



## News & Views

### 331 km tunnel projects to be finished by 2026

The government aims to complete tunnel projects totalling 331km by 2026, Minister for Road Transport and Highways Nitin Gadkari said on Wednesday.

“The aggregate length of National Highway tunnels under operation is 331km. Tunnels totalling 196 km in length are under implementation. Besides this, detailed project report for 135km of tunnels are under progress. The construction of these tunnel projects is expected to be completed by 2026,” Minister Gadkari said at a webinar on road tunnels organised by the Ministry in collaboration with Indian Roads Congress.

The Minister said digitisation of tunneling along with other modern concepts need to be adopted for construction of tunnels in India. “With technological advancements, digitisation will change the way geological data is gathered, rock classification is carried out as well as the application of design analysis required for tunneling.”

*Source: [www.thehindu.com](http://www.thehindu.com), 7.5.21*

### Metro tunnels under river in Pune, India

The excavation of Metro tunnels under the Mutha river on the Civil Court-Kasba Peth stretch was completed recently successfully.

Two tunnel boring machines (TBM) had started the excavation at the beginning of April and reached the other side of the river completing 240-metre-long tunnels 13 metres below the riverbed. The Maharashtra Metro Rail Corporation Limited (MahaMetro) has now started the excavation towards the Kasba Peth station — the next stoppage on the underground stretch.

No hurdles were experienced during the tunnel work below the river as the stretch had unbroken basalt rock foundation. This was the first underwater tunnel constructed in Pune, a MahaMetro official said.

The excavation began from the Civil Court end at the beginning of April. Another official from MahaMetro said, “A detailed plan was in place to complete the excavation at the earliest. The alignment of the tunnels was fixed. Both the TBMs progressed according to the plan and reached the other side of the river. One TBM has completed excavation of 240 metres, while another has covered 223 metres. The tunnels are placed about 18 metres below the ground level while crossing the river.”

The Metro’s underground stretch begins from the Agriculture College grounds. It is aligned via Shivajinagar, Civil Court, Kasba Peth, Budhwar Peth and Mandai up to Swargate.

The Metro would cross rivers in Pune and Pimpri Chinchwad at three more locations through elevated bridges.

Hemant Sonawane, the general manager (public relations) at MahaMetro, said, “The excavation from the Agriculture College up to the beginning of Kasba Peth has been completed. Two machines are marching towards Mandai, while the third has started the tunnelling work from the Swargate-end towards Mandai. These machines will meet at Mandai, where they would be pulled out.”

Another official from the MahaMetro said the work of the underground Metro stations had been speeded up besides the tunnelling work. The work at Civil Court, Shivajinagar, Kasba Peth and Swargate stations was expedited in the last three months, the official added.

*Source: www.timesofindia.indiatimes.com, 28.4.21*

## **Egyptian archaeologists unearth 110 ancient tombs in Nile delta**

Archaeologists in Egypt have unearthed nearly 110 burial tombs at an ancient site in a Nile Delta province, the Tourism and Antiquities Ministry said in a statement on Tuesday. Some of the graves discovered at the Koum el-Khulgan archaeological site in Dakahlia province were found still carrying the human remains inside. The tombs were located approximately 150 kilometers northeast of Cairo, the ministry said, adding that at least 68 of these oval-shaped tombs belonged from the Predynastic Period that spanned between 6000-3150BC.

As many as 37 rectangular-shaped tombs from an ancient era known as the Second Intermediate Period (1782-1570BC) were also unearthed. This dated back to the period when the Semitic of Hyksos ruled ancient Egypt, the ministry informed. The remaining graves were found to belong to the Naqada III period that thrived between 3200BC to 3000BC. Inside these ancient mystical tombs, archaeologists found human remains of adults and children as well as the funerary equipment and pottery objects, the Tourism and Antiquities Ministry said.

Secretary-General of the Supreme Council of Antiquities, Dr. Mustafa Waziri said in a Facebook post that this discovery is an important historical and archaeological addition to the site, where among the tombs found are 68, dating back to the period of the civilization of Lower Egypt. And as many as five tombs from the era of Naqada III and 37 tombs from the era of Hyksos were dug out. “The excavations will continue to reveal more secrets from this region,” he said.

*Source: www.republicworld.com, 28.4.2021*

## **Google puts tools rivalling Microsoft and Slack at centre of I/O**

Google unfurled an expansive range of consumer products and gee-whiz research at the kickoff of its marquee annual conference, with announcements spanning quantum computing, garrulous bots, automated photo animations and dermatology screenings.

