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SEPTEMBER 2024

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Chief Executive

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11 New Rail Line Projects

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Editorial



With an aim to enhance connectivity, ease travel and reduce logistics costs in Indian Railways, the Cabinet Committee on Railways in August approved a total of 11 new rail line projects, including a multi-tracking project. These projects, to be built at an estimated cost of ₹31,113 crore, will go a long way in reducing oil imports and carbon emissions. Also, during the construction of these projects, there will be direct employment of about 4.14 crore man-days.

The Cabinet Committee on Economic Affairs, chaired by hon'ble Prime Minister Shri Narendra Modi, approved 8 new line projects with a total estimated cost of ₹24,657 crore in its meeting on 9th August, 2024 and 3 projects with a total estimated cost of ₹6456 crore in its meeting on 28th August, 2024.

The projects are in line with hon'ble PM Shri Modi's vision of a New India which will make people of the region 'Atmanirbhar' by way of comprehensive development in the area which will enhance their employment/self-employment opportunities. The projects are a result of PM-Gati Shakti National Master Plan for multi-modal connectivity which have been possible through integrated planning and will provide seamless connectivity for the movement of people, goods and services.

The 11 projects covering 21 districts in 8 States i.e., Odisha, Maharashtra, Andhra Pradesh, Jharkhand, Bihar, Telangana, West Bengal and Chhattisgarh will increase the existing network of Indian Railways by about 1200 km.

In 8 projects (Gunupur-Therubali (New Line), Junagarh-Nabrangpur, Badampahar–Kandujhargarh, Bangriposi–Gorumahisani, Malkangiri–Pandurangapuram (via Bhadrachalam), Buramara–Chakulia, Jalna–Jalgaon and Bikramshila–Katareah), 64 new stations will be constructed, providing enhancing connectivity to 6 aspirational districts (East Singhbum, Bhadadri Kothagudem, Malkangiri, Kalahandi, Nabarangpur, Rayagada), approx. 510 villages and about 40 lakh people.

In 3 projects (Bargarh Road-Nawapara Road, Sardega-Bhalumuda and Jamshedpur-Purulia-Asansol), 14 new stations will be constructed, providing enhancing connectivity to two aspirational districts (Nuapada and East Singhbum). new line projects will provide connectivity to a large number of villages and about 11 lakh people. The multi-tracking project will enhance connectivity to approx. 1300 villages and about 19 lakh people.

These are essential routes for the transportation of commodities such as agricultural products, fertilizer, coal, iron ore, steel, cement, limestone etc. The capacity augmentation works will result in additional freight traffic of magnitude 188 MTPA (million tonnes per annum).

The Railways being environment-friendly and an energy-efficient mode of transportation will help both in achieving climate goals and minimizing logistics cost of the country, reducing oil import (42.20 crore litres) and lowering CO_2 emissions (240 crore kg) which is equivalent to the plantation of 13.2 crore trees.

Please let us know how you like our issue.

The Hon'ble Prime Minister Flagged Off
Three Vande Bharat Trains

- ***Vande Bharat is the new face of modernization of Indian Railways***
- ***Nation is inching towards the goal of Vikist Bharat with modernization and expansion of Vande Bharat trains in the country***
- ***Rapid development of Southern states is imperative to accomplish the goal of Viksit Bharat***



The hon'ble Prime Minister, Shri Narendra Modi flagged off 3 Vande Bharat trains via video conferencing. Governor of Uttar Pradesh, Smt Anandi Ben Patel, Governor of Tamil Nadu, Shri R N Ravi, Chief Minister of Uttar Pradesh, Shri Yogi Adityanath and Minister of Railways, Shri Ashwini Vaishnaw were virtually present on the occasion.

The hon'ble Prime Minister, Shri Narendra Modi flagged off three Vande Bharat trains via video conferencing on 31st August, 2024. Realizing the Prime Minister's vision of 'Make in India' and Aatmanirbhar Bharat, the state-of-the-art Vande Bharat Express will improve connectivity on three routes: Meerut—Lucknow, Madurai—Bengaluru and Chennai—Nagercoil. These trains will boost connectivity in Uttar Pradesh, Tamil Nadu and Karnataka.

Addressing the occasion, the hon'ble Prime Minister said that a new chapter is being written in the development journey of India from the North to the South as Madurai—Bengaluru, Chennai—Nagercoil and Meerut—Lucknow Vande Bharat trains are being flagged off. The Prime Minister underlined that the nation is inching towards the goal of Vikist Bharat with the modernization and expansion of Vande Bharat trains in the country. Referring to the three new Vande Bharat trains being flagged off the hon'ble Prime Minister said that these have provided connectivity to important cities as well as historic towns in the country. 'Temple City Madurai is now connected with IT City Bengaluru', hon'ble PM Shri Modi said that this would not only ease connectivity, especially during the weekends or festive period but also be very beneficial for pilgrims. The Chennai—Nagercoil route would hugely benefit students, farmers and IT professionals. He congratulated the citizens on the three new Vande Bharat trains.

The hon'ble Prime Minister underlined that the rapid development of Southern states is imperative to accomplish the goal of Viksit Bharat. 'Southern India is the land of immense talent, resources and opportunities', hon'ble PM Modi remarked. He informed that more than ₹6,000 crore has been

allocated for Tamil Nadu's rail budget this year. He further added that the total number of Vande Bharat trains in Tamil Nadu would go up to 8. Similarly, a budget of more than ₹7,000 crore has been allocated for Karnataka in this year's Budget. 8 Vande Bharat Trains are connecting Karnataka.

The hon'ble Prime Minister stated that railway tracks are being improved, electrification of railway tracks is taking place and railway stations are being modernized. The hon'ble Prime Minister underlined that while RRTS has helped connect Meerut with the national capital New Delhi, now the distance to the state capital Lucknow has also been reduced with the introduction of Vande Bharat.

'Vande Bharat is the new face of modernization of Indian Railways', hon'ble PM Shri Modi remarked. He highlighted the demand for Vande Bharat in every city and every route and said that the advent of high-speed trains has instilled confidence in the people to expand their business and employment and also their dreams. He informed, 'Today, 102 Vande Bharat rail services are being operated across the country and more than 3 crore people have travelled in these trains so far'. He emphasized that these numbers are not only proof of the success of Vande Bharat trains but also a symbol of the aspirations and dreams of India.

The hon'ble Prime Minister underlined that modern rail infrastructure is a strong pillar of the vision of Viksit Bharat. Outlining the rapid progress in the sector, the hon'ble Prime Minister mentioned doubling and electrification of rail lines, running of new trains and construction of new routes. He informed that more than ₹2.5 lakh crore has been allocated to the railways in this year's budget and the government is connecting Indian Railways with high-tech services to transform its old image. Speaking about expansion plans, the hon'ble Prime Minister said that Amrit Bharat trains are also being expanded along with Vande Bharat. He further added that the sleeper version of Vande Bharat is to be flagged off very soon. He also spoke about Namo Bharat trains being run for the convenience of people and Vande Metro will soon be started to tackle the traffic problems within cities.

The hon'ble Prime Minister said that with the Amrit Bharat Station Yojana, there is improvement of the railway stations, while giving a new identity to the cities. Shri Modi said, 'More than 1300 railway stations in the country are being renovated with some being built like airports'. Further, he added that even the smallest stations are being developed with state-of-the-art facilities, which would result in increasing the Ease of Travel.

'When connectivity infrastructure like railways, roadways and waterways is strengthened, the country strengthens', the hon'ble Prime Minister remarked, adding that it benefits the common citizens of the country be it the poor or the middle class. He gave examples of an increase in employment opportunities and new opportunities reaching the villages with the expansion of infrastructure. Hon'ble PM also credited cheap data and digital infrastructure for the advent of new possibilities in villages. 'When hospitals, toilets, and pucca houses are built in record numbers, even the poorest of the poor get the benefit of the country's development. When infrastructure like colleges, universities and industry grows, it also increases the possibility of the progress of the youth', the hon'ble Prime Minister emphasized.

Concluding the address, the hon'ble Prime Minister said that the Railways have worked hard to raise hopes of resolving decades-old problems over the years. He acknowledged that India has a long way to go in this direction and pledged to not stop until Indian Railways guarantees a comfortable journey for everyone, be it the poor or the middle class. He expressed confidence that the infrastructural development in the country will play a major role in ending poverty. 'I once again congratulate the people of Tamil Nadu, Karnataka and Uttar Pradesh for the three new Vande Bharat trains', hon'ble Prime Minister, Shri Modi concluded.■







PM GatiShakti



CENTRAL GOVERNMENT APPROVED

11 NEW LINE PROJECTS

ACROSS INDIAN RAILWAYS



IMPROVING CONNECTIVITY AND MOBILITY

- Providing direct connectivity and facilitating ease of travel.
- Minimising logistics costs.
- Enhancing logistics by connecting.
- Reduction in oil imports and lower CO_2 emissions.
- Expand Indian Railways' network by 1,200 km.
- Enhance rail connectivity to 7 aspirational districts: East Singhbhum, Bhadradri Kothagudem, Malkangiri, Kalahandi, Nabarangpur, Nuapada and Rayagada.
- Facilitate transportation to tourist spots and pilgrim destinations.
- Streamline transportation of essential commodities such as agriculture products, fertiliser, coal, iron ore, steel, etc.
- Generation of direct employment: 4.14 crore man-days during construction approx.
- Covering 21 districts in 8 States: Odisha, Maharashtra, Andhra Pradesh, Jharkhand, Bihar, Telangana, Chhattisgarh and West Bengal.
- 78 new stations to be built.
- Additional freight traffic after capacity augmentation: 188 MTPA (million tonnes per annum).

Cabinet Committee on Economic Affairs, chaired by hon'ble Prime Minister Shri Narendra Modi, approved 8 new line projects with a total estimated cost of ₹24,657 crore in its meeting on 9th August, 2024 and 3 projects with a total estimated cost of ₹6456 crore in its meeting on 28th August, 2024. These projects, to be built at an estimated cost of ₹31,113 crore, will go a long way in reducing oil imports and carbon emissions. Also, during the construction of these projects, there will be direct employment of about 4.14 crore man-days during construction.

The new line proposals will provide direct connectivity and improve mobility, providing enhanced efficiency and service reliability for Indian Railways. The projects are in line with the hon'ble Prime Minister Shri Modi's vision of a New India which will make people of the region 'Atmanirbhar' by way of comprehensive development in the area which will enhance their employment/self-employment opportunities.

The projects are result of PM-Gati Shakti National Master Plan for multi-modal connectivity which have been possible through integrated planning and will provide seamless connectivity for movement of people, goods and services.

The 11 projects covering 21 Districts in 8 States i.e., Odisha, Maharashtra, Andhra Pradesh, Jharkhand, Bihar, Telangana, Chhattisgarh and West Bengal will increase the existing network of IR by 1,200 Kms.

With these projects 78 New Stations will be constructed, providing enhancing connectivity to 7 Aspirational Districts (East Singhbum, BhadadriKothagudem, Malkangiri, Kalahandi, Nabarangpur, Nuapada and Rayagada), approx. 1,810 villages and about 59 lakh population. Ajanta Caves, a UNESCO World Heritage site will be connected to Indian Railway network facilitating large number of tourists.

These are essential routes for transportation of commodities such as agriculture products, fertilizer, coal, iron ore, steel, cement, bauxite, limestone, aluminium powder, granite, ballast, containers etc. The capacity augmentation works will result in additional freight traffic of magnitude 188 MTPA (Million Tonnes Per Annum). The Railways being environment-friendly and an energy-efficient mode of transportation will help both in achieving climate goals and minimizing logistics cost of the country, reducing oil import (42.20 crore litres) and lowering CO_2 emissions (240 crore kg) which is equivalent to the plantation of 13.2 crore trees.

S. No.	New Railway Line route	Length of Line (km)	Districts Covered	States
1	Jalna & Jalgaon	174	Aurangabad	Maharashtra
2	Badampahar & Kendujhargarh	82	Keonjhar & Mayurbhanj	Odisha
3	Bangriposi & Gorumahisani	86	Mayurbhanj	Odisha
4	Bikramshila & Katareah	26	Bhagalpur	Bihar
5	Buramara & Chakulia	60	East Singhbhum, Jhargram & Mayurbhanj	West Bengal, Odisha, Jharkhand
6	Gunupur & Therubali	74	Rayagada	Odisha
7	Junagarh & Nabrangpur	116	Kalahandi & Nabrangpur	Odisha
8	Malkangiri & Pandurangapuram	174	Malkangiri, East Godavari & Bhadradri Kothagudem	Odisha, Andhra Pradesh, Telangana
9	Jamshedpur, Purulia & Asansol	121	Purulia, Bardhaman & East Singhbhum	West Bengal, Jharkhand
10	Sardega & Bhalumuda	37	Sundargarh & Raigarh	Odisha, Chhattisgarh
11	Bargarh Road & Nawapara Road	138	Bargarh & Nuapada	Odisha

Jalna and Jalgaon



Maharashtra : Jalna, Aurangabad and Jalgaon

Land to be acquired : 935 Ha

Benefits

- Jalna is situated on Manmad–Nanded section in Marathwada region and Jalgaon Junction lies on Bhusawal–Kalyan section in North Maharashtra.
- The Ajanta Caves is a UNESCO World Heritage Site and a renowned tourist destination in India, captivating visitors from across the world.
- Presently, the nearest railway station to the Ajanta Caves is the Jalgaon railway station, which is located about 59 km away and from Jalna the distance is about 123 km by road.
- In addition to connectivity to Ajanta caves, this new line project will also provide shorter connectivity of Marathwada region to North Maharashtra, Coastal areas of Maharashtra, Madhya Pradesh and Gujarat.
- The Project will also provide connectivity to Sillod which is an expanding industrial hub that accommodates a range of manufacturing sectors, including construction steel and is a significant producer of agricultural products such as soybeans, cotton, sugar etc.

CO_2 Emissions saved
54 crore kg equivalent to 2.2 crore trees

Length
174 km (approx.)

Estimated Cost
₹ 7,106 Cr.

Bikramshila-Katareah

Bihar: Bhagalpur

Land to be acquired: 194 Ha

Length
26 km (approx.)

Benefits

- Bikramshila station is located on the Bhagalpur – Sahibganj line and Katareah station is located on Katihar – Barauni Line .
- The river Ganga flows through Bihar for approximately 450 km, from Buxar to Rajmahal. There are only three rail bridges across River Ganga which are saturated.
- This new line project will improve mobility of North Bihar, West Bengal, Northeast region, to South Bihar, Jharkhand and Odisha by construction of an additional mega bridge across Ganga.
- Providing shorter and effective mode of transport to evacuate coal from eastern coalfields in Rajmahal district.

CO_2 emissions saved
95 crore kg equivalent to 3.8 crore trees

Estimated Cost
₹ 2,549 Cr.

Badampahar – Kendujhargarh
Bangriposi – Gorumahisani
Buramara – Chakulia

Odisha: Mayurbhanj and Keonjhar
Jharkhand: East Singhbhum, **West Bengal:** Jhargram

Length
228 km (approx.)

Benefits

- Mayurbhanj is tribal dominated and largest district of Odisha.
- North & Central India Connectivity: New route for traffic from East coast towards Northern India avoiding the congested Rupsa-Kharagpur-Tata nagar route.
  (Howrah–Mumbai HDN & Howrah–Chennai HDN route)
- Capital and Shreekshetra Puri Connectivity: The Project will provide connectivity from Badampahar and Rairangpur area to Cuttack-Bhubaneswar-Puri via Keonjhar.
- Port Connectivity: It will reduce the distance between Tatanagar and Paradip and other east-coast ports.
- Nature and wildlife Tourism: Mayurbhanj has been listed by TIME Magazine among the 50 extraordinary destinations to explore in its list of the World's Greatest Places of 2023. Only two destinations of India are included (Ladakh and Mayurbhanj).
- UNESCO Similipal Biosphere Reserve (World famous Similipal Tiger Reserve)

CO_2 emissions saved
259 crore kg equivalent to 10.3 crore trees

Estimated Cost
₹ 6,294 Cr.

Gunupur-Therubali

Maharashtra: Jalna, Aurangabad and Jalgaon
Land to be acquired: 474 Ha

Length
74 km (approx.)

Benefits

- Naupada station is situated on Howrah–Chennai main line. Naupada–Gunupur is a dead-end line.
- KBK region connectivity : Extension of Naupada-Gunupur line up to Therubali will provide direct and shorter connectivity (96 km shorter) for tribal dominated districts of Koraput, Rayagada, Kalahandi, Nabarangpur and Kandhamal with Kolkata-Chennai main route.
- Rice producing area of Odisha and Chhattisgarh: Bolangir, Nuapada, Kalahandi (Odisha) Mahasamund and Raipur (Chhattisgarh) will have faster access of Gopalpur, Bhavanapadu ports.
- South Odisha to Western Odisha Connectivity: It will connect important towns Paralakhemundi, Kashinagar and Gunupur in South Odisha to important towns like Bhawanipatnam, Titlagarh, Bolangir, Sambalpur and Rourkela in western Odisha.
- Bauxite region connectivity: There is a huge Aluminium manufacturing potential in the region. This line will provide port connectivity of this region to Gopalpur , Bhavanapadu, Paradeep, Dhamara and Haldia port.
- Gunupur subdivision will have rail connectivity to it's district town Raygada. Earlier it was connected via Vizianagaram having 331 km, now will be only 100km.

CO_2 emissions saved
92 crore kg CO_2 equivalent to 3.7 crore trees

Estimated Cost
₹ 1,326 Cr.

Junagarh - Nabarangpur
Malkangiri - Pandurangapuram via Bhadrachalam

Odisha: Kalahandi and Malkangiri, **Telangana:** East Godavari
Andhra Pradesh: Bhadradri Kothagudem

Land to be acquired: 1697 Ha

Length
460 km (approx.)

Benefits

- Connectivity to Tribal districts: Tribal and Aspirational districts of Kalahandi, Nabarangpur, Koraput, Rayagada, Malkangiri districts were affected by Left Wing Extremism (LWE) in the past. Now economic activities have started and peace is being restored in these districts.
- Nabarangpur-Jeypore-Malkangiri new line project (170 km) sanctioned in 2017-18. To provide complete connectivity to the above region, Junagarh-Nabarangpur (116 km) and Malkangiri-Bhadrachalam-Pandurangapuram new line (174 km) are sanctioned now.
- New rail corridor parallel to eastern coast of India: This will give additional rail route to coastal movement . Existing: Vijaywada-Vishkapatnam-Bhuwaneshwar-Culcatta New: Warangal-Bhadrachalam-Malkangiri-Jaypore-Titlagarh-Sambhalpur-Rourkela-Tata-Asansol.
- Disaster Management-Back-up Route: This new line will provide connectivity to various districts of Odisha even during Cyclones which affect connectivity in the coastal areas (Howrah – Vijayawada coastal route).
- Distance from Southern Odisha and Bastar region to South India will reduce by 124 km and will also bypass busy corridors like Rajamundary and Vishakhapatanam.

