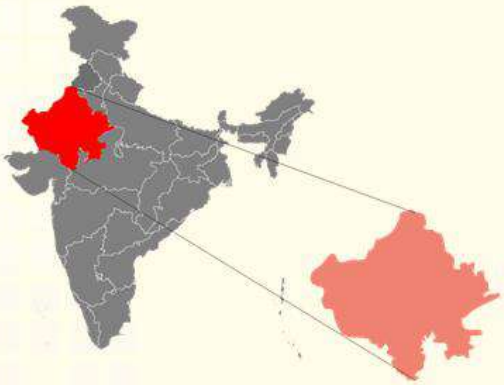
सत्यमेव जयते

Supreme Court Committee on Road Safety

सड़क परिवहन और राजमार्ग मंत्रालय
MINISTRY OF ROAD TRANSPORT & HIGHWAYS
भारत सरकार Government of India
(आईएसओ 9001:2008 प्रमाणित मंत्रालय) (An ISO 9001:2008 Certified Ministry)

Consulting Services to Audit the Implementation by the States of the Directions Issued by the Supreme Court Committee on Road Safety – Group 4



Final Report - Rajasthan State

May 2018

A Joint Venture of The Government of National Capital Territory of Delhi & The IDFC Foundation.
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DIMTS in Association with TRIPP, IIT – Delhi & TERI

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Consulting Services to Audit the Implementation by the States of the Directions Issued by the Supreme Court Committee on Road Safety – Group 4 - Rajasthan

Final Report

May 2018

Submitted by,

Delhi Integrated Multi-Modal Transit System Limited (DIMTS)

Transportation Research and Injury Prevention Programme (TRIPP), IIT-Delhi

&

The Energy and Resource Institute (TERI)

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List of Abbreviations

ALS	Advanced Life Support
ANPR	Automatic Number Plate Recognition
ATR	Action Taken Report
BLS	Basic Life Support
CCTV	Closed-circuit television
CMVR	Central Motor Vehicle Rule
DL	Driving License
Dte.GHS	Directorate General of Health Services
DTI	Driving Training Institutes
DBMS	Data Base Management system
FAB	First Aid Box
FIR	First Information Report
GoI	Government of India
HoDs	Head of Departments
HR	Human Resource
IRC	Indian Road Congress
LMV	Light Motor Vehicle
MDR	Major District Road
MoH&FW	Ministry of Health and Family Welfare
MoRTH	Ministry of Road Transport and Highways
MTW	Motorised Two Wheelers
MV	Motor Vehicle
MAV	Multi Axle vehicle
NCRB	National Crime Record Bureau
NHAI	National Highway Authority of India
NH	National Highway
PWD	Public Works Department
R&B	Roads and Buildings
RDTC	Regional Driver Training Centre
RO	Regional Office
RSA	Road Safety Audit
RTA	Road Traffic Injuries
RTA	Road Transport Authority
RTO	Regional Transport Office
SCCRS	Supreme Court Committee on Road Safety
SCRB	State Crime Record Bureau
SH	State Highway
STALL	Screen Test Aid for Learner License
TCM	Traffic Calming Measure
ULB	Urban Local Body
VIC	Vehicles Inspection Centers
WHO	World Health Organisation

1 INTRODUCTION

1.1 STUDY BACKGROUND

With the cumulative growth in roads and vehicles, Indian roads have seen the inevitable growth in road safety issues including accidents, injuries and fatalities. The unique conditions on Indian roads including a heterogeneous traffic mix that includes high-speed vehicles sharing the road space with vulnerable road users as well as unsafe road infrastructure and vehicles that are in poor condition, all contribute to the high fatality rates seen on India's roads. According to official statistics 148,707 persons were killed and 482,389 injured in road traffic crashes in India in 2015 (NCRB 2016). The situation in India is worsening and road traffic injuries (RTI) have been increasing over the past twenty years.

Both the official country data and W.H.O. estimates show that there are countries with incomes similar to India that has RTI fatality rates lower than India. This demonstrates that lack of finances does not necessarily mean that a society has to have absence of safety on the roads. At the same time, many countries much richer than India have much higher fatality rates. Therefore, we cannot depend on growth in national income alone to promote road safety. It is necessary to institute evidence based national safety policies to ensure improvements in traffic safety.

Formulation of Supreme Court Committee on Road Safety

In April 2014, the Honourable Supreme Court of India constituted a three member Committee on Road Safety, headed by Retired Justice K S Radhakrishnan, in light of increasing road accidents which required immediate attention and remedial action. The main objective was to scrutinize and monitor enforcement of statutory provisions including the Motor Vehicles Act for making road safer. With this objective, the Committee interacted with various central and state ministries and issued directions to improve road safety in India.

The Supreme Court Committee on Road Safety (SCCRS) has, over the course of last year, sent directions to the States to implement various policies, institutional and infrastructure related measure in an effort to improve the standards of road safety and reduce accidents and fatalities.

The Committee, while sending the recommendations for implementation had directed the States that the measures should be implemented positively, and the adopted measures and actions taken up should be shared with the committee through an Action Taken Report (ATR) every quarterly by sending a detailed report to the Committee. Subsequent to this, the Committee issued additional directions to the States based on the review of action taken report received from the States.

It has been observed by the committee that even though the States were taking actions to implement the directions, the road accident fatality rates were not showing much improvement. Also, some of the States were not shown progress towards implementation of the directions.

Towards this, SCCRS would like to have a detailed road safety audit of the implementation status of the road safety directions by the States through expert Consultants.

The Ministry of Road Transport and Highways (MoRTH) took the initiative to have the compliance report ready for 16 states divided into 4 groups with 4 States in each group.

States covered under each groups are as follows:-

- Group 1: Madhya Pradesh, Bihar, West Bengal and Chhattisgarh
- Group 2: Gujarat, Karnataka, Kerala and Maharashtra
- Group 3: Tamil Nadu, Andhra Pradesh, Telangana and Odisha
- **Group 4: Haryana, Punjab, Uttar Pradesh, Rajasthan**

Based on the competitive bidding process, DIMTS-TRIPP IIT Delhi-TERI Consortium has been entrusted with carrying out the study for **Group-4 States**.

This Report details out the finding of audit studies carried out in the **Rajasthan State** which is part of the **Group-4**.

1.2 OBJECTIVES OF THE STUDY

The overall objectives of the study are to:

1) Evaluate the level of compliance (quantify) of the Supreme Court Committee Directives/ recommendations
2) Identify problems in complying with the Supreme Court recommendations
3) Evaluate impact of various recommendations on safety outcomes
4) Identify the most effective recommendations in impacting traffic safety outcomes

1.3 SCOPE OF THE ASSIGNMENT

The scope of the assignment is to audit/verify the implementation of directions issued by the Supreme Court Committee on Road Safety by the States. The scope is largely divided in to five key dimensions:

a) States Initiatives in Road Safety Institutional Arrangements
b) Improvement initiatives related to Road geometry & Engineering of the roads
c) Improvements initiatives related to Enforcement by the state Police and Transport Department
d) Improvement initiatives related to Road user awareness by the Education Department
e) Improvement initiatives related to Trauma & Paramedical and Emergency Health care system by Dte.GHS

The detailed scope of the study for the audit that covers the above dimensions are listed below:

Institutional:

- **Point No. 1:** Verify whether the Lead Agency set up by the State to coordinate all activities on road safety is headed by a senior officer and has dedicated & professional staff and necessary funds to effectively discharge its functions and whether other Departments in the State have been sensitized on road safety. Indicate briefly the working of the Lead Agency.

- **Point No. 2:** Verify whether a Road Safety Fund has been established by the State. Indicate whether the Fund is adequate for meeting expenses on road safety. If so, which Department administers such a fund? Are there rules for the Fund? If so, obtain a copy of the Rules.

Enforcement:

- **Point No. 3:** Verify whether the road accident data is being collected by the State on the format as prescribed by the MoRTH and is analyzed properly to identify causes for high accidents. Which Department is responsible for data collection and analysis? Provide details of the data collection arrangements and analysis thereof. In addition to the above, also verify the use made of the accident data for arriving at road safety counter measures as well as for enforcement purposes
- **Point No. 4:** Verify the number of equipment viz. (i) alcohol-meters (ii) speed checking devices deployed to check traffic violations and whether the equipment's are functional. Also verify the number of CCTV Cameras deployed to detect traffic violations and whether the footage from these cameras is continuously monitored. Please verify these in 4 Cities in each State.
- **Point No. 5:** Verify whether the police personnel are well trained to use the equipment.
- **Point No. 6:** Verify the number of traffic police deployed by the State to detect traffic violations and comment on the adequacy of the traffic police deployed.
- **Point No. 7:** Verify whether the use of helmet has been made compulsory both for driver and pillion rider all over the State and is rigorously checked. Please verify this in 4 Cities in each State and at a stretch of 100 Km. each on National Highways, State Highways and Major District Roads.
- **Point No. 8:** Verify whether the seat belt and cell phone laws are being implemented in the State and are rigorously checked. Please verify this in 4 Cities in each State and at a stretch of 100 Km. each on National Highways, State Highways and Major District Roads.
- **Point No. 9:** Evaluate the driver licensing system in the State and the measures being taken to reduce human intervention in the issue of driving license to the drivers of cars, two-wheelers and commercial vehicles.
- **Point No. 10:** Examine whether the driver licensing data has been computerized and fed into a Central Data Base so that Licensing Authority can verify whether an applicant has obtained the License from another Licensing Authority.
- **Point No. 11:** Examine whether the traffic violations are linked with drivers' licenses, and records of violations kept and updated so that repeated violators can be identified for appropriate action.
- **Point No. 12:** Examine whether separate unit/ team with necessary equipment has been set up to patrol National/ State Highways and traffic violations.
- **Point No. 13:** Verify the ban on sale of alcohol as per the latest Supreme Court Order
- **Point No. 21:** Verify the status on Driving Training Institutes and Vehicles Inspection Centers sanctioned by the MoRTH for the State. In addition to above, where the Centers are functional, have they been audited to see they are functioning properly?
- **Point No. 25:** Verify whether commercial vehicles are being strictly checked from safety point of view at the time of renewal of registration.

- **Point No. 26:** Verify whether school buses are being checked on an annual basis to ensure their safety and road worthiness.

Engineering:

- **Point No. 14:** Verify the arrangements made by the State for detection of Black Spots and their rectification and assess the efficacy of the rectification measures both on the State roads and National Highways. Provide a summary of Short- term and Long-term remedial measures proposed and the action already taken for implementation of these measures.
- **Point No. 15:** Verify whether the protocol for identification, rectification and monitoring of black spots, as directed by the Committee, has been drawn up and is being implemented.
- **Point No. 16:** Verify whether Road Safety Audits are being conducted during the design, construction and operation of roads and the recommendations of the Road Safety Audits are being implemented. Indicate the %age of roads which have been subjected to road safety audits at different stages. Whether the completion meetings are held for finalizing audit recommendations
- **Point No. 17:** Verify the extent of traffic calming measures adopted by the State like rumble strips, speed breakers, road signage etc. at 50 locations in the State where lower hierarchy roads merge with higher hierarchy roads and are accidents prone. Whether Speed Governors are installed in existing commercial vehicles and the instructions issued by the Committee in this regard are being followed
- **Point No. 18:** Verify whether road safety signs, Road markings and traffic lights meet the IRC specifications. Please verify this in 4 Cities in each State and at a stretch of 100 Km. each on National Highways, State Highways and Major District Roads.
- **Point No. 19:** Verify whether the driver rest areas, truck lay byes and bus bays are provided at suitable locations. Please verify this in 4 Cities in each State and at a stretch of 100 Km. each on National Highways, State Highways and Major District Roads.
- **Point No. 20:** Verify the action taken by the State to remove hoardings and objects that obstruct driving or distract drivers. Please verify this in 4 Cities in each State and at a stretch of 100 Km. each on National Highways, State Highways and Major District Roads.
- **Point No. 22:** Verify whether the footpaths and service roads have been provided at required locations and are free from encroachments. Please verify this in 4 Cities in each State. In addition to above, also verify the crossings facilities for pedestrians and vehicles

Road User Awareness and Education:

- **Point No. 23:** Verify whether there are programs to educate and train commercial drivers, traffic police personnel, highway engineers and planners in road safety in the State. Indicate the facilities available and details of the programs. If the training calendar is prepared and followed.
- **Point No. 24:** Verify whether modules on road safety have been included in the school curricula and indicate the level at which these have been included.

Emergency Response and Health Care:

- **Point No. 27:** Verify whether States have developed a comprehensive State Trauma Care System plan for setting the way forward with regard to all components of an organized trauma care system with specific strategies and timelines as per the template provided to the States by Dte.GHS/MoHFW.
- **Point No. 28:** Verify whether the States have done GIS based mapping of potential ambulance points and the health care facilities (both public and privates) and its spatial relation to accident prone areas (black spots), for developing scientifically well-organized State wide emergency and trauma care network.
- **Point No. 29:** Verify whether the States have established an effective network of ambulances for emergency response with an aim to provide definitive care to the victims well within the golden hour.
- **Point No. 30:** Verify whether the States are effectively following the prevailing national specification for ambulances and rescue vehicles.
- **Point No. 31:** Verify whether the States have verified and designated existing health care facilities (both public and private) along/ near the highways as Level III, Level II or Level I hospitals based on the operational definition provided by MoH&FW. A copy of the operational definition for Level III, Level II or Level I hospitals as provided by MoH&FW.
- **Point No. 32:** Verify whether the States have conducted gap analysis in terms of infrastructure, manpower, equipment and organizational functions at the identified trauma care facilities in the State (based on the operational definition for these by MoH&FW) and worked out a realistic plan for filling the critical gaps with definite timeline in its implementation.
- **Point No. 33:** Verify whether the States have set up a mechanism to ensure dynamic linkages between various health care facilities (across Level III, Level II, Level I hospitals) in terms of manpower, resources, skills and information.
- **Point No. 34:** Verify whether the Standardized pre-hospital trauma technician curriculum as developed by Dte.GHS/ MoH&FW for training of pre-hospital Trauma Technicians is being followed by all the States.
- **Point No. 35:** Identify the action being taken by the State in Capacity Building for human resources (starting from first responders-drivers, police personnel, conductors, teachers, students, etc. to specialists).
- **Point No. 36:** Verify that the States are maintaining records/information on injury and trauma. In addition to above, also verify whether data on Two wheelers deaths due to non-wearing of helmets are being maintained by Hospitals
- **Point No. 37:** Verify the effective measures including the awareness strategies by the States on the Good Samaritan Guidelines circulated to them by MoRTH & MoH&FW.
- **Point No. 38:** Identify any other good practices being followed by the States on Trauma Care.
- **Point No. 39:** Propose a formal mechanism of active coordination of MoH&FW with MoRTH and other relevant stakeholders of road transport/ associated department at the state level.

Others:

Point No. 40: Any other observation considered relevant for enhancing road safety in the State.

- **Point No. 41:** Provide a list of departments / officers/ NGOs/ Civil Society met with date and time.

Additional Verification Points

- Have the standards been set up for Private Training Schools? Are these schools audited to ensure that these standards are adhered to?
- Verify whether Drivers and other staffs of the STUs are provided with periodic training on road safety?
- Verify MHA norms on the number of police personnel and the number of equipment required to enforce traffic laws been adopted by the State? If not, whether the State has any plan to adopt the same?
- Verify whether maintenance of TCD are carried out by the state departments? If so, then which department is responsible for the same in the respective state?
- Verify from 3 shops in each of the 4 cities whether the bicycles being sold are fitted with 10 reflectors as directed by the Committee
- Verify in each of the 4 cities whether the helmets being sold are of BIS standard
- Verify in each of the 4 cities that what kind of helmet locking facility is available in two wheelers.

1.4 STRUCTURE OF THE REPORT

This Report consists of 5 Chapters including the **Chapter 1**-Introduction covering Study background, objectives and scope of the work. The structure of report and brief description of each chapter is discussed below:-

- **Chapter 2: Study Approach and Methodology**: - this chapter discusses the detailed study approach and methodology to conduct the audit both with key stakeholders and field studies.
- **Chapter 3: Data Collection and Sampling Strategies** – this chapter outlines the details of the field investigations including the exact locations and survey sampling and type of surveys covered on select cities and rural highways.
- **Chapter 4: Analysis and Findings** – this chapter outlines the audit findings against each of the five dimensions under each category, which are based on stakeholder interactions, verification of support information and field verifications, including State response/ level of compliance on the directions issued by the SCC time to time.
- **Chapter 5: Recommendations** – this chapter provides recommendations for each of the five dimensions, and also provides priority recommendations that shall be implemented by the State on priority basis immediately.
- Annexure – A: Field Investigations Schedules
- Annexure – B: Stakeholder Responses -Duly Filled-in questionnaires
- Annexure – C: Audit Support Documents
- Annexure - D: Study Parameter from IRC standards

2 STUDY APPROACH AND METHODOLOGY

2.1 INTRODUCTION

The status of implementation of the road safety directives in the Group-4 States are required to be studied in detail about the current practices in various functional areas of road safety initiatives ranging from institutional preparedness, engineering aspects, effectiveness and level of enforcement , initiatives to enhance road user awareness and education, and emergency care and response for accident victims. It can be captured only through a detailed interaction with the authorised representatives / officials for the respective function in the state, and also through field verification of the initiatives that were implemented on ground and its effectiveness.

This chapter presents the approach and methodology that were followed by the Consultants in detail.

2.2 STUDY APPROACH

A phase wise approach is conceptualised for this study. Each phase is marked with a deliverable and submission of the deliverable marks the end of the phase, and set the basis for proceeding to the next phase deliverables. Any feedback received on the deliverable will be taken as input and considered in the study.

These phases are described below:

- **Inception Phase**: It includes the identification of areas/aspects/indicators, designing the questionnaire, development of field survey framework and finalization of the research tools, and training of field research staff. This phase end with finalization of the formats for carrying out the audits.
- **Analysis and Recommendations Phase:** This phase focuses on data collection and verification of the road safety implementation initiatives by the State Departments with respect to SCC directions as elaborated in scope of the work section. The deliverables in this phase includes presentation to SCC on the analysis findings followed by Draft Audit Report.
- **Finalization Phase**: This phase focuses on incorporating the feedback from the SCC on our Draft Report and update the draft report and submit the Final Audit Report.

2.2.1 Approach for Audit Process:

In order to carry out the audit of the SCCRC implementation status of the States, we have adopted two level processes.

Level-1 Process- Direct Interactions with the key stakeholders and Head of the agencies: This process involves direct interactions with the officials responsible for the key functions. Main focus is to meet the officials (especially with Head of Departments - HODs of various departments) of State Department and verify initiatives taken in the State about the SCCRS directions.

Level-2 Process- Field Verifications: This process involves verification of the implementation effectiveness on ground by conducting field surveys and investigations. In this

process, team collects the field data and verifies the ground status of the identified parameters at the sample survey locations.

The key departments and details of field investigations that are part of this study are presented in below Figure 2-1.

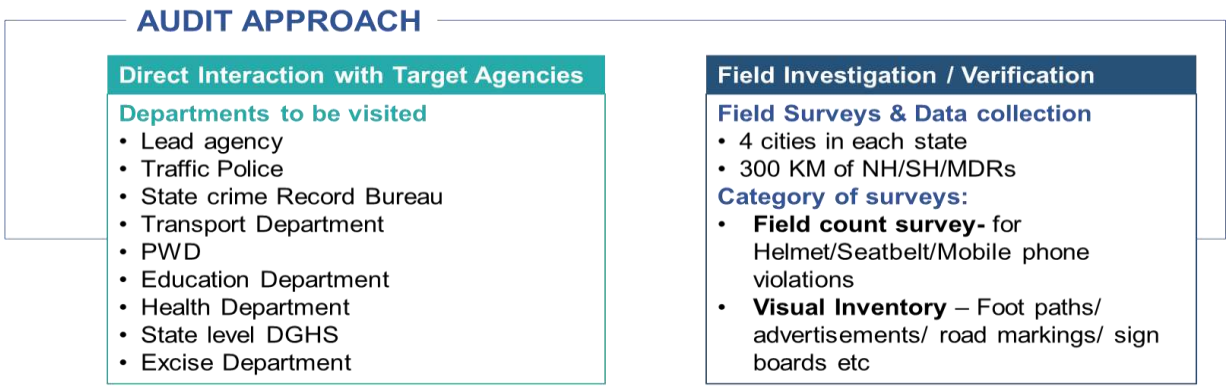


Figure 2-1: Audit Approach – Two level processes

2.3 STUDY METHODOLOGY

The study methodology involves verification of the various road safety implementation status at State level by using well designed and focussed questionnaires. These questionnaires are designed keeping in view the scope of the audit verification points.

Detailed questionnaires are designed for each department keeping in view their responsible functions with respect to road safety. Similarly, a separate set of formats are designed for the filed investigations requirements. The overall methodology is presented in the below Figure 2-2.

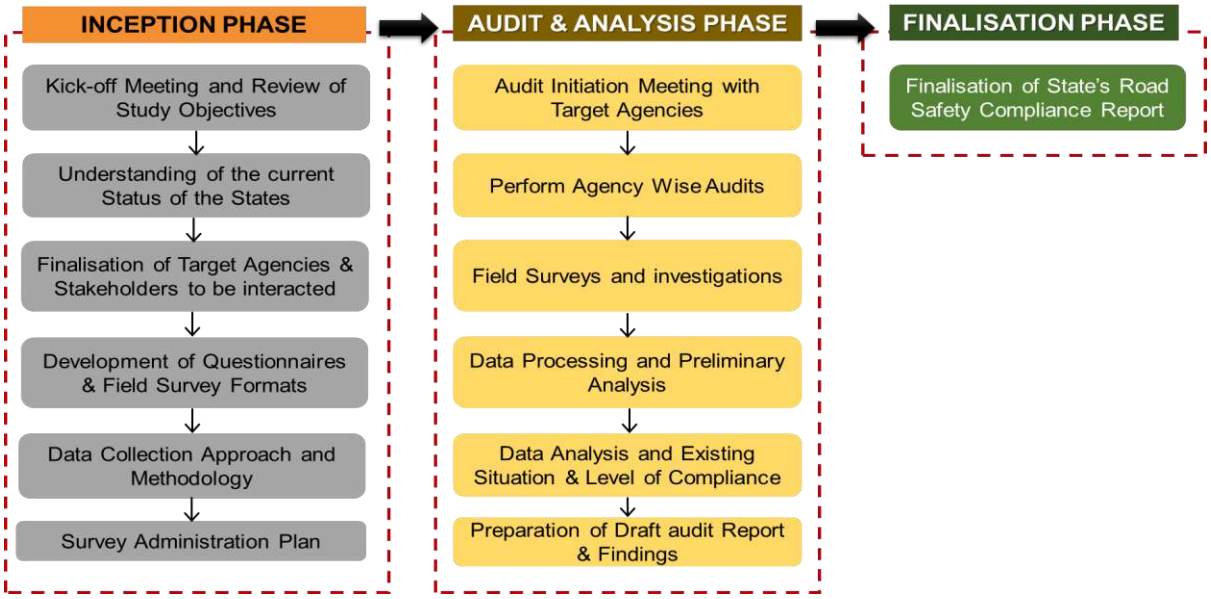


Figure 2-2: Study Methodology Chart

2.3.1 Methodology for Audit with Stakeholders

In order to perform the road safety implementation audit at State level, it is required to interact with various State Departments Heads/ nodal officers/ authorised representatives for understanding the level of implementation and reasons for any gaps in implementing the SCC directives.

State Departments Audit: The process involves with a project initiation meeting with the lead agency co-ordinator and all the key stakeholder departments.

The purpose of this meeting is:

- To understand the States view about the initiatives taken by them in various areas of the road safety
- Share the objectives of the study and explain in detail the audit process
- Share the pre-designed audit questionnaire to the respective department heads
- Collect the duly filled in and signed response formats
- Discuss in detail the responses with the respective function heads
- Further follow-up for any information gaps
- Collect the necessary support documents, as a part of audit verification

The key Stakeholder Departments for the audit are:

- Transport Department - Transport Commissioner & Road Safety Coordinator
- Traffic Police Department & DGP (Highways)
- NHAI – RO
- Public works department – Dy. Secretary, PWD/Chief Engineer
- Urban Local Bodies – Chief Engineer/ Dy. Chief Engineer
- Health Department - Director General Health Services
- State Transport Corporations – Dy. General Manager
- Excise Department
- Education Department

Apart from the above, the audit methodology also includes interactions with the key officials at the city level to gather specific information. These officials include RTOs, Police Commissioners, SP (Traffic), Urban Local Bodies, Emergency Response centre (for Ambulances), Executive Engineers, Driving institute and Vehicle Inspection Centre in-charge(s) and Motor vehicle inspectors.

2.3.2 Methodology for Field Investigations

All the field surveys have been classified into five categories by grouping them into similar ground check verification aspects, such that field investigations can be carried out in a focused way, and complete them in a logical order by a dedicated team(s) in a time bound manner.

- Category -1: Field Surveys for Traffic Violations
- Category -2: Network Inventory Survey
- Category -3: Equipment Availability Inventory Survey- in Cities
- Category -4: Infrastructure Availability for Driver Training and Vehicle Inspections
- Category -5: Highways Inspection and Inventory Surveys

Survey Methodology:

In order to conduct the ground surveys that covers four cities and 100 km each of NH, SH and MDRs within the specified time limit, Consultants formed two audit teams, who has expertise in highway engineering, traffic engineering and road safety aspects.

The scope of the work involved verification of various ground checks at:

- Four cities (Jaipur, Kota, Bikaner and Jodhpur)
- Total 300 km of rural highways- NH, SH and MDR, for 100 km each.

Scientifically designed survey strategy and data collection formats are used to collect the ground data. Following criteria has been adopted for selecting the survey stretches, such that the sample collected is the true representative of actual ground status.

The criteria are as follows:-

a) Sample stretches geographically spread to cover various administrative regions.
b) Stretches covering NH/SH/MDRs maintained by various road agencies (i.e. NHAI, PWD (NH), ULBs)
c) Presence of Black spots on the identified stretches (information on black spots is collected based on the reports available with SCCRS as submitted by States)
d) Traffic intensity (Low, Medium and High category)
e) Lane widths (6lane, 4lane and 2 lane)

The survey methods, sampling strategy and analysis methods used are detailed out in the below Table 2-1.

Table 2-1: Methodology for field investigations

Survey Category	Audit Verification Point	Survey Method	Sampling Strategy	Analysis Methods
Category -1: Field Surveys for Traffic Violations	Use of helmet made mandatory or not and are rigorously checked	Count Survey - 1st 150-200 passing vehicles (2-wheelers)	Survey Locations: 8 major junctions in the city 1 junction each along NH, SH and MDRs	No. of drivers and pillion riders not wearing helmet out of the collected 100 samples (the middle 100 samples were used for analysis) is calculated for checking helmet violations. Percentage is calculated from the 100 samples for each junction and combined for city to arrive at % violation for the city. (Formulae=(No. of people not wearing helmet/ Sample size)*100)
	Use of Seat belt made mandatory or not and are rigorously checked	Count Survey - 1st 150-200 passing vehicles (Cars)		No. of drivers, front passenger and rear passenger not wearing seatbelt out of the collected 100 samples is calculated for checking seatbelt violations. Percentage is calculated from the 100 samples for each junction and combined for city to arrive at % violation for the city. (Formulae=(No. of people not wearing seatbelt/ Sample size)*100)
	Rule against use of Mobile Phone made mandatory or not and are rigorously checked	Count Survey - 1st 150-200 passing vehicles (Cars)		Number of drivers using cell phone is counted out of the collected 100 samples to check the Rule against use of Cell phone

Survey Category	Audit Verification Point	Survey Method	Sampling Strategy	Analysis Methods
				Percentage is calculated from the 100 samples for each junction and combined for city to arrive at % violation for the city. (Formulae=(No. of people using mobile phone/ Sample size)*100)
	Opinion survey for helmet locking facility	Interview survey at parking lots in the city	Survey Location: 20 vehicles and 1 parking lot in the city	Analysis aims to understand percentage of 2-wheeler drivers locking the helmet to the vehicle to understand the provision of secure locking facility by manufacturer.
Category -2: Network Inventory Survey	Verify whether the footpaths and service roads have been provided at required locations	Through detailed road inventory, record the data as per the format with photo reference	**Survey Locations:** 4 Cities (minimum 25km in each City) and sample stretches in cities based on category and geographic spread. i) Availability of Footpaths ii) Availability of Service Road s iii) Encroachments on road	Out of the total length of network surveyed, the length of network provided with footpath and service road is calculated. Out of the total length of network provided with foot path the length of network with encroachment is calculated. (Formulae=(length of network for which footpath available/ total road network length surveyed in a city)*100)
Category -3: Equipment Availability Inventory Survey- in Cities	Verify Equipment - Alcohol Meters, Breath Analyser, Speed checking devices and CCTV	Observing the Monitoring mechanism using CCTV by visit to the centre	Survey Locations: Traffic Control Centre / Police Control room & 1	Number of CCTVs and locations were provided,

Survey Category	Audit Verification Point	Survey Method	Sampling Strategy	Analysis Methods
			Traffic Police Stations /Police Thana in each city Physical Inventory audit i) CCTV/ Breath Analysers/ Alcohol Meters/ speed checking devices / Interceptors	Data on amount of challans generated in a day and the future plans were collected and compared against MHA norms.
		Random Check of Alcohol Meters and Speed Checking Devices at Police station		The number of alcohol meters, speed checking devices/interceptors required for a city is estimated with the help of MHA norms and is compared with the number of equipment available with the respective city traffic police and the gap is estimated.
	Patrol Units with necessary Equipment's to patrol SHs and NHs	Random Check of Patrol units if available for equipment's and tools		The numbers of patrol units required for a city are estimated with the help of MHA norms and are compared with the existing number of units and gap is estimated.
	Audit of driving schools	Visit to random driving schools in each city	Based on discussion with STA and visit to 2 -3 driving schools in the city	The audit of driving schools carried out by Transport department will be recorded based on interaction with the RTOs ad if done, will select random driving schools and will cross check the data and status will be reported
Category -4: Infrastructure Availability for Driver Training and Vehicle Inspections, helmets with BIS standards and bicycles with prescribed reflectors	Status Driving Training Institutes and Vehicle Inspection Centres sanctioned by MoRTH	Visit to the centre and record the operating status of Centres	**Survey Locations:** Driving Training Institutes and Vehicle Inspection Centres - 2 centres in each state or based on availability i) Testing Facilities	The facilities provided in Driving Training Institutes (DTI) and Vehicle Inspection Centres (VIC) has been compared with respect to the guidelines provided by the MoRTH and gap analysis has been done.

Survey Category	Audit Verification Point	Survey Method	Sampling Strategy	Analysis Methods
			ii) Availability of Test Tracks	
	Status of Driver training provided by the STUs to its staff on road safety	On interaction with STU staff	Bus Transport Undertakings/ Operators	Data pertaining to type of training provided, number and category of staff trained, frequency and modules will be collected based on approved format
	Sale of Helmets with BIS Standard	Visit helmet vendors on random basis in each city	3 vendors in each city	From each vendor, number of helmets with BIS standards and not with BIS standards will be recorded and percentage will be estimated which will be considered as % compliance for the city.
	Sale of bicycles with 10 reflectors	Visit cycle vendors on random basis in each city	3 vendors in each city	From each vendor, number of cycles along with cycles with 10 reflectors will be recorded and percentage will be estimated which will be considered as % compliance for the city
Category -5: Highways Inspection and Inventory Surveys	Sale of Alcohol banned by the State along SHs and NHs	Recording of alcohol shops along the NHs and SHs	**Survey Locations:** 100 Km of NH, 100 Km of SH, 100Km of MDR i) 5 Black Spot locations on NH,SH,MDR ii) Traffic Calming measures- merging junctions iii) Road Safety Signage's iv) Driver rest areas v) Hoardings	The number of alcohol shops observed along the National highways and state highways will be recorded along with geo-coding and presented to the SCCRS
	Black Spots Remedial Measures	Verify the Remedial measures as provided by the state at site (Also need to capture AS-IS status based on visual inspection in a specified format)		The black spots details are presented with a photo reference and status of rectification. Mode-wise average speed observed at blackspot was estimated and 85th percentile speed is calculated and presented

Survey Category	Audit Verification Point	Survey Method	Sampling Strategy	Analysis Methods
		Speed at the black spot for each mode will be recorded through use of speed measuring instrument		
	Traffic Calming measures adopted by state at junctions,	Verify the traffic calming measures provided at junctions (minor roads intersecting at major roads		Out of the total sample number of intersections audited for Traffic calming measures, The percentage number of intersections provided with traffic calming measures and road signs both on major road and minor road of the intersection on national highways, state highways and major district road have been analysed.
	Road Safety Signs, Road markings, and traffic lights as per IRC or not	Verify the road safety signs, Road markings and traffic light is as per the IRC or not		**Road safety signs:** Inventory of road safety signs were collected on sample basis along the corridor. Out of the total number of signs collected in the city, the percentage of signs in compliance with IRC Standards in terms of different parameters like size, shape, reflectivity, height is analysed. **Road Markings:** Out of the total length of network audited for the verification of

Survey Category	Audit Verification Point	Survey Method	Sampling Strategy	Analysis Methods
				Road markings, %age of network provided with Road markings like centre line, traffic lanes, edge line etc., is estimated. The percentage number of intersections provided with stop line and pedestrian marking is also estimated. **Traffic lights at intersections:** The percentage number of traffic lights in compliance with IRC standards in terms of height, placement, visibility etc. is verified.
	Driver Rest Areas, Truck Lay byes and bus bays are provided at suitable locations	Verify the availability and suitability of locations Also, map the locations with photo reference		The number of road side amenities, bus stop typology and the truck parking locations, laybys are analysed based on the observation made and presented.
	Action Taken by State to Remove Hoardings and objects	Record the protruding and distracting Advertisements boards and objects along the road network - map the location with photo reference Also verify with Advertisement policy of city/ULB standards		Presence of hoardings which are dangerous in nature structurally and placement wise, and distracting to the road user in observed on the select road network.

3 STAKEHOLDER INTERACTIONS, DATA COLLECTION AND SAMPLING STRATEGY

3.1 DATA COLLECTION AND PROCEDURE FOR PRIMARY AUDITS

Project initiation meeting was held on 22nd January, 2018, where Auditors have interacted with state officials from different departments to understand the initiatives undertaken by the State. Also collected support information and relevant documents from the concerned departments as a part of the auditing process. The questionnaires were shared with the nodal officer/department a week before the project initiation meeting. First half of the day was focussed on discussions on various initiatives taken by the State, and in the second half detailed interactions were held directly with individual nodal officers. Also, duly filled and signed questionnaires formats were collected. Missing information was later collected through email and telephonic communication from the respective officers.

Interactions were held with the following Departments:

- Transport Department – Additional Transport commissioner
- Road Safety Cell – and Dy. Transport commissioner (Transport Dept.)
- Traffic Police Department – Deputy Inspector General
- NHAI – RO Jaipur
- Public Works Department –Executive engineer
- Education Department – Special secretary
- Health Department – Director (Medical and Health)
- Excise and Taxes Department – Additional Commissioner
- State Crime Record Bureau – Director (ADG)
- RSRDC – Deputy General Manager
- RIDCOR – Regional Head
- RSRTC – Executive Director (Admin)

Auditors also interacted with the city officials in Jaipur, Kota, Bikaner and Jodhpur to collect some of the secondary documents and verify the actual ground situation regarding the details given during the interaction.

Officials visited in respective cities are:

- Transport Department – Road Transport Officer
- Traffic Police – Superintend of Police/ACP/DCP
- Driving Training Institute – Head of the Institute
- Vehicle Inspection Centre – Road Transport Officer
- National Highway Authority of India – Regional officer

Schedule of meetings and duly filled in formats are provided in **Annexure A & B.**

Exhibit 3-1: Project Initiation Meeting at Office of Parivahan Bhavan in Jaipur.

3.2 SAMPLING STRATEGY FOR FIELD SURVEYS AND INVESTIGATIONS

3.2.1 Sampling Strategy for Violation Surveys

The survey strategy and actual samples collected are given in the below Table 3-1.

Table 3-1: Field Survey Strategy and Survey Samples – Traffic Rule Violations

Audit Point	Actual Sampling	Actual Sample Collected				
		Jaipur	Kota	Bikaner	Jodhpur	Highways sections
Helmet Violations	• Count Survey - 1st 150-200 passing vehicles(2wheelers) • Survey Locations: 8 major junctions in the city • 1 junction each along NH, SH and MDRs	8 Junctions (1600 vehicles sample has been collected)	8 Junctions (1600 vehicles sample has been collected)	8 Junctions (1457 vehicles sample has been collected)	8 Junctions (1600 vehicles sample has been collected)	12 junctions (4 on National highways, 4 on state Highway and 4 on MDR - 1598 vehicles sample has been collected)
Helmet Locking Facility	• Surveyed 1 parking location in each city	20 vehicles sample has been collected.	20 vehicles sample has been collected.	20 vehicles sample has been collected.	20 vehicles sample has been collected.	NA

Audit Point	Actual Sampling	Actual Sample Collected				
		Jaipur	Kota	Bikaner	Jodhpur	Highways sections
Seat belt Violations	• Count Survey - 1st 150-200 passing vehicles(4w heelers) • Survey Locations: 8 major junctions in the city • 1 junction each along NH, SH and MDRs	8 Junctions (1600 vehicles sample has been collected)	8 Junctions (1510 vehicles sample has been collected)	8 Junctions (1353 vehicles sample has been collected)	8 Junctions (1600 vehicles sample has been collected)	12 junctions (4 on National highways, 4 on state Highway and 4 on MDR – 1381 vehicles sample has been collected)

Audit Point	Actual Sampling	Actual Sample Collected				
		Jaipur	Kota	Bikaner	Jodhpur	Highways sections
Mobile Phone usage (cars)	• Count Survey - 1st 150-200 passing vehicles(4wheelers) • Survey Locations: 8 major junctions in the city • 1 junction each along NH, SH and MDRs	8 Junctions (1600 vehicles sample has been collected)	8 Junctions (1510 vehicles sample has been collected)	8 Junctions (1353 vehicles sample has been collected)	8 Junctions (1600 vehicles sample has been collected)	12 junctions (4 on National highways, 4 on state Highway and 4 on MDR – 1381 vehicles sample has been collected)

The survey locations for violation checks (Helmet, Seat belt and Mobile phone usage) for four cities and rural highway sections is shown in below Figure 3-1.

