CHAPTER 11 SYNOPSIS: REMEDIES AND RECOMMENDATIONS

When developing our cities, while we gave due importance to the free flow/smooth flow of traffic by constructing flyovers and underpasses, we ignored development of facilities for pedestrians, who are the main victims in Road Accidents in our country.

The number of foot over bridges/ subways for pedestrian is lesser than the number of flyovers. A recent survey shows there were 127 FOBs/subways and 150 flyovers/ underpasses in Delhi. **Hence, our planning for Indian conditions needs to be sensitive to the needs of pedestrians and vulnerable road users.**

- Table 11.1 shows road accident and related data of a few metropolitan cities of India for the year 2016.
- Far too many people are losing their life in road accidents. **1591 people in 2016 were killed in Delhi i.e more than 4 people per day.** This needs to be checked as priority.
- Most **victims (around 60%) belong to the productive age group of 20-40 years and lower economic group- pedestrian (42%), Cyclists (3.3%) and two wheelers (35%).**

Table 11.1 Comparative status of Metropolitan Cities

S.No.	City	Area (Sq Km)	Total registered vehicle (lacks)	Population (lacks)	Road Length	Traffic Man power	Fatal Accident	Total Accidents	Accidents Per 10000 vehicles	Deaths per 10000 vehicles
1	Kolkata	243.6	33.46	49.0	4000	3812	**388**	4104	12.26	1.21
2	Mumbai	437.7*	23.32*	125.0*	1941*	3380*	**586**	23468	9.93*	2.28*
3	Bangalore	1005	66.31	115.56	11000	5177	**754**	5333	8.04	1.19
4	Chennai	1189*	44.57*	48**	-	4182*	**859**	7328	21.56*	2.50*
5	Delhi	1483	97.04	185.10	33198	5264	**1548**	7375	7.59	1.63
	India	**32,87,263**		**125 cr.**			**131726**	**501423**	**26.8***	**7.6***

Source: BPR&D, MoRTH and Official websites

* figure belongs to previous years.

"The best way to get the desired result is to provide the conditions/ atmosphere to the users which make them themselves follow rules/paths willingly instead of forcing them to follow rules."

Land use and transport planning

- **Prioritizing the needs of vulnerable road users includes recognizing the importance of the built up environment when making political and planning** decisions. Some of the solutions lie in **appropriate modifications to the physical road environment and setting up a supportive policy framework rather than focusing only on human behaviour** as the primary cause of road traffic crashes. The examples presented below show efforts to incorporate the needs of vulnerable road users in planning for land use and transport.
- **Sweden's model of sustainable road safety** is frequently cited across world as a good practice. **The "Vision Zero" road safety policy was** adopted by Sweden in

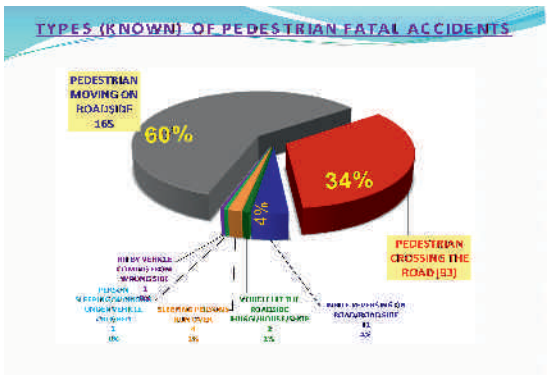
the late 1990s. It's based on an understanding that the environment needs to be modified to take account of human's lack of tolerance to mechanical forces and the human tendency to make errors. This aims to **modify the environment while protecting road users from unacceptable levels of risk, as well as building bicycle and pedestrian lanes, tunnels and car-free play areas, other environmental solutions are being implemented to separate and protect these road users.** Where road users cannot be separated, the strategy acknowledges the need to give **pedestrian safety priority over car traffic – particularly by reducing speed.** (Ref. GLOBAL STATUS REPORT ON ROAD SAFETY (WHO)-2013)

