

**A Training Report on Selection of Site  
for the project  
Traffic Calming Strategies to Improve Pedestrian Safety in India**

**1. Background**

As a part of the project “Traffic calming Strategies to Improve Pedestrian Safety in India” a formal two-day training programme was scheduled for the Indian team on selection of sites on March 3<sup>rd</sup> & 4<sup>th</sup> at CUTS-CITEE conference hall.

**2. Objective**

The objective of this training programme was to guide the Indian Team (KG/DS/BT/UKG/AKJ) on site selection criteria. As the sample studied, represents the whole lot to be referred, correct identification and selection of sample is essential. In addition to this, issues like need of the study, injury prevention and conflict technique were also a part of the training programme.

**3. Participants**

There are growing efforts in different parts of the world to prevent road traffic injuries. But a very few are trained in injury prevention. There is also an urgent need to train practitioners and policy makers in the scientific approach to road traffic injury prevention. Hence, four officials from Traffic Police and two Professors from MNIT had participated in the training programme. Participants of the training programme are given in the following table:

Sr. No.	Name	Designation & Department
1.	Christer Hyden	Professor, Deptt. Of Technology & Society, Lund University, Sweden
2.	Dinesh Mohan	Professor, Biomedical Engineering; and Coordinator, Transportation Research and Injury Prevention Programme, IIT, Delhi
3.	Geetam Tiwari	Professor, Civil Engineering Department; and Coordinator, Transportation Research and Injury Prevention Programme, IIT, Delhi
4.	B L Swami	Professor, Transportation Engineering, Department of Civil Engineering, MNIT, Jaipur
5.	Rajeev Shringi	Professor, Department of Architecture, MNIT, Jaipur
6.	Mohan Singh	Police Inspector, Traffic, Jaipur
7.	Jai Singh	Sub-Inspector, Traffic, Jaipur
8.	Narendra Singh	Sub-Inspector, Traffic, Jaipur
9.	Sahi Ram	Sub-Inspector, Traffic, Jaipur
10.	George Cherian	Associate Director, CUTS and Head,CART
11.	Keya Ghosh	Advisor, CUTS-CRC
12.	Deepak Saxsena	Programme Officer, CUTS-CART
13.	Bhavna Tripathi	Project Manager, CUTS-CART
14.	Umesh Kr Gupta	Project Cordinator, CUTS-CART
15.	Arjun Kant Jha	Project Assistant, CUTS-CART

#### 4. Proceedings

A schedule of training programme is as follows:

<b>Monday, March 3</b>	
<b>TIME</b>	<b>TOPIC</b>
9.45 to 10.00 am	Welcome and Introduction
9.45 to 11.30 am	Introductory lecture by Prof. Christer Hyden on 'Vision Zero'
11.30 to 1.00 pm	Introductory lecture by Prof. Dinesh Mohan enlightening Indian Traffic scenario.
1.00 pm	Lunch
2.45 pm to 6.0 pm	Project Launch
<b>Tuesday, March 4</b>	
9.30 to 11.30 am	Interactive discussions on identification of locations for the study by Prof. Christer Hyden/Dinesh Mohan/Geetam Tiwari
11.30 to 1.30 pm	Broad Guidelines of Conflict Technique by Prof. Christer Hyden.
1.30 to 2.30 pm	Lunch
2.30 to 4.15 pm	Site visit

Prof. Hyden elaborated the Vision Zero safety policy of Sweden and mentioned that conflicts is the only way we can come to efficient traffic calming in India.

##### 4.1 Session I - By Prof. Christer Hyden, March 3

###### ▪ **Sweden's Vision Zero**

Vision Zero is a traffic safety policy, developed in Sweden in the late 1990s and based on four elements: ethics, responsibility, a philosophy of safety, and creating mechanisms for change. The Swedish parliament voted in October 1997 to adopt this policy and since then several other countries have followed suit. It is called 'Vision Zero' because its ultimate goal is no fatalities or severe injuries through road traffic crashes. It is a road safety policy that puts the protection of the most vulnerable road users at its center.

###### ▪ **Ethics**

Human life and health are paramount. According to Vision zero, life should not be allowed in the long run to be treated off against the benefits of the road transport system, such as mobility. Mobility and accessibility are therefore functions of the inherent safety of the system, not vice versa as it is generally today.

###### ▪ **Responsibility**

Until recently, responsibility for crashes and injuries was placed principally on the individual road user. In Vision Zero, responsibility is shared between the providers of the system and the road users. The system designers and enforcers – such as those providing the road infrastructure, the car-making industry and the police are responsible for the functioning of the system. At the same time, the road user is responsible for following basic rules, such as obeying speed limits and not driving while under the influence of

alcohol. If the road users fail to follow such rules, the responsibility falls on the system designers to redesign the system, including rules and regulations.

- **Safety Philosophy**

In the past, the approach to road safety was generally to put the onus on the road user. In Vision Zero, this is replaced by an outlook that has been used with success in other fields. Its two premises are that:

Human beings make errors;

There is a critical limit beyond which survival and recovery from an injury are not possible.

- **Highlights of the session**

- i. Conflicts is the only way we can come to efficient traffic calming in India.
- ii. Accidents are rare events and are therefore associated with random variation.
- iii. Not all accidents are reported and the level of reporting is unevenly distributed.
- iv. The behavioural or situational aspects of the events are not covered by police accident data.
- v. Accident analysis is a desk tool, not a field tool.
- vi. We need links between accidents and behaviours.
- vii. Very few very serious events.
- viii. Very many events with low severity.

