

Criteria to serve safe road infrastructure development

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- A. World Bank Global Road Safety Facility
 - B. Safe System Approach*
 - C. The design and operation of the road network
 - D. Conclusion and challenges



A. The World Bank
Global Road Safety Facility



World Bank response?

Mainstream the planning and provision of improved road safety in country development strategies, and establish the Global Road Safety Facility to support this process.

- ✓ November 2005 - World Bank announced the creation of the Global Road Safety Facility.
- ✓ Aims to increase funding and TA to enable low and middle income countries to develop their own road safety action plans, and to implement the recommendations of the World Report.

B. *Safe System* Approach



The 'Safe System' Approach

- ▶ Anticipate human error.
- ▶ Ensure consequences are non fatal as far as possible.
- ▶ The road safety management system has evolved from one of 'blaming the victim' through to one of shared responsibility. (Bliss)
- ▶ The design challenge is to manage loss of control of kinetic energy within tolerances survivable by the human body.

Safe System principle

“Common driving errors and common pedestrian behavior should not lead to death and serious injury - the traffic system should help users to cope with increasingly demanding conditions.”

World Report on Road Traffic Injury Prevention
Chapter 1 – Fundamentals

Safe System principle

“In all regions of the world, to prevent road death and disabling injury, a traffic system better adapted to the physical vulnerabilities of its users needs to be created –with the use of more crash-protective vehicles and roadsides.”

World Report on Road Traffic Injury Prevention
Chapter 1 - Fundamentals

Survivability in crashes

- ▶ The chances of survival for an unprotected pedestrian hit by a vehicle diminish rapidly at speeds greater than 30km/h.
- ▶ For a properly restrained motor vehicle occupant the critical impact speed is 50km/h for side impact crashes and 70 km/h for head-on crashes.

Shaping the intervention set

- ▶ With the shift to a *Safe System* goal for network and fleet management there has been a growing emphasis on speed management, **the protective features of road infrastructure**, vehicles, and the quality of the emergency medical system for all users.

C. The design and operation of the road network



Safe travel speeds

Types of road infrastructure and traffic	Safe travel speed (km/h)
Locations with possible conflicts between cars and pedestrians/cyclists	30
Intersections with possible side impacts between cars	50
Roads with possible frontal impacts between cars	70
Roads with no possibility of side impact or frontal impact (only impact with the infrastructure)	>100

BASED ON ASHTON & MACKAY, 1979, AND TINGVALL & HAWORTH, 1999.

Safe System tools

- ▶ Safety rating to assess the quality of the road network.
- ▶ International Road Safety Assessment Program (iRAP)

- ▶ Four main crash types:
 - 1) vulnerable road user crashes,
 - 2) crashes at intersections,
 - 3) run-off-road crashes and
 - 4) head-on crashes.

1. Vulnerable road user crashes

- ▶ Impact speed should not exceed 30km/h.
- ▶ *Safe System* measures include:
 - ▶ Separating pedestrians and vehicles physically by fencing or other barriers.



- ▶ Lowering the travel speeds of vehicles by reducing and enforcing speed limits at or below 30km/h.

2. Fatal & serious junction crashes

- ▶ Impact speed in a side impact crash should not exceed 50 km/h.
- ▶ Measures include:
 - ▶ Lowering speed limits, especially in the vicinity of junctions on 60, 70 km/h and 80 km/h arterials.
 - ▶ Improving intersection controls with roundabouts, traffic signals, platforms or other treatments.



The multi-lane Cordata Parkway Roundabout in Bellingham, Washington. Photo courtesy of Reid Middleton, Incorporated

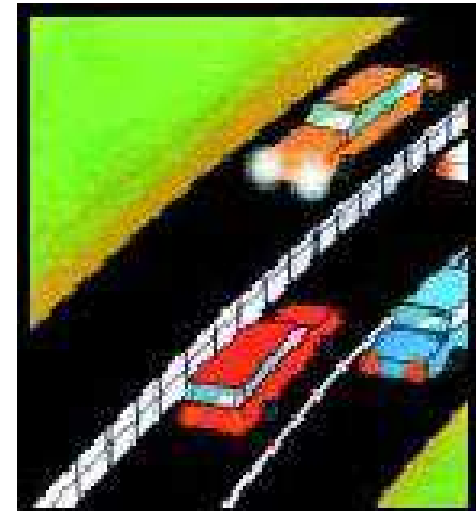
3. Fatal & serious run-off-road crashes

- ▶ These can be reduced by ensuring that roads include features such as:
 - ▶ Wide paved shoulders.
 - ▶ Clear roadsides for 10 to 15 meters or roadsides with objects shielded by flexible barriers.



4. Fatal & serious head-on crashes

- ▶ Lowering speed limits on two lane two way roads to 70km/h or less.
- ▶ Constructing a divided carriageway.
- ▶ Installing a centre median between the two opposing lanes of traffic.



Important approaches that improve road safety

- ▶ Safe design of new infrastructure
- ▶ Low cost safety design features to reduce injury severity
- ▶ Systematic safety audits
- ▶ Systematic reviews
- ▶ Systematic maintenance of all safety features of the road environment

D. Conclusion and challenges



Conclusion

- ▶ Fatalities and serious injuries are largely predictable and preventable
- ▶ Importance of speed management through the protective features of road infrastructure
- ▶ Separation of vulnerable road users from cars and trucks (fencing, other barriers)
- ▶ Traffic-calming through roundabouts, road narrowings, road humps
- ▶ Lanes for overtaking, lanes for turning
- ▶ Clear road sides, safety barriers
- ▶ Divided carriageway, center medians
- ▶ Engineering accounting for safety and operating environment
- ▶ Safety audits
- ▶ Assess roads for safety
- ▶ Allocate resources and prioritize

The challenges

- ▶ Strengthen road safety results focus
- ▶ Mobilize efforts to address the widening road safety performance gap
- ▶ Benefit from the lessons learned
- ▶ Secure financial resources
- ▶ Sequence/prioritize road safety investments

THANK YOU

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