CO_2 emissions saved
267 crore kg equivalent to 10.7 crore trees

Estimated Cost
₹ 7,383 Cr.

Sardega-Bhalumuda
(New Double Line)

Odisha : Sundargarh
Chhattisgarh : Raigarh

Length
37 km (Approx.)

Benefits

- Odisha and Chhattisgarh have large areas comprising tribal populations, strengthening the cultural and social ties between these districts.
- People residing in adjoining villages will benefit from this Rail line as currently, there is no transportation service available. People are heavily dependent on their vehicles.

CO_2 emissions saved
84 crore kg CO_2 equivalent to 3.4 crore trees

Estimated Cost
₹ 1,360 Cr.

Jamshedpur-Purulia-Asansol
(3rd New Rail Line Project)

West Bengal: Purulia and Bardhaman

Jharkhand: East Singhbum

Land to be acquired: 474 Ha

Length
121 km (Approx.)

Benefits

- Situated in West Bengal and Jharkhand, this section strengthens a critical link between the 2 states.
- This multi-tracking project will allow smooth and efficient movement of passengers, goods, and services.
- It will improve connectivity between major trunk routes, Delhi-Howrah and Howrah-Mumbai.
- The project section handles the transportation of iron ore and coal to the Steel plants at Burnpur and Durgapur and the finished steel movement.
- This project is in the vicinity of tourist (Maithan Dam and Churilia) and pilgrimage centres (Kalyaneswari Temple and Ghagar Buri Chandi Temple).

CO_2 emissions saved

74 crore kg CO_2 equivalent to 3 crore trees

Estimated Cost
₹ 2,170 Cr.

Bargarh Road-Nawapara Road
(New Line)

Odisha: Bargarh and Nuapada

Length
138 km (Approx.)

Benefits

- This new line project covers 2 important districts of Odisha, Bargarh and Nuapada.
- Nuapada is an aspirational district and Bargarh is known as the 'Rice Bowl of Odisha'.
- This Rail line will reduce distance between Sambalpur and Raipur by approximately 87 km.
- A goods shed in pipeline in Padampur is planned to ease rice transportation as well as inward cement, steel and fertiliser movement.
- Improved connectivity to Sambalpur will promote Sambalpuri cotton handloom textile products.
- The new line is in close vicinity to the famous Nrusinghnath Temple in Odisha.

CO_2 emissions saved

82 crore Kg CO_2 equivalent to 3.3 crore trees

Estimated Cost
₹2,926 Cr.

Chief Minister, MP Flagged Off Bhopal-Rewa-Bhopal New Superfast Bi-Weekly Train Service



Chief Minister of Madhya Pradesh, Dr. Mohan Yadav flagged off new superfast bi-weekly Bhopal-Rewa-Bhopal Express from Bhopal Railway station. The new train service will facilitate passenger traffic between Bhopal and Rewa and strengthen connectivity between the two cities. This will not only facilitate the travel of passengers but will also contribute to the economic, social, tourism and cultural development of both the cities.On this occasion, Deputy CM, Shri Jagdish Devda, Shri Vishwas Sarang, MP, Bhopal, MLAs, Mayor and other dignitaries were also present.■

A Significant Milestone, First Time 15 Wagons Loaded

Marking a significant milestone, first time 15 wagons were loaded with 950 MT of FCI Food Grains loaded from Ambala Division of Northern Railway unloaded at Khongsang in Manipur on 13th July, 2024.

This train was received by Shri N. Biren Singh, CM of Manipur at Khongsang station.■



Successful Trial of Vande Bharat Express with 20 Coaches at a Speed of 160 kmph Conducted



The semi-high speed Vande Bharat Express of the Indian Railways was once again successfully tested on the West Central Railway. RDSO Lucknow team in collaboration with Operations Department conducted trial run of 20 coach Vande Bharat rake in Kota division of West Central Railway at a speed of 160 kmph. Earlier, an 18-coach Vande Bharat rake was successfully tested at 180 kmph in Kota division. This trial on augmentation of 2 coaches in this rake is again being done for analysis of various technical parameters of braking system behaviour.

On 30th July 2024, this rake was trialled on Lakheri-Kota section up line between Gurla to Lakheri at a speed of 160 kmph thrice. The test was conducted specifically to analyse the force exerted on the coupler connecting two coaches of this rake at a speed of more than 160 kmph. All the coaches carry equal weight of the passengers. The trial run of this rake was carried out under the guidance of Joint Director (Trials), RDSO, Shri S. K. Yadav. The railway employees of Kota coordinated with the Lucknow team.■

Minister of Railways and Minister of Commerce & Industry Flagged Off new Train between Bandra Terminus and Madgaon





Minister of Railways, Shri Ashwini Vaishnaw flagged off the new train between Bandra Terminus and Madgaon through video conferencing (left photo). Shri Piyush Goyal, Minister of Commerce & Industry flagged off the new train from Borivali station (right photo)

Shri Ashwini Vaishnaw, Minister of Railways, (through video conferencing) and Shri Piyush Goyal, Minister of Commerce & Industry flagged off the inaugural trip of the new Bandra Terminus–Madgaon bi-weekly train from Borivali railway station on 29th August, 2024. Several local public representatives were also present alongwith other distinguished guests including Shri Ashok Kumar Misra, General Manager of Western Railway and senior railway officers.

Shri Ashwini Vaishnaw in his address through video conferencing, mentioned that the long standing demand of commencing a train from western suburbs to Konkan has now been fulfilled. Shri Vaishnaw emphasized that the budget outlay in FY 2024-25 for Maharashtra is ₹15,940 crore. He also informed that in last 10 years, Indian Railways has laid approx. 1830 km of railway tracks in Maharashtra. Shri Vaishnaw also briefed about the various ongoing works in Maharashtra which are being carried out with an investment of ₹81,580 crore.

Speaking on Mumbai Suburban, Minister of Railways informed that 12 infrastructure projects are under execution in Mumbai region at a cost of ₹16,240 crore. He also mentioned that 132 railway stations are being developed under the Amrit Station Scheme at a cost of ₹6411 crore in Maharashtra. This year Indian Railways is also running 342 Ganpati Special trains.

Shri Piyush Goyal in his address mentioned that it is a momentous occasion as the age long demand as well as dream of Konkan people residing in north Mumbai has come true. This regular train will provide direct connectivity from western suburbs to Konkan region. He also mentioned that this train is already receiving tremendous response and requested the people to avail the facility of this new train.■



Indian Railways Excelled in Olympics Again



Shri Aman Sehrawat, Grappler, Bronze Medalist and Shri Amit Rohidas, part of Indian Men Hockey team which secured Bronze Medal in the Paris Olympics, 2024 met Minister of Railways, Shri Ashwini Vaishnaw. Smt. Jaya Varma Sinha, Chairman & CEO, Shri Anil Kumar Khandelwal, Member, Infrastructure, Shri Naveen Gulati, Director General, (HR) and Shri Prem Chand Lochab, EDE (Sports) were also present

Indian Railways (IR) has been the pioneer in the development and promotion of sports in the country through its sports wing Railway Sports Promotion Board (RSPB). Railways have supported a sizeable number of sportspersons of 29 game disciplines by ensuring security through job and further growth through out of turn promotions and various incentives based on their performance in sports. As on date more than 9000 sportspersons are on its rolls, which include 28 Padmashri, 178 Arjuna, 12 Dhyanchand, 13 Dronacharya and 9 Major Dhyan Chand Khel Ratna awardees.

IR sportspersons have glorified the prestige of not only Railways but also of the nation itself at international platforms with their medal winning performances in Olympics, Commonwealth Games, Asian Games and various world championships. IR sportspersons have once again shown their outstanding performances in XXXIII Olympic Games held in Paris, France from 24th July to 11th August 2024 by contributing for 3 medals in the country's medal tally of six. In Paris Olympic Games, a total of 18 IR athletes out of 117 Indian contingent of athletes and 2 IR coaches represented India in the largest sporting event of the World. Out of them, 4 athletes represented the country in the prestigious Olympic events for multiple times. Ms. Vinesh Phogat represented the country in Olympics for the third time, while Shri Amit Rohidas, Ms. Annu Rani and Ms. Priyanka for the second time.

Shri Aman Sehrawat, Grappler from NR and Shri Swapnil Kushale, Shooter from CR won Bronze medals in individual events, whereas Shri Amit Rohidas, Hockey player from ECoR was part of Indian Men Hockey Team, which secured Bronze Medal second time in a row in Olympics. In addition to this, Shri Arjun Babuta, Shooter from NWR secured 4th position in 10 meter Air Rifle event. Ms. Vinesh Phogat, woman wrestler from NR had created history by reaching in final in 50kg Women Wrestling, however she was disqualified due to some technical glitches and missed a medal.

In order to boost their morale, Shri Swapnil Kushale (CR) and Shri Aman Sehrawat (NR) have been promoted to Gazetted Group 'B' Officer posts, while Ms. Vinesh Phogat and Shri Amit Rohidas are already working in Group 'B' Gazetted post in Indian Railways. Also, Ms. Annu Rani (PLW) and Ms. Priyanka Goswami (NER) are being promoted to Gazetted Group 'B' Officer posts. With contribution of 3 medals in Indian Tally of 6 medals, IR is the largest contributor in India's medal count by any single Sports Promoting organization.



Minister of Railways Expressed Gratitude to 12 Lakh Railway Employees who Work Tirelessly to Operate almost 20,000 Trains Daily

- **Over 26.52 lakh ultrasonic flaw detection tests conducted and several new technologies incorporated to enhance safety and rail fractures down by 85% from 2,500 in 2013-14 to 324 in 2024**
- **Railway Electrification of 44,000 km in 10 years saves 640 crore litres of diesel and reduces CO_2 emissions by 400 crore kilos, equivalent to planting 16 crore trees**



Minister of Railways, Shri Ashwini Vaishnaw during his address in Parliament on the Demands for Grants under the control of the Ministry of Railways for the financial year 2024-25, covered significant achievements and future plans of Indian Railways on 1st August, 2024. During his address, he also focussed on the dedication of railway employees, advancements in railway safety and progress achieved in railway electrification.

Praising Railway Employees

Shri Vaishnaw began by expressing heartfelt gratitude to the nearly 12 lakh railway employees who work tirelessly day and night to ensure the smooth operation of almost 20,000 trains daily. He underscored the Railways as the lifeline of the country, a vital institution upon which the nation's economy remitted heavily.

Enhancing Railway Safety

While addressing railway safety, Shri Vaishnaw highlighted the significant strides made in this regard over a past decade. Over 26,52,000 ultrasonic flaw detection tests have been conducted and several new technologies have been incorporated to enhance safety measures. This has resulted in a remarkable reduction in rail fractures, from approximately 2,500 in 2013-14 to just 324 in 2024, marking an 85% decrease.

Further, he highlighted that stations now have control through electronic interlocking. While only 837 stations had this technology between 2004 and 2014, a significant increase occurred in the next decade, with 2,964 stations covered from 2014 to 2024.

Advancements in Railway Electrification

In terms of railway electrification, the Minister for Railways detailed the impressive progress made over the past decade. A total of 44,000 km has been electrified in 10 years, compared to only 20,000 km in the preceding 50 years. This electrification drive has yielded substantial benefits, including an additional 600 million tonnes of cargo, saving 640 crore litres of diesel and reducing 400 crore kilos of CO_2 emissions, equivalent to planting 16 crore trees.

These milestones reflect the government's commitment to modernizing the Indian Railways, making it safer, more efficient and environmentally sustainable.■



MoSR Flagged off SMVT Bengaluru – Kalaburagi Vande Bharat Train with Additional Stoppage at Yadgir Station



Shri V. Somanna, Minister of State for Railways flagged off Train No. 22232 SMVT Bengaluru–Kalaburagi Vande Bharat train with Additional stoppage at Yadgir Railway station on 3rd August, 2024 (through remote video link). Simultaneously a regional function was held at Yadgir Railway Station wherein Shri Sharanagowda Kandakur, MLA, Gurmitkal and senior railway officials participated in the programme.

The Minister said that the train also provides convenient travel facility to the people of Yadgir to travel to shorter distances like Kalaburagi, Raichur, Mantralayam Guntakal and back with convenient day journey timings.■

MoSR Inspected Chikkamagaluru and Hassan Railway Stations

Minister of State for Railways, Shri V. Somanna inspected Chikkamagaluru and Hassan Railway stations on 18th July, 2024. He reviewed the on-going railway infrastructure and station redevelopment works. Shri Kota Srinivas Poojary, MP, Udupi-Chikkamagaluru, Principal Chief Commercial Manager, Shri Satya Prakash Shastri, Chief Administrative Officer/ Construction, Shri Ramgopal, Divisional Railway Manager, Mysuru Ms. Shilpi Agarwal and other officers were also present.■



MoSR Inaugurated Vande Bharat Express Stoppage at Tumakuru Railway Station



Minister of State for Railways, Shri V. Somanna on 23rd August, 2024 flagged off Vande Bharat Express with its newly introduced stoppage at Tumakuru Railway Station. The newly added stoppage is part of Train No. 20662 Dharwad-KSR Bengaluru and its return service, train No. 20661 KSR Bengaluru-Dharwad.

The Minister said that to enhance safety for road and rail users 5 ROBs in Tumakuru city at an estimated cost of ₹350 crore were sanctioned in July 2024. Shri V Somanna travelled on the same train from Tumkur to Yesvantpur along with other dignitaries and railway officials. Two new railway line projects i.e. Tumakuru– Davangere (via Chitradurga) and Tumakuru–Rayadurga projects are underway at a cost of ₹2,140 crore and ₹2,500 crore respectively.■

MoSR Flagged off Special Train from Hazur Sahib to Nanded and Reviewed Upgradation Works in SCR





Shri Ravneet Singh, Minister of State for Railways flagged off first of its kind '5 Takht special' special pilgrim train from Hazur Sahib Nanded to five Holi Shrines of Sikhism at Nanded Railway Station on 25th August, 2024. The special train to 5 Takhat Sahiban was organized by Shahid Baba Bhujang Singh ji Charitable Trust, Nanded.

Speaking on the occasion, Shri Ravneet Singh stated that, the first special train covering 5 holy shrines of Sikhism was a tribute by Indian Railways to connect the people and enhance the spirituality culture and nationalism. He said that, Indian Railways is making all efforts to provide comfortable and convenient rail travel facilities to the people of the region. Indian Railways has allocated and unprecedented budget in the current financial year to develop rail infrastructure. Efforts are being made to provide special focus on developments of various railway stations in Marathwada region under Amrit Bharat Station Scheme.

This '5 Takht special train' special pilgrim train is dedicated to Guru Granth Sahib Ji Maharaj ke phele parkash Parv. The train will start from Huzoor Sahib Railway Station to Patna Sahib, Anandpur Sahib, Damdama Sahib and Sri Amritsar Sahib. It is a total 12 days travel Yatra accommodates 1300 devotees total free of cost and every stoppage more than 20,000 devotees would pay their respect. The first coach in the train is a saloon in which the Guru Granth Sahib ji will be present. Langar facility is available for the devotees in the pantry car for complete journey. Every coach is fitted with speaker in which the devotees will be listening to kirtans. This train will cover the holy centres of Patna Sahib, Anandpur Sahib, Fatehgarh Sahib, Damdama Sahib and Sri Amritsar Sahib. This special train will commenced journey on 25th August and completes the trip on 6th September, 2024 to reach H.S.Nanded.

Shri Ravneet Singh, MOSR reviewed the performance of Nanded Division, South Central Railway at Divisional Railway Manager's Conference Hall, Nanded. Shri Neeraj Agrawal, Chief Administrative Officer/Construction, Shri B. Nagya, Principal Chief Operations Manager, South Central Railway, Smt. Neeti Sarkar, Divisional Railway Manager, Nanded Division and other senior railway officials were also present in the meeting.



Shri Ravneet Singh also visited Secunderabad Railway Station and reviewed the station major up gradation plans on 24th August, 2024. He was accompanied by Shri Arun Kumar Jain, General Manager, SCR, Shri Bhartesh Kumar Jain, DRM, Secunderabad, Neeraj Agrawal, Chief Administrative Officer, Construction, SCR and other senior Railway officials. The Minister visited the Secunderabad Station building construction activity of basement at south side, multi level car parking facility, south building extension etc.



Jagjeevan Ram Railway Protection Force Academy, Lucknow Accredited with Excellent Rating from Capacity Building Commission



The accreditation certificates were presented by Dr. Jitendra Singh, Minister of State for Personnel, Public Grievances and Pensions at Civil Service Training Institutions Convention, Vigyan Bhawan, New Delhi

The Jagjeevan Ram Railway Protection Force Academy, Lucknow, has been awarded the prestigious 'Excellent/अति उत्कृष्ट' rating by the Capacity Building Commission (CBC) in recognition of its exceptional adherence to the National Standards for Civil Service Training Institutions (NSCSTI). This landmark achievement underscores the Academy's commitment to excellence in civil service training.

The accreditation certificates were formally presented by Dr. Jitendra Singh, Minister of State for Personnel, Public Grievances and Pensions of India, during the Civil Service Training Institutions Convention held at Vigyan Bhawan, New Delhi on 12th August, 2024.

Director General, Railway Protection Force, Shri. Manoj Yadava while congratulating the Director, JR RPF Academy and his team stated that the accreditation of the Academy is a testament to the relentless dedication and exemplary efforts of the Academy's staff. He noted that this unique recognition underscores their deep commitment to elevating the standards of civil service training. The accreditation not only signifies the Academy's ongoing evolution but has also placed it among the six best apex training institutions of the country.

In line with the Union Government's initiative to enhance the quality of Civil Service Training Institutions, the NSCSTI framework was introduced on 18th July, 2022. As the world's first national-level standard for civil service training, this framework aims to elevate the standards across training institutions in India.

The accreditation process required a comprehensive evaluation based on eight key pillars: Course Design, Faculty Development, Training Targets, Training Support, Digitalisation and Training Delivery, Collaboration, Training Evaluation and Operations and Governance. The JR RPF Academy successfully navigated this rigorous assessment process, demonstrating its commitment to high standards and continuous improvement.


Certificate No.
APPI22IN00032

Certificate of Accreditation

The training institute Jagjivan Ram Railway Protection Force Academy is accredited as Excellent/अति उत्कृष्ट under the Capacity Building Commission's National Standards.

The Accreditation shall remain in force subject to continued compliance with the National Standards. The Accreditation needs to be renewed before the expiry date by the training institution following the due process of assessment.

