INDIA CHAPTER

INTERNATIONAL ROAD FEDERATION
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GRIS
Global Road Infratech Summit & Expo 2025

GLOBAL ROAD INFRA SUMMIT & EXPO

"Vision Zero: Sustainable Infratech and Policy for Safer Roads"

REPORT

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Technical Session I: Road Infrastructure Vision 2047 (Day 1: 06 March 2025)

Chair : Mr. K. K. Kapila, President (Emeritus) International Road Federation, Geneva

Keynote Speaker : Mr. Sudendhu J. Sinha, Project Director, NITI Aayog

Speakers :

1. Mr Amit Shukla, Jt. Secretary, MORD & DG, NRIDA

2. Mr Hamdi Aydin, Chairman, Emay International Engineering & Consultancy, Istanbul, Turkiye

3. Prof. Manoranjan Parida, Director, CSIR-CRRI

4. Mr Anilkumar Gaikwad, VC & MD, MSRDC

Welcoming the Session Panel and Conference delegates, **Session Chair Mr Kapila** set the tone for the two days event that is being rolled out in the first session. He noted that despite the advancements and excellent growth of infrastructure in the country, safety concerns are still plaguing due to the fact that driver behavior, and technology integration still remain as challenges. Road safety is one of the biggest challenge disrupting India's planned growth of the economy, and must be managed. The need of the hour is the collaboration between academia, research organizations and industry to facilitate substantive policy incentives to encourage the adoption of new technologies, global best practices, emerging technologies, and data-driven insights to ensure that our roads are safer, smarter, and more sustainable for future generations.

Keynote Speaker, Mr. Sudhendhu Jyothi Sinha highlighted India's rapid expansion in road infrastructure, emphasizing on high-quality construction with intelligent materials and technology integration; fast infrastructure expansion into north-east, coastal, desert, and mountainous regions; increased use of digital tools for data collection, planning, and maintenance management. He suggested fast tracking of road safety initiative with innovations as India contributes over 11% to global road accident fatalities. He advocated the need for cost effectiveness of improving the road in terms of safety aspects by piloting it on a 100 km road stretch as the model stretch and replicating it across the entire network. Mr. Sinha advocated for adoption of low-cost technological solutions for safety enhancement and supporting policy interventions for improved safety and sustainability.

Mr. Sinha also commended IRF's road safety projects, which are facilitating improvements in road safety. He urged strong government commitment to prioritizing infrastructure resilience and emphasized on adopting global best practices and providing actionable recommendations for road safety and efficiency as well as suggestions for technology-driven maintenance practices for sustainable infrastructure development.

Thereafter the Chair of the Session invited the four speakers of the session one by one. All of them were doyens in the profession, who have implemented mega projects in the field or in innovative research and developments.

Speaker 1: Mr. Amit Shukla presented the initiatives under the Pradhan Mantri Gram Sadak Yojana (PMGSY), emphasizing the importance of enhancing rural connectivity with a sustainable and safe approach. He highlighted that network-based planning is being implemented to ensure seamless rural-urban integration as part of the PMGSY 4.0. Advocating for a shift towards new construction technologies to minimize the carbon footprint, he had set a target of achieving 50% adoption of new technologies in rural road construction. He shared successful pilot projects such as full-depth reclamation in Uttar Pradesh demonstrating effectiveness of innovative construction methods. He also outlined road safety measures, including improved signage, traffic calming strategies, and enhanced road geometry of the rural roads to provide safe and sustainable network development.

He emphasized on the importance of performance-based maintenance contracts and capacity building programs for Engineers and Contractors. To enhance durability of these low volume roads, he explained how integration of GIS and digital planning tools are essential, which facilitates better decision-making in rural road projects (through design and material choices) right from planning, design, construction and maintenance management for achieving sustainability.

Speaker 2: Mr. Hamdi Aydin highlighted Turkey's strategic location as a transportation hub, noting that 90% of transport in the country is road-based. He presented an exhaustive programme of road infrastructure developments in Turkiye.

The country witnessed significant progress in infrastructure expansion, and divided roads increased from 6,000 km to 30,000 km. An investment of US$108 billion has been made in infrastructure development over the last 22 years, ensuring that roads and bridges meet high earthquake-resistant standards. Despite a steep rise in number of vehicle in the country, he pointed out that road safety had significantly improved and presented key projects such as the Çanakkale Bridge, metro expansion, and all of these are earthquake-resistant infrastructure.

Looking at the future, he advocated for intelligent transport systems and green infrastructure. He suggested that Turkey's experience offers valuable insights for India's road development programme and encouraged collaborative efforts between both the nations.

Speaker 3: Prof. Manoranjan Parida addressed India's road network, the second-largest road network globally, and its vital role in economic development. He proposed for **preserving the road infrastructure developed with huge resources through road asset management** He underscored the importance of National Highways and their proper management in terms their operational quality during the life cycle of the infrastructure. He advocated for a robust Road Asset Management System (RAMS), explaining its necessity for efficient fund utilization, long-term sustainability, and data-driven decision-making. He presented global best practices from the USA, UK, Canada, and Australia, emphasizing the need for India to integrate its infrastructure developments with similar technologies and methodologies for sustainable preservation of assets. He highlighted the need for country's own pavement performance study and spoke about GIS-based road management, automated survey tools like NSV for real-time data collection, and AI/ML applications for road deterioration prediction models for asset life cycle.

He recommended policy reforms for sustainable asset management, smart technologies for real-time monitoring, and eco-friendly construction methods and emphasized the need for collaboration between government, industry, and academia, advocating for sustainability metrics in road maintenance strategies.