Figure 3-1: Traffic Rule Violation Survey Locations

3.2.2 Sampling Strategy for audit of Black spots

- There are 963 Black spots identified by nine different departments. 42 Black spots have been identified by MoRTH.
- The black spots identified by MoRTH has been taken into consideration for Field Verification.
- Field verifications were carried out at the Black spots which were identified and reported to Supreme Court Committee by the State Government.
- The list of remedial measures undertaken as part of rectification of the black spot based on the report submitted to SCCRS is taken as a base for the field verification
- The field verification was focussed on the ground truth verification of the reported remedial measures at the spot or location.
- Suitable formats were used to document the field observations along with photos as far as possible

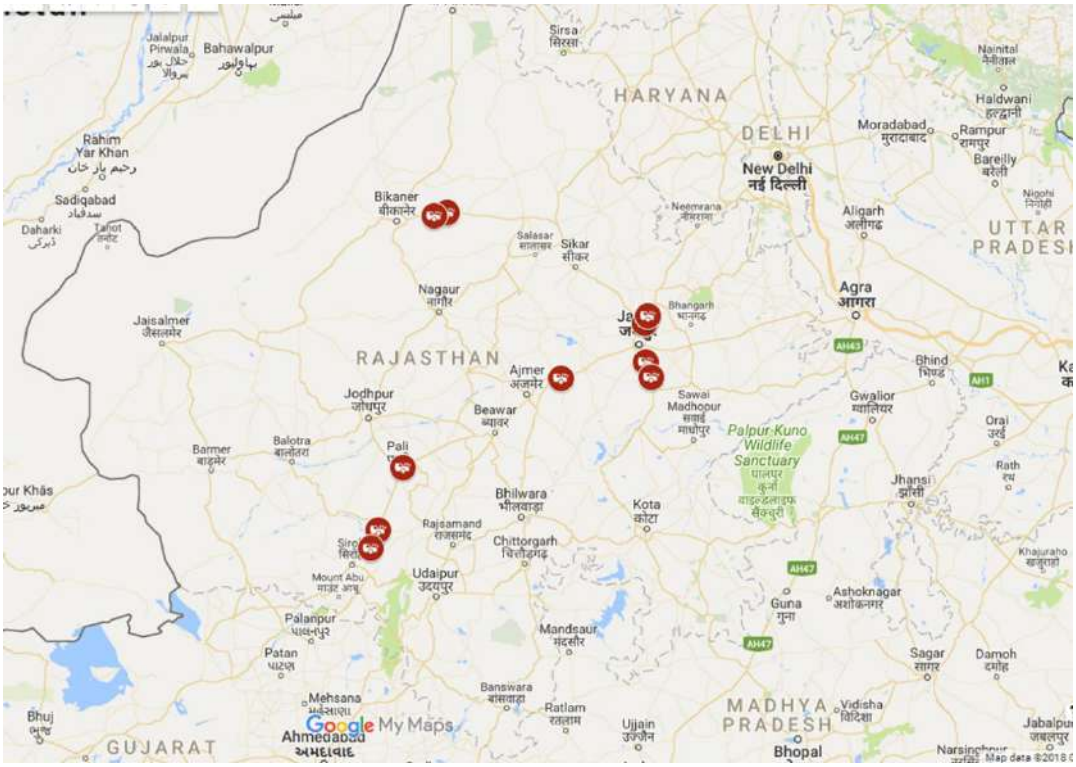


Figure 3-2: Black spots selected for audit of rectification measures

The Black spot locations identified for study are provided in the below Table 3-2.

Table 3-2: Black spots Locations

S.No.	Road Name or Black spot location	Road Name	GPS locations
1	Ch. 104+870	NH 14	Lat: 25.78871 Long: 73.36949
2	Ch. 174+600	NH 14	Lat: 25.20816 Long: 73.11634
3	Ch. 179+000 to Ch. 189+600	NH 14	Lat: 25.17494 Long: 73.09286
4	Ch. 21+000 to Ch. 30+500	NH 29	Lat: 27.17631 Long: 75.87214
5	Ch. 32+944	NH 12	Lat: 26.72713 Long: 75.87548
6	Ch. 233+750 to Ch. 234+250	NH 8	Lat: 27.1427 Long: 75.85741
7	Ch. 356+000 to Ch.356+500	NH 8	Lat: 26.60658 Long: 74.98221
8	Ch. 25+200 to Ch.29+500	NH 12	Lat: 26.75209

S.No.	Road Name or Black spot location	Road Name	GPS locations
			Long: 75.8521
9	Near Nakhat Banna Temple, Jodhasar	NH 11, Bikaner – Jaipur Road	Lat: 28.10367 Long: 73.82166
10	Near Barkha factory, Rohi Sereuna	NH 11, Bikaner – Jaipur Road	Lat: 28.08065 Long: 73.68716

3.2.3 Sampling Strategy for Field audit for Traffic Calming measures

The Sampling strategy and the number of junctions selected in each city and highways are provided in the below Table 3-3.

Table 3-3: Sampling Strategy for Field audit for Traffic Calming measures

Audit Point	Actual Sampling	Actual Sample Collected			
		Urban Roads	National Highways	State Highways	Major District Road
Traffic calming measures	50 locations where Lower hierarchy road meets higher hierarchy road	12 Locations	25 locations	14 Locations	07 Locations

Survey locations for traffic calming measures are shown in the Figure 3-3 below.

Figure 3-3: Traffic Calming measures survey locations

3.2.4 Sampling Strategy for Road Inventory Surveys

A detailed Road inventory survey has been carried out to study the adequacy and adherence of IRC standards for various road safety elements like Road safety signs, Road markings, Traffic control devices, Road side amenities. This survey also conducted to observe presence of hazardous hoardings, extent of availability of pedestrian facilities and service roads, and encroachments. The survey was done on select stretches of the road network in all the four cities, and 100 km each of National Highways, State Highways and Major District roads. The actual length of roads surveyed in the cities and rural highways is given in the Table 3-4 and

Table 3-5 below.

Table 3-4: Length of Network selected in each city for Inventory of different safety infrastructure

City Name	Length of Network Audited	As per scope
Jaipur	60 km.	As per Requirement
Kota	40 km.	
Jodhpur	54 km.	
Bikaner	49 km.	

Table 3-5: Length of Highway sections audited for different safety infrastructure

Rural Section	Length of Network audited	As per Scope
National Highways	132 km	100 km
State Highways	108 km	100 km
MDR	102 km	100 km

Figure 3-4 and Figure 3-5 shows the road network selected for audit in four cities and on highway sections.

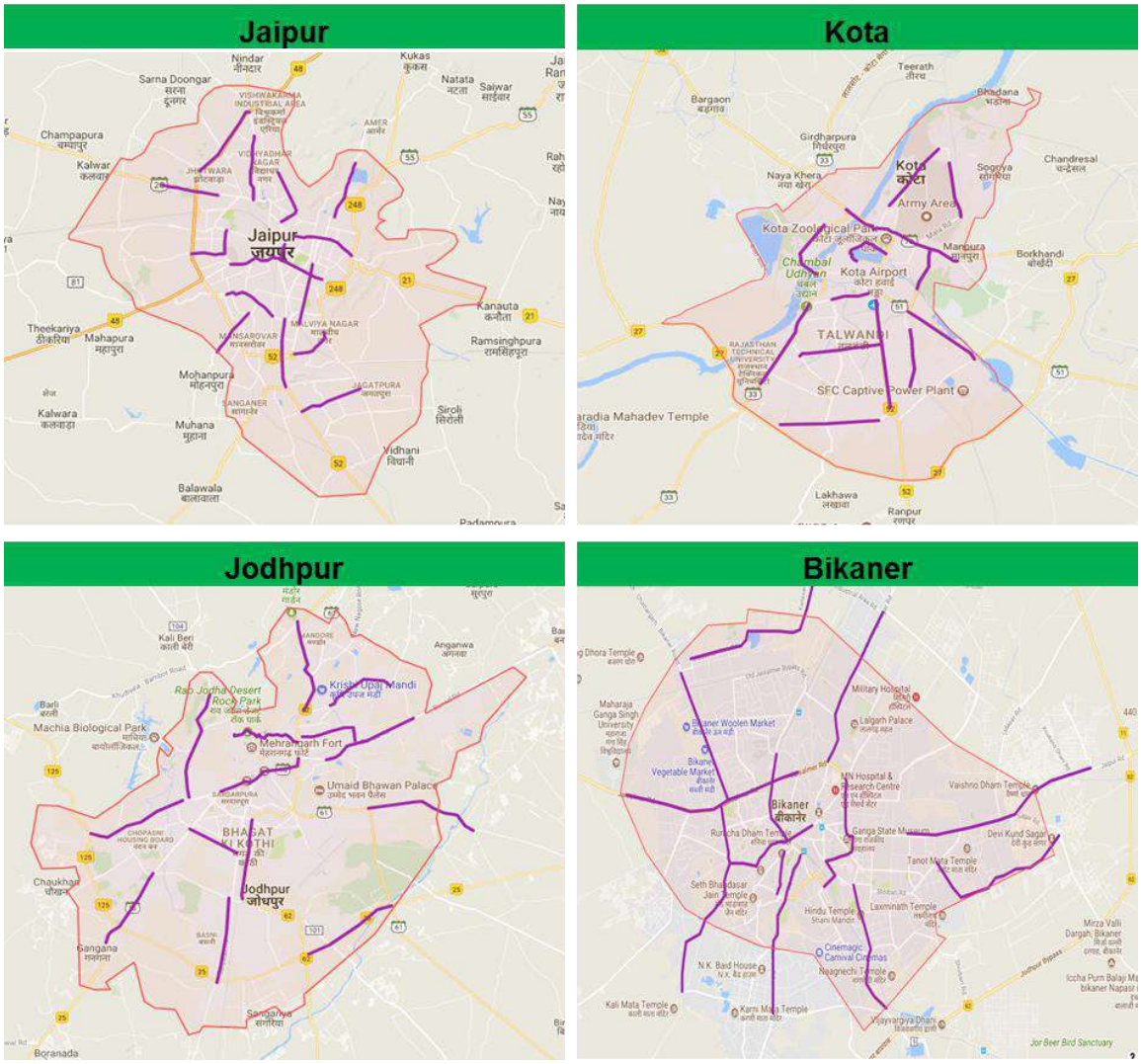


Figure 3-4: Corridors selected in each city for audit of safety furniture

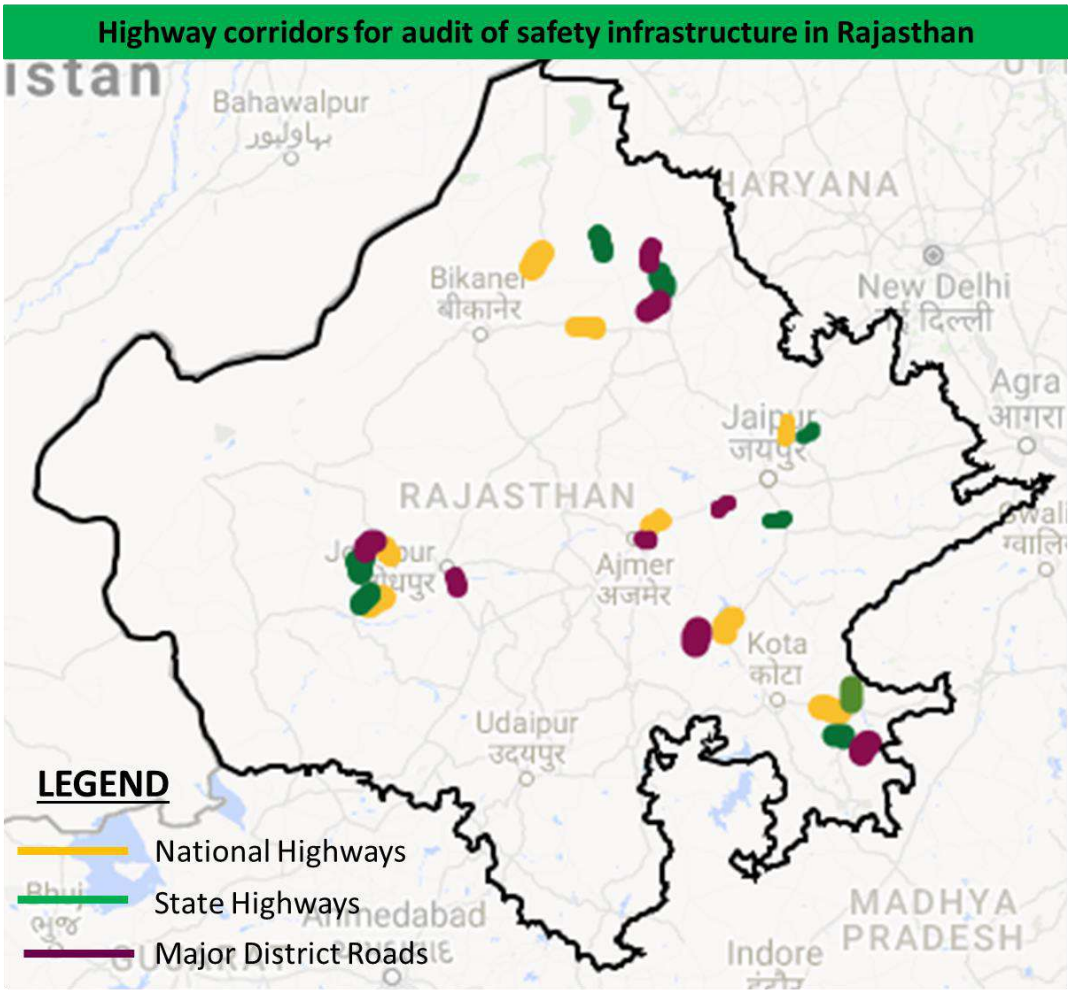


Figure 3-5: Highway corridors selected in the state of Rajasthan for audit of safety furniture

The survey details and actual sample size collected for each type of survey is shown in the below Table 3-6.

Table 3-6: Sample collected for each safety furniture

Audit Point	Actual sampling	Actual Sample Collected (Urban Sections)				Highway Sections		
		Jaipur	Kota	Jodhpur	Bikaner	National Highway	State Highway	Major District Road
1. Road Signage	Identified Urban roads in 4 cities & along 100 km each of National Highways, state Highways, Major District Roads.	111 signs	50 signs	81 signs	85 signs	123 signs	71 signs	24 signs
2. Road Markings	Identified Urban roads in 4 cities & along 100 km each of National Highways, state Highways, Major District Roads.	33 road sections	34 road sections	34 road sections	37 road sections	61 road sections	21 road sections	15 road sections
3. Traffic Control Devices	Identified Urban roads in 4 cities & along 100 km each of National Highways, state Highways, Major District Roads.	92 traffic lights	20 traffic lights	29 traffic lights	6 traffic lights	3 traffic lights	No traffic lights	No traffic lights
4. Road side Amenities / Laybys	Identified Urban roads in 4 cities & along 100 km each of National Highways, state Highways, Major District Roads.	All along the 60 km of Road network	All along the 40 km of Road network	All along the 54 km of Road network	All along the 49 km of Road network	132 km of National Highways	108 km of State Highways	102 km of MDR.

Audit Point	Actual sampling	Actual Sample Collected (Urban Sections)				Highway Sections		
		Jaipur	Kota	Jodhpur	Bikaner	National Highway	State Highway	Major District Road
5. Dangerous and Distractive Hoardings	Identified Urban roads in 4 cities & along 100 kms each of National Highways, state Highways, Major District Roads.	All along the 60 km of Road network	All along the 40 km of Road network	All along the 54 km of Road network	All along the 49 km of Road network	132 km of National Highways	108 km of State Highways	102 km of MDR.
6. Pedestrian Facilities, service roads and Encroachments	Identified urban roads in 4 cities.	123 road sections, which includes : 88 midblock sections 29 junctions and 6 special locations	93 road sections, which includes: 49 midblock sections 31 junctions and 13 special locations.	48 road sections, which includes: 22 midblock sections 15 junctions and 11 special locations.	42 road sections, which includes: 20 midblock sections 16 junctions and 6 special locations			
7. Alcohol shops presence	100 km each of National Highways and state Highways,					132 km of National Highways	108 km of State Highways	

The detailed survey schedule for the field investigations is provided in the **Annexure A**.

4 ANALYSIS AND FINDINGS

4.1 INTRODUCTION

This chapter presents the auditors observations and key findings regarding the State's status on various road safety implementation aspects in relation to the directions issued by the Supreme Court Committee. The detailed methodology adopted has been presented in previous chapters.

As we are all aware, ensuring road safety involves a multi-dimensional subject, and this just can't be achieved through looking at one dimension. Holistic approach is required to address this issue by implementing road safety strategies in all the dimensions in a balanced way.

There are about 38 key audit points that are required to be addressed and ensured (ref. section 1.3) as part of comprehensive road safety implementation audit. These 38 key aspects fall under the purview of the following five dimensions.

i) Institutional Dimension
ii) Enforcement Dimension
iii) Engineering Dimension
iv) Road User Awareness and Education Dimension
v) Emergency Response and Healthcare Dimension

Accordingly, the audit observations have been presented against each of these dimensions. The findings are presented in tabular format, wherein the audit verification points, benchmark/ SCC directions and expectation, State response about the current implementation/ compliance status is recorded. Consultant's observations have been presented as "Consultants Remarks" in the last column, which is based on the interactions, support information and field studies during the audit process.

4.2 INSTITUTIONAL DIMENSION

Institutional dimension has two key areas that need to be verified. These are how the Lead Agency is constituted and it's functioning, and the second one is about the Road Safety Fund establishment and its management.

The details of the mandate are as follows:-

4.2.1 Constitution of Lead Agency

Point No. 1: Verify whether the Lead Agency set up by the State to coordinate all activities on road safety is headed by a senior officer and has dedicated & professional staff and the necessary funds to effectively discharge its functions and whether other Departments in the State have been sensitized on road safety. Indicate briefly the working of the Lead Agency.

Table 4-1: Compliance level for setting up of lead agency

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
Established as Separate Entity in The State	Required to be setup as Separate Entity	Yes, A Road Safety Cell has been reconstituted to coordinate all activities of Road safety, and is acting as Lead Agency.	As per Executive order, Lead Agency to act as a "Secretariat to the State Road Safety council" headed by Transport Minister.
Lead Agency constituted through	Legislative Enactment/ Duly Notified Executive Order	Reconstituted through Executive Order	Order no. F.10 (699) Trans / PD / 2014/13002 dated 29th June 2016.
Head of the Lead Agency is	Dedicated	Yes, head of lead agency is dedicated.	An official appointed on deputation basis from Transport department is acting as head of Lead Agency and is also dedicated.
Appointed LA Head is (Rank)	Not below the Rank of Addl. Commissioner/ Jt. Commissioner	Deputy Transport Commissioner is the Head of Lead Agency. Reporting to Addl. Chief Secretary and Transport Commisioner.	The Rank of head of lead agency is below the expected rank, hence not as per SCC recommendations.
Employment Status of Lead Agency Head	Regular Appointment/ Deputed	Lead Agency head is on Deputation basis	Dy.Transport Commissioner is on deputation to Road Safety cell.
Dedicated Staff	Supported by Full Time Staff from:	Dedicated staff have been appointed on deputation basis from respective	Staff from PWD, Health, Police, Transport, I&T departments are appointed on deputation basis.

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
	(Police/ Education/Emergency care/PWD)	stakeholder departments.	There are no dedicated staff deployed from Education and Urban Development and Housing (UDH) departments, but available on requirement basis.
Recruitment status	Functional with full time dedicated staff	Twenty positions have been sanctioned by the Finance Department as per Internal note: E2/03/Trans (10)/2016-17 dated 26th December, 2016 Dedicated staffs for lead agency from different departments have been accordingly deployed.	As per the note, the following Posts are included: Dy.Transport Commissioner (RS), Regional Transport Officer (RS), Dy. Superintendent of Police, Executive Engineer (Traffic), State Nodal Officer (Medical & Health) and other support staff
Road Safety Policy	Notified Policy	Road Safety Policy has been notified vide notification no F.10 (614) Pari/ R.S./TMC/2016/31953 dated 21st March, 2017.	**Policy covers** Strengthening institutional, legal & financial environment, safer & efficient road infrastructure, driver training and funding mechanism, vehicle safety, safety for vulnerable road users, enforcement of safety laws, data base management, emergency medical services, post-crash trauma care, education and awareness, HRD and research for road safety.
Road Safety Action Plan	5 Yr. Plan till 2020 with clearly defined Annual Plans/ targets	Draft Road Safety Action Plan 2018-2020 is ready, which is approved by transport minister and submitted to CoRS.	Action Plan has clearly defined activities with annual targets Targetted to reduce 50% of fatalities by 2020, with annual targets for year 2018 is 15%

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
			and 2019 is 15%, and for 2020 is 20%.
Lead Agency Regular Functional	Frequency: Road Safety Council Meetings: = 2 times/ Year Chairman: Transport Minister	Road Safety Council formed and meetings conducted for 2 times both in FY 2016-17 and FY 2017-18 under the chairmanship of Transport Minister. Two meetings held each year. FY 2016-17: 1st Meeting: 28th June,2016 2nd Meeting: 3rd January, 2017. FY 2017-18: 1st Meeting: 15th June, 2017. 2nd Meeting: 24th October, 2017.	Broad agenda includes: 1. Status of formation of Lead Agency, 2. Road Safety Fund 3. Helmet laws implementation for both main and pillion rider 4. Strengthening of enforcement 5. Fitment of speed limiting devices in transport vehicles and speed control measures on road. 6. Rectification of Black Spots. 7. Education and awareness among people. 8. Preparation of road Safety policy and action plan etc.
	Frequency: District Committee Meeting: = 4 times/ year	District Road Safety cell within District Traffic Management committee formed on 06.06.2017. 19 districts= 4 times/year No meetings held in 9 districts. Other districts meetings are not regular	District Road Safety Committee meetings are not held in districts: Churu, Alwar, Bundi, Kota, Bara, Sirohi, Bhilwada, Jodhpur, Barmer. In some of the districts like Jaisalmer, Dungarpur, Rajasmand,Pratapgarh, Sriganganagar, meetings are not held regularly
Capacity Building		Training Programmes related to road safety have been arranged to: 1. First responders	Broad training programmes given for the last three years includes: 1. BLS Course, Post accident & First Aid

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
		2. Police Personnel 3. Teachers 4. Students 5. Professionals	training for the general public. 2. Post-Accident and First Aid course for the students. 3. First Aid training, Road Safety training, Primary Health care training for teachers. 4. Certified road safety training, Road safety audit training, and Trauma care workshop for the professionals. 5. Road Accident identification training, primary health care training for the Police Personnel.

4.2.2 Constitution of Road Safety Fund

Point No.2: Verify whether a Road Safety Fund has been established by the State. Indicate whether the Fund is adequate for meeting expenses on road safety. If so, which Department administers such a fund? Are there rules for the Fund? If so, obtain a copy of the Rules.

Table 4-2: Compliance level of Road safety fund

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
Road Safety Fund Established?	Should be Notified	Road Safety Fund has been Notified and established.	Dedicated Road Safety Fund has been notified vide order no.P10 (724) Pari/R.S./D.R.S Fund/2015/32778 dated 03 March, 2017. It has been made operational from April, 2017.
Sources of Funds	Budgetary Allocation Traffic Challans Transport Challans	• Budgetary allocation. • Traffic Challans • Special funds	Road Safety Fund has been made operational from April 2017 and Rs 89.42 crores have been allocated to this fund collected through Traffic challans (25% of compounding fee from traffic and transport challans). Before the creation of Road Safety fund i.e. 2017, Budget was allocated by Rajasthan Transport Infrastructure Development Corporation (RTIDF).
Fund Allocation: %age of Challans	Minimum 30% to 50% of Traffic Challans	25% of compounding fee collected by two enforcement dept. Transport and Police	Rs 89.42 Crore have been allocated in Fy 2017-18
How Assessment of Road Safety Fund Done	Assessment process to be in place	Based on Action Plan	Fund assessment has been linked to the action plan.

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
Road Safety Budget & Expenditure for Last 3 years?	Steady Flow of Funds	<table><tr><th>Year</th><th>Allocated (Rs Cr)</th><th>Expenditure (Rs Cr)</th></tr><tr><td>2014 – 15</td><td>3.0</td><td>1.9</td></tr><tr><td>2015 – 16</td><td>6.9</td><td>6.0</td></tr><tr><td>2016 – 17</td><td>6.0</td><td>4.7</td></tr><tr><td>2017-18</td><td>89.42</td><td>-</td></tr></table>	Approx. 74% of fund utilized towards Education and Awareness programmes, Enforcement. Minimal expenditure ma de towards Engineering and Emergency care areas
Who/How Road Safety fund Managed?	Should Be Managed by Lead Agency	Managed through a Fund Management Committee (According to Road Safety Fund Guidelines)	In Road Safety Fund notification, it is provided that a Fund management committee under the chairmanship of Chief Secretary/Additional Chief Secretary (Transport), and other members from stakeholding departments would control the funds.
Status of Fund Management Committee		Constituted	
Road Safety Fund Lapsable?	Should Be Non-Lapsable	Non Lapsable	As per Road Safety Fund & Rules vide Departmental Order no. P10 (724) Pari / R.S./D.R.S Fund / 2015 / 32778 dated 03 March, 2017., Dedicated road safety fund has been made non lapsable.
Existence of exclusive Bank Account for Road Safety Fund Management	Objective of this to establish exclusive and timely availability of funds	Yes, Public fund account has been opened.	Public Fund Account has been opened.

4.2.3 Summary – Institutional Dimension

- Reconstituted Road Safety Cell is acting as Lead Agency headed by Deputy Transport Commissioner.
- The Rank of the Head of the Lead Agency is not as per the Directions issued by the SCC
- Dedicated staff are deployed on deputation basis from the key stakeholder departments. However, no dedicated staff were deployed from Education and Urban Development and Housing (UDH) or UDI departments.
- Road safety policy has been notified and action plan with targets has been prepared for 3 years for 2018 – 20.
- The dedicated Road Safety Fund has been made operational from April 17.
- Rs 89.42 crores fund is allocated in FY 2017-18.
- Allocated road safety fund is not utilised fully and not spent on any engineering and emergency care related activities.
- The Road Safety Fund established is Non-Lapsable.
- Only 19 distrcits were regularly having District Road Safety Committee (DRSC) meetings. There were no DRSC meetings held in 9 districts, and not regual in other 5 districts.

4.3 ENFORCEMENT DIMENSION

Enforcement dimension falls under the purview of both Transport Department and State Police. Various aspects covered under this dimension are:

- Road accident information such as recording and reporting,
- Status of equipment's for enforcement, and experience of traffic police personnel's in using them,
- Extent of traffic rule violations,
- Driver licensing system and level of computerization
- Vehicle inspection mechanisms were verified.

4.3.1 Accident Information Systems

Point No.3: Verify whether the road accident data is being collected by the State on the format as prescribed by the MoRTH and is analyzed properly to identify causes for high accidents. Which Department is responsible for data collection and analysis? Provide details of the data collection arrangements and analysis thereof. In addition to the above, also verify the use made of the accident data for arriving at road safety counter measures as well as for enforcement purposes.

Table 4-3: Compliance level of Recording Accident Information

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
Accident Recording & Reporting	Recording– Adherence to MoRTH format Reporting Adherence to MoRTH format	Recording – State level common format is maintained by Traffic police Reporting - State level common format maintained by Traffic police	MoRTH format is proposed to be used from April, 2018.
Computerised Information System (DBMS, GIS, data updation)	Computerised data Collection & Recording System	No GIS based computerised accident recording system. Curently, It is maintained manually. No centralized database management system for road accident data.	In 1st Phase, it is proposed to launch "Road Accident Management & Data Analysis System (RAMDAS)"in all range headquarters by 2018-19 followed by all districts by 2019-20 as per Rajasthan Police Road Safety Action

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
			plan 2017-18- 2019-20. Same has been published in State road safety action plan (2018-2020)
Data Analysis	Reasons for Accident through Causal Analysis Extent of Use in formulating Mitigation Measures Used for Policy Formulation	At present Descriptive – Basic classification analysis is done with road accident data. Started using for policy formulation recently.	Inferential, Predictive and Causal analysis of accident data is not being performed.
Data Publishing	Crash Data to be made public	Annual reports on accidents are published in the state which are in public domain. These reports are published at state level.	Same couldn't be verified in public domain.

4.3.2 Functioning of Enforcement Equipment & Inventory & Police Strength

Point No. 4: Verify the number of equipment viz. (i) alcohol-meters (ii) speed checking devices deployed to check traffic violations and whether the equipment's are functional. Also verify the number of CCTV Cameras deployed to detect traffic violations and whether the footage from these cameras is continuously monitored.

Point No. 5: Verify whether the police personnel are well trained to use the equipment.

Point No. 6: Verify the number of traffic police deployed by the State to detect traffic violations and comment on the adequacy of the traffic police deployed.

Table 4-4: Compliance level of enforcement equipment functioning

<table>
<tr><th>Audit Point</th><th>Benchmark/ SCC Directive</th><th>State Response</th><th>Consultants Remarks</th></tr>
<tr><td>Road Safety Enforcement Equipment Inventory</td><td>As per MHA Norms</td><td>
<table>
<tr><th>Equipment</th><th>Total in State</th></tr>
<tr><td>Alcohol Meters</td><td>2047</td></tr>
<tr><td>Speed Guns</td><td>9</td></tr>
<tr><td>CCTV</td><td>6540</td></tr>
<tr><td>Interceptors</td><td>57</td></tr>
</table>
Number of equipment required for the state are assessed based on State Road Safety Action Plan.</td><td>MHA norms are not being followed for estimation of equipment requirements and gap assessment.</td></tr>
<tr><td>Road Safety Equipment- Experience of police personnel's</td><td>All traffic police personnel experienced to use Alcohol Meters</td><td><u>Alcohol Meters:</u>
Information is received from 7 districts in the state:
<table>
<tr><th>FY</th><th>Trained</th></tr>
<tr><td>2016-17</td><td>324 in 7 districts</td></tr>
<tr><td>2017-18</td><td>246 in 7 districts</td></tr>
</table>
Total 520 personnel have experience. (information received from 8 districts)</td><td>Information from 7 districts is only provided during audits.
<u>Field Verifications:</u>
Police personnel were able to operate the equipment in four cities (Jaipur, Kota, Bikaner and Jodhpur)</td></tr>
</table>

<table>
<tr><th>Audit Point</th><th>Benchmark/ SCC Directive</th><th>State Response</th><th>Consultants Remarks</th></tr>
<tr><td></td><td>All traffic police personnel experienced to use Speed Guns</td><td><u>Speed checking devices:</u>
Information is received from 7 districts in state:
<table><tr><th>FY</th><th>Trained</th></tr><tr><td>2016-17</td><td>70</td></tr><tr><td>2017-18</td><td>59</td></tr></table>Total Experienced (information received from 8 districts) - 82</td><td>Information from 7 districts is only provided during audits.
<u>Field Verifications:</u>
Police personnel were able to operate the equipment in four cities (Jaipur, Kota, Bikaner and Jodhpur)</td></tr>
<tr><td rowspan="2">Road Safety Equipment- Functioning</td><td>All equipment’s to be functional</td><td><u>Alcohol Meters:</u>
<table><tr><th>Equipment Verified</th><th>Working</th><th>Not Working</th><th>%age working</th></tr><tr><td>Jaipur</td><td>190</td><td>4</td><td>98%</td></tr><tr><td>Kota</td><td>21</td><td>18</td><td>54%</td></tr><tr><td>Jodhpur</td><td>17</td><td>8</td><td>68%</td></tr><tr><td>Bikaner</td><td>75</td><td>17</td><td>82%</td></tr></table></td><td><u>Field Verifications:</u>
Not all Alcohol meters are in working condition in 4 cities (Jaipur, Kota, Bikaner and Jodhpur)</td></tr>
<tr><td>All equipment’s to be functional</td><td><u>Speed checking devices:</u>
<table><tr><th>Equipment Verified</th><th>Working</th><th>Not Working</th><th>%age working</th></tr><tr><td>Jaipur</td><td>14</td><td>0</td><td>100%</td></tr><tr><td>Kota</td><td>1</td><td>1</td><td>50%</td></tr><tr><td>Jodhpur</td><td>5</td><td>0</td><td>100%</td></tr><tr><td>Bikaner</td><td>1</td><td>0</td><td>0%</td></tr></table></td><td><u>Field Verifications:</u>
Interceptors in Bikaner and Kota are not in working condition.
Maintenance of equipment’s are not being done.
Details are given in section 4.3.2.1.</td></tr>
</table>

<table>
<tr><th>Audit Point</th><th>Benchmark/ SCC Directive</th><th>State Response</th><th>Consultants Remarks</th></tr>
<tr><td>E-Challans through CCTV</td><td>e-challaning to be done through CCTV with continuous monitoring</td><td>Traffic Police has E-challan system in place in Jaipur.
Number of Challans Issued: 25,287
Number of Challans Collected: No data</td><td>A grant of Rs 2.05Cr has been sanctioned for e-challan system from road safety fund in FY 17-18.
It is proposed to cover all districts in phase wise manner by 2020.</td></tr>
<tr><td>Adequacy of Police Strength</td><td>As per MHA Norms</td><td><u>Traffic Police Personnel:</u>
<table>
<tr><th>Rank</th><th>Total Number</th></tr>
<tr><td>Inspector</td><td>25</td></tr>
<tr><td>Sub-Inspector</td><td>92</td></tr>
<tr><td>Asst. Sub-Inspector</td><td>150</td></tr>
<tr><td>Head Constable</td><td>611</td></tr>
<tr><td>Constable</td><td>2709</td></tr>
<tr><td>Total</td><td>3587</td></tr>
</table>
<u>State Estimated Traffic police Personnel:</u>
<table>
<tr><th>Rank</th><th>Total Number</th></tr>
<tr><td>Inspector</td><td>367</td></tr>
<tr><td>Sub-Inspector</td><td>15</td></tr>
<tr><td>Asst. Sub-Inspector</td><td>2190</td></tr>
<tr><td>Head Constable</td><td>6359</td></tr>
<tr><td>Constable</td><td>7933</td></tr>
<tr><td>Total</td><td>16864</td></tr>
</table></td><td>Shortfall in Police Strength is about 13,277.
The assessment for deployment of police personnel is done based on BPR&D (MHA) norms.
Phase wise sanction of traffic police personnel is requested by nu further action.</td></tr>
</table>

4.3.2.1 Verification of Enforcement Equipment with State Police

Jaipur:

Equipment Inventory Verification			
City name:		**Jaipur**	
Department		**Traffic Police**	
Equipment	**Existing**	**Working**	**In Process**
Alcohol Meters	194	190	No
Interceptor vans	14	14	No
CCTV Cameras	124	114	No
Traffic Police		Total 1215	

Key Observations:

- Police persons are able to operate Alcohol meters.
- Command and Control Centre has been established and in fully operational state from 2006.
- Out of 124 Area Traffic Control System cameras (ATCS) that have been installed across the city, 114 are working while 10 are non-working.
- Use of Integrated Traffic Management System (ITMS) from 2017. 9 speed detection cameras and 30 cameras for red light jumping violation have been installed on the road at 5 locations.
- Total challans issued under ITMS-Over speed is 58,420 and ITMS-RLVD is 30,994.
- E-Challans are being generated by traffic police personnel in command control centre through CCTV monitoring.
- Counselling centre has been established in Ambavadi, Jaipur for traffic violators. 2hrs to 3 hrs of counselling is being given to the traffic violators. 17000 violators were counselled in year 2016
- 1,14,965 number of challans are issued by Traffic Police for traffic in 6 months (from 01/07/2017 to 31/12/2017)
    - Over speeding – 23,910
    - Without safety belt – 20,365
    - Without Helmet - 51,875
    - Talking on mobile while driving – 364
    - Drink and Drive - 3356

Command Control Centre, Jaipur

Counselling centre, Jaipur

		
ITMS Control Centre, Jaipur	***E- Challan Machine with traffic police, Jaipur***	***Interceptor with traffic police, Jaipur***

Kota:

Equipment Inventory Verification			
City name:	**Kota**		
Department	**Traffic Police**		
Equipment	**Existing**	**Working(As per official)**	**Additional requisition in Process**
Alcohol Meters	39	21	No
Interceptor vans	2	1	Yes

Key Observations:

- Drink and drive check is majorly conducted at near alcohol shops and at 5 major circles which include Kesavpura circle, Gumarpur tiraha, Aerodrum circle, Gobria badiya circle, near Hanging bridge in Kota.
- 2 alcohol meters and 1 interceptor are inspected during the audit and found in working condition.
- CCTV based command control system established but e- challans are not issued presently.
- Presently 215 CCTV cameras are laid in the city with 30 days data storage, an additional 1100 CCTV is being planned.
- Once operational, 4 traffic police and 1 operator will be required as per infrastructure requirement.
- 1.48 lakh manual challans were issued on an average for each year for 2015, 2016 and 2017. List of head wise traffic violation challans, police strength is attached as annexure.

Traffic police - Kota

Alcohol meter found in working condition

Interceptor van with speed gun

CCTV command control centre - Kota

Bikaner:

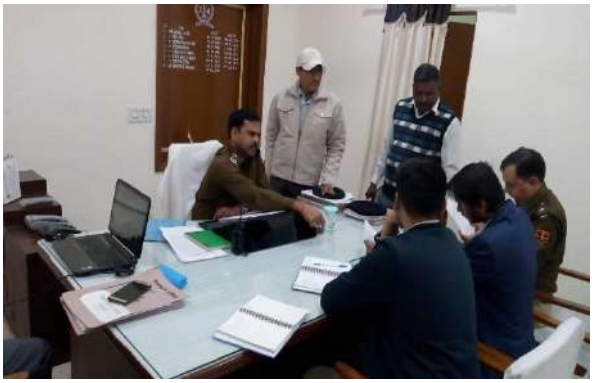
Equipment Inventory Verification			
City name:	**Bikaner**		
Department	**Traffic Police**		
Equipment	**Existing**	**Working**	**In Process**
Alcohol Meters	92	75	No
Interceptors	1	0	Requisition raised for 3 more interceptors
CCTV Camera	465	85	380 are in process to be installed
Traffic Police	115 in Total		

Key Observations:

- Police persons are able to operate Alcohol meters.
- One interceptor is present with traffic police but is not in operation since 2016. The interceptors are not sufficient and requisition request for 3 more interceptors have been raised by Bikaner traffic police.
- Traffic police suggested that a separate maintenance agency to be formed in the city itself for timely maintenance of the equipment.

