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### India's Plan to Save \$500 Million on a Single Road Project

PTI,

December 27, 2024

The Nagpur-Mansar Bypass on NH-44 has become India's first national highway stretch to be constructed using lignin-based bio-bitumen. Praj Industries developed this sustainable alternative to fossil-based bitumen in collaboration with the CSIR-Central Road Research Institute (CSIR-CRRI), the National Highways Authority of India (NHAI), and Oriental Structural Engineers.

Bitumen, a black, viscous material derived from crude oil, is commonly used as a binder in road construction. Lignin, however, is a natural polymer found in plant cell walls and is abundant in agricultural waste.

Processing lignin into bio-bitumen offers an environmentally friendly solution, reducing greenhouse gas emissions by up to 70 per cent compared to conventional bitumen.

In addition to bio-bitumen, the mixture also contains 10 per cent rubber powder, further reducing the proportion of petroleum bitumen used. India imports 50 per cent of its bitumen requirements, costing Rs 250–300 billion annually. For this project, which features up to 15 per cent bio-bitumen blending,

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savings of Rs 40–45 billion in foreign exchange have been estimated. To meet the 15 per cent blending target, around 15 lakh tonne of bio-bitumen would be needed.

The viability of lignin-based bio-bitumen was first tested on a service road in Halol, Gujarat. After two and a half years and three monsoon seasons, the CSIR-CRRI confirmed its durability with no signs of distress. The Nagpur-Mansar highway could serve as a demonstration of how scalable this technology is for larger projects.

The success of this project will be assessed over the next two years as the CRRI evaluates the road's performance under heavy traffic and varying weather conditions. A CRRI scientist mentioned that the bio-bitumen will pass the endurance test if the road's deflection remains within 0.4mm during this period.

Union Minister Nitin Gadkari stated that CRRI would submit a detailed report on the results based on blending performance. Once the report is finalized, bitumen manufacturers will be directed to develop a policy for sourcing lignin for blending purposes. He also mentioned that 40-grade bio-bitumen, known to be stronger than its conventional counterpart, has already been developed.

Gadkari emphasised that this marks the beginning of sourcing raw materials for bitumen from farmers, which aligns with the broader goal of fostering sustainable infrastructure.

While inaugurating the project, Union Minister Nitin Gadkari highlighted the dual economic and environmental benefits. He mentioned that the bio-bitumen used in the project would reduce dependency on imports and transform agricultural waste into a valuable resource. He added that farmers would evolve into not just food producers but also energy providers.

India's bitumen consumption is expected to grow from 88 lakh tonnes in FY24 to 100 lakh tonnes in FY25. This innovation aligns with the Aatmanirbhar Bharat mission by reducing import dependency and boosting domestic production, according to the company.

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## DMRC's Most Ambitious Project: Nearly Half Of Delhi Metro's Phase-IV Expansion Includes Underground Construction

Swarajya,

December 27, 2024



The Delhi Metro Rail Corporation (DMRC) is undertaking its most ambitious underground construction to date as part of its Phase-IV expansion, which involves laying 86 km of new metro lines across five corridors. Of these, 40.1 km will be underground, marking a significant engineering milestone.

The three priority corridors under this phase are Janakpuri West–RK Ashram, Majlis Park–Maujpur, and Aerocity–Tughlaqabad. Work on two additional corridors, Inderlok–Indraprastha and Lajpat Nagar–Saket G Block, is in the pre-tender stage. Notably, the Lajpat Nagar–Saket G Block and Majlis Park–Maujpur corridors have no underground sections.

The Aerocity–Tughlaqabad (Golden Line) corridor presents one of the most complex engineering challenges. Its alignment will pass below 17 pairs of railway tracks between Tughlaqabad and Tughlaqabad Railway Colony stations, spanning a breadth of 110 meters.

"While Delhi Metro lines have passed below railway tracks in the past, this will be the first time the alignment crosses such a wide stretch of railway lines," said a senior DMRC official.

DMRC has achieved several tunnelling milestones during this phase. The 3-km-long tunnelling drive from Derawal Nagar to Pulbangash on the Janakpuri West–RK Ashram corridor is the longest in DMRC's history, surpassing the 2.65-km drive on the Golden Line from Tughlaqabad Airforce Launching Shaft to Maa Anandmayee Marg. In comparison, the longest tunnel in Phase-III was a 1.6-km stretch between Ashram and Nizamuddin.

Tunnelling work is being executed using Tunnel Boring Machines (TBMs), which allow construction without disturbing surface structures. "This is a major engineering challenge as the underground

corridors pass through densely populated residential and commercial areas such as Sadar Bazar, Nabi Karim, Mehrauli-Badarpur Road, and Ajmal Khan Park," said an official.

