

**DEVELOPMENT OF METHODOLOGY TO ESTIMATE
ESAL VAULES FOR LOW VOLUME ROADS IN
PROVINCIAL SECTOR**

G J Kinigama



University of Moratuwa, Sri Lanka.
(08/8862)
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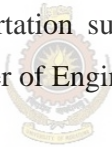
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Dissertation submitted in partial fulfillment of the requirement for the Degree of
Master of Engineering in Highway & Traffic Engineering



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University of Moratuwa

Sri Lanka

March 2010

DECLARATION

“I declare that this is my own work and this dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any University or other institution of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text”

Signature:

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ABSTRACT

The demands for the improvement of provincial roads are ever increasing and GOSL has given priority for the upliftment of rural economy through the improvement of rural road network. Funding agencies have shown interest in providing financial assistance for this task. Road design engineers require reliable traffic data and design specifications for detailed design of provincial roads. One of the basic inputs required for the pavement design is the ESAL values for each vehicle category in each road.

The most common method used for the estimation of ESAL values for trucks is the static axle load survey conducted by RDA for national roads. The axle load surveys are rarely done for provincial roads. Different approaches have been adopted for the estimation of truck factors for provincial roads. Lack of institutional arrangements, inadequacy of funds, lack of technical knowledge and equipment are the main reasons for the inability to carry out proper studies in this sector. Currently used axle load survey methods and their errors are being discussed under literature review.

A simple but accurate methodology is required for the estimation of axle loads. The main objective is to find out

- How to estimate the truck loads from visual observation
- Then how this load is distributed among the axles

A good vehicle classification system is highly desirable for provincial road network in order to find out ESAL values. The vehicle load can be estimated using first principles. The historical axle load survey data shall be used to derive a relationship for the distribution of vehicle load between axles. Then the results will be used for the estimation of ESAL for a sample road. The analysis of results will be done with probability approach. The results will also be checked and verified for accuracy and reliability. Actual axle load survey data will be used for this verification. A simple yet very effective method for the estimation of truck factors shall be introduced for the provincial roads. Most of the provincial road agencies can use this method to find out ESAL values for the entire road network with the available resources. Further recommendations will be made for further improvements on the methodology to improve the reliability of result.

TABLE OF CONTENTS

Declaration	i
Acknowledgement	ii
Abstract	iii
Table of Contents	iv
List of Tables	vi
List of Figures	vii
CHAPTER 1: INTRODUCTION	1
1.1 Background.....	1
1.2 Problem Statement.....	2
1.3 Research Objectives and Principals.....	3
1.4 Outline of the Thesis.....	4
CHAPTER 2: LITERATURE REVIEW	5
2.1 Introduction to Traffic Data Collection.....	5
2.2 Vehicle Definitions.....	6
2.3 Vehicle Classifications.....	7
2.4 Definitions of Terminologies.....	8
2.5 Methods of Traffic Counts.....	10
2.5.1 Manual counts.....	10
2.5.2 Axle sensor based counters (pneumatic tube systems).....	11
2.5.3 Vehicle length based counters.....	13
2.5.4 Machine vision based equipment.....	14
2.5.5 Other technologies.....	15
2.6 Damage to Pavements by Loaded Vehicles.....	15
2.7 Load Spreading to a Pavement.....	16
2.8 Magnitude and Effect of Load.....	17
2.9 Pavement Deterioration.....	18
2.10 Axle Load Weighing Systems.....	19
2.10.1 Portable wheel or axle weighing units.....	19
2.10.2 On-board weighing system.....	20
2.10.3 Single axle weighbridge.....	20

2.10.4	Full length plate weighbridge	20
2.10.5	Part length weighbridge	21
2.11	Overview of Vehicle Weighing Methods	21
CHAPTER 3:	METHODOLOGY	30
3.1	Introduction.....	30
3.2	Vehicle Composition on Rural Rroads	31
3.3	Vehicle Classification	38
3.4	Estimation of Axle Loads	39
3.5	The Distribution of Vehicle Load among Axles.....	44
CHAPTER 4:	ANALYSIS OF DATA AND RESULTS.....	49
4.1	Data Collection	49
4.1.1	Manual classified counts.....	49
4.1.2	Axle load survey on national highways	50
4.1.3	Axle Load survey on provincial roads by RDA.....	51
4.1.4	Axle load survey with loading condition and vehicle dimensions	52
4.2	Analysis of Data.....	53
4.2.1	Load distribution among axles.....	53
CHAPTER 5:	ANALYSIS AND VERIFICATION OF RESULTS.....	67
5.1	Results.....	67
5.1.1	Distribution of empty truck loads among axles	67
5.1.2	Distribution of truck loads among axles	68
5.2	Analysis of Results	72
5.3	Verification of Results	79
CHAPTER 6:	CONCLUSION AND RECOMMENDATIONS	81
6.1	Conclusion	82
6.2	Recommendations.....	83
References:	.....	85
Appendix A.....	.....	86
Appendix B.....	.....	89
Appendix C.....	.....	149
Appendix D.....	.....	159

