

Extent of concerns over Human Limitations in existing road design standards – A Literature review over the “Status of Adequacy”

Granie R Jayalath¹

¹Deputy Director, Road Development Authority,
granierj@eol.lk,

Analysis of technically unexplainable accidents has confirmed that accidents could occur not only due to the user misbehaviors but also due to the lack of purpose designed field of vision including road courses without adequate contrast to increase alertness. These findings imply that without a comprehensive understanding of the human limitations a self explaining road design with low accident risk cannot be achieved. Our current design standards need to be systematically improved to integrate principals of spatial perceptions in order to manage user needs and expectations. In the context of Sri Lanka and of many Asian countries user misbehaviors certainly the most significant contributory factor for the alarming accident rates they experience at present, yet the fact that lack of purpose designed field of vision though would be secondary, certainly will aggravate the end repercussion of a misbehaved user.

The duration taken by an average driver to adapt from one traffic situation to the next or to adjust to a new environment is much longer than the standard reaction time duration between 2.0-2.5 seconds stated in most of the current design standards. This is particularly so when information is difficult to find or when users are confronted, with situations demanding complex decisions.

A critical review of pertinent research and related provisions within road design standards of US, Canada and UK has revealed that concerns over human limitations have not yet been satisfactory incorporated in to the standards (G. KANELLAIDIS, 1997) [3].Birth S IBYLLE, 2013[4] reviewed design standards of nine western countries and found that none of the standards explicitly considers the aspects related to the management of field of vision of drivers.

This paper submits a comparison of “extents of considerations” of human factor concerns over the geometric design standards of Sri Lanka, with other standards including AUSTRROADS[2], AASHTO[1] & Chinese based on findings of previous studies. At the end a framework is discussed allowing the integration of human aspects related to the management of field of vision of road users into the geometric standards of Sri Lanka.

Key words: Field of vision, spatial perception, expectation logic