



ROAD SAFETY POLICY IN INDIA

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Government of India**

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Road Network

Population

>

1 billion people

Road Network (2nd in world)

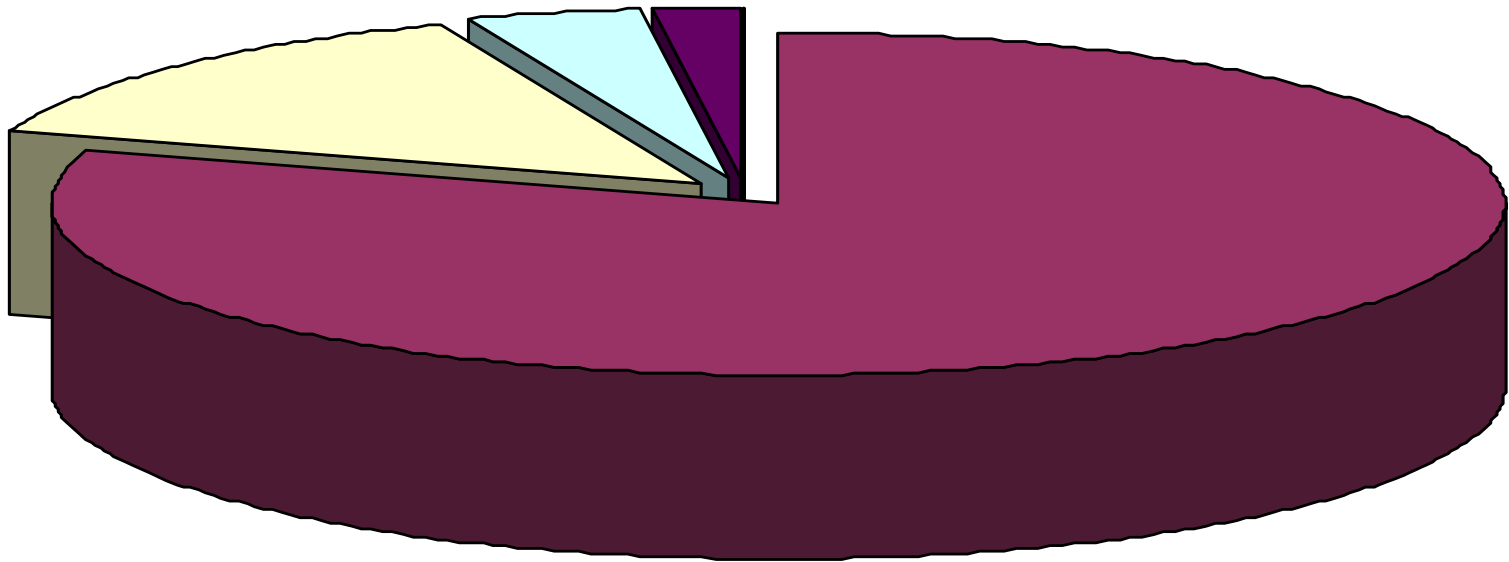
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3.3 million km