- At the time of audit, it was observed that, command control centre was operational and is under trial phase. No challans are being issued currently.
- Out of 465 CCTV cameras, only 85 CCTV cameras are in working condition. Video is being recorded and stored for 1 Month.
- All challans are issued manually.
- List of challans issued by traffic police for different offences related to traffic rule violation are shared in the annexure C
- 114965 number of challans are issued by Traffic Police for traffic in 12 months (from 01/01/2017 to 31/12/2017)
    - Rash Driving 112/183 (speed) – 47
    - Without safety belt – 20365
    - Without Helmet - 51875
    - Talking on mobile while driving – 364
    - Drink and Drive - 2040

Command Control Centre, Bikaner



Meeting with Police Officials, Bikaner

Alcohol meter found in working condition

Police highway mobile patrol

Jodhpur:

Equipment Inventory Verification			
City name:	**Jodhpur**		
Department	**Traffic Police**		
Equipment	**Existing**	**Working**	**In Process**
Alcohol Meters	25	17	No
Interceptors	5	5	No
Traffic Police	216 in Total		

Key Observations:

- Police personnel are able to operate Alcohol meters.
- Five interceptor with speed guns are present with traffic police and all are operational.
- Speed checks are conducted on all 5 national highways going out of city within 1 or 2 kms from the speed limit sign boards.
- Command Control Centre is under construction and near completion.
- CCTV cameras were installed on different location of city and is controlled by Traffic Police in Police control room. 1840 E-challans have been issued in year 2017 through 4 CCTVs installed on 4 locations.
- E challans issued through interceptors are only 5 in year 2017 while that from still camera is 369 in year 2017.
- M-challan (mobile based challan), E-Challan and manual challans are issued.
- 59:41 was the ratio of challans issued to challans paid.
- In addition, traffic police persons take photos on the spot and send challans by post and challan receipts are accepted by the citizens through Post office and E-Challans
- List of challans issued by traffic police under 31 heads of offences are shared in the annexure C.
- 164500 number of challans are issued by Traffic Police in 12 months (from 01/01/2017 to 31/12/2017)
  - Rash Driving 112/183 (speed) – 18512
  - Without safety belt – 2966
  - Without Helmet - 34081
  - Talking on mobile while driving – 5021
  - Drink and Drive – 2642
  - E-Challans cases - 2241

Command Control Centre (under construction), Jodhpur

Meeting with police officials, Jodhpur

	
Interceptor van with speed gun, Jodhpur	***Alcohol meter found in working condition***

4.3.3 Traffic Rule Violations – Helmet, Seat belt & Mobile Phone use

Point No. 7: Verify whether the use of helmet has been made compulsory both for driver and pillion rider all over the State and is rigorously checked. Please verify this in 4 Cities in the State and at a stretch of 100 Km each on National Highways, State Highways and Major District Roads.

Point No. 8: Verify whether the seat belt and cell phone laws are being implemented in the State and are rigorously checked. Please verify this in 4 Cities in the State and at a stretch of 100 Km each on National Highways, State Highways and Major District Roads.

The field investigations for studying traffic rule violations were done for four cities and rural stretches – NH, SH and MDR. The cities include Jaipur, Kota, Bikaner and Jodhpur. The Table 4-5 below shows the overall compliance level.

Table 4-5: Compliance level of Traffic Rule Violations

Audit Point	Benchmark/ SCC Directive	Observations based on Field Verifications	Consultants Remarks
State implemented Helmet rule for both Driver & Pillion Rider Implementation of Seat Belt Law & Mobile Phone usage Laws	Rule to be implemented with 100% compliance	Yes	Rule is amended in the State
Average all 4 cities - Helmet Use Violations	No violation	38% (varies from 35% to 53 % in 3 cities) Jaipur = 13%	Helmet use violation is high in cities except in Jaipur. Bikaner is highest with 53%.

Audit Point	Benchmark/ SCC Directive	Observations based on Field Verifications	Consultants Remarks
Average all 4 cities - Seat Belt Use Violations	No violation	45% (varies from 4% to 86%)	Seat Belt use violation is high in cities except in Jaipur. Kota is very height with 86%
Average all 4 cities - Mobile Phone Usage	No violation	4% (varies from 1.3% to 7%)	This is based on the observation from first 100 samples collected from each junction.
NH/SH/MDRs – Helmet Violations	No violation	77% (varies from 71% to 86%)	Helmet use violation is very high on highways compared to urban roads.
NH/SH/MDRs - Seat Belt Violations	No violation	73 % (varies from 52% to 87%)	Very high violation rate on highways.
NH/SH/MDRs - Mobile Phone Violations	No violation	4% Violations (varies from 3% to 4%)	This is based on the observation from first 100 samples collected from each junction.

Detailed violation analysis based on field observations conducted in 4 cities and on rural highways is presented in the following sections.

4.3.3.1 Helmet Violations and Mobile phone driving violations in Urban Stretches

A. Jaipur

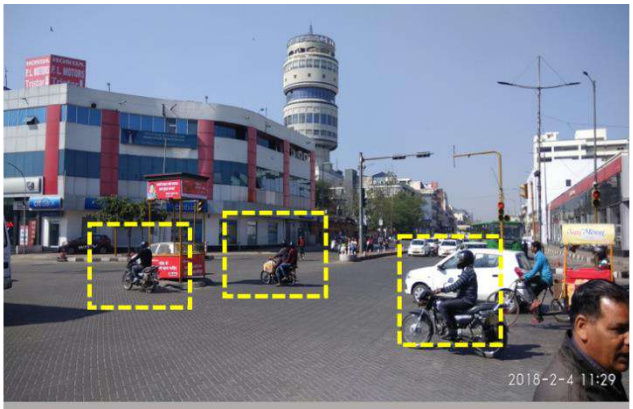
The details of overall compliance of helmet use violations for Jaipur city is presented in Table 4-6.

Table 4-6: Helmet use and Mobile phone driving Violations within Jaipur city limits

 All Drivers Not Wearing Helmet	 Male Drivers Not wearing Helmet	 Female Drivers Not Wearing Helmet	 Pillion Riders Not Wearing Helmet	 2W Drivers Using Mobile Phones while driving
13 %	13 %	16 %	41 %	0.4 %

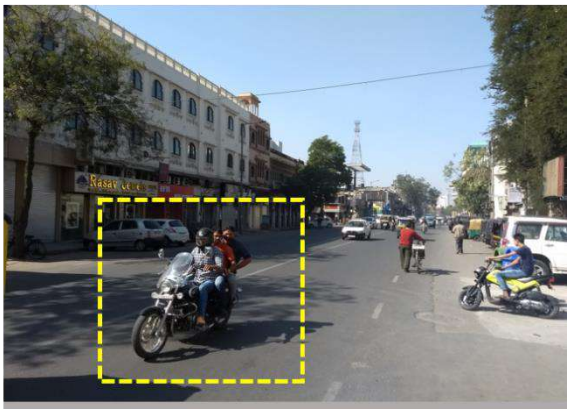
- Helmet violations were mostly observed in pillion riders where 41% of pillion riders were not wearing helmets at surveyed intersections.
- Traffic Police were present at 3 out of the 8 junctions surveyed.

The Exhibit 4-1 below shows few site photos on various violations.



Riders wearing Helmet

Date: 04-02-2018
Location: 26;55;4 75;48;4



Pillion riders without Helmet

Date: 04-02-2018
Location: 26;54;59 75;48;26

Exhibit 4-1: Helmet violations and Mobile phone usage while driving at different parts of the Jaipur City

B. Kota

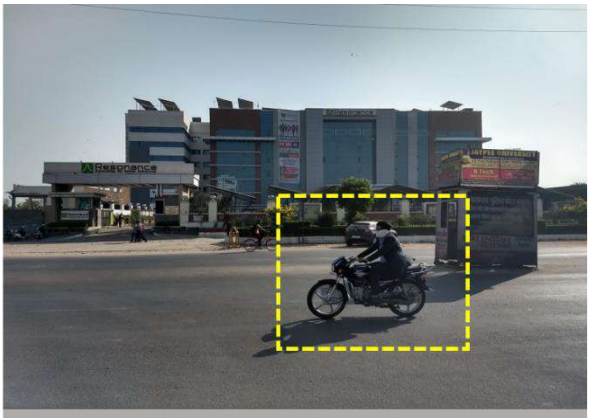
The details of overall compliance of helmet use violations for Kota city is presented in the Table 4-7 below.

Table 4-7: Helmet use and Mobile phone driving Violations within Kota city limits

All Drivers Not Wearing Helmet	Male Drivers Not wearing Helmet	Female Drivers Not Wearing Helmet	Pillion Riders Not Wearing Helmet	2W Drivers Using Mobile Phones while driving
51%	51%	64%	100%	0.6%

- It was observed that almost 50% drivers were not using helmets in Kota city at surveyed intersections.
- Traffic Police were present at 2 out of the 8 junctions surveyed.

The Exhibit 4-2 below depicts the violations observed.



Rider not wearing Helmet

Date: 02-02-2018
Location: 25;8;19 75;51;15

Riders not wearing Helmet

Date: 30-01-2018
Location: 25;9;0 75;49;7

Exhibit 4-2: Helmet Use Violations at different locations of the city in Kota

C. Bikaner

The details of overall compliance of helmet use violations for Bikaner city is presented in the Table 4-8 below.

Table 4-8: Helmet use and Mobile phone driving Violations within Bikaner city limits

All Drivers Not Wearing Helmet	Male Drivers Not wearing Helmet	Female Drivers Not Wearing Helmet	Pillion Riders Not Wearing Helmet	2W Drivers Using Mobile Phones while driving
53%	53%	65%	94%	0.6%

- Almost 50% drivers were not using helmets.
- Helmet violations were mostly observed for pillion riders with 94% not wearing helmets.
- No Traffic Police on any of the junctions at the time of survey.

Exhibit 4-3 shows few site photos on the observed violations.

Helmet Violations of both rider and pillion rider
Dated : 30-01-2018
Location: 28.02505, 73.34395

Riders not wearing helmet
Dated : 02-02-2018
Location: 28.00952, 73.32529

Exhibit 4-3: Helmet Violations at different locations of the city in Bikaner

D. Jodhpur

The details of overall compliance of helmet use violations for Jodhpur city is presented in the Table 4-9 below.

Table 4-9: Helmet use and Mobile phone driving Violations within Jodhpur city limits

All Drivers Not Wearing Helmet	Male Drivers Not wearing Helmet	Female Drivers Not Wearing Helmet	Pillion Riders Not Wearing Helmet	2W Drivers Using Mobile Phones while driving
35%	34%	46%	79%	0.1%

- Helmet violations were mostly observed for pillion riders with 79% not wearing helmets.
- Traffic Police were present at 2 out of the 8 junctions surveyed.

The Exhibit 4-4: Helmet Violations at different locations of the city in Jodhpur**Error! Reference source not found.** below shows few site photos taken during field observation on violations.

Exhibit 4-4: Helmet Violations at different locations of the city in Jodhpur

4.3.3.2 Helmet Use and Mobile phone driving Violations in Rural Highways: NH, SH & MDR

The Percentage of compliance of helmet rule is very less on rural roads which varies from 14% to 29%. Major District Road and State Highways has highest violations. The details of overall compliance of helmet violations on highway sections is presented in the Table 4-10 below.

Table 4-10: Helmet use and Mobile phone driving violations on Highway sections

Type of Rural Highway	All Drivers Not Wearing Helmet	Male Drivers Not wearing Helmet	Female Drivers Not Wearing Helmet	Pillion Riders Not Wearing Helmet	2W Drivers Using Mobile Phones while driving
NH	71%	71%	NA	95%	1.0 %
SH	86%	86%	100%	99%	1.0 %
MDR	75%	75%	92%	98%	2.3 %

4.3.3.3 Seat Belt and Mobile phone Driving Violations within Urban Stretches

A. Jaipur

The details of overall compliance of seatbelt violations for Jaipur city is presented in the Table 4-11 below.

Table 4-11: Seat belt and Mobile Phone Driving Violations within Jaipur city limits

 All Drivers Not Wearing Seatbelt	 Front Seat Passengers Not Wearing Seatbelt	 4W Drivers Using Mobile Phones
4%	3%	1.3 %

B. Kota

The details of overall compliance of seat-belt violations for Kota city is presented in the Table 4-12 below.

Table 4-12: Seat belt and Mobile Phone Driving Violations within Kota city limits

 All Drivers Not Wearing Seatbelt	 Front Seat Passengers Not Wearing Seatbelt	 4W Drivers Using Mobile Phones
86%	32%	4.8 %

C. Bikaner

Overall seatbelt compliance for Bikaner city is shown in Table 4-13.

Table 4-13: Seat belt and Mobile Phone Driving Violations within Bikaner city limits

 All Drivers Not Wearing Seatbelt	 Front Seat Passengers Not Wearing Seatbelt	 4W Drivers Using Mobile Phones
53%	84%	7.0 %

D. Jodhpur

The details of overall compliance of seatbelt violations for Jodhpur city is Table 4-14 below.

Table 4-14: Seat belt and Mobile Phone Driving Violations within Jodhpur city limits

All Drivers Not Wearing Seatbelt	Front Seat Passengers Not Wearing Seatbelt	4W Drivers Using Mobile Phones
36%	75%	2.1%

4.3.3.4 Seat Belt and Mobile Phone Driving violations in Rural Highways: NH, SH & MDR

National Highways has less violations of seat belts compared to State highways and MDR. The percentage of drivers using mobile phone was observed to be higher on MDR with a percentage of 4.3%.

Table 4-15: Seat belt and Mobile Phone Driving violations on Highway sections.

Highways	 All Drivers Not Wearing Seatbelt	 Front Seat Passengers Not Wearing Seatbelt	 4W Drivers Using Mobile Phones
NH	52%	76%	3.3 %
SH	81%	92%	3.0 %
MDR	87%	91%	4.3 %

4.3.4 Extent of Reduction of Human Intervention in Driver Licence Issuance

Point No. 9: Evaluate the driver licensing system in the State and the measures being taken to reduce human intervention in the issue of driving license to the drivers of cars, two-wheelers and commercial vehicles.

Table 4-16: Compliance level of Driver licensing system

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
Reduction of Human Intervention in Issuance of Driving License	Deployment of IT systems and creation of central database system	SARATHI 4.0 (Web Based) system has been implemented in 44 out of 53 RTO centres. Plans to implement in other centres by march 2018.	It has been verified in Jaipur, Kota, Bikaner and Jodhpur RTO centres.
Rule Familiarization test (Learners License)	To be Computerised	Computerised Through STALL test (screen test aid).	Verified in RTO at Jaipur, Kota, Bikaner, and Jodhpur. Percentage of pass ranges from 65% to 85% in different RTO.
Driving Skill Tests	Automated	Only Manual tests are being conducted. 41 out of 53 centres/dist. have manual test tracks. While the remaining 12 don't have test tracks, hence tests are done on road.	Currently there are no Automated Driving Test Track centres (ADTC) in the state. Plans for establishing 37 ADT Centres in the state in two phases. In the first phase 13 centres would be automated and Rs 30cr has been sanctioned for the same from RSA Fund.
Special driving tests for construction vehicles and other over-dimensional vehicle	There should be special driving skill tests	No special tests are conducted for construction vehicles and over dimensional vehicles.	Not done as the current MV Act does not have the provision.

4.3.4.1 Field Verification of Driving Licensing System, Vehicle Checks at regional Transport Office

Jaipur:

Driving Licensing System Verification	
City name:	**Jaipur**
Department	**Regional Transport Office**

Key Observations:

- Jaipur City have 3 Regional Transport Offices, tests for learner's license was computerized in all the 12 RTO's
- The driving test was conducted manually for both private and commercial vehicles under the purview of Inspector.
- Automatic driving test tracks are not yet constructed.
- The commercial vehicles are being checked annually along with speed governors.
- Due to lack of space, the commercial vehicle checks were mostly done along the major roads
- The school buses are being checked annually for road safety
- The private driving schools are being audited by the RTOs.

Kota:

Driving Licensing System Verification	
City name:	**Kota**
Department	**Regional Transport Office**

Key Observations:

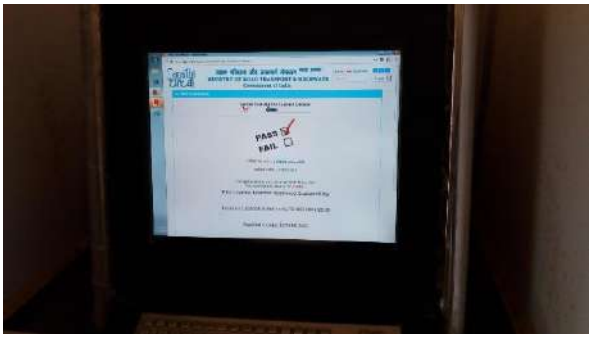
- Driving License System in Kota and Learning license test are computerized
- The driving test tracks are manual for both private and commercial vehicles. Presently tested under the purview of Motor Vehicle Inspector.
- 35% LL seekers are failed the LL test held between 22/1/2018 to 25/12/2018.
- Automated driving test tracks are under construction.
- 8% DL seekers are failed the DL test held between 22/1/2018 to 25/12/2018.
- The private driving schools are being audited by the RTO, but no documents on audit observations are produced to the audit team during the visit
- The commercial vehicles are being checked including speed governors by department flying squad at the time of annual fitness. Sample check list is attached in Annexure
- The school buses are being checked for road safety at random. Sample check list is attached in annexure
- 1098 driving licenses are suspended by RTO against 1423 violations last year i.e, between 27-02-2017 to 09-01-2018

	
RTO, Kota	***Computerised Learner License Test kiosk***
	
Under construction of Automated Driving Test Track - Kota	***RTO, Kota***

Jodhpur:

Driving Licensing System Verification	
City name:	**Jodhpur**
Department	**Regional Transport Office**
Key Observations: • Driving Licensing system was computerized at Regional Transport Office, Jodhpur. • The test for learner's license was computerized. • 97 per cent pass percentage for learner's license test during test held between 01-02-2018 to 06-02-2018. Details attached in Annexure • The commercial vehicles are being checked on routine basis. Speed governors are being checked and challans are issued for mini buses (city buses) as per High court-Jodhpur directions.	

- The driving test tracks were not computerized for both private and commercial, tests was conducted by Motor Vehicle Inspector manually.
- The school buses are being checked under Bal Vahini scheme.
- The private driving schools are being audited by the RTO in every 2-3 months.



Computerized Learning Licence test in RTO Jodhpur

Temporary driving test tracks (RTO premises under construction), Jodhpur

Bikaner:

Driving Licensing System Verification	
City name:	**Bikaner**
Department	**Regional Transport Office**

Key Observations:

- Driving Licensing system was computerized at Regional Transport Office, Bikaner.
- Test for learner's license was computerized in RTO.
- 73 per cent pass percentage for Learner's license seekers during 15-01-2018 to 26-01-2018. Annexure attached.
- The driving test tracks were not computerized for both private and commercial, tests was conducted by Motor Vehicle Inspector manually.
- The commercial vehicles are being checked annually including speed governors. Also routine drives are conducted by flying squads for checking.
- The school buses are being checked generally at the time of issue or renewal of fitness certificate.
- Private driving schools are being audited by the RTO once/twice a year.

	
Computerized Learning Licence test in RTO Bikaner	***Driving test tracks in RTO Bikaner (manual)***
	
Training and Test Centre for Learning Licence, RTO Bikaner	***Factsheet update from Regional Transport Officer, Bikaner***

4.3.5 Status of DL Computerisation, Repeated Violators, Separate Police Teams

Point No. 10: Examine whether the driver licensing data has been computerized and fed into a Central Data Base so that Licensing Authority can verify whether an applicant has obtained the License from another Licensing Authority.

Point No. 11: Examine whether the traffic violations are linked with drivers' licenses, and records of violations kept and updated so that repeated violators can be identified for appropriate action.

Point No. 12: Examine whether separate unit/ team with necessary equipment has been set up to patrol National/ State Highways and traffic violations.

Table 4-17: Compliance level of Driver License Computerisation

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
Status of Computerisation of DL data for all vehicles & Fed and linked to Central Database	Fully Computerised for all vehicles Fed and linked to Central Database	Implemented SARATHI 4.0. This enables to check duplicate driver licence from another RTO. All licences are digitized after 2005.	Driving Licence data for vehicles is fed and linked to central database.
Able to link Traffic Violations data against DL records and keep updated for identifying repeated violators	System and infrastructure availability with Police to issue e-challans for violators	Not updated. The reasons include: 1. Computer systems not in place. 2. Lack of equipment.	Once Sarathi 4.0 is fully implemented, the violation data can be linked with DL.
Identifying repeated violators	First time violators to be given 2 hour counselling plus challan before releasing DL of the second time violators to be suspended for three months	First time violators: Challans are issues and Counselling sessions are conducted for 2 to 3 hrs.	There is no system to check the repeated offences of the offender, hence, unable to penalise such offenders. Every offence is treated a new offence.
Deployment of Separate Units	Separate units for NH/SH patrolling and Traffic violation	5 Highway flying squads have been sanctioned under transport department, but not yet deployed.	Cameras are made available for the enforcement teams.

4.3.6 Status of Driver Training Institute & Vehicle Inspection Centres

Point No. 21: Verify the status on Driving Training Institutes and Vehicles Inspection Centres sanctioned by the MoRTH for the State. In addition to above, where the Centres are functional, have they been audited to see they are functioning properly?

Table 4-18: Compliance level of Operation of DTI and VIC Centres

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
Status of Driver Training Institutes Sanctioned by MoRTH	Sanction Status by MoRTH-DTI sanctioned by MoRTH	One IDTR at Relmagra, Rajasmand district was sanctioned by MoRTH	IDTR has received MoRTH-GoI funding.
Functional Status of Driver Training Institutes	DTI sanctioned by MoRTH to be functional	IDTR at Relmagra is operational.	Audit details of the Relmagra IDTR are given in section 4.3.6.1.
Status of VIC sanctioned by MoRTH & Working Condition	VIC sanctioned by MoRTH to be functional	One VIC is sanctioned by MoRTH at Relmagra, Rajsamand district. Construction completed by Not Operational as there is no equipment. Circuit works are pending and equipment needs to be repaired. It was never officially started.	VIC at Relmagra has been visited and found non-operational. Officials indicated that, just before the commissioning of VIC Centre, the building and equipment's got damaged due to flood.

4.3.6.1 Driving Training Institute

To verify the status on Driving Training Institutes (DTI) sanctioned by the MoRTH for the Rajasthan State, field investigation teams have audited IDTR centre in Relmagra. Along with this, teams have also audited state funded DTI centre in Ajmer.

Detailed audit observations are discussed in the following paragraphs.

Ashok Leyland Vehicle Driver Training Institute, Relmagra:

Status of DTI Railmagra was audited on the basis of guidelines for Institutes of Driving Training and Research (IDTR) and Regional Driver Training Centre (s) - (RDTCs) by MoRTH under

12th Five Year Plan. The key parameters audited are not only limited to operational status but also includes physical infrastructure and equipment's availability at the institute. The following . below shows the status of DTI under various parameters.

Table 4-19: Status of Driver Training Institute, Relmagra

Audit parameter	Status / recorded answer	Remark
Operational Status	Yes (Since Dec 2014)	MoRTH Sanctioned
Buildings	Yes	Adequate
Furniture & Fittings	Yes	Adequate
Teaching and training Equipment	Yes	Adequate
Workshop Equipment	Yes	Adequate
Testing Equipment	Yes	Adequate

- DTI Relmagra is well equipped with required infrastructure and standardized equipment's prescribed by MoRTH.
- Modules for both fresher & refresher courses are available and taught.
- Manual driving test tracks are available as per MoRTH guidelines.
- Advance simulator is available for training of HMV drivers only and not for LMV drivers.
- As an initiative to promote road safety awareness amongst drivers, institute has signed MoU's with Rajasthan skills & livelihood Corporation(RSLDC) for running driver training courses & Hindustan Zinc Ltd. for HMV driver training

Exhibit 4-5 below shows visuals of Driving Training Institute, Relmagra.

Cut Section Model of 6 Cylinder Diesel Engine

Test Tracks

Classrooms

Canteen

Workshop

Hostel

Exhibit 4-5: Visuals from Vehicle Driver Training Institute, Relmagra

Details of Driving Training Institute – Ajmer

Status of DTI Ajmer was audited on 06th of February 2018 based on 12th Five Year Plan of guidelines for Institutes of Driving Training and Research (IDTR) and Regional Driver Training Centre (s) - (RDTCs) by MoRTH. The key parameters audited include but not limited to operational status, physical infrastructure and equipment's availability at the institute. The following .20 below shows the status in various parameters.

Ajmer driving training institute is built in 17 acres of land and is operational . DTI Ajmer is well equipped with one library, three driving training simulators, 3-point and 5–point turn, 8 shaped bend and reversing box training tracks. Details of the plan and the response formats are attached in annexure.

Table 4-20: Status of Driving Training Institute in Ajmer

Audit parameter	Status / recorded answer	Remark
Operational Status	Yes	
Buildings	Yes	**Adequate** with 9 class rooms, 2 staff rooms, one each of driving laboratory, workshop canteen and hostels
Furniture & Fittings	Yes	**Adequate**
Teaching and training Equipment	Yes	Adequate and are in working condition, but Static models in driving procedures are not available(mentioned as not mandatory)
Workshop Equipment	Yes	Available
Testing Equipment	No	Available
 **DTI – Training Classroom**	 **Cut section models**	 **Training track**
 **2 wheeler simulator**	 **Car simulator**	 **Hostel building**

Key Observations:

- 7 member staff are employed for operation of DTI.
- 1 month training course for fresh license applicants yet to begin as hostel furniture is not ready

4.3.6.2 Vehicle Inspection Centre

To verify the status on Vehicle Inspection Centre (VIC) sanctioned by the MoRTH for the Rajasthan State, field investigation teams have audited VIC centre in Relmagra. Along with this, teams have also audited state funded VIC centre in Ajmer.

Vehicle Inspection Centre (VIC) – Relmagra

Status of VIC Railmagra was audited on the basis of scheme/guidelines issued by MoRTH for setting up the Inspection and certification centre for Motor Vehicles. The key parameters include operational status, emission and equipment infrastructure availability at the institute.

VIC at Relmagra has been visited and found non-operational. Officials indicated that, just before the commissioning of VIC Centre, the building and equipment's got damaged due to flood in July, 2016. A joint inspection team had been constituted by MoRTH thereafter consisting of representatives from ARAI, RTO, DTO, PWD and Rosmerta Technologies Limited which submitted their inspection report on 21/7/2016. The same has been attached in Annexure.

Despite being all the inter departmental communication, vehicle inspection centre has not been able to come into operation since repair works are still pending with various departments including PWD, PHED, AVVNL, BSNL etc.

The following table presents the status against these parameters.

Table 4-21: Status of Vehicle Inspection centre in Relmagra

Audit parameter	Status / Recorded answer	Remark
Operational Status	Non-operational	Non-operational since 13/7/2016 due to flooding in entire complex
Equipment Infrastructure Inspection	-	2 LD inspection lanes & 2 HD inspection lanes, equipped with Roller brake tester, Speedo meter tester, Headlight tester, Sideslip tester and Suspension tester
Emission Infrastructure Inspection	-	Equipped with Opacity meter and Gasoline
Visual Inspection and Inspection process flow	-	-
Enforcement	-	-

Exhibit 4-6: Visuals from Vehicle Inspection Centre, Relmagra

Vehicle Inspection Centre (VIC) – Ajmer

Status of VIC Ajmer was audited on 06th of February 2018 based on guidelines for setting up the Inspection and certification centre for Motor Vehicles issued by MoRTH. The key parameters include operational status, emission and equipment infrastructure availability at the centre. The following table presents the status against these parameters.

Table 4-22: Status of Vehicle Inspection centre in Ajmer

Audit parameter	Status / recorded answer	Remark
Operational Status	Yes	
Equipment Inspection Infrastructure	Yes	Only one inspection lane available for both LMV and HMV's inspection. Whereas Roller brake tester, Speedo meter tester, Headlight tester, Sideslip tester and Suspension tester area available in one each.
Emission Inspection Infrastructure	Yes	Equipped with Opacity meter and Gasoline one each
Visual Inspection and Inspection process flow	Followed	
Enforcement	Yes	Frequency of enforcement drives – every six months and records are maintained on daily basis in register. Details attached in annexure

It was observed, that VIC in Ajmer is meeting all guidelines prescribed by MoRTH. The inspection report by ARAI, plan, sample vehicle test report for LMV and HMV are attached in annexure.

Exhibit 4-7: Vehicle Inspection Centre – Ajmer

4.3.7 Commercial Vehicle RC Renewals & Status of Annual School Bus Checks

Point No. 25: Verify whether commercial vehicles are being strictly checked from safety point of view at the time of renewal of registration.

Point No. 26: Verify whether school buses are being checked on an annual basis to ensure their safety and road worthiness.

Table 4-23: Compliance level for implementation of Commercial vehicle RC Renewal and Vehicle checks

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
Checks for Road Safety Aspects-	Commercial vehicles to follow Comprehensive Check list (reflective tape, Rule 62 CMVR, Rule 93 CMVR etc)	Private fitness centres have been allowed to check commercial vehicles. 18 Pvt centres have made available. One fitness centre at has been established at Ajmer which belongs to RSRTC & IL&FS joint venture.	Visual Inspection are done for commercial vehicles at RTO centres also.

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
School Bus & Road Worthiness Check annually	Exclusive State Policy for checks on School Bus Safety Follow comprehensive Check List (Colour/ FAB/ Reflective tape/fire eqmt./ Speed governor etc.)	Yes checked. New Vehicle for every 2 year Old vehicle for every year	Checks are being done according to rule 5.19 (4A) of Rajasthan Motor Vehicle Rule 1990 and Bal Vahini Scheme vide order no. 10(738)/Pari/Road Safety/Bal vahini/2017/38471 dated 29th June 2017. The school bus committee has participation of parents.
Checking of other vehicles carrying school children	Vehicles other than schools buses carrying school children should be checked	Yes random checks are being conducted outside the schools.	Mainly, overloading is being checked.

4.3.8 Status of Audit of Driving Schools, Sale of Standardised Helmets and cycles

Table 4-24: Compliance level of Audit of for implementation of Commercial vehicle RC Renewal and Vehicle checks

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
Audit of Driving Schools in the State	All Driving Schools to be audited annually	Transport department inspectors conducts audit half yearly and annually.	Records of the same have been checked at Jodhpur and Bikaner RTO.

<table>
<tr><th>Audit Point</th><th>Benchmark/ SCC Directive</th><th>State Response</th><th>Consultants Remarks</th></tr>
<tr><td></td><td></td><td>No third party audits of driving schools are conducted.</td><td></td></tr>
<tr><td>Sale of Standardised Helmets</td><td>All helmets sold in the state are of BIS/ISI Standards</td><td>Verified from site</td><td>About 25% to 30% helmets sold in 4 cities are non BIS standards.</td></tr>
<tr><td>Helmet Locking Facility</td><td></td><td></td><td>Verified in 4 cities. % of 2W without any locking facility are:
<table>
<tr><th>City</th><th>No locking facility in 2W</th><th>Own arrangement + Scooty Dicky</th></tr>
<tr><td>Jaipur</td><td>64%</td><td>36%</td></tr>
<tr><td>Kota</td><td>57%</td><td>43%</td></tr>
<tr><td>Jodhpur</td><td>60%</td><td>40%</td></tr>
<tr><td>Bikaner</td><td>71%</td><td>29%</td></tr>
</table></td></tr>
<tr><td>Sale of cycles with appropriate reflectors</td><td>All cycles to be sold with 10 numbers of reflectors per each cycle.</td><td>Verified from site</td><td>Above 90% cycles kept for sale in shops are observed to be fitted with reflectors.</td></tr>
</table>

4.3.9 Status of reflectors on Cycles

As per Supreme Court Committee direction, 10 reflectors are required to be fitted on a cycle. The figure below provides the location at which the reflectors to be fitted before sale.

Figure 4-1: Cycle with 10 Reflectors for Safety

The table below provides the observation from field investigation.

Table 4-25: No. of cycle shops visited and compliance status

Sl. No.	City	No. of shops visited	No. of Cycles observed	% of Cycle with Reflectors*	% of Cycle without Reflectors**
1	Jaipur	2	41	96%	4%
2	Kota	2	34	90%	10%
3	Jodhpur	2	44	91%	9%
4	Bikaner	2	38	92%	8%

**Cycles with Reflectors – Branded cycle with reflectors fitted by the company itself*

*** Cycles without Reflectors include –*

- Toddler's cycle with 3-4 reflectors only
- Local cycle without reflectors – Reflectors are fitted by dealer as per customer choice while selling it to them.

Branded cycles with all 10 reflectors for safety

Local cycle without reflectors

Exhibit 4-8: Cycle shops audit in Rajasthan

4.3.10 Status of BIS standard Helmets

The table below provides the vendors visited in each city and the status of compliance to sale of helmets with BIS mark.

Table 4-26: No. of helmet vendors visited and compliance status

Sl. No.	City	No. of shops visited	% of Helmet with BIS mark	% of Helmet without BIS mark
1	Jaipur	2	60%	40%
2	Kota	2	70%	30%
3	Jodhpur	2	80%	20%
4	Bikaner	2	70%	30%

Helmets with BIS mark

Helmets without BIS mark

Helmets vendors

Exhibit 4-9: Helmet vendors audit in Rajasthan

4.3.11 Opinion Survey on Helmet Locking Facility

The table below provided the parking lots visited in each city and the opinions on locking of helmets by users.

Table 4-27: Opinion of locking of helmets

City	No facility within bike	Own Arrangement +Scooty Dicky
Jaipur	64%	36%
Kota	57%	43%
Jodhpur	60%	40%
Bikaner	71%	29%

4.3.12 Summary Observations – Enforcement Dimension

- MoRTH format is proposed to be used for Accident Recording and Reporting from April 2018.
- Accident Recording formats are not computerised and GIS based Accident Information system is not deployed.
- Computerised Accident Database Systems are not deployed
- Accident data is not utilised for improving road safety.
- No Analysis is done for accident data and no reports are published which are available to public.
- MHA norms are not being followed for estimation of equipment.
- Interceptors in Bikaner and Kota were not in working condition.
- A plan is being made to implement E challan system in all districts by 2020.
- Significant shortfall in existing police strength. It is estimated by the state that this short fall for all position is about 13277. At present there is no plan in place to fill this gap.
- Helmet and seatbelt law violations are very high in all cities except in Jaipur
- SARATHI 4.0 system has been implemented in 44 out of 53 RTO centres for reduction of human intervention in issuing license.
- Currently, there are no Automated Driving Test Track Centres (ADTC) in the state.
- Traffic violations data is not updated against DL data due to lack of complete infrastructure.
- Challans are issued and Counselling sessions are conducted for 2 to 3 hrs for traffic violators.
- IDTR at Relmagra is sanctioned by MoRTH and is operational. VIC at Relmagra sanctioned by MoRTH is under repair and non-functional.
- For issuance of fitness certificate for commercial vehicles 18 pvt centres have been established.
- The school bus committee has participation of parents.
- Auto rickshaws are also used for transporting students to schools.
- Only overcrowiding checks are being done for all unauthorized vehciles carrying school children.

4.4 ENGINEERING DIMENSION

Engineering dimension falls under the purview of both NHAI and State Public Works Department (NH and Buildings & Roads) & Urban Local Bodies. Police Department also has some role in terms of identification of Black spots.

Various aspects covered under this dimension are:

- Development of Protocol for detection and rectification of black spots and its implementation
- Road safety audit studies during various stages of road construction
- Field verification for black spots
- Field verification of traffic calming measures
- Field verification for traffic signage's, traffic lights and road markings for its adherence to IRC standards
- Field verification of presence of dangerous and distractive hoardings
- Field verification for provision of wayside amenities/ Laybyes
- Field verification for extent of availability of pedestrian facilities

4.4.1 Black Spots Protocol – For Identification, Rectification and Monitoring

Point No. 14: Verify the arrangements made by the State for detection of Black Spots and their rectification and assess the efficacy of the rectification measures both on the State roads and National Highways. Provide a summary of Short- term and Long-term remedial measures proposed and the action already taken for implementation of these measures.

Point No. 15: Verify whether the protocol for identification, rectification and monitoring of black spots, as directed by the Committee, has been drawn up and is being implemented.

Table 4-28: Compliance level - Implementation of Black spots protocol

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
Arrangements made by the States for detection of Black spots	Clearly defined process for detection rectification of black spots	NHAI: MoRTH definition of blackspot is followed. Also, Police department identifies the blackspots based on MoRTH definition and send to PWD for further action. PWD& RIDCOR: Police department identifies the blackspots based on MoRTH	**NHAI** Black spots were identified by two different departments (MoRTH & State Traffic Police departments) for National Highways under NHAI. One set of black spots are identified by MoRTH based on 2011, 12, 13 and 14 data in the year 2015. Another set of black spots were identified by Traffic police in 2016 & 17 and

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
		Definition and send to PWD for further action.	submitted to NHAI for further action. **<u>PWD & Others department Roads</u>** Police department identifies the black spots based on MoRTH definition. There is no notified protocol stating the definition of Black spots.
Protocol Status	Notification of Protocol for identification, rectification and monitoring of black spots	<u>State Roads:</u> As per the circular, as interdepartmental process is defined, wherein Police Department identifies the Black Spots and send to SE-PWD. A joint inspection will be carried out and remedial measures would be finalised. Then the rectification measures will be undertaken by PWD after F&A approvals. <u>NHAI Roads:</u> MoRTH protocol wasa followed for blackspots identified till 2015. The process is not continued after 2015.	Total 963 black spots were identified in the state in 2017. Out of that 574 black spots are on NHs inclcuding roads under NHAI. There is no protocol for monitoring of rectified blackspots on State Roads.
Assess the efficacy of the rectification measures both on SH and NH	Verify from Site	Site verification of Black spots on: NHs=8 SHs=2	Refer Section 4.4.2 for details:

4.4.2 Details of Black spots - Field verification

The table below shows the auditors observation based on the field verification at the identified black spots. These observations are focussed on existence of various types of remedial measures on ground as against the reported list of remedial measures undertaken by the respective authorities to SCCRS. Few photo references are also provided in Exhibit 4-10 to Exhibit 4-14.