Speaker 4: Mr. Anil Kumar Gaikwad highlighted Maharashtra's largest economic and infrastructure development project, the Nagpur-Mumbai Samruddhi Mahamarg. He elaborated on the major expressway development programme of Maharashtra designed to boost connectivity, and the state economy. Most important among the proposed network is particularly the Mumbai-Nagpur Expressway, which had reduced travel time between the two major cities from 16 to 8 hours. He discussed the efficient land acquisition process and environmental clearances that facilitated the project's fast progress and completion. He also emphasized the role of public-private partnerships in ensuring effective funding for such mega project.

He outlined key safety measures, including dedicated bus bays, wildlife corridors, and advanced traffic management systems, which are provided for the expressway corridor. He further explained the economic and social impact of the expressway, highlighting industrial expansion and economic zones planned along its route. He stressed the need for continued evaluation of economic and environmental impacts to ensure sustainable expressway development.

Conclusion

In conclusion, the Road Infrastructure Vision 2047 for India represents a transformative blueprint aimed at revolutionizing the nation's mobility landscape. By prioritizing sustainable practices, technological innovation, and enhanced connectivity, this vision seeks to not only improving the efficiency and safety of road networks but also to foster economic growth and social inclusion. As we look towards Vision 2047 for Vikshit Bharat, it is imperative that stakeholders across government, industry, and communities collaborate to implement this vision. All stakeholders are required to ensure that our road infrastructure meets the demands of a rapidly evolving society while minimizing environmental impact. Together, we can pave the way for a resilient, accessible, and future-ready road infrastructure that supports India's aspirations for progress and prosperity.

Technical Session I

Technical Session II: Infrastructure Development - Vision Net Zero

Chair : Ms. Susanna Zammataro, Director General, International Road Federation, Geneva

Keynote Speaker : Dr Sujit Kumar Bajpayee, Member, Commission for Air Quality Management in National Capital Region and Adjoining Areas

Speakers :

1. **Mr. V. N. Heggade, Founder & CEO, DECon Complete Solutions, Mumbai**
2. **Dr. Bibekananda Mohapatra, Advisor and Consultant, Ultratech Cement Ltd., Mumbai**
3. **Prof. Mahendrakumar Madhavan, Professor, IIT Hyderabad**
4. **Dr. Ambika Behl, Sr. Principal Scientist, CSIR-Central Road Research Institute, New Delhi**

The **Session Chair Ms. Susanna Zammataro** discussed the vision of achieving net zero emissions and its significance. She suggested a few measures which can help to achieve this goal. The suggested measures include, Reforms in procurement policies incorporating both safety and performance standards; Harnessing technology and innovation based on automated/AI-driven technologies; Strengthening policies and enhancing collaboration among stakeholders; and International collaboration and knowledge sharing to drive sustainable solutions.

The **Keynote Speaker Dr. Sujit Kumar Bajpayee** discussed the profound consequences of the road sector on the environment and the way forward to vision net zero. He focused on moving beyond traditional construction processes by incorporating measures throughout the entire life cycle and presented a way forward in terms of Climate-resilient roads; Green and sustainable road design and planning; Green belts and eco-friendly landscaping. He suggested a few major steps such as Promoting decarbonization of road construction by using low-carbon materials; Encouraging the use of sustainable materials in construction; Adopting low-carbon construction technologies; Implementing road recycling practices to reduce waste; Promoting the use of low-emission transport vehicles (with cleaner fuels); Developing energy-efficient roadside amenities; Expanding the network of EV charging stations; Implementing a carbon credit mechanism to incentivize sustainable practices.

Speaker 1: Mr. V. N. Heggade discussed the global climate change and its consequences/ risks on bridges. He broadly classified the risks as - Durability risk; Seasonality risk; Geochemical risk; Operational risk; and Accidental risk. He highlighted climate change related risks in bridges including early corrosion, deformations, biodegradation of foundations, liquefaction, and heat-induced damage. He also emphasized the impact of floods, storms, and cyclones on bridges. The solution is the incorporation of climate adaptation strategies for bridges and he highlighted the need for rehabilitation and improved safety factors in bridge design.

Speaker 2: Dr. Bibekananda Mohapatra focused on composite cement which include fly ash and slag based cement for developing sustainable and environmentally friendly structures. He also shared some details of IS 16415:2015, which lists down specification for composite cement and shared usage of composite cement based on studies conducted at NCCBM along with the carbon footprint study. He mentioned that decarbonization of the cement industry involves clinker substitution, use of alternative fuels and raw materials, improvements in energy efficiency as well as use of renewable (green) energy, and adoption of new technologies.

Speaker 3: Prof. Mahendrakumar Madhavan emphasized the need for shifting from concrete-based construction to steel-based construction, as steel enhances sustainability due to its reliability and non-degrading property during the lifecycle of the infrastructure. At this juncture the need for policy decisions to promote steel consumption was discussed. He highlighted the importance of composite flooring concept towards sustainable development in India. Prof. Madhavan also highlighted the process of using steel slag aggregate for road construction. He also emphasized the importance of promoting steel in road infrastructure projects.

Speaker 4: Dr. Ambika Behl showcased the need and the method of incorporating plastic waste in road construction. The use of waste plastic aggregate as a replacement for natural aggregate in bitumen mixes was discussed. It was shared and explained that CRRI had jointly developed the technology with industries for both wet and dry processes of

incorporating plastic into bitumen mixes. The challenges associated with the large-scale adoption of waste plastic technology for road construction were also presented. Dr. Behl mentioned and showed that CRRI has developed the technology for creating aggregates from waste plastics. An industry in Bangalore has already developed the aggregate with CRRI technology and it will be using 14 times more wate plastic in comparison to waste plastic modified bituminous mix by both dry and wet processes. This research was initiated for the use of waste plastic as part of studying the waste management (as part of Waste to Wealth Mission of CSIR) and the related laboratory investigations were shown with the aggregate properties.