4,70,000 kms Major
District Roads

1,28,000 kms
State Highways

66,590 kms National Highways
Including 200 kms Expressways



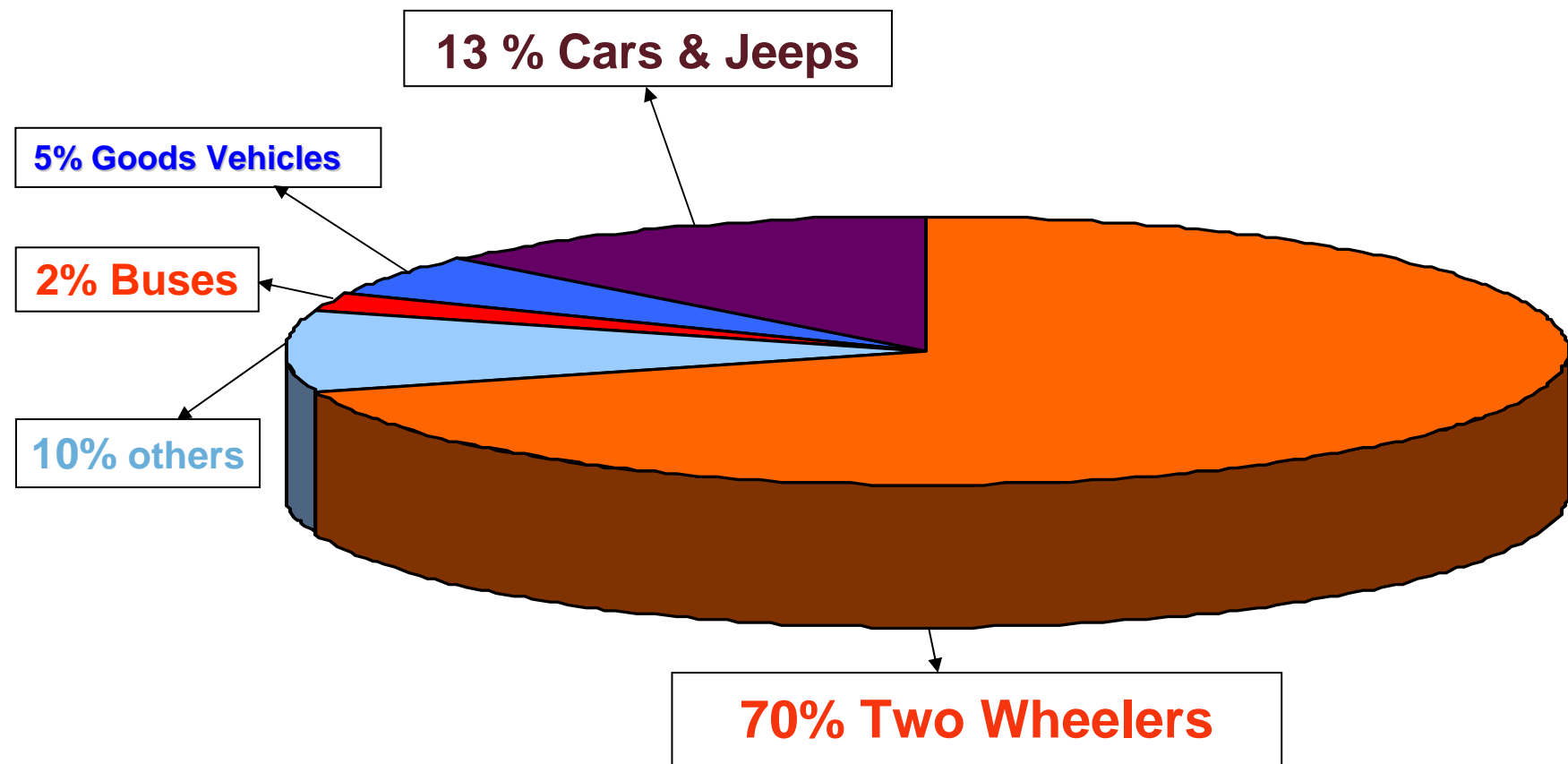
2,650,000 kms Village & Other Roads

Roads carry 85% passenger and 70% freight traffic

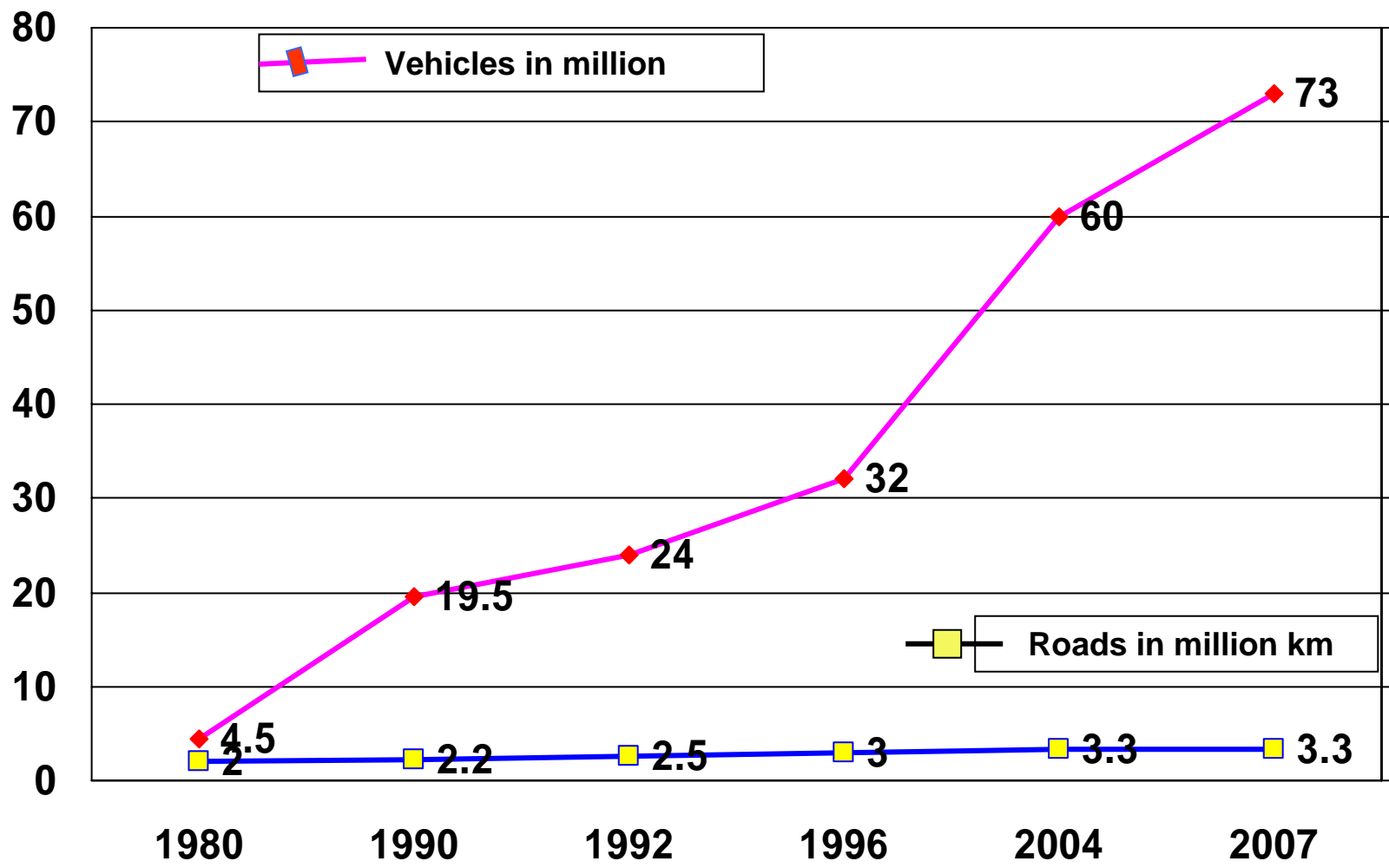
Vehicle Population

Total Vehicle Population
(About 1% share of World)

> 73 million



Vehicles Vs Road Lengths



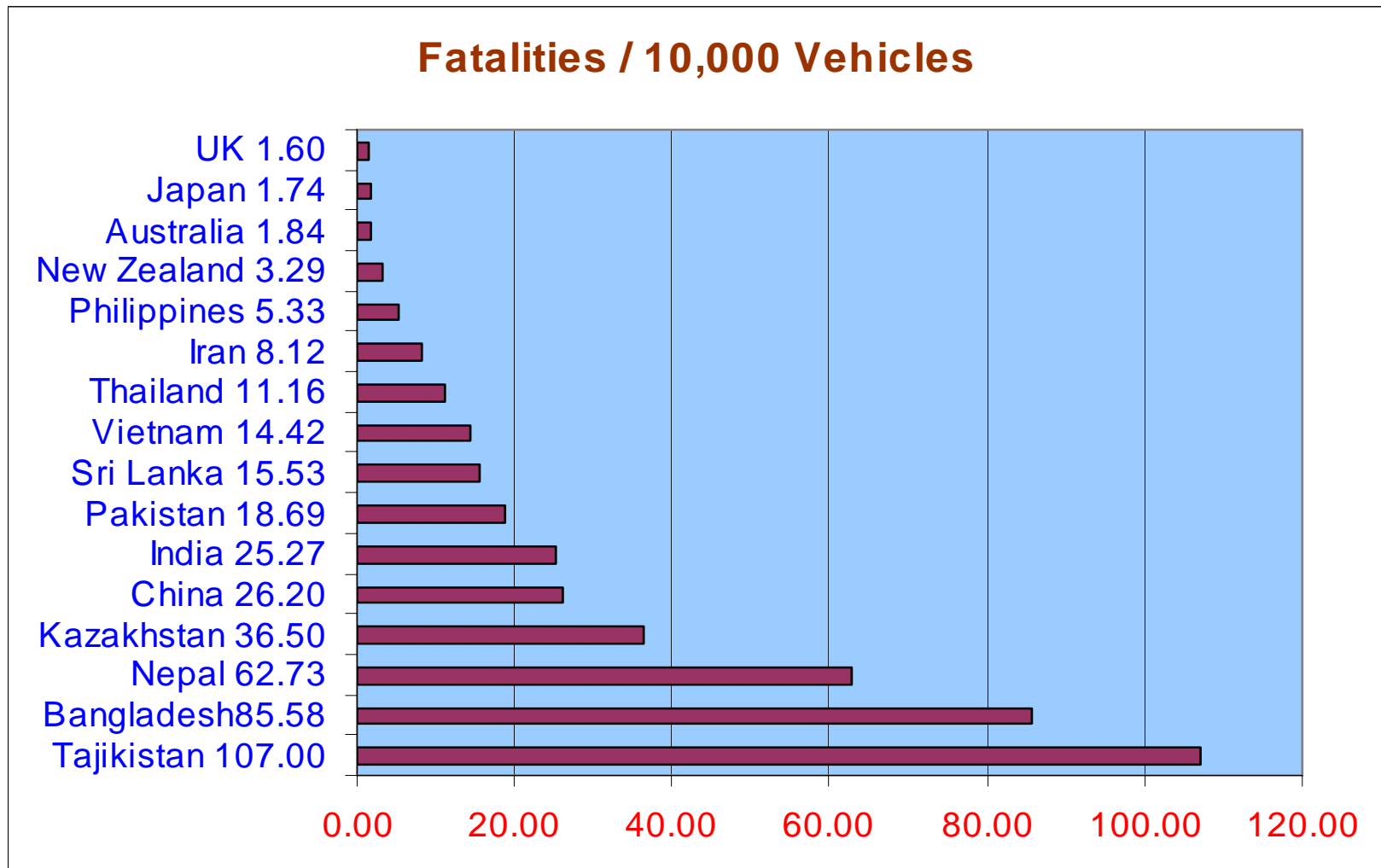
Safety Scenario

- Accidents** - **0.44 million (annual)**
(7 every minute)
- Injuries** - **0.4 million (annual)**
- Fatalities** > **95,000 (annual)**
 - **260 (daily)**
 - **1 (every 6 minute)**