Accreditation granted on 06/08/2024 is valid until 05/08/2026

S.P. Roy
Secretary
Capacity Building Commission

Adil Zainulbhai
Chairperson
Capacity Building Commission

The evaluation involved several stages, including desktop assessments and on-site evaluations by a team from CBC and the National Accreditation Board for Education and Training (NABET). The Academy's exceptional performance throughout this process culminated in its recognition as one of the top six institutions in India out of around 149 training institutions who have been assessed to receive this esteemed rating.

Shri Satish Kumar Took Charge as Chairman and Chief Executive Officer, Railway Board



Shri Satish Kumar took over the charge as the new Chairman and Chief Executive Officer (CEO), Railway Board (Ministry of Railways) on 1st September, 2024 in Rail Bhawan. The Appointments Committee of the Cabinet approved the appointment of Shri Satish Kumar as Chairman & CEO of Railway Board.

Shri Satish Kumar, a distinguished officer of the 1986 batch of the Indian Railways Service of Mechanical Engineers (IRSME), has made significant contributions to Indian Railways throughout his illustrious career, spanning over 34 years. He holds a B.Tech in Mechanical Engineering from the prestigious Malaviya National Institute of Technology (MNIT), Jaipur, and has further enhanced his knowledge with a Post Graduate Diploma in Operation Management and Cyber Law from Indira Gandhi National Open University.

Shri Satish Kumar's career in Indian Railways began in March 1988, and since then, he has served in various pivotal roles across different zones and divisions,

In recognition of his vast experience and contributions to Indian Railways, Shri Satish Kumar was recently appointed as the Member (Traction & Rolling Stock) (MTRS), a key position that oversees the critical aspects of traction and rolling stock across Indian Railways. Following this, he ascended to the highest echelon of Indian Railways as the Chairman of the Railway Board (CRB), where he now plays a pivotal role in shaping the future of the railway network in India.

His vision, expertise, and leadership are expected to drive significant improvements in passenger services, safety, and infrastructure development, ensuring that Indian Railways continues to serve the nation efficiently and effectively.

Chairman & CEO Inspected Prayagraj Station and Reviewed Preparations for Kumbh Mela-2025



Chairman and CEO, Smt. Jaya Varma Sinha inspected Prayagraj Junction, Phaphamau Junction and Prayagraj Sangam stations to review preparations for Kumbh Mela-2025 on 20th August, 2024. Smt Sinha also inspected Prayagraj Rambagh, Jhunsi and Ganga Bridge No. 111. Shri Upendra Chandra Joshi, GM, NCR, Shri Shobhan Choudhury, GM, NR, Ms. Saumya Mathur, GM, NER and other senior officers were present. Devotees coming during Kumbh Mela-2025 will travel from Prayagraj Junction, Prayagraj Chheoki, Naini, and Subedarganj, Prayagraj Rambagh, Jhunsi, Prayagraj Junction and Phaphamau Junction.

During the inspection, Smt Sinha also took stock of the security and passengers facility arrangements for all these stations along with alternative plans and ongoing works and also gave necessary directions. She also directed to install as many screens as possible in the control tower and also asked about the overall in-charge of the control tower. Railways is working on a plan to run more than 900 special trains during Kumbh Mela period. For the safe movement of devotees during Mahakumbh, Railways have prepared a movement plan in collaboration with various departments of State Government and Central Government.■

Hon'ble President of India Awarded President's Police Medal for Distinguished Services and Police Medal for Meritorious Services to 15 Officers/Officials

On the occasion of Independence Day 2024, the hon'ble President of India has awarded President's Medal for Distinguished Service (PSM) and Medal for Meritorious Service (MSM) to the following Officers and staff of RPF/RPSF:



President's Medal for Distinguished Service

Shri G.M. Eswara Rao, Principal Chief Security Commissioner, SR.

Medal for Meritorious Service

- Shri Amaresh Kumar, Principal Chief Security Commissioner, ECR.
- Shri Ujjal Das, Assistant Security Commissioner, ECR.
- Shri Santosh Kumar Sharma, Inspector, 4 BN RPSF
- Shri Balivada Sridhar, Sub-Inspector, ECoR
- Shri Sanjay Vasant More, Sub-Inspector, CR.
- Shri Ajay Kumar, Sub-Inspector, 9 BN RPSF
- Shri Abhay Kumar, Sub-Inspector, ECR.
- Shri Jala Sudhakar, Assistant Sub-Inspector, SCR.
- Shri Nayeem Basha Shaik, Assistant Sub-Inspector, SCR.
- Shri Mukesh Khare, Assistant Sub-Inspector, WCR.
- Shri Arun Kumar Pasi, Assistant Sub-Inspector, NER.
- Shri Rajpal Naik, Assistant Sub-Inspector, WR.
- Shri Prakash Chandra Kandpal, Assistant Sub-Inspector, NER.
- Shri Rajesh Kumar Pradhan, Head Constable, WR.
- Shri Bongi Padma Lochana, Head Constable, ECoR.

RAILWAYS IN PARLIAMENT

Minister of Railways, Shri Ashwini Vaishnaw replied to the questions in Parliament.

Mumbai-Ahmedabad High Speed Rail Project:
1389.5 hectare land acquired



Mumbai-Ahmedabad High Speed Rail (MAHSR) Project construction work is going on and passing through the States of Gujarat, Maharashtra and Union Territory of Dadra and Nagar Haveli.

About MAHSR Project

The length of the project is 508 km with 12 stations planned at Mumbai, Thane, Virar, Boisar, Vapi, Bilimora, Surat, Bharuch, Vadodara, Anand, Ahmedabad and Sabarmati. The sanctioned cost of the project is ₹1,08,000 crore.

Entire land (1389.5 hectare) has been acquired for the project. Till now, 350 km of Pier Foundation, 316 km of Pier Construction, 221 km of Girder Casting and 190 km of girder launching have been completed. The work of the undersea tunnel (approx. 21 km) has also started.

The Bullet Train project is a very complex and technology intensive Project. Considering the highest level of safety and associated maintenance protocols, the Bullet Train Project has been designed with the support of Japanese Railway. It is customized for Indian requirements and climatic conditions. Timelines for the completion of the project can be reasonably ascertained after the completion of all associated works of civil structures, track, electrical, signalling & telecommunication and supply of trainsets. The execution of the MAHSR Project is monitored/reviewed regularly.

Steep Decline in the Number of Accidents

As a consequence of various safety measures taken over the years, there has been a steep decline in the number of accidents. Consequential Train Accidents have reduced from 473 in 2000-01 to 40 in 2023-24 as shown in the graph below.



It may be noted that the consequential train accidents during the period 2004-14 was 1711 (average 171 per annum), which has declined to 678 during the period 2014-24 (average 68 per annum).

Another important index showing improved safety in train operations is Accidents Per Million Train Kilometer (APMTKM) which has reduced from 0.65 in 2000-01 to 0.03 in 2023-24, indicating an improvement of more than 95% during the said period.

Consequential Train Accidents on Indian Railways and casualties therein:

Period	No. of Consequential Train Accidents	No. of Deaths	No. of Injuries
2004-05 to 2013-14	1711	904	3155
2014-15 to 2023-24	678	748	2087

Inquiries into the rail accidents are carried out by the statutory body, the Commissioner of Railway Safety under Ministry of Civil Aviation and Departmental Inquiry Committees as per laid down norms. The agencies, after due deliberations, submit their findings and recommendations. The rail accidents have occurred mainly due to Equipment failure, Environmental factors, Human errors, Sabotage; etc.



Total cost of damages to railway property such as Rolling stock/Tracks etc., in consequential train accidents during the past five years have been assessed as about ₹313 crore.

Safety is accorded the highest priority on Indian Railways. The various safety measures including track maintenance and modernization of signalling systems taken to enhance safety in train operations are as under:

Expenditure on Safety (₹in cr.)			
	2022-23 (Act)	2023-24(Act)	BE 2024-25
Maintenance of Permanent Way and Works	18,115	20,322	21,386
Maintenance of Motive Power and Rolling Stock	27,086	30,864	31,494
Maintenance of Machines	9,828	10,772	11,864
Road Safety LCs and ROBs/ RUBs	5,347	6,662	9,980
Track Renewals	16,326	17,850	17,652
Bridge Works	1,050	1,907	2,137
Signal and Telecom Works	2,456	3,751	4,647
Workshops Incl. PUs and Misc. expenditure on Safety	7,128	9,534	9,634
Total	87,336	1,01,662	1,08,795

- Electrical/Electronic Interlocking Systems with centralized operation of points and signals have been provided at 6,589 stations up to 30th June, 2024 to eliminate accident due to human failure.

- Interlocking of Level Crossing (LC) Gates has been provided at 11,048 level Crossing Gates up to 30th June, 2024 for enhancing safety at LC gates.

- Complete Track Circuiting of stations to enhance safety by verification of track occupancy by electrical means has been provided at 6,609 stations up to 30th June, 2024.

- Axle counters for Automatic clearance of Block Section, BPAC (Block Proving Axle Counter) are provided to ensure complete arrival of train without manual intervention before granting line clear to receive next train and to reduce human element. These systems have been provided on 6079 Block Sections upto 30th June, 2024.

- A project for provision of Long Term Evolution (LTE) based Mobile Train Radio Communication system has been approved for 34,803 Rkm over Indian Railways.

- The project for provision of Tunnel Communication has been taken up in various zonal Railways.

- Emergency talk-back system and Emergency Alarm Systems have been provided in Vande Bharat Train sets.

- CCTVs have been provided in all Vande Bharat Express coaches. Till date more than 9572 coaches are equipped with CCTV.

- Detailed instructions on issues related with safety of Signalling e.g. mandatory correspondence check, alteration work protocol, preparation of completion drawing, etc. have been issued.

- System of disconnection and reconnection for S&T equipment as per protocol has been re-emphasized.

- All locomotives are equipped with Vigilance Control Devices (VCD) to improve alertness of Loco Pilots.

- Retro-reflective sigma boards are provided on the mast which is located two OHE masts prior to the signals in electrified territories to alert the crew about the signal ahead when visibility is low due to foggy weather.

- A GPS based Fog Safety Device (FSD) is provided to loco pilots in fog affected areas which enables loco pilots to know the distance of the approaching landmarks like signals, level crossing gates etc.

- Modern track structure consisting of 60 kg, 90 Ultimate Tensile Strength (UTS) rails, Prestressed Concrete Sleeper (PSC) Normal/Wide base sleepers with elastic fastening, fanshaped layout turnout on PSC sleepers, Steel Channel/H-beam Sleepers on girder bridges is used while carrying out primary track renewals.

- Mechanisation of track laying activity through use of track machines like PQRS, TRT, T-28 etc to reduce human errors.

- Maximizing supply of 130m/260m long rail panels for increasing progress of rail renewal and avoiding welding of joints, thereby improving safety.

- Ultrasonic Flaw Detection (USFD) testing of rails to detect flaws and timely removal of defective rails.

- Laying of longer rails, minimizing the use of Alumino Thermic Welding and adoption of better welding technology for rails i.e. Flash Butt Welding.

- Monitoring of track geometry by OMS (Oscillation Monitoring System) and TRC (Track Recording Cars).

- Patrolling of railway tracks to look out for weld/ rail fractures.

- The use of Thick Web Switches and Weldable CMS Crossing in turnout renewal works.

- Inspections at regular intervals are carried out to monitor and educate staff for observance of safe practices.

- Web based online monitoring system of track assets i.e. Track database and decision support

system has been adopted to decide rationalized maintenance requirement and optimize inputs.

- Detailed instructions on issues related with safety of Track e.g. integrated block, corridor block, worksite safety, monsoon precautions etc. have been issued.
- Preventive maintenance of railway assets (Coaches and Wagons) is undertaken to ensure safe train operations.
- Replacement of conventional ICF design coaches with LHB design coaches is being done.
- All unmanned level crossings (UMLCs) on Broad Gauge (BG) route have been eliminated by January 2019.
- Safety of Railway Bridges is ensured through regular inspection of Bridges. The requirement of repair/rehabilitation of Bridges is taken up based upon the conditions assessed during these inspections.
- Indian Railways has displayed Statutory 'Fire Notices' for widespread passenger information in all coaches. Fire posters are provided in every coach so as to educate and alert passengers regarding various Do's and Don'ts to prevent fire. These include messages regarding not carrying any inflammable material, explosives, prohibition of smoking inside the coaches, penalties etc.
- Production Units are providing Fire detection and suppression system in newly manufactured Power Cars and Pantry Cars, Fire and Smoke detection system in newly manufactured coaches. Progressive fitment of the same in existing coaches is also underway by Zonal Railways in a phased manner.
- Regular counselling and training of staff is undertaken.
- Concept of Rolling Block introduced in Indian Railways (Open Lines) General Rules vide Gazette notification dated 30th November, 2023, wherein work of integrated maintenance/ repair/ replacement of assets is planned up to 52 weeks in advance on rolling basis and executed as per plan.

The details of Safety related works undertaken by Railways are tabulated below:

S.N	Item	2004-05 to 2013-14	2014-15 to 2023-24	2014-24 vs 2004-14
Track Maintenance				
1.	Expenditure on Track Renewal (₹ In crore)	47,018	1,09,659	2.33 times
2.	Rail Renewal Primary (Track km)	32,260	43,335	1.34 times
3.	Use of high-quality rails (60 kg) (km)	57,450	1,23,717	2.15 times
4.	Longer Rail Panels (260 m) (km)	9,917	68,233	6.88 times
5.	USFD (Ultra Sonic Flaw detection) Testing of Rails (Track km)	20,19,630	26,52,291	1.31 times
6.	USFD (Ultra Sonic Flaw detection) Testing of Welds (Nos.)	79,43,940	1,73,06,046	2.17 times
7.	New Track km added (Track km)	14,985	31,180	2.08 times
8.	Weld Failures (Nos.)	In 2013-14: 3699	In 2023-24: 481	87% reduction
9.	Rail Fractures (Nos.)	In 2013-14: 2548	In 2023-24: 383	85% reduction
10	Thick Web Switches (Nos.)	Nil	21,127	
11	Track Machines (Nos.)	As on 31.03.14 = 748	As on 31.03.24 = 1,661	122% increase

Level Crossing Gate Elimination				
1.	Elimination of Unmanned Level Crossing Gates (Nos.)	As on 31.03.14: 8948	As on 31.03.24: Nil (All eliminated by 31.01.19)	100% reduction
2.	Elimination of Manned Level Crossing Gates (Nos.)	1,137	7,075	6.21 Times
3.	Road over Bridges (RoBs)/Road under Bridges (RUBs) (Nos.)	4,148	11,945	2.88 Times
4.	Expenditure on LC Elimination	5,726	36,699	6.40 Times
Bridge Rehabilitation				
1.	Expenditure on Bridge Rehabilitation (₹ In crore)	3,919	8,008	2 Times
Signalling Works				
1.	Electronic Interlocking (Stations)	837	2,964	3.52 times
2.	Automatic Block Signaling (km)	1,486	2,497	1.67 times
3.	Fog Pass Safety Devices (Nos.)	As on 31.03.14: 90	As on 31.03.24: 19,742	219 times
Rolling Stock				
1.	Manufacture of LHB Coaches (Nos.)	2,337	36,933	15.80 times
2.	Provision of Fire and Smoke Detection System in AC coaches (Nos. of Coaches)	0	19,271	
3.	Provision of Fire Detection and Suppression System in Pantry and Power Cars (Nos. of Coaches)	0	2,991	
4.	Provision of Fire Extinguishers in Non–AC coaches (Nos. of Coaches)	0	66,840	
Budget allocation				
1	Gross Budgetary Support for Railway Investment (₹ In crore)	1,56,739	8,25,967	5.3 times

Further following safety measures have also been taken over IR:

KAVACH

- IR is installing KAVACH which is an indigenously developed Automatic Train Protection (ATP) system. Kavach is a highly technology intensive system, which requires safety certification of highest order.
- Kavach aids the Loco Pilot in train running within specified speed limits by automatic application of brakes in case Loco Pilot fails to do so and also helps the train to run safely during inclement weather.
- Implementation of Kavach involves execution of many activities, such as:



- Installation of Station Kavach at each and every station.
- Installation of RFID tags throughout the track length.
- Installation of Telecom Towers throughout the section.
- Laying of optical Fibre cable along the track.
- Provision of Loco Kavach on each and every Locomotive running on Indian Railways.
- Kavach has so far been deployed on 1465 Route km and 144 locomotives on South Central Railway.
- Presently, the progress of main items related to Kavach on Delhi–Mumbai and Delhi–Howrah corridors (approximately 3,000 Rkm) is as under:
- Laying of Optical Fibre Cable: 4275 km
- Installation of Telecom Towers: 364 Nos.
- Provision of equipment at Stations: 285 Nos.
- Provision of equipment in Loco: 319 Locos
- Installation of Track side equipments: 1384 Rkm.
- Indian Railways has also prepared Detailed Project Report (DPR) and Detailed Estimate on another 6000 RKm.
- On 16th July, 2024, Kavach 4.0 specification has been approved by RDSO. This version covers all the major features required for the diverse railway network. This is a significant milestone in safety for Indian Railways. Within a short period, IR has developed, tested and started deploying Automatic Train Protection System.

Trial Run of Electric Engine on Bridge over Chenab River

The work of the new line in Jammu & Kashmir is being undertaken under Udhampur-Srinagar-Baramulla Rail Link (USBRL) Project. Out of the total 272 km of Udhampur Srinagar-Baramulla Rail Link Project (USBRL), 255 km has already been completed. Work has been taken up on balance stretch of Katra-Reasi section of 17 km length. Anticipated cost of the project is ₹41,000 crore, against which, expenditure of ₹38,931 crore has been incurred up to March, 2024 on the project.

The Udhampur-Srinagar-Baramulla Rail Link (USBRL) project is, perhaps, the most difficult new railway line project undertaken in the country post-independence. The terrain passes through young Himalayas, which are full of geological surprises.

This section predominantly involves tunnelling i.e. 97.42 km out of 111 km (i.e. 87%) of length of Katra-Banihal section is in tunnels and maximum length of tunnel T-49 is 12.77 km, which will be longest railway tunnel in the country. Railway has made the world's highest Railway Bridge over Chenab river in Reasi District of Jammu & Kashmir. The iconic Chenab Bridge is 1315 m long having Arch span of 467 m and height of 359 m above river bed. Indian Railway's first cable stayed bridge has been



constructed over Anji Khad. Its bridge deck is 331m above the river bed level and height of its Main pylon is 193m.

The trial runs with electric trains have been successfully conducted on the Chenab Bridge. The section from Reasi to Sangaldan (46 km) has been commissioned. Chenab Bridge is situated between Bakkal and Dugga stations on Reasi-Sangaldan section.

The project is likely to be completed in this Financial year.