Table 4-29: Status of Rectification measures provided at black spots

Road Name or Black spot location	Stated Rectification measures by the Authority to SCCRS (submitted by the state)	Ground Truth Observations/ Status of Rectification measures observed	Comments/ Observations
Black Spots Under National Highway Authority of India			
Ch. 104+870 (NH 14)	ROB has been provided in Four Laning of Beawar-Pali-Pindwar section of NH 14. Traffic plying on ROB since July, 2014.	• ROB is provided. • All required signages and pavement marking provided.	Rectified (Refer Exhibit 4-10)
Ch. 174+600 (NH 14)	VUP of size 10.50 x 5.0 m along with service road in adequate length provided in village Netra.	• VUP is provided. • Road marking is not visible on service road. • Absence of height limit sign board for VUP. • Side drain are found under construction.	Partially Rectified Signage are required. (Refer Exhibit 4-11)
Ch. 179+000 to Ch. 189+600 (NH 14)	Bypass of Sumerpur town provided. All heavy commercial vehicles plying on bypass.	• Bypass is provided. • All required signages, pavement marking provided. • Zebra crossing provided at intersection. • Flashing Beacons provided at the start of bypass	Rectified (Refer Exhibit 4-12)
Ch. 21+000 to Ch. 30+500 (NH-29)	• Highway developed for four laning along with junction improvement. • Necessary signages and road markings have	• Junction improved. • All required road markings, signages and blinker are provided • Delineators and pedestrian railing also provided	Rectified

Road Name or Black spot location	Stated Rectification measures by the Authority to SCCRS (submitted by the state)	Ground Truth Observations/ Status of Rectification measures observed	Comments/ Observations
	been done along with blinkers on the spots. Additional signages as per requirement of traffic police are also provided.	• Sight distance, horizontal and vertical geometry improved.	
Ch. 32+944 (NH-12)	Highway developed for four laning along with construction of bypass for Chaksu town. Necessary signages and road markings have been done along with blinkers on the spots.	• Bypass is provided • Sight distance, horizontal and vertical geometry improvement was done. • All required road markings and signages are provided. • Blinkers are provided.	Rectified
Ch. 233+750 to Ch. 234+250 (NH-8)	Unauthorised median cuts has been closed	• Road signs and markings are provided. • Flashing lights are provided • Crash barrier also provided.	Partially Rectified
Ch. 356+000 to Ch.356+500 (NH-8)	• Traffic Blinker light has been provided by Concessionaire to caution the traffic. • Cautionary signboards have been provided. • Zebra crossing, pavement markings have been provided to regulate the flow of pedestrians.	• Blinker is provided. • Road signs and markings are provided. • Delineators are provided • Crash barrier also provided • Flashing lights are provided • Sight distance, horizontal and vertical geometry improvement was done.	Rectified

Road Name or Black spot location	Stated Rectification measures by the Authority to SCCRS (submitted by the state)	Ground Truth Observations/ Status of Rectification measures observed	Comments/ Observations
Ch. 25+200 to Ch.29+500 (NH-12)	• Highway developed for four laning along with junction improvement. • Necessary signages and road markings have been done along with blinkers on the spots. • Additional signages as per requirement of traffic police are also provided.	• Road signs and markings are provided but cross road sign was missing. • Junction improvement was done • Flashing lights are not provided	Partially Rectified
Black Spots under PWD			
Near Nakhat Banna Temple, Jodhasar (NH 11, Bikaner – Jaipur Road)	• Cautionary board are fixed. • Zebra crossing made.	• No cautionary sign boards. • No zebra crossing. • Pavement markings not visible.	**Not Rectified** As per the road geometry at the black spot side, there is a requirement of more rectification measures like providing crash barrier, access control to prevent entry of animals onto highway. (Refer Exhibit 4-13)
Near Barkha factory, Rohi Sereuna (NH 11, Bikaner – Jaipur Road)	• Cautionary board are fixed. • Zebra crossing made.	• Cautionary sign boards are provided. • Absence of zebra crossing at the location.	Partially Rectified Maintenance is required.

Road Name or Black spot location	Stated Rectification measures by the Authority to SCCRS (submitted by the state)	Ground Truth Observations/ Status of Rectification measures observed	Comments/ Observations
		• Due to excess vegetation, signs are not visible. • Road delineators such as road studs and roadway indicators are provided • Absence of speed reduction measures.	(Refer Exhibit 4-14)

Photo References for Black spots have been provided below. Refer Table 3-2, in previous chapter for exact location details of these blackspots.

ROB is provided and Required road signs, road markings are provided

Exhibit 4-10: Visuals of rectification measures at Ch. 104+870 (NH 14)

Exhibit 4-11: Visuals of rectification measures at Ch.174+600 (NH 14)

Exhibit 4-12: Visuals of rectification measures at Ch. 179+000 to Ch. 189+600 (NH 14)

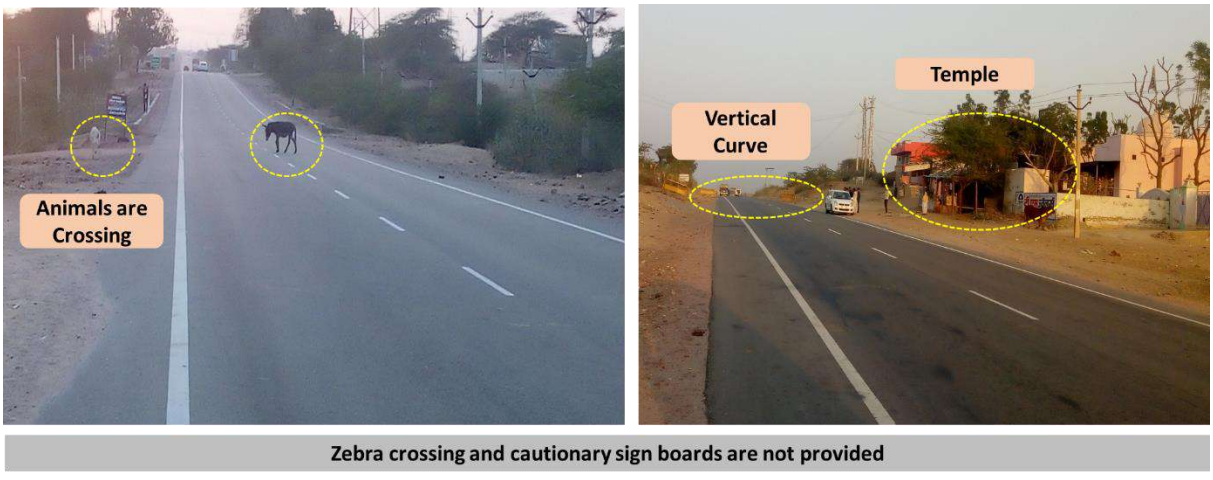


Exhibit 4-13: Visuals of rectification measures Near Nakhat Banna Temple, Jodhasar (NH 11, Bikaner – Jaipur Road)

Exhibit 4-14: Visuals of rectification measures Near Barkha factory, Rohi Sereuna (NH 11, Bikaner – Jaipur Road)

4.4.3 Road Safety Audits by Road Authorities

Point No. 16: Verify whether Road Safety Audits are being conducted during the design, construction and operation of roads and the recommendations of the Road Safety Audits are being implemented. Indicate the %age of roads which have been subjected to road safety audits at different stages. Whether the completion meetings are held for finalizing audit recommendations

Table 4-30: Compliance level of conducting the Road Safety Audits

<table>
<tr><th>Audit Point</th><th>Benchmark/ SCC Directive</th><th>State Response</th><th>Consultants Remarks</th></tr>
<tr><td>Conduct Road Safety Audits</td><td>The notified protocol should be for conducting RSA during design, construction and operations</td><td>
<table>
<tr><td></td><td>NHAI</td><td>PWD</td><td>RIDCOR</td><td>RSRDCL</td></tr>
<tr><td>Exisitng Highways</td><td>Yes</td><td>No</td><td>Yes</td><td>Yes</td></tr>
<tr><td colspan="5">For New Highways/ Highway Widenings</td></tr>
<tr><td>During Design</td><td>Yes</td><td>Yes</td><td>No</td><td>No</td></tr>
</table>
</td><td>Same has been verified through work orders issued to the respective third party consultants provided by NHAI, PWD,</td></tr>
</table>

<table>
<tr><th>Audit Point</th><th>Benchmark/ SCC Directive</th><th>State Response</th><th>Consultants Remarks</th></tr>
<tr><td rowspan="2"></td><td>All Roads during Design</td><td>
<table>
<tr><td>During Construction</td><td>Yes</td><td>Yes</td><td>No</td><td>Yes</td></tr>
<tr><td>During Operations</td><td>Yes</td><td>Yes</td><td>No</td><td>No</td></tr>
</table>

<u>NHAI:</u> Total 2159 km of NHs were audited for Road Safety.

In Additon, 3458 kms ongoing.

- 1927 km design stage
- 1116 km at construction stage)
- 515 km in O&M stage

<u>PWD:</u>

RSA for 979 km of SHs are ongoing

<u>RIDCOR:</u> RSA for 49 Km of NHs, 1237 Km of SHs and 117 Km of MDR were conducted.

<u>RSRDCL</u>: RSA for 1114 Km of SHs and 142 Km of MDRs have been conducted. In addditon, RSA for 721 Km of SHs and 178 Km of MDRs is ongoing.</td><td>RIDCOR and RSRDCL.</td></tr>
<tr><td>All roads during Construction and operations</td></tr>
<tr><td rowspan="2">Completion meetings are held for finalising audit recommendations for road safety audits</td><td rowspan="2">Completion meetings to be held and list of finalised recommendations adopted for implementation to be drawn</td><td>NH: Completion meetings are conducted.</td><td>Final audit reports have been verified.

No completion meeting minutes were maintained. Final reports are treated as completion minutes.</td></tr>
<tr><td>SH & MDR: No completion meeting</td><td>No audit completion meetings are conducted.</td></tr>
</table>

4.4.4 Field Audit Findings – Traffic Calming Measures

Point No. 17: Verify the extent of traffic calming measures adopted by the State like rumble strips, speed breakers, road signage etc. at 50 locations in the State where lower hierarchy roads merge with higher hierarchy roads and are accidents prone. Whether Speed Governors are installed in existing commercial vehicles and the instructions issued by the Committee in this regard are being followed

4.4.4.1 Data Collection for Traffic Calming Measures at State Level

To verify the extent of traffic calming measures adopted by the State of Rajasthan, a total of 58 intersections were surveyed where lower hierarchy roads merge with higher hierarchy roads. A typical such intersection is shown in Exhibit below.

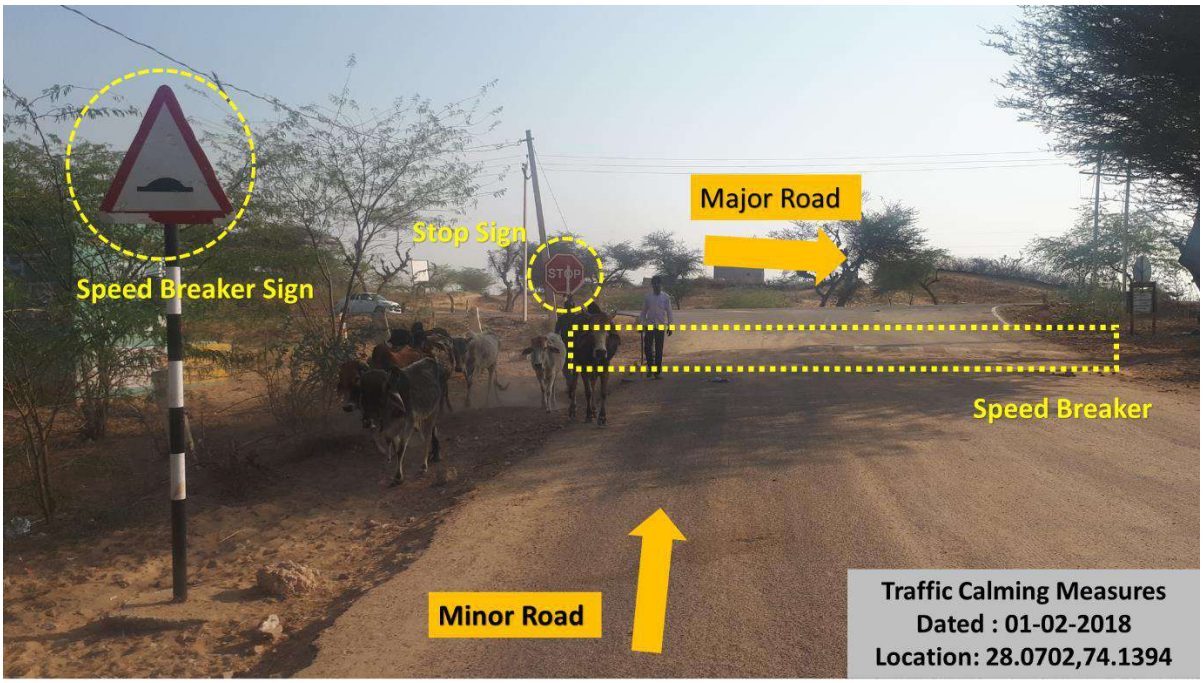


Exhibit 4-15: A Junction showing Minor Road Intersecting the Major Road in Bikaner

Basically two types of speed reducing measures have been taken into consideration for the purpose of data collection.

1) Visual Measures, which includes Traffic Signs, Road Markings, Flashing Beacons etc.
2) Physical Measures, which includes provision of Rumble Strips, Speed Breakers, Speed Tables, Deceleration/Acceleration Lanes etc.
3) Field investigations were carried out separately for rural highways and urban roads. Following table shows the number of intersections investigated against each category of road hierarchy.

Table 4-31: Number of samples collected with respective hierarchy of roads

Minor Road Intersecting With	Sample Size (No of Intersections)
NH	25
SH	14
MDR	7
UR	12
Total	**58**

TCM analysis has been done for the following categories separately.

A) National Highways
B) State Highways
C) Major District Roads
D) Urban Roads

The analysis findings are presented below:-

4.4.4.2 Traffic Calming Measures of Intersections present on National Highways

A total of 25 junctions were inspected on NH to ascertain the provision of traffic calming measures provided at these junctions

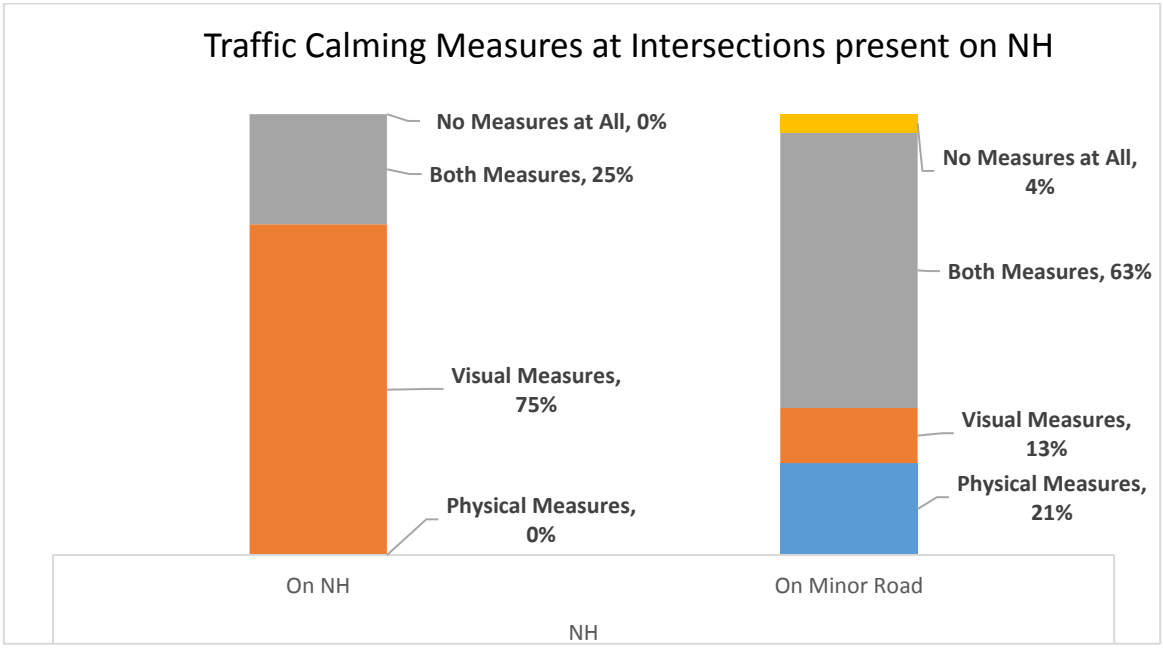


Figure 4-2: Provision of Traffic Calming Measures present on National Highways (NH)

As observed from above Figure –

<u>On Major Road (NH)-</u>

All junctions had traffic calming measures on NH. 75% junctions had visual measures and 25% junctions had both physical and visual measures.

On Intersecting Minor Road -

96% junctions had traffic calming measures on minor road. Whereas 63% junctions had both physical and visual measures.

A Separate analysis has also been done to understand the provision of various types of traffic calming measures on major roads as well as minor roads. The results are shown in Figure 4-3: Various Types of Traffic Calming Measures in Practice on NH Figure 4-3

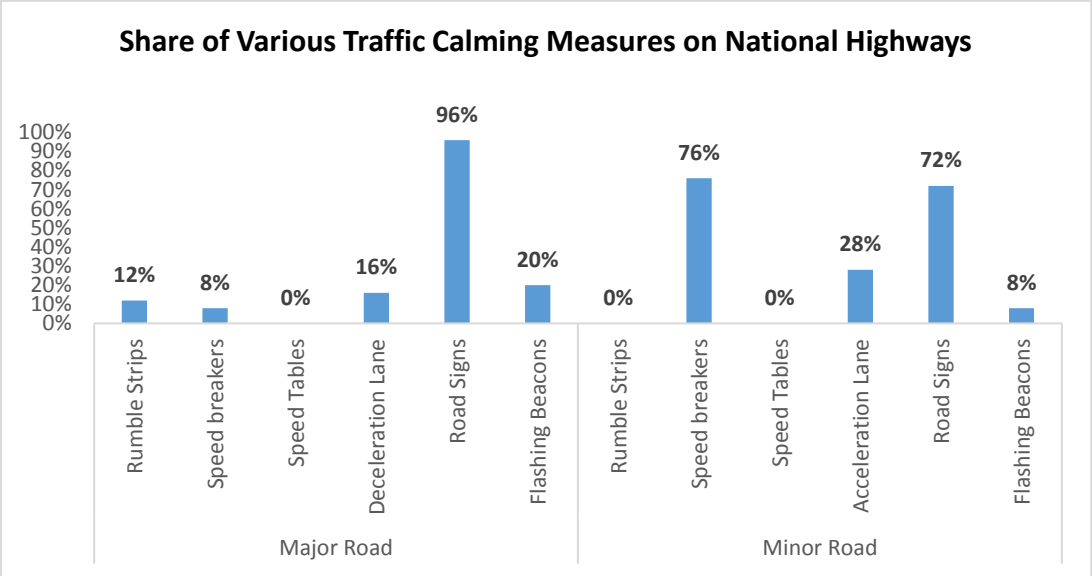


Figure 4-3: Various Types of Traffic Calming Measures in Practice on NH

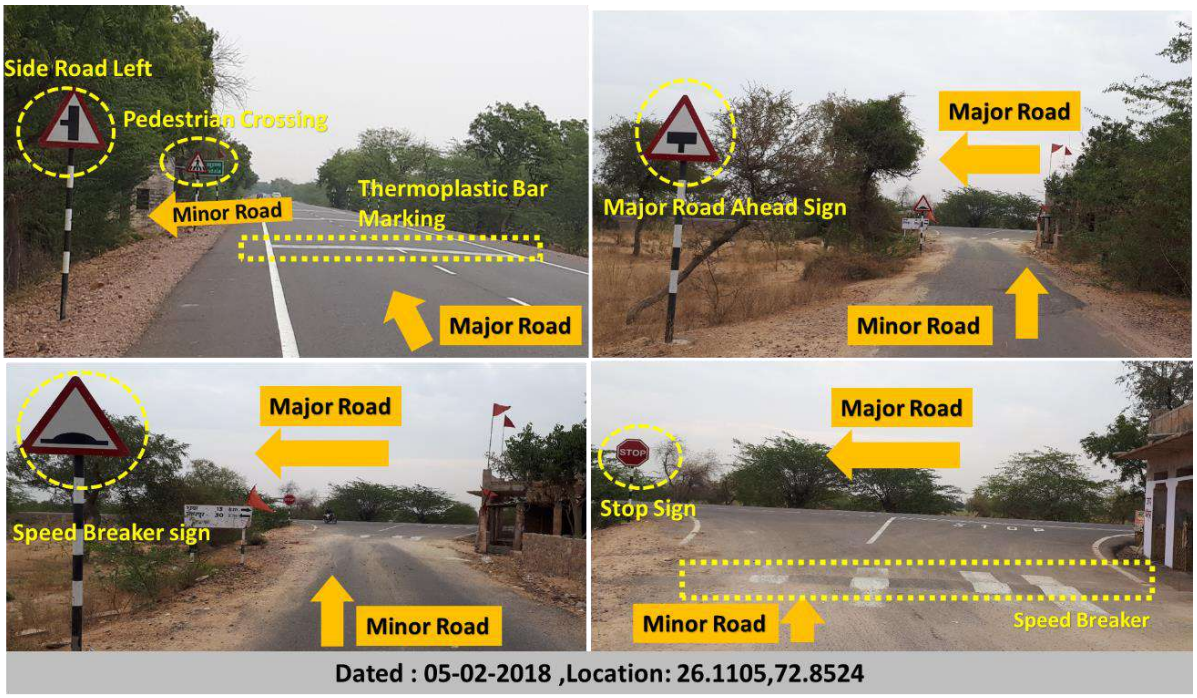


Exhibit 4-16: Traffic calming measures on National highway

4.4.4.3 Traffic Calming Measures of Intersections present on State Highways

A total of 14 junctions were inspected on State Highways to ascertain the provision of traffic calming measures provided at these junctions.

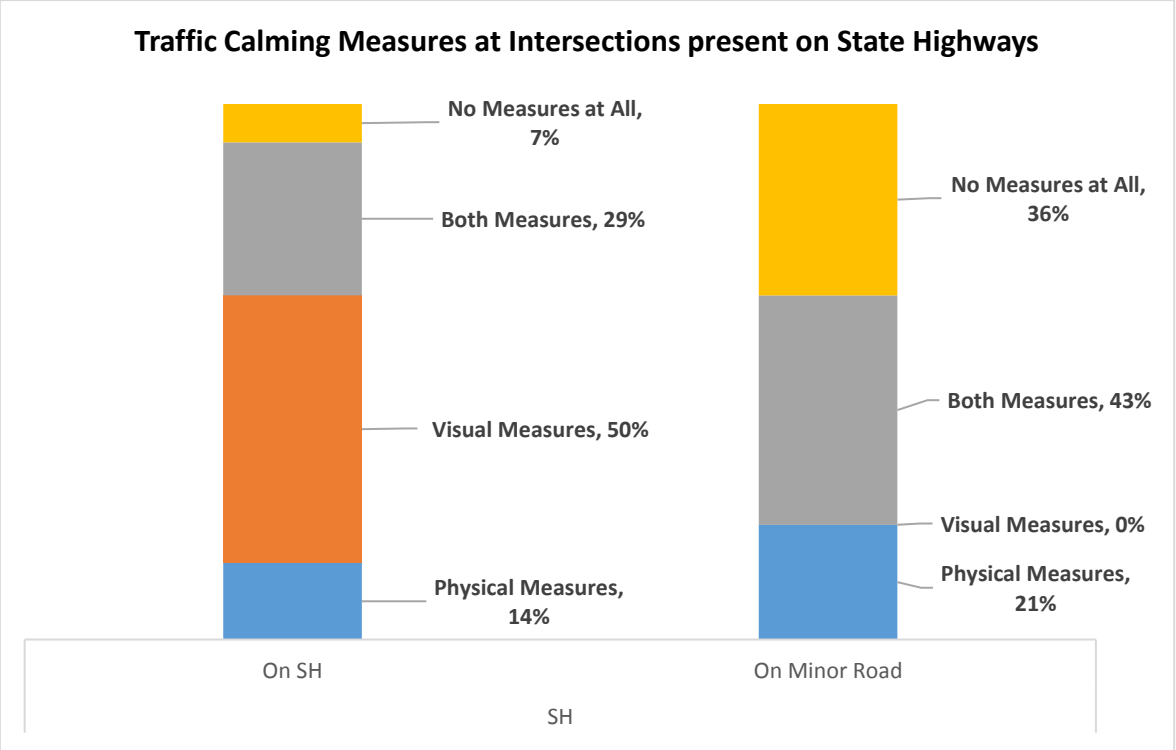


Figure 4-4: Provision of Traffic Calming Measures present on State Highways (SH)

As observed from above Figure –

<u>On Major Road (SH)-</u>

- 93 % junctions had traffic calming measures on SH. whereas at 50% junctions visual measures were provided on SH.

<u>On Intersecting Minor Road -</u>

- 36% junctions had no traffic calming measures on minor road whereas at 43% junctions both physical and visual measures were provided on minor road.

Distribution of various types of physical calming measures that are in use on these rural highways, such as rumble strips, speed breakers, speed cushions, speed tables etc. is shown in Figure 4-5.

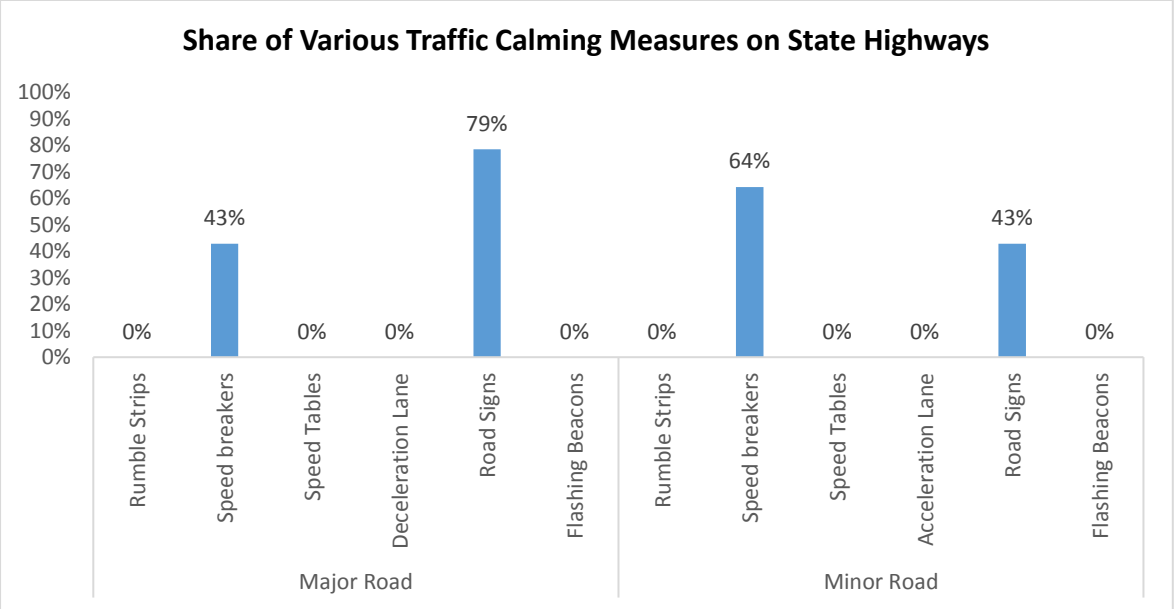


Figure 4-5: Various Types of Traffic Calming Measures in Practice on SH

Exhibit 4-17: Traffic calming measures on State highway junction

4.4.4.4 Traffic Calming Measures of Intersections present on MDR

A total of 7 junctions were inspected on Major District Road to ascertain the provision of traffic calming measures provided at these junctions.

As observed from above Figure –

<u>On Major Road (MDR)-</u>

- 57% junctions had no traffic calming measures on MDR whereas at 43% junctions Visual measures were provided on MDR.

<u>On Intersecting Minor Road</u> -

- 57% junctions had no traffic calming measures on Minor Road whereas only 43% junctions were provided physical measures.

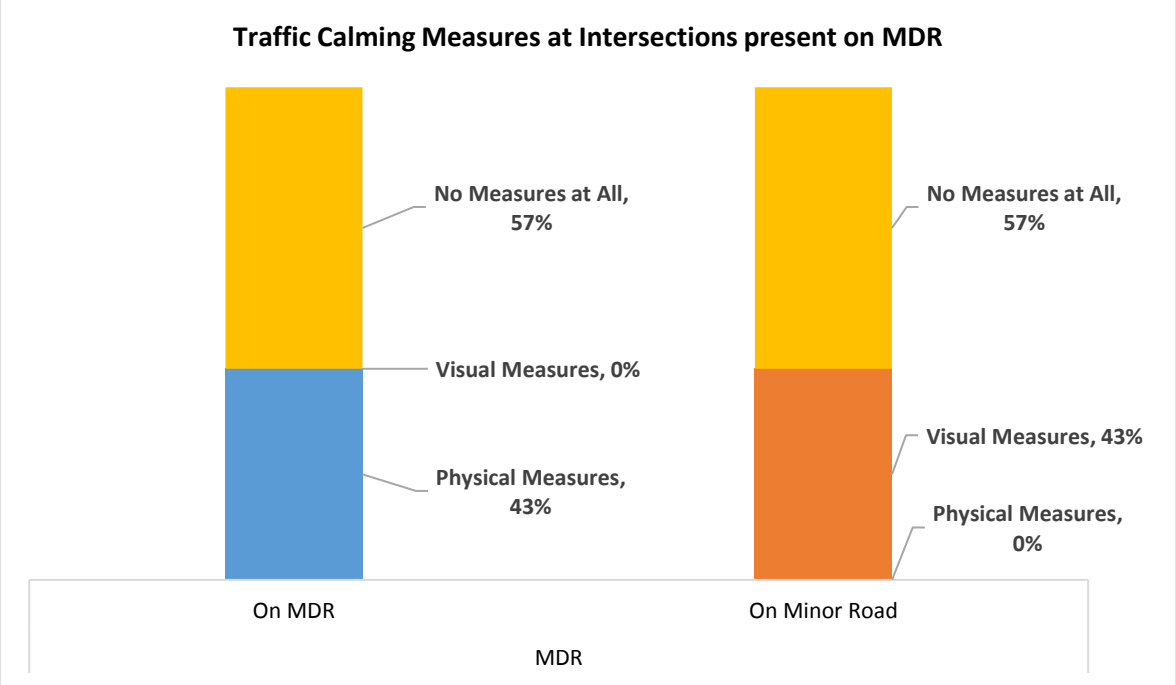


Figure 4-6: TCM Compliance of Intersections at which Minor Road is Intersecting MDR

Distribution of various physical calming measures such as rumble strips, speed breakers, speed cushions, speed tables etc. are shown in Figure 4-7.

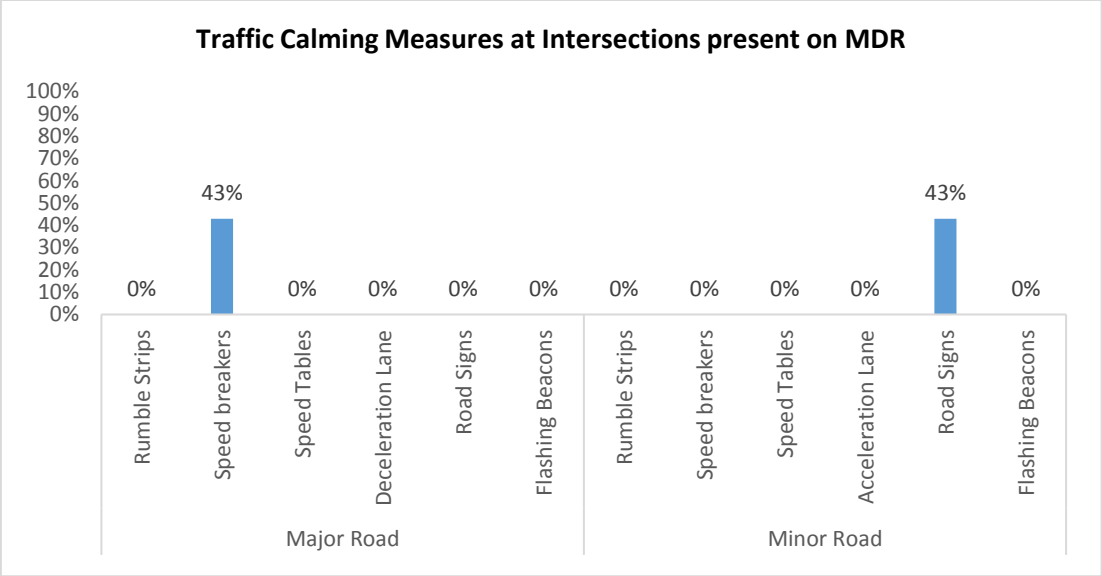


Figure 4-7: Various Types of Traffic Calming Measures in Practice on MDR

Dated : 31-01-2018
Location: 28.2802,74.8983

Exhibit 4-18: No Traffic calming measures on Major District Road junction

4.4.4.5 Traffic Calming Measures of Intersections present on Urban Roads

A total of 12 junctions were inspected on urban roads to ascertain the provision of traffic calming measures provided at these junctions.

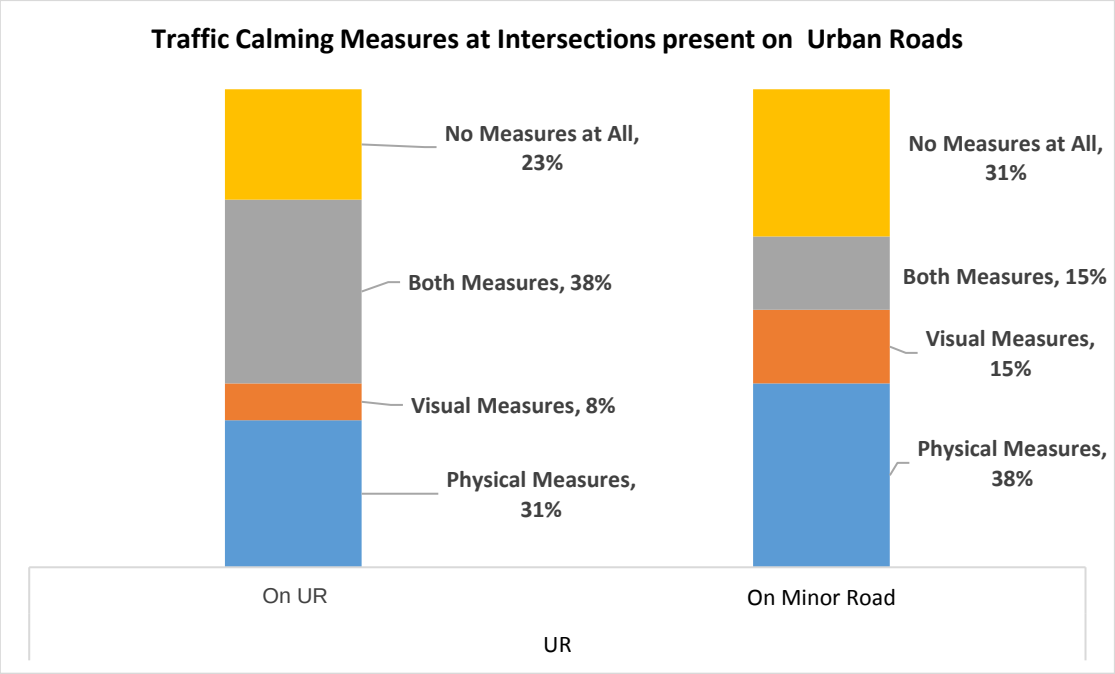


Figure 4-8: Compliance of Intersections at which Minor Road is Intersecting Urban Roads

As observed from above Figure –

<u>On Major Road (UR)-</u>

- 23% junctions had no traffic calming measures on UR whereas at 38% junctions both visual and physical measures were provided on UR.

<u>On Intersecting Minor Road</u> -

- 31% junctions had no traffic calming measures on minor road whereas 38% junctions were provided with both physical measures.

Distribution of various physical calming measures such as Rumble Strips, Speed breakers, Speed Cushions, Speed Tables etc. are shown in Figure 4-9

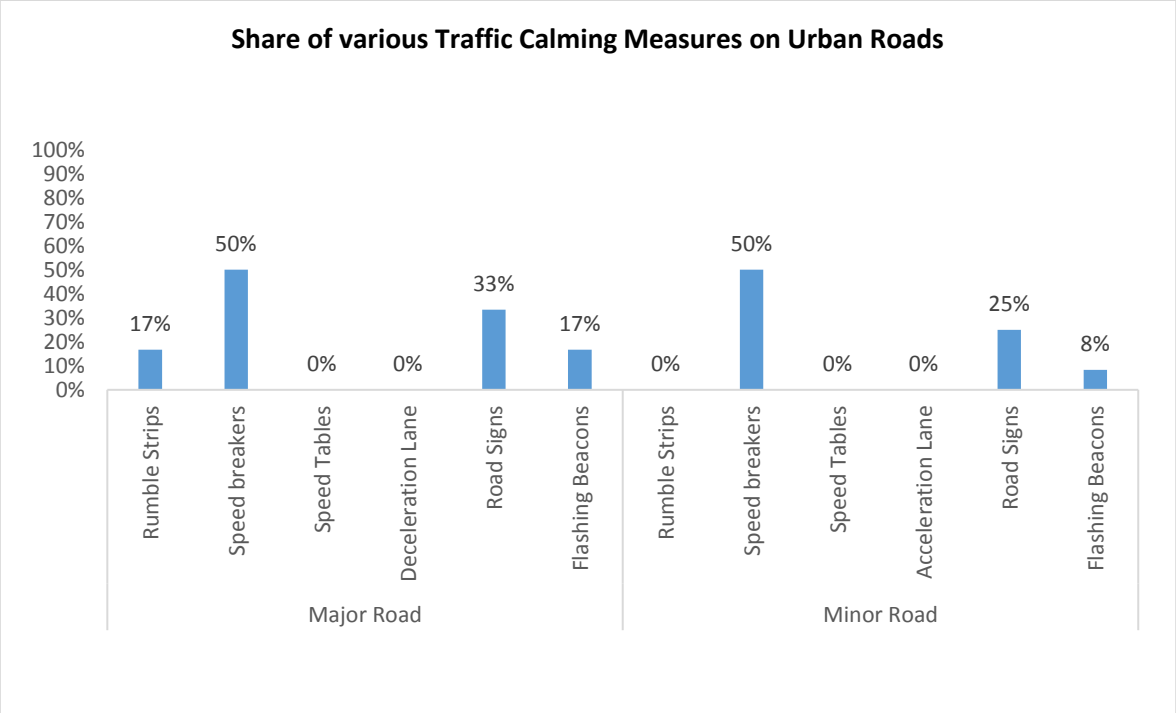


Figure 4-9: Various Types of Traffic Calming Measures in Practice on Urban Roads

4.4.5 Field Audit Findings – Road Safety Signs

Point No. 18: Verify whether road safety signs, Road markings and traffic lights meet the IRC specifications. Please verify this in 4 Cities in the State and at a stretch of 100 Km each on National Highways, State Highways and Major District Roads.

The purpose of road signs is to ensure road safety by notifying road users of regulations and provide warning and guidance needed for safe, uniform and efficient operation.

