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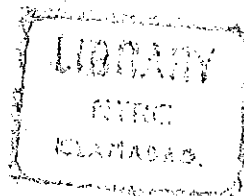
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ACCIDENT BLACK SPOTS STUDY

ON

NATIONAL HIGHWAY (N-5)

HASANABDAL - ATTOCK



NTRC-185

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

On the request of the Superintendent of Traffic Police, Rawalpindi, a comprehensive survey was carried out to identify the black-spots on the Hassanabdal-Attock Khurd section of National Highway (N-5).

National Highway (N-5) is the most vital transportation link in Pakistan. It carries nearly 70% of total traffic in the country.

The road between Hassanabdal and Attock-Khurd is almost a 24' wide undivided highway. The condition of the road in general is good, but the shoulders in particular are very poor with inadequate drainage (photographs 1 - 4). The traffic signs and channelised or signalised crossings are almost non-existent. It is free entry-exit highway and in towns being used as city road, with all the sundry vehicles plying on it.

On the Hassanabdal-Nowshera Section the traffic volume is around 13,500 vehicles per day. The proportion of cars, wagons, buses and trucks were found to be 40%, 19%, 11% and 30% respectively.

The capacity of a two lane undivided highway is approximately 10,000 vehicles per day as against the observed traffic of 13,500 vehicles per day. The problem is further aggravated due to slow moving tractor trollies and trucks forming 30% of the total traffic on the section.

The objective of the study was to investigate and analyse the causes of accidents that have taken place in the past five years. Although, it was quite difficult to analyse the past accidents, mainly because of the fact that geometric conditions of the road have since been greatly changed/improved and partly due to lack of sufficient data.

indicate the negligent and high speed overtaking. Second most common factor involves pedestrians, which are mostly fatal as first aid facilities are very remote.

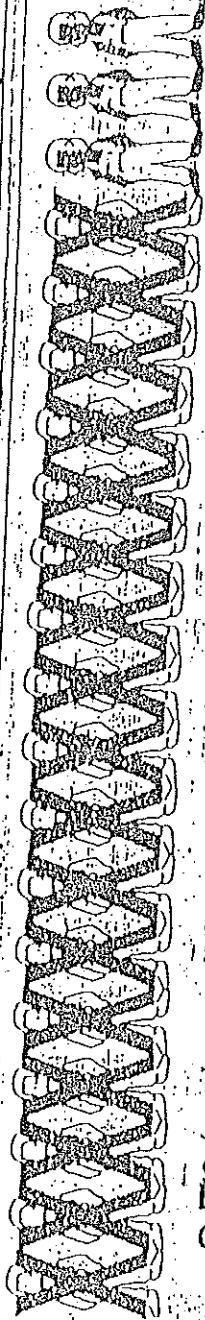
It was also observed that public service vehicles are mostly involved in the accidents particularly the Commuter Vans. Mostly commuter Vans were found to be overspeeding and their speed on the average, as high as 127 km/hr were observed while cars, wagons, buses and trucks were running at 121, 112, 102, 60 km/hr respectively against the speed limit of 80 km/hr on this road section.

The above analysis led to the conclusions that the geometric conditions of the road does not contribute significantly towards the accidents. Rather in this section the road users are mainly responsible for accidents. Most of the accidents occurred on smooth, level and straight highway sections.

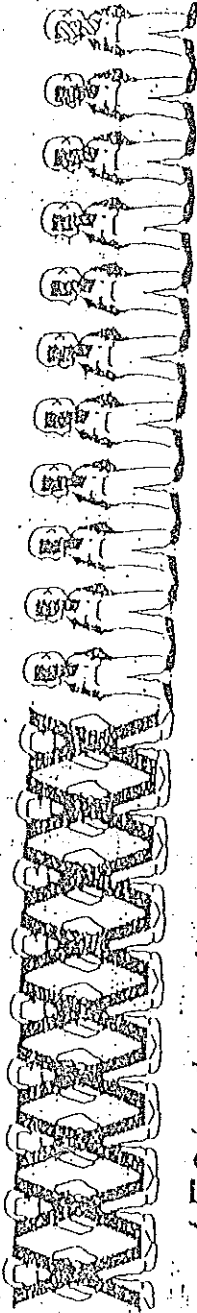
RECOMMENDATIONS

- It is recommended that road (right of way) should be cleared off encroachments and separate service roads should be provided for local traffic so that the through traffic could pass smoothly.
- Shoulders must be levelled and properly sloped.
- Frequent illegal turnings, approaches shall be closed.
- Drainage must be improved by providing proper side drains.
- Intersections be properly designed and signalised.
- Proper pedestrian crossings must be provided as drivers do not give way to pedestrians, who try to cross the road in haste and accident occur.
- Proper bus bays should be provided.
- It is expected that this section will be dualised in the near future, 1997, and therefore, the accidents ratio would be considerably reduced like Labore-Kharian section. Particularly the head-on collisions would become a remote possibility
- Vehicle speeds at the time of accidents must be recorded.
- Sketch of accidents must be carefully drawn
- Drivers, passengers statements must be recorded as well as the comments of the investigating officer are essential for carrying out comprehensive analysis and for fixing of responsibility.
- Committee, comprising officials of highway traffic police, construction authorities and research institution be constituted to streamline the traffic flow during construction works.
- During construction or such eventualities reserve police may be called in to assist traffic police.
- Traffic police may be equipped with radars to check speeds.

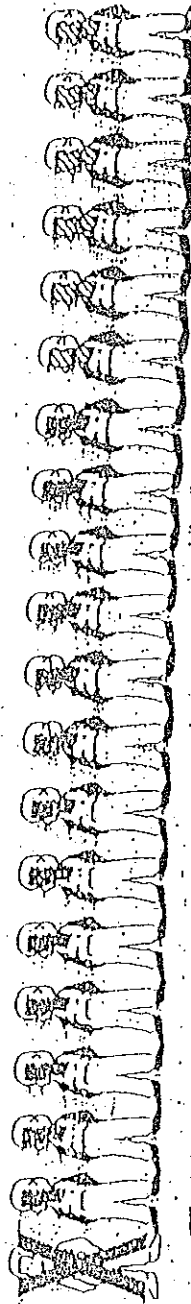
PEDESTRIAN INJURY AT VARIOUS
IMPACT SPEEDS



85% death, 15% injured.

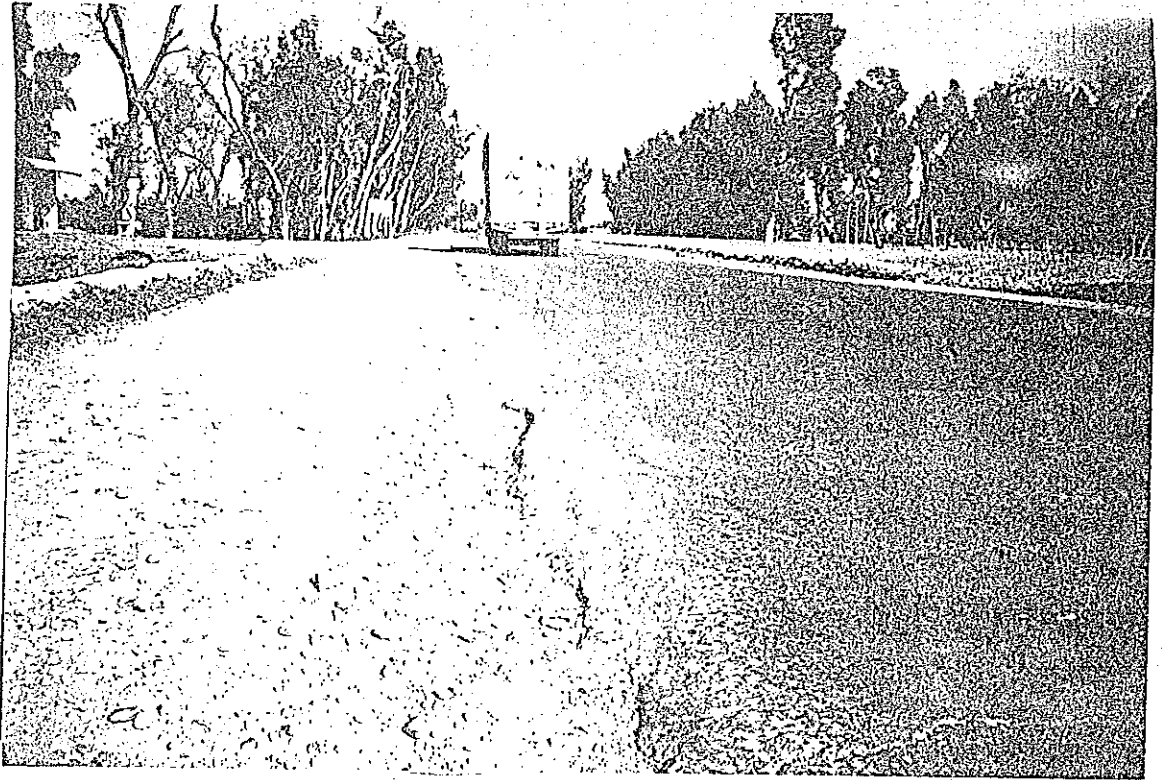


45% death, 50% injured, 5% uninjured.



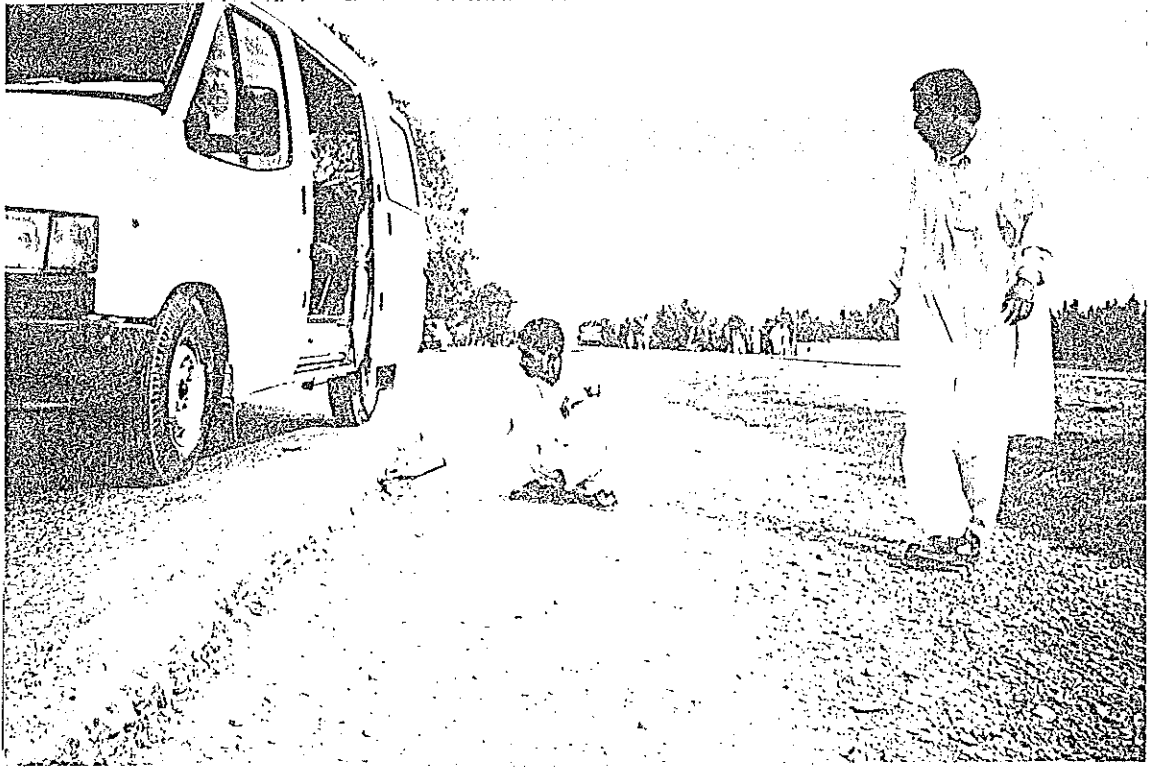
5% death, 65% injured, 30% uninjured.

Fig. 1



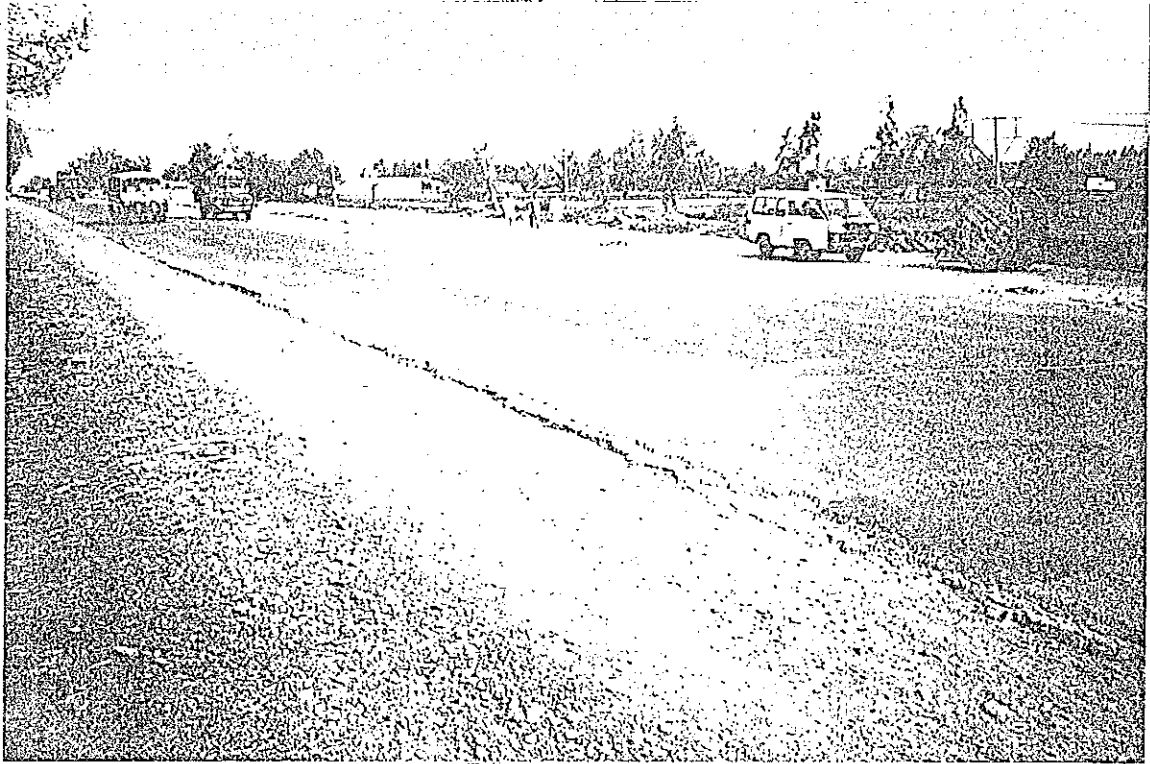
(Photograph - 1)