To ensure safety, DMRC has implemented close monitoring of tunnelling operations. Necessary instrumentation has been installed to regularly assess the condition of buildings in these areas.

The DMRC's use of conventional cut-and-cover technology for underground stations and TBMs for tunnels reflects a blend of tried-and-tested methods and modern innovations, enabling the project to navigate complex urban environments efficiently.

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## Pune-Based Firm Uses AI For Road Surveys In Latur

CW Team,

December 27, 2024

The Maharashtra Public Works Department (PWD) has embraced Artificial Intelligence for conducting road surveys in Latur, a project believed to be the first of its kind in the state.

The AI-driven initiative is currently underway in Udgir, with funding of Rs 1.99 crore provided by the District Planning and Development Council (DPDC), as confirmed by PWD executive engineer Rohan Jadhav on Sunday.

This project involves a digital survey of roads, collecting detailed data on road quality, traffic density, and sequential numbering. Such information will assist the PWD in enhancing construction and maintenance activities, said Jadhav.

The work is being carried out by Rasta.Ai, a Pune-based company specialising in road maintenance and asset management, the official added.

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## Pawan Kalyan Inspects Revolutionary Road Project in Krishna District

PTI,

December 27, 2024

Deputy Chief Minister Pawan Kalyan took a proactive role, personally inspecting the ongoing road construction project in the Kankipadu Mandal of Krishna district. This initiative, designed to improve transportation for around 21,000 residents, has dramatically upgraded the road between the Kanikapadu Bus Stand, Godavarru, and Royyuru, completing significant progress in just two months.

The project was triggered by a village festival that highlighted the poor condition of the Godavarru-Royyuru road, an issue raised by Penamaluru MLA Bode Prasad. In response, Kalyan allocated the necessary funds promptly, leading to the swift construction of a 5-kilometre stretch. This development has alleviated commuting challenges for residents, particularly those living in Kanikapadu, Royyuru, and Godavarru.

The Rs 3 crore project, supported by the National Rural Employment Guarantee Scheme (NREGS) and the State Disaster Response Fund (SDRF), is being carried out in three layers, with close supervision to ensure quality. Kalyan stressed the importance of preparing a solid foundation for long-lasting

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results and maintaining high standards throughout the process. His attention to detail has not only addressed a longstanding issue but also reinforced the public's confidence in government responsiveness and accountability.

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## Hyderabad Metro Phase 2: 800 Properties Set To Be Acquired

CW Team,

December 27, 2024

Hyderabad's metro phase-2 expansion, from MGBS to Chandrayangutta, has reached a major milestone with notifications issued for the acquisition of 800 properties. This expansion is vital for enhancing the city's metro network.

As per a statement from the Hyderabad District Collector, an agreement has been reached with property owners regarding compensation.

The compensation agreement includes Rs 81,000 per square yard, plus construction value, which was finalised after extensive discussions with property owners. Affected individuals are invited to visit Metro Bhavan in Rasoolpura, Begumpet, to provide their consent for the compensation. Once consent is given, the full compensation will be disbursed via cheque within 10 days.

This development underscores the government's commitment to ensuring fair compensation and a smooth land acquisition process for public infrastructure projects. It also highlights the government's focus on advancing the city's metro expansion while compensating property owners adequately.

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## Railways Successfully Conducts Trial Run On India's First Cable-Stayed Rail Bridge, Paving Way For Train Services To Kashmir

Swarajya,

December 27, 2024

The Railways successfully conducted a trial run of a tower wagon on India's first cable-stayed rail bridge, the Anji Khad Bridge, in Jammu and Kashmir's Reasi district, marking a significant step toward launching rail services to Kashmir in January next year.

Union Railway Minister Ashwini Vaishnaw shared a video of the trial run on the social media platform X, while the Railway Ministry hailed the development in a statement: "Giving wings to connectivity in Jammu and Kashmir, the trial run of a tower wagon on India's first cable-stayed rail bridge, the Anji Khad Bridge, was successfully completed for the USBRL project."

The Anji Khad Bridge, part of the Udhampur-Srinagar-Baramulla Railway Link (USBRL) project, is an engineering marvel designed to connect the Kashmir Valley with the rest of India.

The bridge features a 331-meter-high pylon above the riverbed and a total length of 473.25 meters. It is supported by 48 cables on its lateral and central spans and stands as the second-highest railway bridge in India, after the Chenab Bridge.

Prime Minister Narendra Modi praised the completion of the bridge, while Minister of State for Railways Ravneet Singh announced plans for the Prime Minister to inaugurate the Vande Bharat train connecting Kashmir to New Delhi in January.

The USBRL project, which spans 272 kilometers, has seen 255 kilometers completed, with the remaining stretch between Katra and Reasi expected to be finished by December.

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