#### **4.2 Session II – By Prof. Dinesh Mohan, March 3**

- **Indian Traffic Scenario**

A study from IIT, Delhi reveals that Jaipur is at third place in list of total number of road accidents in India. According to official statistics 80,118 persons were killed and 3,42,200 injured in road traffic crashes in India in the year 2000. However, this is an underestimate as not all injuries are reported to the police. The actual numbers are likely to have been in the region of 12,00,000 persons with injuries requiring hospital treatment and 56,00,000 persons sustaining minor injuries. The situation in India is worsening and RTI have been increasing over the past twenty years. This is partly due to the absence of a coordinated official policy to control the problem. The fatality rate per million vehicles has remained around 2 for the past few years. Whereas, the rate per million population continues to increase and is around 80 at present.

Pedestrians who are at the highest risk are those who can't drive or don't have a vehicle and hence, are forced to walk for all their requirements.

- **International situation - pedestrians**

Road Traffic Injury (RTI) accounts for:

- i. 15% of all traffic deaths in the EU
- ii. 11% in the US
- iii. 29% in Japan
- iv. 45% in Sri Lanka

- v. A review of 38 studies found that pedestrian fatalities were highest in 75% of the studies, accounting for between 41% and 75% of all fatalities.

The World report on road traffic injury prevention indicates that there are notable differences in the way different road users are affected by road traffic collisions as summarised below:

- i. More than one million people are killed worldwide every year as a result of road traffic crashes.
- ii. Road traffic injuries are the 11<sup>th</sup> leading cause of disability-adjusted life years lost worldwide.
- iii. More than half of all global road traffic deaths occur among young adults between 15 and 44 years of age.
- iv. 73 percent of all global road traffic fatalities are males.
- v. The poor and vulnerable road users are pedestrian, cyclists and motorcyclists account for a much greater proportion of road traffic collisions in low-income and middle-income countries than in high-income countries.
- vi. Without new or improved interventions, road traffic injuries will be the third leading cause of death by the year 2020.

An essential tool for effective road crash injury prevention is the adoption of a systems approach to:

- identify problems;
- formulate strategy;
- set targets;
- monitor performance.

#### **4.3 Session III - Discussions on identification of locations for the study by CH/GT/DM, March 4**

There were several questions to be answered before selection of site for the study, such as:

- i. What do we know about accidents in general ?
- ii. What do we know about pedestrian accidents ?
- iii. Do we know anything about pedestrian (or motor vehicle) exposure?
- iv. Do we want to select locations with high risk for pedestrians or many pedestrian accidents – or both?
- v. Do we want to select locations with many locations in the same area?
- vi. Do we want to select locations with many locations along the same road?
- vii. Do we want to select locations with individual locations all over?
- viii. Possible filming options
- ix. Possible observer locations
- x. Who will spend money for construction

After discussing the above criteria in detail, important steps for selection of sites are finalised as:

- i. Select all fatal accidents from police records, and non-fatal accidents for pedestrians for the year 2006.

- ii. Collect information on all fatal accidents (including pedestrians) and non-fatal pedestrian accidents: Age, sex, road-user type for injured person, impacting vehicle, time of day, junction or stretch, location.
- iii. Map all pedestrian accidents using different colours for severity (red and green) and different symbols for impacting vehicle (triangle, circle, square). Three options could be considered after mapping the results:
  - a. Two to three corridors could be chosen with at least one corridor on a highway and one on an arterial.
  - b. Local problematic areas, like schools, hospitals.
  - c. Areas like residential areas, central business areas.
- iv. Make a first selection of 24 intersections, based on a balance between the three types (point 4) and considering the following criteria: Possible filming options, possible observer locations, who will spend money for construction (most important, we have to skip locations/areas where we can't do anything)
- v. Start thinking about strategy with regard to design and communication of the measures for the 'After Studies.'
- vi. Ready to work shop to finalise the sites and then the six days training session in April,2008. Invite the three different main implementing organisations (JMC, JDA and PWD).

#### **4.4 Session IV - Conflict Technique by Prof. Christer Hyden, March 4**

- **Some useful comments**

The most influential factor in making a decision to cross at a designated crossing location is the distance of the crosswalk to desired destinations of pedestrians.

(Handy, 1996; Shriver, 1997)

Besides improvements in roads, safety and comfort for pedestrians can be obtained without major side effects on vehicle travel

(Carsten et al., 1998).

Also it is evident that pedestrian safety can be affected by changes in the signal settings at signalised crosswalks

(Garter, 1989).

- **Conflict Technique**

A situation where two road users approach each other in time and space to such an extent that a collision is imminent if their movements remain unchanged. There are always only two road users primarily involved.

- **Time to Accident and Conflicting Speed**

Two basic factors are studied here, the Time to Accident (TA) and Conflicting Speed (CS). Few relevant definitions are as under:

**i. Time to Accident (TA)**

The time it takes from one road user starts an evasive action, until a collision would have occurred if those involved had continued on a collision course with unchanged speed. The time (tenth of seconds) that goes from somebody starts an evasive manoeuvre, until a collision would have occurred if the two involved road users had continued with unchanged speed and direction.

**ii. Conflicting Speed (CS)**

The speed of the vehicle (kph) defined as the relevant road user just at the start of the evasive manoeuvre.

**iii. Serious Conflict**

The character of a serious conflict characterised by suddenness and harshness in action of at least one of the involved. Road users say that "they would never like to be involved in such a situation"

**iv. Primary road user**

Those two directly involved in the conflict (always only two; no matter how many who are colliding).

**v. Secondary road user**

A road user who indirectly have had importance for causing the conflict or the relevant road user. The road user that is relevant for the defining the TA and CS values.

Relevant road user is "decided" either by the road user who takes evasive action if only one does.