ROAD SAFETY ENGINEERING STRATEGIES

1. Introduction

The potential of accident reduction through low-cost engineering measure at hazardous sites is particularly high. Simple remedial measure can significantly reduce the problem. By identifying and eliminating the features which make the site hazardous, engineers can improve road safety. This often means reducing the complexity of an intersection or enabling manoeuvres to be made in stages. Reducing the number of decisions drivers must take at any one time simplifies the driving task and helps drivers to progress in safety and comfort with a minimum a minimum conflict with other traffic and pedestrians.

There are four basic strategies for accident reduction through the use of countermeasures. These are:

1. **Single site**: The treatment of specific type of accident at a single location;
2. **Route action plan**: the application of known remedies along a route with high accident rate;
3. **Mass action Plan**: the application of known remedy to locations with common accident problem;
4. **Area wide schemes**: the application of various treatments over a wide area of town / city (e.g. traffic management and traffic calming (speed reducing device)).

2. Single Site

Single site investigations are the basis of Road Safety Engineering. The investigation of accidents occurring at a single location leads to an understanding of the cause of the accidents, and it is then possible to devise countermeasures that help future road users to cope.

All stages of the investigation are important, but it should be kept in mind that a thorough and complete analysis that identifies the full extent of the problem(s) will probably lead to the implementation of measures that will achieve the best reduction in the numbers of accidents. A weak or compromised analysis will not.

3. Route action Plan

Encouraged by the results of single site techniques engineers began to look for wider applications for these techniques. One practice to emerge from this search is the analysis of accidents along sections of the highway or route studies. Route studies begin with an analysis of accidents occurring on a (typically four to 15 km long) section of road. The analysis is then used to identify the route’s accident problems so that accident countermeasures can be designed and implemented.

The design and implementation of remedial works based on the findings of single site accident analysis have consistently resulted in reductions in the number of road traffic accidents. However route study work allows the engineer to take a much wider perspective of the accident problems and to address them from three standpoints.

1. overall or route wide problems for which it has been found that wider-reaching, more effective measures can be identified and employed
2. localised specific problems which are more likely to be understood and thus more effectively treated within a route study
3. consistency and clarity of information to road users which can only be assessed and provided on a route basis and which improves the road users’ chances of coping safely
4. **Mass action plan**

The Royal Society for the Prevention of Accidents (RoSPA, UK) defines Mass Action schemes as ‘*The application of a remedy to locations with a common accident problem*’. Mass Action Plans reverse from this approach. Road Safety Engineering, Mass Action Plans start by first having a measure that is known to reduce certain types of road traffic accidents. The database is then used to search for locations with a history of those accidents. The practice works towards implementing the measure at the most suitable sites or locations. The remedy is known and it is applied at locations with specific problems.

As the experience of a Road Safety Unit develops and grows, monitoring exercises will identify several low cost but effective measures and practices. Road Safety Engineers can take advantage of this by using Mass Action Plan techniques. The effective measures are then applied to a large number of problem locations quickly and efficiently.

A Mass Action Plan normally involves small-scale improvements, but there is no reason why larger scale work cannot be carried out in this way. The program might include work at individual locations or along sections of the highway. Most highway agencies use a variety of Mass Action plans to improve the road network.

A Mass Action Plan could be used to improve:

- traffic capacity - by implementing traffic engineering measures at junctions along a route
- the general roadside environment - by carrying out a landscaping program of planting trees and shrubs along a route or in areas
- maintenance of the network - by improving street lighting, and implementing road surface programs.

5. **Area wide schemes**

A more recent concept of investigating accidents across a wider area, particularly urban residential areas. Area wide road safety engineering turns attention to residential areas where both the problem of accidents and the approach to accident reduction is quite different. In urban area it will not be uncommon to find over 80 personal injury accidents per square kilometer per year. If treatment is carried out over say 4 sq. km., the potential for accident reduction can be high. Accidents in residential areas are more likely to be scattered throughout the area. They often involve different accident types and consequently routine blackspot and route-wide practices are less likely to be effective.

This technique is beyond the scope of RHD staff as RHD is only responsible for the road network rather than residential area. However, authority responsible for residential area may need to involve RHD officials during devising strategies for reducing accident in residential areas as many residential areas in Bangladesh has direct access to RHD roads.
Figure 1. Treating Accident Blackspots in Bangladesh in Road Safety Engineering