Conclusion

In conclusion, infrastructure development plays a pivotal role in achieving the Vision Net Zero, as it lays the foundation for sustainable growth and environmental stewardship. By prioritizing green technologies, renewable energy sources, use of waste materials, and resilient design principles, we can create infrastructure that not only meets the needs of today but also safeguards the planet for future generations. Collaborative efforts among governments, private sectors, and communities are essential to innovate and implement solutions that reduce carbon footprints and enhance energy efficiency. As we move forward, embracing a holistic approach to infrastructure development will be crucial in driving the transition to a low-carbon economy, ultimately ensuring a sustainable and equitable future for all.

Technical Session II

Technical Session III: Future of Bridges and Tunnels

Chair : Mr S. K. Puri, Former DG (RD) & SS and Road Safety Ambassador, IRF-IC

Keynote Speaker: Prof. Prem Krishna, Former Professor, University of Roorkee (Now IIT)

Speakers :

1. **Prof. Mahesh Tandon, Chairman, Tandon Consultants Pvt. Ltd., New Delhi**
2. **Mr. R.K. Dhiman, Former ADG, BRO and President, TAI, New Delhi**
3. **Mr. Alok Bhowmick, Managing Director, B&S Engineering Consultants Pvt. Ltd., Noida**
4. **Mr. G.K. Sahu, Chief Scientist, Bridge Engineering & Structures Division, CSIR-Central Road Research Institute, New Delhi**

Session Chair Mr. S.K. Puri opened the session by emphasizing the vital role of bridges and tunnels in infrastructure development. He highlighted how projects such as the ATAL Tunnel and Zojila Tunnel have redefined modern connectivity. However, with increasing urbanization, safety concerns, particularly for workers in tunnels, must be prioritized. The Uttarakhand water well collapse was cited as an example of why enhanced safety protocols are necessary. Urban infrastructure complexities, such as launching of girders in congested areas like Dwarka, demand innovative solutions. Safety and sustainability throughout planning, design, construction and in-service maintenance are of utmost importance.

Keynote Speaker Prof. Prem Krishna presented the keynote on the topic of – "Development in Bridge Engineering". He traced the evolution of bridges from timber and stone to modern suspension and cable-stayed structures. He highlighted landmark projects such as the Vidyasagar Setu, the world's highest Chenab Railway Bridge, the Russky Bridge, and the Canakkale Bridge. He emphasized the need for integrating sustainability and smart monitoring systems in bridge design itself. He also stated that with rapid expansion in infrastructure, ensuring longevity through advanced materials and proper maintenance policies is critical.

Speaker 1: Prof. Mahesh Tandon spoke on the aspect of "Future of Bridges & Tunnels" and focused on Ultra-High-Performance Concrete (UHPC), which is 43% stronger than conventional concrete. He explained how UHPC is made from fine sand, fibers, and silica fumes, which enhances durability and reduces maintenance needs. He also discussed integrating urban spaces under bridges, as was seen in the Mumbai Tardeo Project, suggesting to optimize infrastructure use. Updating engineering codes to accommodate modern materials and sustainability was another key point, which he elaborated upon.

Speaker 2: Mr. R. K. Dhiman spoke on the aspect of "Boundary Bed Scour Proposed Formula" and addressed the threat of boundary bed scour in bridge piers, where riverbed erosion weakens the bridge foundations. The outdated 1930 Scour Formula no longer applies to modern bridges. He recommended soil removal, brick lining, and predictive flood modelling. He explained with the case studies of the Tippi and Rangiahat bridges, where it was shown how improved scour protection can enhance resilience during extreme floods.

Speaker 3: Mr. Alok Bhowmick spoke on the aspect of "Future Challenges & Opportunities in Bridge Engineering" and emphasized on the need for standardized bridge lifespan policies in India, where there are 13 million highway bridges and 150,000 railway bridges. Key trends in bridges include UHPC, FRP, AI-driven design, BIM adoption, lifecycle planning, and emerging technologies for monitoring. Sustainability, aesthetics, and interdisciplinary collaboration are crucial for future infrastructure. He emphasized on life cycle based bridge design and importance of maintenance of bridges.

Speaker 4: Mr. G.K. Sahu spoke on the aspect of "Sustainability of Bridges through Enhancement of Service Life by proper & timely Maintenance of Structures" and recommended ways to enhance the service life of bridges by their

inspection, maintenance and instrumentation. He showed moder methods of bridge inspection using MBIU, drone, lifter and boat, etc. The bridges normally need to be checked for overloading as per the codes. He gave a golden rule of Mission 2025 of Clean and Maintain (CM) structures including drainage spouts, expansion joints, water logs, excessive dead weight, vegetation, abutment and piers, bearings, waterways, and excessive live load; and also the cables and anchors in special bridges.

Conclusion

Bridges and tunnels are critical to connectivity of the transport network, which serves the economic development objectives of a nation. However, their longevity is under threat due to overloading, climate challenges, and insufficient maintenance. Structural Health Monitoring, use of sustainable materials, and proactive lifecycle management are key to ensuring long-lasting infrastructure. Collaboration among engineers, policymakers, and governments is crucial for such vital infrastructures to ensure a safer and more resilient future.

