



राजमार्ग RAJMAARG

NHAI BI-MONTHLY NEWSLETTER

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Inner Lanes



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PROMOTING EASE OF LIVING WITH CITIZEN-CENTRIC APPROACH

The Hon'ble Prime Minister's vision for New Bharat places strong emphasis on enhancing the ease of living for every citizen. This vision goes beyond infrastructure; it is about creating systems that improves efficiency and provide comfort to every citizen of our nation. In line with this approach, NHAI has been consistently embracing innovation and technology to strengthen the National Highway infrastructure in the country.

Over the years, India has seen rapid urbanization and an unprecedented rise in mobility needs. This transformation has brought with it the need

for smarter systems that can address demand for increased capacity without compromising safety or efficiency. The advent of commuter centric technology and mobile apps like the Rajmargyatra app is transforming the 'Ease of Commuting' on National Highways. Also, Advanced Traffic Management System (ATMS) has enhanced safety and surveillance on National Highways. Beyond this, incident Management has been further strengthened with 1033 National Highway Helpline number and 'Rajmarg Sathi', the modern Route Patrolling Vehicles that provide

assistance to commuters on National Highways. Further, by enabling cashless transactions FASTag has revolutionized toll operations and reduced congestion, saving both time and fuel at the toll plazas. Also, FASTag Annual Pass was introduced on 15th August 2025 to make commuting more economical and seamless. Together, these initiatives symbolize how innovation is being leveraged for simplifying National Highway travel and enhancing ease of living through the development of advanced infrastructure.



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The development of access-controlled corridors and expressways is yet another step to realise the vision of Ease of living for millions of citizens around the country. As a part of this, a comprehensive road map to decongest the national capital has been under implementation.

Over the years, various National Highway and Expressway projects have immensely

contributed towards decongestion of the National Capital Region. Projects such as Delhi-Meerut Expressway, Eastern Peripheral Expressway, Delhi-Mumbai Expressway and Haryana section of Dwarka Expressway have eliminated the need for heavy vehicles to pass through the National Capital by offering alternate routes resulting in less pollution, boosting inter-state connectivity and easing the

traffic pressure on existing routes in the region. The recently inaugurated Delhi Section of the Dwarka Expressway and UER-II have further contributed towards decongestion of the National Capital Region. Inauguration of these projects by Hon'ble Prime Minister marks a new chapter in promoting Ease of Living and decongesting traffic in Delhi NCR.

DELHI SECTION OF DWARKA EXPRESSWAY

Seamless
Delhi-Gurugram travel
for daily commuters

• 10 km

• 2 Packages

Package-I (5.9 km):

- Has India's Longest & Widest Urban Road Tunnel - 3.6 km, 8 lanes
- 4-lane Airport Tunnel for seamless IGI Airport access
- Multilevel Interchange at Shiv Murti with Flyover + Multiple Underpasses

Package-II (4.2 km):

- Direct Multi-modal Connectivity to Yashobhoomi, Metro (Blue & Orange Line), Dwarka Bus Depot & upcoming Bijwasan Railway Station
- Boosts connectivity across Delhi-NCR

URBAN EXTENSION ROAD - II UER-II

- Delhi's 3rd Ring Road
- 76 km long
- 5 Packages
- Connects NH-44, NH-10 & NH-48 – key lifelines of Delhi-NCR
- **Decongestion Relief:** Mukarba Chowk, Dhaula Kuan and NH-09
- **Sustainable Build:** 10 lakh metric tonnes of waste reused in construction

Travel Time Cut

2 hours 25 minutes for users travelling from Sonipat/Punjab/J&K to IGI Airport

Packages:

- Pkg-1 (15.7 km):** Alipur to Karala-Kanjhawala Road
- Pkg-2 (13.4 km):** Karala-Kanjhawala to Najafgarh-Nangloi Road
- Pkg-3:** Najafgarh-Nangloi to Dwarka Sector-24 (Inaugurated Mar 2024)
- Pkg-4:** 29.6 km long 4 lane spurs to Sonipat bypass
- Pkg-5:** 7.3 km long 4 lane spurs to Bahadurgarh bypass for direct industrial connectivity

- 27 flyovers
- 17 subways
- 2 RoBs
- 31 bus bays
- 11 underpasses
- 111 km Service Roads

In line with the vision of the Hon'ble Prime Minister to encourage technology adoption and enhance 'Ease of Living' for citizens, NHAI rolled out the FASTag Annual Pass on 15th August 2025 across nearly 1,150 Toll Plazas on National Highways and Expressways. The initiative has received an overwhelming response from commuters, with 1.4 lakh passes activated and 1.39 lakh transactions recorded on the very first day. Within hours, thousands of users accessed the facility through the Rajmargyatra App, which has already crossed 15 lakh downloads on the Android Play

Store and ranked no 1 app in the travel category on Apple's App Store. Remarkably, since its launch, the Annual Pass has already been adopted by over 13 lakh users, facilitating more than 1 crore transactions till 31st August.