Safety in Comparison

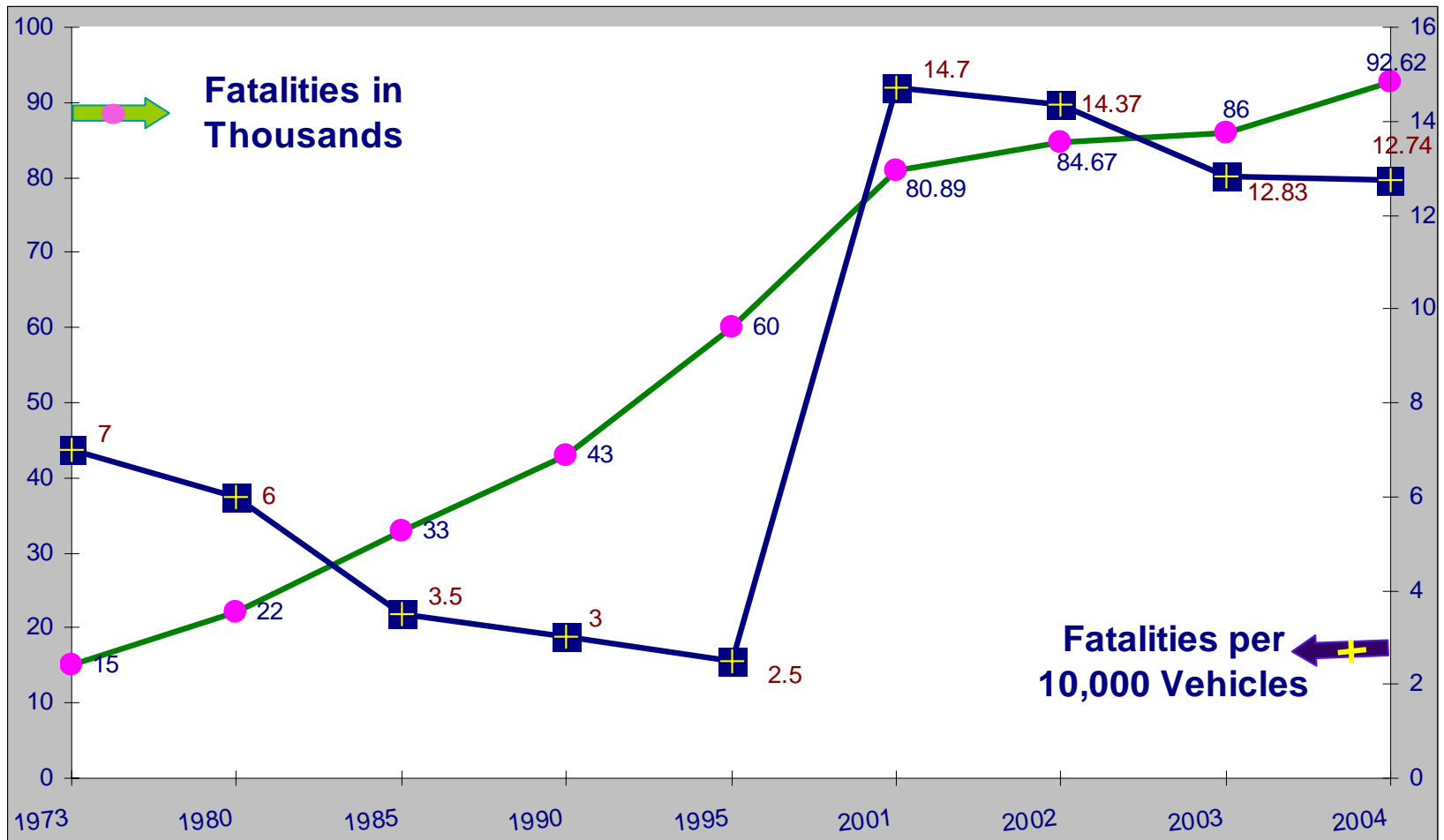
	Global	Asia & Pacific	India
Fatalities/yr	1.2 million	450,000	95,000 (~8% of Global)
Accident Cost	US \$ 400 b (Euro 350 b)	US \$ 100 b (Euro 90 b)	US \$ 18 b (Euro 15b) (Rs. 800 billion) (~ 3% of GDP)

Safety in Comparison (contd.)

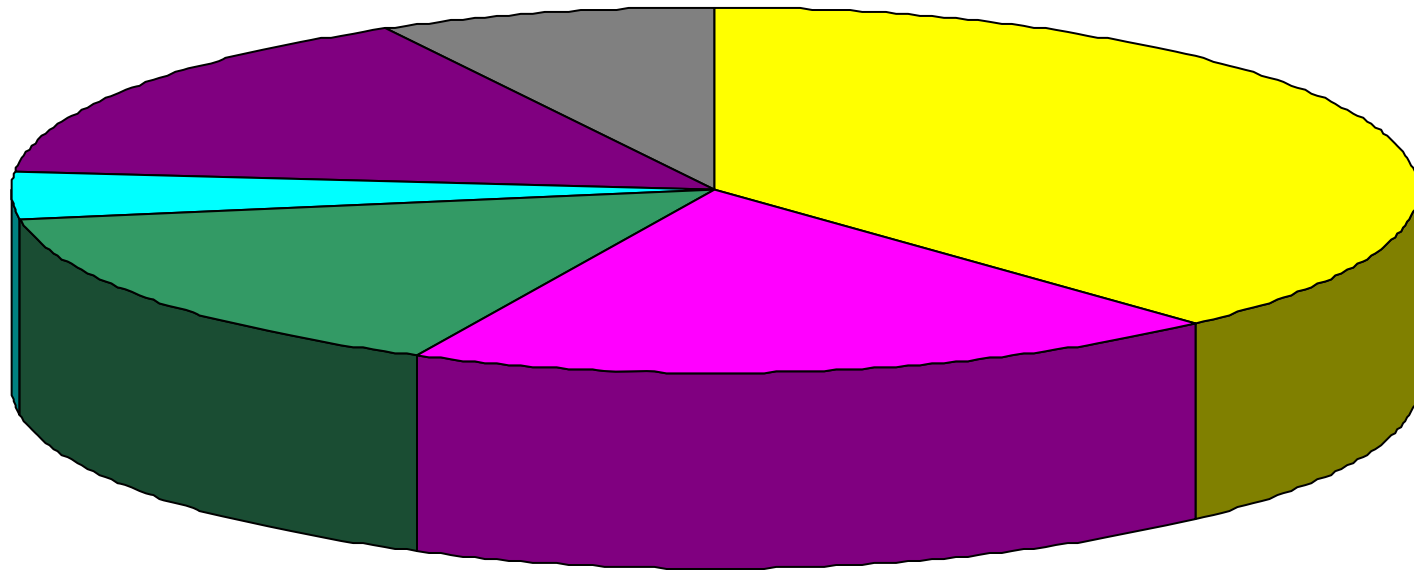


(Source- Road Safety Guidelines For Asia & Pacific Region,1996, ADB)