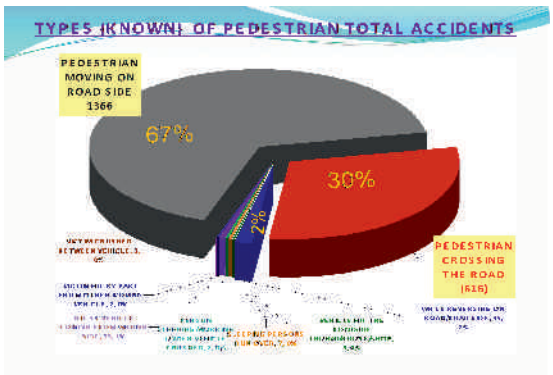
PART – I PEDESTRIAN SAFETY : CREATING PEDESTRIAN FREE ROADS/ZONES

What we presently have for the pedestrians.

- A study was conducted on the type of accident pedestrian is involved in is given in chart 11.1:

Chart 11.1





- The conclusions of the study indicates that among pedestrian accidents 96% of all pedestrian accidents are caused either **while the pedestrian is moving (or standing) along the road side (66.6%) or the pedestrian is crossing the road (30%).**
- **A pedestrian is a person on foot, moving (or standing) along the road side (66.6%):** It indicates that the condition of footpaths and waiting space for pedestrians (to get public transport) on most of the roads of Delhi is very poor. **As per a study 40%, of the total Road Length of Delhi has NO Sidewalks! (And the ones having sidewalks,** lack in quality in terms of surface, width and geometrics). **Source: RITES Transport Demand Forecast Study May, 2008.** The footpaths are missing on many of the main arterial roads of Delhi and where ever provided it's more or less nominal. **They are non-continuous, encroached, un-friendly, and poorly maintained on most of the roads** of Delhi. Some examples are shown in the following pictures.

Pedestrian Difficulties (Some Examples)

