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Key infrastructure sectors, realty may attract Rs 15 trillion by FY26
Business Standard,
June 19, 2024

The Centre has changed a number of clauses in its model concession agreement to ease the market's woes, but it remains to be seen whether these will be appreciated by the sector

India's key infrastructure sectors – real estate, renewable energy and roads – are likely to see investments of Rs 15 trillion over the next two financial years, CRISIL Ratings said on Tuesday.



The ratings agency added that this would be an increase of 38 per cent over the previous two years.

“The surge will ride on India’s need for creation of sustainable infrastructure by adding more green power to the energy mix, improving physical connectivity through a denser road network, as well as rising demand for residential and commercial real estate,” the agency said.

According to Krishnan Sitaraman, senior director and chief ratings officer, CRISIL Ratings, the underlying demand drivers in these three sectors remain strong, with regular policy interventions fuelling investor interest.

This has also supported healthy credit risk profiles of private players and strengthened their execution and funding capabilities.

In renewables, timely commissioning of storage and storage-linked capacities remains a key risk given their higher tariffs compared with the usual renewable capacities.

These storage-linked capacities have so far had low traction on the ground in finding off-takers, with nearly 7 Gw of the Rs 9 Gw projects yet to find buyers.

Similarly, in the roads sector, as government budgetary allocation is moderating, amendments in the build-operate-transfer (BOT) toll model concession agreement have been made to increase private participation.

However, improvement in traffic estimation accuracy and higher willingness of lenders to fund BOT toll projects will bear watching, the agency said.

Earlier this year, the government had launched a pipeline of 53 projects worth Rs 2.2 trillion to be bid out under the BOT model. This, along with private participation, is also a means for the government to meet its highway awarding target.

The ministry had failed to meet its target last financial year due to its Bharatmalaprogramme being stuck in bureaucratic red tape.

However, the BOT model has been unpopular over the past few years owing to a non-performing asset (NPA) crisis from previously-awarded projects.

The Centre has changed a number of clauses in its model concession agreement to ease the market’s woes, but it remains to be seen whether these will be appreciated by the sector.

“In case the lenders or developers are cautious about the new BOT projects and the response from the sector is tepid, it may stagnate highway awarding. And, we may see a two-three per cent growth in highway capital expenditure. The impact on order books of developers may be there in case the new BOT projects don’t work. But even if the new projects are half-successful, the balance sheets of developers are heavy enough to withstand it,” said MohitMakhija, senior director at CRISIL.

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The role of innovative technologies in infrastructure development
Construction Week,



June 19, 2024

Neeraj Sinha, director (operations), Chaitanya Project Consultancy narrates the role of innovative technologies in infra development.

In the fast-moving digital world, society is transforming from every perspective, including the infrastructure sector. The development in the infrastructure sector following innovative technological advancement has brought efficiency, growth, and a sustainable environment, which is taking over the traditional ways of designing and constructing buildings, highways, roads, etc. Additionally, India is on track to become the world's \$5 trillion economy by 2026-2027. To improve the quality of human life, the health of the planet, and the state of the economy, all infrastructure challenges are supposed to be addressed by raising public awareness along with the incorporation of modern technology.

With the help of innovative technological advancements, the National Highways Authority of India (NHAI) set a Guinness World Record in highway construction by completing 75 km of road stretch in Maharashtra in around 105 hours and 33 minutes. This also showcases that, India stands as second in the world in terms of road networks, covering about 66.71 lakh km, which comprises national highways, state highways, and district and rural roads. This elaborate network reflects good connectivity of city areas.

Innovation is burgeoning at every stage of infrastructure development, and new exciting ideas are being generated that hold the potential to change the field and are all set to revolutionize the infrastructure industry in the coming years.

Innovating infrastructure projects through advanced technology –

The use of advanced technologies in infrastructure project development is transforming the Architecture, Engineering, and Construction (AEC) industry. This transformational approach enhances efficiency, sustainability, and resilience.