Technical Session III

Technical Session IV : Road Safety in Changing World

Chair : Prof. Manoranjan Parida, Director, CSIR-Central Road Research Institute, New Delhi

Keynote Speaker : Mr S.K. Nirmal, Former DG(RD) & SS and Former Secretary General, IRC

Speakers :

1. **Ms. Cecilia F. Kadeha, Road Safety Expert, The World Bank**
2. **Dr. Rajesh Krishnan, Chief Executive Officer, ITS Planners and Engineers Pvt Ltd., Hyderabad**
3. **Dr. Venkata S. Chunduru, Director, Arcadis IBI Group, Bengaluru**
4. **Mr. Akhilesh Srivastava, President, ITS India and EVP, IRF-IC**

Session Chair Prof. Manoranjan Parida initiated the session by highlighting the importance of Road Safety issue in the Indian context. India contributes to over 11% to global road traffic fatalities and this is only growing year on year. While knowledge and awareness of the issue exits in multiple stakeholders, a concerted result oriented approach needs to be embraced and adopted strictly backed by Policies, Technology and Enforcement.

The Keynote Speaker Mr. S.K. Nirmal presented data regarding number of road crashes and the concern related to increasing trend. The trend of 45% crashes involving motorised two wheelers and 20% involving pedestrians is worrisome. He compared these numbers with crashes in other countries, especially the statistics related to US having more vehicles and higher speed limits but lesser fatal crashes. Highlighting about the role of IRC and its affiliations with international institutes. He briefed about the robust process of publishing IRC codes and guidelines, and mentioned that updated and new documents are in publication process, such as Sign Manual, Cycling Infrastructure, Safer Commute to Schools, Blackspots, Segregated Lane for Two Wheelers, etc. IRC keeps standardising the design guidelines for all important aspects of Indian road sector domain.

He also mentioned the need for adding a large pool of trained road safety auditors to build capacity. These trained personnel should be so trained to identify blackspots based on blackspot protocol and understand the process of rectifying the same. He also stressed on including Road Safety Audits as mandatory intervention at every stage of the project development and implementation.

Speaker 1: Ms. Cecilia Kadeha presented on the topic of "Transportation Management and Operations Strategies" to ensure mobility and safety for all. To match with the increasing demand and increasing mobility, she shared the strategies of - 'Managed lanes' i.e. BRTS in urban area, High occupancy lanes, etc., 'Ramp metering' through signal for traffic at ramps on highways and 'Dynamic message signs' to keep drivers informed for the traffic on their routes". She presented the benefits achieved by deploying these strategies including higher capacity and better road safety. She also highlighted ongoing knowledge exchange events among IRC and AASHTO

Speaker 2: Dr. Rajesh Krishnan presented on the topic of "Technology for Road Safety including Surrogate Safety measures". He briefly shared the concept of predictive models and proactive models and talked about 'Observation based approach' through commonly used SSM metrics, i.e., Time to Collision, Post Encroachment Time and Deceleration rate to avoid risk of crash, Crash Potential Index, Anticipated Collision Time, etc. He highlighted the importance of using appropriate sensor with appropriate technology to collect information related to vehicle trajectory.

Speaker 3: Dr. Venkata S. Chunduru spoke on the topic of "Economy around road safety". He discussed about the changing mobility pattern, changing modal shifts, change in extreme weather events and also changing drivers' behavioural aspects due to distractions, etc. Response to this change could be addressed through Updated road designed to accommodate change including pedestrian signals, adoptive signal phases; FastTag integration with VAHAN data; Awareness campaigns to be properly designed for the focused groups; Use of drones, mobility twins and AI for better solutions and to have latest data driven policies. He also mentioned about the latest project on CARE and highlighted the need for coordinated strategies on all 'E's of road safety.

Speaker 4: Mr. Akhilesh Srivastava initiated his presentation with blackspot and mentioned that instead of the definition being based on number of fatalities, blackspots should be identified based on on-ground situation captured and

processed by technology driven methods. The 'human behaviour' should be handled through digital and technology solutions through two main approaches. Firstly, a 'Bottom Up approach encompassing - Advance alerts to vehicles and drivers (ADAS & DMS); Safe driving score (SDS); Scaling the awareness through digital platform; Reduced commuting time for emergency vehicles'. Secondly, the 'Top Down approach encompassing - Enforcement system to be upgraded with eChallan system, Upcoming blackspot location related information can be provided to drivers; Linkages between driving score with insurance; e-DAR and IRAD data is to be kept open for public; tax-exemption for helmets and other road safety related products'.

Conclusion

The Chair concluded and said that the publication of IRC Codes should be expedited keeping in view the changing dynamics of the road ecosystem. Besides focus on Road Engineering, the other E's, namely, Road Safety Education, Enforcement and Emergency Care also need simultaneous and urgent addressal. Congestion management plan has been initiated by the Delhi Government and CRRI has also been working on the impact of various speeds on traffic management. Prof. Parida observed that the SSM was presently limited to academic studies and there exist challenges to bring these ideas into implementation, which can give hugely positive results. The effort of Bengaluru Police, as shown in one of the presentations, which resulted in zero fatality on the new year eve shows the way the traffic need to be enforced using technologies for managing better and also to minimize road crashes. Thus, the role of technology has been proven time and again as the enabler to address the key challenges for addressing the multi-stakeholder issues that we have today for road safety.