The technology giant bookended the presentation with tools made for workplaces, underscoring the company's desire to position itself as a leader in the less splashy business of enterprise software.

Alphabet's Google opened its I/O conference on Tuesday (May 18), held virtually, by unveiling a series of upgrades to Workspace, its collaboration software suite.

Traditionally, Google has devoted the conference to mobile software. Instead, it led off with a presentation from Mr Javier Soltero, a vice president hired from Microsoft to manage Workspace. Mr. Soltero introduced a new ability to insert Google Meet video calls directly inside other tools like Docs and Sheets, a direct challenge to Microsoft's Teams product and offerings from Zoom Video Communication Inc.

Google also touted Smart Canvas, a project-management feature. This means Google is plowing forward in a market full of much smaller players, such as Atlassian, Asana and Salesforce.com, which is undergoing a blockbuster acquisition of workplace-chat service Slack.

Even Google's most far-out release of the day was framed as an assist to its cloud business. At the end of the keynote, chief executive officer Sundar Pichai teased a new project called Starline. Using compression technology, Google showed off a way to hold video calls with people as 3D holograms.

"It's as close as we can get to the feeling of sitting across from someone," Mr. Pichai said.

"We have spent thousands of hours testing it in our own offices, and the results are promising," he added. "There's also excitement from our lead enterprise partners." He mentioned media and health-care companies, but did not offer further details.

Revenue in Google's cloud division grew 46 per cent to US\$4.05 billion (S\$5.38 billion) during the first quarter. The company does not share Workspace sales.

*Source: <https://www.straitstimes.com>, 19.5.2021*

## **US military have footage, records of mysterious flying object: Obama**

Amid growing enigma surrounding the presence of aliens and the many videos claiming to show unidentified flying objects (UFOs), former US president Barack Obama on Thursday (May 20, 2021) also weighed in the debate as he confirmed that the US military does have some "footage and records" of mysterious objects.

Speaking on James Corden's 'The Late Late Show', Obama was asked about the issue of UFOs, to which he responded saying there's evidence of objects in the sky and "we don't know exactly what they are".

These mysterious objects have inexplicable behaviour that "we can't explain", Obama also said. "They did not have an easily explainable pattern, and so, you know, I think that people still take seriously trying to investigate and figure out what that is," Obama also said.

Without elaborating his own views on what these mysterious objects were, Obama concluded by saying, "I have nothing to report to you today."

This comes as the American defence department and intelligence agencies are due to release a much-anticipated report on mysterious aerial sightings. The report will be released in June.

*Source: Hindustan Times, 22.5.2021*

## **'A real hot spot': Arctic is warming three times quicker than the planet**

The Arctic has warmed three times more quickly than the planet as a whole, and faster than previously thought, a report warned on Thursday (May 20, 2021).

Arctic sea ice looks set to be an early victim of rising temperatures, with each fraction of a degree making a big difference: the chance of it disappearing entirely in summer is 10 times greater if Earth warms by 2 degrees Celsius above pre-industrial levels compared to 1.5C, the goal set by the 2015 Paris Accord.

The alarming finding comes from the Arctic Monitoring and Assessment Programme (AMAP) in a report timed to coincide with a ministerial meeting this week of the Arctic Council in Reykjavik, which gathers countries bordering the region.

"The Arctic is a real hotspot for climate warming," said Jason Box, a glaciologist at the Geological Survey of Denmark and Greenland.

In less than half a century, from 1971 to 2019, the Arctic's average annual temperature rose by 3.1C, compared to 1C for the planet as a whole.

That's more than previously suspected. In a 2019 report on Earth's frozen spaces, the UN's Intergovernmental Panel on Climate Change (IPCC) concluded that Arctic surface air temperature has likely increased "by more than double the global average".

According to researchers, a turning point came in 2004 when the temperature in the Arctic surged for largely unexplained reason.

Since then, warming has continued at a rate 30 percent higher than in previous decades.

During the summer months from June to September, there is added heat from the ocean, which is increasingly free of ice and the insulation it provides.

*Source: Hindustan Times, 21.5.2021*

### **Jio platforms, Byju's in Time's first list of 100 most influential firms**

Two Indian firms, Reliance Industries' technology arm Jio Platforms and e-learning startup Byju's have figured in the Time Magazine's first-ever list of 100 most influential companies.

On its website, Time said companies shaping the future are at the heart of the first ever TIME100 Most Influential Companies.