Amrit Bharat Trains

Indian Railways endeavours to maintain basic infrastructure of regular trains as per laid down norms. Amrit Bharat trains have been introduced to cater to the travel demand for non-AC class passengers. Four such services have been introduced which have high demand and occupancy of which two are Darbhanga-Ayodhya-Anand Vihar Terminal Amrit Bharat Express and Malda Town-Sir M. Visvesvaraya Terminus (Bengaluru) Amrit Bharat Express.

Indian Railways has introduced Amrit Bharat services, which have enhanced safety features like KAVACH and modern state-of the art technology. They are equipped with advanced features like semi-permanent couplers for jerk free travel, horizontal sliding windows, foldable snack table and bottle holders, mobile holders etc. These services, which are fully non-AC trains, presently comprising 12 sleeper class coaches and 8 general class coaches aim to provide high quality services to the passengers.■



IR has Planned to Manufacture 10,000 Non-AC Coaches



In order to cater to the travelling needs of passengers, Indian Railways operates various types of regular time-tabled trains i.e. suburban, short distance passenger trains, long distance/Mail/Express/Superfast trains with different composition catering to different segments of passengers.

In its constant endeavour to provide additional accommodation to travelling passengers, IR operates special train services during festivals, holidays, etc. and also augments the load of trains, both on permanent and temporary basis, to meet the additional demand. These are on-going processes.

Further, to provide greater accommodation for the passengers using general and non-AC sleeper coaches, the extant policy regarding composition of Mail/Express trains, provide for 12 general class and sleeper class non- AC coaches and 8 AC-Coaches in a train of 22 coaches. Of the total number of coaches being presently utilised for running of train services, two-third are non-AC, and one-third are AC variants. Keeping in view increased demand, IR has planned to manufacture 10,000 non-AC Coaches including general class and sleeper class coaches.

Additionally, Indian Railways have introduced Amrit Bharat services, which have modern state-of the art technology are equipped with advanced features like semi-permanent couplers for jerk free travel, horizontal sliding windows, foldable snack table and bottle holders, mobile holders etc.■

READERS
are requested to send their
SUGGESTIONS/FEEDBACK
editorindianrailways@gmail.com

Mission Net Zero Carbon Emission 2030



Indian Railways (IR) is working on 'Net Zero Carbon Emission by 2030' target with multipronged approach of shift from Diesel to Electric traction, procurement of power through renewable energy and Implementation of energy efficiency measures.

It is expected to give fillip to Renewable Energy (RE) technology in the country and will also result in reduced dependence of IR on imported fuel such as diesel, coal etc.

Indian Railways' efforts will enable IR to achieve 'Net Zero Carbon Emission by 2030'.

For keep abreast with others in these areas, IR enters into Memorandum of Understanding (MoU) with various countries.

On the similar lines a MoU was signed between IR, Government of India and United States Agency for International Development/India (USAID/India) on 14th June, 2023. The MoU, inter-alia, includes different areas of cooperation such as long term clean energy planning and procurement; development of energy efficiency policy; technical support for addressing regulatory and implementation barriers; and capacity building programs.

Scope of the USAID MoU is in line with the already planned and ongoing works of deployment of renewable energy and energy efficiency measures over IR. This MoU is effective for a period of five years or until the effective end of South Asia Regional Energy Partnership (SAREP) program of USAID/ India.■

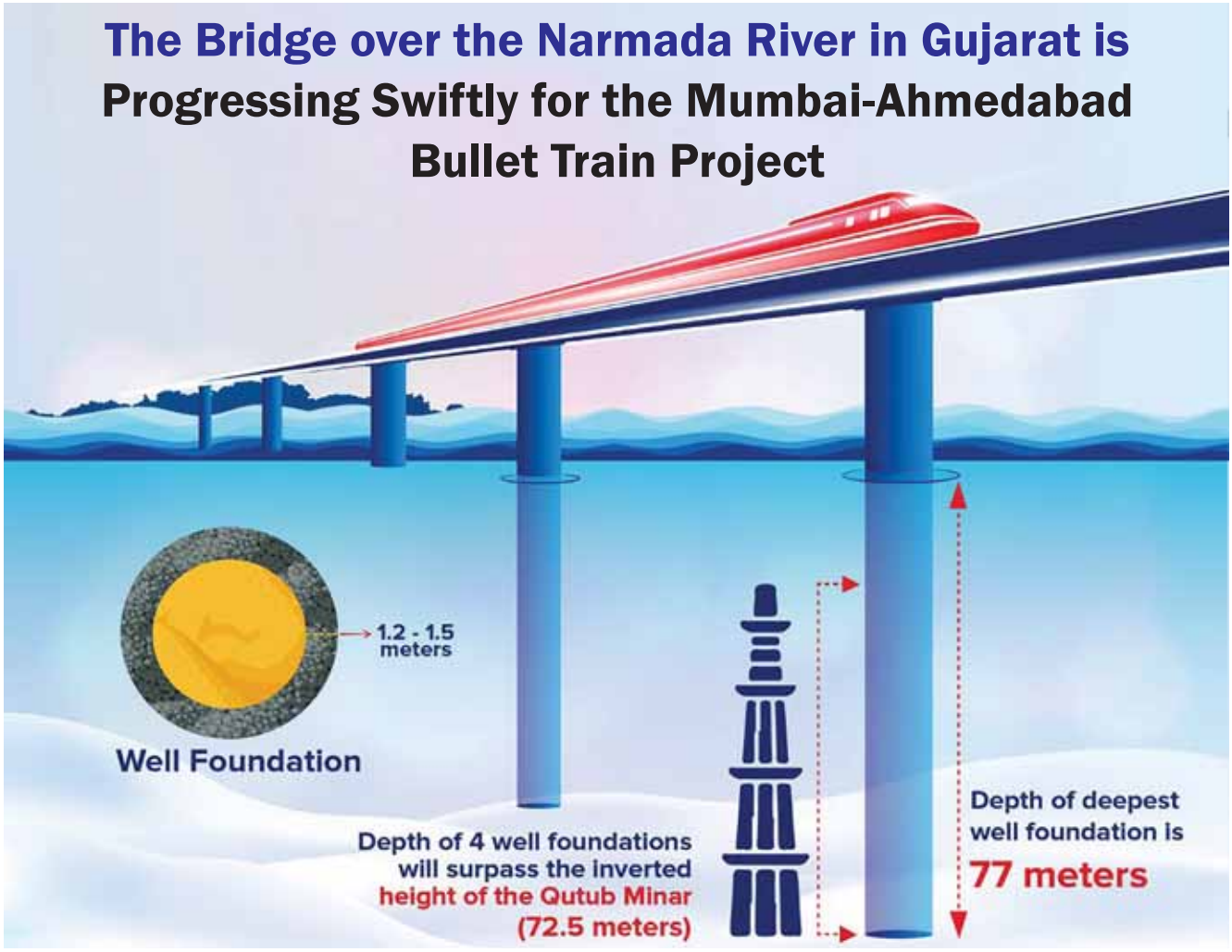
Development of Environment Friendly Fuel for Railway Operations

IROAF was formed to explore Alternate Fuel in Indian Railways. It has promoted use of blended Bio-Diesel and partial substitution of Diesel with CNG and LNG for traction purpose.

A pilot project for retro-fitment of Hydrogen Fuel cell on Diesel Electric Multiple Unit (DEMU) rake for traction purpose has also been taken up.

26 Diesel Power Cars (DPC) of Diesel Electric Multiple Unit (DEMU) rakes have been converted with CNG based propulsion system.■





The Mumbai-Ahmedabad Bullet Train corridor will pass over the Narmada river in the state of Gujarat. The Narmada river is crucial for water resources, supporting agriculture, drinking water and hydropower.

The third highest concrete dam in India-the Sardar Sarover dam is also on this river which is 1210 meters (3970 feet) in length and the maximum height of the dam is 163 meters above the deepest foundation level.

A 1.4 km long bridge on the Narmada river for the Bullet Train project in Bharuch district, Gujarat (in between Surat and Bharuch Bullet Train stations) is under construction. This is the longest river bridge in the Gujarat portion of the project.

The bridge is being constructed on well foundations. A well foundation is a type of deep foundation situated in rivers used to support heavy structures such as bridges. It consists of a hollow, cylindrical structure that is sunk into the ground to a desired depth to provide stability and load-bearing capacity. Well foundations are one of the oldest and most effective foundation types for railways, highways, bridges/viaducts over wide rivers. This method is often used in areas with deep and unstable river beds where other foundation types are not feasible.

The Narmada HSR bridge consists of 25 well foundations. 5 wells are more than 70 meters deep and the deepest well foundation (well cap top to founding level of well) in Narmada River is 77.11 meters, and the depth of other well foundations in the river is around 60 meters. 4 well foundations will surpass the inverted height of the Qutub Minar, one of the tallest structures in India (height of the Qutub Minar is 72.5 m, Source: Delhi Tourism).

The major challenge associated with well foundation structures is the 'Tilt' and 'Shift' of wells during the long duration sinking process because of natural forces such as tidal waves, high river flow and soil conditions at the sinking level.



The construction of bridge over river Narmada was affected adversely during monsoon season and flood situation in September 2023. A large quantity of water (approx. 18 lakh cusec) was released from Sardar Sarovar dam, resulting in damage to temporary steel bridge to facilitate construction, submergence and malfunctioning of on-site heavy-duty cranes, making work-fronts inaccessible and disturbance to electrical connectivity.

Despite these challenges, the site engineers worked tirelessly day and night to restore the operations. Additional teams were mobilized to continuously monitor the sinking of wells. With the use of Jack-Down method, the tilt and shift issues were addressed well in time.

With meticulous planning and dedicated on-site team, the bridge work has achieved remarkable progress with completion of 19 foundations out of 25 wells. The work of erection of superstructure has also commenced.

Salient features of the bridge:

- Total spans: 24 nos. (21X60 m + 2X36 m + 1X35 m)
- Nos. and size of well foundations: 25 nos. (10 m diameter and more than 60 m deep)
- Total number of Piers: 25 circular piers (5 m and 4 m diameter)
- Height of the Piers: 14 m to 18 m
- Type of superstructure: Post-Tensioned Box girders (SBS type)

There are total 24 river bridges in the project, 20 are in Gujarat and 4 in Maharashtra. Out of 20 bridges in Gujarat, ten (10) have been completed on rivers: Par (320 m) Valsad district, Purna (360 m) Navsari district, Mindhola (240 m) Navsari district, Ambika (200 m) Navsari district, Auranga (320 m) Valsad district, Venganiya (200 m) Navsari district, Mohar (160 m) Kheda district, Dhadhar (120 m) Vadodara district, Kolak River (160 m) Valsad district and Vatrak (280 m), Kheda district.



100 m long 'Make in India' Steel Bridge Launched in Silvassa, Dadra and Nagar Haveli for Bullet Train Project



Another steel bridge of 100 m length has been launched for the Mumbai-Ahmedabad Bullet Train Project on 25th August, 2024 near Silvassa in Dadra and Nagar Haveli.

This 1464 MT of steel bridge of 14.6 m in height and 14.3 m in width has been fabricated at the workshop in Trichy, Tamil Nadu and was transported on trailers to the site for installation.

A temporary launching nose spanning 84 meters and weighing 600 MT was connected with the main bridge for launching, to avoid any intermediate support. Additional temporary members were also installed to strengthen the bridge during launching.

Total of 27,500 HSFG (high-strength friction grip) bolts were utilised to connect the components of launching nose and approximately 55,250 Tor-Shear Type High Strength (TTHS) bolts with C5 system painting and elastomeric bearings, were utilized for the main bridge.

The steel bridge along with launching nose were assembled near the site at a height of 14.5 m from the ground on temporary trestles and was pulled with automatic mechanism of 2 semi-automatic jacks, each of capacity of 250 ton using mac-alloy bars.

The Bullet Train project is being executed meticulously, maintaining the utmost standards of safety and engineering excellence. Leveraging Japanese expertise, India is increasingly utilizing its own technical and material resources to build infrastructure under the 'Make in India' initiative. The steel bridge for the Bullet Train Project is a major example of this effort.

This is the fourth out of the 28 steel bridges, completed for the Bullet Train corridor. The details are as follows:

No.	Location	Date of launching	Length of the steel bridge	Weight of the steel bridge
1	Across National Highway 53, Surat, Gujarat	3th October, 2023	70 m	673 MT
2	Over Vadodara-Ahmedabad main line of Indian Railways, near Nadiad, Gujarat	14th April, 2024	100 m	1486 MT
3	Over Delhi-Mumbai National Expressway, near Vadodara, Gujarat	23rd June, 2024	130 m	3000 MT
4	Near Silvassa in Dadra and Nagar Haveli	25th August, 2024	100 m	1464 MT

Construction on track for Mumbai-Ahmedabad Bullet Train Project in Maharashtra



The construction of the 135 km long mostly elevated section of the Mumbai-Ahmedabad Bullet Train corridor in Maharashtra is a challenging section in this high-speed rail project. This section, between Shilphata and Zaroli village near the Gujarat-Maharashtra border, will navigate through 95 villages and towns in the Mumbai Metropolitan Region, covering Thane and Palghar districts.

Key highlights of this challenging construction include:

- **Viaducts and Bridges:** Out of the 135 km, 124 km will consist of viaducts and bridges, including 11 steel bridges.
- **Mountain and Tunnels:** The section will feature 7 mountain tunnels.
- **Stations and Depot:** Three stations—Thane, Virar, and Boisar—are planned, along with a rolling stock depot at Thane.
- **Crossings:** The alignment will cross over several key infrastructures, including Central and Western Railway lines, Dedicated Freight Corridor, Mumbai suburban line, and the elevated Mumbai Metro Line 5. It will also span across major highways, such as National Highway-48 and Mumbai-Agra National Highway-3.
- **River Bridges:** The section will have bridges over four major rivers, with the most challenging being a 460 meter steel bridge (100 + 130, 130 + 100 meter spans) over the Ulhas River, which will be the heaviest steel structure in the project (9672 MT). The longest bridge will be 2.32 km long over the Vaitarna River.
- **Wildlife Sanctuaries:** The alignment will be touching, some of the ecological hotspots for wildlife in north-western Maharashtra – Sanjay Gandhi National Park (SGNP) and Tungareshwar Wildlife Sanctuary (TWS). Special efforts have been made to ensure that ecology of the area does not get adversely impacted due to this project.

Due to its proximity with Mumbai, other infrastructure projects including railway lines and highways are also coming up in this region.

The construction progress includes the nearing completion of geotechnical investigations, the commencement of work on mountain tunnels, and the completion of approximately 265 open foundations (about 11 km) for pier work. Foundation work has also begun at Boisar and Virar stations.

As the construction of this crucial section progresses, it brings the Mumbai-Ahmedabad Bullet Train project one step closer to transforming travel in the region. Overcoming complex engineering challenges and navigating through densely populated areas and protected wildlife sanctuaries, this section once completed, will significantly reduce travel time, boost regional connectivity, and usher in a new era of transportation for the country.■



Shri Uday Borwanker Joined as new Director General of RDSO

Shri Uday Borwanker has assumed the charge of Director General, RDSO/Lucknow on 31st July, 2024. He is an IRSME officer of 1988 batch. In his illustrious career spanning over three decades, he has worked on various challenging positions in CR, WR, SECR, WCR, RDSO, Railway Board and on deputation in the Ministry of Mines and in Maha Metro. He has been extensively trained in reputed institutes like IIM/Ahmedabad, ISB/ Hyderabad, Bocconi School of Management/Italy and University of Sciences in Graz (Austria). Shri Borwanker is credited with several achievements in the field of Environment Management, Quality Control and Skill Development.■

GM/SCR Opened State-of-the-art Divisional Operation and Control Centre



South Central Railway has opened a new Divisional Operation and Control Centre at Guntakal. The state-of-the-art technology provided at the control centre will facilitate smooth and improved working. The facility was inaugurated by Shri Arun Kumar Jain, General Manager, SCR on 26th July, 2024 in the presence of DRM, Guntakal Division. The Operation and Control Centre (OCC) is the office which is responsible for monitoring, management and co-ordination of train operations across its network.■

DFCCIL MD Inspected New Khurja to New Pilkhani Section



Dedicated Freight Corridor Corporation of India Ltd (DFCCIL) Managing Director Shri Hira Ballabh conducted the inspection of New Khurja-New Pilkhani section of Eastern Dedicated Freight Corridor (EDFC) on 23rd August, 2024 in view of ongoing Intensive Safety Drive. Shri Ballabh took stock of the entire stretch between New Khurja and New Pilkhani.

Importance of New Khurja– New Pilkhani Section

The New Khurja–New Pilkhani section on the EDFC is an important section which helps in revolutionizing freight between the eastern parts of India and the northern parts of the country. The speedy movement of coal from the coal fields East to the power stations of North is strengthening the power security of India. This single line section of EDFC plays an important role in the growth and development of iron and steel industries among others. The capacity enhancement of DFC has greatly benefited the Indian Railways' parallel section, leading to improved performance and efficiency.■

One Dalian Rake (MR-513) Introduced in Blue Line



Metro Railway, Kolkata has introduced MR-513 rake popularly known as Dalian Rake to the service of the passengers on 5th August, 2024.

The salient features of the new MR-513 rake are as follows: -

Wider doors in these rakes will facilitate easy entry and exit of passengers specially during the peak hours. Enhanced features of these rakes will also provide jerk-free ride. CCTV coverage inside the coach, modular and wider vestibules, enhanced seating capacity including provision of more seats for senior citizens and specially-abled are some of the unique features of these rakes.

Technical features of these rakes include through rain water channels, paint-free stainless steel car body, improved door channel with side stopper and improved energy consumption which will be more environment-friendly.

These rakes also have some enhanced safety features like disc brake system, controlled discharge fire extinguishers with strap, wider evacuation door and evacuation ramp with anti-skid rubber flooring.■

Sewage Treatment and Rain Water Harvesting in CLW: Steps towards Sustainable Use of Natural Resources



Management of waste in CLW has gained due importance and in order to maintain it properly various waste management processes are being undertaken. The sewage of the township is let into the plant through laid down sewer line of 274.036 km, spreading throughout the township. Every residential quarters and service Building are connected with sewerage system.

There are two main components of the Sewerage Treatment Plant in CLW, the Activated Sludge Plant and the Bio-Filter Plant. The sewage is primarily treated in the Activated Sludge Plant. The Sludge is digested and rendered innocuous and used as fertilizer. During the financial year 2023-24, upto March, 2024 the Sewage treatment plant achieved 7,19,632 kilo litres of waste water treatment. After due processing, the treated water is stored in nominated overhead tanks and reuse for gardening and other purposes.