FASTag has already transformed the Electronic Toll Collection system in India, achieving a penetration rate of over 98 percent. By introducing the Annual Pass, NHAI has further strengthened this ecosystem by offering seamless, economical, and hassle-free option

for frequent highway travelers. The pass, available for all non-commercial vehicles with valid FASTag, can be activated within two hours of a one-time payment of ₹3,000, covering either one year or 200 toll crossings. This eliminates the need for frequent recharges and ensures uninterrupted travel. Beyond convenience, FASTag promotes fuel efficiency, reduces congestion, and contributes to lowering emissions, aligning with the broader goal of creating smarter and greener National Highways.



 ₹3,000 only	 Valid for 1 year or 200 toll plaza crossings	 For non- commercial private vehicles (Car/Jeep/Van)
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Hon'ble Prime Minister Inaugurated Two Landmark NH Projects in Delhi

On 17th August 2025, Hon'ble Prime Minister inaugurated two major National Highway projects at Rohini, Delhi.

These projects included Package-I of the 5.9 km long 8-Lane Dwarka Expressway from Shiv Murti intersection to Road Under Bridge (RUB) at Dwarka Sector-21 in Delhi and 4.2 km long 8-Lane Dwarka Expressway Package -II from Road Under Bridge (RUB) at sector-21 Dwarka to Delhi Haryana Border. The Package – I of the Dwarka Expressway features 3.6 km long 8 lane shallow tunnel and a 4 lane airport tunnel. Package-II of the Dwarka Expressway provides connectivity to Urban Extension Road - II. The section will also provide Multi-modal connectivity to Yashobhoomi, DMRC Blue

line and Orange line, upcoming Bijwasan railway station and Dwarka cluster Bus Depot.

The Hon'ble Prime Minister also inaugurated the 76 km long Urban Extension Road-II (UER-II) that has been envisioned as third ring road of Delhi, UER –II has been implemented in five packages. The 6 lane 15.7 km long Package-1 of UER-II starts from Alipur on NH-44 to Karala-Kanjhawala Road and 6 lane 13.4 km long Package-2 of the project connects Karala-Kanjhawala Road to Najafgarh–Nangloi Road. The 9.6 km long 6 lane Package-3 connecting Najafgarh Nangloi Road to Dwarka Sector 24 was inaugurated by the Hon'ble Prime Minister in March 2024. These packages of the UER-II will help to decongest the

Inner/Outer Ring Roads and other parts of the city like the Mukarba Chowk, Dhaula Kuan and NH-09. Package 4 and 5 of the UER-II consists of a 29.6 km long 4 lane spurs to Sonipat bypass and a 7.3 km long 4 lane spur to Bahadurgarh bypass. These spurs will provide direct connectivity from UER to Bahadurgarh and Sonipat. The Sonipat spur will connect Bawana Industrial Area to NH-352A (Jind Gohana), bypassing congestion on NH-44 and the Bahadurgarh spur will connect Dichaon Kalan to NH-09 at Bahadurgarh, linking Delhi to KMP Expressway. These spurs will facilitate alternate industrial connectivity, reduce congestion within the city and logistics movement in the NCR.



Hon'ble Prime Minister Dedicated to the Nation the 6-lane Ganga Bridge in Bihar

On 22nd August 2025, Hon'ble Prime Minister dedicated to the nation the Aunta (Mokama) – Simaria (Begusarai) 4/6 lane section of NH-31, including the six-lane Ganga Bridge, one of India's widest extradosed bridges with a 34m deck marking a historic milestone in strengthening road connectivity in Bihar.

This bridge will significantly reduce travel distance for heavy vehicles by up to 100 km, decongest Patna and Muzaffarpur while ensuring seamless connectivity between North and South Bihar. This project will improve logistics efficiency and enhance ease of travel across the state. Additionally, this will also improve access

to important pilgrimage centres like Simaria Dham, Bhagwati Uchaith Sthan, Bideshwar Sthan, Ugratara Temple and Singheshwar Sthan in Northern Bihar. This landmark project will not only facilitate faster and safer travel but also pave the way for new opportunities in trade and tourism across the region.



Hon'ble Prime Minister Dedicated to the Nation Key NH Projects in Tamil Nadu

On 26th July 2025, Hon'ble Prime Minister dedicated to the nation two National Highway projects in Tamil Nadu, marking a significant step towards strengthening regional connectivity and economic growth. These projects included four-laning of the 50 km long Sethiyathope-Cholapuram stretch on NH-36 in Tamil Nadu. The project serves as a vital link between Chennai and the Delta districts of Tamil Nadu, significantly enhancing intra-regional travel by reducing travel time by about 45 minutes. The project features three strategically designed bypasses and a bridge across Kollidam River at Anaikarai.

The Hon'ble Prime Minister also dedicated to the nation 6-lane Tuticorin Port Road section of NH-138. The 5.16 km long stretch from V.O. Chidambaranar Port to Tuticorin City on NH-138 will significantly enhance faster movement of heavy commercial vehicles that will help to reduce travel time and logistics costs, thereby enhancing overall operational efficiency.