Technical Session IV

Technical Session V: Technology for Smart Infra

Chair : Dr. Mahesh Kumar, President, ICT Pvt. Ltd., New Delhi

Keynote Speaker : Mr. Vivek Jaiswal, CGM, National Highways Authority of India (NHAI)

Speakers :

1. Mr. G. Parasuraman, Managing Director & Mr. Abhishek Tiwari, Associate Director, IRSM/NTRO, Hyderabad

2. Mr. Lalit Shukla, AI Lead, GarudaUAV, Noida

3. Mr. Amit Saxena, Regional Sales Manager, Trimble India, Karnataka

4. Mr. Kush Agarwal, Co-founder and CEO, YellowSKYE, Pune

5. Ms. Rajni Gandhi, General Secretary, TRAX (NGO), New Delhi

The Session Chair Dr. Mahesh Kumar introduced the Session with the role of technology in developing smart infrastructure, emphasizing upon the application of Artificial Intelligence (AI), cloud computing, and Geographic Information Systems (GIS). These technologies play a crucial role in optimizing infrastructure planning, management, and maintenance. AI enables predictive analytics and automation, cloud computing enhances data storage and accessibility, while GIS supports spatial analysis and decision-making. The integration of these technologies can significantly improve the efficiency, sustainability, and resilience of smart infrastructure systems.

The Keynote Speaker Mr. Vivek Jaiswal introduced the Highway Information Modeling Platform (HIMP) and its role in advancing highway infrastructure through 3D, 4D, and 5D digitization models. He explained how digital twins, virtual replicas of physical infrastructure, enhance design, construction, monitoring, and maintenance processes. These technologies enable better visualization, simulation, and predictive analysis, improving efficiency, cost management, and decision-making for highway projects. The presentation highlighted the growing importance of digitization in modern infrastructure development and its potential to optimize project lifecycle management.

Speakers Mr. G Parasuraman and Mr. Abhishek Tiwari discussed next-generation technologies for pavement evaluation and data collection, highlighting the role of big data in supporting decision-making. Focus of the presentation was on iPAVE, an integrated unit designed for comprehensive pavement evaluation. This system combines structural, functional, and Ground Penetrating Radar (GPR) assessments to provide a holistic approach to pavement condition analysis. By leveraging advanced data collection methods, iPAVE enhances the accuracy and efficiency of pavement management, facilitating informed decision-making for infrastructure maintenance and development.

Speaker 2: Mr. Lalit Shukla representing GarudaUAV discussed about AI-powered drone inspections for roads and highways. The company conducts 4,000 km of highway surveys monthly with NHAI and KPMG. Their drones facilitate automated data collection for various applications, including distress detection, road inventory mapping, road safety assessments, construction monitoring, and structural evaluations. He also showcased their software's user interface, which enables efficient visualization, analysis, and reporting of collected data, enhancing decision-making for highway infrastructure management.

Speaker 3: Mr. Amit Saxena discussed technology for smart infrastructure, emphasizing the importance of survey data integrity throughout the lifecycle of a road project. He highlighted integrating data from multiple sensors, including UAVs and LiDAR, into a single platform to enable connected digital construction. An overview of the Trimble Geospatial Platform and Trimble workflow covered aspects like data processing, storage, application, and customization. He also shared insights from tunnel projects in India and Switzerland, demonstrating how these tools have been successfully applied in real-world infrastructure projects.

Speaker 4: Mr. Kush Aggarwal showcased a video presentation demonstrating the applications of drones in infrastructure projects. The focus was on converting drone-collected data into 2D and 3D digital twins, which are used for surveying, project monitoring, condition assessments, and progress tracking. He also highlighted the role of UAV-based bridge inspections, emphasizing how drone technology enhances accuracy, efficiency, and safety in infrastructure evaluation and management.

Speaker 5: Ms. Rajini Gandhi discussed smart roads and the challenges associated with implementing technology-driven solutions in road infrastructure. She highlighted the data integration, cost, regulatory hurdles, and technological adaptability as the key issues. Further, she also covered the application of Advanced Driver Assistance Systems (ADAS) in enhancing road safety, traffic efficiency, and autonomous vehicle compatibility.

Conclusion

The session concluded with a discussion on human behaviour and its impact on road safety. The Session brought forth NHAI's initiatives and actions aimed at improving road safety through policy measures, infrastructure enhancements, and technological interventions. The industry representatives showcased how with the use of Technology for Smart Infra, such as Drone softwares, LIDAR, etc, are assisting in accurate distress detection, road inventory mapping, road safety assessments, construction monitoring, and structural evaluations. Though there are challenges in technology integration and adaptation, indications of technology as enabler and driving force for road safety, cannot be overlooked. In any technological enhancement will be dependent on the need for awareness, enforcement, and behavioural changes to address the road safety problem in a comprehensive manner.

Technical Session V

Session VI : Panel Discussion: on Policy & Governance for Development of Sustainable Safe and Smart Infra

Chair : Mr K K Kapila, President (Emeritus), International Road Federation, Geneva

Panelist 1 : Mr. D. Sarangi, Former DG (RD) & SS, MoRTH

Panelist 2 : Dr. Rohit Baluja, President, IRTE, Faridabad

Panelist 3 : Prof. Geetam Tiwari, TRIPP & Professor IIT Delhi

Panelist 4 : Prof. P. K. Sikdar, Former Director, CSIR-CRRI and Advisor, IRF-IC

Panelist 5 : Prof. M. Parida, Director, CSIR-CRRI

Panelist 6 : Prof. K. Ramachandra Rao, Professor, IIT Delhi

Session Chair Mr K K Kapila reflected on the discussions from both the days, particularly on resilient infrastructure, emphasizing carbon-neutral structures and smart monitoring technologies for structural health assessment. He highlighted the importance of life cycle cost analysis in selecting the appropriate materials, as well as design. He highlighted the critical road safety issues in India that need to be addressed with modern technology. Additionally, he stressed the need for road safety education for school children and the adoption of advanced technologies to enhance overall road safety.