1. Poor Shoulder Condition



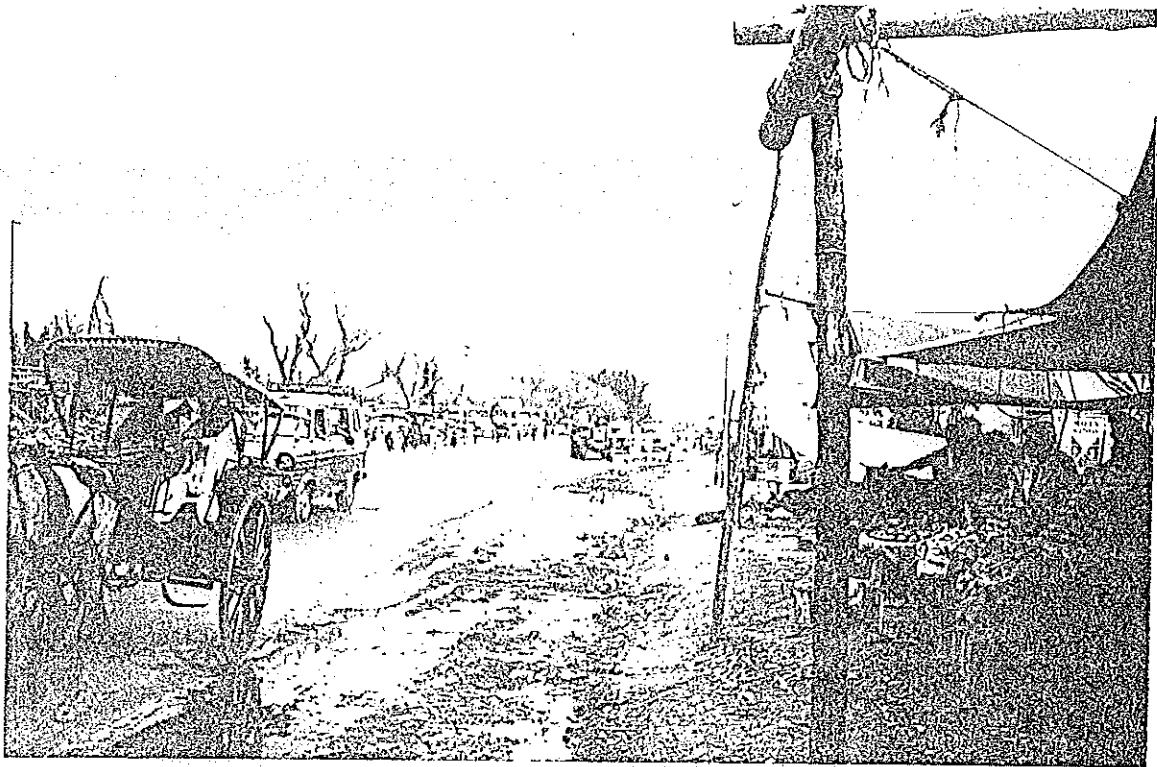
(Photograph - 2)

1. Shoulder surface is uncompacted and 6" - 8" below the pavement surface.
2. Hazardous for overtaking as no vehicle would like to give way to the other vehicle by retiring to shoulder.
3. Heavy goods vehicles would not use such shoulders so to avoid its axles from being damaged/breakage.



(Photograph - 3)

1. Vehicle parked on shoulder.
2. Overspeeding commuter Van (115 KPH).
3. Poor Condition of the shoulder.



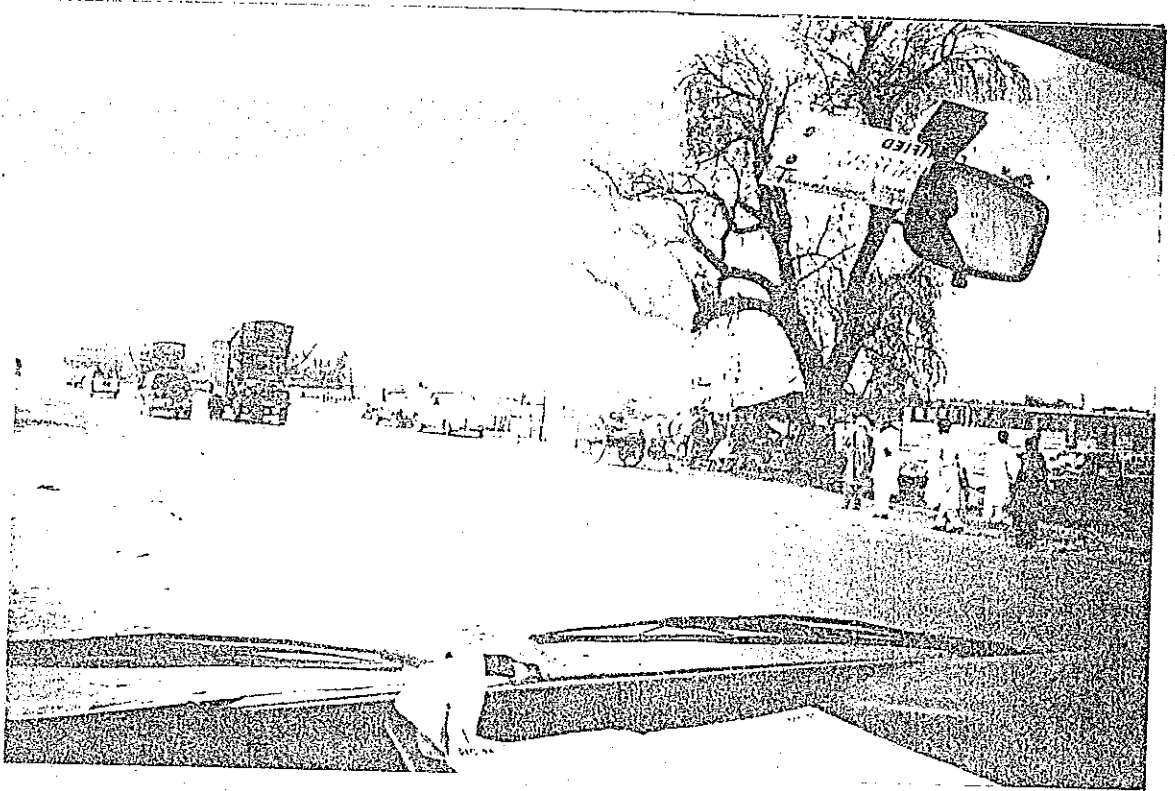
(Photograph - 4)

1. Reduced right of way.
2. Water standing on the road and shoulder.
3. Inadequate drainage system.
4. Animal Drawn vehicles on the road.



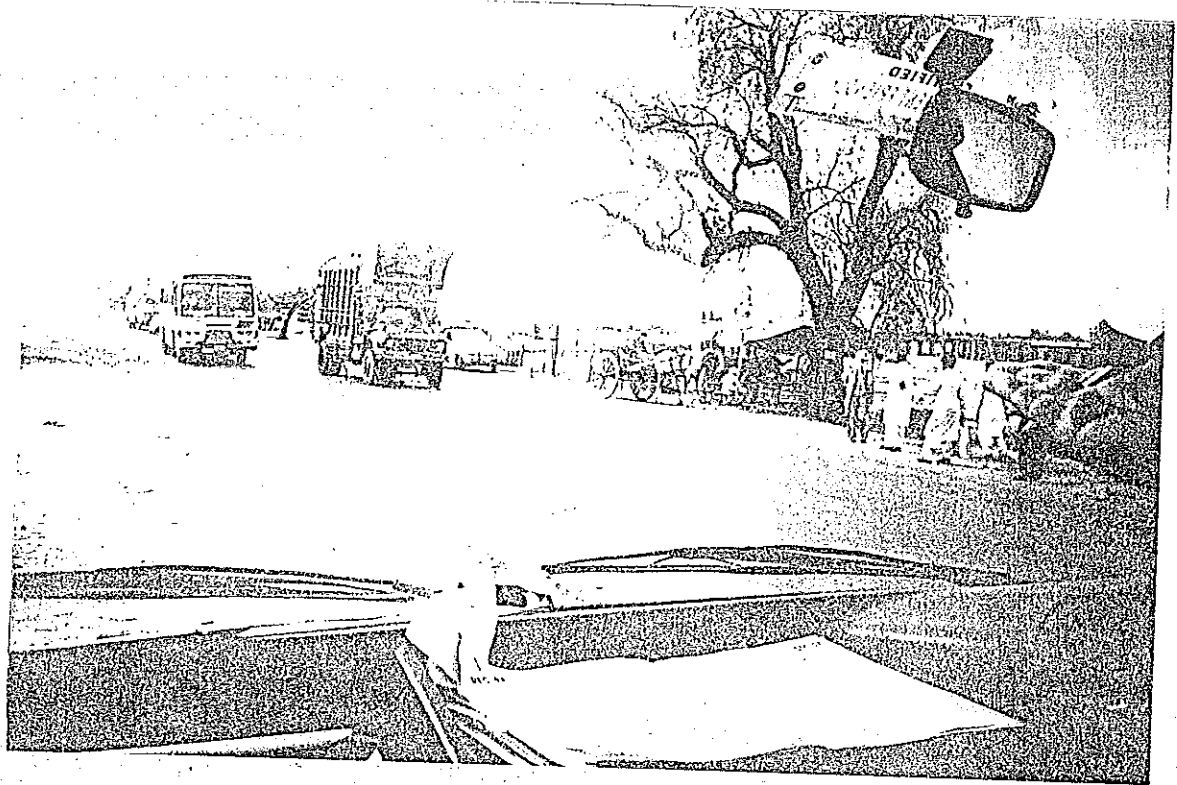
(Photograph - 5)

1. Typical example of rash overtaking. Negligent behaviour of wagon and bus drivers is quite visible.
2. Although safe passing distance was not available but overtaking maneveaour was carried out.



(Photograph - 6)

1. Although the safe passing distance was not available but the bus driver tried to overtake the truck resulting in narrow escape from head on collision between bus and wagon.



(Photograph - 7)

1. Bus passing through Urban Area and making hazardous overtaking manoeuver.

LITERATURE REVIEW

LITERATURE REVIEW

The problem of highway safety in Pakistan has been deteriorating steadily during the last four decades. A number of studies have been carried out by the overseas Unit of the U.K. (TRL) in order to identify the scale of the global road accident problem. Fig 2 shows a comparison of road fatality rates among the 31 countries, expressed in terms of deaths per 10,000 vehicles licenced. Pakistan ranks at the 5th position from the top amongst 31 developing and developed countries surveyed by TRL, being closely behind such countries as Ethiopia, Nigeria, Kenya and Lesotho.

It may be seen from Fig. 3 that the African and Asian countries have experienced high percentage increases in road fatalities while for developed countries the percentage is steadily decreasing.

It is also possible to make prediction about future accidents levels based on current rates. The Smeed Equation uses fatality totals, number of vehicles and population in this form.

$$F/V = 0.0003 (v/p)^{-0.66}$$

where F is the fatality total, V is the number of vehicles and P is the population. When plotted on a graph the Smeed Equation gives a prediction of the future accident rate for the country. Examples are shown in Fig 4. The graph shows that for a given level of vehicle ownership in 1984, the corresponding fatality rate is less than that of 1980. However there is some improvement in the developing countries' accidents situation. Smeed lines can also be used as a means of comparison to see whether a country has a 'high' or 'low' rate for a given level of vehicle ownership.

Road accident fatality rates (Deaths per 10 000 vehicles)