The project is a vital segment of the East Coast Economic Corridor (ECEC) and contributes to the multi-modal logistics integration for facilitating seamless cargo movement between the Port and nearby industrial/export-oriented units, aligning with the growing demands of port operations and industrial expansion in Southern Tamil Nadu.



Hon'ble Prime Minister Laid Foundation Stone for Six-lane Elevated Kona Expressway in West Bengal

On 22nd August 2025, Hon'ble Prime Minister laid the foundation stone for the six-lane elevated Kona Expressway, marking a major step towards strengthening connectivity and economic growth in West Bengal.

The six-lane Kona Expressway will play a pivotal role in improving port connectivity and facilitating seamless movement of goods and passengers. The project will also enhance connectivity

between Howrah, surrounding rural areas, and Kolkata, saving valuable travel time while giving a significant boost to trade, commerce, and tourism in the region.



Shri Nitin Gadkari Laid Foundation Stone and Dedicated to the Nation Various NH Projects in Karnataka

On 11th July 2025, Hon'ble Minister for Road Transport and Highways, Shri Nitin Gadkari, dedicated to the nation various National Highway projects in the state of Karnataka which included major bridge across Sharavathi Backwaters between Ambargodu and Kalasavalli of NH-369E; 2/4 lane with paved shoulder on Bidar-Humnabad stretch of NH 50; two lane with paved shoulder from

Bhanapur-Gaddanakeri stretch on NH 367; four lane Railway-over-Bridge and two lane Major Bridge in Kalburgi-Yadgiri stretch of NH-150; seven minor bridges from Mani-Sampaji on NH-275; permanent restoration work in Shiradi Ghat of NH-75. Shri Gadkari also laid the foundation stone for several National Highway projects that included Road Over Bridge (ROB) at Wadi on

NH-150; additional works to ensure road safety on six-lane Bengaluru-Mysore Access-controlled section of NH-275; construction of Retaining Wall from Sampaje to Kushalnagara on NH-275. These projects will provide seamless movement and reduce travel time, boosting connectivity to industrial hubs, cultural centres and religious sites.



Shri Nitin Gadkari Dedicated to the Nation and Laid the Foundation Stone for various NH Projects in Andhra Pradesh

On 2nd August 2025, Hon'ble Minister for Road Transport and Highways Shri Nitin Gadkari dedicated to the nation two major projects in Andhra Pradesh. These projects included four-laning of 56 km long Madanapalli to Pileru section of NH-71 and four-laning of 31 km long Kurnool to Mandlem section of NH-340C. The Hon'ble Minister also laid the foundation stone for 27 National Highway projects, marking a significant push for

infrastructure development in the state. These projects span across widening of key stretches, construction of bridges, flyovers, service roads and grade-separated structures, as well as strengthening and improvement of bypassed sections in several towns of Andhra Pradesh. Apart from reducing travel time and costs, these projects will significantly enhance connectivity in the state. The projects will also facilitate smoother access to prominent religious sites

and tourist destinations, while providing direct and seamless access to key economic hubs such as ports, airports and rail junctions. Furthermore, by improving last-mile connectivity to rural and tribal areas and easing congestion in major towns, these projects will strengthen regional mobility and contribute towards enhancing socio-economic growth across the region.



Shri Nitin Gadkari Laid Foundation Stone and Dedicated to the Nation Various NH Projects in Madhya Pradesh

On 23rd August 2025, Hon'ble Minister for Road Transport and Highways, Shri Nitin Gadkari, dedicated to the nation various National Highway projects in the state of Madhya Pradesh. These projects included four-laning of 11.96 km long Nauradehi Wildlife Sanctuary part in Hiran-Sindoor section of NH-45 and widening of 19.23 km long Katni Bypass on NH-30. Shri Gadkari also laid the foundation stone

for several National Highway projects that included four-laning of 17.87 km long Amazhar-Barela Road (Jabalpur Ring Road); construction of seven underpasses on Rewa-Maihar-Katni section of NH-30 and construction of six flyovers and underpasses on Katni-Jabalpur-Lakhnadon section of NH-30/34. These projects will provide seamless connectivity between Bhopal and

Jabalpur while significantly reducing travel time. By diverting heavy vehicles away from Jabalpur city, these projects will ease congestion and enhance road safety. Additionally, the construction of underpasses in the Nauradehi Forest area will support wildlife movement, strengthening both safety and environmental protection.



Foundation Stone Laid for Key Projects on NH-48 in Haryana

On 26th August 2025, Shri Harsh Malhotra, Hon'ble Minister of State for Road Transport and Highways and Corporate Affairs laid the foundation stone for two projects on NH-48 in Haryana in presence of Shri Rao Inderjit Singh, Hon'ble Minister of State (IC) for Ministry of Statistics and Programme Implementation; Ministry of Planning and Minister of State for Ministry of Corporate Affairs.

The projects whose foundation stone was laid by the Hon'ble Minister of State include the construction of nine pedestrian overpasses on the Gurgaon-Kotputli-Jaipur section of NH-48, and construction of additional structures, improvement of service roads, and maintenance of six-lane section of NH-48. These upcoming projects will enhance traffic

flow and reduce unauthorized road crossings on the section. Additionally, to address drainage issues, rainwater harvesting structures will be installed at intervals of 500 meters. The Foot-Over Bridges (FOBs) will be constructed at high-traffic locations with significant pedestrian movement, providing pedestrians with safe crossing facilities on NH-48 in Haryana.