Road signs are classified under three heads. They are:-

i. Mandatory/Regulatory signs
ii. Cautionary/Warning signs
iii. Informatory/Guide signs

The audit and field verification is focussed on assessing the adequacy and adherence as per the IRC guidelines. Detailed study parameters and the IRC standard specification for signage have been presented in **Annexure E**.

Following section presents the field verification findings for four cities (Jaipur, Kota, Jodhpur and Bikaner) separately.

For each city, the results are presented separately for:

a) Mid-block sections
b) At Intersections

4.4.5.1 Audit Findings - Urban Roads

A. Jaipur

The length of network audited	60 km
The total number of samples of road signs observed	111
Mid-Block Locations	58
Intersection Locations	53

Findings from Mid-Block locations

The below Figure 4-10 shows the percentage of signs complied with IRC standards in respect of each parameter.

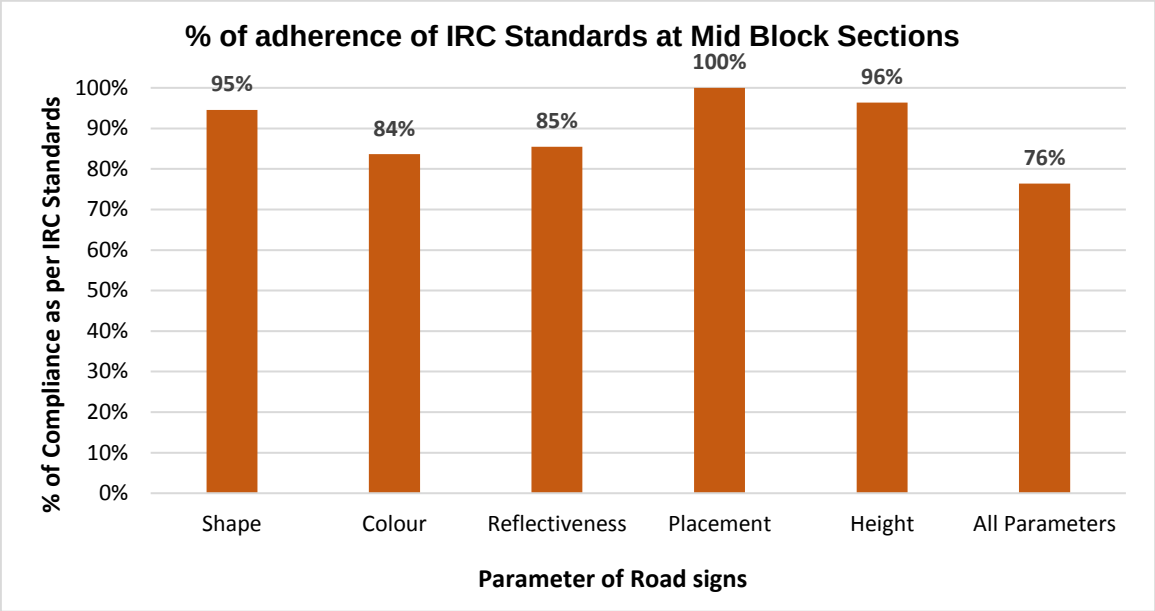


Figure 4-10: Compliance of Road signs as per IRC Standards at mid-block locations in Jaipur city

Based on the analysis it was observed that, overall 76% of the signs were in compliance with IRC standards with respect to all the parameters studied.

The analysis on percentage adherence of various parameters for the three major categories signs are given in below Table 4-32 :-

Table 4-32: Percentage of Different Types of Road Signs in Compliance with IRC Standards at Mid-block locations in Jaipur city.

Sign Type	Shape	Colour	Reflectiveness	Placement	Height	All Parameters
Regulatory	16%	16%	16%	68%	89%	5%
Cautionary	24%	24%	47%	94%	94%	24%
Informatory	86%	82%	73%	100%	100%	68%

It can be inferred from the above table that out of all the sign types, regulatory signs were in least compliance to IRC standards with only 5% signs complying to IRC standards with respect to all parameters.

Findings from Intersection Locations:

The Figure 4-11 shows the percentage of signs complied with IRC standards in respect of each parameter and Exhibit 4-19 below shows the road signs within Jaipur.

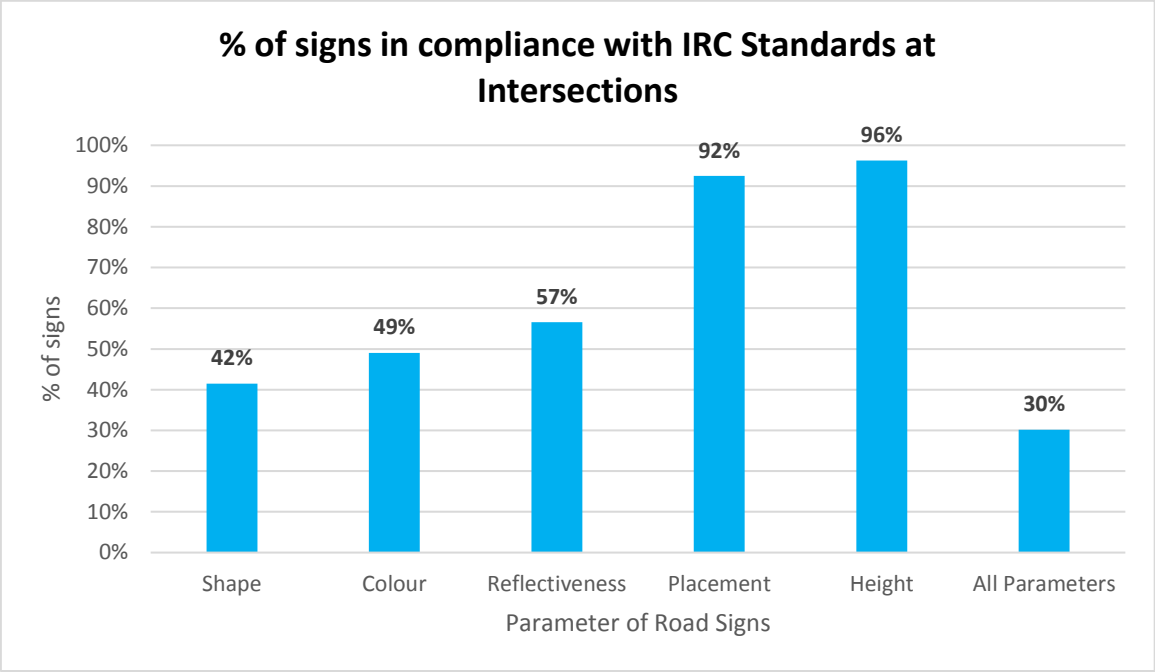


Figure 4-11: Compliance of Road signs as per IRC Standards at Intersections in Jaipur city

Based on the analysis it was observed that, only 30% of the signs at intersections were in compliance with IRC standards with respect to all parameters.

Table 4-33: Percentage of Different type of road signs in compliance with IRC standards at Intersection in Jaipur city

Sign Type	Shape	Colour	Reflectiveness	Placement	Height	All Parameters
Regulatory	33%	33%	47%	87%	87%	20%
Cautionary	31%	31%	38%	100%	100%	31%
Informatory	52%	68%	72%	92%	100%	36%

It is observed from the above Table 4-33 that only 20% of regulatory signs were in compliance with IRC standards with respect to all parameters while the compliance figures for cautionary and informatory were 31% and 36% respectively.

Regulatory Sign not as per IRC Standard	Cautionary Sign installed as per IRC Standard
Date: 03-02-2018 Location: 26;51;43 75;48;23	Date: 03-02-2018 Location: 26;52;46 75;46;7

Exhibit 4-19: Road signs within Jaipur City limits

B. Kota

The length of network audited	40 km
The total number of samples of road signs observed	50
Mid-Block Locations	29
Intersection Locations	21

Findings from Mid-Block locations

The Figure 4-12 below shows the percentage of signs complied with IRC standards with respect to the various key parameters.

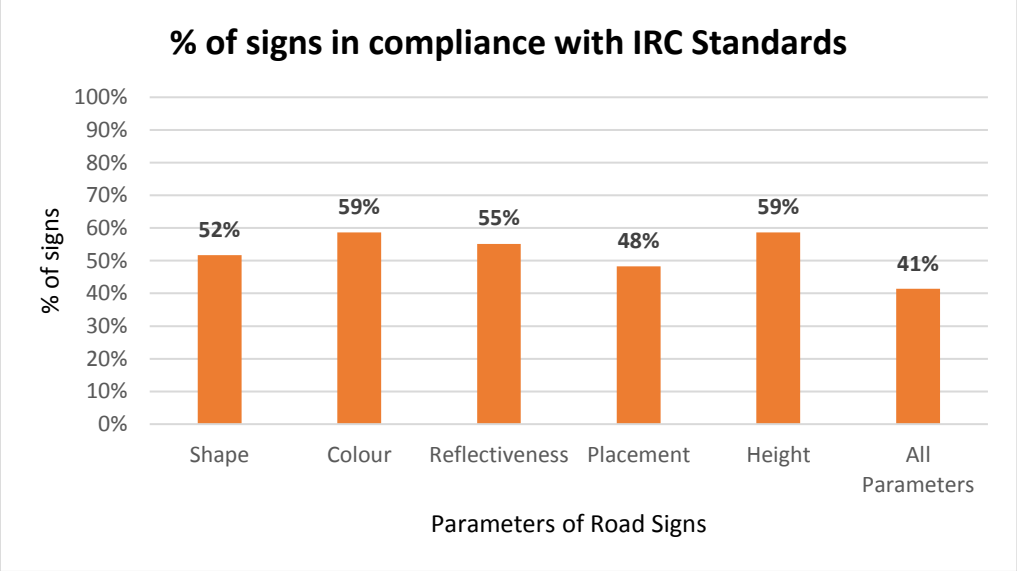


Figure 4-12: Compliance of Road signs as per IRC Standards at Mid-block locations in Kota city

Based on the analysis it was observed that, overall 41% of the signs were in compliance with IRC standards with respect to all parameters. The least compliance was with respect to placement of sign which was 48%.

Table 4-34: Percentage of Different type of road signs in compliance with IRC standards at Mid-block locations in Kota city

Sign Type	Shape	Colour	Reflectiveness	Placement	Height	All Parameters
Regulatory	13%	13%	13%	13%	25%	13%
Cautionary	54%	72%	63%	54%	63%	45%
Informatory	80%	80%	80%	60%	80%	60%

As can be observed from the above Table 4-34 above that out of all the sign types, regulatory signs were in least compliance to IRC standards with only 13% signs complying to IRC standards with respect to all parameters.

Findings from Intersections Locations

The below Figure 4-13 shows the percentage of signs complied with IRC standards in respect of each parameter.

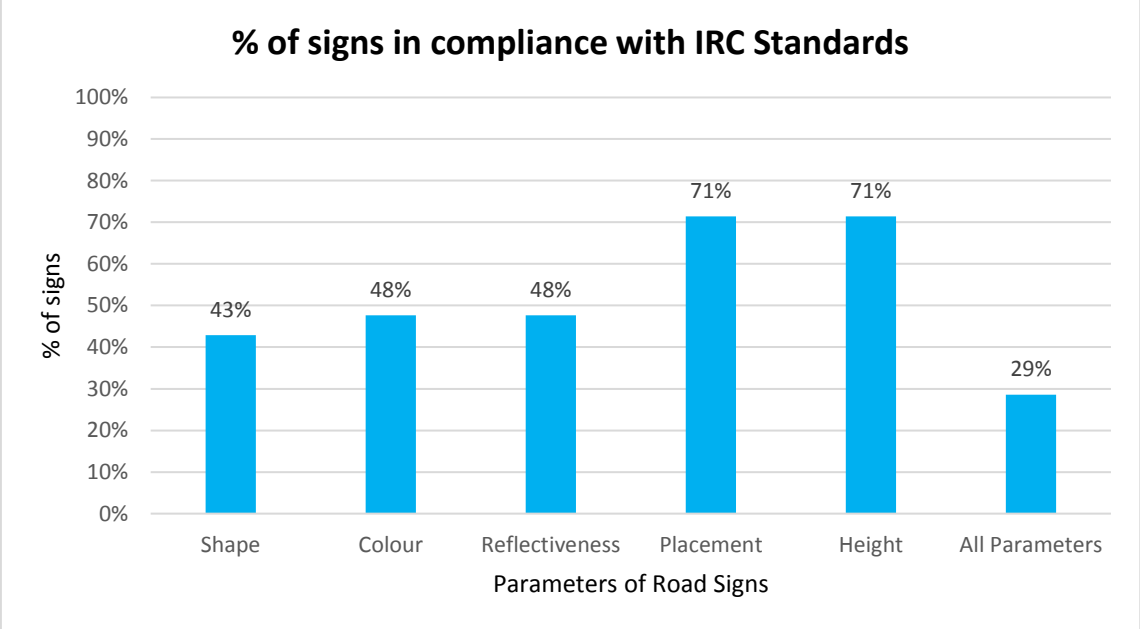


Figure 4-13: Compliance of Road signs as per IRC Standards at Intersections in Kota city

Based on the analysis it was observed that, overall only 29% of the signs were in compliance with IRC standards with respect to all parameters.

Table 4-35: Percentage of Different type of road signs in compliance with IRC standards at Intersections in Kota city

Sign Type	Shape	Colour	Reflectiveness	Placement	Height	All Parameters
Regulatory	28%	28%	28%	57%	71%	14%
Cautionary	38%	50%	50%	63%	50%	13%
Informatory	66%	66%	66%	100%	100%	66%

It can be observed from the above Table 4-35 that the compliance of regulatory and cautionary signages with IRC standards was very less respectively 14% and 13% in terms of all parameters..

Cautionary sign board provided as per IRC Standards
Date: 29-01-2018
Location: 25;12;18
75;51;35

Shape of the Regulatory sign board is not as per IRC Standards
Date: 02-02-2018
Location: 25;11;4.5
75;50;33

Exhibit 4-20: Road signs within Kota City limits

C. Jodhpur

The length of network audited	54 km
The total number of samples of road signs observed	81
Mid-Block Locations	61
Intersection Locations	20

Findings from Mid-Block locations

The below figure shows the percentage of signs complied with IRC standards in respect of each parameter.

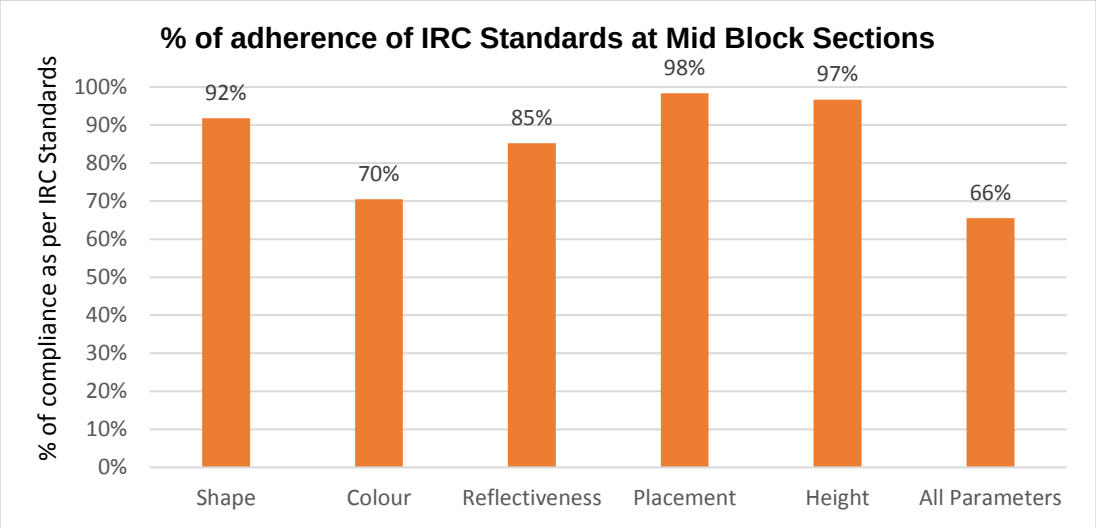


Figure 4-14: Compliance of Road signs as per IRC Standards at Mid-block locations in Jodhpur city

Based on the analysis it was observed that, overall 66% of the signs are in compliance with IRC standards with respect to all parameters.

Table 4-36: Percentage of Different type of road signs in compliance with IRC standards at Mid-block locations in Jodhpur city

Sign Type	Shape	Colour	Reflectiveness	Placement	Height	All Parameters
Regulatory	80%	53%	80%	100%	100%	53%
Cautionary	97%	77%	80%	100%	97%	73%
Informatory	94%	75%	100%	94%	94%	63%

Based on the analysis it was observed that, 53% of the Regulatory signs are in compliance with IRC standards.

Findings from Intersections

The figure below shows the percentage of signs complied with IRC standards in respect of each parameter.

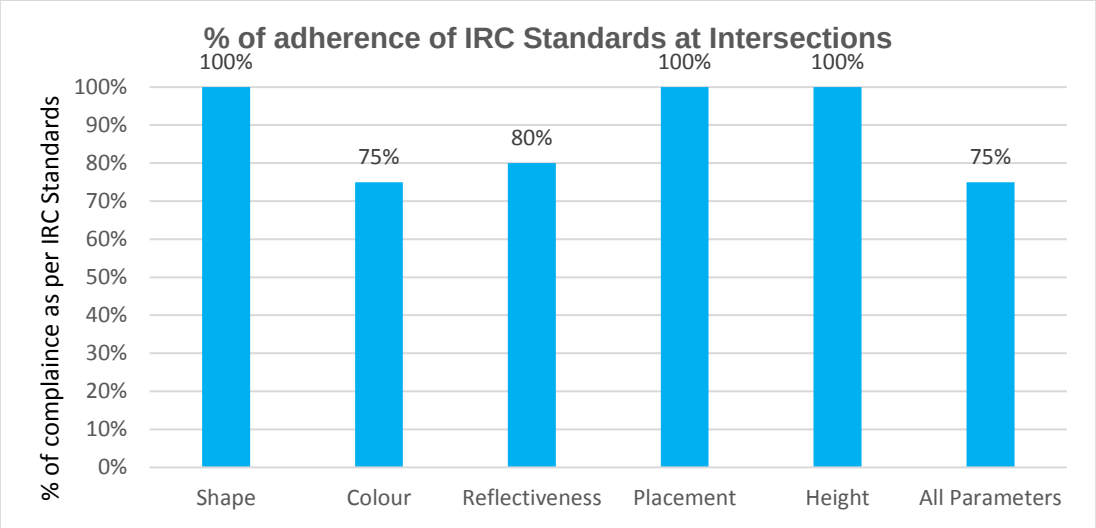


Figure 4-15: Compliance of Road signs as per IRC Standards at intersections in Jodhpur city

Based on the analysis it was observed that, overall 75% of the signs are in compliance with IRC standards with respect to all parameters.

Table 4-37: Percentage of Different type of road signs in compliance with IRC standards at intersections in Jodhpur city

Sign Type	Shape	Colour	Reflectiveness	Placement	Height	All Parameters
Regulatory	100%	0%	50%	100%	100%	0%
Cautionary	100%	73%	73%	100%	100%	73%
Informatory	100%	100%	100%	100%	100%	100%

Based on the analysis it was observed that, All the Regulatory signs are not as per IRC Standards with respect to all parameters.

Jodhpur – Road sign as per IRC Standard
Dated : 04-02-2018
Location: 26.2936,73.0502

Jodhpur – Road sign not as per IRC Standard
Dated : 04-02-2018
Location: 26.2872,73.0227

Exhibit 4-21: Road signs in Jodhpur city limits

D. Bikaner

The length of network audited	49 km
The total number of samples of road signs observed	85
Mid-Block Locations	73
Intersection Locations	12

Findings from Mid-Block Locations

The below figure shows the percentage of signs complied with IRC standards in respect of each parameter.

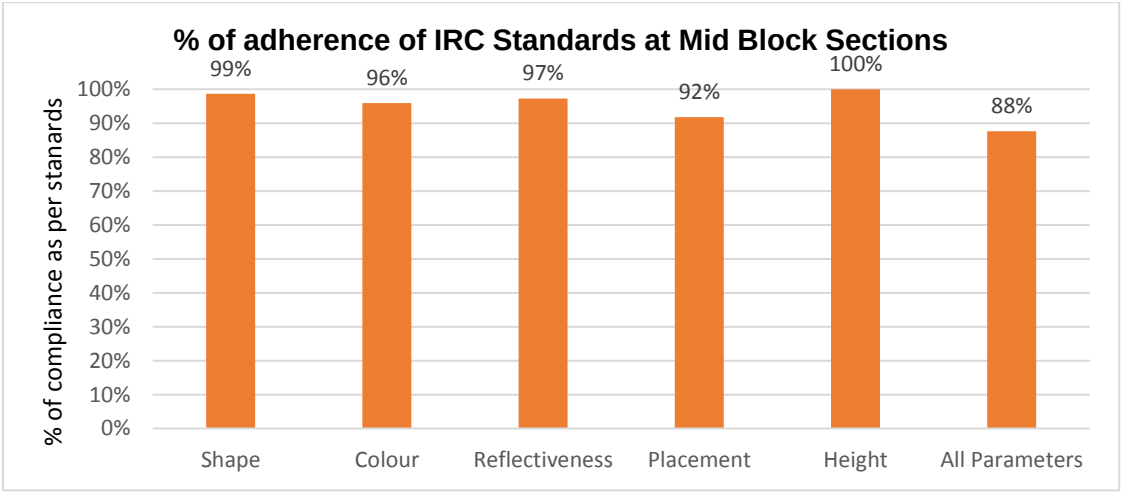


Figure 4-16: Compliance of Road signs as per IRC Standards at Mid-block locations in Bikaner city

Based on the analysis it was observed that, overall 88% of the signs are in compliance with IRC standards with respect to all parameters

Table 4-38: Percentage of Different type of road signs in compliance with IRC standards at Mid-block locations in Bikaner city

Sign Type	Shape	Colour	Reflectiveness	Placement	Height	All Parameters
Regulatory	100%	100%	100%	91%	100%	91%
Cautionary	100%	95%	97%	92%	100%	87%
Informatory	92%	92%	92%	92%	100%	85%

Findings from Intersection

The below figure shows the percentage of signs complied with IRC standards in respect of each parameter.

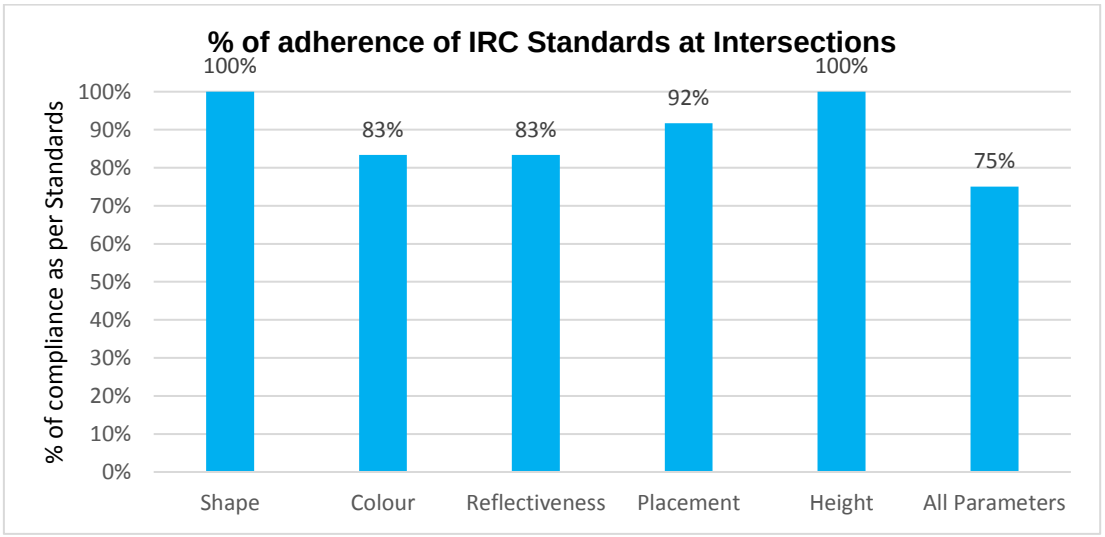


Figure 4-17: Compliance of Road signs as per IRC Standards at Intersection in Bikaner city

Based on the analysis it was observed that, overall 75% of the signs are in compliance with IRC standards with respect to all parameters.

Table 4-39: Percentage of Different type of road signs in compliance with IRC standards at Intersection in Bikaner city

Sign Type	Shape	Colour	Reflectiveness	Placement	Height	All Parameters
Regulatory	100%	100%	100%	100%	100%	100%
Cautionary	100%	60%	60%	80%	100%	40%
Informatory	100%	100%	100%	100%	100%	100%

Bikaner – Road sign as per IRC Standard
Dated : 29-01-2018
Location: 28.0608,73.3372

Bikaner – Road sign not as per IRC Standard
Dated : 29-01-2018
Location: 28.0583,73.3377

Exhibit 4-22: Road signs within Bikaner city limits

4.4.5.2 Audit Findings – Rural Highway

Separate analysis is done on NH, SH & MDR for:

i. Mid-block sections
ii. At intersections

A. National Highways

The length of network audited	132 km
The total number of samples of road signs observed	123
Mid-Block Locations	104
Intersection Locations	19

Findings from Mid-Block Locations

The below figure shows the percentage of signs complied with IRC standards in respect of each parameter.

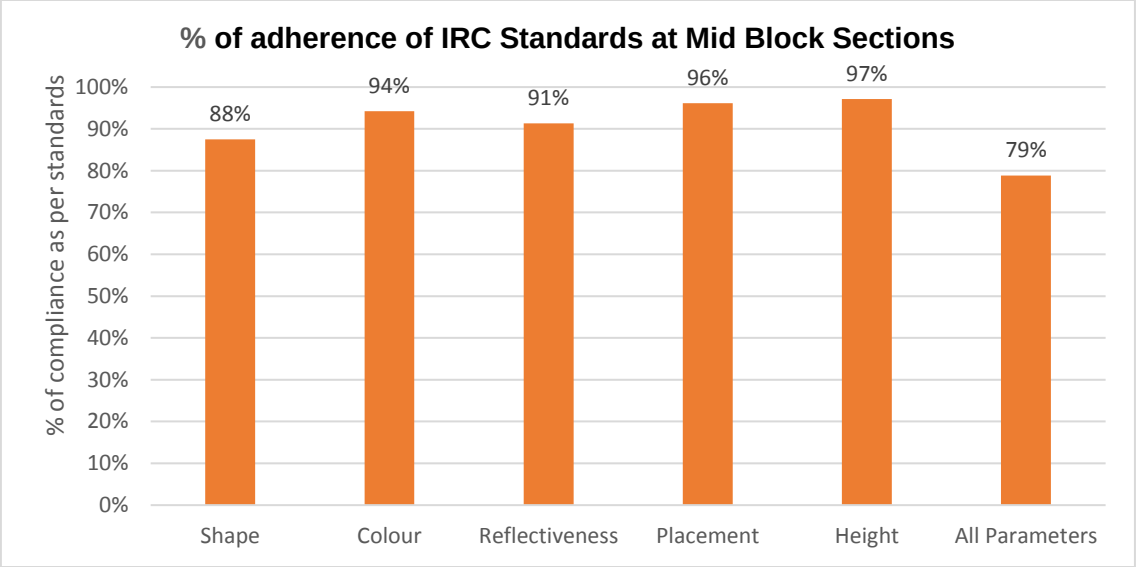


Figure 4-18: Compliance of Road signs as per IRC Standards at Mid-block locations on National Highways

Based on the analysis it was observed that, overall 79% of the signs are in compliance with IRC standards with respect to all parameters.

Table 4-40: Percentage of Different type of road signs in compliance with IRC standards at Mid-block locations on National highways

Sign Type	Shape	Colour	Reflectiveness	Placement	Height	All Parameters
Regulatory	86%	86%	100%	100%	100%	86%
Cautionary	89%	97%	94%	98%	98%	81%
Informatory	86%	93%	82%	89%	93%	71%

It can be observed from the above Table 4-40 that 71% of informatory signages were in compliance with IRC standards in terms of all parameters.

Findings from Intersections

The below figure shows the percentage of signs complied with IRC standards in respect of each parameter.

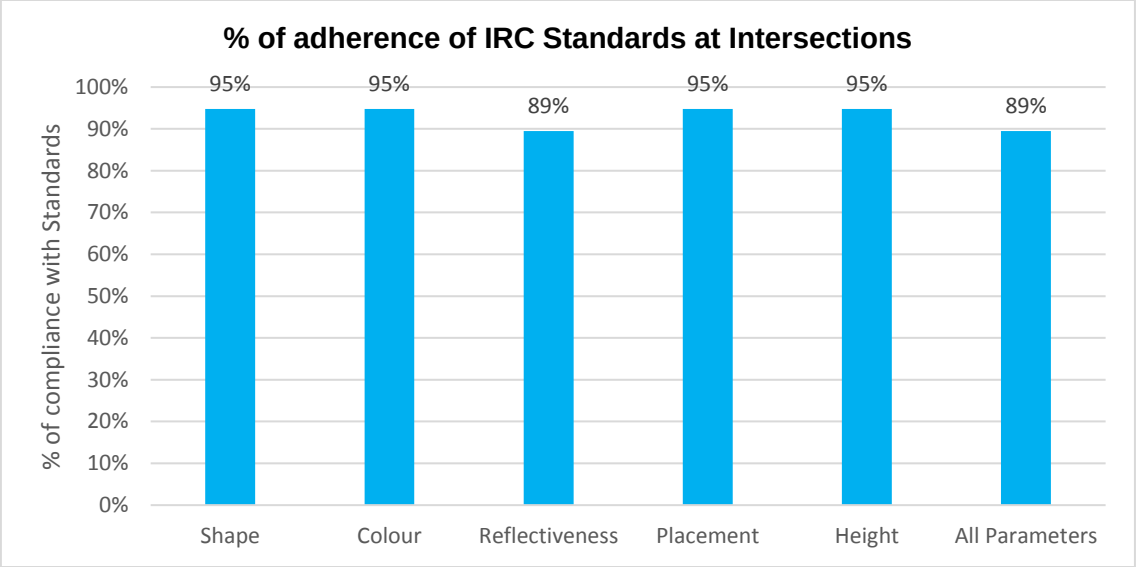


Figure 4-19: Compliance of Road signs as per IRC Standards at Intersections on National Highways

Based on the analysis it was observed that, overall 89% of the signs are in compliance with IRC standards with respect to all parameters

Table 4-41: Percentage of Different type of road signs in compliance with IRC standards at Intersections on National highways

Sign Type	Shape	Colour	Reflectiveness	Placement	Height	All Parameters
Regulatory	50%	50%	50%	50%	50%	50%
Cautionary	100%	100%	89%	100%	100%	89%
Informatory	100%	100%	100%	100%	100%	100%

Based on the analysis it was observed that, overall 50% of the regulatory signs are in compliance with IRC standards with respect to all parameters

Road signs as per IRC Standards on NH-125 Nera Jodhpur
Dated : 05-02-2018
Location: 26.3788,72.5130

Road signs not as per IRC Standards on NH-25 Nera Jodhpur
Dated : 05-02-2018
Location: 26.0594,72.6527

Exhibit 4-23: Road signs on National Highway sections

B. State Highways

The length of network audited	108 km
The total number of samples of road signs observed	71
Mid-Block Locations	57
Intersection Locations	14

Findings from Mid-block locations

The below figure shows the percentage of signs complied with IRC standards in respect of each parameter.

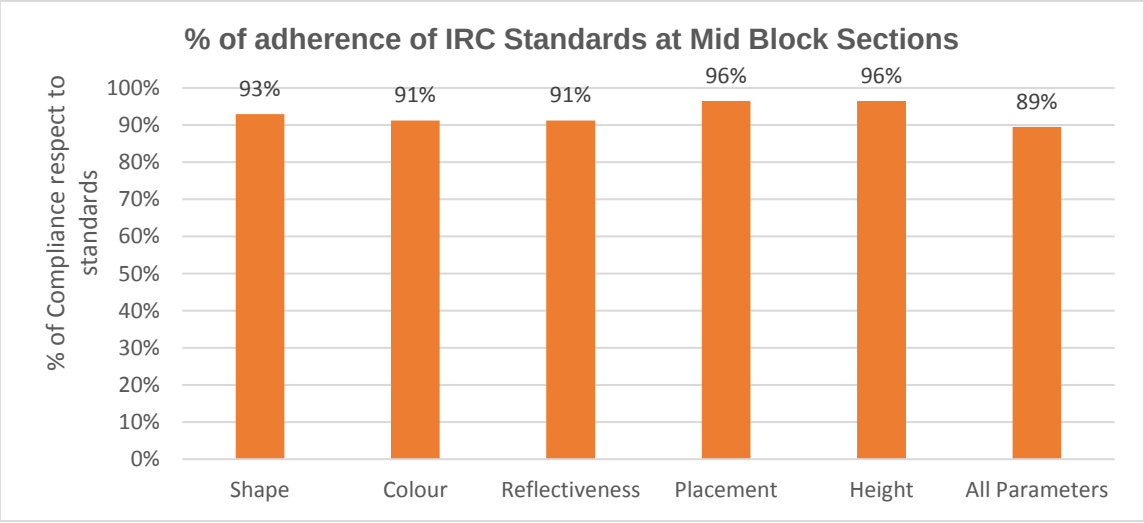


Figure 4-20: Compliance of Road signs as per IRC Standards at Mid-block locations on State Highways

Based on the analysis it was observed that, overall 89% of the signs were in compliance with IRC standards with respect to all parameters.

Table 4-42: Percentage of Different type of road signs in compliance with IRC standards at Mid-block locations on State highways

Sign Type	Shape	Colour	Reflectiveness	Placement	Height	All Parameters
Regulatory	100%	100%	100%	100%	100%	100%
Cautionary	95%	92%	92%	97%	97%	90%
Informatory	75%	75%	75%	88%	88%	75%

It can be observed from the above Table 4-42 that 75% of informatory signages were in compliance with IRC standards in terms of all parameters.

Findings from Intersections

The below figure shows the percentage of signs complied with IRC standards in respect of each parameter.

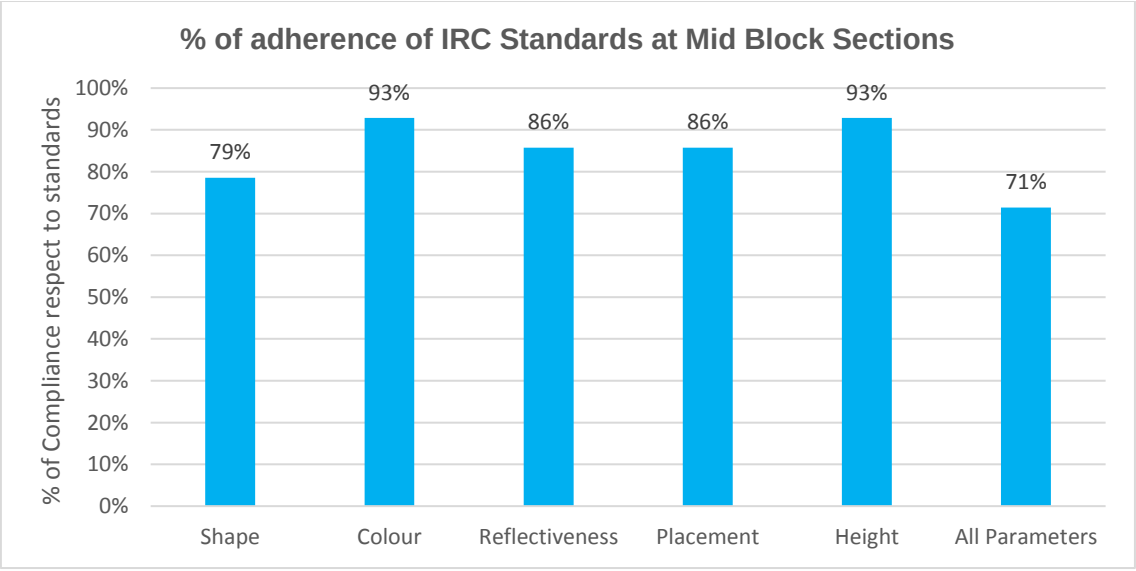


Figure 4-21: Compliance of Road signs as per IRC Standards at Intersections on State Highways

Based on the analysis it was observed that, overall 71% of the signs were in compliance with IRC standards with respect to all parameters.

Table 4-43: Percentage of Different type of road signs in compliance with IRC standards at intersections on State highways

Sign Type	Shape	Colour	Reflectiveness	Placement	Height	All Parameters
Regulatory	100%	100%	50%	100%	100%	50%
Cautionary	71%	100%	100%	86%	100%	71%
Informatory	80%	80%	80%	80%	80%	80%

It can be inferred from the above Table 4-43, 71% of cautionary signs observed were in compliance with IRC standards in terms of all parameters.

Road signs as per IRC Standards on SH-1 Near Kota
Dated : 31-01-2018
Location: 25.2617,76.5120

Road signs not as per IRC Standards on SH-6 Near Bikaner
Dated : 31-01-2018
Location: 28.49,74.6705

Exhibit 4-24: Road signs on State Highway sections

C. Major District Roads

The length of network audited	102 km
The total number of samples of road signs observed	24
Mid-Block Locations	13
Intersection Locations	11

Findings from Mid-Block locations

The below Figure 4-22 shows the percentage of signs complied with IRC standards in respect of each parameter.

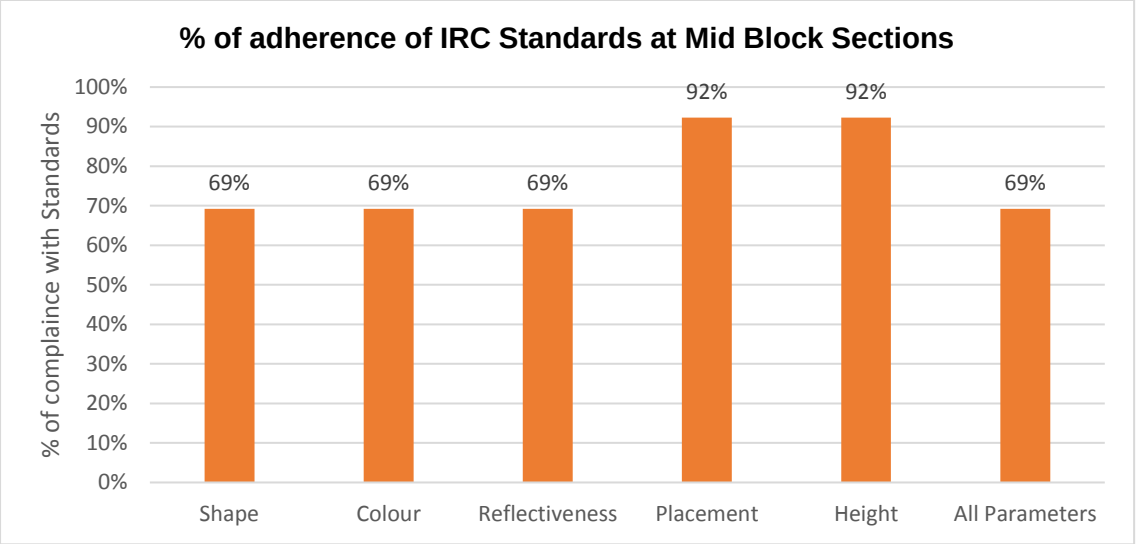


Figure 4-22: Compliance of Road signs as per IRC Standards at Mid-block locations on Major District Roads

Based on the analysis it was observed that, overall 69% of the signs were in compliance with IRC standards with respect to all parameters.