Panelist Mr. D. Sarangi provided insights on the importance of timely rehabilitation of pavements and structures to extend their lifespan and maintain performance. He outlined key sustainability measures, such as incorporating recycled materials like Reclaimed Asphalt Pavement (RAP), solid waste, fly ash, geosynthetics, and slags in road construction. He also emphasized using digital technology to enhance road infrastructure efficiency, resilience, and sustainability, advocating for data-driven decision-making to optimize long-term infrastructure management.

Panelist Dr. Rohit Baluja spoke on policies for sustainable mobility, stressing the need for time-based policy design that considers health, safety, and sustainability. He advocated for a Safe System Approach in policymaking and emphasized the importance of traffic management, accountability, and responsibility for safer roads. He highlighted the need for accountability in road accidents and called for better safety measures for pedestrians and two-wheelers, along with specific policies to protect them. Additionally, he addressed the current status of traffic signals and road signs in the country, emphasizing the need for law enforcement and necessary revisions to improve road safety.

Panelist Prof. Geetam Tiwari spoke on Safe Highways in India: Challenges and Solutions – A Guidance for Road Owning Agencies. She emphasized the importance of identifying non-compliance in road geometry, speed management, and roadside hazards to improve highway safety. She outlined an action plan to ensure compliance, the development of new standards for specific road safety issues, and the need for an institutional safety section/cell in MoRTH, NHAI, and State PWDs. She also recommended short-term, medium-term, and long-term actions to enhance safety on National Highways (NH), State Highways (SH), Major District Roads (MDR), and Other District Roads (ODR).

Panelist Prof. P. K. Sikdar emphasized the importance of educating adults on road behaviour to improve traffic discipline and reduce violations. He highlighted the role of strict enforcement in curbing road crashes, citing the Bangalore-Mysore Expressway as an example of improved compliance post-enforcement by ATMS. He stressed the need for adequate time in preparing Detailed Project Reports (DPRs), as they are crucial for effective road planning. Additionally, he discussed accountability for mistakes in road design and management, the strength of IRC guidelines, and the challenges in their implementation. Lastly, he called for better driving licensing policies to promote safer driving behaviours to improve overall road safety.

Panelist Prof. M. Parida emphasized the importance of policy, technology deployment, and data sharing in improving road safety. He highlighted the availability and utilization of iRAP data for better decision-making and stressed the need to integrate safety as a key component of Operation & Maintenance (O&M) in road projects. He also called for the revision of IRC guidelines to address evolving road safety challenges. Additionally, he discussed the importance of sponsoring research projects on road safety and advocated for designing higher education curriculum that incorporate

road safety concerns to equip future professionals with the necessary knowledge.

Panelist Prof. K. Ramachandra Rao focused on the Vision Zero approach to eliminate road accidents. He emphasized the need for sustainable infrastructure and its critical role in enhancing road safety. He discussed strategies for crash prevention and actions to reduce road crashes, highlighting the importance of trained manpower for effective road safety implementation. Additionally, he stressed the significance of data availability and granularity for research and analysis, which can aid in developing more robust and efficient road safety systems.

Conclusion

The Chairman concluded the session by addressing questions from the audience during the Q&A session. He emphasized the need for policy corrections to enhance road safety, ensuring that regulations are more effective in reducing accidents and improving overall traffic management. He emphasized the importance of integrating technology, enforcement, education, and infrastructure improvements to create a safer and more sustainable road network.

Technical Session VI

Valedictory Session on Day 2 (7 March 2025) of Global Infratech Summit & Expo

Mr. D. Sarangi, Former DG{RD) & SS, MoRTH -- Chief Guest

Mr. K. K. Kapila, President Emeritus, International Road Federation, Geneva – Presiding

Mr. Rahul Bharti, Executive Director, Maruti Suzuki, Gurugram

Prof. P K Sikdar, Former Director, CSIR-CRRI and Advisor IRF-IC, New Delhi

Mr. D. O. Tawade, Sr. Vice President, IRF-IC

The Valedictory Session of the 2 day "Global Infratech Summit and Expo - Vision Zero: Sustainable Infrastructure and Policy for Safer Roads in India" was held on 7th March 2025 at Hotel The Lalit, New Delhi after all the technical sessions and panel discussion was over, at 17.00 hrs. The Chief Guest of the Valedictory Session was Mr. D. Sarangi, DG(RD) & SS, MoRTH (Retd.).

Valedictory Session was presided over by Mr. K. K. Kapila, and he briefed the audience about the Global Summit that was held for two days with a few major observations and directions derived from all the technical sessions. He also informed that a detailed report of the Summit will be available in IRF-IC website within about three weeks, which will include all the presentations of the speakers as well.

The session thereafter began with the Session Summary presented by Prof. P. K. Sikdar. He summarised the proceedings of various technical sessions held over the two days. The gist of the sessions was formed as a part of this report giving details of deliberations of various keynote and invited speakers.

This was followed by re-announcement of the results of Poster Session organized in parallel to the Global Summit. Prof. P. K. Sikdar reported that posters were submitted on the theme of the Summit and a competition was held in the Exhibition Area. Out of 17 submissions of the poster abstracts 13 were approved by the Committee for submission of poster, which were proposed by Post-Graduate students and Research Scholars from academic and research organizations. Finally 12 posters were submitted, which were judged by a three-member jury (Mr. D. O. Tawade, Mr S. K. Nirmal and Prof. P. K. Sikdar) with on-site presentation of the posters.

Three (3) Posters were adjudged as winners by the Jury for award in order of merit as shown here.