Disappearing footpath

Obstructive Signages

Bushes on Footpath

Obstructions to Pedestrians

Inadequate width

Dangerous gaps

Encroachment on Footpath

Insensitive construction agencies

Parking of vehicle on footpath

Lack of continuous Footpath

Institutional Encroachment on Foot Path

Metro Construction

Obstruction on Footpath

Unusable Foot Path

Encroachment by Street Vendors on Footpath

Open Sewage on Footpath

Unfriendly Footpath

Taxi Stand on Footpath

Jhuggies on Footpath

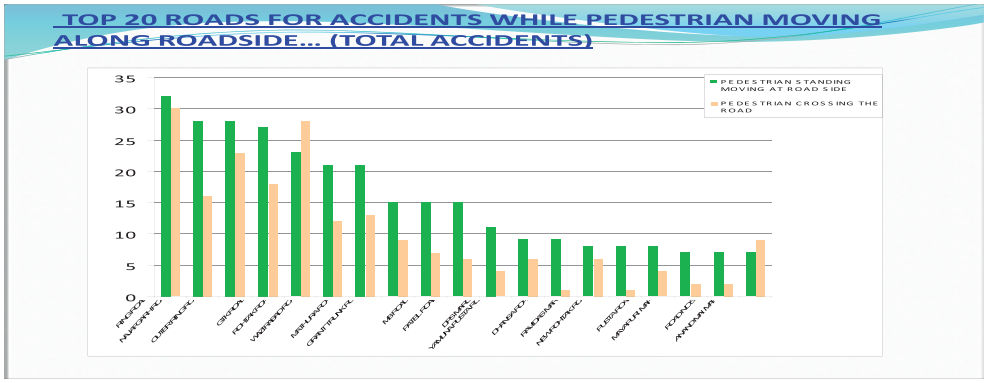


Chart 11.2

- **The accidents caused while crossing the roads, accounts for 30% of pedestrian accidents,** highlights the importance of need of attention to pedestrian crossing facility.
- With **the increase in population, both human and vehicular,** there is struggle for space and mobility on the road. This brings the **human and vehicular conflict on the roads.** While the vehicle driver is in hurry and wants **to drive at the maximum possible speed, there is limitation at which a pedestrian can move. With the roads getting wider and wider to accommodate more and more vehicles, the road crossing is becoming more and more challenging.** Any mis-calculation on part of any human (driver/pedestrian) results in impact that injures the pedestrian.
- **The normal option for preventing such accidents is by providing signaled crossings for the pedestrians.** This can be achieved by stopping the vehicles for some time (few seconds or a minute). With high density of pedestrians and their need to cross the roads this frequency of halting increases which lowers the average speed of vehicle and on some congested roads this frequency becomes so high that average speed of vehicle comes down to 10-15 Km/hr (the average speed of a cycle) which takes off all the advantage of moving in vehicle that can move at far-far high speed. Thus, it is done at the cost of the mobility of vehicles. And in today's **fast moving world all the advantage of time saving by fast moving vehicles is lost. Long halting of vehicles adds the emission and pollution level.** It adds the frustration level and increases the chances of error.

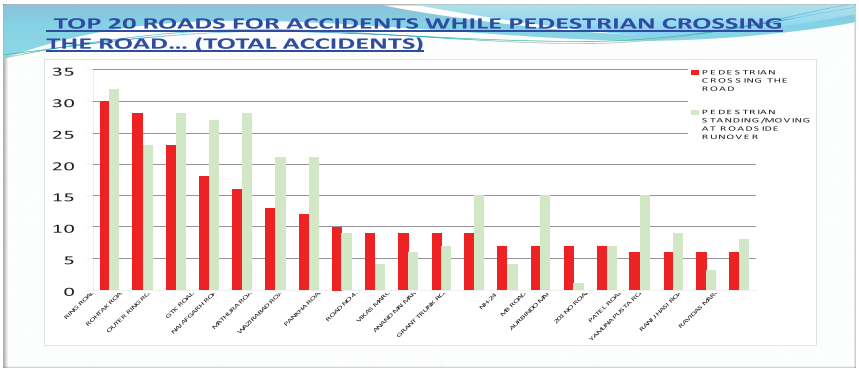


Chart 11.3

- **Segregation of traffic and pedestrians movement (for crossing) can be done either lifting the "fast moving and heavy vehicles" (flyovers and elevated corridors) or by providing FOBs** and subways. **FOBs are cheaper and safer than subways, flyovers and underpasses.**
- The arrangement of making **FOB with guided paths can be preferred over pelican signal crossing** or red light crossing for pedestrians on National Highways and high speed corridors for the following reasons:
  - The **risk factor is still higher in signal crossing due to the possibility of human error** and high speed of the vehicles corridors, especially during lean hours.
  - **Halting of traffic** even for few seconds or minutes **add to the congestion and pollution,** especially during peak hours.
  - This **halting** and slow movement of traffic on **mass level is environmentally disadvantageous** due to extra fuel burning.
  - **It increases the frustration** in the minds of driver and the pedestrian and may sometimes lead to road rage.
- But there are few suggestions to be observed while constructing FOB to make sure that it is effectively used.

Some of the Pros and Cons of present FOBs:

- If FOB is **situated away from the actual place of need,** so people prefer other means.

WHAT PEOPLE PREFER:HIGH GRILLS BECOMES JUST HURDLES

- **If the FOB is provided at the intersections where actual crossings at the ground level** is possible, people prefer to cross road at ground level, so there is no use of high grills provided on divider. Vehicle-pedestrian conflict remains and pedestrians continue to obstruct traffic risking their lives. The purpose of making FOB gets lost.