Smart cities and the Internet of Things (IoT)

Using the Internet of Things (IoT), smart cities use an interconnected network of devices to harvest and analyze data in real time. This approach, fueled by data optimization, makes sure that a city maintains traffic flow, reduces energy consumption, and improves security. For example, smart traffic management systems using IoT and artificial intelligence can sense and dynamically manage movements, which can greatly reduce congestion and emissions. In addition, IoT-infused infrastructure can also monitor the health of bridges, roads, and buildings in general and predict maintenance before it becomes critical. This predictive maintenance not only prolongs the lifespan of infrastructure but also reduces downtime and minimizes repair costs

Building Information Modeling (BIM)

BIM allows architects, construction professionals, and engineers to develop digital models of building information and improve the productivity and quality of their work related to architectural design, building performance analysis, and the documentation of construction processes. In the case of bridges and highways, BIM involves developing digital models of these structures, embracing detailed information related to their physical and functional characteristics. This also allows contractors and architects to make use of correct 3D models of infrastructure projects to pre-visualize the project and to be able to deduce any conflict that may exist before the construction



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process. This makes design easier and enhances coordination, reducing mistakes and costly delays. This is a very powerful tool for the overall enhancement of infrastructure projects in terms of efficiency, accuracy, and sustainability. Furthermore, this technology is also used for remodeling, which gives rise to green infrastructure in which new things are built less and old things are fixed more. Insights provided by BIM also help engineers to better understand how something like, for example, a building, bridge, or highway can be repaired more effectively and efficiently.

3D Printing

3D printing is revolutionizing the construction and infrastructure industries by creating physical, three-dimensional products such as bridges, roads, and buildings from digital designs. This technology offers numerous benefits, including energy efficiency, reduced waste, cost-effective production, and quick manufacturing times. Additionally, 3D printing enhances sustainable integrity by promoting the recycling of old or faulty products into new ones and enabling innovative, complex designs that improve structural integrity.

In India, IIT Madras has pioneered the development of the country's first 3D printing construction technology, in collaboration with Tvasta Manufacturing Solutions. Their goal is to automate construction processes, exemplified by their plan to construct a 320 sq.ft single-storeyed house within three days. This groundbreaking innovation holds great promise for revolutionizing construction methods, especially for initiatives like 'Housing for All' and 'Swachh Bharat Abhiyan'.

Drones

Drones have become indispensable in India's development and infrastructure sectors, seamlessly integrating with the industry's technological upgrades. They are extensively used for surveys, inspections, and monitoring of construction sites, efficiently covering large areas in a short period and providing detailed images and data for analysis. This technology helps reduce human error and increases the accuracy of the data collected. Additionally, drones are employed to inspect hard-to-reach areas, such as roofs, bridges, and towers, enhancing safety and accessibility for workers. The National Highways Authority of India (NHAI) has mandated monthly drone video recordings of project highways during their development, construction, and operation and maintenance (O&M) periods, underscoring the critical role of drones in modern infrastructure projects.

Sustainable and eco-friendly designs

The National Highways Authority of India (NHAI) has used cutting-edge technologies like Fiber-Reinforced Polymer (FRP) composites to build long-span bridges that not only drastically decreased the costs involved but also ensured strength and durability that is unmatched. At the same time, NHAI also undertook sustainable construction efforts on the Mumbai-Goa route by replacing natural aggregates with recycled material such as recycled asphalt pavement (RAP) or recycled concrete aggregate (RCA). This serves to not only decrease dependence on limited natural resources but also to reduce waste generation. By accepting advanced technologies and materials, NHAI is also proving its cost-effectiveness and commitment to the environment in infrastructure development and will serve as a model for future projects in India and abroad.

Bridge health monitoring system

A bridge health monitoring system involves the continuous or periodic evaluation of a bridge's structural integrity using various sensing technologies, data acquisition, and processing methods.



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Its primary purposes are to detect and assess damages, ensure safety and functionality, provide data for maintenance and rehabilitation, extend the bridge's lifespan, improve design practices, and mitigate disasters. The benefits include enhanced safety through early issue detection, cost savings on maintenance and emergency repairs, reduced downtime through scheduled maintenance, data-driven bridge management, and improved design guidelines for future projects.