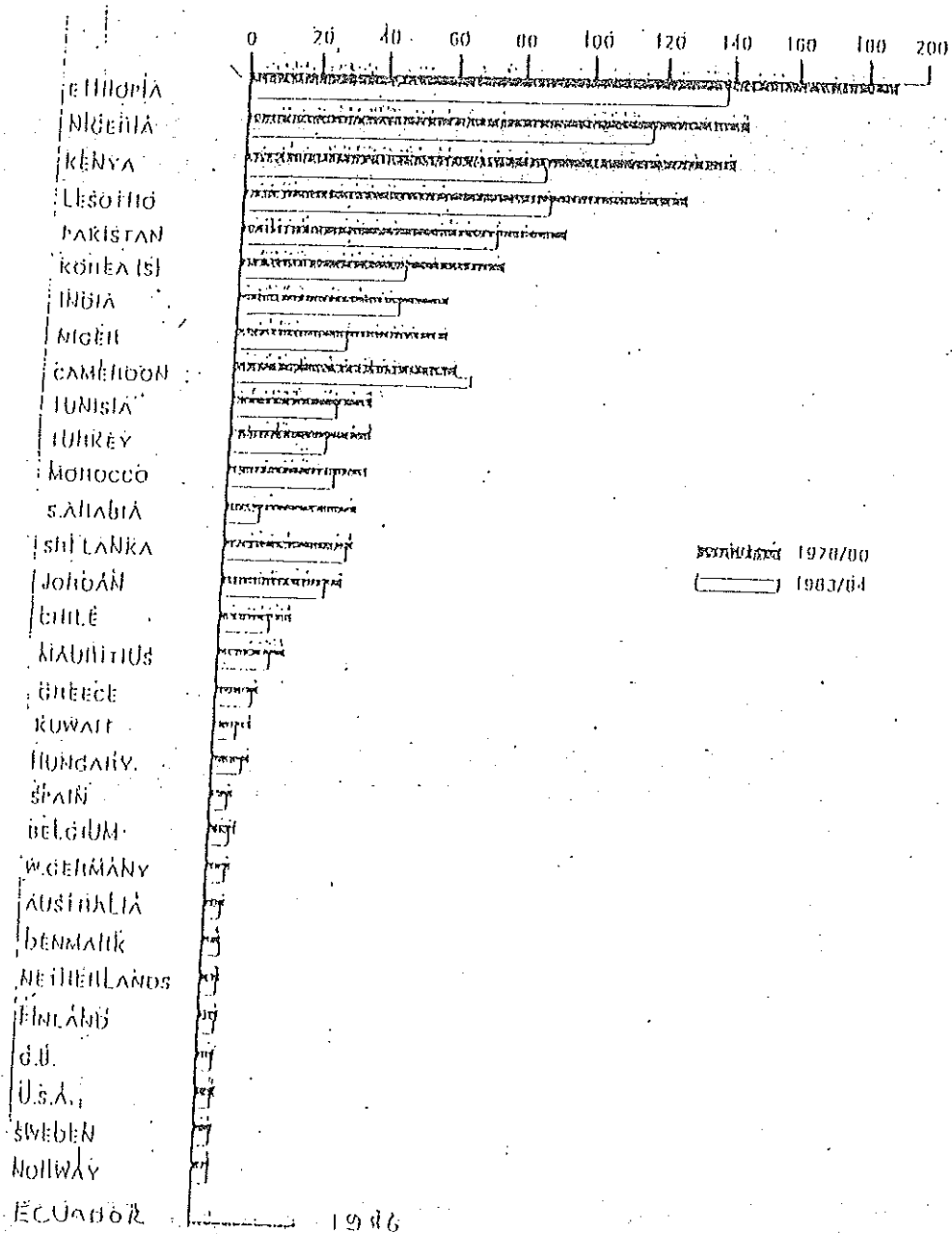


Fig. 2

Percentage change in road accident fatalities 1968-1983

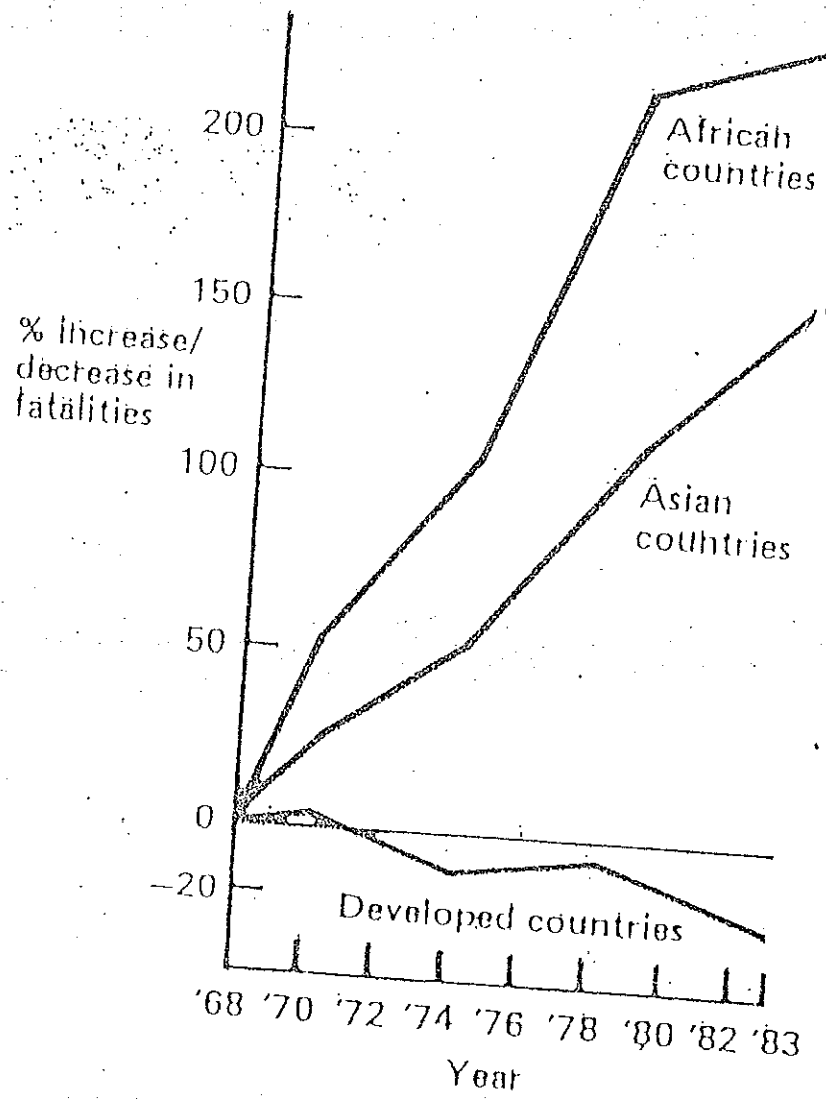


Fig. 3

Relationships between fatality rates and vehicle ownership levels in developing countries

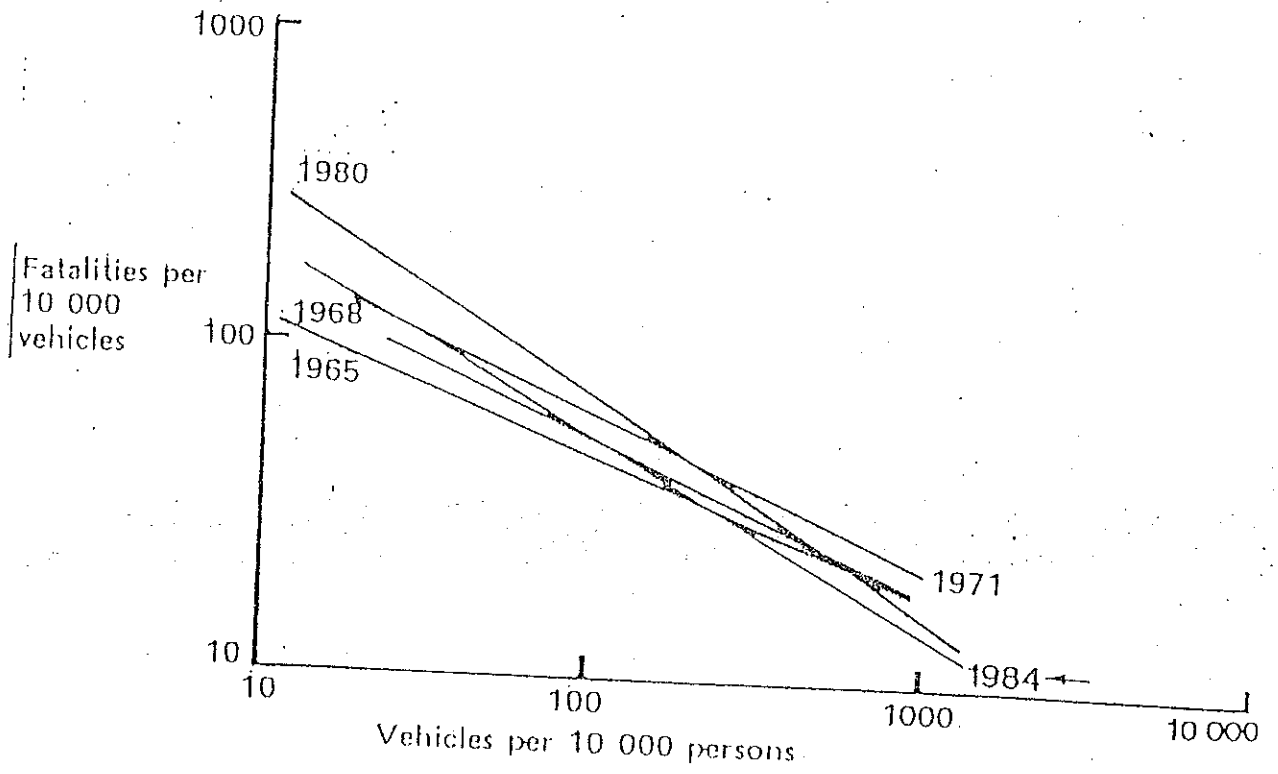


Fig. 4.

WHAT IS MEANT BY A ROAD ACCIDENT

In U.K. the Road Accident defined by the Department of Transport as:

...a road accident is one involving personal injury occurring on the public Highway in which a vehicle is involved and which is reported to the police...

Most U.K. Highway authorities do not investigate those accident which do not involve injury. Road accident definitions vary between different countries. In U.K. a "fatal" road accident is one in which the victim dies from the injuries received in accident within 30 days of its occurrence. This period is also different for different countries.

Road accidents are rare, multi-factor events own randomly in space and time. This seems to be true in terms of the chances of being involved in an accident or predicting its occurrence at a specific time and at a specific location. In fact road accidents are not truly random in occurrence. Certain locations carry a higher than average risk of an accident occurring. These locations are known as "accident black spots" or accident black sites.

The factors that lead to an accidents are known as "contributory factors". They are as follows:

1. The Road User
2. The Environment
3. The Vehicles

Fig. 5 shows how these factors combine to influence accidents occurrence in U.K. The Road Environment (Highway and its adjacent land use) is only and directly responsible in about 2.5% of accidents. But in

combination with other factor the road environment factor is present in 28% of accidents. The road users is responsible in over 90% of all accidents. In 65% of cases the road user is completely responsible. Therefore there is considerable scope for accident prevention by adopting educational and training measures to tackle this part of the problem.

Fig. 5 also shows that the vehicle factors make a small contribution to accident occurrence. Safety improvements can be made here, for example introduction of seat belts head restraints etc. However these measures will generally reduce the severity of accidents not their frequency.

Transport Research Laboratory (TRL) of U.K. in their research examined the factors involving in thousands of road accidents and discovered two important points.

Firstly, accidents are "rare, random, multi-factor" events. In other words they do not occur very often (to individual members of society) they tend to occur at a variety of relatively unpredictable locations and times, and they can be viewed as sequential chains of events.

Secondly the 'multi-factors', that go to make up these chains of events can be classified into three broad categories. These are:

- A) Vehicle safety factors (e.g. failed brakes)
- B) Human/Behavioural factor (e.g. drink driving)
- C) Environmental/Highway Factor (e.g. adverse camber)

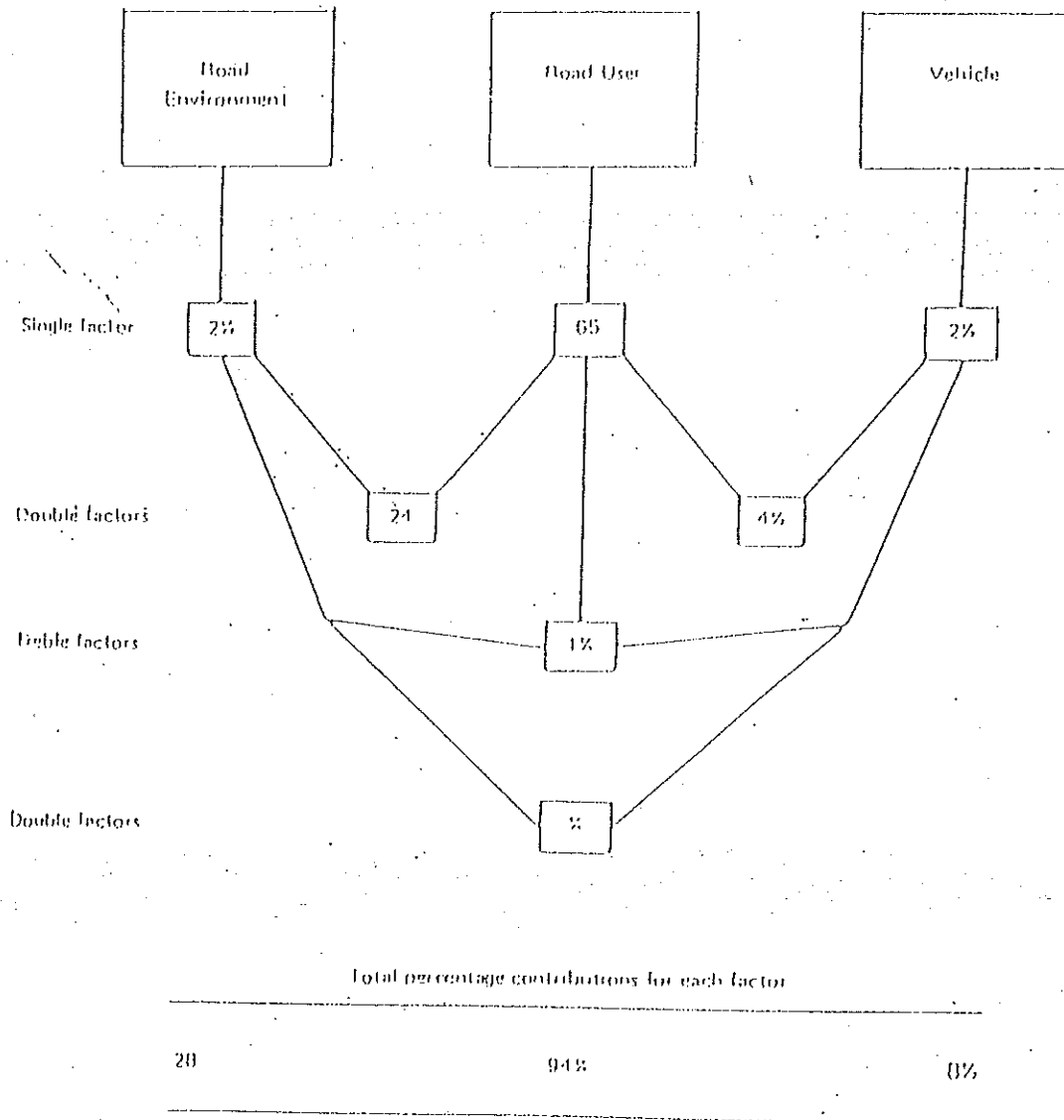
The multi factor chains look like this

A1+C1+B1+B2	=	Accident!
A1+B1	=	Accident!
B1+C1	=	Accident!
B1+B2+C1+C2+C3+B3+A1+B4+C4+H2	=	Accident!

Some of these chains are simple and some are more complex as the above example imply. In the third example there is just one Human Factor and one Environmental Factor in htc chain leading to the accident. In the fourth example the chain is more complex, with two vehicle factors and four environmental and human factors.

The trick in terms of reducing accidents is to remove one of the factors from the chain of events, to prevent the sequence from going to its traumatic conclusions.

PERCENTAGE CONTRIBUTIONS



CONTRIBUTIONS TO ROAD ACCIDENTS

(FROM LIND REPORT 567)

Fig. 5

THE ROAD ACCIDENT PROBLEMS

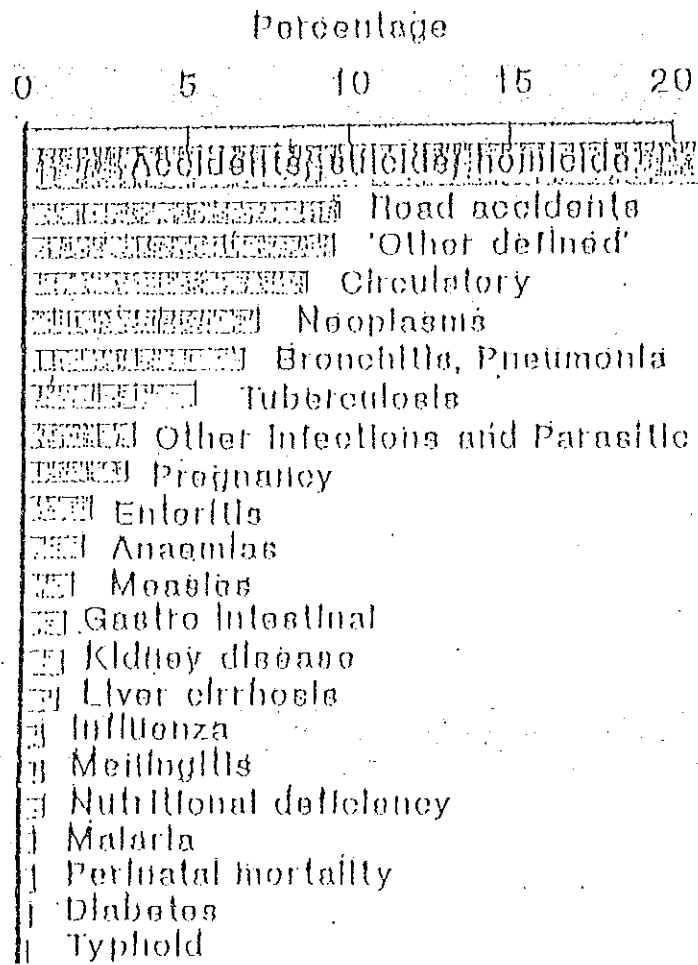
TRL research has indicated that the road accident problem is very serious in developing countries like Pakistan as shown in Fig. 6

- Fatality rates per vehicle were; on the average, at least twenty times higher than those in developed countries.
- Road accidents were a leading cause of death.
- Estimated costs to developing countries were at least one percent of their GNP'S. In case of Pakistan, it amounts to billion of rupees.

Current trends indicate an increase in road death in developing countries in contrast to a decrease in developed countries. If these trends continue it seems likely that the third world annual death toll will approach 400,000 by the end of the century.

Studies have high lighted the seriousness of pedestrian accidents, poor road user behaviour and the high incidence of drugs/drinking driving in some developing countries.