CLW has embraced the rain water harvesting techniques with no underground water being lifted. Seven large sized percolating pits have been made at various places in Chittaranjan to recharge a ground water and to maintain shallow depth of the ground water table.■

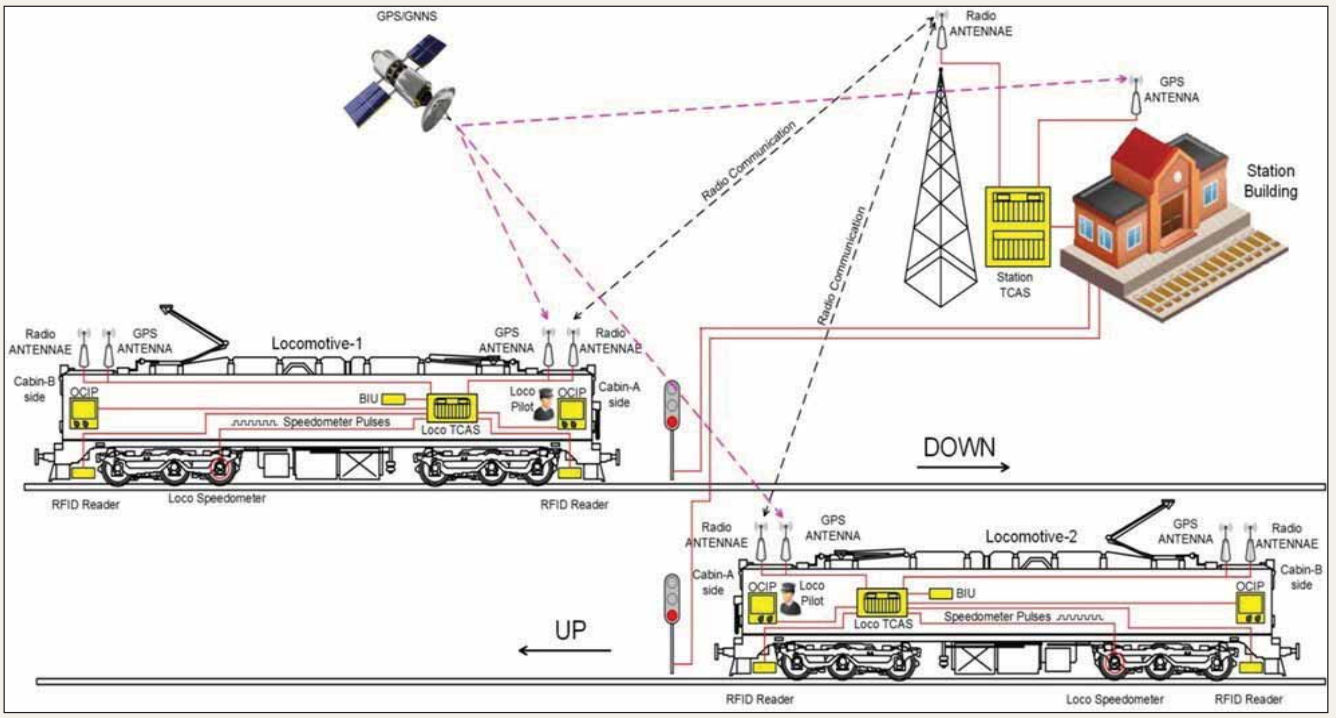
Automated External Defibrillator Machines will be Provided at 20 Stations of Western Railway



Western Railway's Mumbai Central Division has planned to make Automated External Defibrillator (AED) machines available at 20 of its Railway Stations. This facility is being made in collaboration with Rotary Club of Bombay Airport under Corporate Social Responsibility (CSR).

Automated External Defibrillator (AED) is a handy device used to treat sudden cardiac arrests and will prove helpful for emergency treatment in case of heart attacks to passengers at station. AED is designed in such way that it can be used by common people. These AED machines are being provided at 20 stations i.e. Churchgate, Marine Lines, Charni Road, Grant Road, Mahalaxmi, Lower Parel, Prabhadevi, Dadar, Bandra, Jogeshwari, Malad, Kandivali, Borivali, Mira Road, Bhayander, Vasai Road, Nallasopara, Virar, Boisar and Vapi stations.■

Western Railway's Endeavour to a Safe and Smooth Train Operations



KAVACH is an Automatic Train Protection (ATP) system indigenously developed by Indian Railways through RDSO for enhancing the speed of trains up to 200 kmph. This technology will enable to run trains at the permissible speed. It will assist the loco pilots in preventing Signal Passing at Danger (SPAD) and enable continuous speed supervision. The signal aspect and continuous movement authority will be displayed in the loco pilot's cab, which will provide protection against collision. Over Western Railway, the work of KAVACH system is being undertaken on 789 km with 90 locos. Loco trials have been successfully carried out for 405 km out of total 789 km and 60 out of 90 locos have been provided with this technology. Western Railway has set the target of commissioning 735 km in this FY 2024-25.

Over Virar-Surat-Vadodara (Automatic Signalling) section, 201 km out of 336 km has been completed, while over Vadodara-Ahmedabad (Automatic Signalling) section, loco trials of Kavach System of 96 Km has been completed successfully. Over Vadodara-Ratlam-Nagda (Non-Automatic Signalling) section, 108 km out of 303 km has been completed and final testing as well as commissioning work is in progress. Similarly, the contract has been awarded for Mumbai Central-Virar Suburban (Automatic Signalling) section comprising of 54 km and work of survey is in progress.

The indigenously developed KAVACH technology aims to help the IR achieve the goal of 'zero accident'. This system conforms to CENELEC standards EN50126, 50128, 50129 and 50159 (SIL-4).■

KIND ATTENTION

AUTHORS/WRITERS contributing articles for the magazine are requested to restrict their articles to a reasonable size. Ideally an article should not exceed 1000 WORDS.

In view of the space constraints of the magazine, sometimes it becomes difficult to include longer articles. All are requested to appreciate our problem and co-operate.

Sports News



Western Railway hosted the 64th All India Railway Aquatic Championship 2024 at Mahalaxmi Sports Complex, Mumbai. The iving team of WR won the first position, while WR's Swimming and Water Polo teams won the first runner-up. WR Swimmer Shri Devansh Parmar secured highest points in Individual swimming events and won 4 Gold Medals and 1 Silver Medal in various events. The Swimming team of Southern Railway achieved an impressive haul of 4 Gold, 5 Silver, and 8 Bronze medals. Shri Pawan Gupta, working as Commercial Clerk-cum-Ticket Collector in Chennai Division, has set a new record in the 50 m freestyle event, earning him the title of the fastest swimmer of Indian Railways. Shri Ashok Kumar Misra,GM, WRy graced the prize distribution and closing ceremony which was held on 23rd July, 2024.

Around 200 athletes from across 12 Zonal Railways/ Units participated in this championship. The participants contested in 20 Swimming events including relay races, 3 Diving events and Water Polo matches.■



Shri R.N. Singh, General Manager, Southern Railway congratulated the Chess champions for their outstanding performance. International Champion Shri S. Nitin won a Bronze medal in the All India Railway Individual Chess Championship held at Jabalpur. Grand Master Shri N.R. Vignesh secured Gold in the recent Commonwealth Blitz Chess Championship held in Sri Lanka.■



The 35th All India Railway Protection Force Wrestling Competition was organized by West Central Railway from 1st to 5th August, 2024 at Railway Stadium, Jabalpur. On 5th August, 2024, the closing ceremony and prize distribution ceremony of the competition was held in the presence of Smt. Shobhana Bandyopadhyaya, GM, WCR. Prizes were distributed to all the winners of the competitions. Smt. Bandyopadhyaya, GM congratulated all the teams for their excellent performance.■



South Western Railway Powerlifting (Men's) team emerged victorious at the All India Railway Weightlifting Championship 2024-25 held at the Western Railway Sports Association in Mumbai from 6th to 9th, July 2024. General Manager of SWR, Shri Arvind Srivastava felicitated the winners on 12th July, 2024 at Rail Soudha, Hubballi.■



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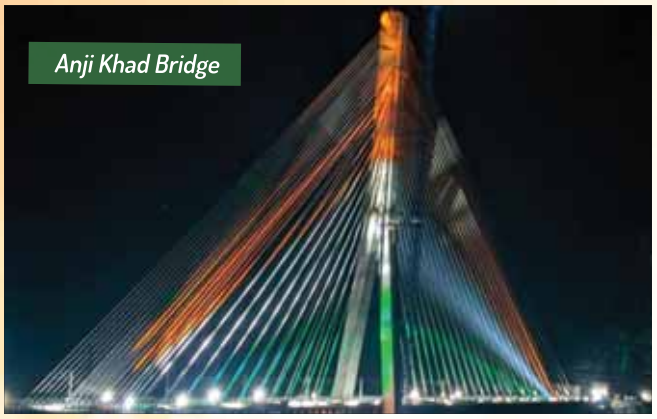


Indian Railways Joined the Celebrations of

Indian Railways joined the celebrations of 78th Independence Day with fervour and gaiety. All prominent Railway stations, and Railway offices were decorated and illuminated with tricolour lighting. The iconic Railway bridges were also illuminated with tricolour lighting.

Various programmes like Tiranga Yatra and exhibition about 'Horrors of Partition Remembrance Day', were also organized.

Mass participation was observed by Railway employees in the ‘Har Ghar Tiranga’ programme.



Anji Khad Bridge



Chenab Bridge

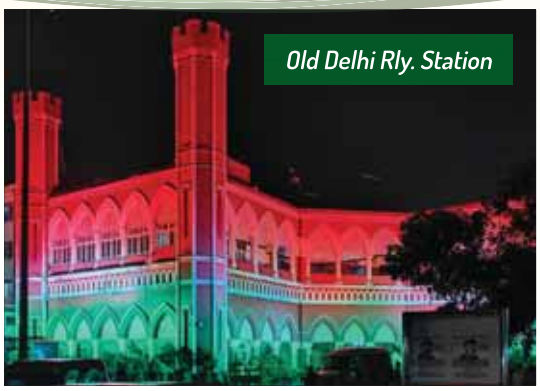


CSMT, Mumbai

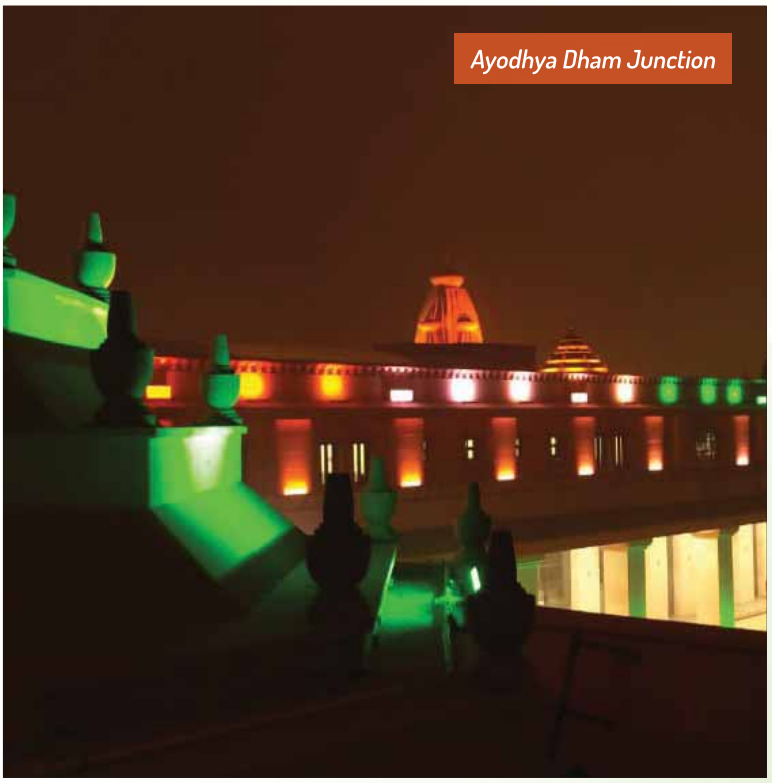


Rail Bhawan, New Delhi

Independence Day with Fervour and Gaiety


Old Delhi Rly. Station


Kacheguda Railway Station
South Central Rly.