The Ministry of Road Transport and Highways plans to install real-time sensors on national highway bridges to streamline maintenance and prevent collapses. These sensors will monitor critical parameters such as strain, deflection, vibration, tilt, displacement, temperature, corrosion, and scour. This data will be included in detailed project reports for new projects, with an expert committee determining sensor placement for existing bridges. Transitioning from visual surveys to real-time monitoring will enable continuous data collection, particularly for major bridges and those in harsh environments. This proactive approach will facilitate timely maintenance, avoiding traffic disruptions and bridge failures.

Prefabrication and modular construction

Prefabrication and modular construction technologies have substantially optimized the construction process for bridges. The developed components are manufactured off-site and assembled on-site, thereby easily and efficiently reducing the duration of construction and also minimizing disturbances to the surroundings. Moreover, prefabrication improves the quality of the bridge components, and hence, a more safe and durable structure is produced.

Looking ahead: The future of infrastructure

The role of advanced technology in infrastructure development will continue to grow, enabled by the demands of efficiency, sustainability, and resiliency. There seems no bar on what advanced technology can achieve, from smart cities with intelligent infrastructure to an energy system that is sustainable and powered by renewables. Today, we can build infrastructure developed on innovation and the use of advanced technology so that it caters to today's needs and foresees the challenges of tomorrow. We can build an infrastructure base that is a foundation for a more prosperous, equitable, and resilient society through collaboration, creativity, and a commitment to sustainability.

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ABB India, Witt India to boost safety in infrastructure projects

Construction Week,
June 19, 2024

This collaboration highlights both companies' commitment to innovation, reliability

ABB India in collaboration with Witt India – a premier manufacturer specializing in tunnel ventilation systems, is setting new benchmarks in tunnel ventilation technology. Harnessing its extensive domain expertise, ABB's cutting-edge smoke extraction motors are successfully deployed for tunnel safety and reliability across India's critical infrastructure development projects. This collaboration aims to contribute towards infrastructure development ensuring safer and more efficient journey for commuters through India's road tunnels.



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These smoke extraction motors power Witt India's Banana Jet Fans and are integral to tunnel ventilation systems providing essential functions such as airflow management, smoke control, pollutant dispersion, temperature regulation, and energy efficiency. Its design and operations are critical to ensuring safe and effective tunnel environments, complying with standards, and enhancing the overall safety and comfort of tunnel users. Witt India has integrated ABB's smoke extraction motors in several key projects across the country, such as Rewa-Sidhi Tunnel in Madhya Pradesh and the Kuthiran Tunnel Highway in Kerala.

“Together, with Witt India, we are driving progress in infrastructure safety and efficiency, ensuring secure and smooth travel through India's rapidly expanding network of road tunnels. ABB's focus towards innovation will ensure high-quality solutions enhancing safety for commuters. The integration of ABB's smoke extraction motors and jet fans in these tunnels aim to augment safety standards as they provide effective smoke management by rapidly extracting smoke during fire incidents, ensuring clear visibility and safe evacuation routes,” said Sanjeev Arora, president – motion business, ABB India.

This collaboration highlights both companies' commitment to innovation, reliability, and safety in infrastructure development. The infrastructure sector is a key driver of India's economy that aims to reach a \$5 trillion milestone in the next three years. As the nation undertakes numerous infrastructure projects, increased capital expenditure is fuelling this growth, playing a pivotal role in accelerating sustainable development.

“With our strategic partnership with ABB India, we are transforming safety and operational efficiency in key infrastructure projects in the country. Our collaboration represents a focal point in our mission to elevate safety standards and enhance efficiency across India's vital infrastructure projects. ABB's motors combined with our Banana® Jet Fans provide unparalleled efficiency to tunnel operators resulting in reduced OPEX and CAPEX costs. With ABB's innovative solutions complementing our commitment, we are poised to deliver state-of-the-art tunnel ventilation systems, ensuring safer travel experiences for all,” said Vinod Kumar Jalagam, MD, Witt India.

ABB motors are engineered for high reliability, exceptional performance under extreme conditions, demonstrating remarkable technical excellence and innovation. Capable of withstanding temperatures of 250°C and 300°C for up to 2 hours, these motors ensure reliable operation during critical smoke extraction operations. When driven with VFD during normal operations, these motors also save substantial energy. The successful deployment of ABB's high-performance smoke extraction motors in India's essential tunnel projects not only enhances safety but also sets new benchmarks in tunnel ventilation systems.