THE ROAD ACCIDENT PROBLEM



Causes of death in developing countries, 5-44 age group

Fig. 6

ANALYSIS OF BLACK SPOTS
DATA

2.1 HASSANABDAL

Date : 24.03.1996, Day: Sunday Weather: Clear

Road Environment

- Road Width = 24' two lane highway but dualization is in progress at this section.
- Road Condition = Good
- Shoulder Width = Inadequate (less than 6' at all locations)
- Shoulder Condition = Poor, uneven, discontinuous and not properly sloped.
- Drainage = Poor Drainage.
- Traffic Signs/Signal = Insufficient Traffic Signs, no traffic signal.
- Lane Marking = No Lane Markings or any other facility such as Chevron, Cat-eyes.

Road User

- Main highway is also used by the Hassanabdal residents as city road.
- Slow moving and mixed local traffic obstructs the main through traffic of N-5 at Hassanabdal.
- No facility for pedestrian crossing has been provided.
- High speeds, and wrong overtaking was observed during survey.
- No bus bays and haphazard stoppages of buses to carry passenger.

- Tanga's occupied the shoulders on both sides.
- Too much interaction between slow moving traffic, pedestrian and high speed traffic causes traffic blockade/jams and drivers loose their passion, who in turn overspeeds on other sections, overtakes and causes accidents.

Conclusion

- As the road passes through the residential/commercial area traffic accidents congestion results because of mixing of local and through traffic.
- The gemoetric condition of the road is not a significant contributing factor and the road is almost straight and level.
- As evident from the accident data, road users contribute 80% of the accidents. Particularly pedestrians are involved in accidents. While 20% accidents result from overspeeding and negligent driving.

Remedial Measure

- It is recommended that the area within the right of way of the road should be cleared off encroachments and seperate service roads should be provided for local traffic so that the through traffic can pass smoothly. It is expected that this section will be dualized in the near future and the accident ratio would be considerably reduced and is also proposed that rumble strips be provided and slow speed signs at appropriate locations must be fixed. Proper tanga and bus bays should be provided.
- Routine traffic monitoring is very important to check the traffic

violation e.g. over speeding, negligent driving, extra.

Missing/necessary traffic signs must be installed.

- Shoulders must be levelled and properly sloped.
- Drainage must be improved by providing proper side drains.
- Intersections, be properly designed and signalised.
- Proper pedestrian crossings must be provided as drivers do not give way to pedestrians, and they try to cross the road in haste and results in accidents.
- Strict enforcement of traffic rules is the most important aspect for reducing traffic accidents. Drivers education is must and they must be made to realise to obey speed limits, understand traffic environment and avoid rash overtaking.

2.2 MUNU NAGAR

Date : 24.03.1996, Day: Sunday Weather: Clear

Road Environment

- Road Width = 24' two lane highway facility
- Road Condition = Very Good.
- Shoulder Width = Inadequate (less than 6' at all locations)
- Shoulder Condition = Poor, uneven, discontinuous and not properly sloped.
- Drainage = Poor Drainage
- Traffic Signs/Signal = Insufficient Traffic Signs and no traffic signal.
- Lane Marking = No Lane Marking or any other facility such a Chevron, Cat-eyes.

Road User

- No facility for pedestrian crossing has been provided.
- High speeds, and wrong overtaking was observed during survey.

Conclusion

- The geometric condition of the road is not a significant contributing factor in the accidents as the road alignment is almost straight and level.
- It is evident from the accident data, that during 1991-96 accidents

occurred due of negligent driving and wrong overtaking.

- Construction material was dumped on the road reducing the effective width of carriage way.

Remedial Measure

- Routine traffic monitoring is very important to check the traffic violation e.g. over speeding, negligent driving, extra. Missing/necessary traffic signs must be installed.
- Shoulders must be levelled and properly sloped.
- Drainage must be improved by providing proper side drains.
- Proper pedestrian/labour crossings must be provided as glass factory are located along the road side and labour usually cross the road.
- Strict enforcement of traffic rules is the most important aspect for reducing traffic accidents. Drivers education is must and they must be made to realise to obey speed limits, understand traffic environment and avoid rash overtaking.



(Photograph 2.2)

1. Construction material dumped on the road thereby reducing right of way and causing traffic hazard.

2.3 BURHAN

Date : 24.03.1996; Day: Sunday Weather: Clear

Road Environment

- Road Width = 24' two lane highway facility
- Road Condition = Very Good
- Shoulder Width = Inadequate (less than 6' at all locations)
- Shoulder Condition = Poor, uneven, discontinuous and not properly sloped.
- Drainage = Poor Drainage
- Traffic Signs/Signal = Insufficient Traffic Signs, the only warning sign has been placed at the end of diversion and no prior warning signs are fixed to guide the drivers.
- Lane Marking = No Lane Marking or any other facility such as a Chevron, Cat-eyes.

Road User

- No facility for pedestrian crossing has been provided.
- No Bus Bay has been provided.

Conclusion

- As the road passes through the Burhan congestion results because of mixing of local and through traffic. Since the Road is a two lane highway facility, the overtaking is difficult and too hazardous to traffic.

- As evident from the accident data, road users are mostly responsible for the accidents.
- Accident data shows that the negligent driving/overspeeding is the main cause of the accidents.

Remedial Measure

- It is expected that this section will be dualized in the near future and the accident ratio would be considerably reduced and is also proposed that rumble strips be provided and slow speed signs at appropriate locations must be fixed.
- Routine traffic monitoring is very important to check the traffic violation e.g. over speeding, negligent driving, extra. Missing/necessary traffic signs must be installed.
- Shoulders must be levelled and properly sloped.
- Drainage must be improved by providing proper side drains.
- Intersections, be properly designed and signalised.
- Proper pedestrian crossings must be provided as drivers do not give way to pedestrians, and they try to cross the road in haste and results in accidents.
- Strict enforcement of traffic rules is the most important aspect for reducing traffic accidents. Drivers education is must and they must be made to realise to obey speed limits, understand traffic environment and avoid rash overtaking.
- Warning signs must be provided on appropriate location.

- Date : 24.03.1996, Day: Sunday Weather: Clear

Road Environment

- Road Width = 24' two lane highway facility
- Road Condition = Very bad
- Shoulder Width = Inadequate (less than 6' at all locations)
- Shoulder Condition = Poor, No shoulder exists.
- Drainage = No Drainage.
- Traffic Sign = Insufficient Traffic Signs.
- Lane Marking = No Lane Marking or any other facility such as Chevron, Cat-eyes.

Conclusion

- As the road is a two lane highway congestion results because of railway crossing.
- The geometric condition of the road is a significant contributing factor in the congestion and the road alignment is curved at the crossing.
- Frequent breakdown of vehicles, particularly trucks occur in this section due to poor condition of the road.

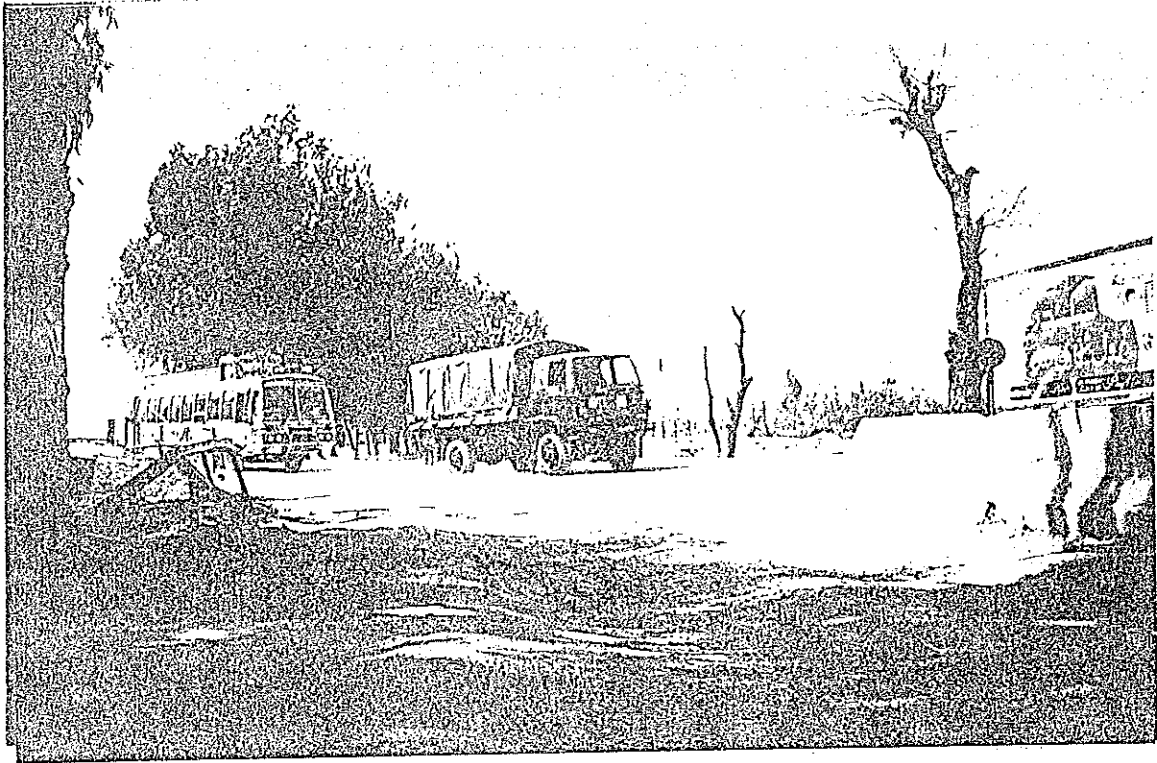
Road Users

- Road users do not keep in their lanes and instead of forming one queue, several

ques in one lane are formed at the level crossing which causes traffic jams and even after opening of the level crossing, it takes a lot of time to clear the traffic.

Remedial Measure

- It is recommended that road should be constructed and shoulders of proper width should be added so that the traffic can pass smoothly. The under construction 4 lane overhead bridge would be completed in the near future, therefore, it is expected that the congestion would be eliminated and smooth flow would be quite possible.
- The M/s. CPECC may be asked to assist traffic Police in case of traffic emergencies as they are equipped with heavy cranes.
- Drainage must be improved by providing proper side drains.
- Strict enforcement of traffic rules is necessary.
- Drivers must be penalised for parallel parking of vehicles when the crossing closes.



(Photograph 2.3.1.a)

1. This is the worst section of the road. The road is completely broken and during rainy season it becomes slushy. Therefore, creating complete traffic jam.

2.4 FATEH-ULLAH

- Date : 24.03.1996, Day: Sunday Weather: Clear

Road Environment

- Road Width = 24' two lane highway facility
- Road Condition = Good
- Shoulder Width = Inadequate (less than 6' at all locations)
- Shoulder Condition = Poor, uneven, discontinuous and not properly sloped.
- Drainage = Poor Drainage
- Traffic Signs/Signal = Insufficient Traffic Signs.
- Lane Marking = No Lane Marking or any other facility such as Chevron, Cat-eyes.

Road User

- No facility for pedestrian crossing has been provided.
- High speeds, and wrong overtaking was observed during survey.
- No bus bays and haphazard stoppages of buses to carry passenger.

Conclusion

- As the road passes through the city/commercial area traffic accidents congestion results because of mixing of local and through traffic. Since the Road is a two lane highway facility, the overtaking is difficult and too hazardous to traffic.



(Photograph 2.3.1.b)

1. The dilapidated condition of the road is clearly visible. Due to bumpy condition, the vehicles take too much time to cross this section.

- The geometric condition of the road is not a significant contributing factor in the accidents as the road alignment is almost straight and level.
- The road is good and the rate of accidents have reduced. Only pedestrian accidents took place in last years.

Remedial Measure

- Pedestrian crossing facility must be provided at appropriate location.
- Shoulder must be levelled and properly sloped.
- Continuous routine traffic monitoring to check the speed of vehicles and to check the negligent driving.

2.5 IIARO BRIDGE

- Date : 24.03.1996, Day: Sunday Weather: Clear

Road Environment

- Road Width = 24' two lane highway facility
- Road Condition = Good
- Traffic Signs/Signal = Insufficient Traffic Signs, no traffic signal.
- Lane Marking = No Lane Marking or any other facility such a Chevron, Cat-eyes.

Road User

- No facility for pedestrian crossing has been provided.
- High speeds, and wrong overtaking on the bridge was observed during survey.
- No warning sign was placed that the road ahead reduces to two lane facility from the four lane divided highway, because of maintenance.
- A broken dump truck was seen on the road without any proper warning sign.
- A small child was found begging on the road who was not able to walk causing traffic hazard.
- No warning sign was observed during the survey that this part of the road has been abandon and vehicle should not go to the old bridge.
- No Bus Bay (Ilaphazard stoppages of buses to carry passenger).

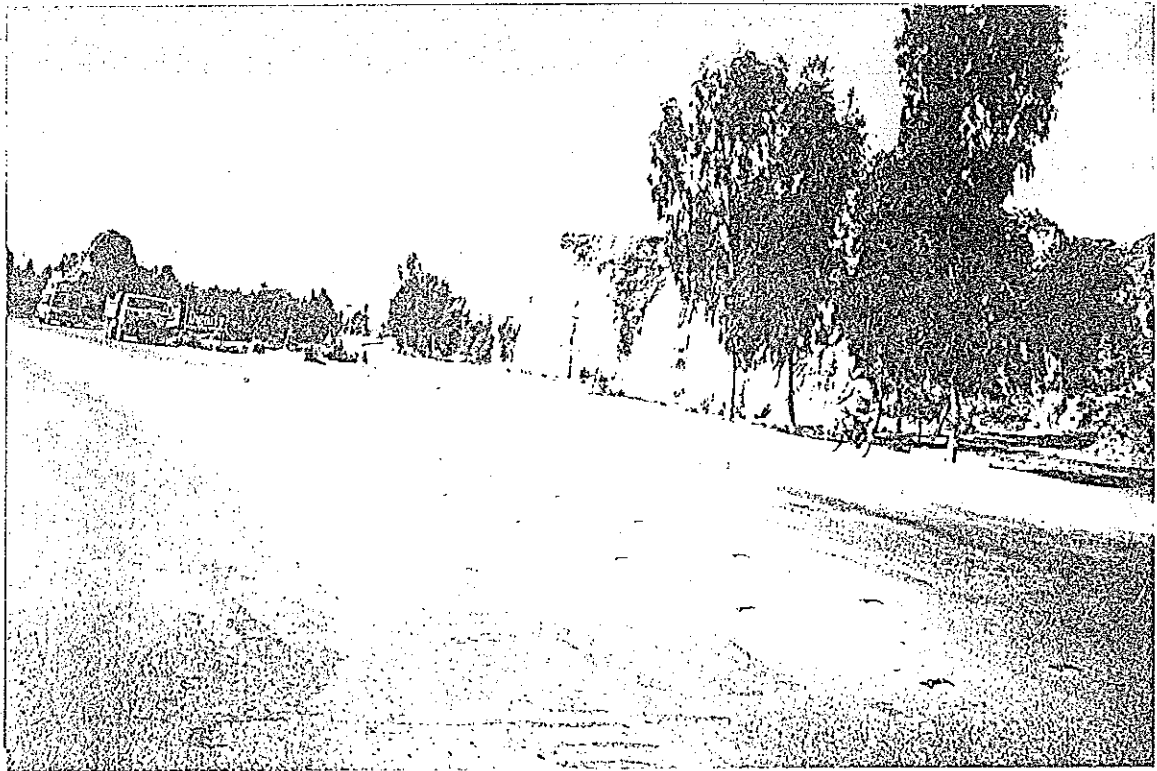
Conclusion

- As the road passes through the city/commercial area traffic accidents congestion results because of mixing of local and through traffic. Since the Road is a two lane undivided highway facility, the overtaking is difficult and too hazardous to traffic.
- The geometric condition of the road is not a significant contributing factor in the accidents as the road alignment is almost straight and level.
- As evident from the accident data, road users contribute 80% of the accidents. Particularly pedestrians are involve in accidents. While 20% accidents result from overspeeding and negligent driving.

