

# UNIVERSITY OF MORATUWA

## ANALYSIS OF SAFETY ON MORATUWA - EGODA UYANA ROAD AND IDENTIFICATION OF REASONS AND POSSIBLE MITIGATORY MEASURES

BY



University of Moratuwa, Sri Lanka.  
Electronic Theses & Dissertations  
www.lib.mrt.ac.lk

SUPERVISED BY  
DR.AMAL S.KUMARAGE



UNIVERSITY OF MORATUWA  
THESES & DISSERTATIONS

625"96"  
625.74

DEPARTMENT OF CIVIL ENGINEERING  
UNIVERSITY OF MORATUWA  
MORATUWA, SRI LANKA

28

**ANALYSIS OF SAFETY ON MORATUWA EGODA UYANA ROAD  
AND  
IDENTIFICATION OF REASONS AND POSSIBLE MITIGATORY  
MEASURES**

**BY**

**WARNAKULASURIYA ANTHONY JUDE EMMANUEL  
FERNANDO**

**THE THESIS SUBMITTED IN PARTIAL FULFILLMENT**

**OF**

**THE REQUIREMENT FOR THE DEGREE OF**



Electronic Theses & Dissertations  
**MASTER OF ENGINEERING**

**IN**

**THE FACULTY OF ENGINEERING**

**DEPARTMENT OF CIVIL ENGINEERING**

පුස්තකාලය  
මොරටුව විශ්ව විද්‍යාලය, ශ්‍රී ලංකාව  
මොරටුව

**SUPERVISED BY DR. AMAL S.KUMARAGE**

65678

UM Thesis  
coll.

**WE ACCEPT THIS THESIS AS CONFIRMING TO THE REQUIRED  
STANDARD**

625 "96"

625.74

**UNIVERSITY OF MORATUWA  
OCTOBER 1996**



## PRESENT TO



University of Moratuwa, Sri Lanka.  
MERNA, MANJU, DINU AND  
Electronic Theses & Dissertations  
THANUSHI  
[www.lib.mrt.ac.lk](http://www.lib.mrt.ac.lk)

## ACKNOWLEDGEMENT

Thanks are due to Mr.M.B.S.Fernando, Chairman, Road Construction & Development Co(Pvt)Ltd., for sponsoring and granting permission to carryout this research and assisting in the preparation of this thesis.

Thanks are due to Dr.Amal S.Kumarage, Research Supervisor, for all the guidance and very valuable assistance given for the research programme and in the preparation of this report.

Thanks are due to Mr.T. Perimpanyagam, D.I.G.Traffic, Police Department, and the O.I.C and his staff of Moratuwa Police Station for providing Traffic Accident Data and other valuable information for the research.

Thanks also to the following staff of the Road Construction & Development Company(Pvt)Limited for their kind assistance provided in collecting information, carrying out surveys, and in the preparation of the report.

Mr. Ranjith Silva  
Mr. S.R.Maharajah  
Mrs.D.P.Kumudini  
Mr. B.K.Jayasiri  
Mr. Thilakasiri Fernando  
Mr. W.Q.Nandasiri  
Mrs. Sujatha Goonetilleke

The contributions of all those who have given their help in the preparation of this thesis is warmly acknowledged.

# CONTENTS

		Page
Chapter	1.0 INTRODUCTION	01
	1.1 Introduction	02 - 07
	1.2 Background	08 - 15
	1.3 Aim And Objective	16
	1.4 Methodology	17
Chapter	2.0 LITERATURE REVIEW	18
	2.1 Introduction To Safety	19 - 22
	2.2 Planning And Road Safety	23 - 24
	2.3 Enhance Safety Through Highway Design	25 - 26
	2.4 Safety By Education	27
	2.5 Road Safety Publicity	28
	2.6 Safety By Traffic Law Enforcement	29 - 30
	2.7 Vehicle Safety	31 - 32
Chapter	3.0 PREPARATION AND ANALYSIS OF QUESTIONNAIRE, ACCIDENT DATA FORMAT, AND TRAFFIC SURVEY FORMAT	33
	3.1 Introduction	34 - 36
	3.2 Pilot Survey	37
	3.3 Preparation And Distribution Of Questionnaire And Format For Accident Data Collection Form Police	38 - 39
	3.4 Preparation And Distribution Of Format For Classified Flow Counts.	39 - 41
	3.5 Results Of The Questionnaire Survey Police Data And Analysis	42 - 94
	4.0 CONCLUSION & RECOMMENDATIONS	95
4.1 Conclusion And Recommendations Based On The Results Of The Research	96 - 113	



Chapter	5.0	FUTURE RESEARCH & SUMMARY	114
	5.1	Future Research, Based On The Recommendations	115- 116
	5.2	Summary Of Findings	117- 119
APPENDIX			120 125
REFERENCES			126- 128
ANNEXTURES			129
1. Location Distribution Of Accidents According To Police Records. (Jan. 1991 - October 1995)			1 - 07
2. Location Distribution Of Accidents According To Field Survey (Jan. 1991 - October 1995)			8 - 14
3. Summary Of Details Of Accidents (Jan. 1991 - October 1995)			15 - 23
4. Computer Analysis Of Accident Data			24 - 70

