June	30	996	4408	5,434
July	24	846	3915	4,785
August	29	952	3944	4,925
September	23	868	4226	5,117
October	25	950	3984	4,959
November	30	882	4078	4,990
December	50	1067	4353	5,470
Grand Total	367	11,176	49,421	60,964

Table 2. Shows the number of persons killed and injured in road accident for the months of January to December 2006.

	Central	Eastern	Northern	Southern	Western	Total Persons
Fatal	125	57	51	92	46	371
Non Fatal	4090	3311	1766	3856	955	13,978
Total	4,215	3,368	1,817	3,948	1,001	14,349

Note that a 'fatal' accident involves at least one person killed, while a 'non-fatal' accident at least one person injured but no fatalities.

Table 3. In terms of the number of accidents involved, by accident severity, this translates to:

	Central	Eastern	Northern	Southern	Western	Total
Fatal	124	55	51	92	45	367
Non Fatal	3208	2748	1313	3247	660	11,176
DTP	13952	10429	3056	18374	3610	49,421
Total	17,284	13,232	4,420	21,713	4,315	60,964

DTP – Damage to property

Table 4. Below indicates the distribution of accidents by cities and municipalities in Metro Manila from January – December 2006.

City	Fatal	Non Fatal Injury	Damage to Property	Grand Total
Caloocan	26	737	1945	2708
Las Piñas	5	497	2666	3168
Makati	31	831	6411	7273
Malabon	5	169	302	476
Mandaluyong	15	493	2643	3151
Manila	45	659	3610	4314
Marikina	14	1054	2218	3286
Muntinlupa	9	377	2563	2949
Navotas	10	80	194	284
Parañaque	20	548	2628	3196
Pasay	8	333	2342	2683
Pasig	24	1018	4152	5194
Pateros		10	120	130
Quezon	124	3209	13956	17289
San Juan	3	210	1472	1685
Taguig	18	625	1587	2230
Valenzuela	10	326	612	948
Grand Total	367	11,176	49,421	60,964

On the table no. 5, the municipality of Pateros has the lowest number of incidences for year 2006 from January to December, followed by Navotas. We can now consider these LGU's to be the safest in Metro Manila in terms of road traffic accident is concerned, since they have no/lesser recorded fatal and non-fatal incidences in the MMARAS. This maybe attributed to the following:

- Small land area within NCR
- No major arterial road compared to other cities
- Not considered as a Central Business Districts (CBD's)
- Minimal road accidents, and/or
- Manageable traffic direction and control

On the other hand, the City of Quezon dominates all the cities and municipalities of Metro Manila in terms of fatal road traffic accident followed by City of Manila. This is because of the following several factors:

- Both are Central Business Districts (CBD's) with high social and economic activity.
- Quezon City has the biggest land area (166.2 sq. km.) among the cities in Metro Manila.
- It is noted that 4 on the 7 major thoroughfares such as EDSA, Commonwealth Ave., Quezon Ave. and Radial Road 10 are located within these cities.

However, problems on road traffic accident in Quezon City would be given preference by this unit in conducting road safety audit and providing remedial measures on the "blackspots" or accident-prone areas of this city. On this process, traffic accident might be reducing in the future.

Known deficiencies

The concept of collecting traffic accident data was revised by tasking the personnel of the Metropolitan Road Safety Unit - Data Researchers Group to gather and copy all those traffic accidents happened in Metro Manila through the available records of every traffic stations instead of letting the Traffic Accident Investigator make their own traffic accident report and be submitted in this office. This new concept increases the statistics of collected road traffic accident data.

Given the complex mechanism for collecting and gathering of road accident data in Metro Manila, and the relatively large number of Traffic Accident Investigators involved, it is inevitable that there will be some data that is missed from the database and these are those under reported incidences. At the present time, however, there is no firm evidence that large numbers of accidents are being omitted because copied data are based from the records on the log book of every traffic stations where traffic accidents (major or minor) have been logged.