To assemble it, TIME solicited nominations across sectors including healthcare, entertainment, transportation, technology and evaluated each one on key factors, including relevance, impact, innovation, leadership, ambition and success.

"The result is a diverse array of 100 institutions, from the tech startup engineering a smarter way to recycle to the cryptocurrency firm reimagining the future of money to the pharma titans creating the vaccines of tomorrow (and today). Together, these businesses and the leaders who steer them are helping to chart an essential path forward," it said.

It listed Jio Platforms under the Innovators category alongside Zoom, Adidas, TikTok, Ikea, Moderna and Netflix.

"Over the past few years, Reliance Industries, the Mumbai-based conglomerate, has built India's largest 4G network by charging some of the lowest data rates in the world (less than 5cents a month for 1 GB).

"Now leading investors are turning to Jio Platforms -- the holding company for Reliance's digital businesses -- to reach its more than 410 million subscribers," it said.

Among them are Facebook, to develop a WhatsApp-based e-commerce platform, and Google, with which it is aiming to roll out low-cost 5G smart phones.

Last year, Jio raised over USD 20 billion in capital, a testament to the value and potential of its rapidly growing user base.

Byju's was listed alongside Tesla, Huawei, Shopify, Airbnb and DiDi Chuxing in the Disruptors category.

"Byju Raveendran, the founder of Indian e-learning startup BYJU'S, knows how to press an advantage. As users of his company's signature app nearly doubled to 80 million during the COVID-19 pandemic, he went on a spending spree, fuelled by funding from investors like Tencent and BlackRock," Time said.

The Byju's summer acquisition of WhiteHat Jr, an app that teaches kids to code along with the purchase of Silicon Valley educational-game maker Osmo in 2019 - gives the company a foothold in the US e-learning market.

In April, the company announced plans to dramatically expand outside its home base in India, adding one-on-one lessons in the US, the UK, Indonesia, Mexico and Brazil.

Byju's also snapped up a leading Indian test-prep school for almost USD 1 billion.

"The explosive growth has turned BYJU'S into one of India's most lucrative startups increasing the company's expected value to USD 15 billion, up from USD 5.5 billion in July 2019," it added.

*Source: www.business-standard.com, 28.4.2021*

## **Beijing sees record low births; its population set to start shrinking**

Beijing recorded its lowest number of births in 2020, official data has revealed, with a top expert saying the Chinese capital's population could start shrinking from 2022, and China's by 2027.

The change in Beijing's demographics, a city of more than 21 million people, is an indication that the number of people in China could start to decline six years from now, according to a report published in the tabloid Global Times on Wednesday.

The number of newborns in Beijing hit a new low in a decade in 2020, decreasing by 32,000 as against the previous year to a total of 100,368.

Not just Beijing, a dozen Chinese cities in eastern China's Zhejiang and southern China's Guangdong provinces have reported the numbers of newborns in 2020 hitting a new low in the past six to 10 years.

The state media report comes a day after the London-based Financial Times newspaper reported that China was poised to report its first population decline in five decades following a once-in-a-decade census, which was completed last December.

The FT report said the latest census figures are expected to show China's population slipping to under 1.4 billion.

The statistics from the new census were expected to be released earlier this year, but have been delayed possibly because of the complexities that have emerged around the population figure.

The population figure is considered sensitive and won't be published until government departments have a consensus on the data and its implications, The Financial Times wrote, citing its sources.

A population drop will add pressure on Beijing to roll out measures to encourage couples to have more children and avert an irreversible decline, the report said.

Overall, the number of babies born in China fell by 580,000 to 14.65 million in 2019 and the birth rate of 10.48 per thousand was the lowest since 1949 when present methods of collating data began, according to the National Bureau of Statistics.

The two-child policy implemented from 2016 has failed to make an impact on the low birth rates. Speaking to Global Times, Huang Wenzheng, a demography expert from the Beijing-based think-tank Centre for China and Globalisation, said the narrowing gap between newborns and deaths indicated that the capital city may see more deaths than newborns starting 2022 - which will mark a natural negative growth in population.

*Source: Hindustan Times, 29.4.2021*

### **Einstein's handwritten letter sells for \$1.2 million**

A letter written by Albert Einstein in which he writes out his famous  $E = mc^2$  equation has sold at auction for more than \$1.2 million, about three times more than it was expected to get, Boston-based RR Auction said Friday (May 22, 2021).

Archivists at the Einstein Papers Project at the California Institute of Technology and the Hebrew University of Jerusalem say there are only three other known examples of Einstein writing the world-changing equation in his own hand.

