



Uganda Road Safety Capacity Building Workshop

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Principles of Road Safety Engineering

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Road Safety Engineering

Accident Reduction

- Action to reduce accidents to a lower level, often by the introduction of remedial measures.

Accident Prevention

- Action to prevent accidents in the future at sites and in circumstances not yet existing, often by Safety Audits.



Accident Reduction

Basic Principles

- High numbers of accidents of a similar type can indicate a problem related to the road.
- Accidents of this type will continue to occur unless the problem is treated.
- Making changes to a road environment can change driver behaviour and reduce road accidents.



Accident Problem Locations

➤ Single sites

➤ Mass action

➤ Routes

➤ Areas



Single Sites

Investigation Methodology

- Identify the problem sites
- Rank the sites
- Analyse accidents at each site
- Visit the site
- Define the accident problem(s)
- Look at possible remedial measures
- Estimate accident savings and cost savings
- Decide on remedial measure(s)
- Implement the measures
- Monitor



Mass Action

Investigation Methodology

- Identify treatable problems at isolated locations over an area
- Implement known remedial measures
- Monitor



Route Investigations

Similar methodology as for single sites:

- Identify problem routes
- Analyse accidents to define the problem(s)
- Series of single sites? Or route-wide problem?
- Look at ways to reduce accidents
- Decide on most cost-effective measure(s)
- Implement
- Monitor



Area Wide Investigations

Similar methodology to single sites and routes:

- Identify problem areas – rank the areas
- Analyse accidents to define the problem
- Look at ways to reduce accidents
- Decide on most cost-effective
- Implement
- Monitor



Road Accident Data

- Accident involving injury occurs
- Accident reported to Police
- Accident details recorded by police or STATS-19 form
- Local authority/Police put accidents onto computer
- Accident data ready for analysis by local authority



Road Accident Data

- Accuracy of data - Police concerns on site
 - ✓ Attend to casualties
 - ✓ Investigates offences
 - ✓ Get traffic moving
- Accuracy of data - Police local knowledge
 - ✓ Location can be suspect
 - ✓ Engineering knowledge



Road Accident Data Analysis Systems

What should an accident system be able to do?

- Provide a list, ranked in descending order, of sites, routes and areas with high accident numbers and/or severity (hotspot list)
- Provide a list, ranked in descending order, of locations with high accident numbers of a pre-determined type (mass action list eg loss of control on bends)



Road Accident Data Analysis Systems

- Provide detailed accident data from a single enquiry at a location where complaints have arisen
- Provide tables and charts describing accident trends
- Provide an automatic monitor of success of schemes
- Have a wide and easy access to all traffic and road safety staff



Road Accident Data Analysis Systems

Individual workshop exercise:

Does your accident analysis system;

- Provide a hotspot list of sites/routes/areas?
- Provide hotspot data by severity?
- Provide mass action lists?
- Do site specific enquiries?
- Provide tables and charts showing accident trends?
- Do automatic monitoring of accident schemes?
- Have wide access to staff?



Single Sites & Routes – Ranking Methods

- **Single sites**
 - ✓ Accident number in 3 (or 5) years
- **Routes**
 - ✓ Accidents/km/ in 3 (or 5) years
 - ✓ Accident rates (accidents/100 million vehicle km)
- **Timescale**
 - ✓ 3 years less likely that conditions have changed
 - ✓ 5 years provides more data



Example of Ranking System

- **Single sites**
 - ✓ 8 or more accidents in 3 years (hotspot)
- **Routes**
 - ✓ At least 10 accidents in 3 years
 - ✓ Listing of those with at least 25% more than above
 - ✓ Accident frequency compared with accidents per 100m veh kms



Accident Prevention

- “Prevention is better than cure”
- Change behaviour
- Change attitudes
- Improve vehicle safety
- Road Safety Audits



Safety Audit

- Engineering side of accident prevention
- Mandatory on Trunk Roads
- Recommended on local roads
- Stages (F), 1, 2, 3 & 4
- Stage 4 is monitoring after 1 and 3 years
- Interim audits



Thank you

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