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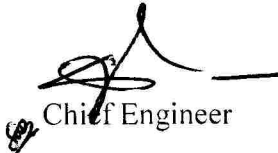
Dated: 15.04.2016

Circular

Sub: Education – Technical report and recommendations of two Sumposia conducted by Transportation Engineering Research Centre of College of Engineering, Thiruvananthapuram-reg-

Ref: Letter No. L4/25117/15 dated 29.02.2016 from the Director of Technical Education

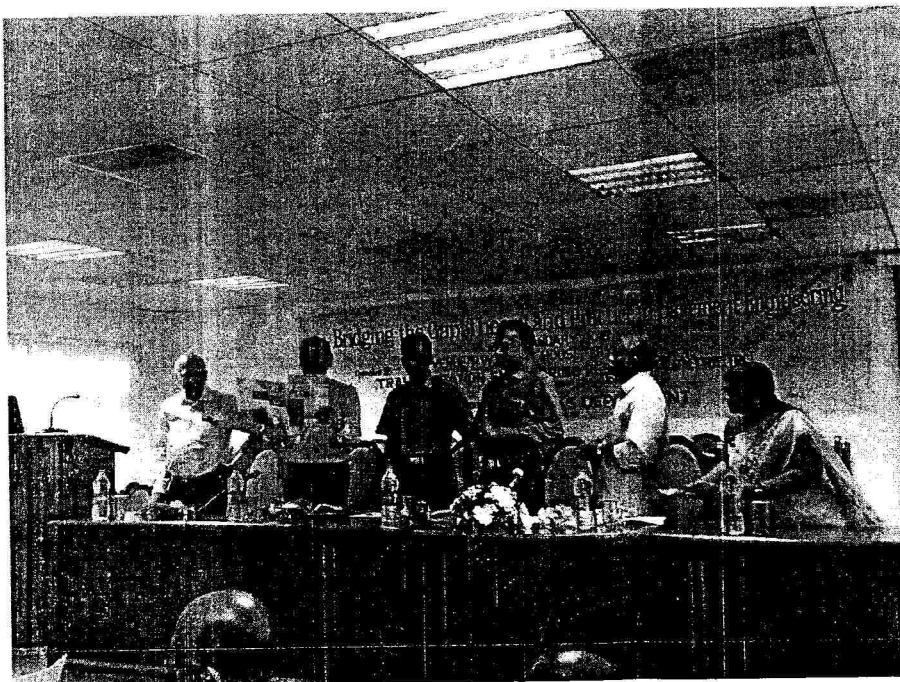
Vide reference letter cited, Director, Technical Education forwarded here the report and recommendations of the two Symposia conducted on 23.01.2016 and 30.01.2016 (Bridging the Gap : Theory and Practices in Pavement Engineering) & (Road Safety Mission towards safe lands) respectively by transportation Engineering Research Centre, Department of Civil Engineering, College of Engineering Thiruvananthapuram. These are published in the website for information and good practice by LSGD Engineering Wing.


Chief Engineer

Report on One Day Symposium on
"Bridging the Gap: Theory and Practice in Pavement Engineering"

The Transport Engineering Research Centre (TRC) was instituted at the Transportation Division, of CET in March 2012 with the intention of contributing its academic and research outputs to offer 'better roads' for the public of Kerala. The prime objective of TRC is to transfer technological knowhow and research outputs to the stake holders in various sectors of road construction, maintenance, and road safety.

In order to ensure the dissemination and implementation of innovative research outputs in road sector, TRC organized a brain storming session, a One Day Symposium on "Bridging the Gap: Theory and Practice in Pavement Engineering "for practicing engineers, consultants and contractors. The symposium was meant to throw light on the recent innovations in the field through deliberations of and interaction with renowned experts in Pavement Engineering. The first TRC news letter depicting the research activities of TRC over the past three years was released by Prof. B. B. Pandey during this programme.



