Navi Mumbai International Airport Project

Strategically located in the heart of the fast-developing satellite city of New Mumbai, the eagerly awaited Navi Mumbai International Airport is expected to meet Mumbai's air travel demands that are reaching sky high. Envisioned as a greenfield airport, L&T is executing the Main Works of the airport on an EPC basis that will augment Mumbai's aviation capacity, as the second airport to the already existing Mumbai International Airport.

Arvind Kumar Jha
Project Manager

This intricate coordination can only be accomplished effectively by adopting innovative digital solutions that facilitate precise and efficient management of various project aspects, right from design and planning to construction and operations.

VOICES FROM **GROUND ZERO**

Eventually to handle 90 million passengers, after completing Phase 1, the airport will be able to handle 20 million passengers annually, which is 40% of the existing Mumbai Airport's total capacity.

Although L&T are the foremost builders of airport infrastructure with 12 airports under its belt, Project Manager, Arvind Kumar Jha, and his project team must still buckle down to construct a complex infrastructure project along with simultaneous land development work involving blasting. "It demands seamless integration and management of multiple domains, all of which must operate or be constructed in synchronization," he points out. "This intricate coordination can only be accomplished effectively by adopting innovative digital solutions that facilitate precise and efficient management of various project aspects, right from design and planning to construction and operations."

True to his word, Arvind has been spearheading the introduction of several digital initiatives that are improving coordination, productivity & efficiency. Planning In-charge Abhinav Agarwal emphasizes the crucial role of digital initiatives in closely monitoring project progress. "The project is on track for completion and timely hand over," he asserts. "Considering the extensive scope of work and interfacing with multiple facilities, the digital initiatives implemented at the site have significantly benefited us."

Building Information Modelling (BIM): A detailed 3D modelling of the entire airport infrastructure through BIM has given the team better visualization, helping enormously in its planning, much to the delight of Aniket Kulkarni, BIM Modeller, EDRC, and Shashank Kashyap, Design Co-ordinator, whose responsibility is to ensure clash-free designing for the infrastructure & airside works. "BIM helps us to detect clashes and manage construction activities, ensuring that all our stakeholders have a comprehensive understanding of the project's progress," they chorus.

Project Management Software: Advanced project management tools such as server-based Primavera P6 expertly schedule tasks and monitor progress while progress reporting