Table 4-44: Percentage of Different type of road signs in compliance with IRC standards at Mid-block locations on Major District Roads

Sign Type	Shape	Colour	Reflectiveness	Placement	Height	All Parameters
Regulatory	100%	100%	100%	100%	100%	100%
Cautionary	63%	63%	63%	88%	88%	63%
Informatory	75%	75%	75%	100%	100%	75%

It is observed from the above Table 4-44 that 63% Cautionary signage's were in compliance with IRC standards in terms of all Parameters

Findings from Intersections

The Figure 4-23 shows the percentage of signs complied with IRC standards in respect of each parameter.

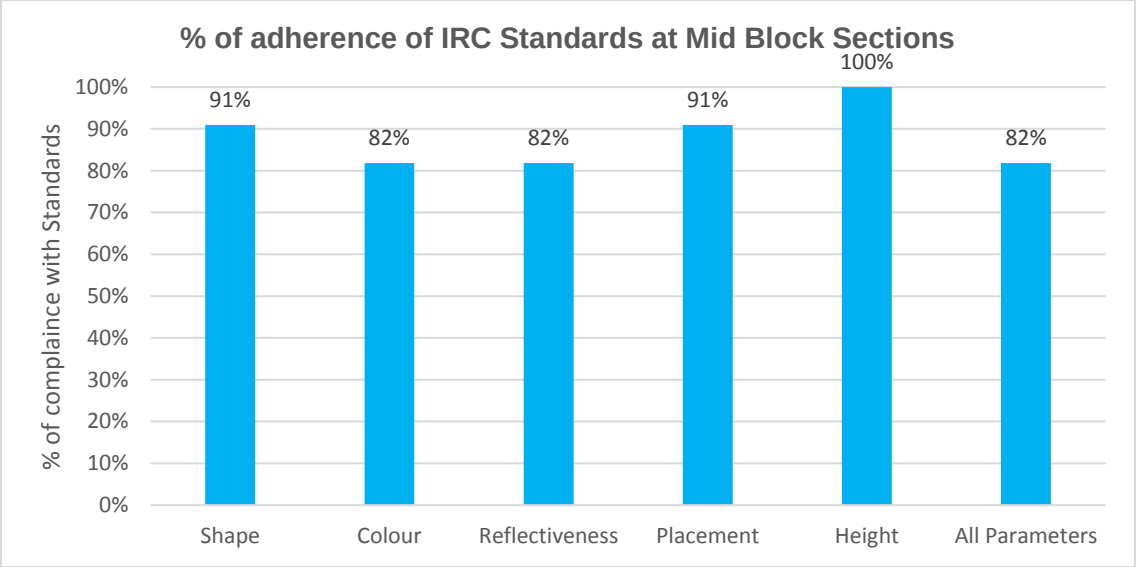


Figure 4-23: Compliance of Road signs as per IRC Standards at Intersection on Major District Roads

Based on the analysis it was observed that overall 82% of the signs observed were in compliance with IRC standards with respect to all parameters.

Table 4-45: Percentage of Different type of road signs in compliance with IRC standards at Intersection on Major District Roads

Sign Type	Shape	Colour	Reflectiveness	Placement	Height	All Parameters
Regulatory	100%	100%	100%	100%	100%	100%
Cautionary	67%	67%	67%	100%	100%	67%
Informatory	100%	80%	80%	80%	100%	80%

It is observed from the above Table 4-45 that 67% of Cautionary signs were in compliance with IRC standards in terms of all parameters

Exhibit 4-25: Road signs on Major District Roads

4.4.6 Field Audit Findings – Road Markings

Point No. 18: Verify whether road safety signs, Road markings and traffic lights meet the IRC specifications. Please verify this in 4 Cities in the State and at a stretch of 100 Km each on National Highways, State Highways and Major District Roads.

This study is conducted for all four cities at mid-blocks and at intersections. Also, studied for rural highways separately.

4.4.6.1 Study parameters

Four parameters are considered in this analysis. Parameters are selected based on IRC specifications for pavement marking. Parameters are as follows:-

- Percentage (%) of Road marking **Availability** out of total road length investigated. This includes separate analysis for presence of edge marking, centre lines and lane markings as per IRC.
- Road Marking **Width** *(As per standard, Sub-standard)*
- Marking **Visibility** *(Yes, No)*
- Road Marking **Reflectiveness** *(As per standard, Sub-standard)*

4.4.6.2 Road Marking Analysis – Urban Stretches

The urban stretches in Jaipur, Kota, Jodhpur and Bikaner have been studied. The total road length investigated in each city and the number of locations is shown in the Table 4-46 below.

Table 4-46: Total Urban length of network for field investigation

Survey Parameters	Jaipur	Kota	Jodhpur	Bikaner
The length of network audited	60 km	40 km	54 km	49 km
The total number of samples of Road markings observed	94	68	64	55
Mid-Block Locations	33	34	34	37
Intersection Locations	61	34	30	18

FINDINGS OF ROAD MARKING – ADHERENCE TO IRC ROAD MARKING GUIDELINES:

ROAD MARKINGS ON MIDBLOCK SECTIONS

DIVIDED ROADS – PERCENTAGE ADHERENCE TO IRC ROAD MARKING GUIDELINES				
Parameters	**Jaipur**	**Kota**	**Jodhpur**	**Bikaner**
Traffic Lane Marking	• **Available – 65.2%** of road length • Width of all markings are as per IRC standards. • **Visibility** – **79.6%** of the markings	• **Available – 43.9%** of road length • Width of all markings are as per IRC standards • **Visibility** – **75.2%** of the markings are visible	• **Available – 73%** of road length • Width of markings are as per IRC standards • **Visibility** – **92%** of the markings are visible**.**	• **Available – 84%** of road length • Width of markings are as per IRC standards • **Visibility** – **88%** of the markings are visible.
Border of Edge Marking	• **Available – 71.4%** of road length • Width of all markings are as per IRC standards • **Visibility** – **85%** of the markings are visible.	• **Available – 44.5%** of road length • Width of all markings are as per IRC standards • **Visibility** – **69.5%** of the markings are visible.	• **Available – 76%** of road length • Width of markings are as per IRC standards • **Visibility** – **89%** of the markings are visible**.**	• **Available – 84%** of road length • Width of all markings are as per IRC standards • **Visibility** – **88%** of the markings are visible.
Warning Line	• **Available – 51.5%** of road length • Width of all markings are as per IRC standards • **Visibility** – **84.6%** of the markings	• **Available – 21%** of road length • Width of all markings are as per IRC standards •	• **Available – 33%** of road length • Width of markings are as per IRC standards • **Visibility** – Warning lines are visible wherever provided.	• **Available – 55%** of road length • **Width** – **80%** of all marking widths are as per IRC standards. • **Visibility** – **80%** of the markings are visible.

UN-DIVIDED ROADS – PERCENTAGE ADHERENCE TO IRC ROAD MARKING GUIDELINES				
Parameters	**Jaipur**	**Kota**	**Jodhpur**	**Bikaner**
Centre Line Marking	• **Available – 36%** of road length only. • **Width –** Width of all available Centre line marking is as per IRC standards. • **Visibility –** Centre line marking are visible wherever provided.	• **Available – 50%** of road length only. • **Width –** Width of all available Centre line marking is as per IRC standards. • **Visibility – 93%** of the centre line markings are visible	• **Available – 82%** of road length surveyed. • **Width –** Width of marking is as per IRC standards. • **Visibility – 69%** of the centre line markings are visible.	• **Available –** Only on **40%** of road length surveyed. • **Width – 94%** of widths are as per IRC standards. • **Visibility – 88%** of the centre line markings are visible
Traffic Lane Marking	• **Available – 37%** of road length • **Width** – Width of all traffic lane marking is as per IRC standards. • **Visibility – 98%** of the markings are visible	• **Available – 41%** of road length • **Width** – Width of all traffic lane marking is as per IRC standards. • **Visibility – 89.8%** of the markings are visible	Not Applicable	Not Applicable
Border of Edge Marking	• **Available – 37%** of road length only. • **Width –** Width of all Border edge marking in the city is as per IRC standards. • **Visibility –** Edge line marking are visible wherever provided.	• **Available – 56%** of road length only. • **Width –** Width of all Border edge marking in the city is as per IRC standards. • **Visibility –89%** markings are visible	• **Available – 27%** of road length • **Width –** Width of marking is as per IRC standards. • **Visibility –** Traffic lane markings are not clearly visible.	• **Available –** Only on **27%** of road length surveyed. • **Width – All** traffic lane marking widths are as per IRC standards. • **Visibility – 91%** of the markings are visible

ROAD MARKINGS AT INTERSECTIONS:

ROAD MARKINGS AT INTERSECTIONS – PERCENTAGE ADHERENCE TO IRC ROAD MARKING GUIDELINES				
Parameters	**Jaipur**	**Kota**	**Jodhpur**	**Bikaner**
Stop Line Marking	• **Available – 55%** of Intersections - All markings are Solid • **Width –** All are as per IRC standards • **Visibility- 61%** of them are visible	• **Available – 38%** of Intersections - All markings are Solid • **Width –** All are as per IRC standards • **Visibility-** All are visible	• **Available –** Only on **24%** of Intersections - All markings are Solid • **Width –** All are as per IRC standards • **Visibility – Only 40%** of them are visible	• **Available –** Only on **8%** of Intersections • **Width –** All are as per IRC standards • **Visibility –** Stop Line markings are not clearly visible.
Pedestrian Crossing	• **Available – 64%** of Intersections • **Width –** All pedestrian crossings are as per IRC standards • **Visibility – 62%** of pedestrian crossing markings are visible	• **Available – 56%** of Intersections • **Width – 89%** are as per IRC standards • **Visibility – 62%** of pedestrian crossing markings are visible	• **Available –** Only on **52 %** of Intersections • **Width –** All pedestrian crossings widths are as per IRC standards • **Visibility – 64 %** of pedestrian crossing markings are visible	• **Available –** Only on **25 %** of Intersections • **Width –** All pedestrian crossings are as per IRC standards • **Visibility – Only 33 %** of pedestrian crossing markings are visible
Directional Arrows	• **Available –** Only on **14%** of Intersections • **Width –** Directional arrows are as per IRC standards • **Visibility – 60%** of the markings are visible	Not Applicable	No Directional Arrows	• **Available –** Only on **25 %** of Intersections • **Width – 67%** of widths are as per IRC standards • **Visibility – Only 67 %** of the markings are visible
Marking at Rotaries	Not Applicable	Not Applicable	• **Available –** Only on **22%** of Rotaries. • Marking at rotaries are not as per IRC standard.	Marking on rotaries are not available where ever required.

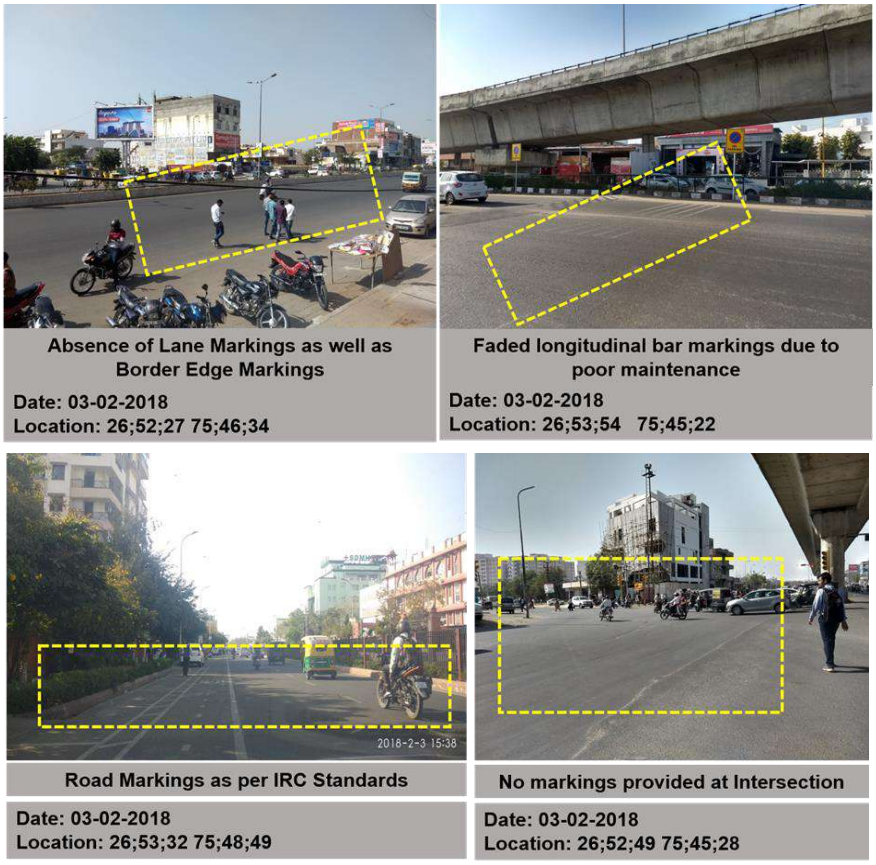


Exhibit 4-26: Photo references for Road Markings in Jaipur city

Exhibit 4-27: Photo references for Road Markings in Kota city

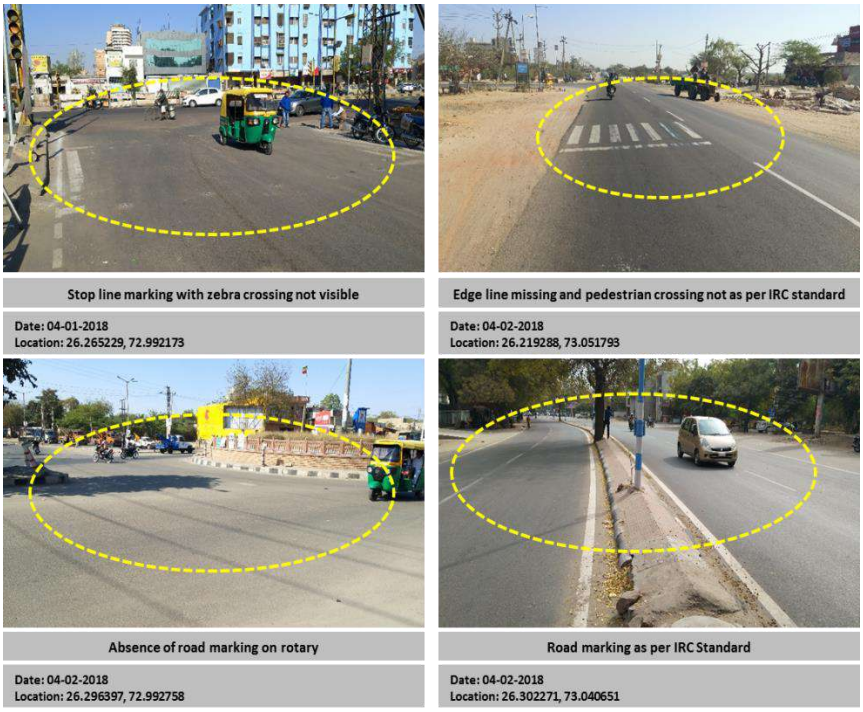


Exhibit 4-28: Photo references for Road Markings in Jodhpur city

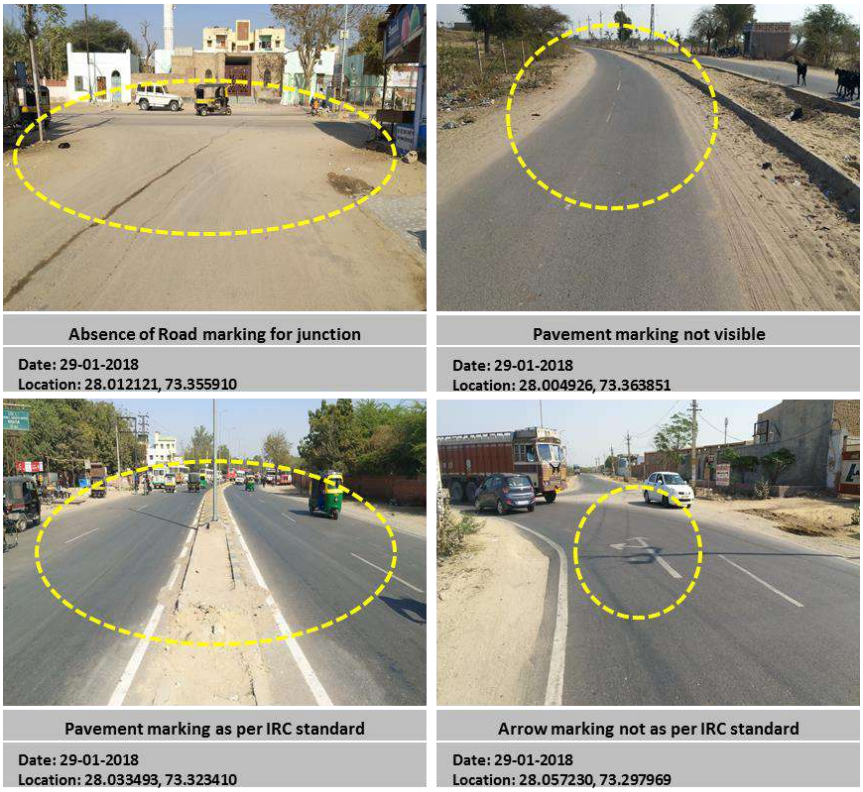


Exhibit 4-29: Photo references for Road markings in Bikaner city

4.4.6.3 Road Marking Analysis – Rural Stretches

Survey Parameters	National Highway (NH)	State Highway (SH)	Major District Roads (MDR)
The length of network audited	132 km	108 km	102 km
The total number of samples of Road markings observed	77	34	29
Mid-Block Locations	61	21	15
Intersection Locations	16	13	14

FINDINGS OF ROAD MARKING – ADHERENCE TO IRC ROAD MARKING GUIDELINES:

ROAD MARKINGS ON MIDBLOCK SECTIONS:

DIVIDED ROADS – PERCENTAGE ADHERENCE TO IRC ROAD MARKING GUIDELINES			
Parameters	**National Highway (NH)**	**State Highway (SH)**	**Major District Roads (MDR)**
Traffic Lane Marking	• **Available – 82%** of road length surveyed. • **Width –** Width of marking is as per IRC standards. • **Visibility – 99%** of the traffic lane markings are visible.	• **Available –** Only on **6%** of road length surveyed. • **Width –** Width of marking is as per IRC standards. • **Visibility –** Traffic lane marking is not clearly visible.	Not Applicable
Border of Edge	• **Available – 82%** of road length surveyed. • **Width –** Width of marking is as per IRC standards. • **Visibility – 99%** of the Edge line marking are visible.	• **Available –** Only on **6%** of road length surveyed. • **Width –** Width of marking is as per IRC standards. • **Visibility –** Edge line marking is not clearly visible.	Not Applicable
Warning Line marking	• **Available – 70%** of road length surveyed.	No Warning lines	Not Applicable

DIVIDED ROADS – PERCENTAGE ADHERENCE TO IRC ROAD MARKING GUIDELINES			
Parameters	**National Highway (NH)**	**State Highway (SH)**	**Major District Roads (MDR)**
	• **Width – 82%** of the widths of marking are as per IRC standards. • **Visibility – 82%** of warning lines are visible.		

UN - DIVIDED ROADS – PERCENTAGE ADHERENCE TO IRC ROAD MARKING GUIDELINES			
Parameters	**National Highway (NH)**	**State Highway (SH)**	**Major District Roads (MDR)**
Centre Line Marking	• **Available – 99%** of road length surveyed. • **Width –** Width of marking is as per IRC standards. • **Visibility –**Centre line markings are visible on all surveyed locations.	• **Available –** Only on **51%** of road length surveyed. • **Width –** Width of marking is as per IRC standards. • **Visibility – 89% of** center line markings are visible.	• **Available –** Only on **19%** of road length surveyed. • **Width –** Width of marking is as per IRC standards. • **Visibility – Only 29% of** center line markings are visible.
Border of Edge	• **Available – 98%** of road stretches surveyed. • **Width –** Width of marking is as per IRC standards. • **Visibility –**Edge Line markings are visible on all surveyed locations.	• **Available –** Only on **42%** of road length surveyed. • **Width –** Width of marking is as per IRC standards. • **Visibility –** Edge line markings are visible wherever provided.	• **Available –** Only on **5%** of road length surveyed. • **Width –** Width of marking is as per IRC standards. • **Visibility –** Edge line markings are visible wherever provided.
No Overtaking Line	• **Available –** On all the road stretches wherever required. • **Width –** Width of marking is as per IRC standards. • **Visibility –**No overtaking line markings are visible on all surveyed locations.	• **Available –** Only on **5%** of road length wherever required. • **Width –** Width of marking is as per IRC standards. • **Visibility –** No overtaking line markings are visible wherever provided.	• **Available –** Only on **21%** of road length wherever required. • **Width –** Width of marking is as per IRC standards. • **Visibility –** No overtaking line markings are visible wherever provided.

UN - DIVIDED ROADS – PERCENTAGE ADHERENCE TO IRC ROAD MARKING GUIDELINES			
Parameters	**National Highway (NH)**	**State Highway (SH)**	**Major District Roads (MDR)**
Warning Line	• **Available –** On all the road stretches wherever required. • **Width –** Width of marking is as per IRC standards. • **Visibility –** Warning lines are visible on all surveyed locations.	• **Available –** Only on **5%** of road length wherever required. • **Width –** Width of marking is as per IRC standards. • **Visibility –** Warning lines are visible wherever provided.	• **Available –** Only on **12%** of road length wherever required. • **Width –** Width of marking is as per IRC standards. • **Visibility –** Warning lines are visible wherever provided.

ROAD MARKINGS AT INTERSECTIONS:

ROAD MARKINGS AT INTERSECTIONS – PERCENTAGE ADHERENCE TO IRC ROAD MARKING GUIDELINES			
Parameters	**National Highway (NH)**	**State Highway (SH)**	**Major District Roads (MDR)**
Stop Line Marking	• **Available –** At **86%** of Intersections - All markings are Solid • **Width –** All are as per IRC standards • **Visibility – Only 67%** of them are visible wherever provided.	• **Available –** Only at **20%** of Intersections - All markings are Solid • **Width –** All are as per IRC standards • **Visibility – All** of them are visible wherever provided.	• **Available –** Only on **38%** of Intersections - All markings are Solid • **Width –** All are as per IRC standards • **Visibility – All** of them are visible wherever provided.
Give Way Lines Marking	Not Applicable	No Give Way lines	Not Applicable
Pedestrian Crossing	• **Available – On 86 %** of Intersections • **Width –** All pedestrian crossings are as per IRC standards • **Visibility – 83 %** of pedestrian crossing markings are visible	• **Available –** Only at **42 %** of Intersections • **Width –** All pedestrian crossings are as per IRC standards • **Visibility – 80 %** of pedestrian crossing markings are visible	• **Available –** Only on **43 %** of Intersections • **Width –** All pedestrian crossings are as per IRC standards • **Visibility – 83 %** of pedestrian crossing markings are visible
Directional Arrows	• **Available –** On **79 %** of Intersections	No Directional arrow markings	No Directional arrow markings

	• **Width –** All directional arrows are as per IRC standards • **Visibility – 73 %** of the markings are visible.		

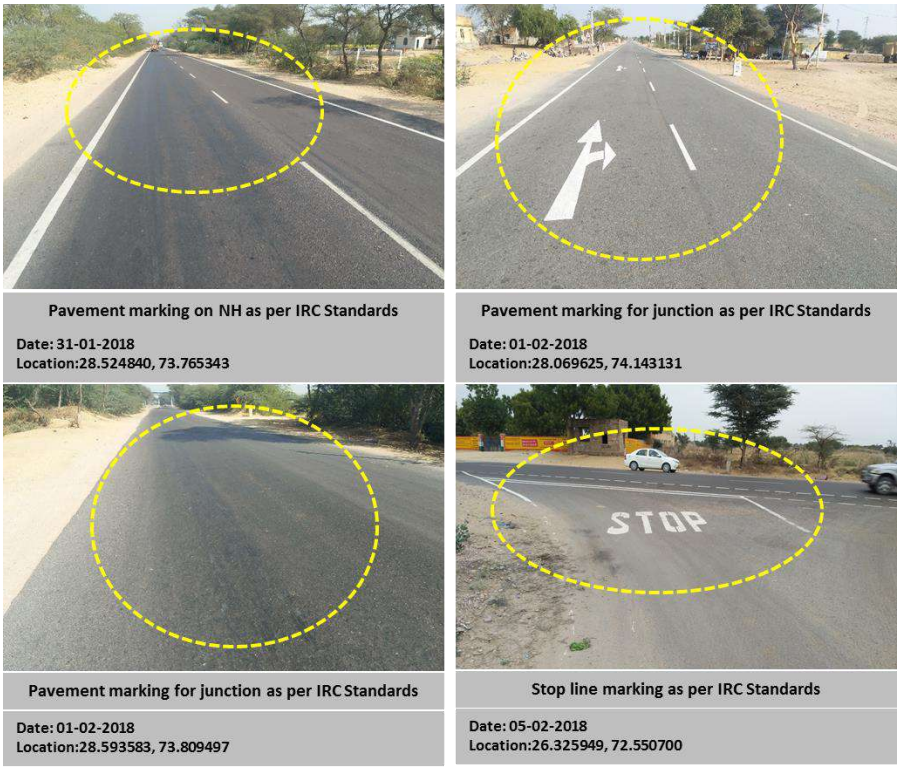


Exhibit 4-30: Photo references for Road markings on National Highways sections

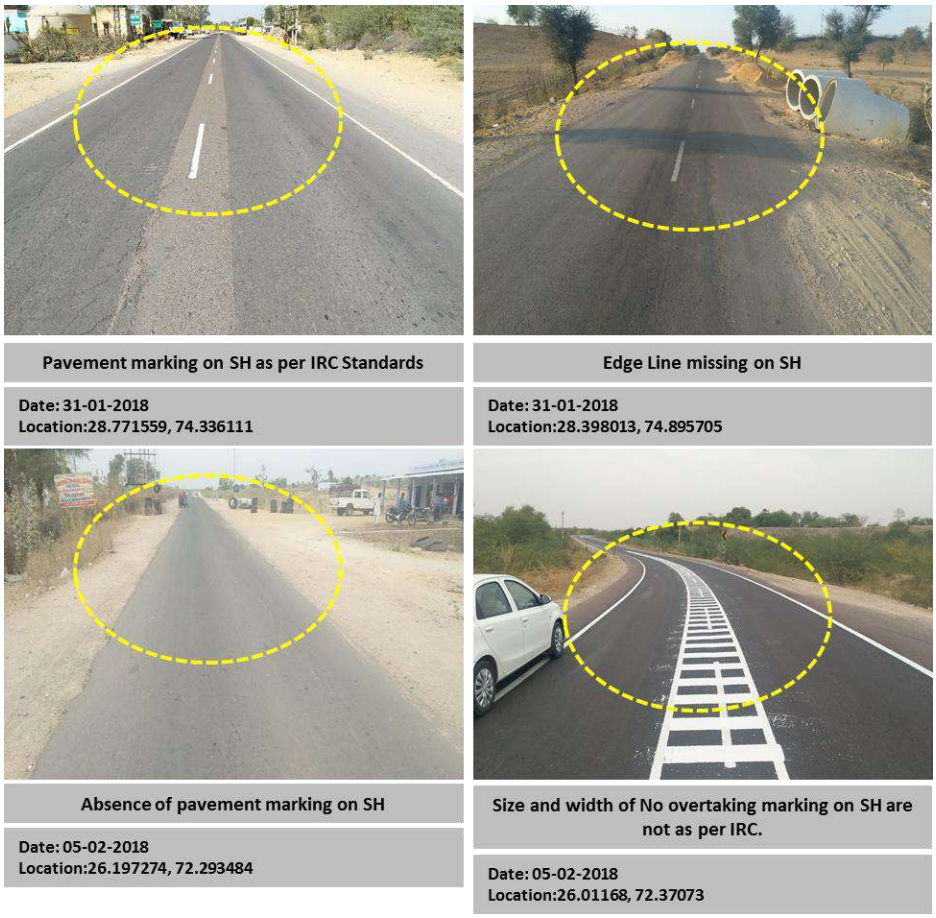


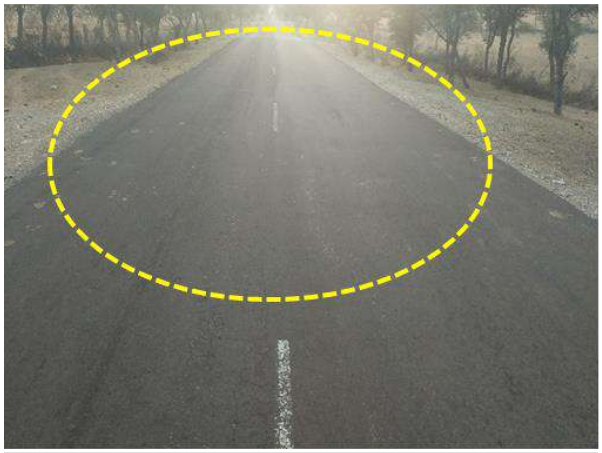
Exhibit 4-31: Photo references for Road markings on State Highways sections

Pavement marking on MDR as per IRC Standards

Date: 31-01-2018
Location:24.8103837, 76.5955263

Absence of pavement marking on MDR

Date: 31-01-2018
Location:28.595631, 74.774155



Absence of edge line marking on MDR

Date: 31-01-2018
Location:28.257323, 74.857846

Absence of pavement marking for junction on MDR

Date: 06-02-2018
Location:26.148051, 73.111436

Exhibit 4-32: Photo references for Road markings on Major District Road sections

4.4.7 Field Audit Findings – Traffic Control Devices

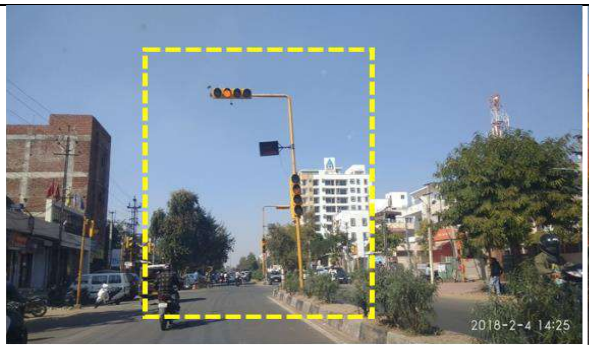
Point No. 18: Verify whether road safety signs, Road markings and traffic lights meet the IRC specifications. Please verify this in 4 Cities in the State and at a stretch of 100 Km each on National Highways, State Highways and Major District Roads.

The field investigations are done to understand the adherence of traffic signals to the IRC guidelines w.r.t its placement, height, visibility and more importantly their functioning. The results for intersections are presented below and Table 4-47 .

At Intersections

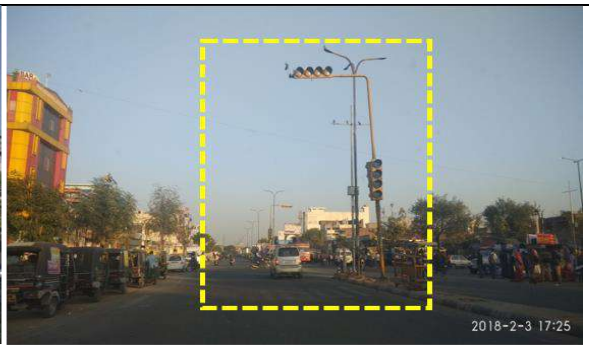
Table 4-47: Traffic Control Devices - % of Adherence as per IRC standards – at Intersection

Traffic Control Devices - %age of adherence as per IRC standards							
Sections	Urban				Rural		
	Jaipur	Kota	Jodhpur	Bikaner	National Highway	State Highway	Major District Roads
No. of Signals Observed	75	13	29	6	6	-	-
Placement	93%	92%	100%	67%	100%	-	-
Height	97%	100%	100%	100%	100%	-	-
Visibility	99%	92%	100%	100%	100%	-	-
Functional	83%	38%	66%	0%	67%	-	-
All Parameters	75%	38%	66%	0%	67%	-	-



Traffic light installed as per IRC Standards

Date: 04-02-2018
Location: 26;56;46 75;47;52



Traffic light installed but not in functional state

Date: 03-02-2018
Location: 26;56;50 75;43;22

Exhibit 4-33: Traffic control devices in Jaipur

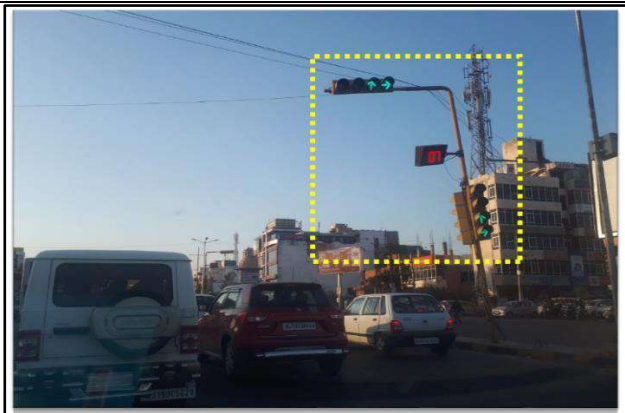
Traffic light installed as per IRC Standards

Date:29-01-2018
Location: 25;11;57 75;50;26

Traffic blinker blocked by a pole infront

Date: 30-01-2018
Location: 25;11;4 75;52;20

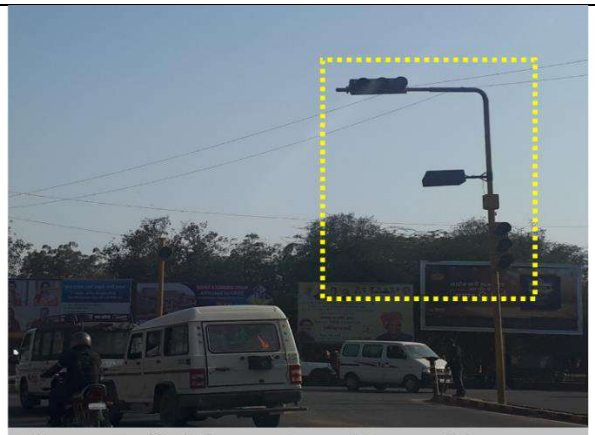
Exhibit 4-34: Traffic Control Devices in Kota



Jodhpur - Traffic lights as per IRC standards
Dated : 04-02-2018
Location: 26.2730, 73.0616

Jodhpur - Traffic lights Not in working condition
Dated : 04-02-2018
Location: 26.265, 72.9925

Exhibit 4-35: Traffic control devices in Jodhpur



Bikaner - Traffic lights Not in working condition
Dated : 29-01-2018
Location: 28.0180, 73.3288

Bikaner - Traffic lights Not in working condition
Dated : 29-01-2018
Location: 28.0275, 73.3016

Exhibit 4-36: Traffic control devices in Bikaner

4.4.8 Field Audit Findings – Road side Amenities

Point No. 19: Verify whether the driver rest areas, truck lay byes and bus bays are provided at suitable locations. Please verify this in 4 Cities in the State and at a stretch of 100 Km each on National Highways, State Highways and Major District Roads.

Below is the table showing the Rural Road sections surveyed and the availability of Truck laybys, bus stops, Bus stops with bus bays and Rest area.

Table 4-48: Highway sections with Road Side Amenities like truck layby, bus bays and Rest area.

Highway Section Surveyed	Truck Laybys (Y/N)	Bus Stops (Y/N)	Bus stops with bus bays (Y/N)	Rest Area (Y/N)	Remarks
NH 48 (section from Beelpur to Vidara Rural)	N	N	N	N	
NH 448 (section from Kishangarh to Gegal)	N	Y	Y	N	
SH 52 (section from Todalari to Portabgarh)	N	Y	N	N	
SH 2 (section from Chaksu to Ankeshpura)	N	Y	N	N	
MDR 6 (section from Shreenagar to Kiranipura)	N	Y	N	N	
MDR 81 (section from Mozamabad to Jhag)	N	Y	N	N	
NH 27 (section from Ras Khera to Palaita)	N	Y	Y	N	Unauthorized parking of Trucks on Dhabas and within carriageway
NH 52 (section from Tikar to Sirohi)	Y	Y	Y	Y	Unauthorized parking of Trucks on Dhabas and within carriageway
SH 1 (section Baran to Mangrol)	N	N	N	N	
SH 51 (section from Nayapura to Sankhera)	N	N	N	N	
MDR 04 (section from Banpur to Atru)	N	N	N	N	
MDR 56 (section from Kushyata to Bhilwara)	N	N	N	N	
NH 125 (section from Unthwaliya to Agolai)	Y	Y	Y	N	Trucks parked on Dhabas (Unauthorized)

Highway Section Surveyed	Truck Laybys (Y/N)	Bus Stops (Y/N)	Bus stops with bus bays (Y/N)	Rest Area (Y/N)	Remarks
NH 25 (section from Kuri to Newri)	Y	Y	Y	Y	Trucks parked on Dhabas (Unauthorized)
SH 28 (section from Pachpadra to Thob)	N	N	N	N	Trucks parked on Dhabas (Unauthorized)
SH 65 (section from Barnama Jagir to Devigarh)	N	N	N	N	
MDR 101 (section from Guda Bishnoi to Khara Bera Puroh)	N	N	N	N	
MDR 104 (section from Birad nagar to Kui Jodha)	N	N	N	N	
NH 11 (section from Satlera to Salasar)	Y	Y	Y	N	Trucks parked on Dhabas (Unauthorized)
NH 62 (section from Lunkaransar to Peepera)	N	Y	Y	N	Trucks parked on Dhabas (Unauthorized)
SH 7 (section from Bhanipura to Sawar)	N	N	N	N	Trucks parked on Dhabas (Unauthorized)
SH 69 (section from Ghantel to Karnisar)	N	Y	Y	N	
MDR 30 (section from Beenasar to Sehala)	N	N	N	N	
MDR 95 (section from Bhaleri to Thelana)	N	N	N	N	

- On surveyed stretches of NH, SH and MDRs, four driver rest areas were observed on National Highways as per IRC Standards. Road side Dhabas at frequent intervals were observed along the NHs, which were used as rest areas by truckers and cars.
- Seven truck lay byes were observed on 4 NH stretches out of 8 stretches surveyed.
- No truck lay byes were available for state highways and major district roads surveyed.