Releasing of TRC news letter by Prof. B. B. Pandey

B. B. Pandey

Coordinator
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The experts who led the symposium included Prof. B. B. Pandey, Advisor, Sponsored Research and Industrial Consultancy and former Professor and Head, Dept. of Civil Engineering, IIT, Kharagpur, Shri. Bongirwar, Former Principal Secretary, PWD, Maharashtra and Dr. A. Veeraragavan, Professor, I.I.T, Madras. The programme had an overwhelming response and a total of 90 participants including about 50 engineers from State Government departments/Consultancy Services and Academia, research scholars and post graduate students attended the programme. The topics of discussion included revisions included in the latest codes of practice for design of flexible and rigid pavements, construction of roads at affordable cost, innovative pavements and importance of maintaining quality control in construction of pavements. The need of adoption of innovative and sustainable materials like Recycled Asphalt Pavement materials, modified binders and adapting to new construction practices were emphasized in the programme. During the interactive session with the experts, the engineers shared various types of issues and challenges confronted by them in the field and the experts discussed the issues in detail and suggested possible solutions for them. The theme and conduct of the symposium was well appreciated by the participants.

The specific recommendations of the symposium are given below:

Sl. No.	Recommendations
1	Stabilization of subgrade soil using lime/ fly ash/cement/ rice husk ash with lime or a combination of any of these whichever is suitable for the site can be tried for improving the CBR value and thereby reducing the thickness of pavement.
2.	Provision of geo synthetic drainage layer, Geo Cell filled WMM, DBM grade II and a BC layer will reduce the thickness of pavement considerably.
3.	Use of marginal aggregates in base and subbase to be encouraged.
4.	For climatic condition of Kerala, use of VG 40 bitumen modified with polymer or natural rubber is desirable especially for high trafficked roads like National Highways.
5.	Top down cracking in bituminous pavements are to be addressed seriously, and the mixing, rolling and compaction temperatures for modified binders should be 15°C more than that for conventional binders
6.	Pavements with Recycled Asphalt Pavement (RAP) /RAP and fresh aggregate combination in base course is a desirable option for bituminous pavements instead of providing additional thickness as overlays.
7.	Cold recycling can be a sustainable practice suitable for Kerala, and use of RAP with bitumen emulsion/foamed bitumen is desirable.
8.	Providing bituminous pavement with cemented base, granular subbase with crack relief layer of aggregate above cemented layer is to be adopted as it prevents crack propagation.

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9.	Geocell filled with aggregates for base course in cement concrete pavements can be tried as they are found to have better service life due to the confinement provided by geocell.
10.	Semi self-compacted concrete roads are suitable for low volume roads.
11.	Use of 20 mm carpet without fines and cement grout as seal coat can be tried for low volume roads instead of 20 mm PMC plus seal coat.
12.	Cell filled concrete pavement(flexible concrete) for village roads
13.	Maintenance free Panel concrete for major highways(expressways, NH and SH), District roads and village roads (cost is same as that of bituminous roads)
14.	Gap graded wearing course(GGWC) with rubberized bitumen (IRC:SP:107:2015) , Unlike BC and SDBC, with Bitumen, CRMB and PMB, GGWC can give long life even on a cracked bituminous surface



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Report on one-day Symposium on Road Safety: Mission towards Safe Roads

