

# CONSTRUCTION WEEK

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# EXPRESSIONS OF PROGRESS

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India has been building highways and expressways faster than ever before. They will take people places soon

BY JAYASHREE KINI MENDES



In February, India for the first time set a world record when her able contractors constructed a single lane stretch of 25.54 km in 18 hours. Around the same time, NHAI along with Patel Infrastructure created another world record for laying the highest quantity of concrete on a four-lane highway in 24 hours. The feat made it to the India Book of Records and Golden Book of World Records.

We quickly made it a habit. In March/April, this was followed up with another record and a mention in the Guinness Book of World Records when contractors constructed a 2.5 km 4-lane concrete road within 24 hours. These records don't come easy and are all in a day's work, in a manner of speaking.

As projects get more ambitious, contractors have been stretching themselves to keep up with the government's demands for world-class highways and expressways. This issue, we will focus on the Delhi-Vadodara-Mumbai expressway, while also mention in passing other memorable ones under construction.

Construction Week catches up with Manoj Kumar, member (projects), National Highways Authority of India (NHAI); ZA Sultani, GM (tech), NHAI; Arvind Patel, MD, Patel Infrastructure; and Vinay Shah, sr VP, Patel Infrastructure, who speak about the world record and also the upskilling required to build state-of-the-art infrastructure.

**THE DELHI-VADODARA EXPRESSWAY**

With multiple projects under construction in various parts of the country, Ministry of Road Transport & Highways (MoRTH) and NHAI have been wearing themselves thin on finding the right contractors with apt skills and the necessary equipment. In the last couple of years, the Ministry and the Authority have realised



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**MANOJ KUMAR**

that technology and innovation play a key role in delivering an excellent product.

Manoj Kumar says, "Our achievements today did not happen overnight. It took years for us to get our systems to sync and thankfully, that time is now. Be it supply, design, or the execution capability, our people are doing much to be sought after. But few even realise that

▲ The world's largest paver was first used in the Delhi-Mumbai expressway project.



▲ Perhaps no other agency has worked at such breakneck speed to give the country its much-needed infrastructure.



WE MET ALL THE STRINGENT PARAMETERS THAT NHAI LAID DOWN FOR THE CONTRACTOR. AND WE ARE NOT FAILING THEM IN ANY WAY.

**ARVIND PATEL**



▲ More Indians will be able to travel to places that were out of reach.



WE DEPLOYED SEPARATE CONCRETE BATCHING PLANT FOR STRUCTURE WORK AND DLC, AND TWO HUGE CONCRETE BATCHING PLANTS OF 240 CU.M. AND 120 CU.M. FOR PQC ALONE.

**VINAY SHAH**

they have crossed the set milestone and have achieved new benchmarks."

Arvind Patel is glad that their dream of bagging a prestigious project like the Delhi-Vadodara expressway has come true. In his words, "Long ago, I had seen the Mumbai-Pune expressway and had always wanted to execute a project on such a scale. So when tenders were issued, we gathered all our resources and bagged the project. We met all the stringent parameters that NHAI laid down for the contractor. And we are not failing them in any way."

What has also stood the company in good stead is its policy of buying equipment rather than relying on rental ones. With more than 1300 equipment of various kinds, Patel Infra is well-equipped to take on projects of any kind. Moreover, the



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AFTER THAT IS RESOLVED IN A TIME-BOUND MANNER.”

ZA SULTANI

two packages that Patel Infra bagges has seen scores of vehicles and equipment of every possible size at the site.

Explaining the technicalities of the project, Vinay Shah says, “We secured two adjacent packages of 63km of eight-lane expressway in 2018. Then, to be sure to do the job well, we procured one the largest paver – 18.75 m wide PQC paver – to lay entire width of one side expressway in a single pass. This is the world’s largest PQC paver. However, in order to achieve the world record, we had to several calculations and work backwards to understand whether our equipment had the wherewithal to create history. This involved checking on the batching plants production, the paver’s capability, the required manpower, etc.”

Ramesh Palagiri, MD & CEO, Wirtgen India, says, “The record was established with Wirtgen SP 1600 Slipform Paver which is the world’s largest concrete paver with paving width of 18.75 m in single pass. The SP 1600 is its flagship paver which is in operation in India over past 20 years, building several highways and projects like the Yamuna expressway, the Eastern Peripheral expressway and, more recently, the Samruddhi expressway.”

Speaking about the numerous equipment from his company that was used n the project, Deepak Shetty, CEO and MD, JCB India, says, “We are delighted to be a part of this record-breaking achievement with our Made-in-India machines. It gladdens us to know that our excavators, telehandlers, wheeled loaders, gensets and backhoe loaders were used extensively in this project. JCB machines are today connected digitally through Livelink - our advanced Telematics technology that enables customers to monitor the performance of their equipment at all times.”