First Prize: **Srishti Saini,** CSIR-Central Road Research Institute (CRRI), New Delhi on **AI-Powered Drowsiness Detection for Driver Safety: Analyzing Eye Aspect Ratio and Mouth Opening Ratio.**

Second Prize: **Pradeep Kumar N K V** (University of Visvesvaraya College of Engineering), **Sarfaraz Ahmed** and **Dr. G. Bharath (CSIR – CRRI) on Performance Evaluation of High-Performance Bituminous Mixes With Varied Content of Reclaimed Asphalt Pavement Material for Sustainable Pavements.**

Third Prize: **Reashma P S** and **Aishwarya B M** (Street Matrix Pvt. Ltd.), **Dr. S. Velmurugan** (CSIR – CRRI), **Amit Thatte** and **Vidheya Rao** (Kataline Infraproducts Pvt. Ltd.), on **Enhancing Road Safety through Transverse Bar Markings: Impact of Thickness on Speed Reduction - Case Study.**

A brief presentation on their poster submissions were made by the three winners, after the three winners were announced at the end of the Panel Discussion session. The winners were given mementos at the valedictory session. A cash prize and a certificate are also been sent to them after the Summit.

This was followed by a Valedictory Address by the Chief Guest who commended the efforts of IRF-IC for organising a relevant knowledge intense Global Summit spread over two days. The impressive line-up of speakers and their presentations were highly topical and resonated well with the theme of the Summit.

IRF-India Chapter introduced **Road Safety Award** to recognise contributions of individuals in the road safety domain. Two categories of awards - Road Safety Leadership Award and Road Safety Champion Award were introduced this year.

The Road Safety Leadership Award was conferred upon Mr. Rahul Bharti, Executive Director, Maruti Suzuki for the massive Drivers' Training programs at IDTRs across the country since a number of years. Similarly. Road Safety

Leadership Award was conferred upon Mr. Mahmood Ahmad, Additional Secretary (Road Safety), MoRTH for spearheading Road Safety initiatives across the country.

Thirty (30) Road Safety Champion Awards were conferred upon individuals from Construction Industry, Academia and Road Safety Research. This Award was also conferred upon Mr Anilkumar Gaikwad, VC&MD, MSRDC for his vision for building safe road infrastructure in Maharashtra.

The Awards were presented by the Chief Guest Mr. D. Sarangi.

The Valedictory Session ended with a Vote of Thanks Proposed by Mr. D. O. Tawade, who left no stone unturned to recognise all presentations, Speakers, Delegates, Sponsors, Partners, Exhibitors, Organisers including the IRF-IC Secretariat. He thanked Ms. Rekha Mehra for the beautiful dance programme on the first day during evening. He also thanked event management organization, the hotel and the media for their meticulous arrangements during the two days.

The Global Summit concluded with High Tea session before dispersal of the delegates.

Showcasing MSRDC at GRIS 2025

Inauguration GRIS-2025

Cultural Programme

Exhibitors

Media Clippings

TWO-DAY GLOBAL ROAD INFRATECH SUMMIT & EXPO CONCLUDES

Ahmedabad, Eminent infrastructure and road safety experts from across the world taking part in a Two-day Global Road Infratech Summit & Expo (GRIS) have stressed on the need of finding and developing on innovative solutions, best practices, and policies transform India's roads for the future. "Despite major advances in the road Infratech sector, the country still stands at the crossroads of safety, sustainability, and innovation, we must reaffirm our commitment to building safe, efficient, and sustainable roads. The Road to Vision Zero – both aims for Carbon Zero and Fatality Zero" said Mr K K Kapila, President Emeritus , International Road Federation (IRF) a global road safety body working for better and safer roads worldwide."Every year, over 1.7 lakh lives are lost on Indian roads, a crisis that demands urgent intervention. While global road fatalities have declined by 5%, India has seen a 10% rise, underscoring the need for technology-driven, policy-backed, and infrastructure-led interventions." Said Mr Kapila.

TWO-DAY GLOBAL ROAD INFRATECH SUMMIT & EXPO CONCLUDES WITH STRESS ON CONSTRUCTING SUSTAINABLE INFRATECH AND SAFER ROADS

New Delhi March 7, 2025 Eminent infrastructure and road safety experts from across the world taking part in a Two-day Global Road Infratech Summit & Expo (GRIS) have stressed on the need of finding and developing on innovative solutions, best practices, and policies transform India's roads for the future.

"Despite major advances in the road Infratech sector, the country still stands at the crossroads of safety, sustainability, and innovation, we must reaffirm our commitment to building safe, efficient, and sustainable roads. The Road to Vision Zero – both aims for Carbon Zero and Fatality Zero" said Mr K K Kapila, President Emeritus , International Road Federation (IRF) a global road safety body working for better and safer roads worldwide .

Gadkari slams engrs, contractors, consultants for poor road safety

TIMES NEWS NETWORK

New Delhi: Road transport minister Nitin Gadkari on Thursday slammed engineers, consultants and contractors for having the least concern for safety of road users, and signage and markings.

"Most accidents happen in the country due to small civil mistakes and nobody is held accountable. Even small things such as the road signage and marking systems are very poor in the country; these can be copied from countries like Spain, Austria, and Switzerland," he said while speaking at Global Road Infratech Summit & Expo.

The minister said India recorded 4.8 lakh road accidents, 1.8 lakh deaths, and about 4 lakh serious injuries in 2023. Out of these 1.4 lakh accident deaths are in the age of 18-45 years and mostly two-wheeler riders and pedestrians. He pointed out the poor quality of detailed project reports (DPRs), holding engineers largely responsible for the rise in road accidents due to poor planning and design.