Remedial Measure

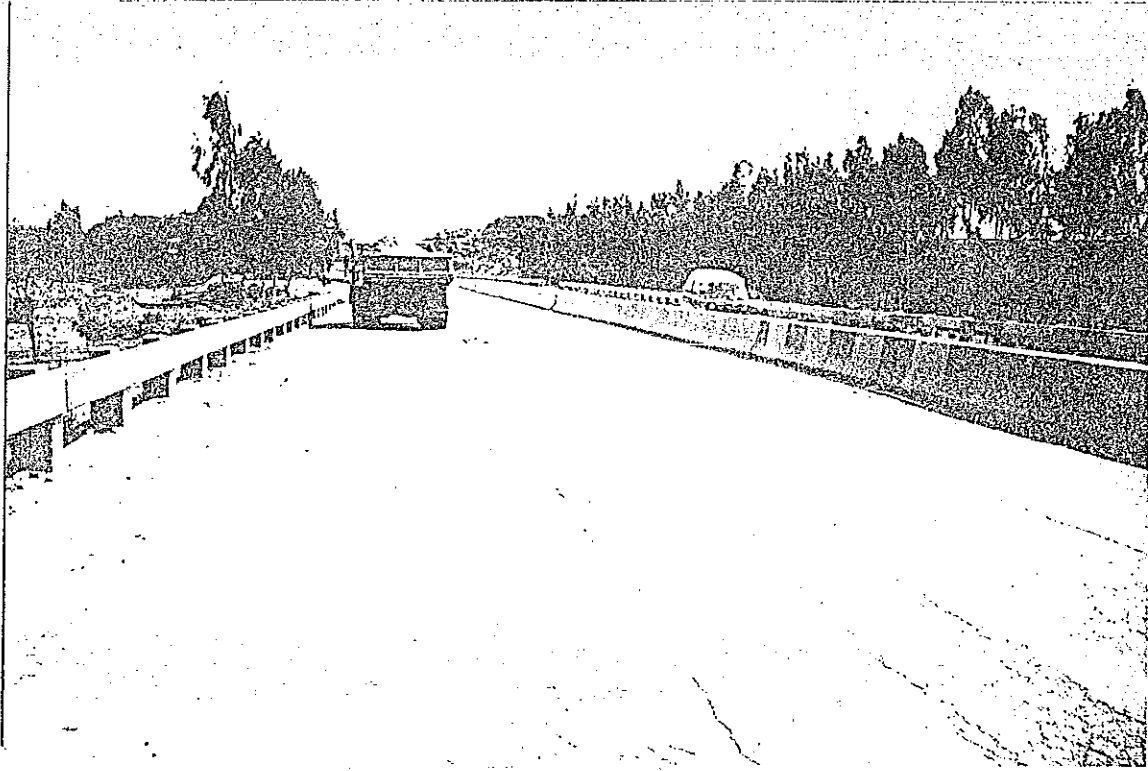
- It is recommended that road (right of way) should be cleared off encroachments and seperate service roads should be provided for local traffic so that the through traffic can pass smoothly. It is expected that this section will be dualized in the near future and the accident ratio would be considerably reduced and is also proposed that rumble strips be provided and slow speed signs at appropriate locations must be fixed. Proper tanga and bus bays should be provided.
- Routine traffic monitoring is very important to check the traffic violation e.g. over speeding, negligent driving, extra. Missing/necessary traffic signs must be installed.
- Shoulders must be levelled and properly sloped.
- Drainage must be improved by providing proper side drains.
- Intersections, be properly designed and signalised.

- Proper pedestrian crossings must be provided as drivers do not give way to pedestrians, and they try to cross the road in haste and results in accidents.
- Strict enforcement of traffic rules is the most important aspect for reducing traffic accidents. Drivers education is must and they must be made to realise to obey speed limits, understand traffic environment and avoid rash overtaking.
- Fixing of warning sign on appropriate places.
- A warning sign for the abandon bridge so that drivers should not go there.
- A warning sign for indicating the road head is going be 2 lane instead of 4 lane divided.
- Routine maintenance and checking of traffic.



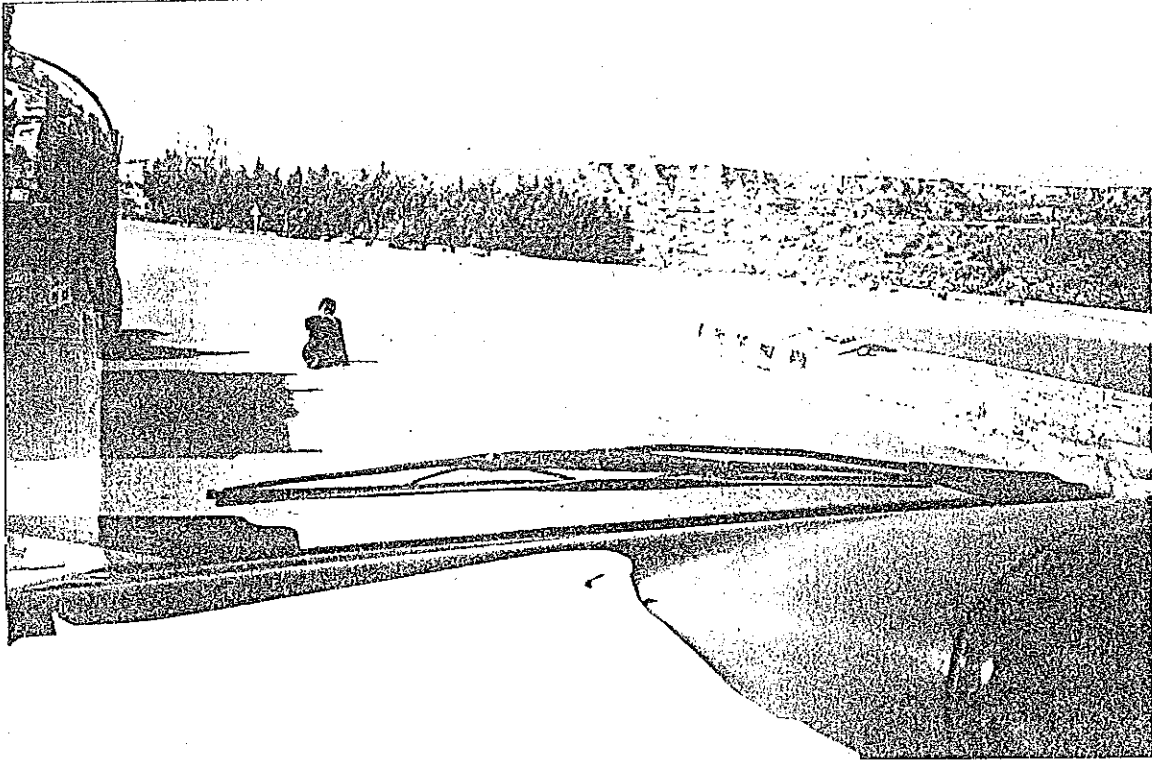
(Photograph 2.5.1)

1. No traffic sign or barrier to guide the drivers onto the new bridge.
2. Similarly, no sign warning drivers not to use old road.



(Photograph - 2.5.2)

1. A broken vehicle is parked on the road without any warning sign.



(Photograph 2.5.3)

1. A disabled boy begging in the middle of the road..

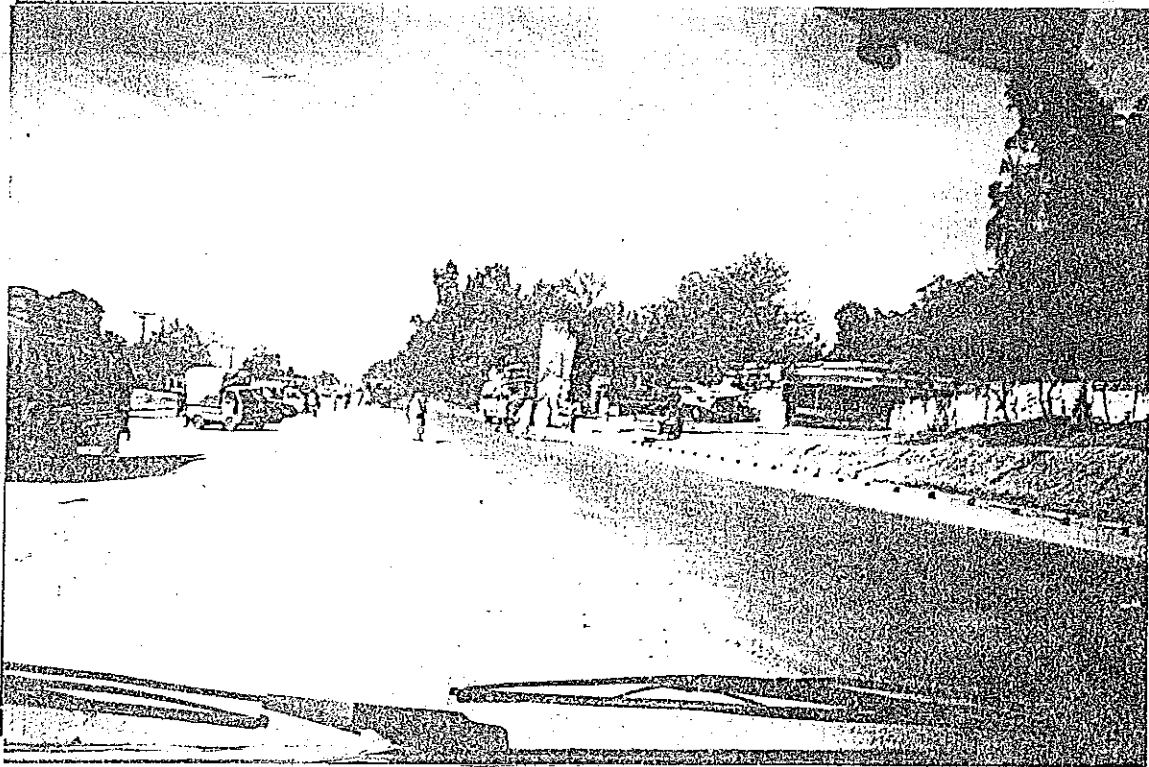
Conclusion

- As the road passes through the city/commercial area traffic accidents congestion results because of mixing of local and through traffic. Since the Road is a two lane undivided highway facility, the overtaking is difficult and too hazardous to traffic.
- The geometric condition of the road is not a significant contributing factor in the accidents as the road alignment is almost straight and level.
- The analysis of accident of data clearly shows that road user contribute significantly towards accidents. Particularly, overspeeding, negligent overtaking/wrong manouring and pedestrians are involved in the accidents.

Remedial Measure

- It is recommended that the area within the right of way of the road should be cleared off encroachments and seperate service roads should be provided for local traffic so that the through traffic can pass smoothly. It is expected that this section will be dualized in the near future and the accident ratio would be considerably reduced. It is also proposed that rumble strips be provided and slow speed signs at appropriate locations must be fixed. Proper tanga and bus bays should be provided.
- Routine traffic monitoring is very important to check the traffic violation e.g. over speeding, negligent driving, extra. Missing/necessary traffic signs must be installed.
- Shoulders must be levelled and properly sloped.

- Drainage must be improved by providing proper side drains.
- Intersections, be properly designed and signalised.
- Proper pedestrian crossings must be provided as drivers do not give way to pedestrians, and they try to cross the road in haste and results in accidents.
- Strict enforcement of traffic rules is the most important aspect for reducing traffic accidents. Drivers education is must and they must be made to realise to obey speed limits, understand traffic environment and avoid rash overtaking.



(Photograph 2.6)

1. On road Suzuki Stand.
2. No proper bus bays and on road embarking and disembarking of passengers.
3. No proper pedestrian crossing.
4. Not properly designed intersection.

2.7 SALWA FLOUR MILLS

- Date : 24.03.1996, Day: Sunday Weather: Clear

Road Environment

- Road Width = 24' two lane highway facility
- Road Condition = Good
- Shoulder Width = Inadequate (less than 6' at all locations)
- Shoulder Condition = Poor, uneven, discontinuous and not properly sloped.
- Drainage = Poor Drainage
- Traffic Signs/Signal = Insufficient Traffic Signs, no traffic signal.
- Lane Marking = No Lane Marking or any other facility such as Chevron, Cat-eyes.

Road User

- No Bus Bay (Haphazard stoppages of buses to carry passenger).
- Too much interaction between slow moving traffic, pedestrian and high speed traffic causes traffic blockade/jams and irritates drivers, who in turn overspeeds on other sections, overtakes and causes accidents.

Conclusion

- Due to flour mills frequent passing of labour/pedestrian from one side to other side of the road. The accident data also showing pedestrian accident in the year 1994 and accident due to wrong overtaking.

Remedial Measure

- Proper walk way facility for the pedestrian in front of Salwa Floor Mills.
- Warning sign that residential area is ahead.
- Overtaking must may be prohibited in front of Salwa Floor Mills.

2.8 KAMRA

- Date : 24.03.1996, Day: Sunday Weather: Clear

Road Environment

- Road Width = 24' two lane highway facility
- Road Condition = Good
- Shoulder Width = Inadequate (less than 6' at all locations)
- Shoulder Condition = Poor, uneven, discontinuous and not properly sloped.
- Drainage = Poor Drainage
- Traffic Signs/Signal = Insufficient Traffic Signs, no traffic signal.
- Lane Marking = No Lane Marking or any other facility such as Chevron, Cat-eyes.

Road User

- Main Highway N-5 Road is also used by the Kamra residents as city road.
- Slow moving and mixed local traffic and traffic towards Kamra obstructs the through traffic of N-5.
- No facility for pedestrian crossing has been provided.
- High speeds, and wrong overtaking was observed during survey.
- No Bus Bay (Haphazard stoppages of buses to carry passenger)..

- Too much interaction between slow moving traffic, pedestrian and high speed traffic.
- Frequent turning movement due to PAF Aero Nautical Complex and no proper lane marking was seen during survey.