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Towards Road Safety: Real-Time sensors to be rolled out on national Highway Bridges

Swarajya,

June 19, 2024

In a significant move to bolster the safety and longevity of national highway bridges, the Ministry of Road Transport and Highways (MORTH) has announced a new initiative to install real-time sensors on these vital structures.



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This proactive measure aims to revolutionise the maintenance process and prevent potential bridge collapses, ensuring safer travel for commuters across the country.

The primary goal of installing these sensors is to enable continuous health monitoring of bridges. These advanced sensors will collect data on various parameters crucial for the structural integrity of bridges, including strain, deflection, vibration, tilt, displacement, temperature, corrosion and scour.

For major bridges, these sophisticated sensors will ensure that any potential issues are promptly identified and addressed.

Key Benefits

The introduction of real-time sensors will transform bridge maintenance by enabling preventive measures rather than reactive repairs. Continuous data collection allows for timely interventions, reducing the risk of catastrophic failures and extending the lifespan of bridges.

By incorporating real-time monitoring into maintenance protocols, the ministry aims to significantly enhance the safety standards of national highways. This proactive approach will help prevent traffic disruptions and ensure safer travel conditions for all road users, reports Economic Times.

With detailed project reports (DPRs) now accounting for health monitoring sensors, there is an opportunity to develop standardised tools for data analysis. This will enable consistent monitoring and maintenance practices across various types of bridges, ensuring uniform safety standards nationwide.

However, the implementation of this initiative presents several challenges. One significant hurdle is the lack of standardised analysis tools for monitoring different parameters across diverse bridge topologies.

The ministry has acknowledged this gap and is allowing contractors the flexibility to propose their own software tools, but developing a unified, standardised system remains a critical task. Integrating these advanced sensors into existing bridges, especially those in highly saline or polluted environments, poses a logistical challenge.

Ensuring that the sensors are accurately installed and maintained to provide reliable data will require meticulous planning and execution. Additionally, the vast amount of data generated by these sensors needs to be efficiently managed and analysed.

Establishing a robust data acquisition system and training personnel to interpret and act on this data is crucial for the success of this initiative.

As the system evolves, the integration of advanced technologies like artificial intelligence and machine learning could further enhance predictive maintenance capabilities, ensuring that India's bridges remain safe and reliable for years to come.

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Modi 3.0's new infra push! NHA to begin work on Rs 4,000-crore Chattergala tunnel in J&K, confirms NitinGadkari



FE Online,
June 19, 2024

He noted that the tunnel proposal was initiated six years ago, with the Border Roads Organisation preparing the detailed project report. However, the project was delayed due to a lack of funds.

Initial delays occurred due to Punjab's demand for a similar corridor between Delhi and Amritsar. Union Minister of Road Transport and Highways NitinGadkari recently said that the National Highways Authority of India (NHAI) will soon commence the Rs 4,000-crore Chattergala tunnel project in Jammu and Kashmir. Gadkari chaired a review meeting attended by Union Minister of State in the Prime Minister's Office, Jitendra Singh.

“The prestigious Chhatergala tunnel work, costing about Rs 4,000 crore, will be executed by the NHAI, and the underpasses on the Kathua express corridor section, wherever demanded by the public, will be undertaken at the earliest,” stated an official spokesperson after the meeting.

Jitendra Singh expressed gratitude to Gadkari for accepting most of his suggestions and proposals. He noted that the tunnel proposal was initiated six years ago, with the Border Roads Organisation preparing the detailed project report. However, the project was delayed due to a lack of funds. Now, the NHAI will construct the new national highway from Lakhanpur to Basohli-Bani to Bhaderwah-Doda.

Delhi-Ghaziabad-Meerut RRTS corridor: NCRTC likely to conduct trial runs on Delhi section of Namu Bharat by year-end

“Once complete, this highway will be a game changer, providing all-weather connectivity between Lakhanpur and Doda district via tourist spots Basohli and Bani. It will reduce travel time, boost businesses, create employment, and generate revenue,” Singh said.

