



# Bridging the Brahmaputra

As L&T constructs India's longest river bridge in an extremely tough region, *Bappaditya Paul* reveals why the company prides itself as a builder to the nation

**CONTEXT:** Located 260 km west of Guwahati, Dhubri in Assam is of immense strategic importance to India – both in terms of defence and trade. It shares an international border with Bangladesh and interstate boundaries with Meghalaya and West Bengal.

Brahmaputra – the mighty tri-country river – originates in Tibet, cuts across Dhubri separating it from Meghalaya and then flows into Bangladesh. Owing to this, notwithstanding the geographical proximity, the people of Meghalaya are required to traverse some 212 km through a circuitous route to reach Dhubri and vice-versa. This hampers trade and the overall economic growth of the region.

To address this, the National Highways & Infrastructure Development Corporation Ltd, with support from the Japan International Cooperation Agency (JICA), is building a bridge over the Brahmaputra between Dhubri in Assam and Phulbari in Meghalaya. The bridge will slash the distance from 212 km to just about 20 km – a 15-minute drive.

This will benefit over 31.47 lakh people (2011 Census) of Dhubri and the South Salmara-Mankachar districts of Assam and the West Garo Hills district of Meghalaya.

The four-lane bridge will also plug a missing link of NH 127B which runs from Srirampur (Assam-West Bengal border)

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to Nongstoin in Meghalaya. The bridge – poised to become India's longest over a river – is being constructed by Larsen & Toubro.

The bridge has been designed by L&T's in-house Engineering Development & Research Centre, while the enabling structures such as caissons, launching-girders, bridge-builders have been fabricated by another in-house arm – the Construction Methods Planning Cell.

It was early afternoon. As we stepped onto the Dhubri-Phulbari Bridge project site, a strong gusty wind – blowing north to south – besieged us. It was raining at the same time – something unusual in March for most of India and even by Assam’s regular weather standards.

“It was scorching hot out here this morning but post-noon everything changed dramatically. That’s how unpredictable the weather here is,” said Apurva Naik, as we trudged through the sandy alignment of the under-construction bridge. Naik is an assistant construction manager with L&T’s Transportation Infrastructure vertical which is constructing this ambitious bridge.

Instead of flowing through a single channel – as is usual for a river – the Brahmaputra here flows down in multiple channels, with sandbars popping up in between. In the dry season, people grow rice and vegetables on these sandbars. But during the monsoons, all the sandbars get

submerged – but for Birsing which, with human settlements, is as good as an island.

The 19.28 km bridge will leap over both land and river as it connects Dhubri to Phulbari. While using the bridge in winter, one will see the sandbars below, but during the monsoon – when the Brahmaputra is in full spate – it will be water and only water all around.

**The 19.28 km bridge will leap over both land and river as it connects Dhubri to Phulbari.**

With untimely downpours, gusty winds and the very strong currents of the Brahmaputra, it is an extremely difficult region in which L&T is executing the project. It involves constructing piers and erecting segments both on land and in the river, and for this, men and material are required to be ferried across the channels

– each one of which is as wide as a river in itself. For this purpose, the project team maintains a large fleet of watercraft – barges, tugboats and speedboats – but those can be used only when the weather is favourable.

By the time we reached one of the makeshift jetties, the weather turned squally and the river too turbulent for even a speedboat to cross over a channel. Arbind Yadav, the project’s fleet in-charge, advised us to abort our trip.

“Apart from the erratic weather, another major issue we face is the erosion of sandbars and the ever-changing course of the river channels. So much so that almost every two months the sandbars vanish, compelling us to shift our jetties time and again,” explained Yadav.

## A TOUGH TASK

As compared to Guwahati’s annual



The bridge will shorten a 212 km circuitous route to just 19.28 km.



rainfall of 1,695 mm, Dhubri receives 2,939 mm, and it rains heavily from May through September. "Due to the prolonged monsoons, the work season here is just about seven months as against 10 months at other project sites in India. This comes in the way of speedy execution," said Project Director V R Saravanakumar.

The Dhubri-Phulbari Bridge is designed to be an extradosed one, with approach viaducts both at the Dhubri and Phulbari ends. It will have piers standing both on land and in water.

