

Systematic Ratings of Accident Prone T – Intersections on National Highways

A. Arulrasa¹, W. K. Mampearachchi²

Abstract

Road Traffic accidents and the resulting deaths have now emerged as one of the major safety and public problems. 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 Srilanka 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 is a 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 the each element.

The lane width was classified as single lane, two lane 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 was determined by using Analytical Hierarchy Process (AHP) with a rating system. The rating of each element was suggested by experts of Roads and Traffic Engineering. Expert ratings were subjected to consistency testing and AHP determines the weightage of each elements. 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 did not comply with the model were further studied and identified the causes for lower or higher number of accidents in those locations.

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.

Key Words: Accident prone location, Geometry elements, Road Safety

1. Engineer, Road Development authority, Srilanka, arulrasa2000@yahoo.com, 021 222 2968/ Mob: 077 0416501
2. Professor, Department of Civil Engineering, University of Moratuwa, wk.mampearachchi@gmail.com , 0112 650 567 Ext: 2024 , Mob: 077 3048865