Truck lay Bye with rest area on NH

Date: 05-02-2018
Location: On NH 25 (between Kri and Newri villages)

Truck lay Bye with rest area on NH

Date: 05-02-2018
Location: On NH 125 (between Unthwaliya and Jalam Nagar villages)

Truck parked on dhabas on SH

Date: 05-02-2018
Location: On SH 28 (between Newai and Thob villages)

Truck parked on dhabas on NH

Date: 31-01-2018
Location: On NH 62 (between Lunkaransar and Peepera villages)

Exhibit 4-37: Location of Parking of Vehicles on Highway sections

A. Availability of Bus Stops and Bus Bays:

I. Urban Roads

- In Japur city, out of 15 stretches audited, eleven stretches were provided with bus stops but bus bays were available in one stretch.
- In Kota city, out of 14 stretches audited, only two stretches were provided with bus stops but bus bays were not available for the observed bus stops.
- In Jodhpur city, out of 14 stretches audited, six stretches were provided with bus stops but bus bays were not available for the observed bus stops.
- In Bikaner city, out of 13 stretches audited, only two stretch was provided with bus stops but bus bays were not available for the observed bus stops.

II. Rural Roads or Highway sections

- Out of total 8 stretches audited for National highways, seven stretches were provided with bus stops and bus bays.

- Out of total 8 stretches audited for State highways, only one stretch had bus stops with shelter along with proper bus bay.

- Total 8 MDR stretches were audited and found that there were no bus shelters observed on these stretches.

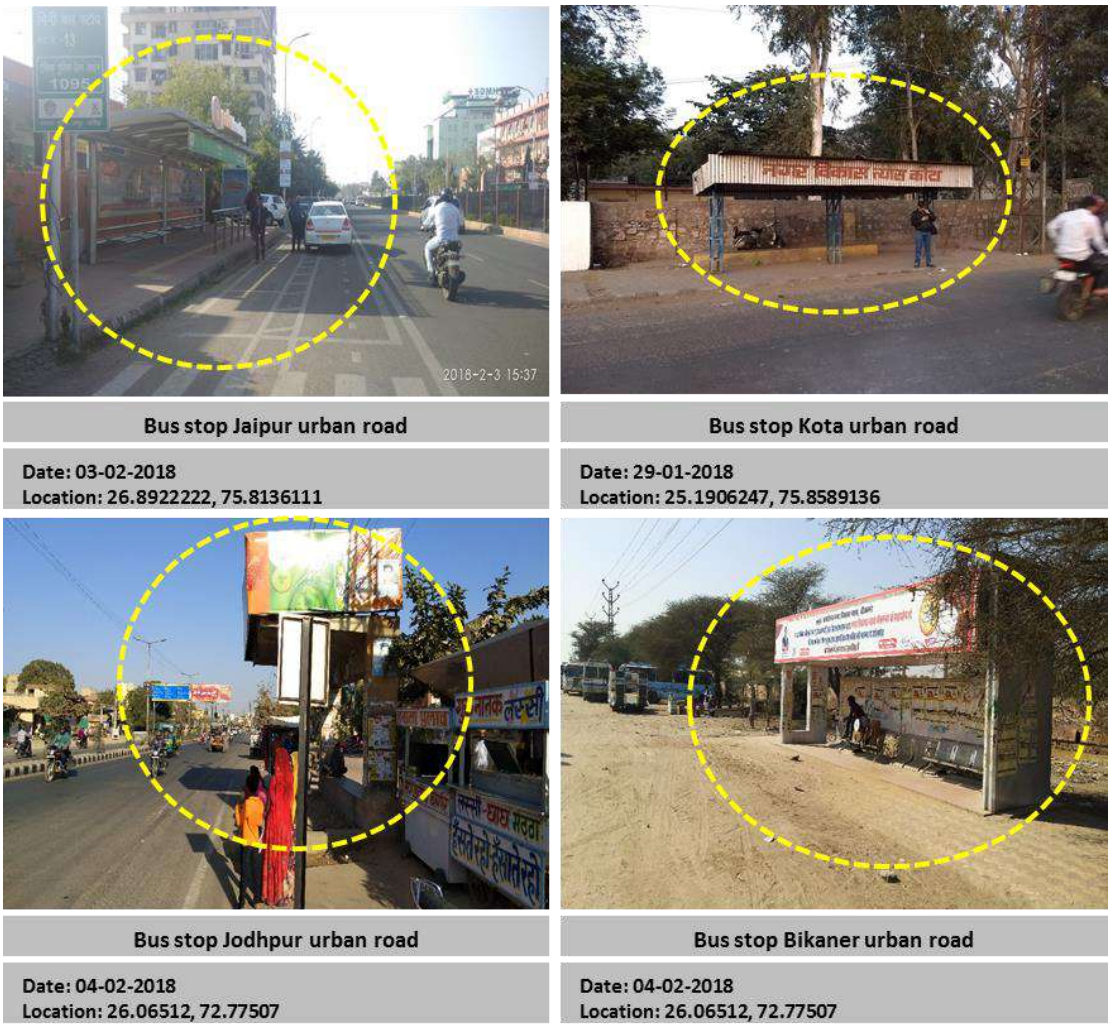


Exhibit 4-38: Availability of Bus stops in urban roads of Rajasthan

Exhibit 4-39: Availability of Bus stops with bus bays in rural roads of Rajasthan

4.4.9 Field Audit Findings – Hoardings

Point No. 20: Verify the action taken by the State to remove hoardings and objects that obstruct driving or distract drivers. Please verify this in 4 Cities in the State and at a stretch of 100 Km each on National Highways, State Highways and Major District Roads.

Hoardings

Out of 82 stretches audited in the State of Rajasthan only 5 stretches were observed with hoardings which are blocking information, creating sight distance problems and distracting the drivers.

In Kota,19% of the road stretches are having hoardings and in Jaipur 5 % of the road stretches are having hoardings. In Jodhpur and Bikaner hoardings are not there in audited stretches.

Table 4-49: Hoardings % in each city

City	% of surveyed sections with Dangerous Hoardings
Jaipur	5%
Kota	19%
Bikaner	Not available
Jodhpur	5%

4.4.10 Field Audit Findings – Pedestrian Facilities

Point No. 22: Verify whether the footpaths and service roads have been provided at required locations and are free from encroachments. Please verify this in 4 Cities in the State. In addition to above, also verify the crossings facilities for pedestrians and vehicles.

Pedestrian facilities should be planned in an integrated manner so as to ensure a continuous pedestrian flow. The basic aim should be to reduce pedestrian conflicts with vehicular traffic to the minimum. While planning and design the pedestrian facilities, the overall objectives would be continuity, comfort and safety.

The audit and field verification is focussed on assessing the adherence as per the IRC guidelines. The main objective is to verify whether footpaths meet the IRC specifications and the footpaths and service roads have been provided at required locations and are free from encroachments. Four parameters were considered for analysis and were as follows:-

- Percentage of road network length provided with footpath.
- Percentage of footpath length compliance with IRC standards in terms of width and rise.
- Percentage of road network length with encroachments on footpaths
- Percentage of road network length provided with service roads
- Total instances of junctions and other locations provided with pedestrian crossing facilities

The field investigations were conducted at midblock and intersections and few other locations which are in proximity to schools, hospitals and religious places. The details of the samples are summarised in the table below.

Survey Parameters	Jaipur	Kota	Jodhpur	Bikaner
The length of network audited	60 km	40 km	54 km	49 km
The total road sections observed	121	96	48	42
Mid-Block Locations	86	52	22	20
Intersection Locations	29	31	15	16
Other Locations	6	13	11	6
Expected length of footpath	120 km	80 km	108 km	98 km
Observed length of footpath	78 km	26.12 km	11.56 km	2.8 km
Observed length of footpath (%)	**65%**	**33%**	**11%**	**3%**

Note: Expected length of footpath = (length of network audited X 2), as per IRC guidelines, footpath should be on both side of the road sections.

- Apart from above locations, 25 numbers of special areas were also observed in Rajasthan State on National Highways, State Highways and Major District Roads.

The findings from each city are provided in detail below.

Table 4-50: Analysis Findings from Midblock locations - Pedestrian Facilities

Analysis Findings from Midblock locations - Pedestrian Facilities				
Parameters	**Jaipur**	**Kota**	**Jodhpur**	**Bikaner**
Footpath Availability	• **Available** - **65%** of Footpath length **Footpath availability:** ○ **One side** – 12% of road length ○ **Both side** – 59% of road length ○ **Not available** – 29% of road length	• **Available** - **33%** of Footpath length **Footpath availability:** ○ **One side** – 25% of road length ○ **Both side** – 20% of road length ○ **Not available** – 54% of road length	• **Available** - **11%** of Footpath length **Footpath availability:** ○ **One side** – 0% of road length ○ **Both side** – 11% of road length ○ **Not available** – 89% of road length	• **Available** - **3%** of Footpath length **Footpath availability:** ○ **One side** – 1% of road length ○ **Both side** – 2% of road length ○ **Not available** – 97% of road length
Footpath width	• **As per IRC standard** – 7% of footpath length	• **As per IRC standard** – 8% of footpath length	• **As per IRC standard** – 100% of footpath length	• **As per IRC standard** – 15% of footpath length
Footpath Rise	• **As per IRC standard** –15% of footpath length	• **As per IRC standard** – 31% of footpath length	• **As per IRC standard** – 100% of footpath length	• **As per IRC standard** –100% of footpath length
Footpath Encroachment	• **65% Encroached**	• **38% Encroached**	• **23% Encroached**	• **15% Encroached**

Analysis Findings from Midblock locations - Pedestrian Facilities				
Parameters	**Jaipur**	**Kota**	**Jodhpur**	**Bikaner**
Encroachment along carriageway	• **Encroached Along Carriageway -** 45% of Road length	• **Encroached Along Carriageway -** 16% of Road length	• **Encroached Along Carriageway -** 14% of Road length	• **Encroached Along Carriageway** – 16% of Road length
Footpath usability	• **Usable** - 51% of Footpath	• **Usable** - 27% of Footpath	• **Usable** - 100% of Footpath	• **Usable** - 85% of Footpath
Service road Availability	○ **One side** – 9.1% of road length ○ **Both side** – 24.7% of road length ○ Not available – 66.2% of road length	○ **One side** – 8.6% of road length ○ **Both side** – 8.6 % of road length ○ Not available – 82.8% of road length	○ **One side** – 4.1 % of road length ○ **Both side** – 1.4% of road length ○ Not available – 94.5% of road length	Not available on 100% of road length

Table 4-51: Analysis Findings from Intersections - Pedestrian Facilities

Analysis Findings from Intersections - Pedestrian Facilities					
Parameters		**Jaipur**	**Kota**	**Jodhpur**	**Bikaner**
Crossing Facility	Zebra Crossing	72%	61%	47%	6%
	Foot Over Bridge	--	6%	--	--
	Pedestrian Signal	--	--	--	--
Pedestrian Signage		90%	55%	7%	--
Traffic Calming measures for Pedestrian crossing	Speed Breaker	--	61%	13%	13%

Analysis Findings from Intersections - Pedestrian Facilities					
Parameters		**Jaipur**	**Kota**	**Jodhpur**	**Bikaner**
	Rumble Strips	--	3%	--	--
	Table Top	--	--	--	--
	Flashing light	72%	3%	--	--

Table 4-52: Analysis Findings from special areas - Pedestrian Facilities

Analysis Findings from special areas - Pedestrian Facilities						
Parameters		**Jaipur**	**Kota**	**Jodhpur**	**Bikaner**	**NH/SH/MDR**
Crossing Facility	Zebra Crossing	58%	64%	33%	33%	62%
	Foot Over Bridge	--	--	--	--	1.3%
	Pedestrian Signal	--	--	--	--	--
Pedestrian Signage		58%	72%	21%	17%	65%
Traffic Calming measures for Pedestrian crossing	Speed Breaker	--	65%	4%	--	42%
	Rumble Strips	--	--	--	--	--
	Table Top	--	--	--	--	--
	Flashing light	50%	--	--	--	--

***Special area: Schools, Colleges, Religious places and Hospital*

The photo references for each of the city are detailed below.

Jaipur City

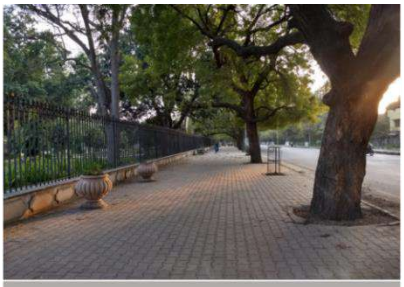
Provision of proper footpath along the carriageway in Jaipur city	
Date: 03-02-2018 Location: 26;53;43 75;48;26	Date: 04-02-2018 Location: 26;57;40 75;50;43

Installation of sign boards from municipal corporation on foothpath itself may cause hinderance to movement of pedestrian
Date: 04-02-2018 Location: 26;57;45 75;50;45

Foothpath in poor condition due to improper maintenance	Foothpath encroached by parking of vehicles
Date: 04-02-2018 Location: 26;51;38 75;45;48	Date: 03-02-2018 Location: 26;52;26 75;46;34

Exhibit 4-40: Condition of Pedestrian Facilities in Jaipur city

Kota City



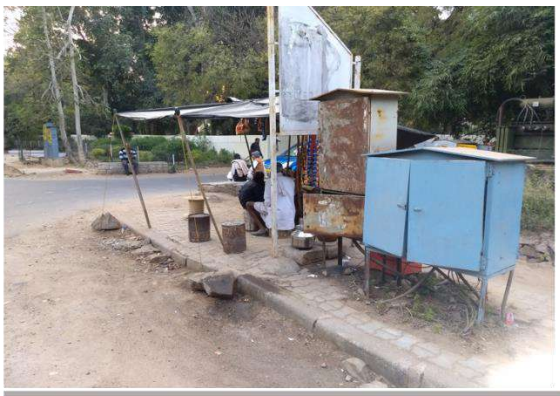
Provision of proper footpath along the carriageway

Date: 29-01-2018
Location: 25;12;27 75;51;45

Foothpath in poor condition due to improper maintenance

Date: 29-01-2018
Location: 25;12;27 75;51;45

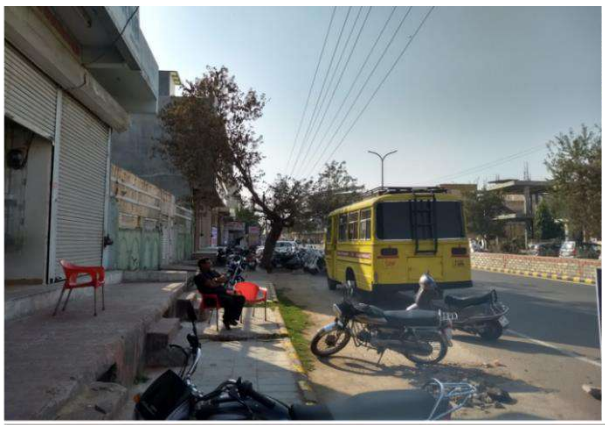
Date: 29-01-2018
Location: 25;12;44 75;51;56

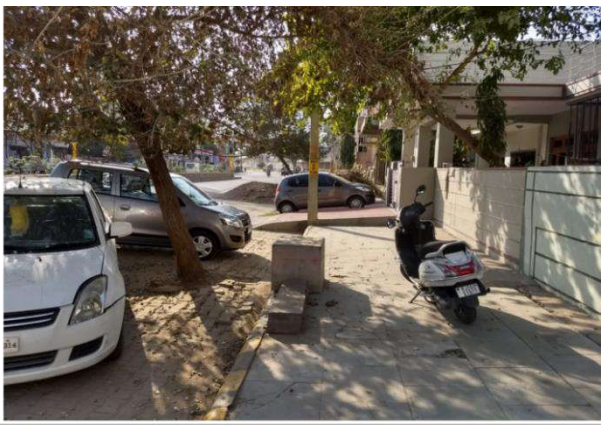


Encroachment of footpath by vendors and utilities may cause discourage among pedestrians to use footpath

Date: 29-01-2018
Location: 25;12;18 75;51;36

Date: 02-02-2018
Location: 25;8;45 75;50;0





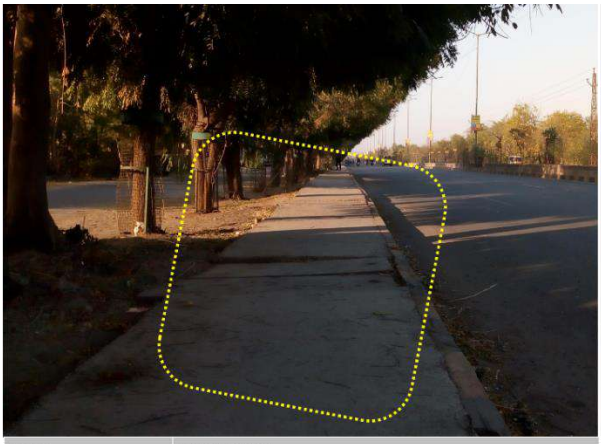
Encroachment of footpath by parking of vehicles

Date: 02-02-2018
Location: 25;8;42 75;49;28

Date: 02-02-2018
Location: 25;8;42 75;49;28

Exhibit 4-41: Condition of pedestrian facilities in Kota city

Jodhpur City



Date	04-02-2018

✓ Availability of clear Footpath on both side of the roads

Date	04-02-2018

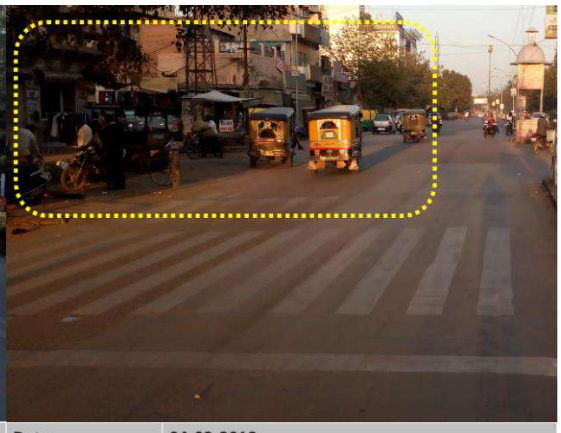
× Improper Maintenance of Footpath

Date	04-02-2018

Date	04-02-2018

× Lack of footpath availability, Leads to pedestrians are forced to walk on the carriageway

Date	04-02-2018



Date	04-02-2018

×Footpath and Carriageway encroached by Vendors. Vehicles are parking on footpath and along the carriageway

Exhibit 4-42: Condition of Pedestrian facilities in Jodhpur city

Bikaner City

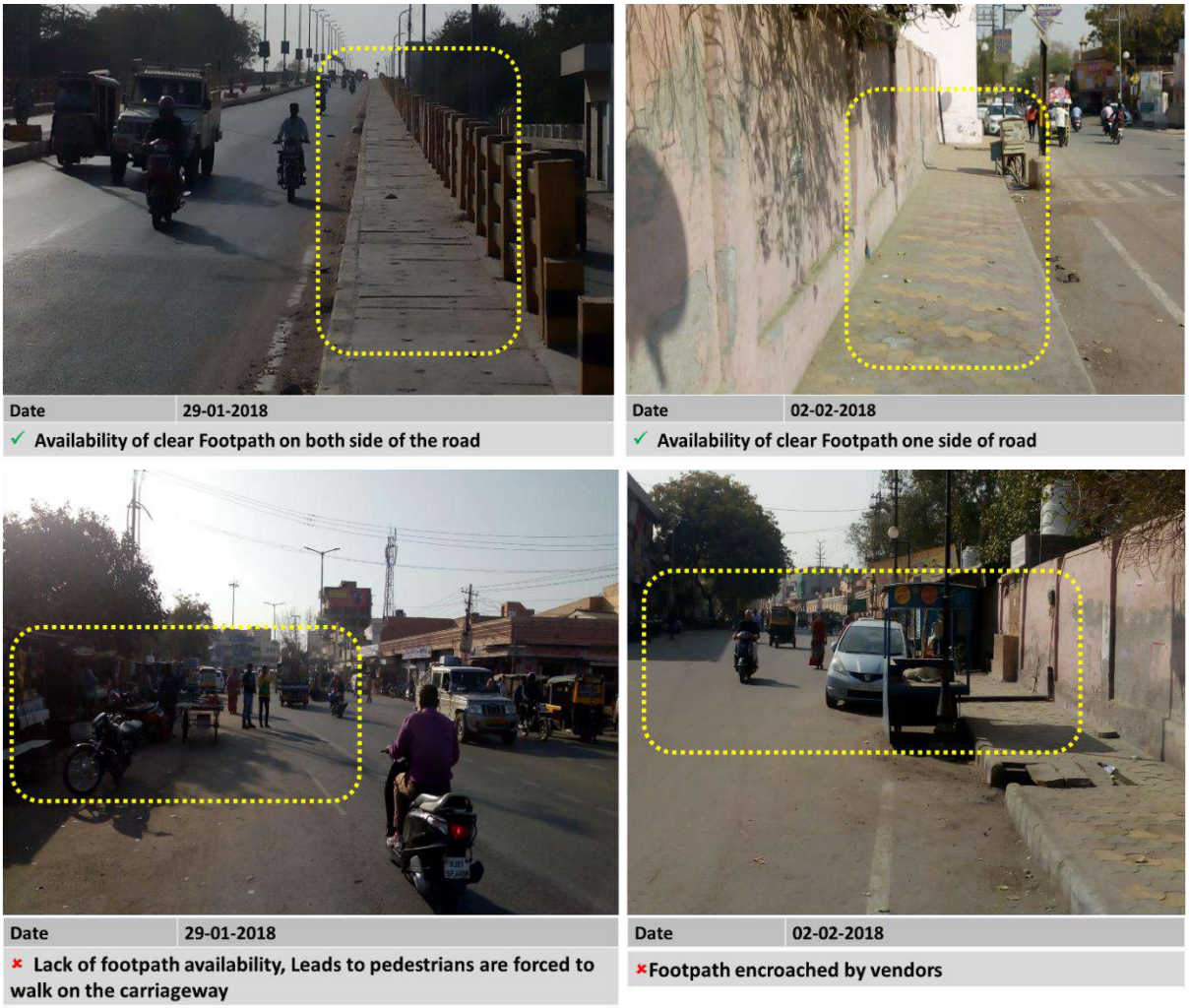
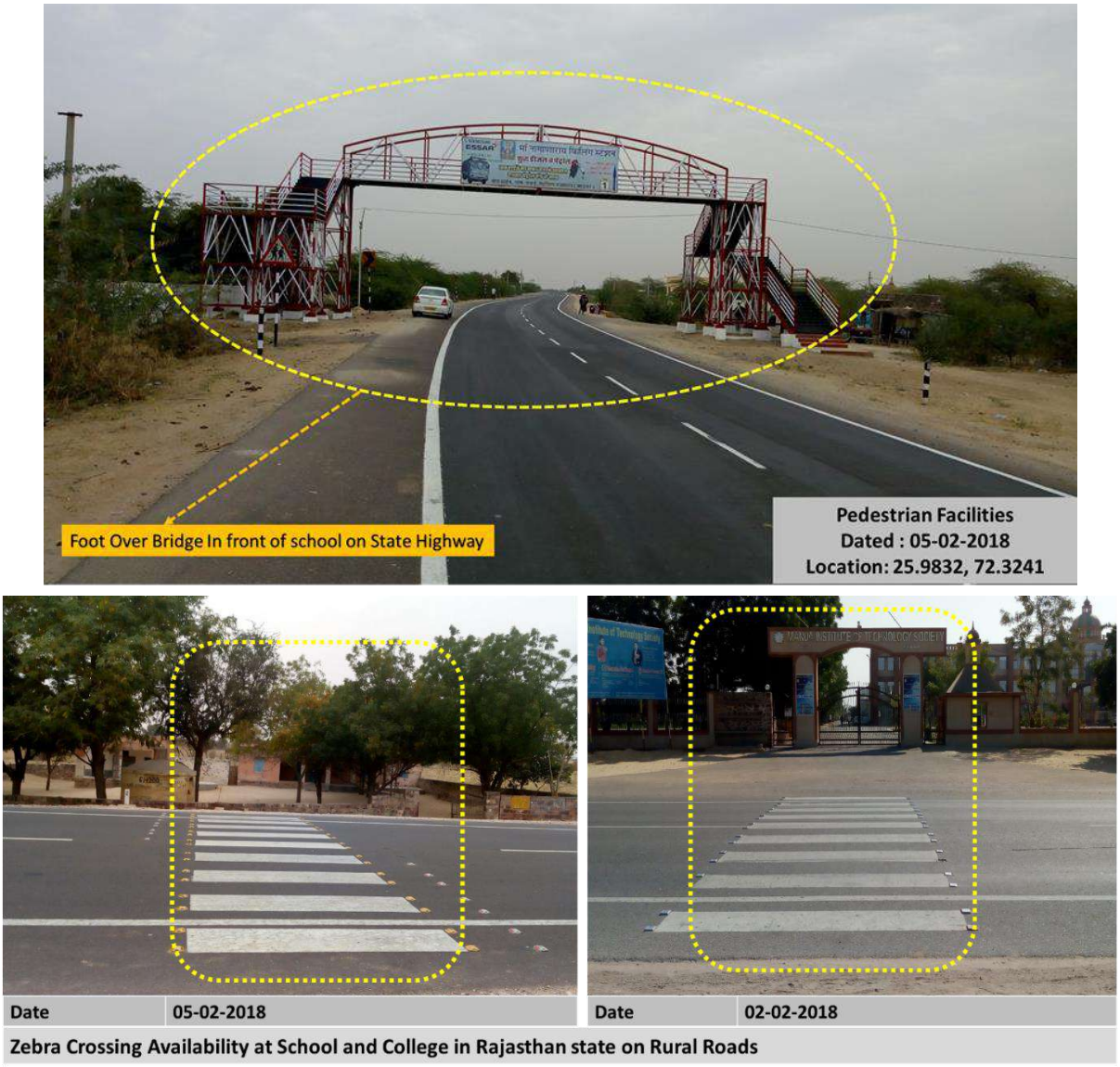


Exhibit 4-43: Condition of pedestrian facilities in Bikaner city

National Highways/State Highways/Major District Roads



Date	05-02-2018

Date	02-02-2018

Zebra Crossing Availability at School and College in Rajasthan state on Rural Roads

Exhibit 4-44: Condition of pedestrian facilities in Rajasthan state on Rural Roads

4.4.10.1 Summary- Pedestrian Facilities

- The overall footpath availability in cities is 28% of road length audited. This figure clearly indicated that pedestrian safety was neglected in cities and footpaths were not accessible.
- Cities had narrow footpaths, no crossings, streets dangerous for pedestrians.
- Some of the footpaths were either blocked or encroached by hawkers, Parking or other such temporary establishments.
- The design of footpath at some of the stretches surveyed were not as per IRC standards.
- Some of the major reasons why footpaths in the city are not usable are due to:
    - Encroachments
    - Electricity poles, transformers
    - Sign boards
    - Vehicles parked on footpath
    - Poor maintenance of footpath
- Very less number of service roads are present in Kota, Jodhpur and Bikaner. In Jaipur service road availability is 34% of the road length audited.
- Less number of pedestrian facilities observed near special areas like schools, colleges, religious places and hospitals.
- Unauthorized parking along carriageway, shoulders and footpath forces pedestrians to walk on main carriageway.

Table 4-53: Summary of status of Footpaths and Service roads in Rajasthan state

Footpath and Service Road Facility				
Criteria	**Jaipur**	**Kota**	**Jodhpur**	**Bikaner**
Availability of Footpath	65%*	33%*	11%*	3%*
Footpath width as per IRC	7%*	8%*	100%*	15%*
Footpath Rise as per IRC	15%*	31%*	100%*	100%*
Footpath Usability	51%*	27%*	100%*	85%*
Encroachments on Footpaths	45%*	38%*	23%*	15%*
Encroachments along the Carriageway	45%**	16%**	14%**	16%**
Service Road Availability	34%**	17%**	5.5%**	0%**
Zebra Crossing at Junction	72%***	64%***	47%***	6%***

Note:
**-percentage of observed footpath length*
***-percentage of road length*
****-percentage of intersections*

4.4.11 Traffic Management Plan at Construction sites

As part of the field investigation for adherence to traffic management plan at construction sites on Highways, NH stretch that was considered for the study was intersection of NH 27 and NH 52, and SH stretch that was considered for the study was SH-69 (Bhaleri – Churu section) from the State. The audit point was assessed based on a checklist prepared as per IRC SP-55: 2014 guidelines for "Traffic Management Plan for Work Zone Safety". The observations for the audited sections are provided below.

1) NH27 intersection with NH52 (Traffic management plan for Chainage 81 +790)

Key Observation

- The work involves construction of Jhalawar to Bundi Flyover at the T - intersection of NH 27 and 52 by NHAI
- Traffic management plan was prepared and submitted by the contractor and was site specific and followed
- Work zone signs, barricades with reflectivity, retro-reflective delineators, flagmens and diversion signs were observed at construction site to warn, inform and divert traffic as per the IRC guidelines.
- No lighting devices, flashing warning lights and flashing arrow signs were observed at site. Contractor raised the concern of theft of road safety equipment's for the same.
- Details of the site specific traffic movement and safety arrangement at diversion km 81+790 is attached in annexure.

<table>
<tr>
<td>  </td>
<td> 
Usage of water sprinkler for dusting</td>
<td> 
Direction Signboards</td>
</tr>
<tr>
<td> 
Construction of the flyover</td>
<td> 
Barricades with direction guidance</td>
<td> 
Barrier not provided alongside the carriageway</td>
</tr>
</table>

Exhibit 4-45: Traffic management at construction site – Jhalawar to Bundi Flyover at the T - intersection of NH 27 and 52

2) SH-69 Bhaleri – Churu section

Key Observation

- Construction work for widening of 2 lane road to 2 Lane with paved shoulder is being undertaken by PWD.
- No barricading provided around the construction area.
- There is absence of work zone sign boards.
- No advance warning to traffic for diversion areas.
- Equipments are operating without any flagman to warn the moving traffic.
- No arrangements for night time safety around work zones.

Absence of proper barricades to segregate the work zone from traffic

No work zone sign boards to warn the traffic

Absence of proper barricades and work zone signs on either side of carriageway

Absence of proper barricades and work zone signs on either side of carriageway

Exhibit 4-46: Traffic management at construction site –SH-69 Bhaleri – Churu section

4.4.12 Summary – Engineering Dimension

Blackspots & Road Safety Audits:

- A total of 963 Black spots were identified by traffic police in the year 2017, out of which 574 were on National highways, 265 were on State Highways and 124 on MDR and Roads maintained by other departments..
- There is no notified protocol exists for identification of black spots for state roads. As per internal process, Police Departemnt identifies the Black spots on all roads and send tot respective department for further action. Police department is using MoRTH definition for identifying the blackspots.
- For NHAI roads, MoRTH has finalized the list of blackspots in the year 2015.
- Road Safety Audits are not being conducted for the existing roads under PWD.
- No completion meeting minutes were maintained. Final audit reports are treated as completion minutes for National Highways under NHAI.
- There are no mechansim for monitoring the effectiveness of the rectified blackspots, which were identified by Polic department.

Adherence to IRC Standrads on Rural Roads (NH, SH, MDR):

- About 36% of the junctions on state highways, and 57% of the junctions on MDR lack traffic calming measures on Minor roads at Major Road-Minor road Junctions
- The compliance of road signs with IRC standards is better on National and State highways.
- There is severe lack of required road markings on State highways and Major District Roads.
- There are good number of properly designed Bus stops and Bus Bays available on National highways. Whereas, no Bus stops and Bus Bays were provided on State Highways and MDRs.

Adherence to IRC Standrads on Urban Roads (4 Cities- Jaipur, Kota, Jodhpur, Bikaner):

- Traffic Sign boards are not as per IRC standards with respect to Color and Reflectiveness parameters in Jaipur, Jodhpur and Kota.
- There is lack of required Road Markings on Divided road sections in Kota, and on Un-divided road sections in Bikaner
- There are only five intersection have Traffic lights in Bikaner. All five were not working. In Kota only 38% of traffic signals and Jodhpur only 68% of traffic signals are working.
- Some hoardings on road sections in Kota are obstructing and distracting in nature.
- There are lack of adequate bus stops in cities except Jaipur. Also, there are no Bus Bays in any of the four cities.
- In Jaipur, 65% of the roads have footpaths. However, only 7% of them are as per IRC standards. Also, 65% of the available footpaths were encroached.
- All other 3 cities (Jodhpur,Kota, Bikaner) has in-significant length of footpaths.
- Jodhpur and Bikaner fully lack proper pedestrian crossing facilities at junctions and mid blacks. Pedestrain crossing facilities in Jaipur and kota are not adequate and needs to be improved.
- Not all sensitive zones like schools, Colleges, hospitals in all four cities has pedestrian facilities (footpaths, zebra crossing).
- The encroachments on carriageway are less in all cities except Jaipur.

4.5 ROAD USER AWARENESS AND EDUCATION DIMENSION

Under Education, the training provided to the commercial drivers, traffic police personnel's, Engineers and also inclusion of modules on road safety in school curricula was verified.

4.5.1 Programs to Educate Commercial Drivers, Police in Road Safety

Point No. 23: Verify whether there are programs to educate and train commercial drivers, traffic police personnel, highway engineers and planners in road safety in the State. Indicate the facilities available and details of the programs. If the training calendar is prepared and followed.

Table 4-54: Compliance level for Road Safety Awareness/Education programs

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
Training Programs to : Commercial Drivers Traffic Police Personnel Highway Engineers/ Planners	Training to be provided on Road Safety	Teachers, students and general public	• BLS Course, Post accident & First Aid training for the general public. • Post-Accident and First Aid course for the students. • First Aid training, Road Safety training, Primary Health care training for teachers. • Certified road safety training, Road safety audit training, and Trauma care workshop for the professionals.
		Traffic Police Personnel	• Training for Use of Enforcement equipment is provided for Police personnel. • In 2017, 246 people were trained for alcohol meters and 59 people for Speed guns. • Road Accident identification training, primary health care training for the Police Personnel.

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
		Highway Engineers of NHAI, PWD, RIDCOR,	• **NHAI:** Awareness and sensitization training on Road Safety organized by RSC, NHAI HQ to engineers of NHAI, contractor/ concessionaire/ consultants by Road Safety Expert. 63 officers have been trained. • Approx. 32 PWD officials have been trained by IAHE and CRRI on Road Safety in the previous calender year. • Officials have been selected in such a way that atleast one officer represents each district.
Infrastructure for Training Facilities available	Facilities available	No Data	IDTR Relmagra, Centre for road safety- SPUP (Jodhpur) has required infrastructure facilities.
Training calendar Published and Followed	Published & Followed	NO Training calender is published.	
Training provided to Drivers and Conductors by respective STUs	Training to be provided on Road Safety.	RSRTC: Periodic training provided to drivers. Training includes: • 3 days routine training • 7 days Accident Cases training and counselling	• There is MoU of RSRTC with IL&FS (PPP) for accident cases training and counselling. • In Accident cases training (7 days), participants learn about duties in case of vehicle accidents & first aid, basics of vehicle assembly operations, good driving habits & fuel savings, following traffic rules & regulations, gain knowledge of road

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
			safety and safe driving practices.

4.5.1.1 Other Initiatives being organised in the State:

Rajasthan Road Safety Education and Awareness Mission

This Mission is to spread road safety awareness through mobile van having LCD projector and a high-decibel sound system, in a wide variety of grass root including gram panchayats, Municipal wards and Schools. The mission is operated by **Rajasthan Sadak Suraksha Society** - a Rajasthan Based not for profit organization which is sponsored by **Hindustan Zinc limited and All India federation of motor vehicle department**. It has educated 3.12 Lakh Road Users which includes commercial drivers, Traffic Police Personnel, Transport officers and Planners in Road Safety in the state. It is working in 5 districts of Rajasthan i.e. Ajmer, Bhilwara, Chittorgarh, Rajsamand, and Udaipur.

Three projects which are undertaken by Rajasthan Sadak Suraksha Society under the mission. These include:

1. **Spread Road Safety Awareness in Schools and Remote Area of Rajasthan**: The method of teaching involves a 90-minute audio-video training, Short Stories on Road Safety, Presentations, guidelines and education on traffic rules, behavioral training and first aid. The program is interactive and involves the audience through question and answer sessions also.
2. **Developing Safe and Zero Accidental Zone:** This involves conducting baseline surveys for checking the behavior of road users, collecting of accident and fatality information of the road sections for last five years (sample stretches), operations road safety audits etc.
3. **Most Safe Award Campaign for Safe Transportation of School Children**: This Pilot project is done in Udaipur in Collaboration with Traffic Police and Media Partner Rajasthan Patrika Earlier from Nov-Jan 2017. Performance rewards are awarded by the Traffic Police for the contribution of schools for this social cause for the following categories:
    - Most Safe School
    - Best Driver
    - Best Road Safety Club
    - Excellence Award

4.5.2 Road Safety Curricula in Schools

Point No. 24: Verify whether modules on road safety have been included in the school curricula and indicate the level at which these have been included.

Various aspects covered under this dimension are:

- Road User Safety Awareness initiatives
- Road Safety curricula in schools

Table 4-55: Compliance level of Road safety education at school level

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
Modules introduced on Road Safety	In school Curricula	Yes	Verified with the modules provided for English, Maths, Hindi, Social Studies, Science subjects of class 6th to 10th.
To be included in Moral Science	To be included in Moral Science	Has been included in subjects like English, Hindi, Maths, Social Studies, Science of class 6th to 10th.	Included in other subjects also.
To be introduced at elementary level	To be introduced at elementary level	Introduced at secondary level.	Not introduced at elementary level.

4.5.3 Summary – Road User Awareness and Education Dimension

- Trainings have been provided to commercial drivers, Traffic Police Personnel, Highway Engineers of NHAI, PWD, RIDCOR, RSRDCL by Transport Department. Also, under Rajasthan Road Safety Education and Awareness Mission road safety awareness is given through mobile van among large no. of people since 2013.
- There is MoU of RSRTC with IL&FS (PPP) for providing 7 days accident cases training and counselling of the participants.
- Road safety modules are included in school curricula from 6th to 10th in subjects like English, Hindi, Maths, Social Studies, Science.