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When the bridge piers are needed to be constructed in a river, civil engineers bore wells in the water with the help of caissons. A caisson is a heavy circular metal structure which is fabricated on land and then lowered into the river at the desired spot. The caisson gradually sinks into the riverbed and settles down: engineers then



*Launching a caisson (right) in the Brahmaputra to bore wells for erecting bridge piers.*

seal its walls and top with reinforced concrete and cast piers over it.

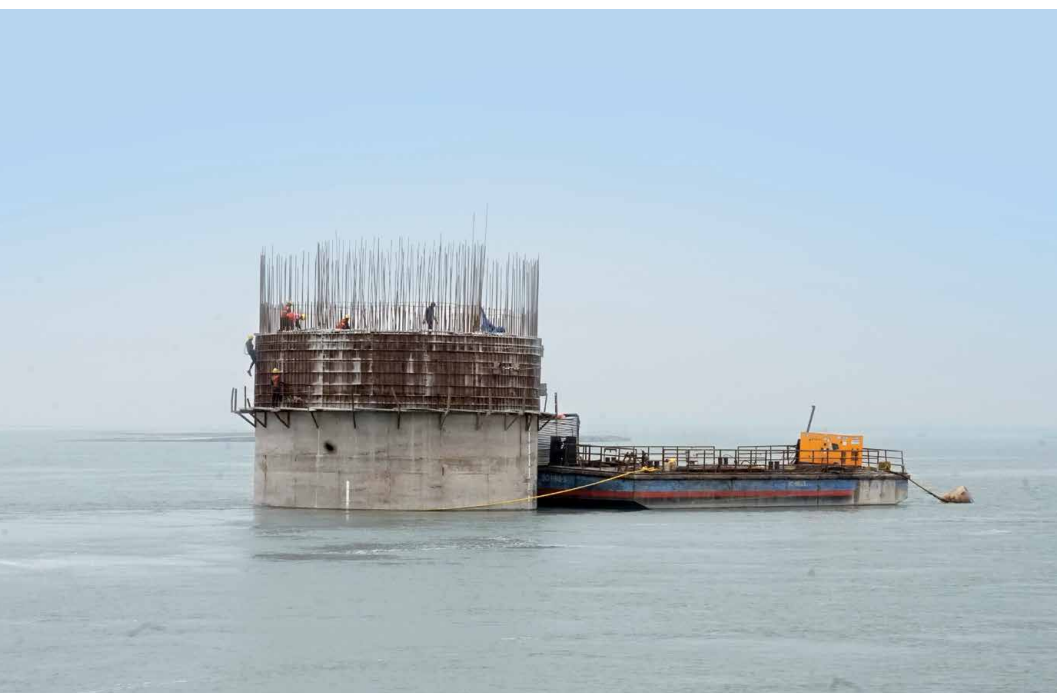
This project calls for 94 such wells, each 40 metres deep. Boring so many wells in the high-current Brahmaputra is a very, very

challenging task.

"In October last, we were lowering a caisson when the weather suddenly turned rough and consequently the river turned turbulent in no time. Despite all the requisite measures, the high current carried away the caisson three km downstream. We were able to intercept it only after an overnight struggle," recalls Manas Ghosh, Head – Well Foundations at the project.