Santosh Kumar Yadav, IAS
Chairman, NHAI

Dear Friends,

As we continue our journey of building world class National Highways, we remain committed towards enhancing the 'Ease of Living' and commuting experience of the National Highway users.

As you must be aware, our Hon'ble Prime Minister recently inaugurated two milestone projects that will help to decongest Delhi NCR. The inauguration of Delhi section of Dwarka Expressway and Urban Extension Road-II will enhance seamless inter-state travel experience by connecting three major National Highways around Delhi. While UER-II is envisioned as third ring road of Delhi, the Delhi section of Dwarka expressway will benefit lakhs of commuters travelling daily between Delhi and Gurugram.

Another initiative that will go a long way in easing travelling on National Highways was launched on 15th August 2025. I am happy to share that the 'FASTag Annual Pass' has received an overwhelming response from the National Highway users. Around 10 lakh Annual Passes were purchased within first 10 days and National Highway users are happy that they are getting SMS messages for zero deduction of the toll fee.

Over the past year, we have taken initiatives to enhance 'Ease of Living' for National Highway users, one shining example of this is 'Rajmargyatra app' that has crossed fifteen lakh downloads and has become the most downloaded app in travel category on Apple App Store and among top five apps on Android Play Store in Travel category.

Moving forward, our focus continues to be on creating National Highways that not only connect destinations, but also makes travelling more efficient, comfortable, and safer for all.

Best Wishes,
Santosh Kumar Yadav



NHAI Chairman Visits Qazigund–Srinagar Section of NH-44

On 25th July 2025, NHAI Chairman Shri Santosh Kumar Yadav visited Qazigund–Srinagar section of NH-44 in Jammu & Kashmir. The inspection focused on strengthening road safety, improving service quality and

ensuring smooth connectivity for commuters. The Chairman was accompanied by senior NHAI officials from the Regional Office Jammu, along with concessionaire and consultants. During his visit, the Chairman

also conducted a comprehensive review of the operations and maintenance of the section as it plays a vital role in facilitating mobility, trade and tourism in Jammu & Kashmir.



Shri Vishal Chauhan Inspires Newly Inducted Deputy Managers at IAHE Training

On 19th August 2025, Shri Vishal Chauhan, Member (Administration), NHAI, addressed the 8th batch of newly inducted Deputy Managers (Technical) who are undergoing 16-week Induction Training at the Indian Academy of Highways Engineering (IAHE), Noida. In his interaction with the batch, Shri Vishal Chauhan highlighted the immense opportunities and responsibilities that come with

being part of the dynamic National Highways sector. He emphasized that the role of Deputy Managers is critical in shaping the future of the country's infrastructure, and therefore, they must remain dedicated to the evolving expectations of this sector. He urged the young officers to align their efforts with NHAI's organizational goals, which includes developing world-class National Highway infrastructure across the nation.

Shri Chauhan also underlined the importance of maintaining the highest standards of professional competence, integrity, and dedication in their work, noting that these values are the true foundation of a successful career in public service. By upholding these principles, the officers will not only contribute to the growth of NHAI but also to the larger vision of nation-building through infrastructure development.



NHAI Launches Project Aarohan to Support Education for Children of Toll Plaza Employees

In a significant step towards empowering children of toll plaza employees, NHAI, in collaboration with Vertis Infrastructure Trust, launched Project Aarohan on 26th August 2025. The initiative was unveiled by NHAI Chairman Shri Santosh Kumar Yadav at NHAI Headquarters in New Delhi. Dr. Zafar Khan, Executive Director and Joint CEO, Vertis Infrastructure Trust, and senior NHAI officials were also present on the occasion. To be implemented by SMEC Trust's Bharat

Cares, the program aims to remove financial barriers, bridge socio-economic divides and provide equal access to quality education. 'Project Aarohan' will support students from economically weaker backgrounds, with a special focus on girls, first-generation learners, and students from EWS, SC, ST, OBC, and minority communities. With a fund allocation of ₹1 crore for the first phase (July 2025 – March 2026), the project will benefit 500 students from Class 11 to graduation,

each receiving an annual scholarship of ₹12,000. Additionally, 50 bright students aspiring for postgraduate and higher studies will be supported with scholarships of ₹50,000 each. Beyond financial aid, the program integrates mentorship, skill-building workshops, and career guidance to holistically prepare students for the future. Through this initiative, NHAI seeks to nurture young talent, enabling them to contribute meaningfully to India's growth journey.