VOICES FROM **GROUND ZERO**

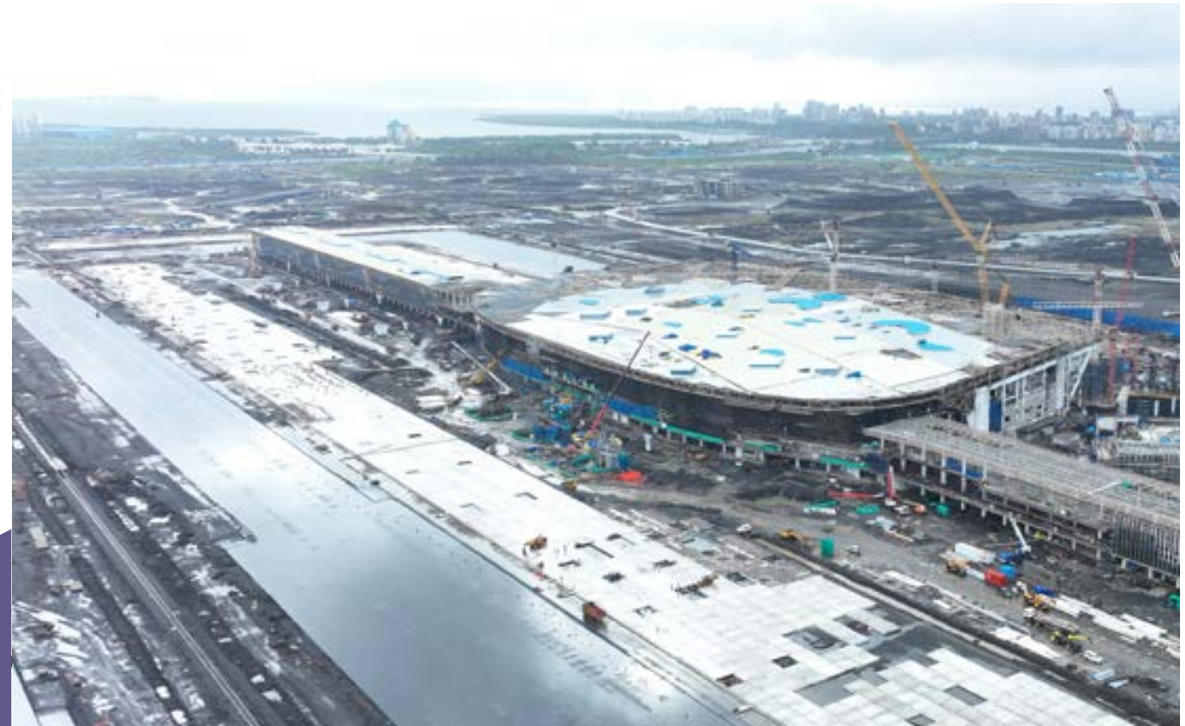
Abhinav Agarwal
Planning In-charge

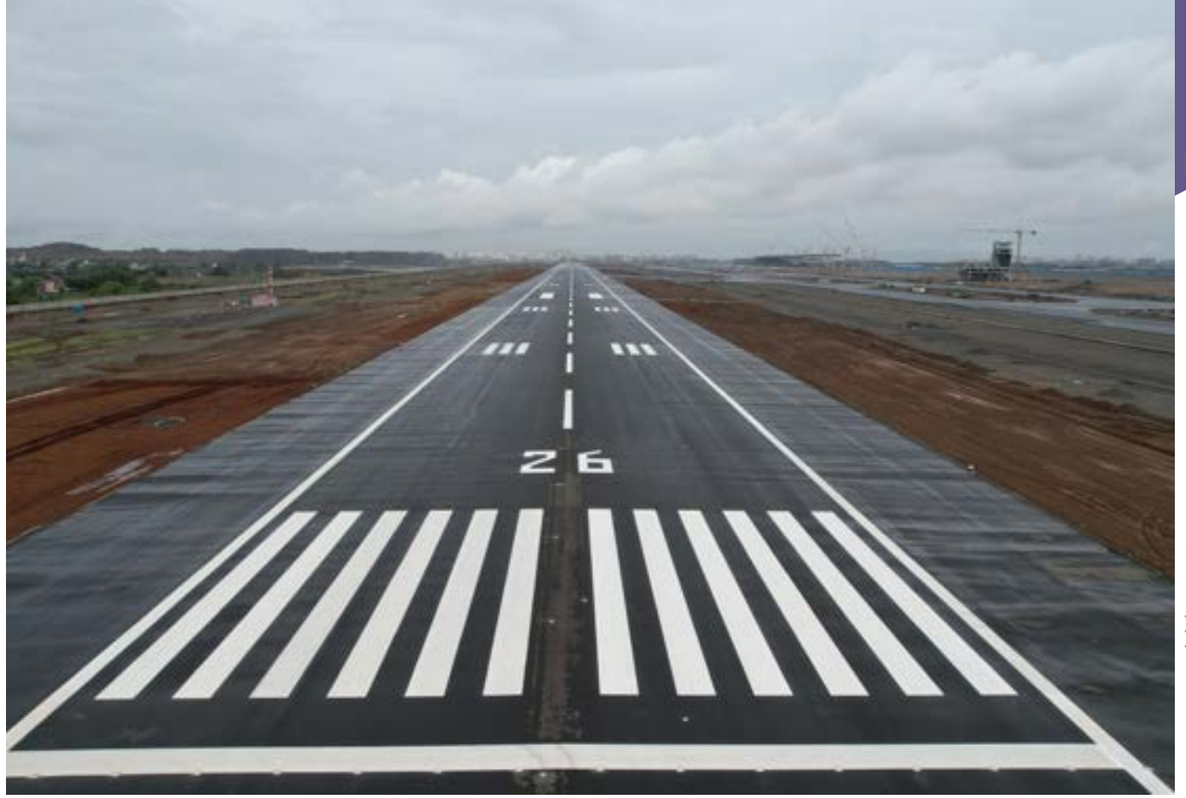
The project is on track for completion and timely hand over," he asserts. "Considering the extensive scope of work and interfacing with multiple facilities, the digital initiatives implemented at the site have significantly benefited us.