Ayodhya Dham Junction



DRM Building, Bhopal


Chittaranjan Locomotive Works


Southern Railway
Headquarters, Chennai



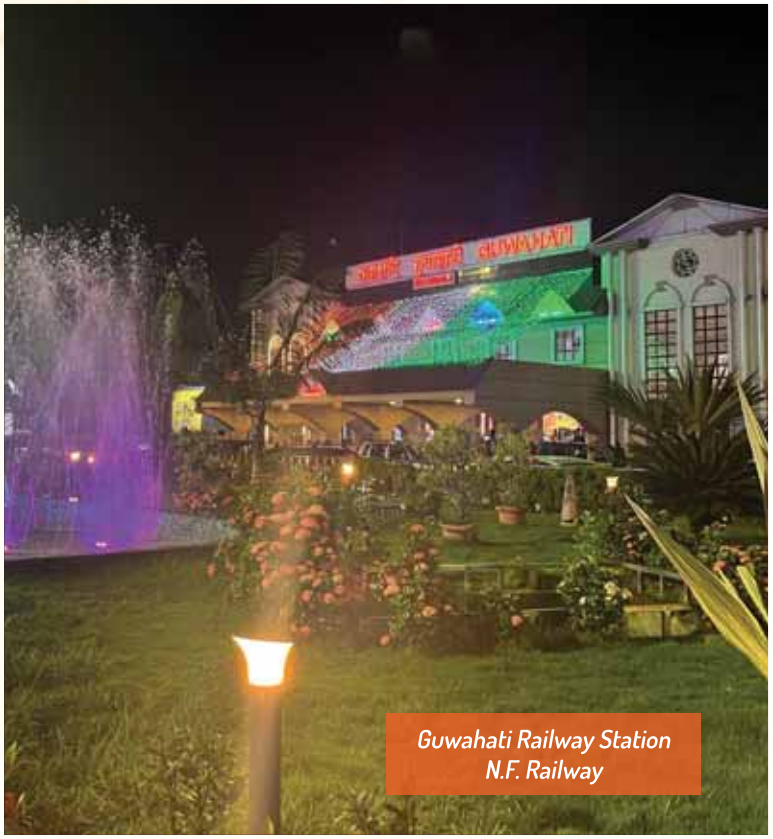
Rani Kamalapati Railway Station



Puratchi Thalaivar Dr MG Ramachandran Chennai Central Railway Station



Sanchalan Bhavan, Secunderabad Divisional Headquarters, SCR



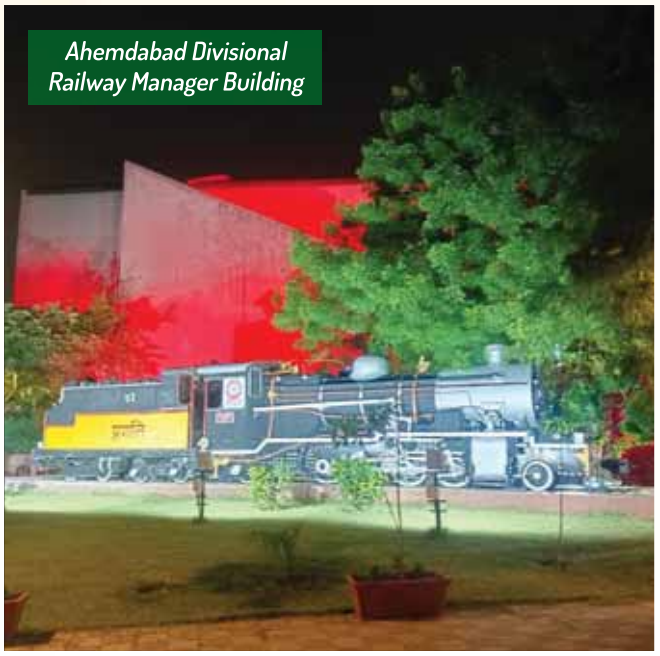
Guwahati Railway Station N.F. Railway



Vizianagaram Junction



Rail Soudha, SWR Headquarters


Ahemdabad Divisional Railway Manager Building


DRM Office, Ajmer


Gandhinagar Capital Railway Station, Gujarat


Ekta Nagar Railway Station, Gujarat


Sir M Visvesvaraya Terminal, Bengaluru



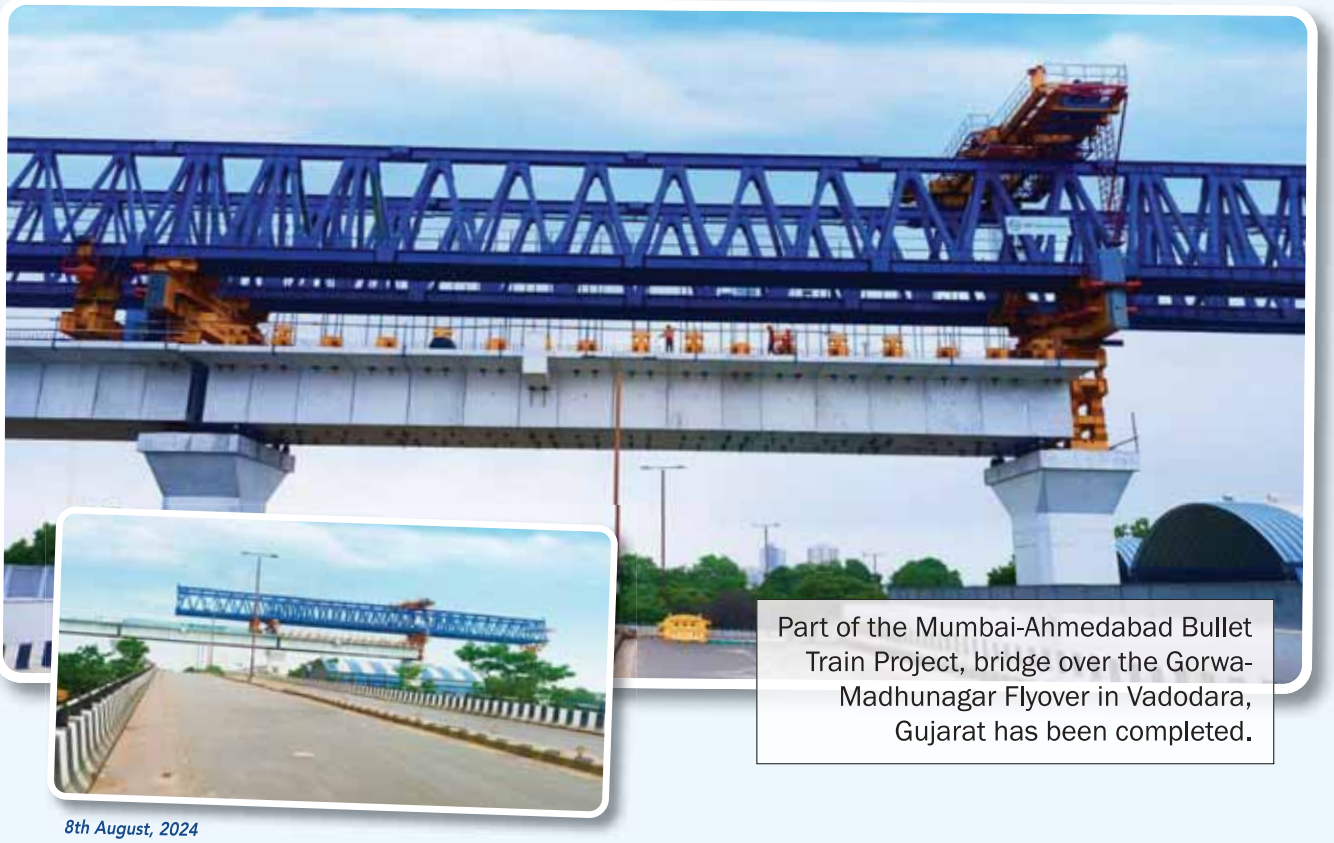
Sealdah Railway Station



Barddhaman Jn., Eastern Railway

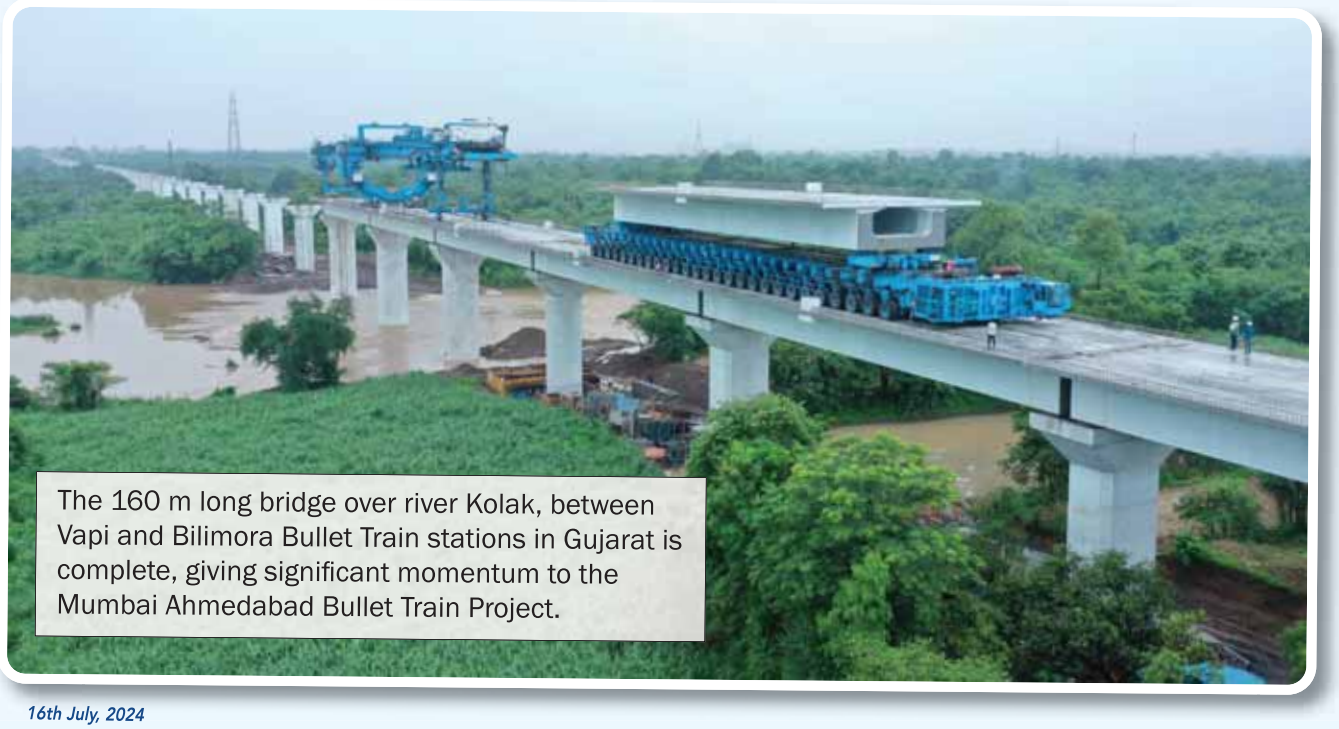
Progress Report

Mumbai-Ahmedabad Bullet Train Project



Part of the Mumbai-Ahmedabad Bullet Train Project, bridge over the Gorwa-Madhunagar Flyover in Vadodara, Gujarat has been completed.

8th August, 2024



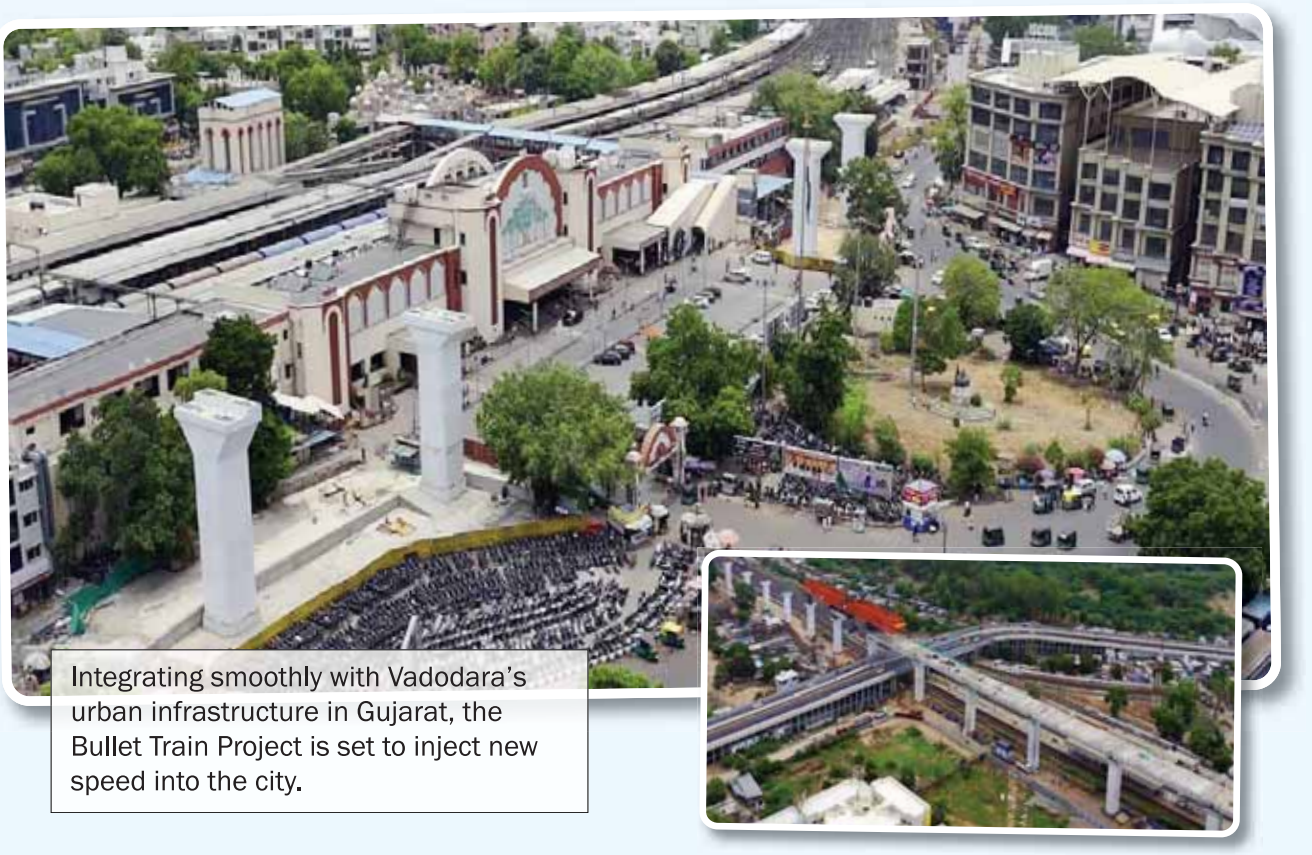
The 160 m long bridge over river Kolak, between Vapi and Bilimora Bullet Train stations in Gujarat is complete, giving significant momentum to the Mumbai Ahmedabad Bullet Train Project.

16th July, 2024



A Span-By-Span launcher paves the way for the MAHSR corridor along the Rail Line in Ahmedabad, Gujarat, seamlessly launching segments for the Bullet Train viaduct.

12th July, 2024



Integrating smoothly with Vadodara's urban infrastructure in Gujarat, the Bullet Train Project is set to inject new speed into the city.

9th August, 2024



Bird's eye view of work-in-progress on the Bullet Train project in Surat, Gujarat.

19th August, 2024



A unified fleet of machinery progresses in the development of the MAHSR Corridor.

21st August, 2024



Advancing progress along MAHSR Corridor, a 45-meter-long span featuring 19 segments was successfully launched over the Petlad Irrigation Canal in Kheda, Gujarat.

23rd August, 2024



The Vatrak River Bridge in Gujarat, spanning 280 metres, for the Mumbai-Ahmedabad Bullet Train Project, connecting Anand and Ahmedabad Bullet Train Stations, is now complete.

27th August, 2024

OUTLET FOR PURCHASE/SUBSCRIPTION OF MAGAZINES PUBLISHED BY MINISTRY OF RAILWAYS



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Rajnandgaon-Nagpur 3rd Line (228 km)





7th August, 2024

Commissioned Length: 178.54 km

- Enable operation of new trains on this route
- Reduce travel time
- Boost coal, cement and steel industries in the region.

Jhansi-Bina 3rd Line Project (153 km)



5th August, 2024

Commissioned Length: 134 km

Upon Completion:

- Propel Bundelkhand region's connectivity
- Boost operational capacity for goods and passenger trains between Uttar Pradesh and Madhya Pradesh

Vijayawada-Kazipet Third Line (219 km)





8th August, 2024

Commissioned Length: 99.1 km
Benefits:

- Ease congestion with improved train mobility
- Facilitate additional handling of passenger and freight trains
- Foster region's socio-economic growth

Son Nagar-Patratu 3rd Line (291 km)



145 km commissioned

- Enhance rail connectivity of Ramgarh, Hazaribag, Latehar, Palamu, Garhwa and Aurangabad districts
- Boost transportation of food grain, iron ore, coal, fertiliser, cement and sugar.



6th August, 2024

Satna-Rewa Doubling Project (50 km)



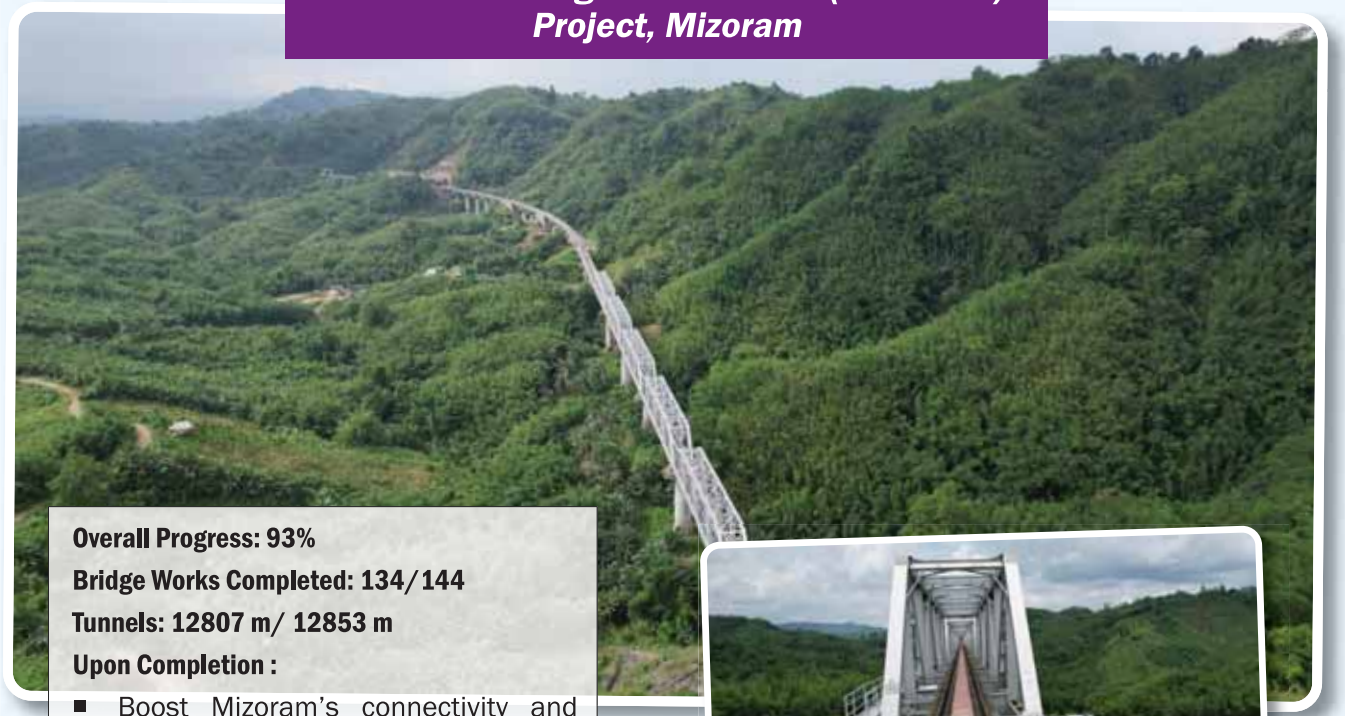


10th August, 2024

Commissioned Length: 31 km

- Improvement in line capacity and mobility of trains
- Boost to cement industries in the region
- Spur in socio-economic growth in Satna, Rewa, and Sidhi districts

Bhairabi-Sairang New Rail Line (51.38 km) Project, Mizoram



Overall Progress: 93%

Bridge Works Completed: 134/144

Tunnels: 12807 m/ 12853 m

Upon Completion :

- Boost Mizoram's connectivity and commerce
- Stimulate tourism
- Foster industrial development

26th July, 2024

Katni-Singrauli Railway Line (261 km) Doubling Project, Madhya Pradesh





12th August, 2024

Construction of 210.5 km rail line completed

- Enhance socio-economic development in Singrauli, Sidhi and Katni districts
- Operation of more trains will boost tourism in north Madhya Pradesh

Koraput-Singapur Road Doubling Project (164.56 km)



Commissioned Length: 55.3 km

- Boost industrial development in nearby tribal areas
- Enhance connectivity in Koraput district
- Ease congestion on existing line
- Ensure smooth movement of freight trains

13th August, 2024

Optimising train operations at Tambaram Railway Station, Tamil Nadu





Optimising train operations at Tambaram Railway Station, Tamil Nadu, ongoing works are in progress, including signalling upgradation works, track work and revamping the yard.

16th August, 2024

Sivok-Rangpo New Rail Line Project (44.96 km)



Work Completed: 90%

Work Completed:

- Piling work (23,953 m)

Work in progress:

- Tunnel mining works: 36 km
- Tunnel lining works: 16 km
- Pier work: 828 m

It will introduce Rail connectivity in Sikkim, strengthening.

20th August, 2024

Bondamunda-Ranchi Doubling Project (158.5 km)





22nd August, 2024

Commissioned Length: 125.24 km

Benefits:

- Increased line capacity to boost regional coal industries
- Overcome traffic bottlenecks and improve train operations between Jharkhand and Odisha

Freight Train Examination and Routine Overhauling (ROH) Facility at Sarla Railway Station Commissioned



- Support industrial growth and enhance steel, aluminum and coal supply.
- Ensure efficient freight train operations.
- Stimulate economic growth in Sambalpur region.

23rd August, 2024

Station Redevelopment Progress Report

Yesvantpur Junction, Karnataka



The upgradation work at Yesvantpur Junction, Karnataka. Once completed, the station will feature advanced passenger amenities with a modern outlook, enhancing the overall experience for commuters.

15th July, 2024

Charlapalli Satellite Terminal Station, Telangana



Work Completed: 90%

Work in progress:

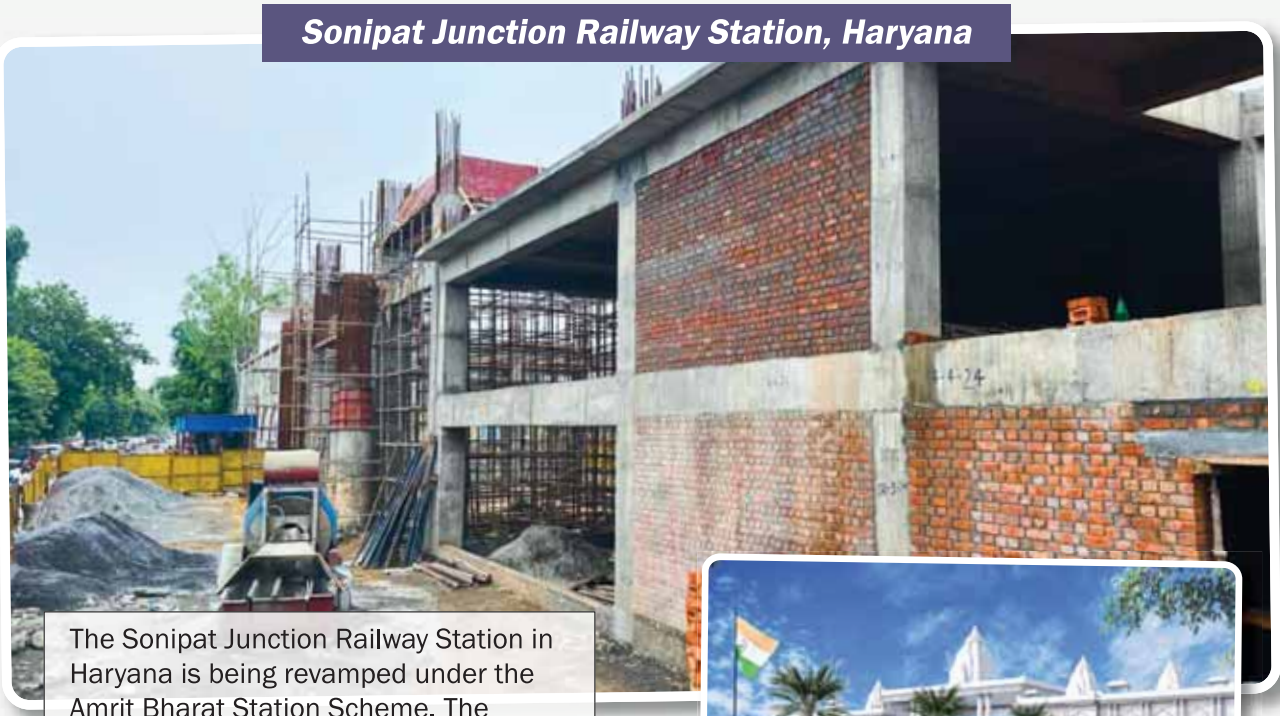
- Roof sheeting
- Turbo ventilator
- Side brick

Upon completion it will:

- Be the 4th Terminal station in Twin Cities in Telangana
- Accommodate an additional 15 pairs of trains.

