EVALUATION OF PARAMETERS INFLUENCING DELAY FOR THE ROAD USERS AT RAILWAY LEVEL CROSSINGS IN SRI LANKA

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DECLARATION

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

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ABSTRACT

Design, construction and maintenance of railway level crossings are responsibilities of Sri Lanka Railways. The funding agency in this regard is the Ministry of Finance where allocations are provided from the annual budget for above targets.

The additional time consumption born by the road users at level crossing is a current issue to be addressed at the earliest possible in order to minimize the delay and inconvenience. According to the SLR the reason behind in this issue is the poor maintenance due to inadequacy of budgetary allocations provided by the Central Government. Also the officials of SLR highlighted that they do not have sufficiently equipped laboratories or skilled technical staff for doing research and also the application of advance high tech equipment such as sensors and replaceable surface materials. One of the main reasons behind in this issue is the high capital cost of implementation of said needful.

Under this research around 125 locations of level crossings were visited all over the country where the faults and weaknesses influenced for delay was carefully observed. A random sample of 42 numbers of crossings (including good and bad sections) was selected for evaluation. The prominent causes detected were categorized for quantitative analysis. The locations contributed with high gravity on delay and safety such as Yangalmodara, Kolathenna, and Kapuwatta were taken as case studies and compared with the level crossing at Bentota which can be considered as the best out of 125 level crossings observed. Since the comparison was not that easy as the parameters such as number of rail tracks, traffic flows, type of crossings etc. defers from place to place it was decided to compare the delay per vehicle for 100m distance (50m distance from either sides of centre lines of the tracks) with the time taken by an average vehicle to travel the same distance in the particular area.

The parameters mostly influenced for delay were cross tabulated. The correlations were checked among the parameters. The gravity of causes was assessed by giving a rating (1-3) at different locations.

Furthermore this discussions were made with the responsible officers of Sri Lanka Railways and Road Development Authority.

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With the help of the information gathered from the two organizations and also with the data collection and the evaluations carried out during the research it was able to forward some improvement proposals/ mitigation measures in order to minimize the delay at level crossings in Sri Lanka. It is suggested that based on rough quantitative and acceptable qualitative analysis given in this dissertation the designers and responsibility bearers of relevant authorities would be able to carry out their designs or construction/ maintenance activities successfully.

It was found that the main parameters causing for this delay are visibility, surface defects and poor vertical alignment in approaches and in between tracks due to settlement or in proper designs implemented at level crossings.

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ABBREVIATIONS

SLR	- Sri Lanka Railway
RDA	- Road Development Authority
ITS	- Intelligent Transport Systems
ADT	- Average Daily Traffic
UK	- United Kingdom
AWD	- Automatic Warning Devices
FIG	- Figure

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CONTENTS

Page No.

Chapter 1 BACKGROUND INFORMATION

1.1 Introduction 1
1.2 Problem Statement 2
1.3 Objectives 2

Chapter 2 LITERATURE SURVEY

2.1 History of Railway and level crossing development 4
2.2 Railway crossings and design standards 6
2.3 Crossings around the world 8
2.3.1 Australia 8
2.3.2 United Kingdom 8
2.3.2.1 Pedestrian crossings in UK 10
2.3.3 United States 10
2.3.4 Belgium 13
2.3.5 Canada 13
2.3.6 New Zealand 14
2.3.7 Sweden 14
2.3.8 East and South Asia 15
2.3.9 Taiwan 15
2.4 Innovations 16
2.5 Different types of crossing and related appliances 17

Chapter 3 DATA COLLECTION

3.1 Rail Network in Sri Lanka 24
3.1.1 The systems adopted for data collection 24
3.2 Types of level crossings in Sri Lanka 25
3.3 Details of surveys and data collection 27
3.3.1 Surveys for delay issue 27

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www.lib.mrt.ac.lk

3.3.2 Surveys for risk of safety 28
3.3.2.1 Selection of the crossing type 29
3.3.2.2 Occupational level crossings 30
3.3.2.3 Construction of parallel road sections
In place of direct right angle crossings 31
3.3.2.4 Replacing unprotected crossings by signal
Lights and gates 32
3.3.2.5 Implementation of ITS applications 33
3.3.2.6 Safety assurance of pedestrians 33