ADVANTAGE LOST: PEOPLE PREFER ROAD

- **People like comfort** and don't prefer climbing –stairs to cross roads. When possible, provide a safe and comfortable skyway directly and safely dropping them at the point of need/work.

- **The extended dropping into the complex platform can reduce the conflicts on the service road.** These minor one time improvements in construction can reduce conflicts and contribute in large scale reduction in congestion and accidents.

- **Unplanned ramp landing on opposite side of bus stand** or place of footfall becomes meaningless.

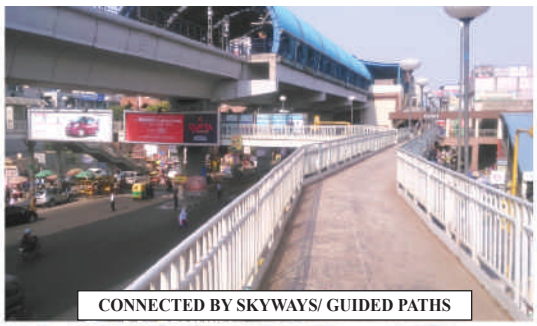
NO STAIR/ ESCLATORS TOWARDS BUSSTAND

LANDING NO WHERE

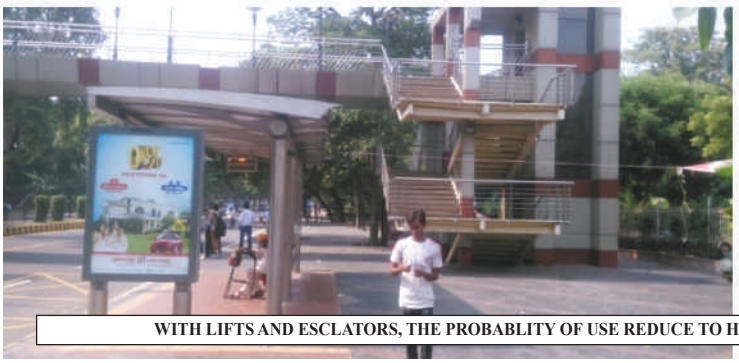
- **FOB on a two lane road with open intersection, without escalator** and having ramp can increase the effective distance by upto 200 mts and therefore, it **never attracts people** and is wastage of public money.

- The FOB or skyway **to be designed keeping convenience of users in mind.**
- To provide maximum facility to users and to attract people.
- **Architectural design must provide facility at the right place** for example: escalator, ramps , double story escalators

STARTING RIGHT FROM THE EXIT PIONT OF VEHICLE (LIKE BUS STOP, METRO STATION)



CONNECTED BY SKYWAYS/ GUIDED PATHS



WITH LIFTS AND ESCLATORS, THE PROBABLITY OF USE REDUCE TO HALF WITHOUT ESCLATORS

HAVING SIDE GRILLS TO PREVENT PEDESTRIANS LANDING ON ROADS

POINTS CAN BE IDENTIFIED FOR MAKING FOB/SUBWAY ON SIMPLE CRITERIA LIKE 1000 PERSONS CROSSING THE ROAD FROM THE SAME POINT PER DAY.

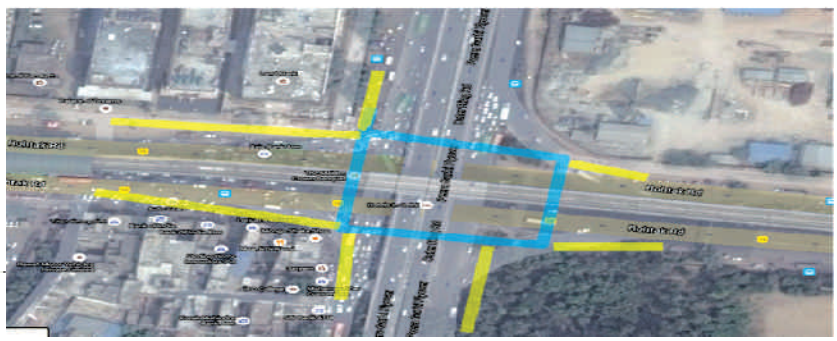
We need to set the priorities and improve our planning. We need to give the utmost importance to pedestrian safety by segregating them from vehicular traffic. Some simple steps that can be taken to achieve this are:

1. **Fixation of high grills at medians:** There were no fatal accidents involving pedestrian crossing the NH-8 in 2016. Mainly due to the high grills on the median. Similar, action can be taken on other NHs, Ring Road, Outer Ring Roads and major arterial Roads. **High grills on the central verge should be fixed on all these roads.**

2. The NHs pass through villages and other heavily populated areas. These roads are wide 6-8 lanes and have vehicles moving at high speed. Local people tend to cross these roads for their daily needs and become victim of high speed traffic. **To reduce accidents due importance to be given to the needs of local people and right arrangement should be made to cross the road.**

3. Adequate number of FOBs to be provided for crossing the road. **FOBs can be provided at small distances, if these are potential road crossing points. Life and safety of the locals is equally important and should not be ignored for speed.**
4. **If erecting FOB is not possible, proper pelican signal should be provided for pedestrians to cross the roads.**
5. **Providing of FOB/Subway should be mandatory for all the six lane or more roads** as crossing Highways where the vehicle density is very high, is most dangerous.
6. These **FOB/Subway/underpasses should be modified to accommodate slow moving vehicles (cycles/Rickshaw/ E-Rickshaw) at places where their numbers are high.**
7. **Footpath should be properly developed and should be separated from road by grills** to prevent pedestrians from coming on road.
8. **FOBs should be equipped with escalators to make it more people friendly.**
9. The **location/point of providing FOB should be as per the requirement of the users** (It has been found that wrongly locating the FOB even by 50 meters makes it ineffective).
10. **Similarly, the design of the FOB/Subway should be as per the requirement of the intersection or locations.** It may also be extended to cover service road or extended up to the shopping mall complex's platform or into the bus terminal if it is more convenient for people using it.

11. **There is a need to develop guided paths/skyways instead of just the foot over bridge/subways for pedestrians at the major intersections** and crossing. These guided paths should extend to the desired destination i.e. bus stand/metro station/shopping complex etc.
12. **Movement of thousands of pedestrians at the intersections like** Peeraghari **creates conflict with vehicles.** This makes pedestrian unsafe and also obstructs the vehicular movement which adds to the congestion and pollution.



Elevated guided paths/FOB/skyways need to be designed for their safe movement, right from the alighting point from first vehicle to the boarding point of second vehicle.

13. **The encroachment of foot path by vendors needs to be removed.** Also the rehri and hand cart vendor needs to be removed from all these roads. The high grill segregating the foot path and roads will help this.
14. **Separate bus bays to be provided at all the bus stands by widening of the road.** These should be long enough to accommodate 2-3 bus and grills with gap only at the position of gates to be provided at the bus stands.
15. **All the major intersections like Peeragarhi, Singhu border, Mukharba chowk, ISBT etc. needs to be individually designed according to the multi model transport means (DTC, Cluster Buses, Roadways buses, Gramin Sewa, RTV, TSR, Rickshaw, E-Rickshaw etc)** and pedestrian traffic.
16. **A separate halting space for other public transport vehicle like TSRs/Gramin Sewa to be provided.**
17. Thus, important junctions need to be developed into proper hubs where roadways passengers, DTC/CBUS passengers, Gramin Sewa, TSRs and E-Rickshaw etc are systematically available to the users safely interchanging from one mode to another.
18. **Route maps of the DTC/Cluster buses like that of the metro route maps to be displayed on the bus stand and at the metro stations** at least at the major intersections and transport hubs.
19. **Sufficient direction boards for the passengers to get next connecting mode of transport** or to reach nearby important places safely through footpaths and foot over bridges.