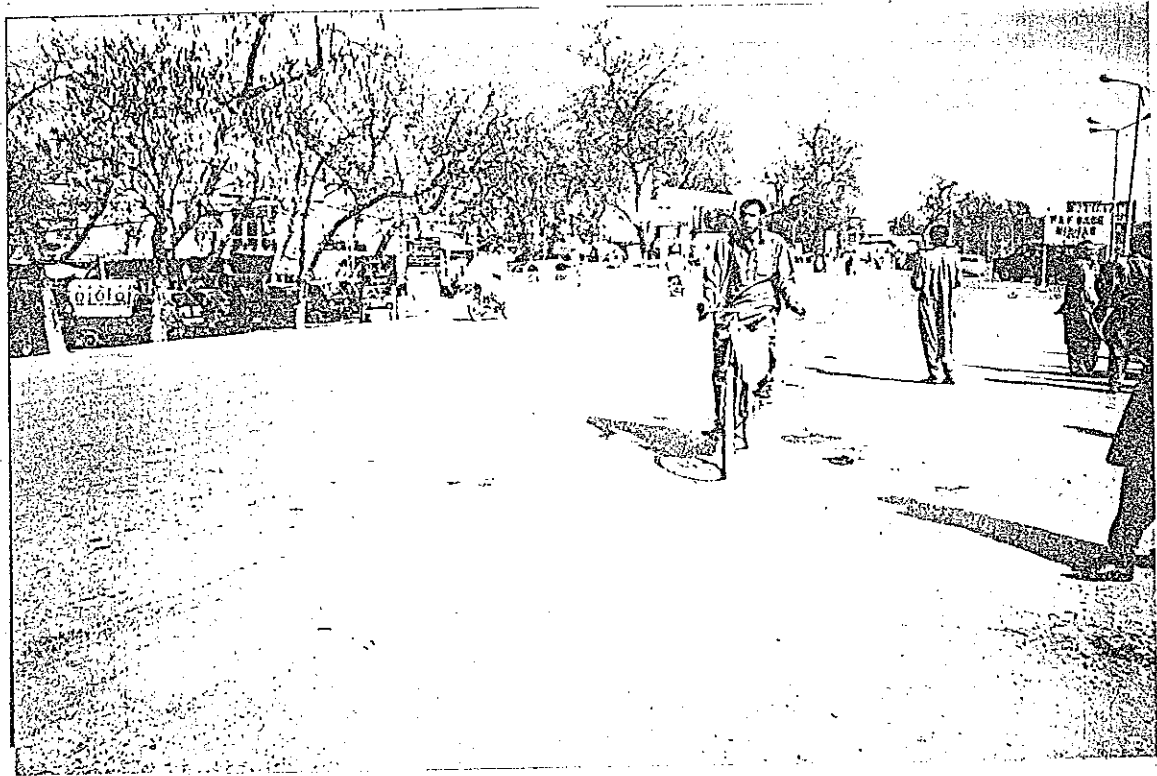
Conclusion

- As the road passes through the residential/commercial area traffic congestion results because of mixing of local and through traffic. Since the Road is a two lane highway facility, the overtaking is difficult and too hazardous to traffic and fatal pedestrian accidents occurred during last five years.
- From the accidents data it is cleared that accidents occurred due to overtaking and wrong manoeuvring.

Remedial Measure

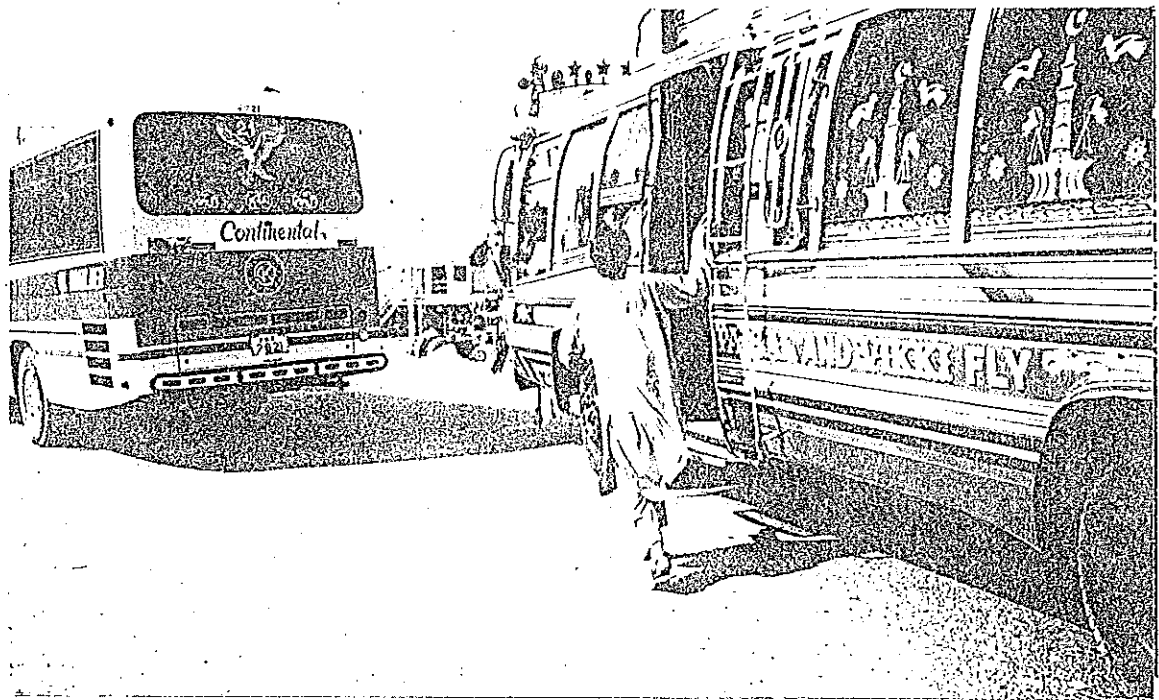
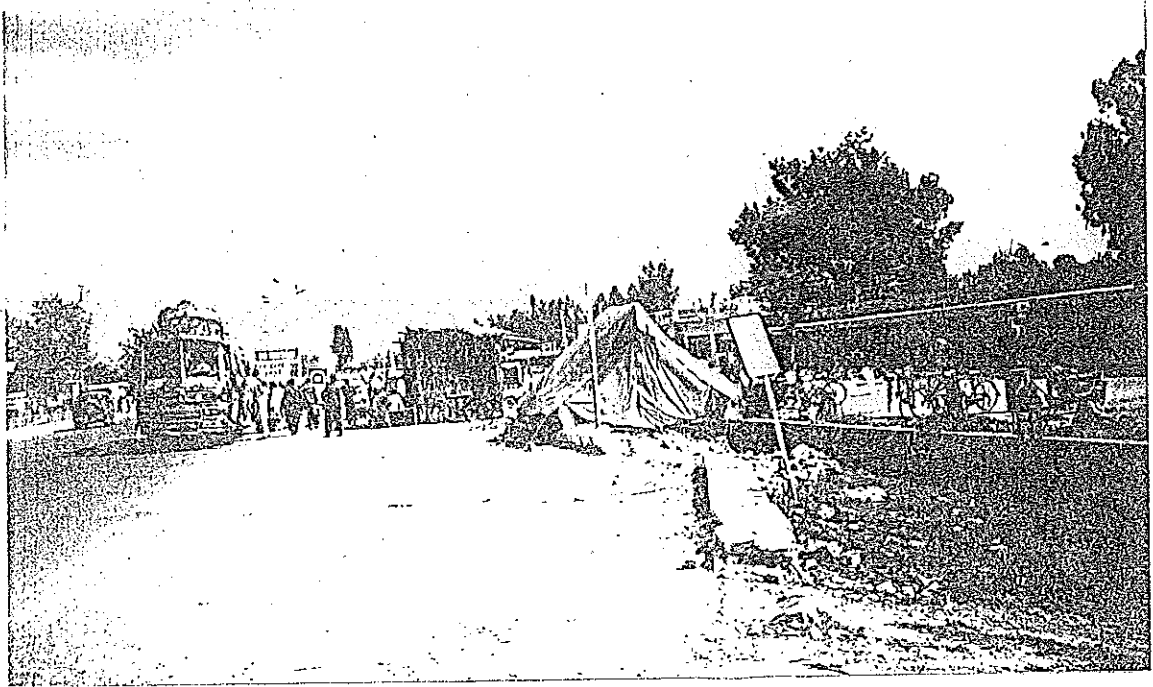
- It is recommended that road should be cleared off encroachments and separate service roads should be provided for local traffic so that the through traffic can pass smoothly. It is expected that this section will be dualized in the near future and the accident ratio would be considerably reduced and is also proposed that rumble strips be provided and slow speed signs at appropriate locations must be fixed.
- Routine traffic monitoring is very important to check the traffic violation e.g. over speeding, negligent driving, extra. Missing/necessary traffic signs must be installed.
- Shoulders must be levelled and properly sloped.
- Drainage must be improved by providing proper side drains.

- Intersections, must be properly designed and signalised.
- Proper pedestrian crossings must be provided as drivers do not give way to pedestrians, and they try to cross the road in haste and results in accidents.
- Strict enforcement of traffic rules to reduce traffic accidents. Drivers education is must and they must be made to realise to obey speed limits, understand traffic environment and avoid rash overtaking.



(Photograph 2.8.1)

1. Suzuki stand just adjacent to the main road.
2. Main highway being used by residents as city road.
3. *Poorly designed interactions.*



(Photograph 2.8.2)

1. No use of bus bay facility. On road embarking and disembarking of passengers.

2.9 QUTBA MORE

Date : 24.03.1996, Day: Sunday Weather: Clear

Road Environment

- Road Width = 24' two lane highway facility
- Road Condition = Good
- Shoulder Width = Inadequate (less than 6' at all locations)
- Shoulder Condition = Poor, uneven, discontinuous and not properly sloped.
- Drainage = Poor Drainage
- Traffic Signs/Signal = Insufficient Traffic Signs, no traffic signal.
- Lane Marking = No Lane Marking or any other facility such a Chevron, Cat-eyes.

The accident data shows that three pedestrian were hit by the overspeeding buses. Though the road is single 24' lane but the condition of road is satisfactory and only in this section improvement in shoulder and warning signs at appropriate location are required.

Continuous traffic monitoring is very important to curb the traffic violation e.g. over speeding, negligent driving.

2.10 HATYAN

- Date : 24.03.1996, Day: Sunday Weather: Clear

Road Environment

- Road Width = 24' two lane highway facility
- Road Condition = Good
- Shoulder Width = Inadequate (less than 6' at all locations)
- Shoulder Condition = Poor, uneven, discontinuous and not properly sloped.
- Drainage = Poor Drainage
- Traffic Signs/Signal = Insufficient Traffic Signs, no traffic signal.
- Lane Marking = No Lane Marking or any other facility such as Chevron, Cat-eyes.

Road User

- Main highway is also used by the Hatyan residents as city road.
- Slow moving and mixed local traffic obstructs the main through traffic of N-5 at Hatyan.
- No facility for pedestrian crossing has been provided.
- High speeds, and wrong overtaking was observed during survey.
- No Bus Bay (Haphazard stoppages of buses to carry passenger).

Conclusion

- As the road passes through the city/commercial area traffic accidents

congestion results because of mixing of local and through traffic. Since the Road is a two lane undivided highway facility, the overtaking is difficult and too hazardous to traffic.

- One road leads to hazard making "T" junction with the N-5 main highway and that "T" junction is not properly lane marked.

Remedial Measure

- It is recommended that the area within the right of way of the road should be cleared off encroachments. It is expected that this section will be dualized in the near future and the accident ratio would be considerably reduced and is also proposed that rumble strips be provided and slow speed signs at appropriate locations must be fixed.
- Proper tanga and bus bays should be provided.
- Routine traffic monitoring is very important to check the traffic violation e.g. over speeding, negligent driving, extra.
- Shoulders must be levelled and properly sloped.
- Drainage must be improved by providing proper side drains.
- T-Junction Intersections, be properly designed and signalised.
- Proper pedestrian crossings must be provided as drivers do not give way to pedestrians, and they try to cross the road in haste and results in accidents.
- Strict enforcement of traffic rules is the most important aspect for reducing traffic accidents. Drivers education is must and they must be made to realise to obey speed limits, understand traffic environment and avoid rash overtaking.

2.11 GONDAL

Date : 24.03.1996, Day: Sunday Weather: Clear

Road Environment

- Road Width = 24' lane highway but dualization is in progress at this section.
- Road Condition = Good
- Shoulder Width = Inadequate (less than 6' at all locations)
- Shoulder Condition = Poor, uneven, discontinuous and not properly sloped.
- Drainage = Poor Drainage particularly in rainy season the shoulder is flooded with water.
- Traffic Signs/Signal = Insufficient Traffic Signs, no traffic signal.
- Lane Marking = No Lane Marking or any other facility such as Chevron, Cat-eyes.

Road User

- Main highway is also used by the Gondal residents as city road.
- Slow moving and mixed local traffic obstructs the main through traffic of N-5 at Gondal.
- No facility for pedestrian crossing has been provided.
- High speeds, and wrong overtaking were observed during survey.

- No bus bays and haphazard stoppages of buses to carry passenger.
- Tanga's occupied the shoulders on both sides.
- Too much interaction between slow moving traffic, pedestrian and high speed traffic causes traffic blockade/jams and drivers loose their passion, who in turn overspeeds on other sections, overtakes and causes accidents.
- Cattle market is also held in Gondal on the main highway, which is also a big hazard to traffic.

Conclusion

- As the road passes through the residential/commercial area traffic accidents congestion results because of mixing of local and through traffic.
- It is also cleared from the accidents data that padestrian were mostly hit by the motorized vehicles.

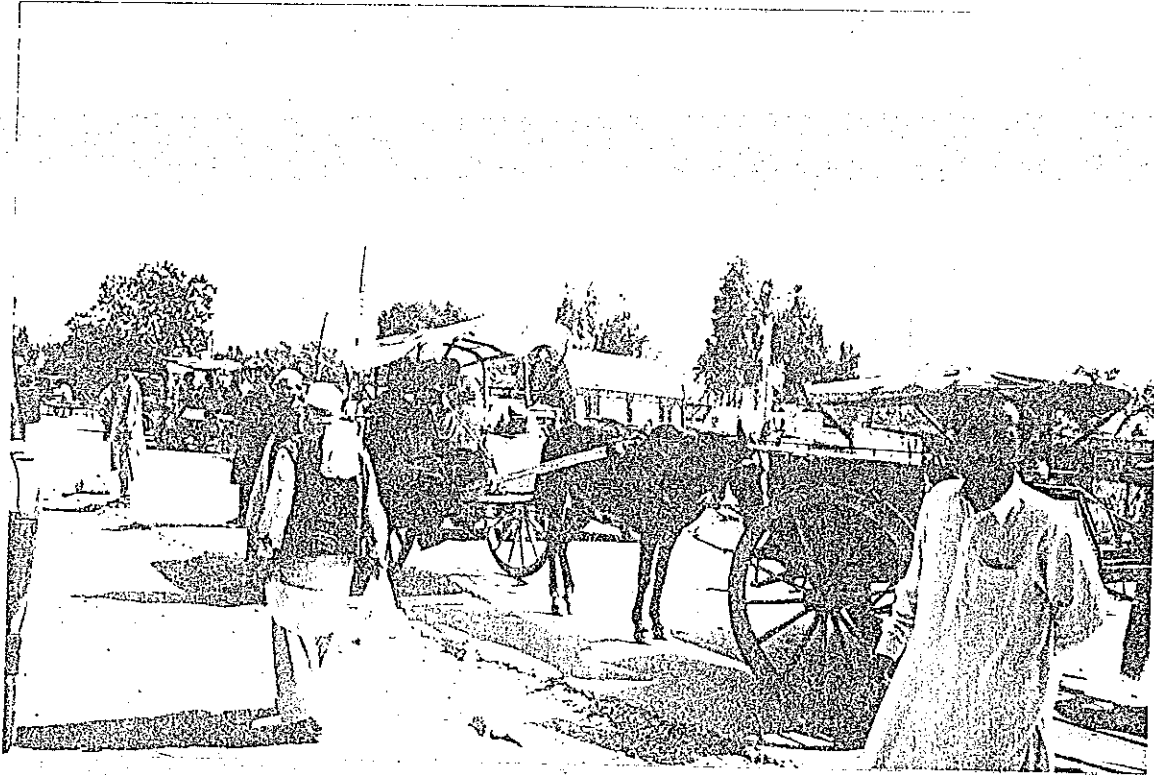
Remedial Measure

- It is recommended that the area within the right of way of the road should be cleared off encroachments and seperate service roads should be provided for local traffic so that the through traffic can pass smoothly. It is expected that this section will be dualized in the near future and the accident ratio would be considerably reduced and is also proposed that rumble strips be provided and slow speed signs at appropriate locations must be fixed. Proper tanga and bus bays should be provided.
- Routine traffic monitoring is very important to check the traffic

violation e.g. over speeding, negligent driving, extra.