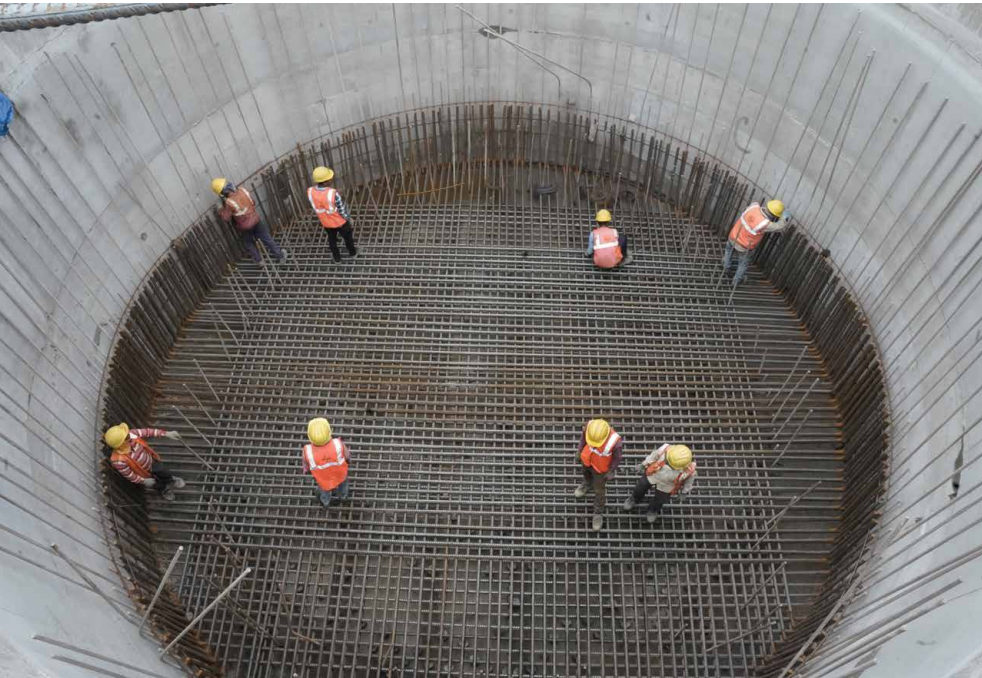
Standing in the middle of Birsing, we could see several wells that have been constructed in the turbulent river and a long row of piers passing through the sandbars towards Dhubri. L&T workmen were busy bending thick iron bars, while yet another batch was preparing to cast a well-cap.

As dusk slowly set in, the rainy winds became intense, so much so that even standing together, we could hardly hear each other. We returned to the base camp at Dhubri, and that night it rained cats and dogs, casting a doubt over the next day's plans.



*A well-foundation at an advanced stage of completion.*





L&T workmen sealing the top of a well bored in the river.

But true to Dhubri's whimsical weather, at dawn, the rains ceased, and as the morning progressed, it turned out to be a bright sunny day. This time, the river channels were calm, allowing our speedboat to cross the south channel of the Brahmaputra for the Phulbari-end of the bridge project.

Due to the prolonged monsoons, the work season here is just about seven months as against 10 months at other project sites in India.

At Phulbari, we came across an amusing sight: the L&T project office is housed over stilts. "During the monsoons, the entire area gets submerged. The stilt house saves our office from getting flooded. At



L&T CMD Mr S N Subrahmanyam (right) with Project Director Mr V R Saravanakumar during a visit to the bridge site in 2023.





*L&T workmen busy bar-bending at Birsing island.*

such times we come to office in boats,” explained Ashok Kumar Singh, the Project Manager at Phulbari.

One needs to visit project sites like this to really understand why L&T prides itself as a builder to the nation. It is not merely a brand slogan – thousands of L&T’s people actually surmount extreme hardships to deliver what the nation needs.

## **BRISK BRIDGING**

The foundation stone for Dhubri-Phulbari Bridge was laid in February 2021 and the scheduled completion deadline is September 2028. As of May 2024, over 48% of the work is completed – much of this pertains to the foundation and substructure jobs. This apart, both at



*To avert flooding, the L&T project office at Phulbari sits on stilts.*

Phulbari and Dhubri-end, around 1.2 km long superstructure has been put in place, which paints a clear picture that the bridge is shaping up fast.

Project Director V R Saravanakumar says that despite the locational disadvantages, L&T's target is to complete the bridge a year in advance, that is, in 2027. And to realise this goal, it has deployed around 1,800 workers – far more than the initial strength planned.

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Phulbari, in West Garo Hills district of Meghalaya, is known for its cashew farms. In 2021-22, Meghalaya produced around 10,000 tonnes of cashew nuts, the bulk of which was processed at Phulbari.

Once the bridge is commissioned, it



Project Manager (Phulbari) Mr Ashok Kumar Singh.

will give cashew and other agricultural produce of Meghalaya, such as rubber, a direct access to the pan-India markets via Siliguri and Kolkata. On the other hand, people of lower Assam and north Bengal will get easy access to Meghalaya's

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picturesque tourist sites.

According to JICA, by 2030, some 2,954,000 people will use this bridge annually, while the cargo movement is pegged at 11,841,000 tonnes per annum. While boosting the region's economy, the dramatic reduction in distance and travel time will cut down the overall emissions. A win-win for the environment and the people, as a new dawn breaks for progress and prosperity of the people. ■



India's longest river-bridge taking shape faster than scheduled.