3.4 Observations Gathered during Inspection 33
3.4.1 Common causes for delay at level crossings 33
3.4.2 Demand for crossings 36
3.4.3 Demand for railway Vs road transport 36

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Electronic Theses & Dissertations
www.lib.mrt.ac.lk

Chapter 4 DATA ANALYSIS

4.1 Introduction 38
4.2 Identification of reasons causes of delay 42
4.2.1 Use of SPSS & excel packages for Analysis 42
4.2.2 Analysis of combined effects 42
4.2.3 Cross tabulation and Correlation Analysis 42
4.2.4 Calculation of time taken for different causes of delay 44
4.3 Sample Calculation 44
4.4 Findings and General Comments 45
4.4.1 Most effective causes for delay 46
4.4.2 Absence of pedestrian and cycle paths at crossings 47
4.4.3 Delay effect during peak hours 47
4.4.4 Compression of delay at controlled level crossings with Uncontrolled crossings 48
4.4.5 Comparison of Estimated Delay with the Total Rates 48

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www.lib.mrt.ac.lk

Chapter 5 PROPOSALS FOR IMPROVEMENTS

5.1 Construction of level crossing surface jointly with the Road Development Authority 55
5.2 Application of concrete or high tech materials on surface area 56
5.3 Implementation of proper designs for construction of approaches 56
5.4 Introducing ITS applications 58
5.5 Introducing level crossing management systems in place of Periodic maintenance 58
5.6 Improvements to the Alignment 59
5.6.1 New construction 59
5.6.2 Improvements to the Existing level crossings 59
5.7 Enforcing of regulations on unauthorized construction 59
5.8 Implementation and maintenance of proper drainage system 60
5.9 Consideration of correlations among parameters for design 61

List of Tables **Page No.**

Table 3.1 Summary of existing rail network 24

Table 3.2 Risk of Safety 37

Table 4.1 Causes for Delay 51

Table 4.2 Analysis by Nos. of Causes Affected 52

Table 4.3 Estimated delay 53

Table 4.4 Value of Delay for Road Users 54

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

List of Figure **Page No.**

Fig. 2.1 A Railroad crossing in Belton 17

Fig. 2.2 A Rail crossing with road gates 17

Fig. 2.3 A Traditional mechanical crossing bell 18

Fig. 2.4 An Electronic crossing bell in Kalamazoo 18

Fig. 2.5 An Electronic crossing bell made by general signal inc 19

Fig. 2.6 A Car crossing the railroad in North Carolina 19

Fig, 2.7 A New inexpensive warning sign at Loimaa 20

Fig. 2.8 "Railroad Crossing" appearing on warning sign in North America 20

Fig. 2.9 An advance warning of the crossing in USA 21

Fig. 2.10 A chicane preventing pedestrians crossing the track 21

Fig. 2.11 Dublin level crossing in Latvia 22

Fig. 2.12 A Level crossing in Japan 22

Fig. 2.13 AAWS(advance active warning signal) in Australia 23

Fig. 3.1 Pictures of a manually operated rail crossing at Kapuwatta 28

Fig. 3.2 An Occupational level crossing at Kandana 31

Fig. 3.3 Construction of parallel road section for road user safety 32

Fig. 3.4 Newly installed signal lights at Peralanda 32

Fig. 3.5 Surface defects at China bay 34

Fig. 3.6 Surface defects at Kantale 34

Fig. 3.7 Poor visibility at Yangalmodara 35

Fig. 3.8 Poor visibility at Kolathenna 35

Fig. 3.9 Poor vertical alignment at Kolathenna 36

Fig. 3.10 Settlement of approaches at Boys Town 36

Fig. 4.1 Controlled crossings with good section 40

Fig. 4.2 Controlled crossing with bad sections at Kolathenna & Ragama 40

Fig. 4.3 Uncontrolled crossing with good section at Kandana 41

Fig. 4.4 Uncontrolled crossings with bad sections at Kapuwatta 41

Fig. 4.5 Visibility issue at Yangalmodara & Kolathenna 47

Fig. 4.6 A chart for analysis of individual & combined effects 50

Fig. 5.1 A Cross section related to base design 57

Fig. 5.2 Installation of the check rail 57

Fig. 5.3 Standard dimension for approach 58

Fig.5.4 Visibility/ Sight Clearance 60

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List of Annexes

Annex 1 - Cross tabulations

Annex 2 - Corerelations

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