

**SYSTEMATIC RATING OF ACCIDENT PRONE
T – INTERSECTIONS ON NATIONAL HIGHWAYS**

Arichandran Arulrasa

138302U

Thesis submitted as a partial fulfilment of the requirements for the Master of
Engineering in Highway and Traffic Engineering

Department of Civil Engineering

University of Moratuwa

Sri Lanka

December 2017

DECLARATION OF THE CANDIDATE AND SUPERVISOR

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 other University or institute 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.

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ACKNOWLEDGEMENT

This dissertation would have not been possible without the guidance and the assistance of several individuals who contributed, advised and encouraged me for the preparation and completion of this study.

In the first phase I would like to express my sincere gratitude to my supervisor Prof.W. K Mamparachchi, Professor of Civil Engineering, University of Moratuwa and also to Prof J. S.M. J. Bandara and Dr. H. R Pasindu, University of Moratuwa for their guidance and encouragement provided in the preparation and completion of this study.

Also I wish to express my sincere thanks to Dr. De Silva G. L. D. I., Course Coordinator, Department of Civil Engineering; University of Moratuwa for his kind assistance and guidance. In addition to that, I would like to express my sincere gratitude to all staff of the Department of Civil Engineering, who have recommended and approved extended period for the completion of this study and helped me in various other ways.

Further, I would like to thank Road Development Authority Planning Division Engineers and Highway Design Division Engineers, who provided innumerable information in support of this study.

Finally, I thank my wife, children and other family members for their enormous support and encouragement extended for the completion of this study.

ABSTRACT

Road Traffic accidents and the resulting deaths have now emerged as a major safety and public problem. In this study intersection geometry of roads were considered to rate accident prone T – Intersection locations in national highways.

The only source of accident data in Sri Lanka is available with the Traffic Police. Availability of accident data is vital for identifying accident prone locations in the traditional data analysis process. However, insufficient data for statistical analysis and changes to the geometry of the intersection with improvement are major drawback of analyzing the available data. In this study, a method is introduced to find and rate the accident prone T – Intersections with respect to road geometry without depending on traffic police accident data. The parameters of road geometry such as road width, vertical profile and type of movement and combination of these: are considered as main influence elements and identified vulnerable factors of each element. The lane width was classified as single lane, two lanes and multi-lane and approach road profile was divided into flat, medium and adverse. The turning movement types were classified into four types: M1, M2.M3 & M4 based on centre median configuration for traffic movement at the junction. Then the relative contribution of the elements to the accident prone T – Intersections were determined by using Analytical Hierarchy Process (AHP) with a rating system. The ratings of each element were suggested by experts of Roads and Traffic Engineering. Expert ratings were subjected to consistency testing and AHP determines the weightage of each element. It was found that road width is the most critical element of the road geometry and followed by vertical profile and turning movement type. The intersections that did not comply with the model were further studied and the causes for lower or higher number of accidents in those locations were identified.

Most vulnerable accident prone T-intersections had the combination of flat gradient of approach road, single lane width and open centre median in the major road of the intersection.

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LIST OF ABBREVIATIONS

AHP	- Analytic Hierarchy Process
PDO	- Property Damage Only
F	- Flat
R	- Rolling
M	- Mountainous
AADT	- Average Annual Daily Traffic
RDA	- Road Development Authority
CR	- Consistency Ratio
RW	- Road Width
VP	- Vertical Profile
CM	- Centre Median
TOM	- Type of Movement
LHS	- Left Hand Side
RHS	- Right Hand Side
λ_{\max}	- Maximum Eigen value
CI	- Consistency Index

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