LIST OF TABLES

Table 2.1	Standard Vehicle Classification System	7
Table 3.1	Road List.....	32
Table 3.2	Traffic Composition.....	34
Table 3.3	Vehicle Classification System for Provincial Roads	39
Table 3.4	Axle Load Survey Data for Empty Light Goods vehicles	41
Table 3.5	Validated Data for Empty Truck Loads of LGV	42
Table 3.6	Loading Conditions.....	44
Table 3.7	Axle Load Data for Loaded Trucks of LGV.....	45
Table 3.8	Validated Axle Data for Loaded LGV.....	47
Table 4.1	MCC Data on Nawalapitiya Dekinda Road.....	49
Table 4.2	List of National Roads – Axle Survey Locations	50
Table 4.3	List of Provincial roads -Axle Load Survey by RDA.....	52
Table 4.4	Axle Load Survey Data with Vehicle Dimensions	52
Table 4.5	Vehicle Grouping Between RDA and Provincial roads	54
Table 4.6	Load Distribution Analysis-Empty Large Bus	55
Table 4.7	Load Distribution Analysis-Empty Medium Bus	56
Table 4.8	Load distribution Analysis- Empty LGV.....	56
Table 4.9	Load distribution Analysis – Empty MGV.....	57
Table 4.10	Load distribution Analysis – Empty LGV	57
Table 4.11	Load Distribution Analysis- FV.....	58
Table 4.12	Load Distribution Analysis - Large Bus	58
Table 4.13	Load Distribution Analysis- Medium Bus.....	59
Table 4.14	Load Distribution Analysis- LGV	59
Table 4.15	Load Distribution Analysis- Arrack/Beer.....	60
Table 4.16	Load Distribution Analysis- Asphalt	61
Table 4.17	Load Distribution Analysis- Blasting Material.....	61
Table 4.18	Load Distribution Analysis- Bricks	62
Table 4.19	Load Distribution Analysis - Cement	62
Table 4.20	Load Distribution Analysis- Arrack/Beer.....	63
Table 4.21	Load Distribution Analysis- Ceramics.....	63
Table 4.22	Load Distribution Analysis- Electric Posts.....	64
Table 4.23	Load Distribution Analysis- Fruits	64

Table 4.24	Load Distribution Analysis- Motor Spare Parts.....	65
Table 4.25	Load Distribution Analysis- Water.....	65
Table 4.26	Load Distribution Analysis- Farm Tractors.....	66
Table 5.1	Load distribution Ratios-Empty trucks.....	68
Table 5.2	Load Distribution Ratios-Loaded Trucks	69
Table 5.3	Load Distribution Ratios-Loaded Medium Goods Vehicles	69
Table 5.4	Load Distribution Ratios-Loaded Heavy Goods Vehicles.....	71
Table 5.5	Standard Deviation Values – Empty Trucks.....	73
Table 5.6	Standard Deviation Values –Large Buses.....	74
Table 5.7	Standard Deviation Values –Medium Buses	74
Table 5.8	Standard Deviation Values –Medium Buses	75
Table 5.9	Standard Deviation Values –Medium Goods Vehicles	76
Table 5.10	Standard Deviation Values –Medium Goods Vehicles	78
Table 5.11	ESAL Values for Provincial Roads	80
Table 5.12	ESAL values on Padiyatalawa-Mahiyangana Road	81



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LIST OF FIGURES

Figure 2.1	Loads Spreading on a Pavement	17
Figure 2.2	Three Groups of Heavy Vehicles with Equal Damaging Effect.....	18
Figure 2.3	Effect of Width in Wheel Base	22
Figure 2.4	Effect of Weight Transfer-Three Wheel Base	23
Figure 2.5	Weighing on a Level Plane	23
Figure 2.6	Load Transfer on Flat Ground	24
Figure 2.7	Load Transfer on an Inclined Surface.....	24
Figure 2.8	The Distribution of Load within the Truck.....	25
Figure 3.1	Traffic Composition on Nawalapitiya – Dekinda Road	35
Figure 3.2	Major and Minor Traffic Distribution	36
Figure 3.3	Distribution of Heavy & Light vehicles	36
Figure 3.4	Heavy Vehicle Composition	37
Figure 3.5	Heavy and Light Vehicle Distribution.....	37
Figure 3.6	Axle Load Distributions for Empty Trucks of LGV.....	42
Figure 3.7	Load Distribution among Axles for Loaded Trucks	48