Data Analysis

Types of person involved

The following tables give a breakdown of the number of persons involved in road accidents during the past year, categorized by:

- Drivers : person driving a mechanically propelled vehicle or riding a Pedal cycle
- Passengers : anyone carried-in or on a mechanically propelled vehicle
- Pedestrians : anyone traveling on foot.

Fatalities

District	Drivers Killed	Passengers Killed	Pedestrians Killed	Total Killed
Central	39	14	72	125
Eastern	26	12	19	57
Northern	20	7	24	51
Southern	35	11	46	92
Western	15	2	29	46
Total	135	46	190	371

Injuries

District	Drivers Injured	Passengers Injured	Pedestrians Injured	Total Injured
Central	1426	1475	1189	4,090
Eastern	1389	991	931	3,311
Northern	638	573	555	1,766
Southern	1271	1076	1509	3,856
Western	408	389	158	955
Total	5,132	4,504	4,342	13,978

A person involved in a road accident may indicate a driver, a passenger or a pedestrian. Of these types of persons involved, we have recorded 190 pedestrians, 135 drivers and 46 passengers that have been killed in road accidents since January up to December 2006. While looking into persons injured, 5,132 are drivers, 4,504 are passengers and 4,342 are pedestrians. The relatively high proportion of drivers, passengers and pedestrians killed and injured is a cause for concern.

Breakdown by time of day

The following table represents the frequency of incidents by time of day. However, there were a number of accidents this year that did not have the time of the incident recorded. These involved eight (8) fatal, four hundred and one (401) non-fatal injury and seven hundred and three (703) damage to property accidents.

Time Hour	Fatal	Non Fatal Injury	Damage to Property	Grand Total
0	3	172	633	808
1	17	299	716	1032
2	16	272	691	979
3	11	219	562	792
4	13	232	755	1000
5	19	293	785	1097
6	21	339	1229	1589
7	16	480	2040	2536
8	11	512	2488	3011
9	12	498	2879	3389
10	14	585	3411	4010
11	12	588	3456	4056
12	26	653	2808	3487
13	10	513	2618	3141
14	14	541	3038	3593
15	15	645	3365	4025
16	16	592	2971	3579
17	12	597	2589	3198
18	12	470	2206	2688
19	16	511	2387	2914
20	17	482	2122	2621
21	17	452	2026	2495
22	20	462	1673	2155
23	19	368	1270	1657
No Time Indicated	8	401	703	1112
Total	367	11,176	49,421	60,964 (100%)
Day-time (6:00-17:55)	179 (00.29%)	6,543 (10.73%)	32,892 (53.95%)	39,614 (64.97%)
Night-time (18:00 – 5:55)	188 (00.31%)	4,633 (07.60%)	16,529 (27.11%)	21,350 (35.03%)

Overall, 21,350 or 35.03% of accidents occurred during the hours of darkness and without time indicated, while the 39,614 or 64.97% occurred during the daytime. But, it can be observed that most of the accidents occurred at daytime but Fatal accidents are considered high during night-time and wee hours in the morning. Drivers, Passengers and Pedestrians are advised to be cautious and attentive during these particular hours.

Breakdown of vehicle types involved in accidents

The classification of vehicle types within MMARAS is as follows:

- Cycle/Pedicab : human-powered vehicle
- Motorcycle : two-wheeled mechanically propelled Vehicle
- Motor Tricycle : three-wheeled passenger-carrying mechanically propelled vehicle
- Car : privately-owned mechanically propelled vehicle, which included all forms of 'Private use' small passenger-carrying vehicle.
- Jeepney/Taxi/Fx/Bus : mechanically-propelled vehicle which carries passengers on payment of a fee.
- Van : small vehicle for carrying goods
- Truck : large vehicle for carrying goods

The following table indicated the distribution of vehicles involved in accidents from January to December 2006:

Vehicle Type	Fatal	% of Total	Non Fatal Injury	% of Total	Damage to Property	% of Total	Total No. of Vehicles
Cycle-Pedicab	27	5.23%	640	3.59%	381	0.40%	1,048
Motorcycle	122	23.64%	5274	29.57%	4880	5.09%	10,276
Motor Tricycle	18	3.49%	1276	7.15%	1920	2.00%	3,214
Car	113	21.90%	5386	30.20%	54611	56.93%	60,110
Jeepney	56	10.85%	1968	11.03%	8939	9.32%	10,963
Taxi / Fx	18	3.49%	962	5.39%	5829	6.08%	6,809
Bus	30	5.81%	526	2.95%	4132	4.31%	4,688
Van	32	6.20%	1010	5.66%	8876	9.25%	9,918
Truck	78	15.12%	691	3.87%	5799	6.04%	6,568
Train	10	1.94%	2	0.01%	3	0.01%	15
Unknown Vehicle	12	2.32%	99	0.55%	548	0.57%	659
TOTAL	516	100%	17,834	100%	95,918	100%	114,268

On the table shown before this page, motorcycles have the highest fatality accident rate with 122 involved or 23.64% of the total fatal accidents, then followed by cars with 113 total or 21.90% respectively. For non fatal incidents, Cars have the highest rate with 5,386 or 30.20% share and followed by motorcycles with 5,274 or 29.57%.

According to the statistics released by the LTO, the distributions of registered vehicles in Metro Manila are:

Jan. to Oct. 2004

Motor cycle	Motor Tricycle	Car	Jeepney/ Taxi/FX	Bus	Truck/ Trailers	Total
284,176	Included at MC	989,281	101,577	13,573	70,145	1,458,752
19.5%		67.8%	7.0%	0.9%	4.8%	100%

Annual 2005

Motor cycle	Motor Tricycle	Car	Jeepney/ Taxi/FX	Bus	Truck/ Trailers	Total
366,394	Included at MC	569,915	558,639	10,404	75,501	1,580,853
23.18%		36.05%	35.34%	0.65%	4.78%	100%

Jan. to Aug. 2006

Motor cycle	Motor Tricycle	Car	Jeepney/ Taxi/FX	Bus	Truck/ Trailers	Total
293,113	Included at MC	430,042	409,066	6,087	60,552	1,198,860
24.45%		35.87%	34.12%	0.51%	5.05%	100%

Accident maps

Maps indicating the location of all accidents during this year are not available because our software (Mapinfo) is already obsolete and it is very difficult to plot the accidents due to un-updated street name and landmarks. The maps will be updated and reproduced once the new GIS software (ArcGIS) will be provided and distributed by the Office of the General Manager for Planning of the MMDA to this Unit.

Collision Type

Table 1. Shows the accident statistics by collision type.

Collision Type	Fatal	Non Fatal	Damage	Total
Angle Impact	23	844	2835	3,702
Head-on	5	53	8	66
<i>Hit and Run (regardless of what collision type)</i>	19	330	2092	2,441
<i>Hit object (regardless of what object was being hit)</i>	10	158	754	922
Hit parked vehicle	-	7	595	602
Hit Pedestrian	171	3,834	-	4,005
<i>Other</i>	36	535	806	1,377
Rear-end	9	468	1462	1,939
Self-Accident	-	-	2	2
Side Swipe	33	2115	10118	12,266
No Collision Stated (based on Blotter Book)	61	2832	30749	33,642
Grand Total	367	11,176	49,421	60,964

Table 2. Shows the breakdown of Hit and Run.

Collision Type	Fatal	Non Fatal	Damage	Total
Hit and Run (Angle Impact)	-	-	2	2
Hit and Run (Head-on)	-	-	-	0
Hit and Run (Hit parked vehicle)	-	-	39	39
Hit and Run (Hit Pedestrian)	6	53	-	59
Hit and Run (No Collision Stated)	13	274	2043	2,330
Hit and Run (Rear-end)	-	1	6	7
Hit and Run (Side Swipe)	-	2	2	4
Grand Total	19	330	2,092	2,441

Table 2. Shows the breakdown of Hit object collisions.