4.6 EMERGENCY RESPONSE AND HEALTH CARE DIMENSION

Emergency care dimension falls under the purview of Director General of Health Services (DGHS). Various aspects covered under this dimension are:

- Comprehensive Trauma Care System Plan and GIS Mapping Systems
- Effective Network of Ambulance Systems for Emergency Response
- National Specification for Ambulances & Designation of Health Care Systems
- Gap Analysis at Trauma Care Facilities & Dynamic Linkages With Trauma care Centers
- Pre-Hospital Trauma Technical Curriculum & Capacity Building for HR
- Maintenance of Records on Trauma & Awareness Good Samaritan Guidelines

4.6.1 Comprehensive Trauma Care System Plan

Point No. 27: Verify whether States have developed a comprehensive State Trauma Care System plan for setting the way forward with regard to all components of an organized trauma care system with specific strategies and timelines as per the template provided to the States by Dte.GHS/MoHFW. The details of template listing the components/equipment and specifications will be provided to the successful bidder at the time of Audit.

Point No. 28: Verify whether the States have done GIS based mapping of potential ambulance points and the health care facilities (both public and privates) and its spatial relation to accident prone areas (black spots), for developing scientifically well-organized State wide emergency and trauma care network.

Table 4-56: Compliance level of State Trauma care system plan.

Audit Point	Benchmark/ SCC Directive	State Response	Consultant Remarks
Development of Comprehensive State Trauma care system Plan	As per Dte.GHS/MoHFW template	No (under Preparation) Target Year during FY 2018 - 19	No comprehensive Trauma plan is prepared for the state.
Strategies developed for implementation of plan	As per Dte.GHS/MoHFW	Not Available as there is no Plan prepared	Plan is still under preparation
Timelines set for implementation	As per Dte.GHS/MoHFW	Not Available as there is no Plan prepared	Plan is still under preparation.

Audit Point	Benchmark/ SCC Directive	State Response	Consultant Remarks
Trauma care facilities to be provided as per the template provided to the states by Dte.GHS/MoHFW	As per Dte.GHS/MoHFW template	Not Available as there is no Plan prepared	State trauma care plan is not prepared.
GIS mapping	GIS mapping of potential Ambulance points.	Yes mapping has been done.	All government ambulances (ambulances under 108 service, 104 service and base ambulances) have been mapped. No mapping service for Private ambulances
	GIS mapping of health care facilities	Yes mapping has been done.	But Mapping is done only for government hospitals and health care centres.
	Spatial relation to accident prone areas, for developing scientifically well-organized state wide emergency and trauma care network	Not done	Ambulances are located at Hospitals. Along Highways it is located near police station or Fire station.

4.6.2 Effective Network of Ambulance Systems for Emergency Response

Point No. 29: Verify whether the States have established an effective network of ambulances for emergency response with an aim to provide definitive care to the victims well within the golden hour.

Table 4-57: Compliance level for Ambulance network systems

<table>
<tr><th>Audit Point</th><th>Benchmark/ SCC Directive</th><th>State Response</th><th>Consultants Remarks</th></tr>
<tr><td>Set-up ambulances networks</td><td>Set-up ambulances one within 50 km road network length – ALS & BLS</td><td>Total of 1537 ambulances are available

Under 108 service
<table><tr><th>Type</th><th>No</th></tr><tr><td>ALS</td><td>32</td></tr><tr><td>BLS</td><td>732</td></tr></table>
Under 104 service
<table><tr><th>Type</th><th>No</th></tr><tr><td>BLS</td><td>586</td></tr><tr><td>Patient Transport</td><td>189</td></tr></table></td><td>764 ambulances i.e. ALS and BLS ambulances are under 108 service.

773 ambulance (BLS and patient transport) are under 104 service but being operated under 108 service with integration of 104 and 108.</td></tr>
<tr><td>unified toll free helpline number</td><td>Single unified toll free helpline number</td><td>Helpline number 108 & 104

Both are integrated.</td><td>108 is assigned for Rajasthan medical emergency services</td></tr>
<tr><td>Development of Emergency Control Centre/Response centre</td><td>To be implemented</td><td>Available in Jaipur</td><td>Central command control centre is being operated by GVK EMRI and same has been visited by consultants.</td></tr>
<tr><td>Provision of TRANEXAMIC ACID within ambulances</td><td>To verify the awareness about the medicine</td><td>Being used</td><td>Health care officials are aware of Tranexamic acid and same is being used in the ambulances.</td></tr>
<tr><td>No of cases attended per day per ambulances</td><td>Benchmark to be derived based on geography, terrain and Traffic.</td><td><u>Ambulances under 104 Service (patient transport)</u>

4 cases/day/ambulance

<u>Ambulances under 108 Service</u>

2 cases/day/ambulance</td><td></td></tr>
<tr><td>Response time</td><td>Minimum response time and within the</td><td>Urban – 20 min

Rural – 30 min</td><td>It is within golden hour concept.</td></tr>
</table>

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
	golden hour concept		

4.6.3 Ambulances Specification & Designation of Health Care Systems

Point No. 30: Verify whether the States are effectively following the prevailing national specification for ambulances and rescue vehicles.

Point No. 31: Verify whether the States have verified and designated existing health care facilities (both public and private) along/ near the highways as Level III, Level II or Level I hospitals based on the operational definition provided by MoH&FW. A copy of the operational definition for Level III, Level II or Level I hospitals as provided by MoH&FW.

Table 4-58: Compliance level of Designation of health care systems

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
Specification for Ambulances and rescue vehicles	As per prevailing National specification for ambulances	National specifications followed	Ambulances are audited fortnightly basis by state level / district level officers
Health care facilities along/near Highways: Level I	As per "Capacity Building For Developing Trauma Care Facilities On National Highways" issued by MoHFW	<u>One Level I:</u> Institute of Traumatology, SMS Hospital.	Consultants have visited SMS hospital, Jaipur Audit details are provided in the 4.6.3.1 section.
Level II	As per "Capacity Building For Developing Trauma Care Facilities On National Highways" issued by MoHFW	<u>Four Level II:</u> • S. P medical college- Bikaner • JLN Medical college – Ajmer • Medical college – Kota • RNT Medical college – Udaipur	Consultants have visited S.P Medical college, Bikaner Audit details are provided in the 4.6.3.2 section

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
Level III	As per "Capacity Building For Developing Trauma Care Facilities On National Highways" issued by MoHFW	38 Level III	Almost in each district at least one Level III trauma centre has been established.
Existing health care facilities to be upgraded to Level I, II & III trauma	As per "Capacity Building For Developing Trauma Care Facilities On National Highways" issued by MoHFW	20 Health care centres are identified.	20 districts have been identified based on no of accidents and one health care centre in each district is being upgraded as Level II trauma care centre.
Hospitals with Trauma Team Concept Plan	Follow trauma team concept	Yes, 6 medical colleges has Trauma team concept in place.	There are no details of private health care facilities with trauma team concept plan.

4.6.3.1 Status of Level – I Trauma Care Centre

- A government trauma centre of level I in SMS hospital, Jaipur was audited in the state of Rajasthan.
- Auditors had visited the trauma centre on 06th February 2018 and verified whether sufficient number of equipment and human resource are provided as per the guidelines.
- The adequacy of different facilities in the trauma centre against norms has been detailed out in the below Table 4-59.

Some of the visuals are provided in the below Exhibit 4-47

Table 4-59: Adequacy of trauma care centre of level - I

Audit Parameter	Adequacy for Level - I
Over all infrastructure (ICU beds and Operation theatres)	**Adequate** • ICU beds – 10 out of 10 • Trauma beds – 20 out of 20 • Operation Theatres – 8 are available
Equipment	**Adequate** No Trolley based 3D ultra-sonography All other equipment are available
Rehabilitation Equipment's	**No Equipment are available** (Refer Annex B for details)

Anaesthesia Equipment's	**Inadequate** Following Equipment are not available: Cautery machine, High vacuum suction machine, Transport ventilator, patient warming system, operating microscope. • Defibrillator with monitor - 3 out of 10 (Refer Annex B for details)
Orthopaedic Equipment's	**Inadequate** No Pneumatic Tourniquet and Splints and traction devices. Power drill and power saw – 1 out of 2 (Refer Annex B for details)
OT equipment's	**Inadequate** • No Thoracotomy instrument, Humidity control meter and Lab automatic blood gas analyser.
Other Facilities	**Adequate** All facilities like Blood bank, laminar air flow, electricity backup are available.
Human Resources	**Adequate** • Neurosurgeon (Surplus) in SMS Hospital – 14 out of 4 The number of casuality medical officer, OT technician and MRI technician are not adequate (Refer Annex B for details)

Exhibit 4-47: Some of the visuals of trauma centre of Level – I

4.6.3.2 Status of Level – II: Trauma care centre

- A government trauma centre of level II in S.P medical college, in Bikaner was audited in the state of Rajasthan.
- Auditors had visited the trauma centre on 31st January 2018 and verified whether sufficient number of equipment and human resource are provided as per the guidelines.
- The adequacy of different facilities in the trauma centre against norms has been detailed out in the below Table 4-60: Adequacy of trauma care centre of level – II

Table 4-60: Adequacy of trauma care centre of level – II

Audit Parameter	Adequacy for Level - III
Over all infrastructure (ICU beds and Operation theatres)	**Inadequate** ICU beds – 7 out of 10 Operation theatre – 2 out of 2
Equipment	**Inadequate** No Trolley based 3-D ultrasonography and CT scan.
Rehabilitation Equipments	**Inadequate** No separate rehabilitation equipments for trauma centre available with PMR dept.
Anaesthesia Equipment's	**Adequate** Defibrillator with monitor – 3 out of 10 No Patient warming system.
Orthopaedic Equipment's	**Adequate** Pneumatic Tourniquet – 2 out of 2 Power drill – Not in working condition General Orthopaedic instruments - NIL
OT equipment's	**Adequate** All instruments are available
Other Facilities	No Blood bank and microbiology.

Human Resources	**Adequate** Neuro surgeon – 1 out of 1 No OT Technician

Exhibit 4-48: Some of the audit visuals of trauma centre of Level – II

4.6.3.3 Status of Level – III: Trauma care centre

- A government trauma centre of level III associated with Civil hospital Deoli, Rajasthan was audited
- Auditors had visited the trauma centre on 1st of February 2018 and verified whether sufficient number of equipment and human resource are provided as per the guidelines.
- Audit results of trauma centre of level II mentioned in Table 4-59 below.
- The adequacy of different facilities in the trauma centre against norms has been detailed out in the below Table 4-59.

Some of the visuals are provided in the below **Exhibit 4-49**.

Table 4-61: Adequacy of trauma care centre of level - III

Audit Parameter	Adequacy for Level - III
Over all infrastructure (ICU beds and Operation theatres)	**Inadequate** No required number of ICU beds
Equipment	**Inadequate** Following equipment are not available Ultrasonography X ray machine, Portable X ray machine
Anaesthesia Equipment's	**Inadequate** Cautery machine, suction machine, defibrillator with monitor are inadequate Transport ventilator, Ventilator with highend compressor and ABG machine are not available
Orthopaedic Equipment's	**Inadequate** No equipments are available.
OT equipment's	**Inadequate**

	Craniotomy instrument, humidity control meter are not available.
Other Facilities	**Inadequate** No ICU beds
Human Resources	**Inadequate** The following human resources are in inadequate number Anaestheist, orthopaedic surgeon, General surgeon, Radiographer

Exhibit 4-49: Some of the visuals of trauma centre of Level – III in Deoli, Rajasthan

4.6.4 Gap Analysis at Trauma Care Facilities & Dynamic Linkages

Point No. 32: Verify whether the States have conducted gap analysis in terms of infrastructure, manpower, equipment and organizational functions at the identified trauma care facilities in the State (based on the operational definition for these by MoH&FW) and worked out a realistic plan for filling the critical gaps with definite timeline in its implementation.

Point No. 33: Verify whether the States have set up a mechanism to ensure dynamic linkages between various health care facilities (across Level III, Level II, Level I hospitals) in terms of manpower, resources, skills and information.

Table 4-62: Compliance level of Gap Analysis

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
Gap Analysis of existing trauma care facilities in terms of: **1) Infrastructure** **2) Manpower** **3) Equipment** **4) Organizational functions**	Based on MoHFW definitions	Based on gap analysis of Infrastructure, Man power, Equipment's and Organisational function.	Health care facility is first analysed in terms of available infrastructure and Human resources and a detailed report of the is prepared. Gap analysis reports for three health care facilities have been provided.
Prepare Action plan to fill the Critical Gaps with definite timelines	As per MoHFW	No,	No action plan prepared to fill the gaps.
Dynamic Linkages between various health care facilities **wrt Manpower**	Establish dynamic linkages w.r.t manpower	No Linkage	At present there is no linkage of Trauma care facilities in terms of manpower or Resources or Sharing of information or skills.
In terms of Resources	Establish dynamic linkages wrt resources	No Linkage	No Linkage established.
in terms of skills and information	Establish dynamic linkages w.r.t skills and information	No Linkage	No Linkage established.
Action taken for dynamic linkages	Initiatives to be taken by the state	Still under planning stage.	Expected to be completed by 2018-19.

4.6.5 Pre-Hospital Trauma Technical Curriculum & Capacity Building

Point No. 34: Verify whether the Standardized pre-hospital trauma technician curriculum as developed by Dte.GHS/ MoH&FW for training of pre-hospital Trauma Technicians is being followed by all the States.

Point No. 35: Identify the action being taken by the State in Capacity Building for human resources (starting from first responders-drivers, police personnel, conductors, teachers, students, etc. to specialists).

Table 4-63: Compliance level - Capacity building

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
Standardized pre-hospital trauma technician curriculum developed by Dte. GHS/MoH&FW to be followed by the State	Prepare pre-hospital trauma technician curriculum as per Dte. GHS/MoH&FW	No	General Training is being provided by Doctors. No approved PTT curriculum at State Level
PTT Legislation[1] to be made	Have a PTT legislation	No	No approved PTT curriculum at State Level
Capacity building exercise taken by state to train First responders, Police personnel, conductors, teachers, engineers, Planners, students etc.	Undertake capacity building exercise to train First responders, Police personnel, conductors, teachers, engineers, Planners, students	Teachers, Police and general public is given first responders training.	BLS training centre has been established and training is being provided to first responders.
ATLS training to Health department staff	Provide ATLS training to all staff	Yes training is provided by AIIMS. 120 doctors have been provided with training and nurses.	A total of 4 training programs have been provided in the last 3 years. A certificate is also provided to the doctors who undergo training.

[1] As the PTT may involve certain procedures. They need to be licensed and empowered to do the procedures.

Allied health professional needs to be protected and regulated. Hence, this requires Legislation to be passed at State level.

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
			Training centre is being developed in SMS medical college, Jaipur

4.6.6 Maintenance of Records on Trauma & Awareness Good Samaritan Guidelines

Point No. 36: Verify that the States are maintaining records/information on injury and trauma. In addition to above, also verify whether data on two-wheelers deaths due to non-wearing of helmets are being maintained by Hospitals

Point No. 37: Verify the effective measures including the awareness strategies by the States on the Good Samaritan Guidelines circulated to them by MoRTH & MoH&FW.

Table 4-64: Compliance level - Records maintenance

Audit Point	Benchmark/ SCC Directive	State Response	Consultants Remarks
Maintaining records/information's on Injury and Trauma	States to maintain records on injury and trauma	Not maintained	For 108 services it has been checked at the control centre situated in Jaipur.
Awareness strategies by the States on the Good Samaritan Guidelines	To be circulated and publicised in all hospitals	Published at Hospitals	Not displayed in all police stations.

4.6.7 Summary – Emergency Response and Health Care Dimension

- No comprehensive Trauma plan is prepared for the state.
- All government ambulances and health care centers are mapped.
- A total of 1537 ambulances are available and 108 & 104 have been assigned as unified toll helpline numbers for medical emergency services.
- The response time ambulance service is 20 and 30 min in urban and Rural respectively.
- There are one Level I, four Level II and 38 Level III Trauma care centers and 20 other health care centers are identified to upgrade as trauma care centers.
- Gap analysis reports have been prepared for some of the health care facilities but action plan for the same has to be prepared.
- No Dynamic Linkages between various health care facilities and No approved PTT curriculum at State Level
- BLS training centre has been established and training is being provided to first responders.
- No Maintenance of records/information's on Injury and Trauma

5 RECOMMENDATIONS

Many of the SCC recommendations have not been completely adhered as per the guidelines. These are listed below with consultants' recommendations to improve compliance.

In this chapter, detailed recommendations for each of the safety dimension which need to be implemented by the state immediately are provided.

5.1 RECOMMENDATION FOR EACH SAFETY DIMENSION

These are listed below with consultants' recommendations to improve compliance.

5.1.1 INSTITUTIONAL DIMENSION

Table 5-1: Recommendation for Institutional Dimension

Audit Point	Recommendations
Constitution of Lead Agency *Point No. 1: Verify whether the Lead Agency set up by the State to coordinate all activities on road safety is headed by a senior officer and has dedicated & professional staff and the necessary funds to effectively discharge its functions and whether other Departments in the State have been sensitized on road safety. Indicate briefly the working of the Lead Agency*.	**Audit Finding:** a) Reconstituted Road Safety Cell is acting as Lead Agency headed by Deputy Transport Commissioner. The Rank of the Head of the Lead Agency is not as per the Directions issued by the SCC b) Dedicated staff deputed from key stakeholder departments are deployed. **Recommendation:** The Lead Agency shall be independent, headed by not less than Addl. Commissioner level person, with dedicated full time staff to address Road safety issues as per the Directions of the SCC.
Constitution of Road Safety Fund *Point No.2: Verify whether a Road Safety Fund has been established by the State. Indicate whether the Fund is adequate for meeting expenses on road safety. If so, which Department administers such a fund? Are there rules for the Fund? If so, obtain a copy of the Rules.*	**Audit Finding:** a) Dedicated Road Safety Fund (RSF) has been notified and made operational from April, 2017. b) Rs 89.42 Crore have been allocated in Fy 2017-18. c) Allocated road safety fund is not utilised fully and not spent on any engineering and emergency care related activities. d) RSF is managed through a Fund Management Committee (According to Road Safety Fund Guidelines) e) Road Safety Fund is made Non – Lapsable.

Audit Point	Recommendations
	Recommendation: The Road Safety fund shall be used for strengthen road safety initiatives covering all dimensions.

5.1.2 ENFORCEMENT DIMENSION

Table 5-2: Recommendation for Enforcement Dimension

Audit Point	Recommendations
Accident Information Systems *Point No.3: Verify whether the road accident data is being collected by the State on the format as prescribed by the MoRTH and is analysed properly to identify causes for high accidents. Which Department is responsible for data collection and analysis? Provide details of the data collection arrangements and analysis thereof. In addition to the above, also verify the use made of the accident data for arriving at road safety counter measures as well as for enforcement purposes*	**Audit Finding:** MoRTH prescribed form is not in use for recording and reporting and is proposed to be used from April 2018. Computerised Accident Database Systems are not deployed proposed to launch "Road Accident Management & Data Analysis System (RAMDAS)"in all range headquarters by 2018-19 followed by all districts by 2019-20 **Recommendation:** a) Recording of data to be carried out using revised MoRTH format. The proposal of creating RAMDAS should be in line with CCTNS project by GOI. b) Feedback from public would improve the quality of accident reporting.
Functioning of Enforcement Equipment & Inventory & Police Strength *Point No. 4: Verify the number of equipment viz. (i) alcohol-meters (ii) speed checking devices deployed to check traffic violations and whether the equipment's are functional. Also verify the number of CCTV Cameras deployed to detect traffic violations and whether the footage from these cameras is continuously monitored.* *Point No. 5: Verify whether the police personnel are well trained to use the equipment.* *Point No. 6: Verify the number of traffic police deployed by the State to detect traffic violations and comment on the adequacy of the traffic police deployed*.	**Audit Finding**: MHA norms are not being followed for estimation of equipment requirement. Not all Alcohol meters are in working condition in 4 cities. Interceptors in Bikaner and Kota are not in working condition. Severe Shortfall in Police Strength is about 13,277 with respect to MHA norms. **Recommendation:** a) Even though BPR&D (MHA) guidelines are used for estimation of staff, State should increase the staff strength accordingly for each city and district. b) BPR & D Norms (MHA) norms should be used for estimation of equipment and procurement of the same should be made as soon as possible.

Audit Point	Recommendations
	c) Police department should include maintenance budget and monthly checklists for verifying usability of equipment.
Traffic Rule Violations – Helmet, Seat Belt and Usage of Mobile Phone *Point No. 7: Verify whether the use of helmet has been made compulsory both for driver and pillion rider all over the State and is rigorously checked. Please verify this in 4 Cities in the State and at a stretch of 100 Kms each on National Highways, State Highways and Major District Roads.* *Point No. 8: Verify whether the seat belt and cell phone laws are being implemented in the State and are rigorously checked. Please verify this in 4 Cities in the State and at a stretch of 100 Kms each on National Highways, State Highways and Major District Roads*	**Audit Finding:** Helmet use violation and Seat belt law violation is high in cities except in Jaipur. On Highways Helmet law violations and seat belt law violation is abour 73% and 77% respectively, and current practice of creating awareness has not resulted in satisfactory levels of compliance. **Recommendation:** a) Helmet use rule must be enforced to ensure the compliance of helmets. This requires continuous assessment of enforcement strategy half yearly. b) To improve use of seat belts and compliance of rule against mobile use while driving requires random checking on roads continuously for few years, until it reaches satisfactory levels.
Extent of Reduction of Human Intervention in Driver Licence Issuance *Point No. 9: Evaluate the driver licensing system in the State and the measures being taken to reduce human intervention in the issue of driving license to the drivers of cars, two-wheelers and commercial vehicles*.	**Audit Finding:** DL system automation has been done in 44 out of 53 RTO centres. Currently there are no Automated Driving Test Track centres (ADTC) in the state. In the first phase 13 centres would be automated and Rs 30cr has been sanctioned There no special driving tests for construction vehicles and over-dimensional vehicles are not done. **Recommendation:** Automation for issuance of DL shall be implemented throughout the State. All automated test tracks for issuance of DL to be made operational at the earliest in at all the identified locations There shall be no Human intervention in issuing commercial vehicle DLs also.
Status of DL Computerisation, Repeated Violators, Separate Police Teams	**Audit Findings:** Fully computerised and linked to SARATHI database.

Audit Point	Recommendations
Point No. 10: Examine whether the driver licensing data has been computerized and fed into a Central Data Base so that Licensing Authority can verify whether an applicant has obtained the License from another Licensing Authority. *Point No. 11: Examine whether the traffic violations are linked with drivers' licenses, and records of violations kept and updated so that repeated violators can be identified for appropriate action.* *Point No. 12: Examine whether separate unit/ team with necessary equipment has been set up to patrol National/ State Highways and traffic violations.*	No linking of Traffic Violations data against DL records Challans are issued against RC and DLs and counselling sessions are conducted for 2 to 3 hrs. 5 Highway flying squads have been sanctioned but not yet deployed **Recommendation:** a) Violations and issue of challans to be linked with Drivers Licenses and mechanism to identify repeated violators to be devised **b)** The sanctioned flying squads have to be deployed as soon as possible and more such squads are to be sanctioned.
<u>Status of Driver Training Institute & Vehicle Inspection Centres</u> *Point No. 21: Verify the status on Driving Training Institutes and Vehicles Inspection Centres sanctioned by the MoRTH for the State. In addition to above, where the Centres are functional, have they been audited to see they are functioning properly?*	**Audit Finding:** MoRTH sanctioned (DTI) at Relmagra is under Operational. But MoRTH sanctioned VIC at Relmagra is not operation and is under repair. **Recommendation:** VIC at Relmagra shall be made functional at the earliest. Well-equipped inspection centres with adequate staff should be established.
<u>Commercial Vehicle RC Renewals & Status of Annual School Bus Checks</u> *Point No. 25: Verify whether commercial vehicles are being strictly checked from safety point of view at the time of renewal of registration.* *Point No. 26: Verify whether school buses are being checked on an annual basis to ensure their safety and road worthiness.*	**Audit Finding:** Annual checks are done as per CMVR for both commercial vehicles. Private fitness centres have been allowed to check commercial vehicles. 18 Pvt centres have made available. School bus checks are being done according to rule 5.19 (4A) of Rajasthan Motor Vehicle Rule 1990 and Bal Vahini Scheme Only visual checks are done. **Recommendation:** Well-equipped inspection centres with adequate staff should be established.
Point: Audit of Driving schools in the State	**Audit Findings:**

Audit Point	Recommendations
	Transport department inspectors conducts audit half yearly and annually. **Recommendation:** Audits are to be done regulary by all RTO centres in their respective jurisdictions.

5.1.3 ENGINEERING DIMENSION

Table 5-3: Recommendation for Engineering Dimension

Audit Point	Recommendations
Black Spots Protocol – For Identification, Rectification and Monitoring *Point No. 14: Verify the arrangements made by the State for detection of Black Spots and their rectification and assess the efficacy of the rectification measures both on the State roads and National Highways. Provide a summary of Short- term and Long-term remedial measures proposed and the action already taken for implementation of these measures.* *Point No. 15: Verify whether the protocol for identification, rectification and monitoring of black spots, as directed by the Committee, has been drawn up and is being implemented.*	**Audit findings:** Under NHAI, black spots identified by two different departments are being rectified. For PWD & other agencies Police department identifies the Black Spots based on MoRTH Definition. No Monitoring mechanism for rectified blackspots. **Recommendation:** a) Protocol to be notified for identification and rectification of blackspots on National Highways and state Roads in line with MoRTH protocol. Continuous process shall be in place for identification, evaluation, rectification and monitoring of black spots.
Road Safety Audits by Road Authorities *Point No. 16: Verify whether Road Safety Audits are being conducted during the design, construction and operation of roads and the recommendations of the Road Safety Audits are being implemented. Indicate the %age of roads which have been subjected to road safety audits at different stages. Whether the completion meetings are held for finalizing audit recommendations*	**Audit Findings:** RSA is conducted by NHAI and PWD both during operations for existing highways and during design, construction and operations for new highways/road widening. ` 2159 km of NHs Road Safety Audit has been done. RSA of 979 km of SH under PWD is being conducted. **Recommendation:** a) The Audit process shall ensure to follow the MoRTH road safety audit guidelines. PWD shall ensure to appoint consultants as per MoRTH bid document guidelines for road safety audit consultancy services. b) The Department shall strengthen in-house capabilities of their engineers in road safety area by providing road safety trainings through MoRTH certified training institutes (ex: IAHE/ CRRI/ IITD).
Road Safety Signs, Pavement Markings and Traffic Lights: *Point No. 18: Verify whether road safety signs, pavement markings and traffic lights meet the IRC specifications. Please verify this in 4 Cities in the State and at a stretch of*	**Audit Findings:** **Traffic signs:** Colour and reflectiveness parameter of road signs are in less compliance with IRC standards in all cities except Bikaner.

Audit Point	Recommendations
100 Kms each on National Highways, State Highways and Major District Roads	**Road Markings:** Availability of Road markings are less in Jaipur compared to other cities. Very less Road markings were available on State highways and Major District Roads. Only 30 – 40% of the intersections on State highways and MDR have required markings. **Traffic Control Devices:** Except Jaipur the availability of traffic lights and their functionality is very less in other 3 cities.. **Recommendations:** a) ULB, PWD and NHAI should establish regular monitoring system for road markings and signage. In case of inadequacy, corrective measures should be taken within a stipulated time frame. **Traffic signs:** a) ULBs shall ensure provision of adequate Traffic Signs as per IRC standards wrt to – Size, Shape, Height, Color, Reflectivity and Location for Urban roads. b) ULBS shall ensure periodic maintenance of Traffic Signs to see that they are always functional c) State PWD to ensure provision of adequate and appropriate traffic signs on SHs and MDRs especially at all locations where it is meeting NHs, junctions, sensitive zones like sections passing through villages, school zones etc. as per IRC standards wrt to – Size, Shape, Height, Color, Reflectivity and Location **Road Markings:** a) ULBs shall ensure provision of adequate and appropriate Road Markings as per IRC : 35 2015 wrt to – Lane markings, Edge markings, Zebra Crossings, Stop lines at junctions, Parking zones, Reflective Studs for Urban Roads. b) ULBS shall ensure periodic maintenance of Road Markings c) State PWD to ensure provision ensure provision of adequate and appropriate Road Markings as per IRC : 35 2015 wrt to – Lane markings, Edge markings, Zebra Crossings, Stop lines, Marking at

Audit Point	Recommendations
	Junctions, Reflective Studs for night visibility for all NHS, SHs and MDRs. Also, ensure time maintenance of the road markings. **Traffic Control Devices:** a) ULB/UDH/PWD shall ensure All Traffic Lights are functional and serving the intended purpose. b) Ensure regular maintenance of the traffic lights so that they are functional and working.
<u>Road Side Amenities/ Lay-bys</u> *Point No. 19: Verify whether the driver rest areas, truck lay byes and bus bays are provided at suitable locations. Please verify this in 4 Cities in the State and at a stretch of 100 Km each on National Highways, State Highways and Major District Roads*.	**Audit Findings:** <u>Truck Lay-Byes</u> a) No truck lay byes were available for state highways b) Road Side Dhabas are frequent. No planned rest areas found within the surveyed stretches. c) Truck laybyes are very less. Seven truck lay byes were observed on 4 NH stretches out of 8 stretches surveyed d) No planned off-street parking lots were found with the survey stretches. <u>Bus Lay-Bays</u> a) On NHs, more than 90% bus stops were provided with bus shelters and bus bays. b) On SHs and bus shelters were there, but very less bus stops have bus bays. **Recommendations:** a) NHAI and State PWD shall establish Truck-Laybyes/ Rest Areas as per IRC guidelines at regular intervals on NHs and SH/MDRs. b) Bus shelters and bus bays shall be developed at bus stops on NHs and SHs as per IRC guidelines.

Audit Point	Recommendations
Dangerous hoardings *Point No. 20: Verify the action taken by the State to remove hoardings and objects that obstruct driving or distract drivers. Please verify this in 4 Cities in the State and at a stretch of 100 Km each on National Highways, State Highways and Major District Roads.*	**Audit Findings:** Very less number of Hoardings were observed on the stretches surveyed. In Kota notable number of sections have hoardings. **Recommendations:** ULBs shall remove all hoardings which are obstructing the sight distance at the intersections, and blocking the traffic visibility on the carriageways.
Pedestrian Facilities *Point No. 22: Verify whether the footpaths and service roads have been provided at required locations and are free from encroachments. Please verify this in 4 Cities in the State. In addition to above, also verify the crossings facilities for pedestrians and vehicles.*	**Audit Findings:** a) Footpath facilities in the cities are very less except Jaipur. Encroachment on footpaths are frequent. Footpaths are being used as a parking/ street vendor shops, and other temporary structures. b) Encroachments along carriageway are less except Jaipur. c) Jodhpur and Bikaner fully lack proper pedestrian crossing facilities at junctions and mid blocks. d) Not all sensitive zones like schools, Colleges, hospitals in all four cities has pedestrian facilities (footpaths, zebra crossing). e) Service roads are largely absent in 4 cities. **Recommendations:** **Pedestrian Facilities:** f) All ULBs shall ensure obstruction free, continuous, and safe footpaths available to pedestrians g) All ULBS shall ensure footpaths are free of encroachments by parking of vehicles, garbage dumps, and temporary structures. **h)** ULBS shall ensure minimum effective width of footpath without any obstruction is available for walking as per IRC guidelines. Also, ensure height is also as per IRC guidelines.

Audit Point	Recommendations
Traffic Management Plan at Construction sites	**Audit Findings:** **NH27 intersection with NH52 (Chainage 81 +790):** a) No lighting devices, flashing warning lights and flashing arrow signs were observed at site b) Work zone signs, barricades with reflectivity, retro-reflective delineators, flagmen and diversion signs were observed at construction site. **SH-69 Bhaleri – Churu section** No barricading provided around the construction area. There is absence of work zone standard sign boards. No advance warning to traffic for diversion areas. No arrangements for night time safety around work zones **Recommendations:** NHAI, shall ensure to plan and implement Work Zone Safety/ Construction Zone Safety guidelines as per IRC guidelines. NHAI shall ensure to follow IRC Guidelines for Work Zone Safety (IRC SP 55) at all the construction sites on NHs.

5.1.4 ROAD USER AWARENESS AND EDUCATION DIMENSION

Table 5-4: Recommendation for Road User Awareness and Education Dimension

Audit Point	Recommendations
Programs to Educate Commercial Drivers, Police in Road Safety Point No. 23: Verify whether there are programs to educate and train commercial drivers, traffic police personnel, highway engineers and planners in road safety in the State. Indicate the facilities available and details of the programs. If the training calendar is prepared and followed.	**Audit Findings:** a) Training to commercial drivers, BLS Course, Post accident & First Aid training for the general public, Post-Accident and First Aid course for the students, First Aid training, Road Safety training, Primary Health care training for teachers are provided. b) Certification training on road safety for engineers (PWD& NHAI) were provided. c) Trauma care workshop for the professionals are conducted. **Recommendations:** Road Safety training shall be provided to all in a systematic process through a well-planned training calendars. All road safety awareness programmes should be scientifically evaluated for effectiveness. This requires long term monitoring. Continuation of these programmes should be based on its effectiveness.
Provision of Road Safety modules in schools curriculum. Point No. 24: Verify whether modules on road safety have been included in the school curricula and indicate the level at which these have been included	Road Safety curriculum has been included in subjects like English, Hindi, Maths, Social Studies, Science of class 6th to 10th. **Recommendations:** Comprehensive Road Safety Curriculum shall be introduced at all levels right from Primary till Higher Secondary level through well designed modules.

5.1.5 EMERGENCY RESPONSE AND HEALTH CARE DIMENSION

Table 5-5: Recommendation for EMERGENCY RESPONSE AND HEALTH CARE DIMENSION

Audit Point	Recommendations
Comprehensive Trauma Care System Plan *Point No. 27: Verify whether States have developed a comprehensive State Trauma Care System plan for setting the way forward with regard to all components of an organized trauma care system with specific strategies and timelines as per the template provided to the States by Dte.GHS/MoHFW. The details of template listing the components/equipment and specifications will be provided to the successful bidder at the time of Audit.* *Point No. 28: Verify whether the States have done GIS based mapping of potential ambulance points and the health care facilities (both public and privates) and its spatial relation to accident prone areas (black spots), for developing scientifically well-organized State wide emergency and trauma care network.* *Point No. 29: Verify whether the States have established an effective network of ambulances for emergency response with an aim to provide definitive care to the victims well within the golden hour.*	**Audit findings:** **Comprehensive State Trauma Care System Plan:** No comprehensive Trauma plan is prepared for the state. All government ambulances and health care centers are mapped. A total of 1537 ambulances are available and 108 & 104 have been assigned as unified toll helpline numbers for medical emergency services. The response time ambulance service is 20 and 30 min in urban and Rural respectively. **Recommendations:** a) State shall finalize the State trauma care system plan with definitive strategy and timelines in lines with MoH&FW template guidelines. b) The State shall ensure and include all private ambulance assets into its ambulance network and response system. And, establish spatial relation with black spots and placement of ambulances. c) The response time of the ambulances are within the Golden-hour concept.
Ambulances Specification & Designation of Health Care Systems *Point No. 30: Verify whether the States are effectively following the prevailing national specification for ambulances and rescue vehicles.* *Point No. 31: Verify whether the States have verified and designated existing health care facilities (both public and private) along/ near the highways as Level III, Level II or Level I hospitals based on the operational definition provided by MoH&FW. A copy of the operational definition for Level III, Level II or Level I hospitals as provided by MoH&FW*	**Audit findings:** Ambulances deployed were as per National specifications. There are one Level I, four Level II and 38 Level III Trauma care centres and 20 other health care centres are identified to upgrade as trauma care centres. **Recommendations:** a) State shall follow National Specifications for all Ambulances. Regular audits shall be done by the experts.

Audit Point	Recommendations
	b) Proposed Level I, Level II or Level-III trauma care centers shall be made operational. c) Adequate equipment and facilities shall be deployed. Centers shall be maintained well in all respects.
Gap Analysis at Trauma Care Facilities & Dynamic Linkages *Point No. 32: Verify whether the States have conducted gap analysis in terms of infrastructure, manpower, equipment and organizational functions at the identified trauma care facilities in the State (based on the operational definition for these by MoH&FW) and worked out a realistic plan for filling the critical gaps with definite timeline in its implementation.* *Point No. 33: Verify whether the States have set up a mechanism to ensure dynamic linkages between various health care facilities (across Level III, Level II, Level I hospitals) in terms of manpower, resources, skills and information*.	**Audit findings:** Gap analysis in terms of available infrastructure and Human resources and a detailed report of the same is prepared Action plan for the same is not yet prepared. No dynamic linkage of Trauma care facilities. **Recommendations:** Action plan for the identified gaps should be prepared and implemented. State shall ensure to integrate all resources across all health care facilities through Dynamic Linkage of data.
Pre-Hospital Trauma Technical Curriculum & Capacity Building *Point No. 34: Verify whether the Standardized pre-hospital trauma technician curriculum as developed by Dte.GHS/ MoH&FW for training of pre-hospital Trauma Technicians is being followed by all the States.* *Point No. 35: Identify the action being taken by the State in Capacity Building for human resources (starting from first responders-drivers, police personnel, conductors, teachers, students, etc. to specialists).*	**Audit findings:** No approved PTT curriculum at State Level. BLS training centre has been established and training is being provided to first responders. A total of 4 training programs have been provided in the last 3 years. **Recommendations:** State to follow PTT curriculum developed by *Dte.GHS/ MoH&FW* . As the PTT may involve certain procedures, they need to be licensed and empowered to do the procedures. Allied health professional needs to be protected and regulated. And, hence State shall pass Legislation for PTT curriculum.
Maintenance of Records on Trauma & Awareness Good Samaritan Guidelines *Point No. 36: Verify that the States are maintaining records/information on injury and trauma. In addition to above, also verify*	**Audit findings:** a) No records are maintained for Injury and trauma b) Data on Two wheeler deaths without helmet is not maintained

Audit Point	Recommendations
whether data on two-wheelers deaths due to non-wearing of helmets are being maintained by Hospitals *Point No. 37: Verify the effective measures including the awareness strategies by the States on the Good Samaritan Guidelines circulated to them by MoRTH & MoH&FW*	c) Good Samarian Guidelines are publicized at hospitals. Not displayed in police stations **Recommendations:** a) State should prepare a comprehensive list of private trauma care facilities and their competence. Availability of ambulance can be improved by creating a comprehensive network of private and government ambulances. b) State should also provide adequate funds to maintain the system c) Good Samaritan Guidelines shall be displayed at all police stations.