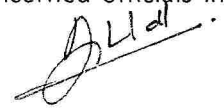
The one-day symposium was held at College of Engineering Trivandrum, organised by Transportation Engineering Research Centre (TRC). Delegates from PWD, RSA, MVD, VicRoads, KSTP, National Highways, NATPAC, and educational institutions participated in the symposium. Dr.B.G. Sreedevi, Director, NATPAC inaugurated the symposium. Prof. Dr. P.K. Sikdar, Former Director of CRRRI and President, Intercontinental Consultants and Technocrats Pvt. Ltd (ICT) delivered a Keynote Address on "Issues and Challenges" and urged the audience to follow approach by Sweden, Japan and New Zealand in road safety matters. He emphasized on a safe system approach. Prof. Dr. J .David, Principal, CET Presided over the function. Dr. R. Padmakumar, coordinator of symposium welcomed the dignitaries and delegates, Dr. Ashalatha R, Coordinator TRC gave an overview of TRC and it's activities, Prof. Preethi P., coordinator of symposium presented an overview of the symposium and its objectives. Prof. Jyothi Thomas, Dean P.G. studies and Dr. P.G. Jairaj, Professor and Head of Civil Engineering Department delivered felicitations. Prof. Salini S, coordinator of symposium delivered vote of thanks. A technical session then followed. Mr. Jim Jarvis, Team Leader, VicRoads presented "An Institutional Framework to support coordination of Road Safety Activity", and discussed a safe corridor demonstration program. Mr. P.M. Shaji, Assistant Transport Commissioner and Mr. Mahesh delivered a talk on Kerala Road Safety Authority and projects under Motor Vehicles Department. Mr. Tony Mathew, Vice President, ICT, delivered a talk on "Designing for safety", emphasizing on a proactive approach and use of advanced signs and marking concepts. The afternoon session began with a session on Enforcement and Education. Mr Muhammed Najeeb, Kochin Metro Ltd. presented concept and technical details of enforcement. Mr. B. Zubin (NATPAC) presented the importance of Road Safety Education. There was a very good response from the audience in the form of queries on different aspects.

Report on Panel Discussion

Professor (Dr.) P K Sikdar, moderator of the discussion expressed his concern over the influence of vehicle advertisements in media that promote rash driving. He highlighted the role of institutions and NGOs in the field of road safety. He suggested approaching road safety as a multi-disciplinary task. He was of opinion that driver licensing should be strictly done, and any violation should be recorded in the license.

Mr. Jim Jarvis of VicRoads was for coordination and cooperation among the institutions and stake holders. He emphasized on the need of a Traffic and Safety Engineer. He suggested that it should be easier to tackle road safety issues along corridors than over the entire network. Mr. Greg Rowe was concerned more with the drunken driving, lack of helmet use and speed.

Er. Anil N T. Executive Engineer, Road safety cell, PWD discussed about the limitation of work force in coordinating various aspects. They were just seven engineers working for the entire Kerala state. The entire staff in the field is busy. They are not able to report any accidents occurring at their place. Accident data involving teenagers are not available with them. Lack of coordination between the departments involved, for instance the Motor vehicles department make changes in system (speed limits, for instance) and takes things forward without even consulting with the concerned officials in



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PWD. They are not ready to go by the rules and design aspects of PWD. The coordination between MVD and PWD should be improved.

Mr. Aravind, NGO, CanWalk discussed about Trauma and other related issues. He informed that Road Safety campaigns are being conducted in campuses for creating awareness. This NGO is working on helping incapacitated people. He informed that every year during the Second Sunday of November a candle light march is held for people who are disabled; they are brought out of their houses and pooled at public places like say Trivandrum Museum. He suggested that generating awareness on traffic safety is needed as a first step, thus making people not to blame others for not following traffic safety as they themselves are the ultimate losers.

Prof. Dr. Sikdar accepted the concluding point of Mr. Aravind that road users are the ultimate losers if they do not follow road safety and not abide by the laws. Rules should be strictly enforced on ourselves. He stated that targets and sub-targets should be set for accident reduction, engineering improvements, enforcements and campaigning. New roads and sub-roads should be subjected to preventive Road safety audit at all stages of development and correcting design issues using the recommendations of RSA team. Network should be developed and maintained strictly according to the nature of traffic demands.