NHAI Signs Agreement to Implement India's First Multi-Lane Free Flow Tolling System

In a major step towards barrier-free tolling, the Indian Highways Management Company Limited (IHMCL), a company promoted by NHAI, has signed an agreement with ICICI Bank to implement the country's first Multi-Lane Free Flow (MLFF) tolling system at Choryasi Fee Plaza on NH-48 in Gujarat. The agreement was signed in the presence of NHAI Chairman

Shri Santosh Kumar Yadav and senior officials from NHAI, IHMCL, and ICICI Bank at NHAI HQ, New Delhi on 30th August 2025. The initiative will make Choryasi Fee Plaza India's first barrier-free toll plaza. Additionally, a similar agreement has been signed for Gharaunda Fee Plaza in Haryana on NH-44. NHAI plans to introduce MLFF tolling at around 25

fee plazas during the current financial year, with the process of identification underway. MLFF enables seamless toll collection using FASTag and Vehicle Registration Number (VRN) recognition through RFID Readers and ANPR Cameras, reducing congestion, saving fuel, cutting emissions, and improving toll revenue efficiency across the National Highway network.



Capacity Building through Management Development Programme

From 28th April to 23rd May 2025, NHA1 conducted a four-week Management Development Programme for Deputy Managers (Finance & Accounts). A total of 17 officers participated in the programme, which was designed to strengthen managerial capabilities and enhance professional skills. The

programme received highly positive feedback from participants, reflecting its effectiveness in addressing training needs and building leadership capacity within the organisation. Alongside structured sessions, the programme also facilitated interactive discussions, peer learning and practical insights to help participants

apply knowledge in their day-to-day roles. These initiatives underline NHA1's commitment to continuous learning and professional development, ensuring that officers are well-equipped to contribute to the vision of delivering world-class National Highway infrastructure for the nation.



NHA1 Organizes 'Innovation Hackathon 2025' for Advancing NSV Efficiency

On 4th July 2025, NHA1 launched the 'Innovation Hackathon 2025' with a focus on enhancing the efficiency of Network Survey Vehicles (NSVs), a key tool in monitoring and maintaining country's National Highway network. Centred around the theme "Real-time Visualisation of NSV Reports", the Hackathon aimed at finding technology-driven

solutions to streamline data interpretation and improve operational outcomes. The initiative received 42 entries of participation from innovative thinkers and technology enthusiasts. Following the evaluation, the top entries were recognised for their outstanding creativity and technical expertise. The first prize was awarded to Bhanoj Dokku

(M/s Cube Highways), the second to Devanshee Deepak (M/s KPMG & Dronamaps), while the third prize was jointly awarded to Ayan Srivastava and Manav Singal. NHA1 continues to encourage innovation through its commitment to integrate technology and building National Highway network that is future ready.



Strengthening Transparency and Accountability in Highway Maintenance

- by Shri Amit Munjal, GM (Technical), NHAI

Abstract

India's vast highway network is both an asset and a responsibility. While constructing thousands of kilometres of highways is an engineering achievement, ensuring their upkeep requires vigilance, transparency, and advanced technology. Network Survey Vehicles (NSVs) provide the perfect blend of innovation and preventive vigilance, bringing objectivity and accountability to road asset management.

Problem Statement

India has the second-largest road network in the world. In the last decade, the country has aggressively built new highways, adding several thousand kilometres to its network. While constructing roads at this scale is a challenge, the larger and more enduring challenge lies in maintaining these assets in serviceable conditions over their entire life-cycle.

Deterioration of pavement is a natural process, influenced by factors such as heavy traffic, weather conditions, waterlogging, and environmental impacts. Like other nations, India faces the question of how to maintain its highways efficiently while minimising costs and ensuring road safety.

The first challenge lies in defining acceptable pavement conditions. The Indian Roads Congress (IRC) and other government agencies provide guidelines on permissible levels of pavement distress, including roughness, cracks, potholes, and rutting. These benchmarks are the foundation for determining whether a highway section needs maintenance or rehabilitation.

The second challenge is monitoring the network with accuracy. Traditionally, project engineers used manual inspections and visual surveys. While adequate for small stretches, these methods are slow, costly, and subjective. They cannot deliver reliable data for network-level management. Inaccuracies often lead to disputes, delayed decisions, and in some cases, premature or unnecessary expenditures.

Globally, countries have adopted advanced technologies such as vehicle-mounted laser profilers, sensors, and high-resolution cameras to monitor pavements objectively and at scale. Inspired by these practices, India adopted Network Survey Vehicles (NSVs) as part of its highway management strategy.

Subjectivity in evaluation not only undermines the credibility of reports but also affects the timely initiation of maintenance activities. In cases where assessments are disputed or delayed, road users ultimately bear the consequences in the form of deteriorating road quality and compromised safety. Such challenges highlight the urgent need for a transparent and technology-driven approach.



Advantages of Network Survey Vehicles (NSVs)

The adoption of Network Survey Vehicles (NSVs) has introduced a range of strategic benefits that significantly enhance both vigilance and asset management capabilities. Key advantages — now with practical examples — are highlighted below:

1. Comprehensive and Objective Road Assessment

NSVs capture extensive data in one survey, including IRI (ride quality), surface distresses (cracks, potholes, rutting), pavement texture, geometry, and GPS-based geo-referencing. These capabilities produce a complete, objective snapshot of road conditions and infrastructure compliance. The ability to generate panoramic visual records and LIDAR-based measurements ensures that even details like lane markings and drain widths are scrutinized.