Fatalities Trend in India

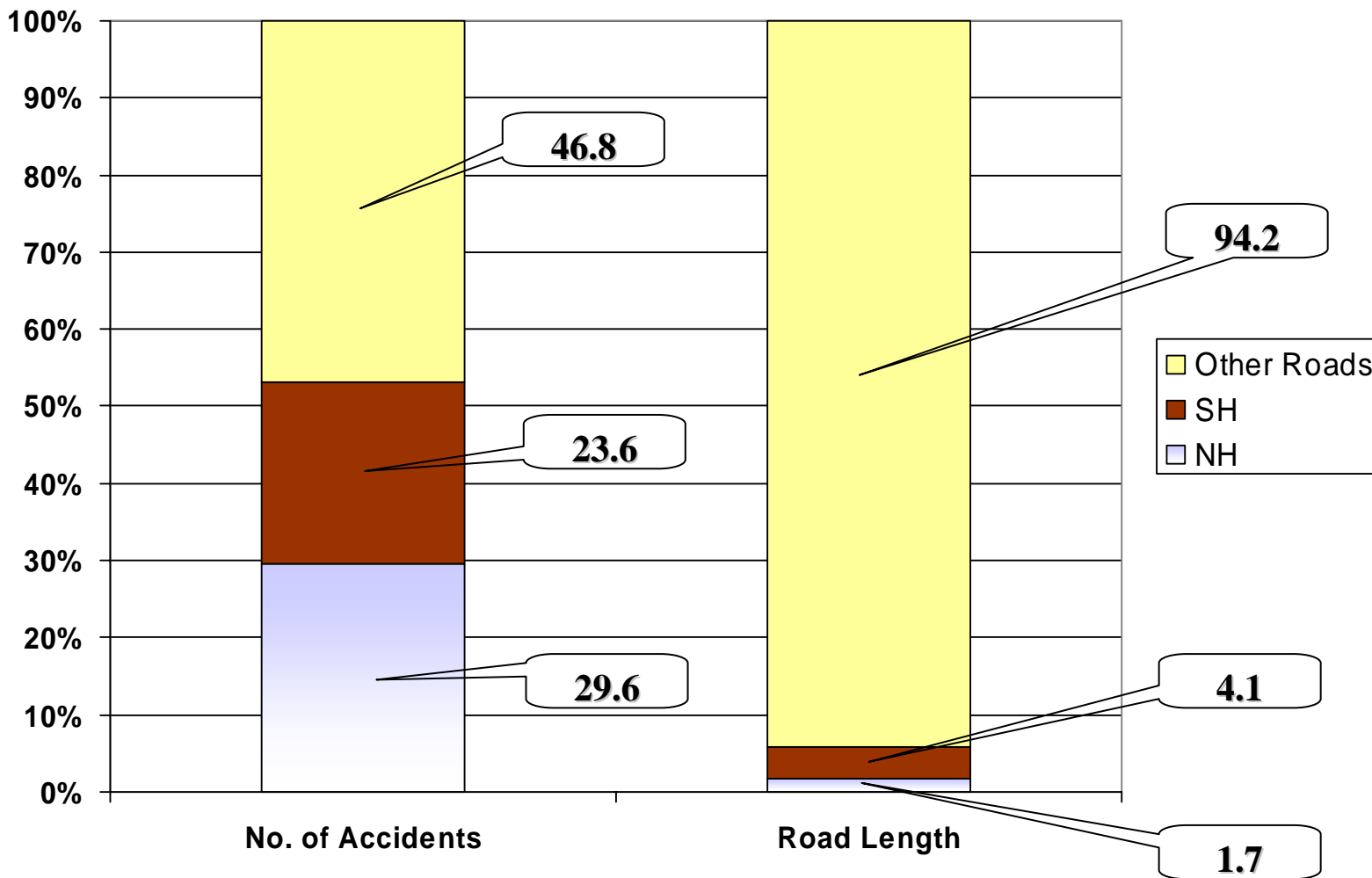


Vehicles Involved in Fatalities



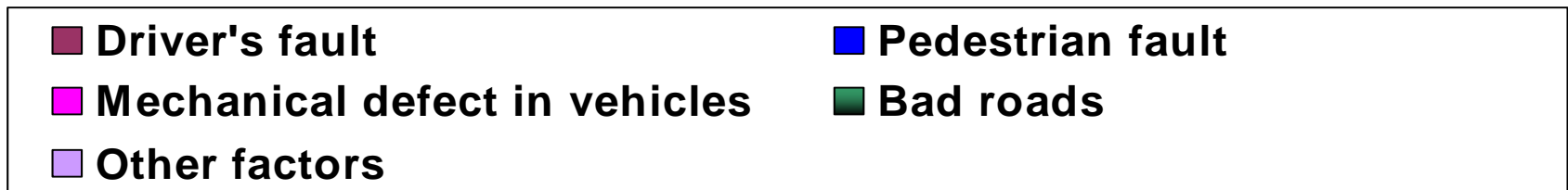
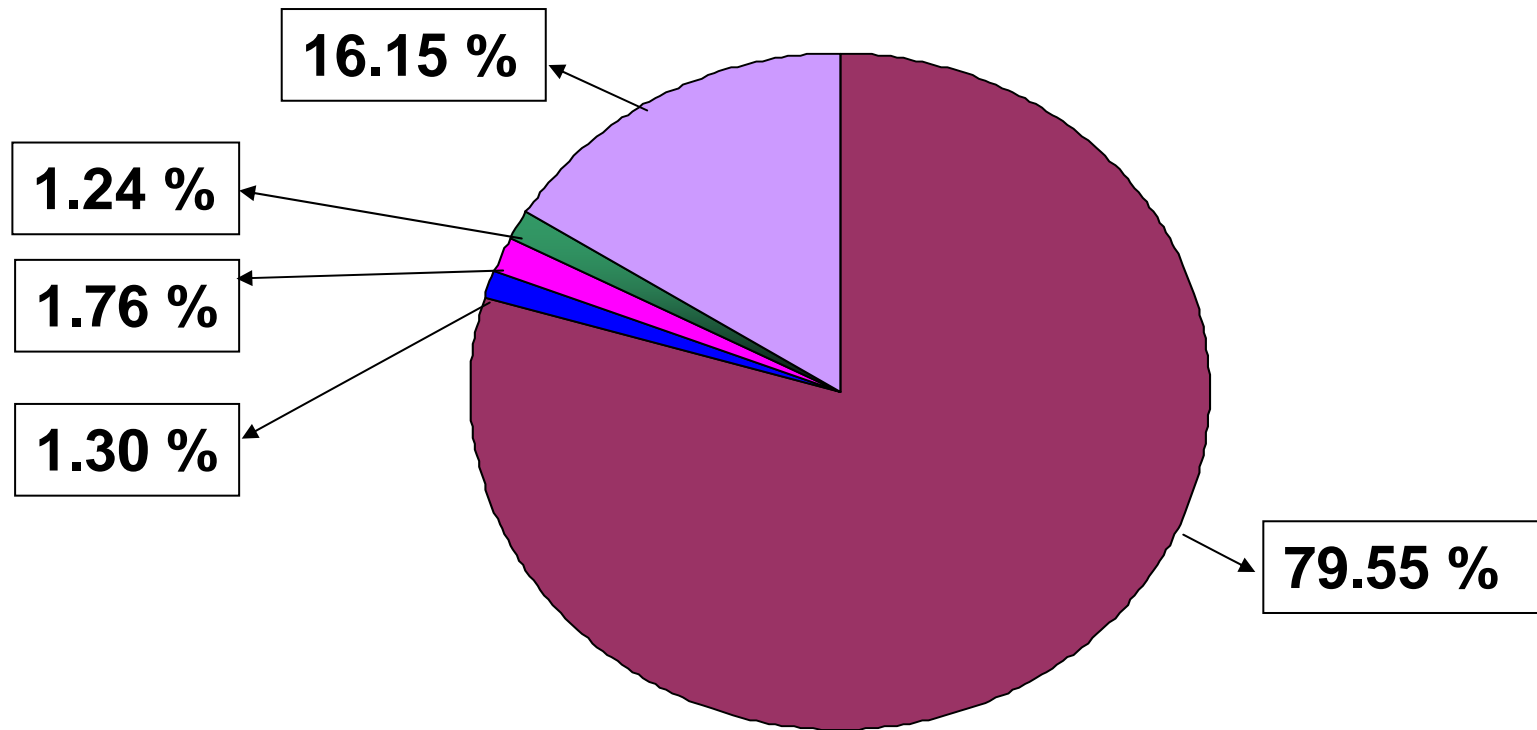
- Trucks/Buses and Other Heavy Vehicles (37%)
- Cars/Jeeps (19%)
- 2 Wheelers (15%)
- 3 Wheelers (4%)
- Others (15%)
- Non-motorized (8%)

Accidents and Road Length as per Road Classification



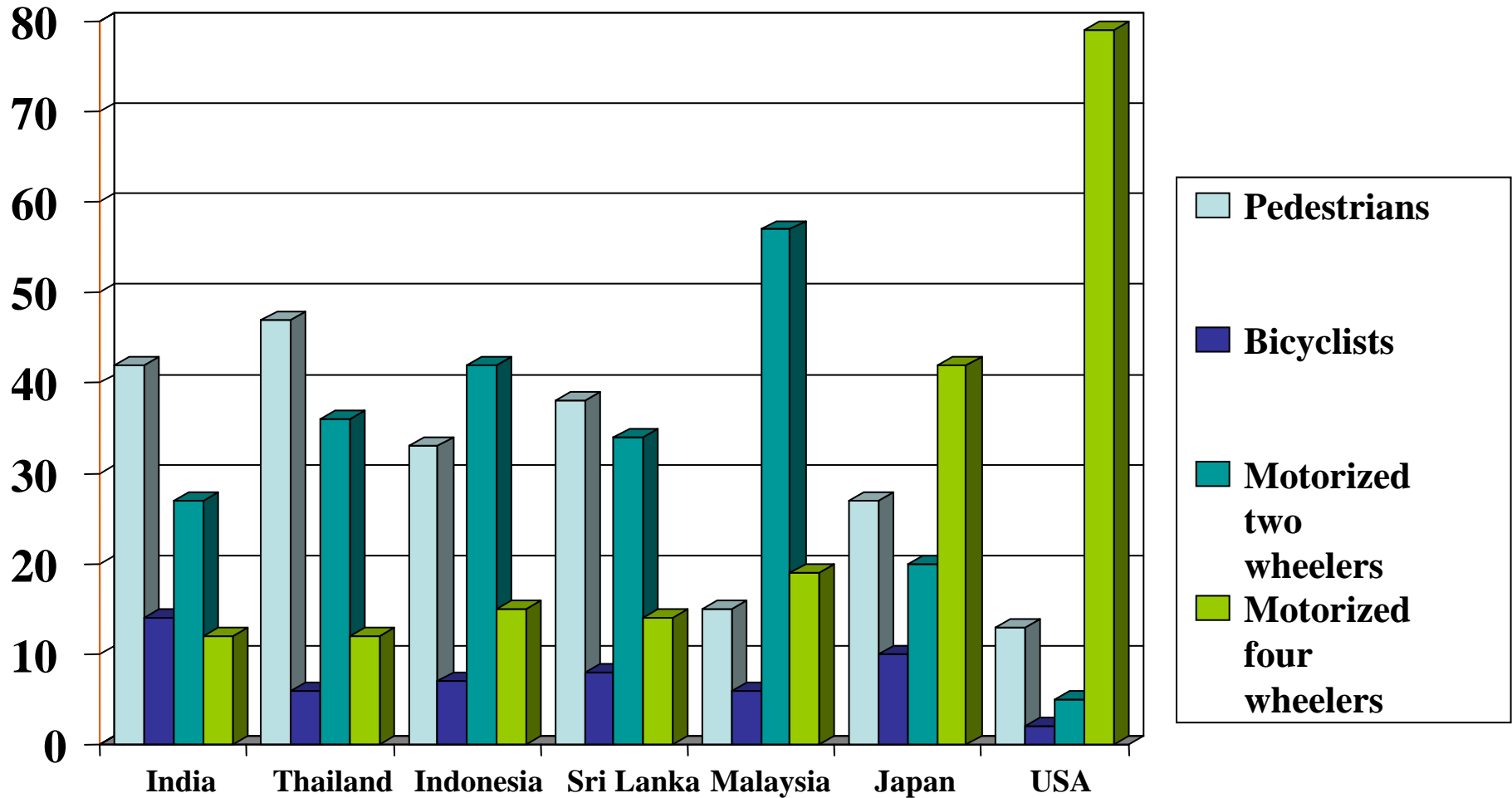
(Source –Road Accidents in India, 2005, MOSRTH India)

Accidents Causative Factors in India



(Source –Road Accidents in India, 2005, MOSRTH India)

Fatalities in Various Modes a Proportion of Total Fatalities



(Source- Word Bank Report)

Major Problems

❖ Mixed Traffic

- Fast Moving
- Slow Moving

❖ Preponderance of old / poorly maintained Goods vehicles



Major Problems (Contd.)