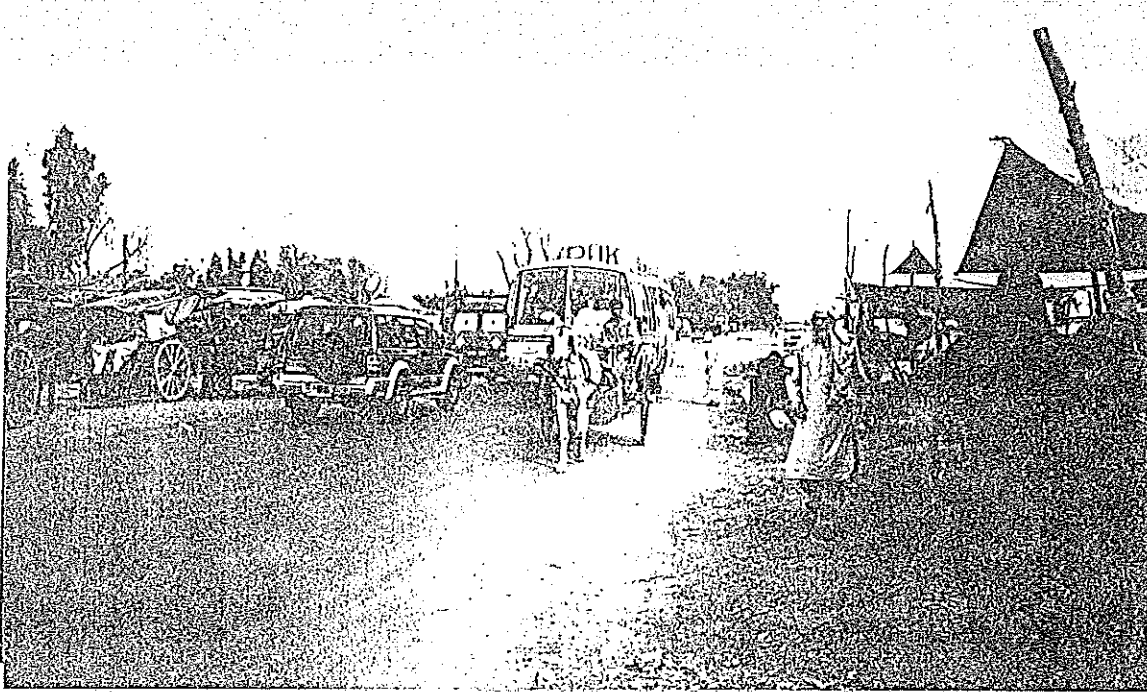
Missing/necessary traffic signs must be installed.

- Shoulders must be levelled and properly sloped.
- Drainage must be improved by providing proper side drains.
- Intersections, be properly designed and signalised.
- Proper pedestrian crossings must be provided as drivers do not give way to pedestrians, and they try to cross the road in haste and results in accidents.
- Strict enforcement of traffic rules is the most important aspect for reducing traffic accidents. Drivers education is must and they must be made to realise to obey speed limits, understand traffic environment and avoid rash overtaking.
- Proper bus bays should be provided.



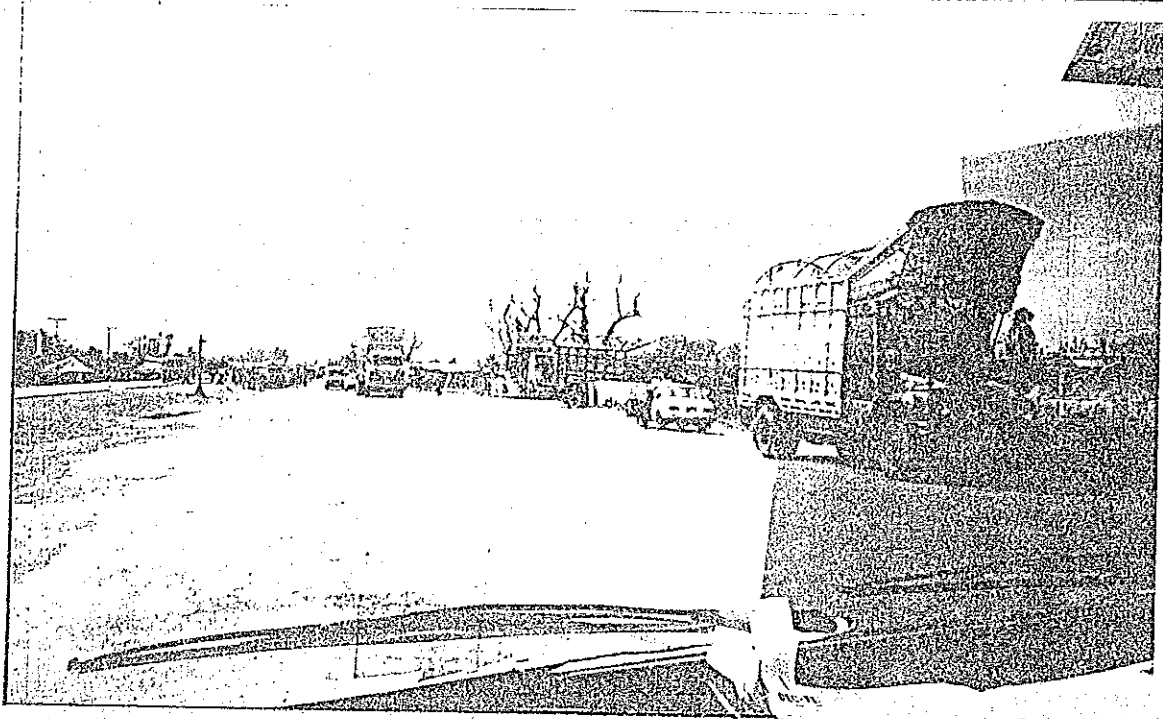
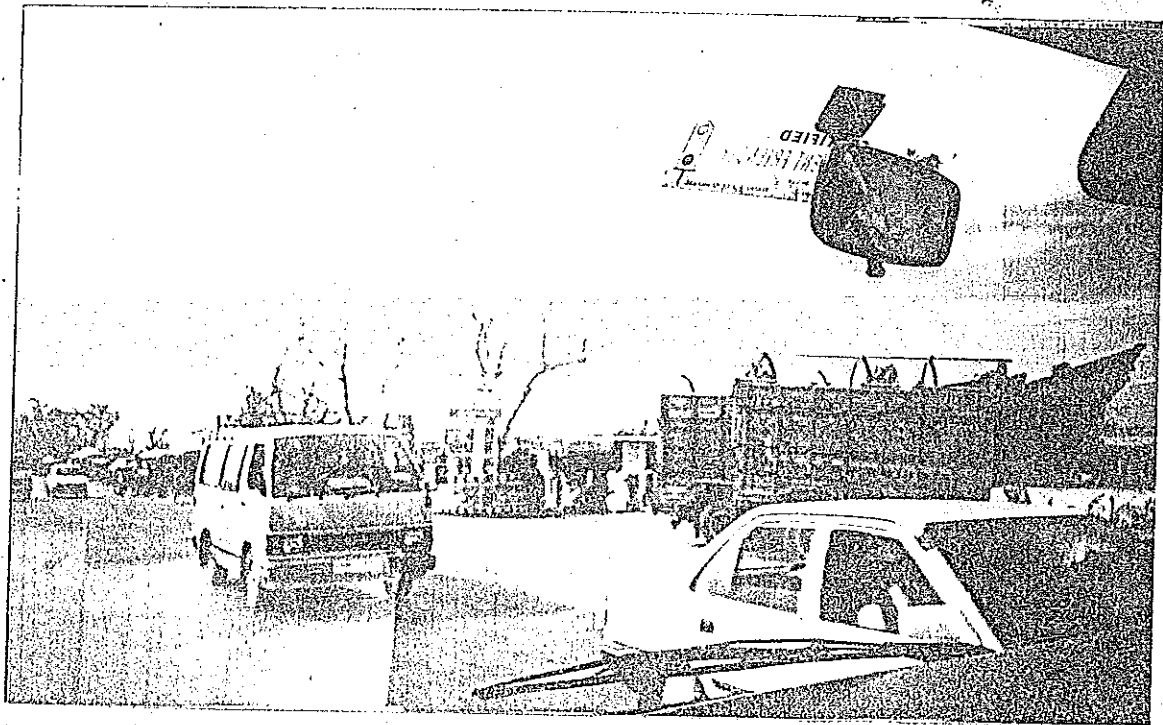
(Photograph 2.11.1)

1. On road tonga stand.



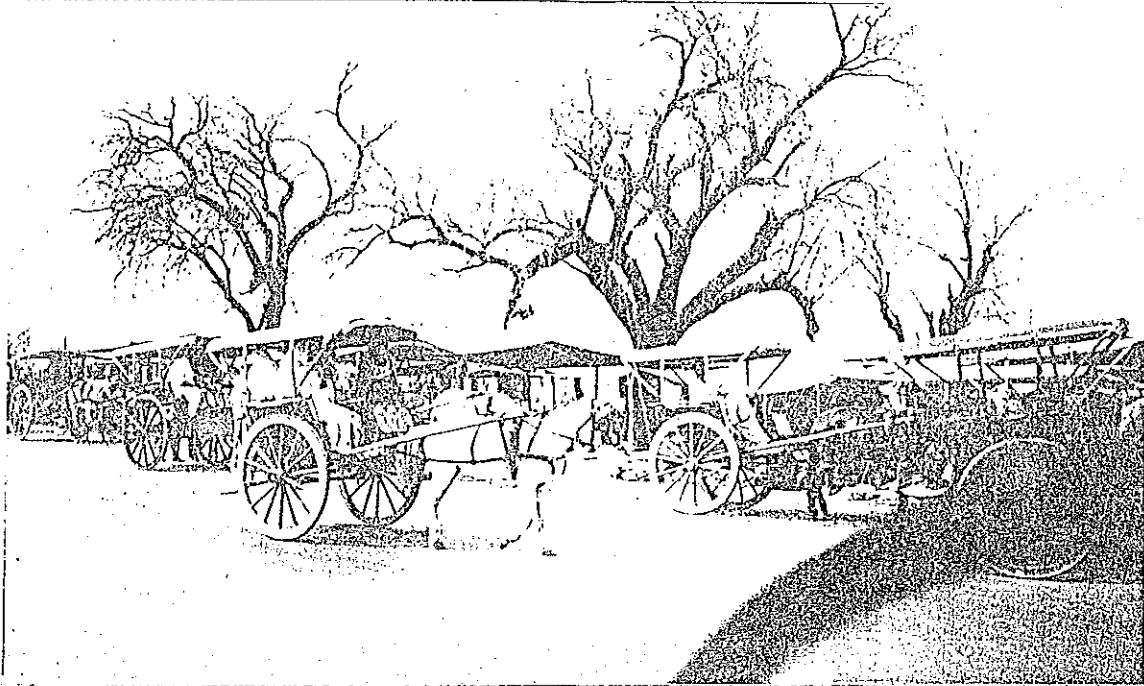
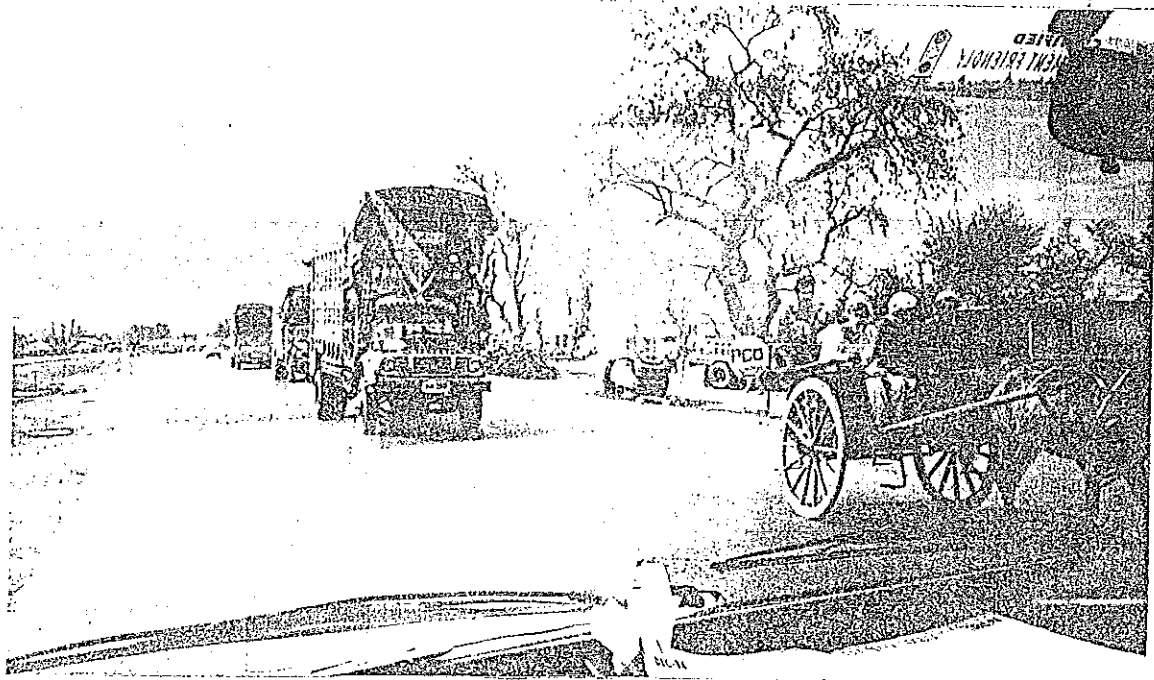
(Photograph 2.11.2)

1. Reduced width of right of way.
2. Mixed traffic on main road.
3. Highway being used as city road.



(Photograph 2.11.3)

1. Vehicles parked along with the main road.



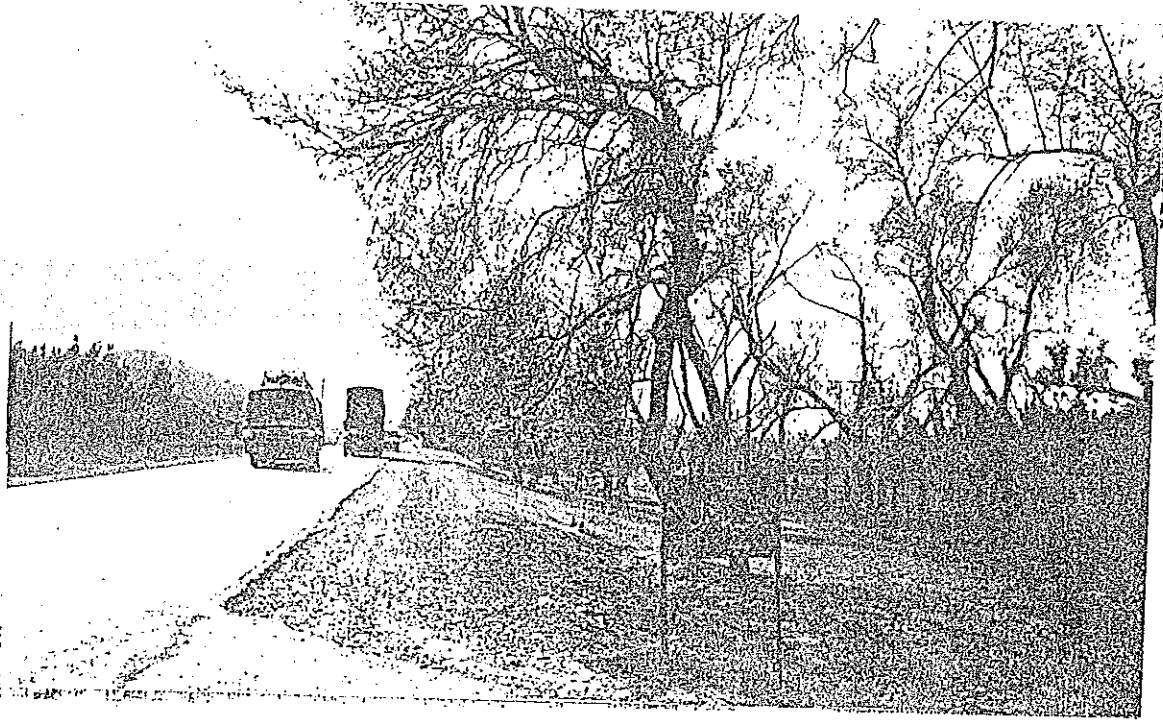
(Photograph 2.11.4)

1. Traffic hazard due to tongas.

- The geometric condition of the road is not a significant contributing factor in the accidents as the road alignment is almost straight and level.
- As evident from the accident data, road users are principal contributor of the accidents.