2. Accuracy, Reliability, and Transparency

Using laser-based 3D systems, NSVs detect cracks smaller than 1 mm with precision. Each data point is time-stamped and geo-tagged, guaranteeing consistent, repeatable, and verifiable monitoring. This removes subjective bias, enhances transparency, and underpins robust vigilance mechanisms across the highway network.

3. Efficiency and Timeliness

In contrast to slow manual surveys (20–80 km/day), NSVs can cover up to 300 km/day at normal highway speeds (30–80 km/h). The rapid data processing workflow — raw data within 48 hours and final reports in 10 days — ensures maintenance needs are identified and addressed quickly before problems escalate. This shift turns condition monitoring into a real-time management tool.

4. Strengthened Accountability

Updated NSV reporting benchmarks pavement conditions against contractual thresholds. When a deficiency crosses the stipulated limit, automated notices are issued via the NHAI Data Lake, and contractors/cells must upload action-taken reports into the same system. This closed-loop transparency significantly enhances contract compliance and oversight.

5. Support for Data-Driven Governance

All NSV data is streamed into NHAI's AI-powered Data Lake and RAMS platform. This digital integration enables advanced analytics, forecasting, and predictive maintenance — shifting governance from reactive responses to long-term, evidence-driven strategy.

Addressing the issue

In 2019, the Government of India mandated the use of NSVs for pavement evaluation. Surveys are required at three stages of a project: during construction, after completion, and at regular intervals during operation.

To process and analyse survey data, NHAI developed the Road Asset Management System (RAMS), which includes modules such as:

- Pavement Management System (PMS) – for analyzing pavement condition and recommending maintenance.
- Bridge Management System – for monitoring structures.
- Traffic Information System – for traffic and safety-related data.

Despite this robust framework, shortcomings emerged in implementation:

- Lack of dedicated ownership: Surveys were initially assigned to field units and consultants across the country, leading to non-uniform methodologies and reduced reliability.
- Delay in report acceptance: Reports often took 2–6 months to be finalised, making them less useful for timely maintenance.
- Limited utility: Even accepted reports were not always linked to immediate rectification, diluting their value.

Revamped NSV Framework

To overcome these challenges, NHAI introduced significant reforms:

- Creation of a dedicated NSV Cell at NHAI HQ, staffed with technical experts and Assistant Advisors.
- Adoption of laser-based 3D NSV technology, capable of detecting cracks as fine as 1 mm with minimal human intervention.
- Division of India into five zones, with agencies appointed directly by HQ to ensure consistency.
- Provision of office space and power supply by NHAI to agencies, minimising chances of manipulation.
- Strict timelines for data: raw data to be submitted within 48 hours and final reports within 10 working days.
- Enhanced reporting formats, ensuring direct comparison with contract thresholds and enabling immediate rectification.

These measures transformed NSVs into not just a monitoring mechanism but a powerful instrument of preventive vigilance.





Under the revamped system, the deficiencies identified by the NSVs are now directly fed into the NHAI Data Lake system, where notices to contractors and concessionaires are generated automatically. At the same time, field units are required to upload Action Taken Reports (ATRs) on the same platform.

This has created a closed-loop arrangement wherein deficiencies are not only identified but also tracked until rectification is confirmed. This reform has revolutionised the entire process of highway maintenance within NHAI, making it faster, more transparent, and significantly more accountable.

Transition to Phase II:

Encouraged by the tangible benefits achieved under Phase I, the Government of India has approved Phase II of the NSV project, which will cover the remaining stretches of the NHAI network. This expansion is a crucial step towards achieving 100% coverage of national highways under technology-enabled monitoring.

Moreover, NHAI has decided that the NSV-based monitoring framework will not remain limited to newly constructed or selected stretches alone. The scope has been broadened to include all highways under Operation and Maintenance (O&M) contracts, thereby bringing the entire national highway network under this system.

This decision marks a significant milestone, as it ensures that every part of the network—whether newly built, tolled, or maintained under O&M contracts—will be subjected to uniform, objective, and technology-driven evaluation.

Future Outlook:

The extension of NSV surveys to the entire highway network will establish a national-level digital inventory of road conditions, continuously updated at defined intervals.

Such a comprehensive system will not only support timely rectification but will also serve as a reliable database for long-term planning, budgeting, and performance evaluation.

In addition, the integration of NSV data with advanced analytics and Artificial Intelligence (AI) tools in the Data Lake will enable predictive maintenance strategies, shifting the focus from reactive to preventive care of assets.

The successful implementation of this system has demonstrated that technology-backed vigilance mechanisms are sustainable, scalable, and replicable. Going forward, as the NSV framework matures and becomes embedded into NHAI's governance, it is expected to serve as a model for adoption by State Governments, municipal corporations, and other infrastructure agencies across the country.