❖ User Attitude

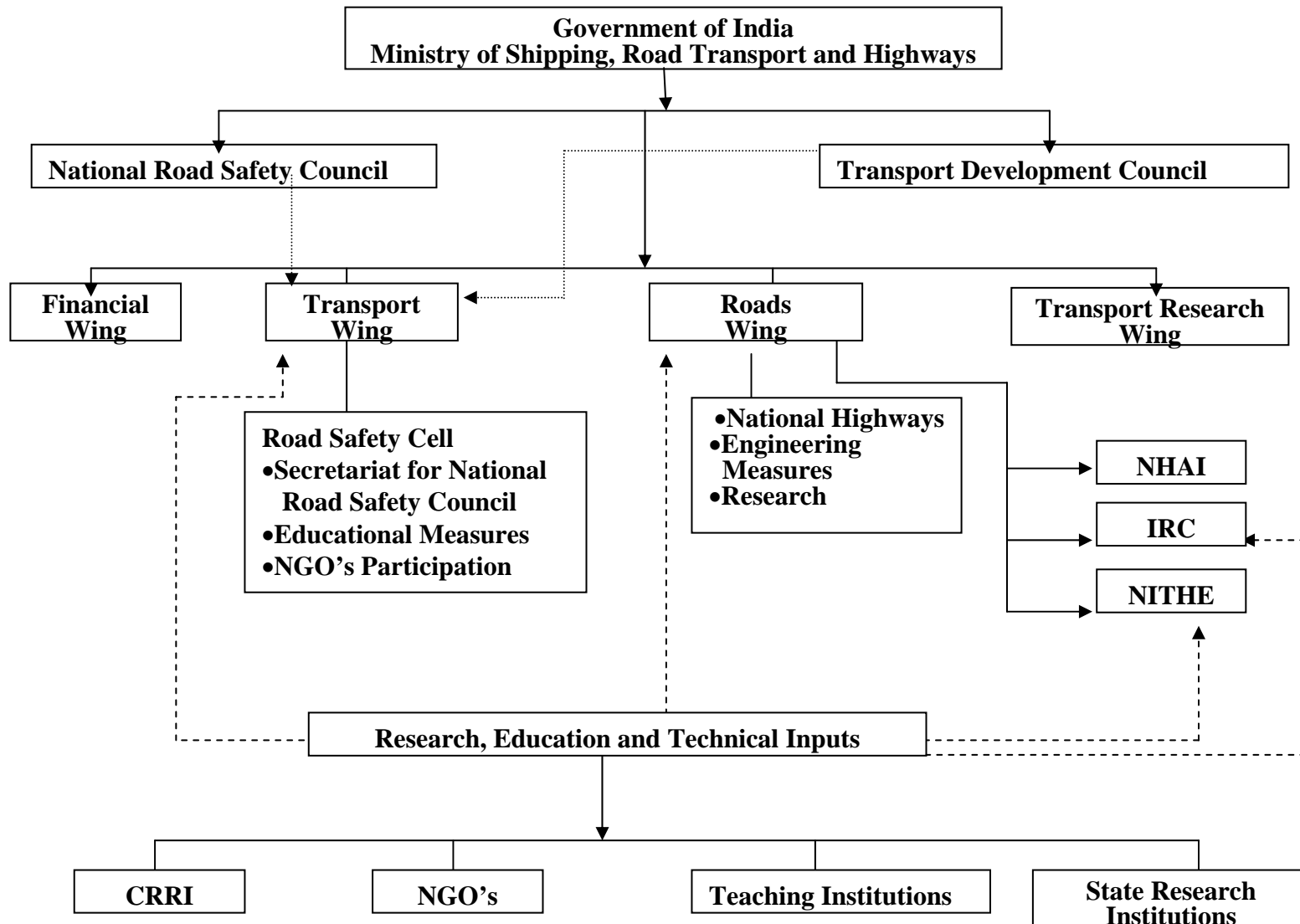
- Public apathy
- Poor respect for traffic rules
- Low level of awareness
- Lack of driving culture



Main Constraints

- ❖ **Inadequate Enforcement due to Lack of**
 - **Awareness / Skill**
 - **Tools**
 - **Training**
- ❖ **Lack of Safety Consciousness in policy makers/ professionals**
- ❖ **Infrastructural Deficiencies for Safer Travel**
- ❖ **Absence of Database and Analysis**
- ❖ **Improper Driver Licensing System**
- ❖ **Ineffective Institutional System**
- ❖ **Lack of Funds**

Institutional Arrangements for Road Safety



Institutions Engaged in Road Safety

Agency	Functions						
	Policy	Planning	Accident analysis	Engineering measures and standards	Traffic regulation and enforcement	Education, awareness, training	Research & development
Central Government							
Department of Road Transport & Highways	✓	✓		✓		✓	✓
Central Road Research Institute, New Delhi			✓	✓		✓	✓
Central Institute of Road Transport, Pune						✓	✓
National Institute for Training of Highway Engineers (NITHE)						✓	

Institutions Engaged in Road Safety

(Contd.)

Agency	Functions						
	Policy	Planning	Accident analysis	Engineering measures and standards	Traffic regulation and enforcement	Education, awareness, training	Research & development
State Government							
State Public Works Departments	✓	✓		✓			
Police Establishments		✓	✓		✓		
State level Research Institutes/ Labs			✓			✓	✓

Institutions Engaged in Road Safety

(Contd.)

Agency	Functions						
	Policy	Planning	Accident analysis	Engineering measures and standards	Traffic regulation and enforcement	Education awareness training	Research & development
Indian Roads Congress				✓			✓
Academic Institutions including IITs			✓	✓		✓	✓
NGO's			✓			✓	✓

Main Initiatives by Government of India

- ❖ **Drafting Road Safety Policy**
- ❖ **Infrastructure Improvements**
- ❖ **Creation of Road Safety Boards at Centre and States**
- ❖ **Safety Audit for New Projects**
- ❖ **Ambulances and Highway Patrolling**
- ❖ **Enhanced fines for Traffic Rules Violations**
- ❖ **Manuals for Standards for 4 and 6 Lanes Highways**

Road Safety Policy

❖ 1994 Policy

- Reduction up to 50% by 2001 in fatalities and accident
- Improvement in Road Users behavior

❖ Policy proposed now

- Commitment for significant reduction in accidents
- Eleven focus areas identified for achievement
 - Creation of data base
 - Safer Road Infrastructure
 - Safety of vulnerable road users
 - Safety education and training
 - Emergency Medical Services
 - Enabling legal, institutional and financial environment
 - HRD and Research

Infrastructure Improvements

❖ National Highways Development Project (NHDP)

- 4-laning of 26,000 km (40%) of NHs in Phases I, II & III
- 6-laning, Expressways, Ring roads, Bypasses etc
- Investment of about US\$ 57 billion in next 7 years

❖ Prime Minister's Rural Development Project

- Access through all weather roads for
 - Habitation with 500, in plains
 - Habitation with 250, in hills
- Investment of about US\$ 29 billion in next 7 years