## LIST OF TABLES

Table		Page
	1.1 Vehicles Registered	3
	1.2 Cost of Accidents	4
	1.3 Accident Statistics	5
	3.1 Distribution of Age	42
	3.2 Distribution of Sex	44
	3.3 Distribution of Marital Status	45
	3.4 Distribution of Economics Status	46
	3.5 Distribution of Education	47
	3.6 Distribution of Disability	49
	3.7 Distribution of Victim under the Influence of Liquor	50
	3.8 Distribution of Residence	51
	3.9 Distribution of Accident (Questionnaire Survey)	53
	3.10 Distribution of Accident (Police Data)	53
	3.11 Comparison of Percentage of Accidents Registered (1991 - 1995)	54
	3.12 Distribution of Injury	56
	3.13 Manner of Usage by Pedestrian	57
	3.14 Distribution of Place of Accident	58
	3.15 Distribution of Accident with Times	59
	3.16 Distribution of Accidents with Time (Before Opening of Street Light)	59
	3.17 Distribution of Accidents with Time (After Opening of Street Light)	60
	3.18 Analysis of Accident Data with and without Street Lights	60
	3.19 Distribution of Road Condition	62
	3.20 Distribution of Opinion	63
	3.21(a) Distribution of Motor Vehicle Involvement	64
	3.21(b) Distribution of Conflict Type	65
	3.22 Traffic Survey - Egoda Uyana Classified Flow Counts	66-67

3.23	Distribution of Direction	70
3.24	Distribution of Accident Type	71
3.25	Distribution of Accident By Location	72
3.26	Cost of Accidents	82
3.27	Distribution of Period	84
3.28	Distribution of Accidents By The Year	86



University of Moratuwa, Sri Lanka.  
Electronic Theses & Dissertations  
[www.lib.mrt.ac.lk](http://www.lib.mrt.ac.lk)

## LIST OF FIGURES

		<b>Page</b>
Fig.	1.1 Proposed Layout	09
Fig.	3.1 Distribution of Age	42
	3.2 Distribution of Sex	44
	3.3 Distribution of Marital Status	45
	3.4 Distribution of Economics Status	46
	3.5 Distribution of Education	47
	3.6 Distribution of Disability	49
	3.7 Distribution of Victim Under Influence of Liquor	50
	3.8 Distribution of Residence	51
	3.9 Distribution of Accident(Questionnaire Survey)	53
	3.10 Distribution of Accident(Police Data)	53
	3.11 Distribution of Injury	56
	3.12 Manner of Usage by Pedestrian	57
	3.13 Distribution of Place of Accident	58
	3.14 Distribution of Accidents with Time	59
	3.15 Distribution of Accidents with Time (Before Install of Street Light)	59
	3.16 Distribution of Accident with Time (After Opening of Street Light)	60
	3.17 Distribution of Road Condition	62
	3.18 Distribution of Opinion	63
	3.19(a)Distribution of Motor Vehicle Involvement	64
	3.20(a)Distribution of Motor Vehicle Involvement	64
	3.19(b)Distribution of Conflict Type	65
	3.20(b)Distribution of Conflict Type	65
	3.21 Distribution of Direction(Police Data)	70
	3.22 Distribution of Accident type	71
	3.23 Distribution of Location	73
	3.24 Black Spot No.1 at Chainage 1 + 900	75
	3.25 Black Spot No.2 at Chainage 2 + 700	76
	3.26 Black Spot No.3 at Chainage 3 + 000	76
	3.27 Black Spot No.4 at Chainage 3 + 500	77
	3.28 Black Spot No.5 at Chainage 3 + 800	78
	3.29 Black Spot No.6 at Chainage 4 + 900	79
	3.30 Black Spot No.7 at Chainage 5 + 200	80

	<b>Page</b>
3.31 Black Spot No.8 at Chainage 6 + 000	81
3.32 Cost of Accidents	82
3.33 Distribution of Period	84
3.34 Distribution of Period	85
3.35 Distribution of Accidents By The Year	86
3.36 Distribution of Accidents Monthly	86
3.37 Encroachment of Drain	89
3.38 Drain Used for Dumping Waste Products	90
3.39 Timber Logs Filling the Drain	90
3.40 Encroachment of Shoulder with Timber Logs	91
3.41 Encroachment of Carriageway with Timber Planks	91
3.42 Shoulder being used to Mix Concrete	92
3.43 Cycling in the wrong Direction	93
3.44 Driving in the wrong Direction	94



University of Moratuwa, Sri Lanka.  
Electronic Theses & Dissertations  
[www.lib.mrt.ac.lk](http://www.lib.mrt.ac.lk)