Conclusion:

The introduction of Network Survey Vehicles marks a paradigm shift in India's highway maintenance strategy. By minimising subjectivity, ensuring accuracy, and institutionalising preventive vigilance, NHAI has established a robust framework for asset management. The integration of NSVs with digital platforms like the Data Lake has not only improved transparency and efficiency but also strengthened accountability across all stakeholders. As the system expands to cover the entire national highway network, it promises to deliver safer roads, better user experiences, and significant savings in maintenance costs, truly setting a benchmark in infrastructure governance.

The adoption of NSVs represents not only an improvement in engineering practice but also a significant stride in preventive vigilance. By creating a system where road conditions are measured scientifically and communicated transparently through digital platforms, NHAI has been able to curb malpractices, enforce accountability, and enhance public trust in the management of national highways.

Results and Way Forward

The revamped Network Survey Vehicle (NSV) project was formally launched in June 2024, with a target of surveying approximately one lakh kilometres of the national highway network under Phase I. This was a landmark initiative in India's journey towards transparent and technology-driven highway maintenance.

Phase I Achievements:

The revamped Network Survey Vehicle (NSV) project was formally launched in June 2024, with a target of surveying approximately one lakh kilometres of the national highway network under Phase I. This was a landmark initiative in India's journey towards transparent and technology-driven highway maintenance.

One of the most transformative aspects has been the automation of the communication process. Earlier, inspection findings had to pass through multiple layers of manual reporting, often leading to delays, inconsistencies, or subjectivity.



Creating a Resilient National Highway Network

'Down the memory lane' is a series that revisits the glorious years of making of National Highways Authority of India. This series brings exclusive insights and captures the triumphs, milestones, challenges and experiences of former Chairmen of NHAI, who have steered NHAI to newer heights. Rajmaarg caught up with the former NHAI Chairman, Dr. S. S. Sandhu and here are the excerpts from the conversation that highlights his tenure with the organisation.



Dr. S. S. Sandhu
Former Chairman
National Highways Authority of India

Delivering a World-Class Highway Infrastructure

Being the Chairman of NHAI was one of the best experiences of my career. It is great to see NHAI at the forefront of India's massive infrastructure development. There is enormous construction under the Bharatmala Pariyojana, one of the world's biggest road infrastructure development programmes.

It is great to see NHAI spending a huge amount of money on road construction and land acquisition.

NHAI is creating a "New India" with all the new Greenfield Expressways and National Highways. The road experience in the country would be unique and different, and comparable to the best anywhere in the world.

Keeping Pace With Technology

NHAI is one of the biggest organisations in India, creating world-class infrastructure for the country and regularly setting new construction records. But the best thing about NHAI is

that it is based on an outsourcing business model. It is a consultant driven organisation, due to which the expenditure on the staff is minimum, always updated with the latest technology and practices in the world.

NHAI Going Fully Digital

NHAI being such a big organisation, I was surprised that most of the systems were manual. Even the payments to the contractors were being made through cheques. Then came COVID19 and the ensuing lockdowns.

However, we used this as an opportunity to launch the digitalisation drive. We converted all the systems from manual to digital during the lockdown period. We hired the best experts for the purpose, and in a short period, the entire project management of NHAI was made digital. There was hardly any paper used.

The results were instantaneous. Proposals from the remotest corners of the country would reach the Chairman office within hours, and the approvals were given swiftly.

NHAI became the first fully digital public organisation in the highway sector, and it enormously enhanced our efficiency and transparency. Everyone felt happy, our engineers, the contractors and consultants, because of the transparency which resulted from the digitalisation of project management.

Implementing Electronic Toll System

Another technological accomplishment during my tenure was the successful implementation of the Electronic Toll System through the FASTag.

When I joined NHAI, there was a meeting in the first week where we were told that the FASTag had been planned for around five years, but its implementation may get postponed for various reasons. But, we made it a point to implement it as soon as possible and were given a target of one month.

I held daily video conferences with all the regional offices and took stock of the existing infrastructure. There were some toll plazas where the infrastructure was still to be made.



We launched a dry run, and not only it was successful but done ahead of the one-month deadline. We developed the requisite infrastructure within time and created Whatsapp groups for round-the-clock monitoring of the situation. It was a warlike situation, and every concern was addressed immediately. The team was highly motivated and worked very hard to ensure that FASTag was implemented successfully.

It was one of the most satisfying experiences to see digital payments made through FASTag becoming one of the highest in the world.

Building Sustainable & Green Highways

One thing that was always in focus was the development of green corridors along the National Highways to grow a sustainable environment. Sustained nationwide plantation drives were taken up to saturate National Highways with green plantations from time to time. Also, to ensure 100% survival of the plants, avenue plantation of a minimum height of 1.5-meter was emphasised along the National Highways.

We also leveraged technology to monitor plantations and launched 'Harit Path', a mobile app that provides a digital address to every tree planted along the National Highways. The GPS based app provides accurate data to monitor location, growth, species details, and maintenance activities for each tree planted along the National Highways under all plantation projects.

Overcoming Challenges

During my tenure, there were several challenges, but the biggest was a large number of disputes. When I joined, there were disputes involving a massive amount of Rs 90,000 crore. Many companies, contractors and lending institutions were in trouble.

We tried to resolve the maximum number of disputes and conflicts through conciliation. Disputes involving a sum of Rs 30,000 crore were resolved through the conciliation mechanism.