❖ National Urban Renewal Mission

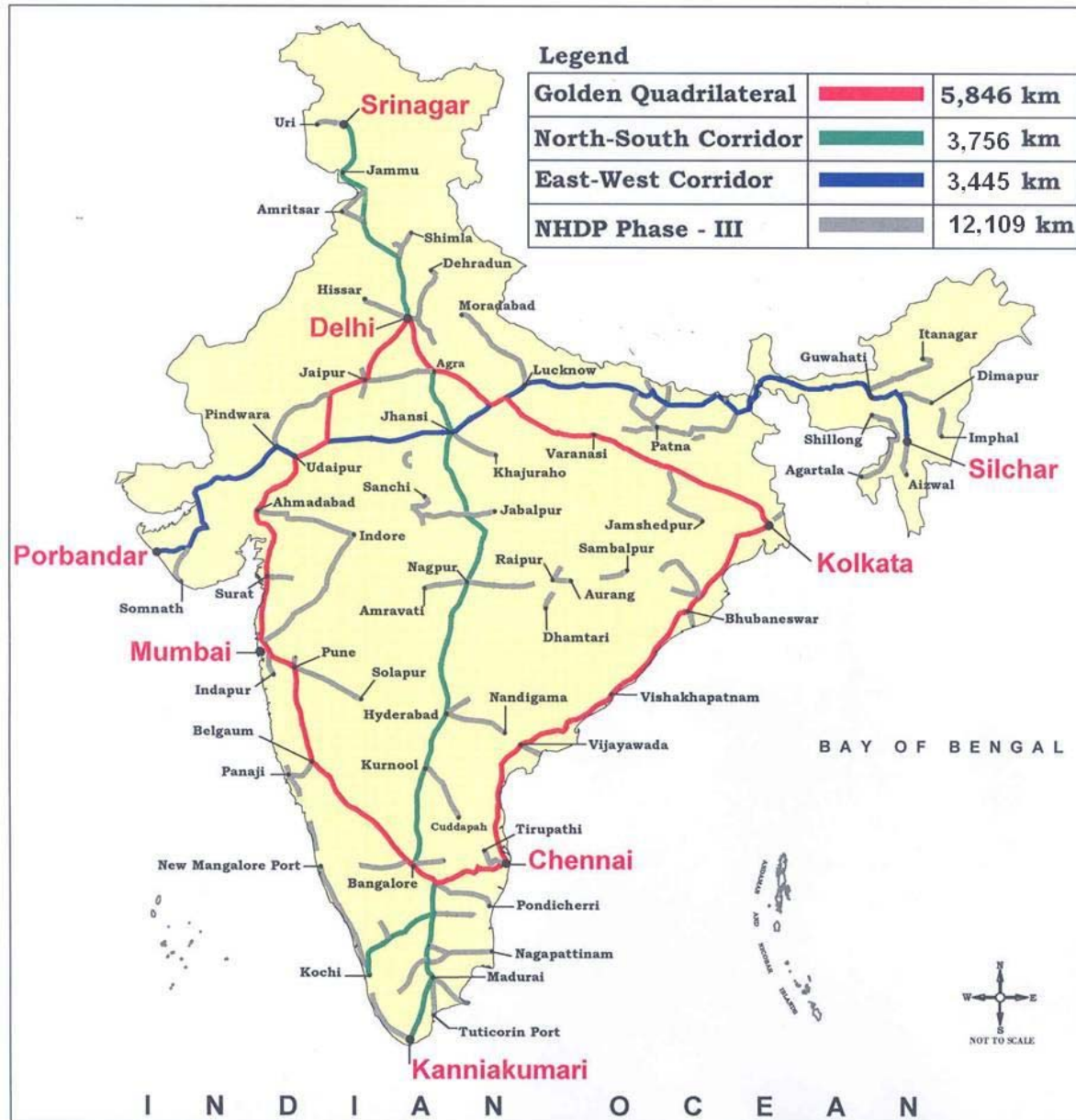
- Infrastructure improvement for rejuvenation of Indian cities
- Investment of about US\$ 11 billion in next 7 years



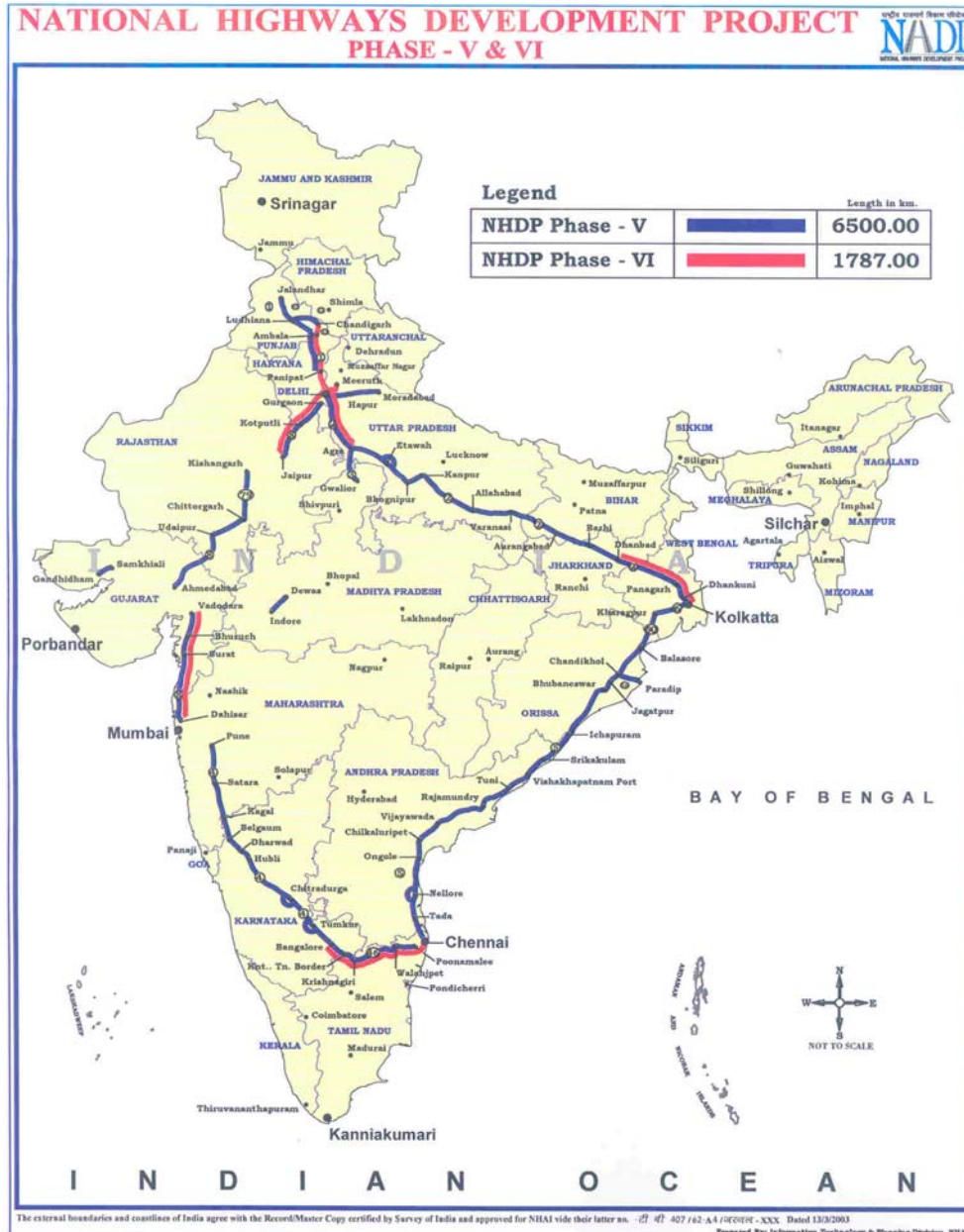
National Highways Development Project (NHDP)

NHDP PHASES	Estimated Cost In	
	Rs. Billion	US\$ Billion
Phase I : Balance Work (Gold'n Quadri'l)	88.11	2.15
Phase II : Balance Work (NS-EW Corridor and Others)	436.23	10.64
Phase III : 4-laning of 12,109 km on BOT	806.26	19.66
Phase IV : 2-laning with paved shoulder, of 20,000 km on BOT- Toll/Annuity	278.00	6.78
Phase V : 6-laning of 6,500 km on DBFO basis	412.10	10.05
Phase VI : 1,000 km Expressways on DBFO basis	166.80	4.07
Phase VII : Ring Roads, Bypasses etc. on BOT - Toll/Annuity	166.80	4.07
Total	2354.30	57.42

NHDP Phases I, II & III



NHDP Phases V & VI



Safety Elements in NHDP

- ❖ Four lane Dual Carriageway facility
- ❖ Improved geometrics and intersection layout
- ❖ Segregation of slow/ local traffic by service roads
- ❖ Grade separators at major intersections
- ❖ Subways for pedestrians/ local traffic
- ❖ Road over Bridges at Railway crossings
- ❖ Bus bays and truck laybys
- ❖ Improved traffic signs and markings
- ❖ Safety Barriers at hazardous locations
- ❖ Safe practices in construction zones
- ❖ Proper maintenance of facilities
- ❖ Emergency Medical Services
- ❖ ITS application



New Initiatives

❖ National Road Safety Board

➔ Expert Divisions in

- Road Engineering and Safety
- Automobile Safety
- Data Analysis and Research
- Communication and Human Resource Management
- Traffic Engineering and Enforcement
- Emergency Medical Help



National Road Safety Board

❖ Structure

➤ **Chairman**

➤ **Members with Expertise in**

- **Road and Traffic Engineering**
- **Automobile Engineering**
- **Traffic Laws, Enforcement, Education**
- **Database and Analysis**
- **Medical care, Training**



National Road Safety Board (Contd.)