Regarding the Delhi-Katra express corridor, Singh recalled the project's approval process, which began in 2015. Initial delays occurred due to Punjab's demand for a similar corridor between Delhi and Amritsar.

A compromise led to the express corridor between Delhi and Katra with stopovers in Amritsar and Kathua, finalizing the project.

Singh confirmed that the corridor is in its final construction phase and expressed satisfaction that public demands for underpasses in locations like Hatli, Rajbagh, ChannArorian, Chapper, and Kootah had been accepted to benefit locals.

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Over 800 km of highway stretches bid out

PTI,
June 20, 2024

NHAI gets aggressive on ToT

The investor response to earlier rounds of monetisation through ToT has led to NHAI planning to put three bundles of highways on block every quarter.



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In its first attempt at monetisation through Toll Operate Transfer (ToT) mode this financial year, the National Highways Authority of India (NHAI) has invited bids for three bundles of highways at one go as against two bundles in earlier rounds .

The investor response to earlier rounds of monetisation through ToT has led to NHAI planning to put three bundles of highways on block every quarter.

The highway builder has invited bids for monetising 801.7 km of national highways through Toll Operate Transfer (ToT) mode in the first round.

Delhi-Ghaziabad-Meerut RRTS corridor: NCRTEC likely to conduct trial runs on Delhi section of Namo Bharat by year-end

The highways have been grouped together in three bundles and are in states of Uttar Pradesh, Tamil Nadu and Odisha. In ToT bundle 17 Kanpur-Lucknow-Ayodhya section and Ayodhya-Gorakhpur section of highways in Uttar Pradesh totalling 333.4 km are on offer.

In Bundle 18 Chandikhol-Bhadrak and Panikholi – Rimuli sections on two highways in Odisha of total length of 283.8 km are on offer. In Bundle 19 Trichy – Thanjavur and Madurai – Tuticorin sections of highways of total length of 184.5 km in Tamil Nadu are open for bidding.

Last year for bundles 11, 12, 13 and 14 bids had come from the likes of KKR-backed Highways Infrastructure Trust, Cube Highways, IRB Infrastructure Trust, Abu Dhabi Investment Authority-backed funds, National Investment and Infrastructure Trust (NIIF) and Adani Group. Around Rs 15,968 was raised through transfer of these bundles to outside investors.

Under ToT the investors get the right to collect toll on highways for 20 years after making an upfront payment to NHAI, the owner. According to analysts on an average the realisation from monetisation of every kilometre of highway is around Rs 22 crore. The amount, however, varies wildly depending on the traffic density and the user base- whether it is used more by personal vehicles or commercial vehicles.

Bidding process for Bundle 15 and Bundle 16 is in progress. These bundles have three highway stretches 375 km long in the states of Telangana and Tamil Nadu.

The aggression on ToT comes as NHAI chases the Rs 54,000 crore target for monetisation this financial year, which is much higher than Rs 40,227 achieved last year. Of the FY 25 target, Rs 8,000 will come from project based financing and Rs 46,000 crore from ToT and Infrastructure Investment Trust. National Highways Infrastructure Trust (NHIT) has already said that its share will be Rs 15,000 to Rs 20,000 crore in this year's monetisation plan.

The highway builder has identified 33 highway stretches of 2741 km that will be offered in the monetisation drive.

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Cabinet clears Rs 76,220-crore mega sea port on west coast

FE Bureau,

June 20, 2024



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The project cost includes the cost of land, development for core infrastructure, terminals and other commercial infrastructure in the public-private-partnerships mode.

The project will be located 130 km from Mumbai and 150 km from the Jawaharlal Nehru Port Trust, the country's largest container port.

The Union Cabinet on Wednesday approved the development of a Rs 76,220-crore all-weather greenfield deep draft major port at Vadhavan in Maharashtra, which, on completion, will be among the top 10 ports of the world.

The project will be implemented by a special purpose vehicle, Vadhavan Port Project, to be formed by the Jawaharlal Nehru Port Authority and the Maharashtra Maritime Board with a shareholding of 74% and 26%, respectively.

The project will be located 130 km from Mumbai and 150 km from the Jawaharlal Nehru Port Trust, the country's largest container port.