The dispute redressal gave a lot of relief to the contracting firms and companies and the lending institutions. Many banks thank me because their funds stuck in these disputes were released, companies were revived, and the bank's balance sheet also improved.

Another challenge we faced was COVID19 and the ensuing lockdowns. Despite all the restrictions and challenges concerning the pandemic, NHAI made three new world records that show the spirit. Despite the challenges, NHAI and the contractors kept working.

They took up the challenge and continued to work following all COVID19 protocols. And we set up a new record of daily construction, which was well-publicised.

Winning the COVID-19 Challenge

To begin with, we held video conferences almost daily. While people were unprepared during the initial lockdown period, gradually, we opened up. One major challenge was the problem of large-scale labour migration, as many workers initially wanted to return to their native villages and remote areas. To curb this, we asked the contractors and the firms to convince workers in the states about all the facilities they would be getting, which otherwise will not be available if they go back to their native villages and remote areas. They were convinced, and the contractors made all the facilities available, including medical treatment, preventive measures, food and shelters. The workforce was happy with all the facilities that were provided. They later admitted that their colleagues who went back to villages were not as comfortable as they were at the project sites.





Changing the Public Perception

When I joined NHAI, there was a lot of negative publicity that NHAI was getting into a debt trap, and there were even suggestions that it should stop constructing new roads and only manage roads.

To counter and change the perception, we did hard work and financial engineering. We did a lot of analysis. Ultimately, we discovered that NHAI's future is bright financially as it can monetise the assets already created. These are the roads which have maximum traffic in the country. They are real gold mines for NHAI. So once we made those projections, the public perception was changed.

There was an article when the monetisation target was given to NHAI that it is likely to mobilise around Rs three lakh crore through asset monetisation. One of the biggest newspapers in the country wrote an editorial on the availability of a large amount of funds

with NHAI. It should give some money to the health and education department. It should not spend all the money on road construction. So that was a change in the perception.

Novel Initiatives

We collaborated with research institutions because I firmly believed that the research and technological innovations are key to India's massive infrastructural development. So, we involved the Indian Institutes of Technology (IITs) and other civil engineering colleges and asked their civil engineering department to adopt a stretch of National Highway near them and suggest ways and means to improve them.

That led to a lot of quality improvement, and many problems known to the locals were resolved economically. Moreover, the technology network survey vehicle was made compulsory, and so was every road's monthly drone video survey. It was put on the Data Lake, so everybody could

see the condition of the road on a particular date, which led to a lot of transparency. The disputes were reduced significantly, becoming almost negligible as a result of this transparency.

Motivating the team

In any organisation, it's teamwork that makes it a success story. Although we had set up very tough targets, at the same time, we addressed all the genuine grievances of ROs and PIUs. Once they started seeing the results and the appreciation from everyone, I think they too got motivated. I believe it has been my experience that if you are fair and you address the genuine grievances of your staff, they are motivated, and they can deliver whatever you want them to deliver.

-- (Dr. S. S. Sandhu is a 1988 batch IAS officer from the Uttarakhand Cadre, he was the Chairman, National Highways Authority of India, from October 2019 to July 2021.)





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@KumbakonamOoru

NH 36 - VKT road! Need such major projects to uplift the standard of living!
Such a road will surely improve the economy of the region!

Thank you @NHAI_Official
@nitin_gadkari



derma_skin_solution Edited
Government सेवाएं अगर ऐसी हो, तो हर
सफर memorable बन जाता है!
Heartfelt thanks to NHAI for timely road
support! 🙏 IN

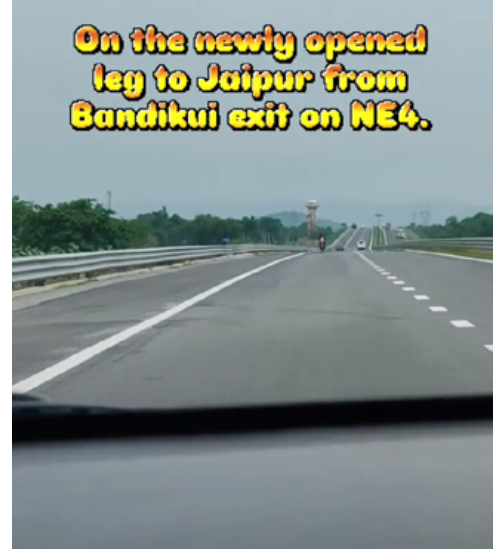


प्रियश भार्गव
@BhargavaPriyash

Thanks to @narendramodi @nitin_gadkari
For #UER2 Expressway



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This Bandikui exit for Jaipur on NE 4 was
opened on July 4 and we travelled on this
on 5th July. NE4 is excellent, world class,
with restrooms, restaurant, rest areas
every 40..50 km. Wonderful experience!
#ghummakaddiaries #travelindia
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Ajay Karan
@ajaykaranuday

NH83 Best ever NH i have ever travelled.
Thank you @nitin_gadkari for this.
#NH83 #nhai #dindigul #Udumalaipettai



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