❖ Functions

- Commission and Conduct Road Safety Audit
- Setting of Safety Standards for roads
- Recommend Traffic Calming and similar safety features
- Set Standards for Safety features for vehicles
- Audit for adherence to Standards
- Identify Research Areas in Safety and Establish Excellence Centers
- Maintain the Data Base
- Promote Best Practices in Road Safety
- Identify/recognize and assist NGOs in the area of road Safety
- Lay down guidelines for trauma care
- Advise Central Government on Issues of Road Safety
- Liaise with International Agencies in Road Safety

National Road Safety Board (Contd.)

❖ Powers

- Spot Checking through Auditors.
- Issue direction for Corrective measures in cases of non-adherence to Standards
- Power to penalise for non- adherence

❖ Budget

- Grant from Dedicated Road Safety Fund
- Created from 1% of Cess from sale of Petrol and Diesel – around \$ 30 million per year

❖ Road Safety Board at State Level

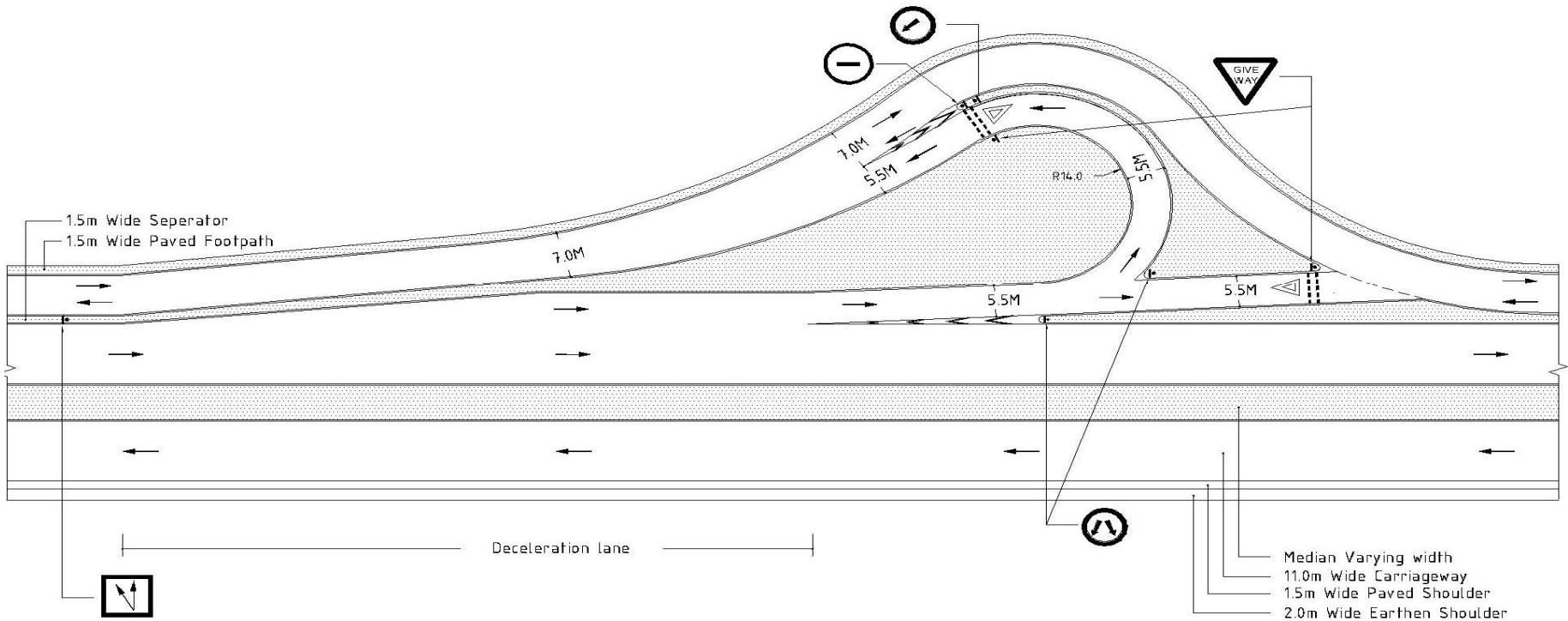
New Initiatives

- ❖ **Emphasis on Road Safety in the development during next 5 years**
- ❖ **Pedestrians and cyclists safety**
 - Speed limit of 50 kmph on arterials and 30 kmph on residential road – potential of saving around 5000 lives per year
- ❖ **Motor Cyclist Safety**
 - Compulsory helmet law by every State and day time headlight use – potential of saving around 3000 lives per year
- ❖ **Motor Vehicle Occupant Safety**
 - Enforcement of seat belt use
 - Speed governors
 - Potential of saving around 4000 lives per year
- ❖ **Vehicle Safety**
 - All vehicle to meet international crashworthiness standards by 2010
- ❖ **Safer Design of highways**
- ❖ **Trauma care facilities specially along highway**

Policy Initiatives for Safer Design

- ❖ **Manuals for developing and designing of 4/6 lane highway**
 - **Partial control on access**
 - **Separation of local/slow traffic through service roads**
 - **Entry to and Exit from service road through ramps**
 - **No at-grade intersections for 6 lanes highways and limited at-grade intersections for 4 lane highways**
 - **Detailed system for signs and markings**
 - **Control and access from private properties**
 - **Facilities for pedestrians and cyclists**
 - **Facilities for crossing of cattle**
 - **Controlled opening for medians**
 - **Provision of Rest Areas and bus bays**
 - **Application of Intelligent Transport Systems (ITS)**
 - **Provision of Ambulances/cranes and patrolling**
 - **Safety Audit in Design and Pre-Opening**