BharatBenz too provided on-site support as per customer requirements & support to ensure higher uptime of vehicles to meet the project timelines. Their dedicated teams stayed in touch with customers through fleet consulting to track project status. With its digital tools like Empower 2.0 and Proserv, it is transforming the way CVs are sold in India.

#### AS GOOD AS DONE

A good thing that NHAI has done is allowing the concessionaires to use new technologies in highway and expressway construction. Kumar says, “Under EPC and PPP, they are welcome to bring in their durable technology. Of course, there is scope for innovation and optimisation in structures and their designs. We are working with the concessionaires to make this happen.”

The government is highly ambitious as far as infrastructure development is concerned. In early April, Union Minister for Road Transport & Highways Nitin Gadkari said that the pace of highways construction has touched a record 37km per day in 2020-21. The ministry constructed 13,394 km of highways in fiscal year 2020-21. Accelerated road construction is the only solution.



▲ The Wirtgen SP 1600slipform paver that created the world record.



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BUILDING SEVERAL HIGHWAYS AND PROJECTS LIKE THE YAMUNA EXPRESSWAY, THE EASTERN PERIPHERAL EXPRESSWAY, ETC.”

RAMESH PALAGIRI

Shah says, “Accelerated only implies that all activities continue parallelly on projects. Hence, for this project, we have deployed separate concrete batching plant for structure work and DLC, and two huge concrete batching plants of 240 cu.m. and 120 cu.m. for PQC alone. In order to quicken the pace, we

have gone in for precast box culverts instead of cast-in-situ at site to reduce construction time. We have also raised our profile by 300mm to accommodate the underpasses and approach routes. Then there's elimination of manual work so as to quicken the pace of construction."

It is common knowledge that land acquisition has been the biggest hurdle in the construction of roads and highways. Over the last few years, MoRTH and NHAI have worked out a scheme that would allow them to offer the landowners a fair price and pay them online, which has greatly improved transparency while allowing them to acquire land quickly.

The Authority had to acquire 15,000 hectares of land for the Delhi-Mumbai expressway alone. Kumar says, "We have acquired about 90% of the land across the five states where the expressway passes. In any project, planning at the outset is what matters. Be it in terms of technology, transferring of revenue records, matching the engineering designs, procurement, they need to be ironed out early on as they have led to delays in the past. It is probably the reason we are confident of delivering this expressway within four years of the planning stage."

One of the reasons why NHAI has been successful with completing projects on time is its strong early decision processes. ZA Sultani says, "We do not deviate from DPRs that have been approved. Any issue that arises after that is resolved in a time-bound manner."

Patel agrees with this and says that working with the Authority is now a breeze. "Earlier, there was much bureaucracy and getting approvals was a painstaking process. Today, they function so fast that it's not surprising that there are so many projects happening everywhere across the country," he adds.

The Authority has left no stone unturned to ensure quality across its processes. Right from checking the quality of materials to the site, it has also appointed a third-party agency to double check. Kumar says, "The pre-cast elements we have introduced is our way of assured quality. A factory environment offers accuracy and this means the goods arriving at the site have already been approved. For that matter, so superior is the quality that we have outsourced one drain to a Japanese company who are executing it at their factory before installing it at site."

Ask NHAI about asphalt or concrete, and Kumar says, "Delhi to Vadodara is bituminous, while Vadodara to Mumbai is concrete. Each have their own standing in the market. Bituminous means recurring maintenance, but to avoid this it introduced a technology called perpetual pavement. It is ex-

pected to last for up to 50 years. Since it's a new technology, it's a test for the entire engineering team. We have brought in new equipment to measure its steadfastness," adds Kumar.

#### OTHERS TOO JOIN IN

NHAI has an extensive programme for building expressways and Greenfield corridors. It is committed to deliver several of them by 2025. The total length of expressways is 7800km and we have already awarded 3100km. Some of the significant ones are Chennai-Bangalore expressway, Delhi-Amritsar-Katra, Ahmedabad-Dholera, where land has been acquired and works of some kind or the other has started. Then there are the access-controlled roads (not exactly expressways) such as Bhatinda to Jamnagar (1200km), Raipur to Visakhapatnam (400km), etc.



JCB MACHINES ARE  
TODAY CONNECTED  
DIGITALLY  
THROUGH LIVELINK

- OUR ADVANCED TELEMATICS  
TECHNOLOGY. ”

DEEPAK SHETTY



THE RECENT  
ADVANCEMENTS IN  
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TECHNOLOGY HAVE

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OF CONCRETE PAVEMENTS, WHICH IS  
HIGH INITIAL COST. ”

NALIN GUPTA



▲ Some of the most breath-taking roads and highways have come up in India last few years.