Remedial Measure

- The intersection must be properly designed and signalised and warning signs must be fixed at appropriate location.
- It is expected that this section will be dualized in the near future and the accident ratio would be considerably reduced.
- Routine traffic monitoring is very important to check the traffic violations e.g. over speeding, negligent driving, etc. Missing/necessary traffic signs must be installed.
- Shoulders must be levelled and properly sloped.
- Drainage must be improved by providing proper side drains.
- Proper pedestrian crossings must be provided.
- Strict enforcement of traffic rules is most important, as wrong overtaking and high speeds are very common on such "Open" sections.



(Photograph 2.12)

1. No road sign indicating T-Junction.
2. Poor condition of the shoulders.

2.13

MANSAR/JAMGAH/MULAN MANSOOR/ATTOCK CHECK POST

- Date : 24.03.1996, Day: Sunday Weather: Clear

Road Environment

- Road Width = 24' two lane highway facility
- Road Condition = Good
- Shoulder Width = Inadequate (less than 6' at all locations)
- Shoulder Condition = Poor, uneven, discontinuous and not properly sloped.
- Drainage = Poor Drainage
- Traffic Signs/Signal = Insufficient Traffic Signs.
- Lane Marking = No Lane Marking or any other facility such a Chevron, Cat-eyes.

Road User

- Main highway is also used by the residents, frequently cyclists and animal drawn, tractor trollies come on the road.
- Slow moving and mixed local traffic obstructs the main through traffic of N-5.
- No facility for pedestrian crossing has been provided.
- High speeds, and wrong overtaking was observed during survey at these sections.
- No bus bays and haphazard stoppages of buses to carry passenger).

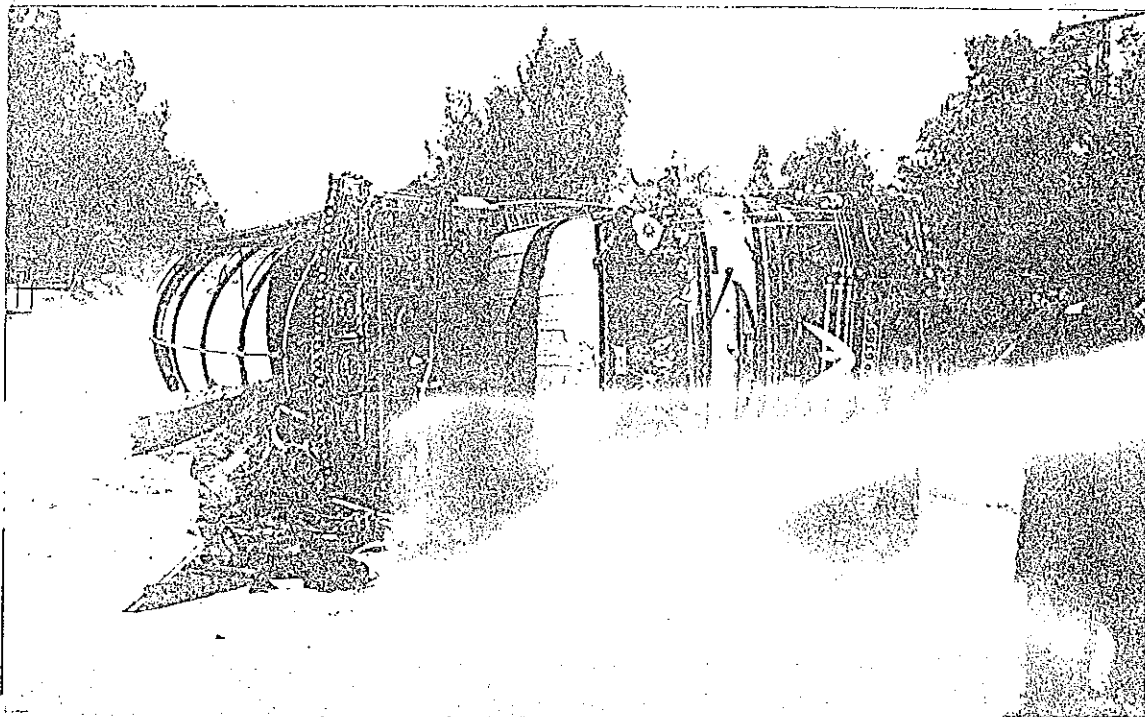
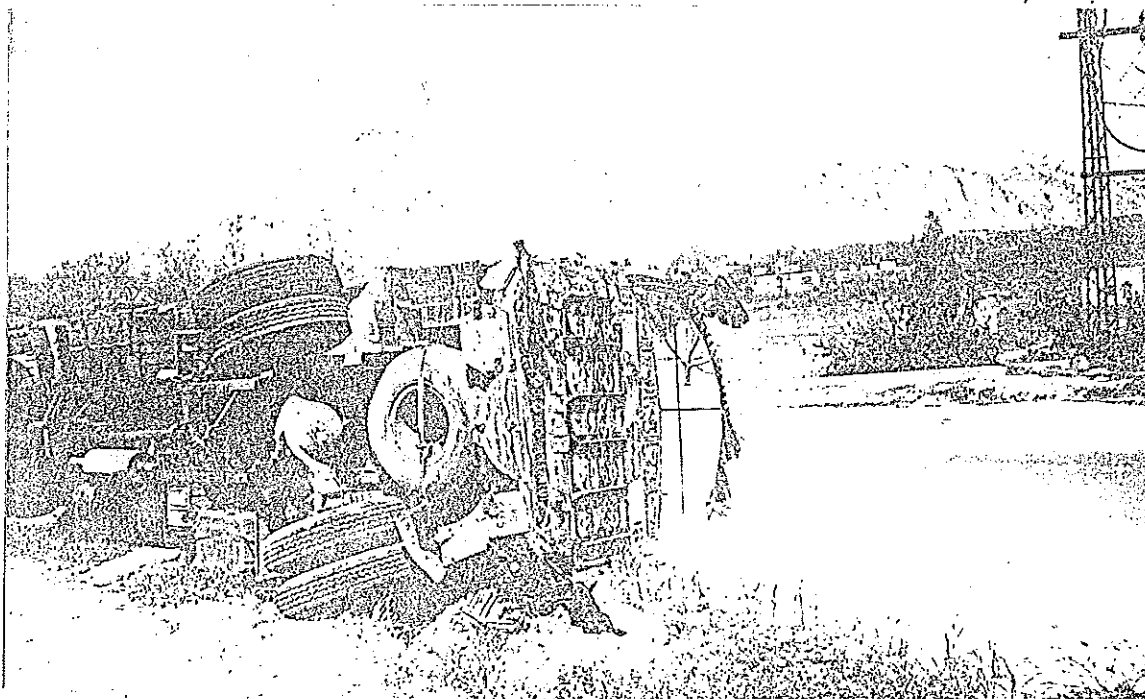
Conclusion

- As the road passes through the towns/villages traffic accidents results

**ACCIDENTS OBSERVED
DURING SURVEY**

3.1 NEAR BASTI CHOWK

- A fatal accident, costing two pedestrian lives was observed on survey day. Two old aged pedestrians were crossing the road to condole the death of their family members across the road. The pedestrians overlooked the oncoming high speed Suzuki Carry and tried to cross the road and one of them was first hit by an overspeeding suzuki, while the other one jumped into the second lane, but the truck coming parrallel to suzuki, a little belined, applied brakes, but failed to stop and hit the pedestrian and overturned.
- Another major geometric hazard was observed on the site. The figure shows that the level of service road is low as compared to main road, therefore, when the vehicle approaches the main road, it is not visible to the driver on the main road.

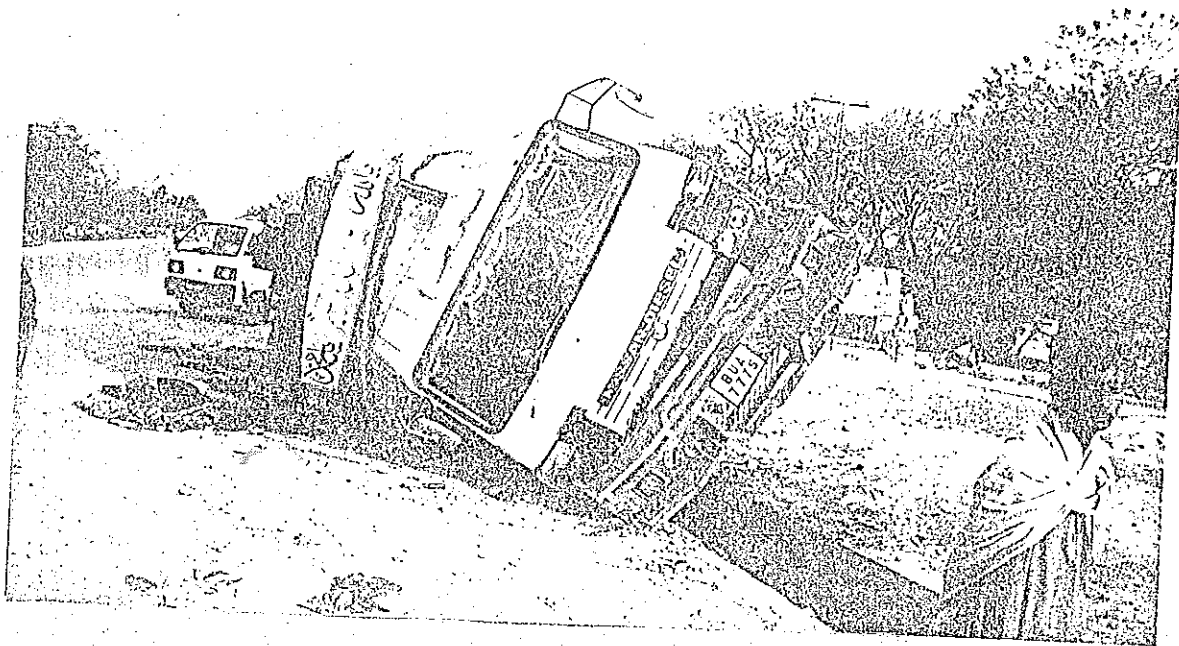
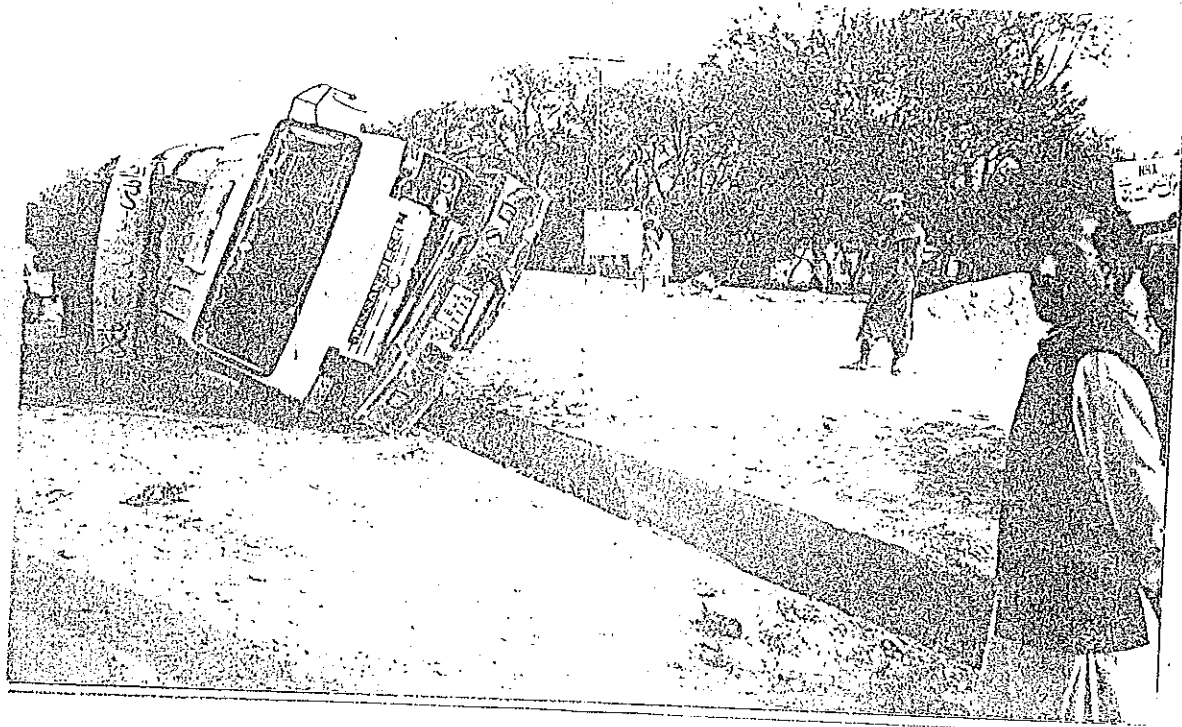


(Photograph 3)

1. A view of the overturn vehicle lying on the road.

3.2 TRAFFIC ACCIDENT OF OIL TANKER

Due to dualisation of highway, a diversion was provided on the highway section but the warning sign was fixed at the start of the diversion. The truck going from the one direction took a long turn and strayed into the opposite lane and to avoid collision took a sharp turn and skided into the ditch and overturned but a major loss of life was averted. Observers at the scene described the driver as "sleepy" and blamed the driver for negligent driving, therefore, diversions must be properly designed and constructed rather than simply cleared off shrubs and be opened to traffic. Traffic at such diversions must be separated to a certain distance to avoid head on collisions, as shown in the sketch.



(Photograph 3.2)

1. A view of the overturned oil tanker.