

### Director's Desk



Indian highways are increasingly becoming killing fields. Among Indian States, Kerala recorded higher road accident rate for the past five decades. The Government realised that road safety need to be improved to the level of developed nations. As a result, accident situation in the State has improved substantially. The proactive steps such as enforcement of helmet/seatbelt use, control on over speeding, observance of traffic signs/markings, lane discipline, control on drunken driving, improvement of accident prone location, road safety education and better enforcement all have resulted in better safety level on roads. Effective road safety counter measures in accordance with accident pattern should be adopted so as to enable transport and road safety personnels to apply those measures quickly and fruitfully in accident prone areas. This issue of 'Mobility' focuses on road safety improvement on the highly accident prone Oachira - Chinnakada stretch of National Highway-66.

*Dr B.G.Sreedevi*

### ROAD SAFETY IMPROVEMENT STUDY ON OACHIRA - KOLLAM STRETCH OF NATIONAL HIGHWAY -66

National Transportation Planning and Research Centre, at the instance of Commissioner of Police, Kollam has conducted road safety inspection on the highly accident prone Oachira - Chinnakada stretch of National Highway-66. The section with a length of 32.5km, passes through urban and semi-urban areas, connects Oachira, Karunagappally, Chavara, Neendakara, Sakthikulangara, Ramankulangara, High School Junction and Chinnakada. The study was conducted to determine the accident prone locations, identify potential road safety hazards and suggest short-term improvement measures.

The landuse on both sides of the road stretches selected for the study are characterized with mixed landuse dominated by commercial establishments. Except urban road stretches, majority of the roads in Oachira - Kollam stretch on NH-66, are having dual lane carriageway width with 1.0m paved shoulders on both sides.

Studies conducted by NATPAC in 2010

showed that Kollam - Alappuzha road stretch carries average daily traffic to the tune of 30000 Passenger Car Units (PCUs) per day. The stretch also caters to non-motorised traffic as is evident from the fact that around 1500 cycles were used by students studying in various schools located at Karungappally. From the Volume/Capacity ratio analysis, it has been found that majority of the road stretches on NH-66 is operating at double or triple times their design capacity. Due to this heavy traffic, congestion and delay is experienced on this road corridor during peak hours. If the roads are developed with four-lane divided carriageway with well designed paved shoulders of 1.5m width on both sides, the design capacity of National Highways can be increased upto 40000 PCUs. Service roads should be provided on both sides of the road to facilitate local traffic movements. Non-motorized transport infrastructure including cycle tracks and pedestrian footpath should be provided on both sides of the carriageway, physically segregated from the vehicular traffic. Road fatality statistics

for the last two years in the study stretch was collected from District Crime Records Bureau, Kollam. Over-speeding and rash driving of the vehicles were identified as the major cause of fatal accidents on the study stretch, which needs to be curbed. Nearly 55% of road users involved in accidents are vulnerable road users comprising of cyclists, pedestrians and two wheelers. Around 30% of road users involved in accidents are cars, KSRTC buses and trucks.

Oachira - Kollam road stretch on National Highway-66 bear the bulk of traffic movements and there exists a number of access roads on either sides of NH. Absence of poor retro-reflective signs, less visible road markings, lack of retro-reflective studs, absence of street lighting, unscientific design of segregated bus stops etc. add to the woes.

Retro-reflective/Solar road studs or rumble strips or profiled line marking applied longitudinally as an edge line and centreline can be effective in reducing head-on accidents to a certain extent. These can also be provided transversely across the road at accident prone sections, intersections, pedestrian crossing locations etc. Any obstruction or encroachment in the form of vegetation, advertisement boards, waste materials, construction materials etc. should be removed to increase visibility. Obstruction and encroachment - free minimum paved shoulder width of 1.5 m on both sides should be ensured and maintained. Minimum footpath width of 1.8m on both sides should be ensured at urban and semi-urban road stretches. Minimum useable unpaved shoulder width of 1.5m on both sides of the road, should be ensured on this road stretch at rural sections. Minimum zebra crossing width of 2m at requisite locations should be ensured. Object marking should be provided for all objects on the carriageway and adjacent to carriageway located within 2.4 m from shoulder/kerb accompanied by adequate object hazard sign.

Horizontal alignment of the road section, Oachira - Chinnakada, is characterized with stretches consisting of straight, curves - moderate and sharp, reverse curves and series of bends. Accident spots were inspected with the help of police from the

local police station and detailed investigations were carried out.

Short term measures recommended by NATPAC on the Oachira – Kollam road stretch to improve safety the of pedestrians and vehicle users includes improvement of junctions and road stretches, installation of Road signs, provision of Road markings and Studs, speed reducing measures, improvement of pedestrian facilities, Street lighting, Public Transport facilities, routine maintenance of infrastructure, installation of Signals, Parking management measures, Traffic management measures, enforcement measures, Road Safety Education and Training and Emergency Response measures.