16th July, 2024

Sonipat Junction Railway Station, Haryana



The Sonipat Junction Railway Station in Haryana is being revamped under the Amrit Bharat Station Scheme. The redeveloped station will have modern facilities for passengers.

3rd August, 2024

Jalna Railway Station, Maharashtra



The redevelopment work at Jalna Railway Station is progressing swiftly. Once completed, the station will showcase a modern outlook with contemporary passenger facilities.



4th August, 2024

Ramnagar Railway Station, Nainital, Uttarakhand



The Ramnagar Railway Station located in Nainital district of Uttarakhand is being redeveloped at a rapid pace under the Amrit Bharat Station Scheme. During this time, modern passenger facilities are being developed at the station in line with future requirements.

12th July, 2024

Swami Narayan Chhapia Railway Station, Uttar Pradesh





16th August, 2024

Under the Amrit Bharat Station Scheme, the work of redevelopment of Swami Narayan Chhapia Railway Station in Uttar Pradesh is being done at a rapid pace. Modern facilities are being developed here for senior citizens, Divyangjans and other travellers.

Reliability of Track Geometry Reported by Track Recording Cars: Provisions and Findings

S.K. Barnwal
ED/Track Monitoring
RDSO

Saurabh Srivastav
Director-II/TMM
RDSO

Anupam Kumar Tiwary
JE/TMM
RDSO

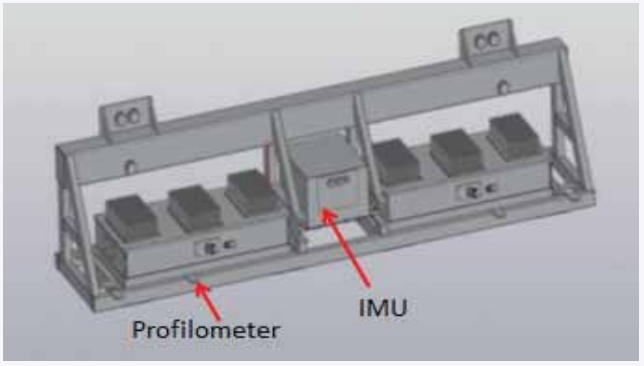
Abstract: The track recording car (TRC) has to be validated for the authenticity of the track geometry measurement. Validation is carried out on new TRC, after maintenance and on regular basis. European standard EN 13848-2:2020 'Railway applications-Track-Track geometry quality - Part 2: Measuring systems - Track recording vehicles' is applicable for this purpose since no Indian Standard available in this field. The method of TRC data validation and observation are described in this article.

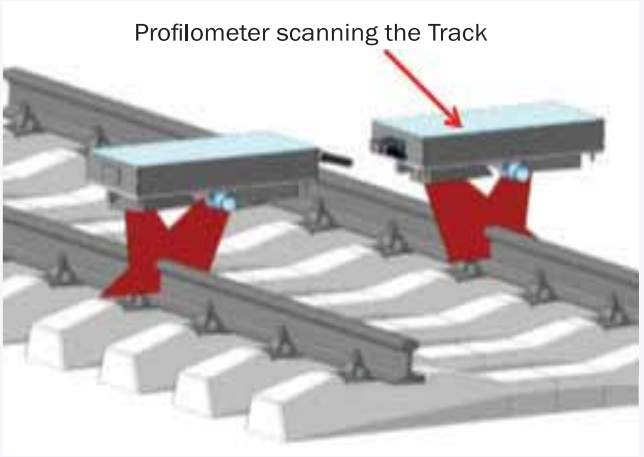
Introduction - The Track Geometry Measuring Systems (TGMS) are installed in Track recording cars (TRC) for measurement of track geometry parameters. All track geometry recording vehicles (self-propelled or hauled vehicle) with fixed, dedicated, measuring equipment and systems, used for the measurement, assessment and recording of track geometry parameters under loaded conditions are required to produce consistent results. The measuring system is calibrated to ensure the continued accuracy of measurements. The calibration is performed according to a specified process.

European norms EN: 13848 - 1 to 6 deals with 'Railway Applications – Track Geometry Quality'. EN: 13848-2:2020 of this series deals with 'Measuring Systems - Track Recording Vehicles'. It includes description of field tests of TRCs and limit values to be respected for various track geometry parameters. After the calibration of the track geometry recording system, a method based on comparison between different measurement runs on the same section of track is used to validate the recording system. Validation procedures are applied to the following:

a) Initial testing of a new or modified track geometry recording system.
b) After a maintenance or repair operation on the track geometry recording system.
c) On regular basis.

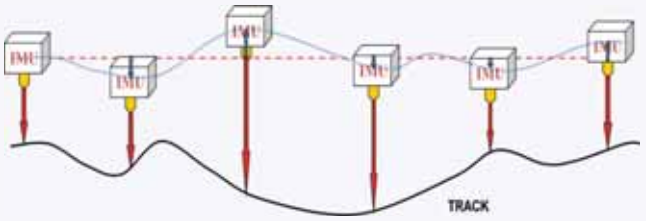
2.0 Measurement Principle of TGMS: The technology adopted for the TRC is contactless based on the Opto-Inertial principle. Measurement of track parameter is done with the help of laser, camera and inertial measuring unit (IMU).





Laser Camera Unit: For the TGMS, infra-red laser is used as a light source. It is equipped with special optics that spreads the laser spot into a thin line of light. A high speed, high resolution, digital camera is used to acquire a video image of the rail outline illuminated by the laser. Specialized optical processing software determines the precise location where the laser intersects the rail.

i) **IMU:** The Inertial sensors measure vehicle's vertical, lateral and longitudinal accelerations as well as the vehicle roll, yaw and pitch rotational movements.



Signal-processing techniques are applied to the sensor input information to remove the vehicle movement components, resulting in a very accurate measure of the track. The inertial and optical data are acquired and processed by a single-board PC. Track characteristics such as track gauge, cross level, twist, alignment and longitudinal level are calculated over a selectable sampling step from 0.20 m to 0.6 m. On Indian Railways the sampling interval is 0.25 m.

Track irregularities are generally interpreted as the deviations from design geometry within 1–200 m wavelength range. During evaluation, track irregularity data are filtered into different wavelength ranges, the most common being 3–25 m (denoted D1), 25–70 m (D2) and 70–150 m vertically or 70–200 m laterally (both D3). Shorter waves, at least shorter than 1 m, are defined as roughness or corrugation of the rails and longer wavelengths about 200 m and above represent the vertical and horizontal curves of the track.

3.0 Provision in EN Code – 13848 – 2:2020 (Measuring systems – Track recording vehicles) : The provisions of this code specifies the minimum requirements for track geometry measuring principles and track geometry measuring systems in order to produce comparable results when measuring the same track. It applies to all measuring systems, attended or unattended, fitted on any vehicle, except those systems defined in EN 13848-3 (Measuring systems – Track construction and maintenance machines) and EN 13848-4 (Measuring systems – Manual and lightweight devices). Track geometry recording vehicle should be self-propelled or hauled vehicle with fixed, dedicated, measuring equipment and systems, used for the measurement, assessment and recording of track geometry parameters under loaded conditions, which measures and produces consistent results to the requirements of EN 13848-1 (Railway applications – Track - Track geometry quality).

Static tests concern mainly track gauge and cross level measurements. It consists of comparing the measured value with a defined reference and carried out to ensure that there are no offsets in the measurement of cross level and track gauge.

Dynamic tests concern all track geometry parameters according to EN 13848-1 i.e. gauge, longitudinal level, cross level, alignment and twist. It consists of comparing the measured values of consecutive measurement runs performed on the same track section under identical or varying measurement conditions. For conducting dynamic tests, repeatability and reproducibility of recorded data are conducted.

Apart from this periodic checking is carried out by the operators in accordance with the procedures described by the manufacturer in the operator manual. It can consist of cross checks, adjustment operations and/or comparison with historical data.

i) **Repeatability:** It is the degree of agreement between the values of successive measurements of the same parameter made under the same conditions, within a short period of time, where the individual measurements are carried out on the same section of track using the same measurement and interpretation methods, subject to the following controls:

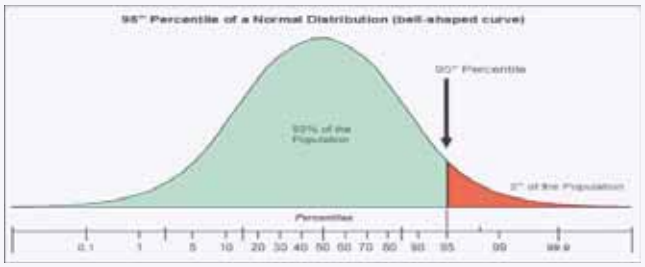
- Similar speed
- Same measuring direction
- Same vehicle orientation
- Similar environmental conditions

ii) **Reproducibility:** It is a degree of agreement between the values of successive measurements of the same parameter made under varying conditions, within a short period of time, where the individual measurements are carried out on the same section of track using the same measurement and interpretation methods, subject to one or more of the following:

- Speed variation
- Different directions of measurement
- Different vehicle orientation
- Different environmental conditions

iii) **Statistical Analysis:** It is made for each parameter to be validated and for each pair of runs used for the comparison. It consists of the following steps:

- Calculation of the differences between the track parameter values collected at all sampling points.
- Evaluation of the distribution of the differences for the total length of the test sections.
- Calculation of the 95th percentile of the distribution of the absolute differences. The 95th percentile is a number that is greater than 95% of the numbers in a given set.



iv) **Limits of 95th Percentile:** The distribution of the absolute difference between the parameter data obtained on each run are evaluated for each parameter. The 95th percentile of the distribution should respect the limit values given below:

Limit of 95th percentile in Repeatability and Reproducibility as per EN 13848 – 2:2020 of Annexure – C

Track Geometry Parameters	Base/ Wave Length Range	Repeatability Limit	Reproducibility Limit	Remarks
Gauge	-	0.5 mm	1.0 mm	1. D1 Wavelength range 3 m < λ ≤ 25 m 2. D2 Wavelength range 25 m < λ ≤ 70 m
Cross level	-	1.5 mm	2.5 mm	
Twist (TW1)	l < 5.5 m	1.0 mm/ 3 m	1.5 mm/ 3 m	
Twist (TW2)	5.5 < l < 20 m	2.0 mm/ 15 m	3.0 mm/ 15 m	
Alignment	D1	0.7 mm	1.1 mm	
Alignment	D2	2.0 mm	3.0 mm	
Longitudinal Level	D1	0.5 mm	0.8 mm	
Longitudinal Level	D2	1.0 mm	2.0 mm	

4.0 Validation of Track Geometry Parameters – Case Study on TRC 8001 (ITMS-I)

a) Collection of data

i) The Repeatability and Reproducibility test were conducted on all track geometrical properties.

ii) Reference track having length of a test run not less than 5 km (typical length: 10 km) were selected.

iii) TRC were run at different speeds up to 160 kmph. After trial runs, the data were collected in CSV format or excel format for further analysis.

iv) Sections of 5 km stretch (minimum) having similar speed for repeatability test and different speeds, direction of movement and orientation of vehicle for reproducibility test during both trial runs were selected.

v) For local synchronisation, RFID tags are used even for better synchronisation. RFID tags were installed on the track of trial routes.

b) Trial Run and Data analysis:

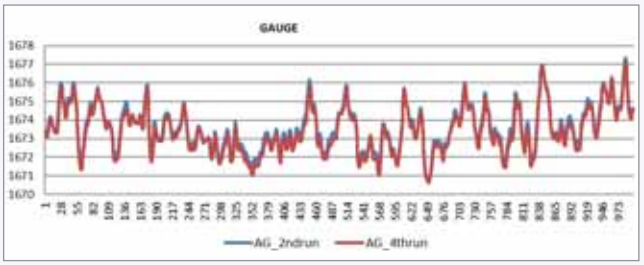
i) For the validation of TRC, field trial runs of ITMS-8001 were conducted during January-April, 2022. The trials for various planned speed up to 110 kmph were conducted between Unchahar (UCR) Raebareli (RBL) of Northern Railway and up to 160 kmph trials conducted in between Agra (AGC) and Mathura (MTJ) of North Central Railway. For getting required data for reproducibility analysis, the orientation of vehicles was changed during trials in both the sections.

ii) Repeatability Analysis - From the entire section, few stretches of approximately 5 km, each having constant speed of 20 kmph, 60 kmph, 100 kmph at UCR-RBL and 120 kmph and 160 kmph at high AGC-MTI section is selected for repeatability analysis.

iii) Reproducibility Analysis - From the entire section, 5 km stretches were selected. Following trial runs were carried out:

- at 160 -160 kmph, different vehicle orientation, same direction.
- at 160 -120 kmph, different vehicle orientation, same direction.
- at 20-60 kmph, on same vehicle orientation, same direction.

iv) For data synchronization, graphs for each parameter value of two selected trial runs are overlapped by deleting few samples, so that peaks of both the lines approximately overlapped. This step is performed to synchronize the ground location of selected runs.



v) The absolute difference of all parameter values for both the runs were calculated.

vi) Further 95th percentile value for absolute difference were calculated.

vii) These steps were repeated for each track geometry parameter separately.

viii) Result of each track geometry parameter were compared with the limits presented in European Standard EN: 13848-2: 2020.

c) Discussion

i) Repeatability Test

After trial runs, 95th percentile values of track geometry parameters were calculated for the deleted stretch of 5 km at prescribed speed. The obtained value were compared with the limiting value given in EN – 13848-2: 2020. The parameter wise detail is written below:

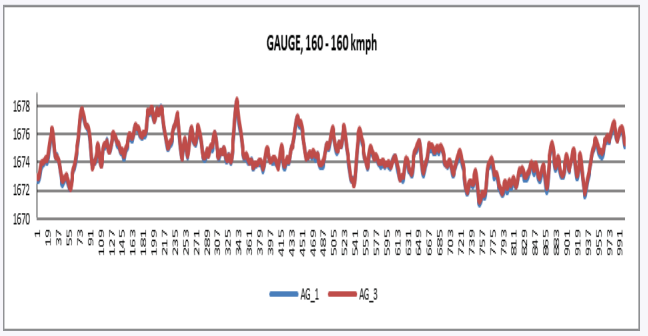
From the repeatability analysis it is observed that the 95th percentile of absolute difference of all track geometry parameters (gauge, cross level, twist, alignment and unevenness) are well within the repeatability limits prescribed by EN: 13848 – 2: 2020 as detailed in para 3 (iv) above.

Sample graphical representation of track geometry parameter values of two runs taken for repeatability analysis of different parameters are shown below for better appreciation.

Repeatability analysis - Synchronised graph of geometric parameters for two runs:

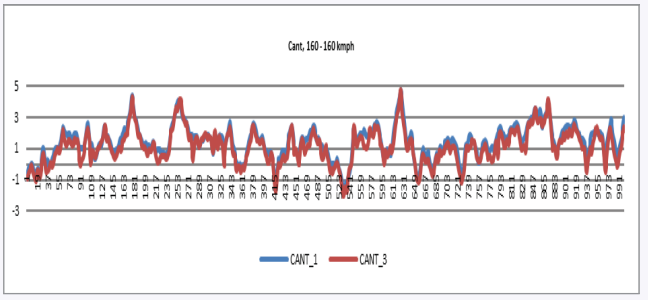
a. Gauge (Repeatability)

Synchronized graph of two run for Gauge at 160 kmph



b. Cross level (Repeatability)

Synchronized graph of two run for Cross level at 160 kmph



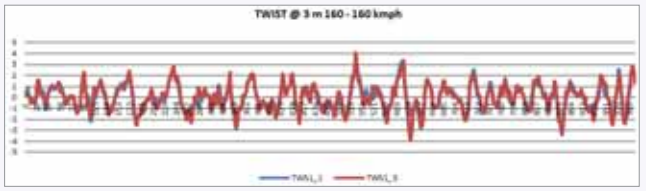
Repeatability Analysis

Section	Speed (kmph)	Direction of Movement		Orientation of TRC		95th Percentile Value of Track Geometry Parameter											
		1st run	2nd run	1st run	2nd run	Gauge (mm)	Cross Level (mm)	Twist (mm/m)		Alignment Left Rail (mm)		Alignment Right Rail (mm)		Longitudinal Level Left Rail (mm)		Longitudinal Level Right Rail (mm)	
								3m	15m	D1	D2	D1	D2	D1	D2	D1	D2
RBL-UCR (SL)	20 & 20	RBL-UCR	RBL-UCR	WT	WT	0.4	0.4	0.5	0.5	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.5
	60 & 60	UCR-RBL	UCR-RBL	WL	WL	0.3	0.3	0.4	0.4	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1
	100 & 100	RBL-UCR	RBL-UCR	WT	WT	0.5	0.8	0.4	0.4	0.2	0.1	0.2	0.1	0.3	0.2	0.2	0.2
AGC-MTJ (DN)	120 & 120	AGC-MTJ	AGC-MTJ	WL	WL	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.0
	160 & 160	AGC-MTJ	AGC-MTJ	WT	WT	0.4	0.2	0.2	0.2	0.3	0.1	0.3	0.1	0.1	0.1	0.1	0.1

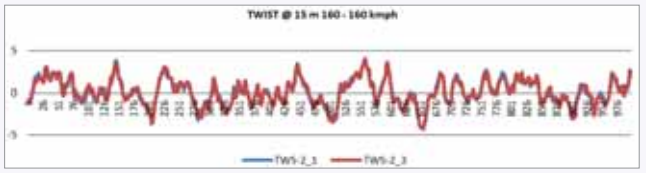
Note : WT – Window Trailing, WL – Window Leading

c. Twist (Repeatability)

Synchronized graph of two runs for Twist (base – 3 m) at 160 kmph

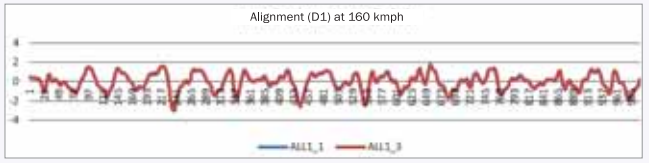


Synchronized graph of two runs for Twist (base – 15 m) at 160 kmph

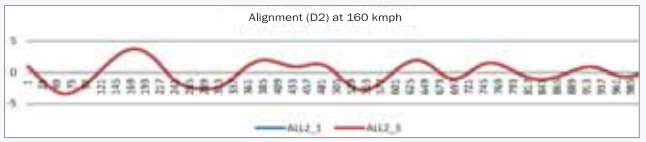


d. Alignment (Repeatability)