Entry Ramp for Service Road



Note:-

1. Detailed system of Road Markings as per IRC:35
2. Detailed system of Road Signs as per IRC:67

MINISTRY OF SHIPPING, ROAD TRANSPORT & HIGHWAYS
DEPARTMENT OF ROAD TRANSPORT & HIGHWAYS

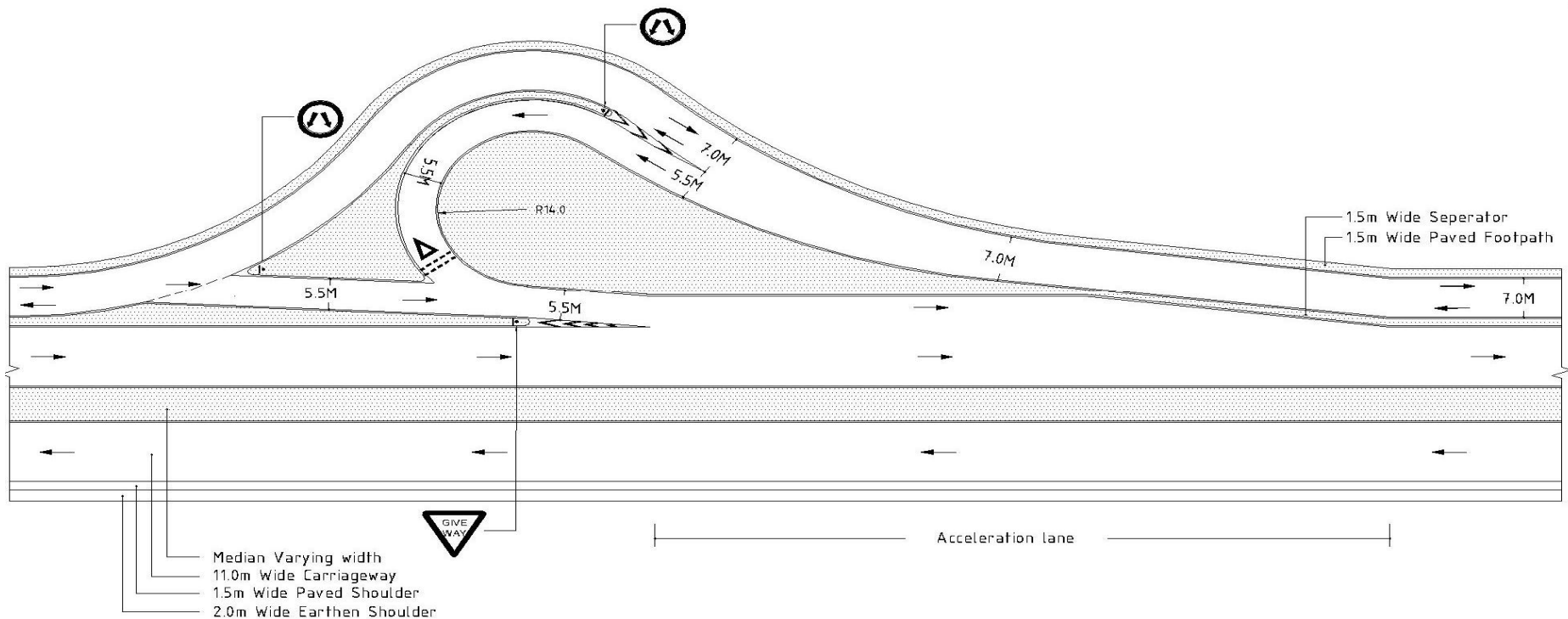
DRAWING TITLE:-

Suggestive Layout for Exit Ramp from Highway

Figure: 2.1C

SCALE:- Not to Scale

Exit Ramp from Service Road



Note:-

1. Detailed system of Road Markings as per IRC:35
2. Detailed system of Road Signs as per IRC:67

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 DEPARTMENT OF ROAD TRANSPORT & HIGHWAYS

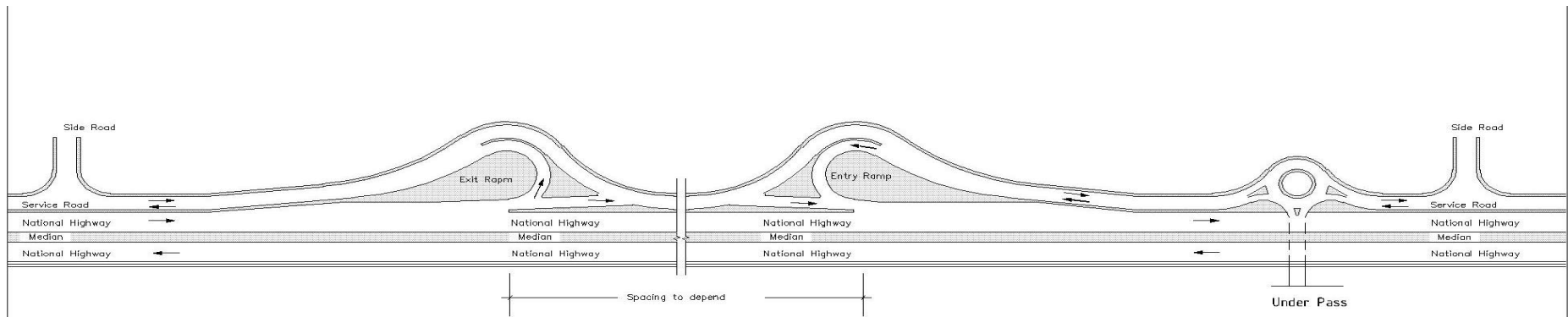
DRAWING TITLE:-

Suggestive Layout for Entry Ramp to Highway

Figure: 2.1D

SCALE:- Not to Scale

Safety for Service Road



Note:-

1. Detailed system of Road Markings as per IRC.35
2. Detailed system of Road Signs as per IRC.67

MINISTRY OF SHIPPING, ROAD TRANSPORT & HIGHWAYS
DEPARTMENT OF ROAD TRANSPORT & HIGHWAYS

DRAWING TITLE:-

Suggestive Layout showing configuration of service road, entry/exit ramps, side road and underpass

Figure: 2.3

SCALE:- Not to Scale

New Initiatives

- ❖ **Highway Traffic Patrol in some States e.g. Haryana, Kerala**
- ❖ **Post Accident Management – Tamil Nadu**
- ❖ **Safety Aid Posts and Safety Task Force in Maharashtra**
- ❖ **Support for NGO's on Awareness generation and sensitization of community including villagers**



New Initiatives (Contd.)

- ❖ **Safety Audit on about 50% of completed Golden Quadrilateral sections**
- ❖ **Low cost counter measures at hazardous locations**
- ❖ **Safety Provisions in Construction Zones**
- ❖ **Training of Trainers for dissemination of road safety manual**
- ❖ **Introduction of Intelligent Transport Systems (ITS)**
 - **Advanced Traffic Management Systems (ATMS)**
 - **Electronic Toll Collection (ETC)**
 - **Advanced Traveller Information Systems (ATIS)**



New Initiatives (Contd.)

Crash Lab



- ❖ Digital Movie/ Still Camera
- ❖ High Spot Light synchronized with camera
- ❖ Laser device for distance/ speed measurement
- ❖ Software for data processing to reconstruct collisions
- ❖ Software for simulation and analysis
- ❖ Violations recorded dealt by the police and engineering shortcomings are conveyed to the Traffic Engineering Cell.

Education Measures

- ❖ **Increase in Driver's Training School**
- ❖ **Refresher Courses**
- ❖ **Traffic Parks**
- ❖ **Schools encouraged for imparting safety education**
- ❖ **Safety Week observance**
- ❖ **Assistance to NGO's-Training, Booklets, Awareness Campaign among local people**
- ❖ **Training by National Institute for Training of Highway Engineers and Central Road Research Institute**
- ❖ **Use of Mass Media**
- ❖ **Seminars / Workshops**



Documents on Road Safety

- ❖ **Manual for Safety in Road Design**
- ❖ **Geometric Design Standards for Highways**
- ❖ **Highway Safety Code**
- ❖ **Guidelines for Safety in Construction Zones**
- ❖ **Standard Drawings for At-grade Intersections**
- ❖ **Code of Practice for Road Signs**
- ❖ **Code of Practice for Road Markings**
- ❖ **Technical Circulars from Ministry**
- ❖ **Safety related Guidelines by Indian Roads Congress**

Studies in Road Safety

- ❖ **Black spot Identification System**
- ❖ **Safety Audit**
- ❖ **Traffic Calming Technique**
- ❖ **Policy for Hoarding on Highways**
- ❖ **Road Safety Policy (to be endorsed by Prime Minister) and Action Plan**
- ❖ **Road Accident Costing**



Enforcement Measures

- ❖ **Operation and Maintenance Contract**
- ❖ **Highway Patrolling**
- ❖ **Modern Tools**
 - **Interceptor Vans**
 - **Breathalysers**
- ❖ **Motor Vehicles Act Amended**
 - **Speed and Weight limits**
 - **Carrying of the Hazardous material**
 - **Enhanced Penalty for Traffic Rules Violations**
- ❖ **Seat belt in car/ Helmet for 2-wheelers**
- ❖ **Driver Licensing system computerized**
- ❖ **Vehicle Registration and fitness system stricter**
- ❖ **Speed Governors for Public Transport Buses**



Infrastructure Improvement



23e Congrès mondial de la Route - Paris 2007



Flyover and Service Road



Chevron Signs at Curve



04/05/2005

Rest Area On Ahemdabad – Vadodara Expressway



ITS Application for Road Safety

- ❖ **Advanced Traffic Management Systems (ATMS)**
 - 180 km stretch of National Highway
 - Mumbai – Pune Expressway
- ❖ **Area Traffic Control in Delhi**
 - Covering 47 intersections



ATMS on National Highways

- ❖ 180 km section of National Highway 8
- ❖ Emergency Call Boxes (ECBs)
- ❖ Variable Message Signs (VMS)
- ❖ CCTV System
- ❖ Mobile Radio Network
- ❖ Fibre Optic Communication System
- ❖ Automatic Traffic Counter and Classifier
- ❖ Meteorological System
- ❖ Highway Patrolling
- ❖ Ambulance Services
- ❖ Tow away Cranes

Emergency call box for ATMS



Emergency call box for ATMS



Components for ATMS



HTMS



HTMS



HTMS



Control Room on NH-8



ATMS Control Room





THANK YOU