is on a mobile input-based software developed to ensure dynamic reporting. "These digital tools provide a centralized platform for various teams to collaborate, ensuring accurate and timely progress monitoring and reporting." remarks Prathamesh Dingorkar, Assistant Construction Manager (Civil), who leads implementation of digital initiatives at site.

Internet of Things (IoT): "The Internet of Things (IoT) devices are deployed across the site to monitor equipment, track materials, ensure worker safety, provide real-time data, improved operational efficiency, and reduced downtime," highlights Prathamesh. Digital tools such as MOBA Fuel Dispensing Management System (FDMS), SpotTrack Asset Utilisation Monitoring are being efficiently utilised at site to monitor resources better. "All our batching plants as well as weighbridges are connected to IoT ensuring effective utilisation," adds Arvind, already reaping the rewards of technology interventions.

Trimble Grade Controller System, an advanced system, has been deployed to automate motor grader operations to enhance the precision and efficiency of subgrade works. This connects to a base station to ensure seamless communication and data transfer. Describing how the system works, Sai Krishna, Engineer (P&M) explains: "The finalized pavement section design, along with its coordinates, is uploaded into the 3D Grade Controller system, that appears on the controller's display, providing a visual guide for the operator. When the motor grader enters the designated location, the system





The Internet of Things (IoT) devices are deployed across the site to monitor equipment, track materials, ensure worker safety, providing real-time data, improved operational efficiency, and reduced downtime.

Prathamesh Dingorkar
Assistant Construction Manager (Civil)

VOICES FROM **GROUND ZERO**

accurately displays the specific elevation levels and grading information for that area." This precise level control is user-friendly for the operators, ensures accuracy, reduces wastages, significantly boosts the grader's productivity, and saves time.

Other digital solutions

AR & VR: Augmented Reality & Virtual Reality technologies are used for immersive training, site inspections, and design reviews. These provide an interactive experience, for stakeholders to explore the construction site virtually and make informed decisions.

Drones are used for aerial surveys and inspections, providing high-resolution images and videos of the construction site that help to monitor, identify potential issues, measure stock, and ensure quality control.

Cloud-based platforms store and share project data securely, enabling remote access and collaboration among stakeholders and all the team members access the latest information, regardless of their location and platforms for dynamic updates.

Meerut–Hapur–Ganga Expressway Project – Ticking all the technology boxes

Project Manager, Shashikanta Tripathy, and his team's mandate at the greenfield Meerut–Hapur–Ganga Expressway Project is to construct a 62.1 km access-controlled 6-lane expressway from Group 1A km 07+900 in Meerut district to km 70-000 in Amroha district, Uttar Pradesh, for the Uttar Pradesh Expressways Industrial Development Authority. "Our project is a part of the prestigious Ganga Expressway project that will ultimately link Greater Noida to the eastern and western boundaries of UP to give trade, commerce and movement of people a huge fillip," remarks Shashikanta, underscoring the strategic relevance of his project. "We started work on 12 October 2022, and aim to hand over as per our contract on 11 October 2025," he says with steely determination.

We use the drone footage to explain certain site attributes to the design team to help them arrive at effective design solutions. These even help improve our safety by capturing the required data from critical locations.