Collision Type	Fatal	Non Fatal	Damage	Total
Hit object	6	108	532	646
Hit object (Barriers, e.g. concrete, plastic, steel)		16	53	69
Hit object (Beams, e.g. concrete)				0
Hit object (Billboards/Signboards/Signages)			10	10
Hit object (Blocks, e.g. concrete)				0
Hit object (Bollards, e.g. concrete, steel)			1	1
Hit object (Cable Wires of PLDT, Meralco, etc.)			7	7
Hit object (Establishments, e.g. shops, stores, stalls, etc.)			3	3
Hit object (Fences/Walls, e.g. see-thru, concrete, etc.)	1	4	31	36
Hit object (Footbridges)				0
Hit object (Gates)	1	2	8	11
Hit object (House, Shanty, Barracks, and the like)			4	4
Hit object (Islands, e.g. center island, pots and the like)		3	5	8
Hit object (Light/Lamp Posts and the like)		3	14	17
Hit object (Pavements, e.g. gutter, sidewalk, road)			5	5
Hit object (Plants/Trees and the like)		3	12	15
Hit object (Posts of PLDT, Meralco, MRT, e.g. concrete, steel, wood, other)	2	11	42	55
Hit object (Pumps, e.g. gas pump, nozzle, etc.)			2	2
Hit object (Railings, e.g. steel)		3	6	9
Hit object (Vertical Clearance)				0
Hit object (Waiting Shed)			1	1
Hit object (Two or More objects/structures being hit at a time, e.g. Cable Wire & Post, Barrier & Fence, etc.)		3	9	12
Hit object (Various Objects, e.g. Door, Glass Panel, Meterbase, Galvanized Iron, Pipes, Stair, etc.)		2	9	11
Grand Total	10	158	754	922

Continuation of Collision Type

Table 3. Shows the breakdown of Other collision or combined collisions.

Collision Type	Fatal	Non Fatal	Damage	Grand Total
Other	17	186	316	518
Other (Angle Impact + Rear-end)		1		1
Other (Chain Collision)			4	4
Other (Fell-on an Excavation)			1	1
Other (Fell-on an Open Manhole / Drainage)		1	2	3
Other (Head to Rear)			2	2
Other (Hit basketball ring then object fell at the rear portion of another vehicle)			1	1
Other (Hit by a Collapsed Roof)			1	1
Other (Hit by a Disintegrated Billboard)	1	1	4	6
Other (Hit by a Fallen Object)		1	13	14
Other (Hit by an Unknown Object)			1	1
Other (Hit parked vehicle + Hit object, gate)		1		1
Other (Hit Ped. + Hit Obj.)		2		2
Other (Hit Ped. + Hit Obj., Gate)		1		1
Other (Hit Pushcart)	1	1		2
Other (Hit Veh. + Hit Obj.)		1	2	3
Other (Hit Veh. + Hit Obj., Concrete Fence/Wall)		3	2	5
Other (Hit Veh. + Hit Obj., Fixed Post Street Sign)		1		1
Other (Hit Veh. + Hit Obj., Maravilla Optical)		1		1
Other (Hit Veh. + Hit Obj., Meralco Concrete Post)			1	1
Other (Hit Veh. + Hit Obj., MMDA See-thru Fence)		1		1
Other (Hit Veh. + Hit Obj., Parking Railing)			1	1
Other (Hit Veh. + Hit Obj., Steel Fence, See-thru Fence and Lamp Post)		1		1
Other (Hit Veh. + Hit Obj., Street Light)			1	1
Other (Hit Veh. + Hit Obj., Street Sign Post and Meralco Concrete Post)			1	1
Other (Hit Veh. + Hit Ped.)	2	73		75
Other (Hit Veh., Angle Impact + Hit Ped.)		1		1
Other (Hit Veh., Rear-end + Hit Ped.)		2		2
Other (Hit Veh., Side Swipe + Hit Obj.)			2	2
Other (Hit Veh., Side Swipe + Hit Ped.)		1		1
Other (Passenger Fell Down)		22		22
Other (Passenger Jump-off)		2		2
Other (Rear-end + Hit Obj., Meralco Post)		1		1
Other (Rear-end + Overturned Vehicle)			1	1
Other (Rear-end + Side Swipe)		1	8	9
Other (Self-Accident)	15	229	429	673
Other (Side Swipe + Rear-end)			1	1
Other (Sidewalk Repair)			1	1
Other (Stone Throwing)			11	11
Grand Total	36	535	806	1,377