Mr. Tony Mathew had the opinion that State should have clear targets for reduction of accidents and should set rules for enforcement. E.g. drunken driving, speeding etc. The results are to be monitored annually. Every road network in Kerala should have a Junior Engineer assigned. An Assistant Engineer should be assigned to any part of this network. This Assistant Engineer contact should be in touch with the local police station and there should be a mechanism where the police straight away reports details of accidents to the respective Assistant Engineer. This helps to record the accident easily the same day itself. The details could be sent as notification to CE and DGP to discuss about the road safety problems which caused the accident. Some mechanism should evolve in defining speed limits in the road network under the leadership of road safety department. Regarding KSTP and World Bank projects, he commented that designs are not based on the demands on the road like parking, space for pedestrians etc. He recommended that road marking should be done in the entire network, state, highway and district roads. Road marking should be included in the routine maintenance. All engineers, particularly Assistant Engineer should be trained in traffic engineering. Transport department should initiate this with other agencies and conduct training for engineers. It has to be undertaken every year. This enables them to be updated with the latest technology and they can apply the knowledge to transportation systems in real time. At AE should recommend at least 10 to 15 black spot improvements in a target oriented way.

Er. L Beena, EE, KSTP while talking on capacity building projects (World Bank Funded) associated with VicRoads. She raised concern over land acquisition problems in Kerala. If TRC can arrive at the social and environmental factors related to traffic the road acquisition committee can be convinced regarding road safety. Despite having funds and being ready to develop single lane, or multiple lane road networks considering the topography of Kerala, it is very difficult to move forward without land acquisition. As of now, KSTP is forced to limit the land acquisition to minimum. There are certain places, especially with


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MC roads, where there are social issues such that medians along roads, sign boards, foot paths etc. can't be provided especially in the Vettu Road – Kottarakkara stretch, which has made it an accident prone area. She was hopeful that TRC could address these problems. Road safety problems are now developing in multi dimensions. Along the footpaths there are so many trees and it is difficult to cut these off. This makes pedestrian ways impossible to use even though they are provided.

Dr. R Padmakumar, Assistant Professor, CET presented issues faced by road safety engineers in the city. He expressed concern over dangerous two-wheeler riders' practices like keeping kids standing on platform and facing rider, overloading of two-wheeler with bags etc. He also opined that stray dogs need to be controlled as they appear out of nowhere in traffic, endangering two-wheelers. He informed authorities on the underutilization and misuse of bus bays, and parking on footpaths and issues such as exit ramp of airport in to by-pass, improper road maintenance, uncovered drains and vehicle alterations. Unauthorised access to highways was another issue mentioned. While supporting the views expressed by Mr. Tony Mathew during technical session, he suggested that the hazard markers are improperly placed at many locations and, hence do not serve the purpose. He also mentioned issues regarding non-availability of reliable crash data and need for establishing a crash data base, with coordination among departments, research organizations and TRC.



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RECOMMENDATIONS

One-Day Symposium

Road Safety: Mission towards Safe Roads

30th January 2016

The One-day Symposium was held at CETAA Hall, College of Engineering Trivandrum on 30th January 2016. The symposium was inaugurated by Dr. B. G. Sridevi, Director, NATPAC and the key-note was presented by Prof. P. K. Sikdar, President ICT.

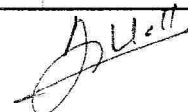
Following the inauguration and key-note address, special presentations were made in the forenoon technical sessions by Mr. Jim Jarvis, Team Leader Vic Roads KSTP-II, Mr. P.M. Shaji, Assistant Transport Commissioner, MVD, Kerala, and Mr. Tony Mathew, Vice-President, ICT, on various aspects of the theme 'Road Safety Management & Engineering. In the post-lunch technical session on the topic 'Enforcement, Education & Campaign', Dr. Mohammed Najeeb, Sr. Deputy General Manager, Kochi Metro Rail Ltd. and Mr. B. Subin, Scientist, NATPAC made presentations on the topics 'enforcement of traffic regulations' and 'road safety education' respectively.