Major accident prone locations are in the vicinity of minor intersections, where slow traffic from the side roads often conflicts with high speed traffic on the National Highway. Short term measures for reducing road accidents at minor intersections includes provision of road signs, markings, studs, speed breakers, channelizing physical islands and ghost islands. Acceleration and deceleration lanes along with protected turn lanes will reduce the risk significantly at such locations, which are considered as a medium term improvement measure.

Speed restriction measures using Intelligent Transportation System (ITS) techniques may be adopted by the enforcement departments such as Police and Motor Vehicle Departments. Scientific accident data collection and GIS enabled management system are imperative for research of road accidents and identification of causative factors in road geometry and other parameters. This will help in the formulation of proper mitigation measures for reducing particular type of accidents. Recording of GPS coordinates should be made mandatory in the Accident reporting form by the Police. Training should be given to the police regarding scientific collection of accident data from the site.

Surveillance cameras should be installed at major intersections along the corridor. All cameras installed should have Automatic Number Plate



Recognition facility for automatic identification and challenging of offences. An Integrated Traffic Management Control Room should be implemented for effective management of network of installed cameras.

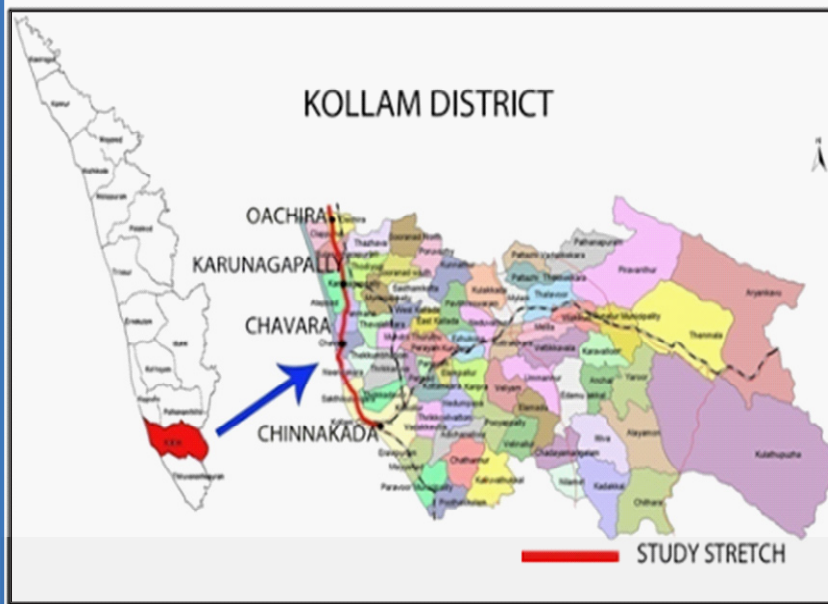
Rash and negligent fast moving traffic, crossing at road/ intersections and walking along the carriageway expose pedestrians to the great risk of accidents. Adequate infrastructure

facilities, proper enforcement of traffic regulations and awareness programmes on road safety can only create the right environment for the safety of road users.

It is estimated that a total cost of Rs. 29.13 crores will be required for the implementation of short term road safety proposals in the study stretch. About five percent of road safety infrastructure costs should be earmarked annually for

maintenance, which reduces hazards and future repair costs. Comprehensive engineering surveys are required for estimating detailed cost estimate for the improvement schemes.

The combination of 5-E's of road safety (Engineering, Education, Enforcement, Emergency, Evaluation) activities will reduce road trauma. Early implementation of the proposals will go a long way in evolving safe travel for people on Oachira - Chinnakada stretch of National Highway-66.



## TRAINING PROGRAMMES CONDUCTED

### In-house Training

- i) 'Presentation on ROMDAS equipments especially on iRAP accredited systems' to scientists and Technical Officers by Mr. Ben Clotworthy, Sales and Marketing Manager, ROMDAS on 5<sup>th</sup> November 2015.



- ii) 'Training/demo on SPSS Software and their online training portal' to scientists and Technical Officers on 4<sup>th</sup> December 2015.



## External Training/Presentations

- i) **'Training on Mx Roads'** to M.Tech Students of RIT Kottayam on 12<sup>th</sup> -13<sup>th</sup> October 2015 by K C Wilson, Scientist-C NATPAC.
- ii) **'Training on VISSIM Software'** to M.Tech Students of RIT Kottayam on 12<sup>th</sup> -13<sup>th</sup> October 2015 by B Anish Kini, Scientist-B NATPAC.