VOICES FROM GROUND ZERO

Shashikanta Tripathy
Project Manager

Technology leading the way

"As a team, we appreciate the benefits of digitalization and therefore our technology adoption has been robust, widespread and is paying us rich dividends," smiles Aneesh Kumar Sharma, Senior Construction Manager (Civil), happy with the results that are helping him and the project team to stay in step with the asking rate. "We have analysed every aspect of the construction process and found several solutions to improve productivity, reduce wastage, cut costs and overall improve our delivery."

Verdhhman Verma
Quality In-charge

Sabyasachi Bhaduri
QA In-charge

The Quality parameters we track include Quality walkdowns by the Project Director, Quality and pep talks, supervisor and worker training, DRIFT/NC reporting, QC on materials and adherence to Quality processes

SHEILD: 100% adoption of the SHEILD App translates into usage that is as high as 95% to measure EHS parameters. EHS In-charge, Suraj Eknath Kolhatkar, is delighted with the results. "Since inception, 14,465 RTRs have been assigned, 6,244 instances of Unsafe Act/Unsafe Condition have been submitted and 25 e-TICS have been raised and complied to," he shares with satisfaction. Their rigorous adoption has ensured that the project has recorded no LTIs, having clocked 12.57 safe million manhours till date.

QUALITY: Quality In-charge Verddhman Verma's and QA In-charge Sabyasachi Bhaduri's lives have become easier with the deployment of the Quality App, an in-house developed digital solution in Power Apps. "The Quality parameters we track include Quality walkdowns by the Project Director, Quality and pep talks, supervisor and worker training, DRIFT/NC reporting, QC on materials and adherence to Quality processes."

WMS 4.0: The team uses WMS 4.0 (a new, improved version of the erstwhile WISA) to onboard & manage workers,

VOICES FROM GROUND ZERO

Aneesh Kumar Sharma
Senior Construction Manager (Civil)

As a team, we appreciate the benefits of digitalization and therefore our technology adoption has been robust, widespread and is paying us rich dividends. We have analysed every aspect of the construction process and found several solutions to improve productivity, reduce wastage, cut costs and overall improve our delivery.

Since inception, 14,465 RTRs have been assigned, 6,244 instances of Unsafe Act/Unsafe Condition have been submitted and 25 e-TICS have been raised and complied to.