About 50-60 participants from all stakeholder agencies participated in the Symposium. All M.Tech. (Traffic and Transportation Engineering) students and Research Scholars of the division also participated. During the various presentations and subsequent deliberations, it was clearly brought out that road safety is an alarming issue and is fast becoming a major public health problem. The 'business as usual' approach will put the wellness of the current and future generations in Kerala at great risk. The symposium recognised that significant, immediate and sustained interventions are required from all the stakeholders, for the State to reduce the road accidents. The stakeholders identified, who are directly concerned with road safety management in the State, are as follows:

- KRSA;
- Police;
- Transport Department (MVD);
- Public Works Department
- KSTP
- Municipal Corporations/Urban Local Bodies
- Other Road Agencies
- Health Department/ Hospitals
- Education Department /Schools /Colleges/Universities
- Academic Institutions (NATPAC, CET (TRC), NIT Calicut), etc
- NGOs

After the day-long technical presentations, a panel discussion was held for drawing up the recommendations from the various discussions held during the day's deliberations. These are compiled here for consideration of the authorities and the Government for alleviation of road safety in Kerala in a time bound manner.

Sl. No.	Recommendations (Specific)	Responsible Action Institution(s)
1.	Set a target for accident reduction at the highest levels of the government and publicize it widely through media; <i>For example, 50% reduction in accidents and fatalities by 2020.</i>	Highest Levels of Government



2.	Set annual and quarterly targets for engineering improvements, enforcement, and road safety campaign	KRSA in association with Police, Motor Vehicle Department, PWD, KSTP, Urban Local Bodies
3.	Every PWD division/ district council should aim to identify and improve at least 10 blackspots/ hazardous road sections in a year for improved road safety, keeping the safety for vulnerable road users (pedestrians and cyclists) in mind.	KRSA in association with PWD/ KSTP, District Road Safety Councils and other Urban Local Bodies. Research input from TRC to be made available.
4.	Initiate programme to provide footpaths on all urban roads; and make a 10 year target; For example, provide 200 km of road with footpaths per year (in entire State) up to 2025 or until all urban roads are covered, whichever comes earlier <i>Note: Footpaths shall be at least 1.8m wide; the maximum width depending upon the density of pedestrians along the roadway; NATPAC and TRC to provide guidelines to the Government</i>	KRSA in association with PWD/ KSTP, Urban Local Bodies, NATPAC and TRC
5.	Initiate programme to provide cycle lanes on all urban roads and on those sections of the NHs, SHs and District Roads, where significant cyclists are observed; and make a 10-year target; For example, provide 200 km cycle tracks per year (in entire State) up to 2026 or until all urban roads/ required road sections are covered, whichever comes earlier. <i>Note: Cycle lanes along the road shall be 1.0 to 1.5m wide; the maximum width depending upon the density of cyclists along the roadway; NATPAC and TRC to provide guidelines to the Government</i>	KRSA in association with PWD/ KSTP, Urban Local Bodies, NATPAC and TRC
6.	Initiate programme to provide bus bays and bus stops on all State Highways, Urban Roads and District Roads; and make a 10 year target; The choice between bus bays and bus stops shall depend upon the volume of traffic; <i>Note: NATPAC and TRC to provide guidelines for bus bays and bus stops</i>	KRSA in association with PWD/ KSTP, Urban Local Bodies, NATPAC and TRC
7.	Design and implement on-street parking on urban roads from 2017 onwards in a phased manner; On street parking shall be charged on all urban roads; Parking fee shall be determined through an appropriate study. <i>Note: NATPAC and TRC to provide study result for parking charges</i>	KRSA in association with PWD/ KSTP, Urban Bodies, NATPAC and TRC. Cooperation from Traffic Police to be sought.
8.	Develop guidelines for on-street parking spaces for cars, motor cyclists and cyclists, designated parking spaces for	KRSA in association with