This fourth example, the only one in a private collection, only became public recently, according to RR Auction, which had expected it to sell for about \$400,000. "It's an important letter from both a holographic and a physics point of view," Bobby Livingston, executive vice president at RR Auction said, calling the equation the most famous in the world.

The equation - energy equals mass times the speed of light squared - changed physics by demonstrating that time was not absolute and that mass and energy were equivalent.

The one-page handwritten letter in German to Polish American physicist Ludwik Silberstein is dated Oct. 26, 1946. Silberstein was a well-known critic and challenger to some of Einstein's theories.

"Your question can be answered from the  $E = mc^2$  formula, without any erudition," Einstein wrote in the letter written on Princeton University letterhead, according to a translation provided by RR Auction.

The letter was part of Silberstein's personal archives, which were sold by his descendants.

The buyer was identified by RR only as an anonymous document collector.

The rarity of the letter set off a bidding war. Five parties were bidding aggressively at first, but once the price reached about \$700,000, it became a two-party contest, he said.

The auction began May 13 and concluded Thursday.

*Source: Hindustan Times, 23.5.2021*



## **Memories!!**

### **Excerpts of a special lecture delivered in a national workshop on application of Rock Engineering in Nation's Development by Prof. Bhawani Singh**

*"More you share inspiration of God, more it increases"*

A field of knowledge may become popular if its socio economical relevance is proved repeatedly. Global commercial relevance is better. The word repetition is important. There is immense power in repetition as the public memory is short. This is one of the roles of conferences.

Our prayer to God is development of hygienic society. We need to perhaps undo past mistakes. We would love to mention a thrilling discovery of entropy of living beings. The biochemistry has proved that entropy of living systems is negative. In other words, living systems have inherent ability to reduce disorderliness in nature continually for all the time. As such, there is urgent need to use healthy bio- systems to recreate hygienic environment. Simultaneously use of unhygienic technology should be stopped to cut down increase in the entropy or related disorderliness or chaos. We should encourage clean technology even if it is costly and slow, as there is nothing precious than health for all. This is the secret of developing a hygienic and healthy nation. This is the concern of all here.

The aim of technical education is to enable engineers and researchers to be self-reliant. Rich nations are tempting poor nations to become dependent on them. On the contrary, we should try to become self-reliant in the selected fields like Rock Mechanics, Tunnelling Technology, Engineering Geology and Geo Technical Engineering. We should perfect our own appropriate technologies and strategies. Europe is the living example of developing self-reliance even after crippling wars.

Importance of Rock Mechanics and Geology is now realized by even chief ministers of hill states. They are inviting companies for clean hydropower development and landslide control in Himalaya. It is unfortunate that vast damage during recent earthquakes has made our leaders and people realize the utmost importance of Civil Engineering over all other branches of engineering. Civil Engineering is the heart and soul of a civilized society.

### ***Some Humble Suggestions***

The following ideas are presented for future R&D to diffuse social crises.

- Underground shelters should be built in cities prone to major natural disasters and wars. Underground shelters may be used as the places of worship in peace time as a symbol of eternity.
- Indian construction companies have a base of precious experiences of tunnelling within most challenging rock conditions. As such, they have potential to compete with the global companies in tunnelling.
- A delegation of engineers, scientists and planners should visit underground space facilities in European countries. They should learn finer details of appropriate UST. Underground space development is a must in earthquake prone cities.
- We should identify software needs in soil and rock engineering. India should develop and export their software packages. They will sell like hot cakes.
- The need of the time is to use methods of rigorous researches in the field and then try to search simple and practical thumb rules as in U.S.A.

- There is a need to prepare insitu horizontal stress map of India. This map may be used for micro-zonation of seismicity.
- There is a need to prepare landslide zonation maps of Himalayan region for safe development of hilly regions.

We hope that we have given a field-tested knowledge base for R&D in the 21st century. It is interesting to know that simple solutions are possible for many complex and fuzzy problems of Rock Engineering. Our desire was to prove very simple classification approach to be crude and irrational. Yet life long research proved it to be amazingly successful. It is a great joy to find simple analysis giving realistic results of field problems such as landslides.

In our humble opinion, Government of India subsidy grant should be allocated to hill states which are prone to frequent natural disasters to provide cover to deadly risks to the hill people.

I thank you again for inspiring research on Rock Mechanics in India.

*Source: Proceedings of the National Workshop on Rock Engineering  
in Nation's development (In honour of Prof. Bhawani Singh),  
27-28 April, 2001, Roorkee.*