## PRESENTATION OF PAPERS IN SEMINARS/WORKSHOPS

**Anish Kini**, "*Risk Potential of Roads in Kerala using iRAP*". Workshop on IndiaRAP, Delhi, 7<sup>th</sup> October 2015.

**P Kalaiarasan**, "*Study on the impacts of vehicular emission on human health – a case study*". 25<sup>th</sup> Swadeshi Science Congress organized by Sanskrit University, Kalady, 16<sup>th</sup> -18<sup>th</sup> December 2015.

## INVITED TALKS/MEDIA INTERACTIONS

**Dr.B.G.Sreedevi, Director**

### Media Interactions

1. Discussion on 'Vehicle Pollution'. Manorama Channel on 5<sup>th</sup> December 2015.
2. Panel Discussion on 'Trivandrum – the way forward'. Mathrubhoomi Channel on 9<sup>th</sup> December 2015.
3. 'Traffic Policies at Delhi' in 'Counter Point'. Manorama Channel on 11<sup>th</sup> December 2015.
4. 'Energy Conservation' in 'Samvadham'. Doordarshan on 12<sup>th</sup> December 2015.
5. Discussion on 'Increasing Accidents in the State'. All India Radio, Kozhikode on 20<sup>th</sup> December 2015.
6. Discussion on 'Two Wheeler Accidents'. All India Radio, Kozhikode on 29<sup>th</sup> December 2015.

### Invited Talk

'Panel Discussion': Third International Conference on Modeling and Simulation in Civil Engineering – ICMSC 2015, organised by Dept. of Civil Engineering, TKM College of Engineering, Kollam, 10<sup>th</sup> December 2015.

**V S Sanjay Kumar, Scientist – E1**

## Invited Talk

1. Inaugural talk at the Civil Engineering Association activities for the year 2015-16. Holy Kings College of Engineering and Technology, Pampakuda, Ernakulam, 7<sup>th</sup> November 2015.
2. Technical talk on “Introduction to Urban Transportation Planning”. Holy Kings College of Engineering and Technology, Pampakuda, Ernakulam, 7<sup>th</sup> November 2015.

## PARTICIPATION IN WORKSHOPS, SEMINARS / CONFERENCES AND OTHER TRAINING PROGRAMMES

Name of Programme	Organised by	Date	Venue	Participants
<b>Seminars/Conferences</b>				
‘ROADTECH – National Conference on Sustainable Roads and Highways – Role of New Technologies and Value Engineering in Construction, Maintenance and Safety’	The Associated Chambers of Commerce and Industry of India	09.10.2015	Hotel Le-Meridian, New Delhi	Shaheem S V S Sanjay Kumar Anish Kini
Urban Mobility Conference	Ministry of Urban Development, Government of India	24.11.2015 – 27.11.2015	New Delhi	Shaheem S T Ramakrishnan
Colloquium on ‘Information Security in E-Governance	Computer Society of India, Thiruvananthapuram	25.11.2015	Thiruvananthapuram	Sanjai R J Deepa Radhakrishnan
‘TRIMA 2015’, ‘Make in India – a Kerala Perspective’, The Annual Management Convention of Trivandrum Management Association	Trivandrum Management Association	09.12.2015 – 10.12.2015	Taj Vivanta, Thiruvananthapuram	Veena.K.S Jegan Bharath Kumar D Shaju
<b>Workshops</b>				
Development of Pavement Management System for High Speed Corridors	CRR	07.10.2015	New Delhi	V S Sanjay Kumar
Emotional Intelligence at Work	Trivandrum Management Association	09.10.2015	Trivandrum	Subin B K Mohana Kumar
Climate Finance in Kerala – GCF&NAFCC	Dept.of Environment and Climate Change	16.10.2015	NABARD Regional Office, Thiruvananthapuram	P Kalaiarasan
River Based Management in Kerala	Pamba River Basin Authority and CWRDM	18.11.2015	Govt. Guest House, Thycaud, Thiruvananthapuram	Dr. B G Sreedevi P Kalaiarasan
Computational Geotechnics and Soil Dynamics	Indian Geotechnical Society - Thiruvananthapuram Chapter	23.11.2015 – 25.11.2015	Thiruvananthapuram	Salini U
<b>Training Programmes</b>				
Fuel Efficiency in Transport Sector	MORTH & PCRA	07.10.2015	Cochin	Subin B Arun Chandran Ebin Sam George Koshy



## GUIDANCE TO STUDENTS' PROJECT WORK AND THESIS

The list of guidance provided by the Scientific Divisions to students from various National Institutes and reputed Professional Colleges during this period is given below:

Name of the Institution	Course	Guide	No.of Students	Topic
National Institute of Technology, Surathkal, Karnataka	M.Tech (Transportn. Engineering)	Dr.B.G.Sreedevi	1	Study on the effect of Geometric Parameters on Road Safety – A Case Study on newly upgraded Highways in Kerala
National Institute of Technology, Kurukshethra	M.Tech (Transportn. Engineering)	Dr.B.G.Sreedevi	1	Utilization of Jarofix and other waste material for road construction
Cochin University of Science and Technology	M.Tech (Transportn. Engineering)	Dr.B.G.Sreedevi	1	Study on the influence of subgrade soil on the strength of inservice flexible pavements
Rajiv Gandhi Institute of Technology (RIT), Kottayam	M.Tech (Transportn. Engineering)	Wilson K C	1	Performance Modeling of Flexible Pavements
Amritha Engineering College, Coimbatore	M.Tech (Transportn. Engineering)	Salini U	1	Study on Recycled Asphalt Pavements
Rajiv Gandhi Institute of Technology (RIT), Kottayam	M.Tech (Transportn. Engineering)	V S Sanjay Kumar	1	Modelling the relationships between Highway Geometrics and Accidents
National Institute of Technology, Kurukshethra	M.Tech (Transportn. Engineering)	Salini U	1	Numerical modeling of highway embankment constructed with soil-jarofix mixture
Vidya Academy of Science and Technology, Thrissur	B.Tech (Civil)	B.Anish Kini	5	Redesign of Sakthan Thampuran Bus Terminal
Mar Baselios College of Engineering	B.Tech (Civil)	B.Anish Kini	5	Advanced Traveller Information System for optimization of road network and reduction of congestion
Rajiv Gandhi Institute of Technology (RIT), Kottayam	M.Tech (Transportn. Engineering)	B.Anish Kini	1	Impact of Implementation of Congestion Charging in Trivandrum City
Valiya Koonambayi Kulathamma College of Eng. & Technology, Paripally	B.Tech (Civil)	B.Anish Kini	5	Junction Improvement for Kachery Junction, Attingal
Mangalam College of Engineering, Kottayam	B.Tech (Civil)	B.Anish Kini	4	Traffic Impact Study of Lulu Complex, Trivandrum
Sree Buddha College of Engineering for Women, Pathanamthitta	B.Tech (Civil)	P.Kalaiarasan	4	Environmental Study on Selected Canals in Alappuzha Region
Sree Buddha College of Engineering for Women, Pathanamthitta	B.Tech (Civil)	P.Kalaiarasan	4	Estimation of Vehicular Emission in Thiruvananthapuram Centre
Muslim Association College of Engineering, Venjaramoodu	B.Tech (Civil)	P.Kalaiarasan	7	Study on improvement of selected Canals in Alappuzha Region
Sarabhai Institute of Science and Technology, Velland	B.Tech (Civil)	P.Kalaiarasan	5	Study on improvement of Kovalam-Akkulam Canal for inland navigation

## OTHER NEWS

- ★ Human Rights Oath taking was conducted in NATPAC at 11 am on 10<sup>th</sup> December 2015, the Human Rights Day. Dr.B.G.Sreedevi, Director delivered the oath to the staff of NATPAC.



- ★ Dr.B.G.Sreedevi, Director, NATPAC received the 'Kerala State Energy Conservation Commendation Certificate – 2015' in the category of individuals. The Commendation Certificate was presented by Shri. Aryadan Muhammed, Hon'ble Minister for Power, GoK on 14<sup>th</sup> December 2015 at Hotel Residency Tower, Thiruvananthapuram.



- ★ NATPAC was nominated in the Public Category of the 'India Road Safety Mission 2015 Awards' instituted by Maruti & Times Now.



# MOBILITY NEWSLETTER

## DO YOU KNOW ?

### STEPS TAKEN BY CENTRAL GOVERNMENT TO IMPROVE ROAD SAFETY

- National Road Safety Policy approved
- National Road Safety Council constituted
  - All States/UTs requested to set up State Road Safety Councils and District Road Safety Committees
  - Adoption of a multi-pronged strategy to address the issue of road safety based on 4 Es of Road Safety:
    - (i) Education
    - (ii) Enforcement
    - (iii) Engineering (roads as well as vehicles)
    - (iv) Emergency care.

Source: <http://www.unescap.org/>, 27.04.2016

### INDIA: INCIDENCE OF ROAD ACCIDENTS

- Rise in number of accidents, injuries & deaths per lakh of population
  - Reflects rise in motor vehicle population, increase in duration & number of travel trips with rise in income.
- Sharp decline in number of accidents, injuries, & deaths per 10,000 vehicles
  - Reflects improved crash worthiness vehicles & occupant protection better enforcement.
- Rise in number of accidents, injuries & deaths per 10,000 km
  - Reflects higher exposure to risk due to heterogeneous nature of traffic, lack of traffic separation etc.

राष्ट्रीय परिवहन योजना एवं अनुसंधान केंद्र

**natpac**

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