Accident Causations

Accident factors	Fatal	Non Fatal	Damage	Grand Total
Human Error			3	3
Human Error (Alcohol suspected)	1	9	4	14
Human Error (Backing Inattentively)		1	4	5
Human Error (Bad overtaking)	7	453	5381	5841
Human Error (Bad overtaking / Inattentive)		1	1	2
Human Error (Bad overtaking / Too fast)		6		6
Human Error (Bad turning)	2	304	2864	3170
Human Error (Disobey enforcer's signal)		7	3	10
Human Error (Disobey sign or traffic lights)	5	248	1780	2033
Human Error (Evading Animal Crossing)			1	1
Human Error (Evading Pedestrian)		1		1
Human Error (Evading PUJ)			1	1
Human Error (Hanging)		1		1
Human Error (Inattentive)	155	4161	926	5242
Human Error (Inattentive / Too fast)	11	263	2223	2497
Human Error (Inattentive / Too close)			2	2
Human Error (Lost Control)	3	3	1	7
Human Error (Moving on Counterflow)		1		1
Human Error (No signal)		22	3	25
Human Error (Sudden Stop)		3		3
Human Error (Tired / Asleep)		20	98	118
Human Error (Too close)	8	483	772	1263
Human Error (Too fast)	64	1585	4589	6238
Human Error (Too fast / Too close)	2	68	444	514
Other	8	134	184	326
Other (Due to the Heavy Wind Blows)	1	1		2
Other (Greasy Pavement)		1		1
Vehicle Defect	10	141	1	152
Vehicle Defect (Lost Brake)	2	9	1	12
No Accident Factor Stated (based on Blotter Book)	88	3250	30135	33473
Grand Total	367	11,176	49,421	60,964

Top Five (5) Accident Causations

- (1) Too Fast
- (2) Bad Overtaking
- (3) Inattentive
- (4) Bad turning
- (5) Inattentive / Too Fast

MMDA has been coming up with solutions to solve the problem in Road Safety, almost all of the Authority's projects are geared towards Public Safety. Pedestrians facilities and signage's are designed to promote safety and convenience, Footbridges has been put up at major choke points where pedestrian volume is high, Sidewalk clearing operations intensified, geometric improvements at accident prone areas undertaken among others. Road Safety is a global concern, and the task to lessen the number of traffic accidents is a high objective but possible with the cooperation and support of the public.

Accident Prone Areas

Based on the MMARAS database, by means of cross table querying, number of accidents prone locations are emerging for every district. These are:

District	Location
Northern	
Caloocan	Rizal Ave. corner 7 th Ave. – 1 F; 5 NF; 10 DTP
Navotas	C-3 Road corner North Bay Blvd. – 2 F; 9 NF; 18 DTP
Southern	
Makati	Pres. Osmeña corner Pasay Road – 2 F; 10 NF; 72 DTP
Eastern	
Marikina	E. Rodriguez Ave. corner Aquilina – 1 F; 3 NF; 4 DTP
Mandaluyong	Shaw Blvd. corner 9 de Febrero – 2 F; 11 NF; 17 DTP
Pasig	Rodriguez-Lanuza corner Julia Vargas – 1 F; 8 NF; 28 DTP
San Juan	Ortigas Ave. corner Wilson – 1 F; 8 NF; 48 DTP
Western	Pres. Osmeña corner San Andres – 1 F; 6 NF; 14 DTP
Central	EDSA at U – turn, Quezon Ave. – 3 F; 1 NF
	Commonwealth ave. fronting Sandigan Bayan – 3 F; 9 NF; 26 DTP
	Elliptical Road corner East Ave. – 2 F; 4 NF; 17 DTP