SAFETY ISSUE: Nitin Gadkari

"This gives me a feeling that, basically, engineers are responsible for road accidents. So, the main problem is road engineering and defective planning, and defective DPRs," Gadkari said. He urged the industry and govt to collaborate on solutions to prevent road accidents, emphasizing the importance of education in building safer infrastructure and promoting safer driving habits.

THE ECONOMIC TIMES

'Faulty Reports and Designs to Blame for Rising Road Mishaps'

Our Bureau

New Delhi: Road transport and highways minister Nitin Gadkari on Thursday said faulty detailed project reports (DPRs) and faulty road design prepared by civil engineers and consultants are responsible for increasing road accidents and fatalities in India.

Addressing Global Road Infratech Summit & Expo (GRIS), Gadkari highlighted the urgent need for improving road safety measures, strengthening law enforcement mechanism and enhancing emergency medical services on national highways.

"Most road accidents happen in the country due to small civil mistakes and faulty DPRs, and nobody is held accountable," Gadkari said.

Road transport and highways minister Nitin Gadkari

The minister also called upon the road construction industry to develop strategies to enhance road safety by adopting newer technologies and sustainable recyclable construction materials.

Even small things like the road signage and marking system are very poor in India, he said, adding India needs to learn from countries like Spain, Austria and Switzerland on ways to improve signage and marking systems and make them world-class.

Pointing out that worst quality DPRs are made in India, Gadkari said the main problem is road engineering, defective planning and defective DPRs.

According to the minister, 180,000 people died in the country due to road accidents in 2023. "Road accidents contributed to an economic growth loss of 3% of GDP," he said, adding the government aims to reduce road accident rates by 50% by 2030.

Gadkari urged the industry and government to collaborate on solutions to prevent road accidents, emphasising the importance of education in building safer infrastructure and promoting safer driving habits.

Media Clippings

The Statesman

Gadkari highlights immediate need for improved road safety measures

AGENCIES
NEW DELHI, 6 MARCH

Union Minister for Road Transport and Highways Nitin Gadkari on Thursday highlighted the immediate need for improved road safety measures to put in place and called upon the road construction industry to develop strategies to enhance road safety by adopting newer technologies and sustainable recyclable construction materials.

Speaking after inaugurating two-day Global Road Infratech Summit and Expo (GRIS) with the theme "Vision Zero: Sustainable Infratech and Policy for Safer Roads," in New Delhi today, Gadkari observed that most of the road accidents that happen in the country are due to poor civil engineering practices in road design, construction, and management and improper road signages and marking systems. "India witnessed 4,80,000 road accidents, 1,80,000 deaths, and about 4,00,000 serious injuries. Out of these 1,40,000 accident deaths are in the age of 18-45 years and affecting mostly two-wheeler riders and pedestrians. These accidents contribute to an economic loss of 3 per cent to GDP," Gadkari noted.

सड़क हादसों के लिए सिविल इंजीनियर और सरकारी तंत्र जिम्मेदार : गडकरी

Hindustan Times

Govt aims to reduce road accident rates by 50% by 2030: Nitin Gadkari

Gadkari called upon the road construction industry to develop strategies to enhance road safety by adopting newer technologies

NEW DELHI: Union minister for road transport and highways Nitin Gadkari on Thursday said the government aims to reduce road accident rates by half by 2030 and said accidents contribute to an economic loss of 3% to GDP.

"India witnessed 4,80,000 road accidents, 1,80,000 deaths, and about 4,00,000 serious injuries. Out of these 1,40,000 accident deaths are in the age of 18-45 years and affecting mostly two-wheeler riders and pedestrians," Gadkari said citing the latest (2022) nationwide data.

The minister was speaking at the inauguration of two-day Global Road Infratech Summit & Expo (GRIS) in New Delhi.

Gadkari also highlighted the need for improved road safety measures and called upon the road construction industry to develop strategies to enhance road safety by adopting newer technologies and sustainable recyclable construction materials.

The minister also said that most crashes in India are due to poor civil engineering practices in road design, construction, and management and improper road signages and marking systems. He suggested that they can be rectified by emulating from what is being practiced in countries such as Spain, Austria and Switzerland.

Substandard detailed project reports (DPRs) also contributed to poor quality of roads, he said.

Stating that road safety is a top priority, the minister urged the industry to collaborate with governments in finding solutions to prevent road accidents, emphasising the importance of education in building safer infrastructure and promoting awareness on safer driving habits.

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केंद्रीय मंत्री ने सुरक्षा उपायों में तत्काल सुधार की जरूरत बताई

सड़कों की खराब डिजाइन से दुर्घटनाएं बढ़ीं : गडकरी

ग्लोबल समिट

2023

2030

छोटी-छोटी चीजें भी बहुत जरूरी

"भारत में हर साल 4 लाख 80 हज़ार सड़क दुर्घटनाएं होती हैं और 1 लाख 80 हज़ार मौतें होती हैं, जो शायद दुनिया में सबसे ज़्यादा हैं.

इन सभी दुर्घटनाओं के सबसे महत्वपूर्ण दोषी सिविल इंजीनियर हैं. मैं सभी को दोषी नहीं ठहराता. लेकिन 10 साल के अनुभव के बाद मैं इस नतीजे पर पहुंचा कि सबसे महत्वपूर्ण दोषी वे हैं जो डिटेल्ड प्रोजेक्ट रिपोर्ट बना रहे हैं और इसमें हजारों गलतियां हैं.

नितिन गडकरी
केंद्रीय सड़क एवं राजमार्ग मंत्री

BBC NEWS हिन्दी

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