Adani Ports receives LOI for O&M of container terminal at Kolkata port

The project cost includes the cost of land, development for core infrastructure, terminals and other commercial infrastructure in the public-private-partnerships mode. The Cabinet also approved establishing the road connectivity between the port and national highways by the Ministry of Road Transport and Highways and rail linkage to the existing network and the upcoming Dedicated Rail Freight Corridor by the Ministry of Railways.

The port will comprise nine container terminals, each 1,000-meter long; four multipurpose berths, including the coastal berth; four liquid cargo berths; a Ro-Ro berth and a Coast Guard berth.

The project, aligned with the objectives of the PM Gati Shakti, will further economic activity and also have the potential for direct and indirect employment opportunities for around one million individuals, thereby contributing to the local economy, a statement issued after the Cabinet meeting said.

It involves reclamation of 1,448 hectare of area in the sea and construction of 10.14 km of offshore breakwater and container/cargo storage areas. The project will create a cumulative capacity of 298 million tonne per annum, including around 23.2 million TEU (twenty-foot equivalents) of container handling capacity.

Capacities created will also aid the trade flow through the the India-Middle East-Europe Economic Corridor and the International North-South Transportation Corridor. The port's state-of-the-art terminals will be capable of handling mainline mega vessels plying on international shipping lines between the Far East, Europe, the West Asia, Africa and the Americas.

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Bengaluru to adopt Hyderabad Inspired Land Pooling Model for Peripheral Ring Road Project

Swarajya,
June 20, 2024



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The project is very significant to Bengaluru city because it is expected to address serious traffic challenges.

Bengaluru is set to take a cue from Hyderabad in constructing the long-delayed 74-kilometre Peripheral Ring Road (PRR) project, which has been stalled for the past two decades.

Karnataka Deputy Chief Minister D K Shivakumar announced that the state government has decided to adopt a land-pooling model, similar to the one used in Hyderabad, where 40 per cent of the land will be returned to the original landowners. This move hints at the possibility of the Bangalore Development Authority (BDA) notifying more properties for acquisition in the future.

"We are not pledging the BBMP properties, but there is a plan to acquire properties for the Peripheral Ring Road project under the 60:40 ratio," stated Shivakumar.

Initially, the government intended to build the 90-metre wide ring road around the city by providing cash compensation to the farmers. The BDA had estimated the land acquisition cost at approximately Rs 21,000 crore, with construction costs projected to be around Rs 7,000 crore.

Shivakumar expressed dissatisfaction with this proposal, pointing out that while the BDA returns 40 per cent of developed land to farmers or landowners in layouts like DrShivaramKaranth Layout and Kempegowda Layout, the compensation structure for the PRR project was significantly different, reports Deccan Herald.

By adopting this approach, the government aims to ensure that the local residents benefit from the infrastructure development, fostering a sense of shared progress and cooperation among stakeholders.

Bengaluru Peripheral Ring Road

The PRR, designed to encircle the city's peripheries, aims to alleviate traffic congestion and improve connectivity in the region. The PRR will traverse through 10 major junctions and over 100 minor intersections, strategically placing 16 flyovers at key locations such as Hesarghatta Road, Old Madras Road, Whitefield Road, Channasandra Road, and Hosur Road, among others.

This ambitious project is set to feature 16 flyovers, 10 overpasses, and 12 underpasses, enhancing the city's transportation network. Additionally, the plan includes bridges over seven water bodies, including prominent ones like Chikkatogur Lake, Gunjur Lake, and Jarakabande Lake, further facilitating seamless connectivity.

To tackle traffic intricacies, the project incorporates six cloverleaf-type over bridges, providing a solution for efficient crisscrossing without congestion.

Designs made public by the BDA showcase a 100-m-wide greenfield expressway, featuring green spaces, utilities, underground cables, footpaths, cycle tracks, and drains.

The main carriageway, boasting eight lanes, will be flanked by service roads on both sides, with a broad median reserved for potential future integration with the metro project.



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The project covers a length of 65.95 km between Hosur Road and Tumakuru Road, with an additional 3.4 km near Madanayakanahalli and 4.08 km near Hebbagodi to link existing roads seamlessly into the PRR network.

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