F - Fatal

NF – Non Fatal Injury

DTP – Damage to Property

Accident Prone Stretches

Based on the MMARAS database, by means of cross table querying, there are also numbers of accidents prone stretches in every district. And these stretches are:

District	Location
Northern	
Caloocan	Quirino Highway; Rizal Avenue Extension
Malabon	C-4 Road; Gov. Pascual Ave.; M. H. Del Pilar St.; McArthur Highway
Navotas	Honorio Lopez Blvd., Radial Road 10; Gov. Pascual Ave.; M. Naval St.
Valenzuela	Maysan Road; McArthur Highway
Southern	
Makati	EDSA; Pres. Sergio Osmeña Highway; Buendia Ave.
Las Piñas	Alabang-Zapote Road; Real St.; Marcos Alvarez Ave.
Muntinlupa	West Service Road; National Highway: Alabang-Zapote Road
Parañaque	West Service Road; Roxas Blvd.; Ninoy Aquino Ave.; Dr. A. Santos Ave.
Pasay	EDSA; Buendia Ext.; Roxas Blvd.
Taguig	Carlos P. Garcia Ave. (C-5); M. L. Quezon St.; East Service Road
Pateros	M. Almeda St.; P. Herrera St.
Eastern	
Marikina	Marcos Highway; Sumulong Highway
Mandaluyong	EDSA; Shaw Blvd.
Pasig	Ortigas Ave.; E. Rodriguez Jr. Ave.; Marcos Highway; Julia Vargas
San Juan	Ortigas Ave.; EDSA; Santolan Road; P. Guevarra St.; N. Domingo St.
Western	
Manila	Pres. Sergio Osmeña Highway; Radial Road 10
Central	
Quezon	Commonwealth Ave.; EDSA; Quirino Highway; Quezon Ave.; Katipunan Ave.

Note:

There are still other accident-prone stretches aside from the above stated stretches.

On-going Activities / Plans of the MRSU

- **Intensified Data Collection**
Good accident record is vital in analyzing and devising appropriate solutions / remedial measures to accident-prone locations. The MRSU Data Researchers Group has been working to further improve the collection of accident data on 'fatal' and 'non-fatal' accidents including the damage to property accidents.
- **Inspection of Accident Sites**
The MRSU has prepared a schedule for the ocular inspection of accident-prone locations to gather more information that would be useful in evaluating accident sites. Three to four accident locations will be visited on a weekly basis.
- **Road Safety Audit**
Road safety features, or lack of it, at selected locations will be identified and appropriate remedial actions will be developed. Engineering measures will be developed for five accident locations every quarter of the year.
- **On- Going Training of Technical Staff**
A lot of on the job training will be undertaken for the new technical staff to developed their knowledge and skills in this new kind of work and endeavor.
- **Revision of MMARAS Form and the Database**
It is a must to revise the MMARAS Form and the Database to incorporate the other data needed in the analysis of traffic accident.
- **Acquire Additional Equipment / Technical Personnel**
It is important to acquire additional equipment such as service vehicle, computers, digital cameras, printer, and other office supplies that enables the unit to perform their assigned tasks well. MRSU also needs to have an Engineer that will head the Road Safety Audit group.

SAFETY MEASURES

1. Installation of “Pedestrian Footbridges” along Metro Manila’s major thoroughfares or major choke points wherein pedestrian volume is high.
2. Improvement of Sidewalks, to encourage pedestrian to pass thru.
3. Installation of various Traffic Facilities (gantry, signages, barriers, see-thru fence, etc.) to promote safety and convenience.
4. Application of “Lane Markings”, for both vehicles and pedestrians.
5. Installation of “Reflectorized Sash Stickers” on concrete barriers to be easily recognized by motorists especially during night time.
6. Installation of Steel Barriers along the sidewalks to separate vehicles from pedestrians.
7. Strict enforcement of road violations by the various Traffic Enforcement Units.

Updated (April 29, 2011)

**Source : Metro Manila Accident Reporting and Analysis System (MMARAS) Database
RICHARD DOMINGO**