Suraj Eknath Kolhatkar
EHS In-charge

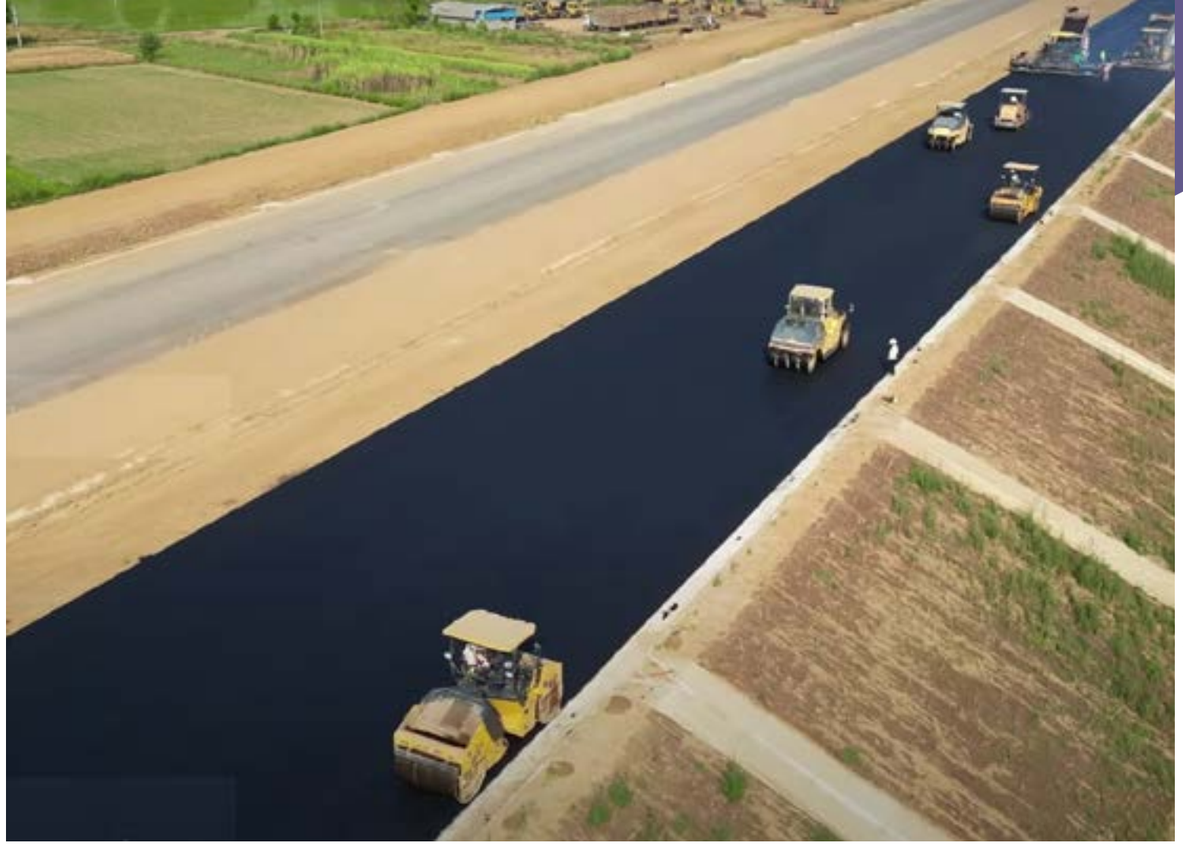
VOICES FROM **GROUND ZERO**

maintain their attendance through biometrics and track their demographics. As of date, some 8,000 workers have been onboarded through WMS 4.0 that additionally captures data on the number of unique subcontractors engaged, number of unique subcontractors with workers exceeding 25 numbers, average gang sizes, average daily worker strength and more.

ASSET-INSIGHT: Material tracking is what can give a Planning Engineer sleepless nights but with the digital solution, Asset-Insight, Planning In-charge, Aneesh Kumar Sharma, can at least breathe easy. "With the weighbridge system, we access and track material transactions real time, monitor open, or open and faulty transactions and track material quantities real time," he says with purpose. With the GPS-based 'Spotrack', the team tracks & monitors productivity and status of major equipment in real time enabling easy identification of status. "As of date, we have tracked, connected and onboarded 254 major equipment," adds Aneesh.

MOBA-RFID: At an organizational level, fuel tracking has been identified as a key focus area to improve productivity and Shashikanta has not taken his eyes of the ball, using the MOBA-RFID digital App with fuel sensors to track & monitor fuel status, consumption & distribution. "With FDMS, we have kept a strict check over HSD distribution and fuel pilferage at site," he remarks.

Although linear, the site is under the constant surveillance of 102 CCTV cameras installed in the camp, plant, weighbridge & crushers for remote monitoring, improved security, better EHS & to prevent or at least discourage pilferage & theft at site. Overhead drones record progress showing the diverse features



of construction that are then collated into monthly reports for the Client & senior management. "We use the drone footage to explain certain site attributes to the design team to help them arrive at effective design solutions," remarks Shashikanta. "These even help improve our safety by capturing the required data from critical locations," he nods.

Monthly aggregate stock measurements are taken at the camps & stockyards using the DGPS survey control system that aids to accurately and timely reconcile bulk material.

With just over a year to go to handover, Shashikanta and team are focused to execute their project in time to quality and if they continue their robust technology adoption, we can rest assured that they will deliver as promised. ■