Synchronized graph of two runs for Alignment (D1) at 160 kmph

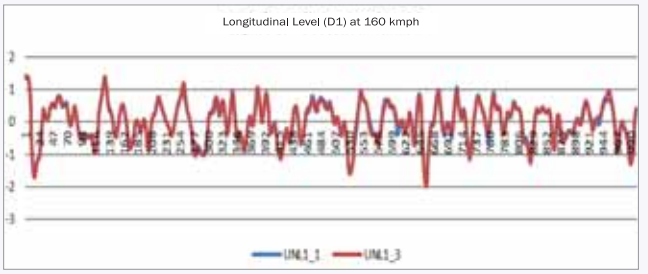


Synchronized graph of two runs for Alignment (D2) at 160 kmph

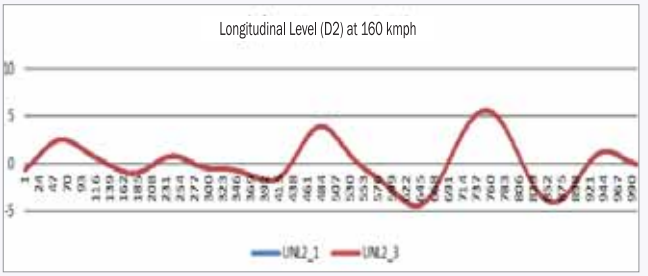


e. Longitudinal level (Repeatability)

Synchronized graph of two runs for Longitudinal Level (D1) at 160 kmph



Synchronized graph of two runs for Longitudinal Level (D2) at 160 kmph



Reproducibility Test

After trial run 95th percentile values of track geometry parameters were calculated for the selected section on prescribed speeds. The obtained values are compared with the limiting values given in EN – 13848-2: 2020. The parameter wise details are written below:

Reproducibility Analysis

Section	Speed (kmph)	Direction of Movement		Orientation of TRC		95th Percentile Value of Track Geometry Parameter											
						Gauge (mm)	Cross Level (mm)	Twist (mm/m)		Alignment Left Rail (mm)		Alignment Right Rail (mm)		Longitudinal Level Left Rail (mm)		Longitudinal Level Right Rail (mm)	
		1st run	2nd run	1st run	2nd run			3m	15m	D1	D2	D1	D2	D1	D2	D1	D2
AGC-MTJ (DN)	160 &160	AGC-MTJ	AGC-MTJ	WL	WT	0.4	0.2	0.2	0.2	0.3	0.1	0.3	0.1	0.1	0.1	0.1	0.1
	120 &160	AGC-MTJ	AGC-MTJ	WL	WL	0.9	1.6	1.0	1.1	0.7	0.3	0.6	0.2	0.7	0.1	0.7	0.2
UCR – RBL (SL)	20 & 60	UCR - RBL	UCR - RBL	WL	WT	0.4	0.4	0.5	0.5	0.2	0.2	0.2	0.2	0.4	0.2	0.4	0.2

Note: WT – Window Trailing, WL – Window Leading

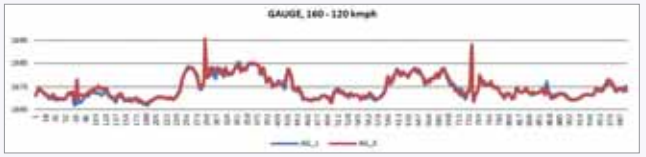
From the reproducibility analysis it is observed that the 95th percentile of absolute difference of all track geometry parameters (gauge, cross level, twist, alignment and unevenness) are well within the reproducibility limits prescribed by EN: 13848 – 2: 2020 as detailed in para 3 (iv) above.

Sample graphical representation of track geometry parameter values of two runs taken for reproducibility analysis of different parameters are shown below for better appreciation:

Reproducibility analysis - Synchronised graph of geometric parameters for two runs

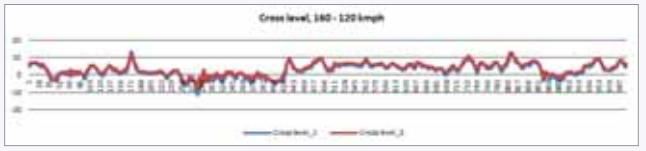
a. Gauge (Reproducibility)

Synchronized graph of two runs for Gauge at 160-120 kmph, different measuring orientation.



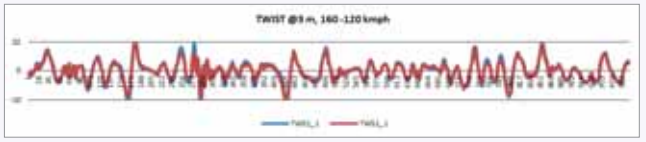
b. Cross level (Reproducibility)

Synchronized graph of two runs for Cross level at 160-120 kmph, different measuring orientation.

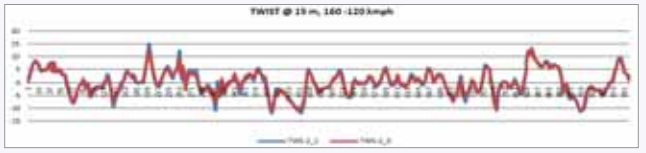


c. Twist (Reproducibility)

Synchronized graph of two runs for Twist (base – 3 m) at 160-120 kmph, different measuring orientation.



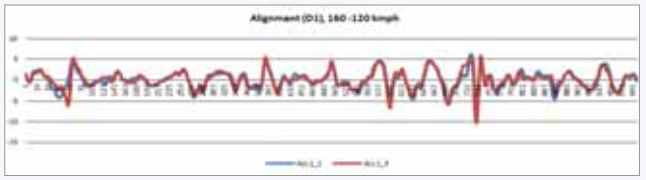
Synchronized graph of two runs for Twist (base – 15 m) at 160-120 kmph, different measuring orientation.

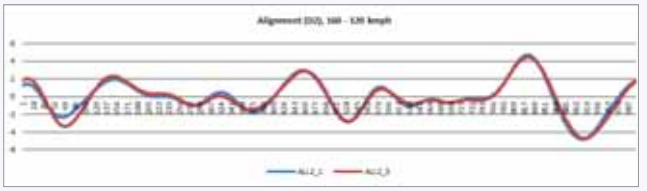


d. Alignment (Reproducibility)

Synchronized graph of two runs for Alignment (D1) at 160-120 kmph, different measuring orientation.

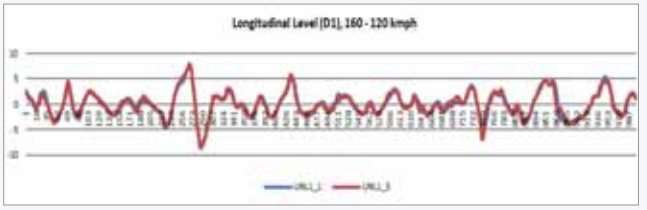
Synchronized graph of two runs for Alignment (D2) at 160 kmph at 160-120 kmph, different measuring orientation.



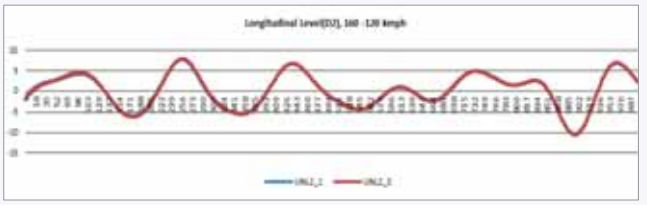


e. Longitudinal level (Reproducibility)

Synchronized graph of two runs for Longitudinal Level (D1) at 160-120 kmph, different measuring orientation.



Synchronized graph of two runs for Longitudinal Level (D2) at 160-120 kmph, different measuring orientation.



5.0 Other practices being followed by RDSO for validation of TRC data

a) Comparison of Gauge and Cross level measured by TRC (in loaded and dynamic condition) and manual measurement in floating condition

Comparison study was conducted with TRC data (in dynamic condition) and manual measurement (in floating condition) for Gauge and Cross level. TRC runs were conducted at lower speed (75 kmph) as well as higher speed (160 kmph) in different routes. Same stretch of approximately 200 m length were selected. The selected stretches were fully ballasted and recently tamped, not showing any significant deflection under dynamic conditions. Since the sampling interval of TRC is 0.25 m hence the same was adopted during manual measurement.

It is observed that variation in gauge (dynamic vs floating) is well within 1 mm in more than 98% of the samples. Similarly variation in cross level is up to 1 mm in more than 96% of the samples. A detailed comparison based on the differences between TRC

and manual measurement is shown in the table below.

Description	Speed 75 kmph (MLJ Yard, 1052 km)		Speed 160 kmph (MTJ-AGC, 1378 km)	
	Gauge	Cross Level	Gauge	Cross Level
Number of samples	801	801	815	815
Variation up to 1 mm	795 (99.25%)	780 (97.37%)	799 (98.04%)	784 (96.20%)
Variation > 1 mm – 1.5 mm	5 (0.62%)	17 (2.12%)	15 (1.84%)	20 (2.45%)
Variation > 1.5 mm – 2mm	1 (0.12%)	3 (0.37%)	1 (0.12%)	5 (0.61%)
Variation above 2 mm	0 (0.0%)	1 (0.12%)	0 (0.0%)	6 (0.74%)
Max. variation observed (mm)	2.52	2.52	1.62	3.60

Similar exercise was conducted on rundown track and it is observed that when the track is in deteriorated condition, the variation of gauge and cross level is considerably higher. Reason for such variation is more deflection in track during dynamic loading.

b) Comparison of two track-recording cars running together

To compare the result of one TRC to another TRC, the joint run of TRC 8001 and TRC 8002 was conducted on December, 2022 on Unchahar (UCR) – Raibarely (RBL) section of Northern Railway at a speed of 110 kmph. The results of the both TRCs are analysed for variation in recorded data by both TRCs. The detailed findings are tabulated below:

S.N	Parameters	95th Percentile Value (mm)		Limit Reproduc-ibility
		UCR-RBL (75-80 Km) WT	RBL-UCR (95-90 Km) WL	
1	Gauge	0.48	0.44	1 mm
2	Cross Level	0.48	0.41	2.5 mm
3	Twist 1 base I <= 5.5m	0.59	0.55	1.5 mm/ 3 m
4	Twist 2 base 5.5 < I <= 20m	0.55	0.55	1.5 mm/ 15 m
5	Left Alignment D1	0.35	0.31	1.1 mm
6	Left Alignment D2	0.09	0.34	3 mm
7	Right Alignment D1	0.33	0.29	1.1 mm
8	Right Alignment D2	0.09	0.31	3 mm
9	Left Long. Level D1	0.29	0.55	0.8 mm
10	Left Long. Level D2	0.12	0.57	2 mm
11	Right Long. Level D1	0.31	0.54	0.8 mm
12	Right Long. Level D2	0.12	0.56	2 mm

Although there is no such prescribed limit of variation for different track geometry parameters for such comparisons, the observed variation of 95th percentile value of absolute differences of track geometry properties are found well within the limit proposed by EN:13848 – 2:2020 for repeatability and reproducibility.

6.0 Conclusion

When measuring the same track, track geometry recording systems has to produce results that are consistent and comparable, irrespective of the measuring speed and direction of travel. The measuring results are used for track quality monitoring, maintenance planning and contributing to the process of safety assurance as related to track geometry.

EN: 13848-2: 2020 for "Railways application – Track – Track geometry quality Part 2: Measuring systems – Track recording vehicles" specifies the minimum requirements for track geometry measuring principles and track geometry measuring systems in order to produce comparable results when measuring the same track.

The Track Recording Cars (TRCs) of Indian Railways are being validated using the method described in European norms EN: 13848-2: 2020 for "Railways application – Track – Track geometry quality Part 2: Measuring systems – Track recording vehicles". Repeatability and Reproducibility analysis results conducted for validation of the Track Geometry parameters were found well within the prescribed limits provided in EN: 13848-2: 2020. Apart from this, track geometry parameter (gauge and cross level) recorded by TRC in dynamic condition were compared with the manual measurement in floating condition of track and it was found that in the stable track there was very insignificant difference in the track geometry parameters. Outputs for different track geometry parameters of two TRCs run together were quite comparable. It was found that 95th percentile of absolute difference of track geometry parameters recorded was well within the reproducibility limits of European norms.

EL Nino-Climatic Effects on Earth

Prof. S. Balakothandapani
Former Chief Trainer, ZRTI



Primarily the Indian subcontinent's rainy season is due to South-west monsoon which falls during June to September of the year.During this time the country receives nearly 75% of its rainfall. The irrigation facilities are very poor and mainly depend on South west monsoons. Many factors contribute to the onset and progress of winds and one of them is EL Nino.

EL Nino is a Spanish word. The term EL Nino means 'the child'. EL Nino tends to trigger intense and widespread periods of extreme ocean warming known as marine heat waves. It is a natural phenomenon wherein the ocean temperature rises especially in parts of the Pacific Ocean.

La Nina means 'little girl'. It is termed as opposite of the phenomenon of El Nino as it results in the cooling of the ocean water in parts of the Pacific Ocean. Both of them also result in changes of atmospheric conditions along with ocean changes.

Origin and Development

Originally the term EL Nino applied to an annual weak warm ocean current that ran southwards along the coast of Peru and Ecuador at about Christmas time. However over time the term has evolved and now refers to the warm and negative phase of the EL Nino-Southern oscillations and is the warming of the ocean surface or above average sea surface temperature in the centre and Eastern tropical Pacific Ocean. Scientists have also found chemical signatures of warmer sea surface temperatures and increased rainfall caused by EL Nino in Coral specimens that are around 13,000% years rain. Around 1525 when Francisco Pizarro made landfall in Peru he noted rainfall in the deserts the first written record of the impacts of EL Nino. Modern day research and reanalysis techniques have managed to find atleast 26 EL Nino events since 1900.

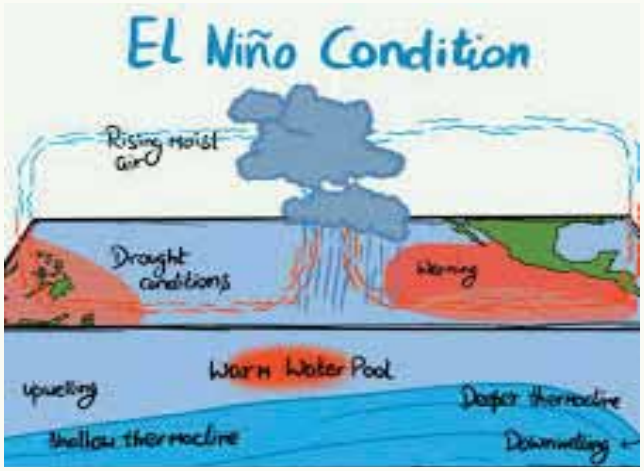
The oceanic Nino index (ONI) is used to measure deviations from normal sea surface temperatures. EL Nino is accompanied by high air pressure in the western Pacific and low in air pressure in the eastern Pacific. El Nino phases are known to last close to four years. However records demonstrate that the cycles have lasted between two and seven years. During the development of EL Nino rainfall develops between September-November.

EL Nino and the World

The warm water affects air currents that leave areas wetter or dry than usual. It can ramp up storms in some areas like the Southern US while tending to tamp down Atlantic hurricance activity. A marine heat wave is just that a 'wave' of extreme heat in the ocean not dissimilar to an atmospheric heat wave on land. As their smaller marine heat waves can inundate local bays and covers with hotter than normal water for a few days or weeks. Fierce marine heat waves like in 2019 can wreak havoc on sea like off in the North America Pacific coast.

Along the US West Coast during EL Nino surface winds that normally blow from the north tend to subside. This weakens evaporation and slows upwelling of colder, deeper water. That indicates the chances of coastal marine heat waves.

Areas of west Japan and Korea tend to experience very fewer September-November tropical cyclones impacts during EL Nino are neutral years. In the Bay of Bengal, East of India, interactions between EL Nino and tropical air flow pattern known as the Walker circulation elevate the risk for marine heat waves.



A University of Cambridge working paper shows that Australia, Chile, Indonesia, India, Japan, New Zealand and South Africa face a shortlived fall in economic activity in response to an EL Nino shock. The IMF estimates that a significant EL Nino can boost GDP of the United States by 0.5% due largely to lower heat bills and reduce the GDP of Indonesia by 1.0%.

EL Nino cycle is associated with increased risk of some of the diseases transmitted by mosquitoes such as malaria, dengue fever and Rift valley fever. Cycles of malaria in India, Venezuela, Brazil and Colombia have now been linked to EL Nino. Outbreak of another mosquito transmitted disease Australian encaphalities occur in temperature. South East Australia after heavy rainfall and flooding which are associated with La Nina. A severe outbreak of Rift valley fever occurred after severe rainfall in north eastern Kenya and Southern Somalia in 1957-98 by EL Nino.

Conclusion

India's monsoon rain fall for the year 2023 has hit a 5 year low marking the lowest since 2018 due to EL Nino. According to latest projections from National Oceanic and Atmospheric Administrations climate Prediction center the Northern Hemisphere may experience a strong El Nino from March to May, 2024 with 1 in 3 chance of it high historically strong surge of EL Nino.■

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Test Your Knowledge

1 Name the newly appointed Chairman & Chief Executive Officer of Railway Board.

(a)	(b)	(c)	(d)
Shri Satish Kumar	Shri Anil Khandelwal	Shri Ravinder Goyal	Shri Brijmohan

2 Name the first women Chairman & Chief Executive Officer of Railway Board

(a)	(b)	(c)	(d)
Ms. Aruna Nayar	Ms. Anjali Goyal	Smt. Jaya Varma Sinha	Ms. Roopa Srinivasan

3 How many rail line projects has the Cabinet approved recently?

(a)	(b)	(c)	(d)
11	2	3	6

4 Which train with 20 coaches covered 160 km successfully in the recently conducted speed test?

(a)	(b)	(c)	(d)
Anubhuti	Vande Bharat	Tejas	Amrit Bharat

5 How many meals does IRCTC serve daily?

(a)	(b)	(c)	(d)
10,000	16 lakh	15,500	5 lakh

6 At present, how many coaches are being manufactured every year by Indian Railways in their Coach Factories.

(a)	(b)	(c)	(d)
7,500	50,000	25,200	2,200

7 Traditionally designed ICF coaches are being replaced by which type of coaches?

(a)	(b)	(c)	(d)
Anubhuti	L.H.B.	Vistadome	Amrit Bharat

8 How many players of Indian Railways won medals in the Olympic Games?

(a)	(b)	(c)	(d)
0	7	12	3

9 Name the men's Hockey team player of Indian Railways who was included in the Paris Olympic Games.

(a)	(b)	(c)	(d)
Swapnil Kusale	Amit Rohidas	Vinesh Phogat	Aman Sehrawat

10 In how many train coaches, CCTVs been installed so far?

(a)	(b)	(c)	(d)
3,050	16,500	9,572	1,256

Right Answers

1- (a)	2- (c)	3- (a)	4- (b)	5- (b)
6- (a)	7- (b)	8- (d)	9- (b)	10- (c)



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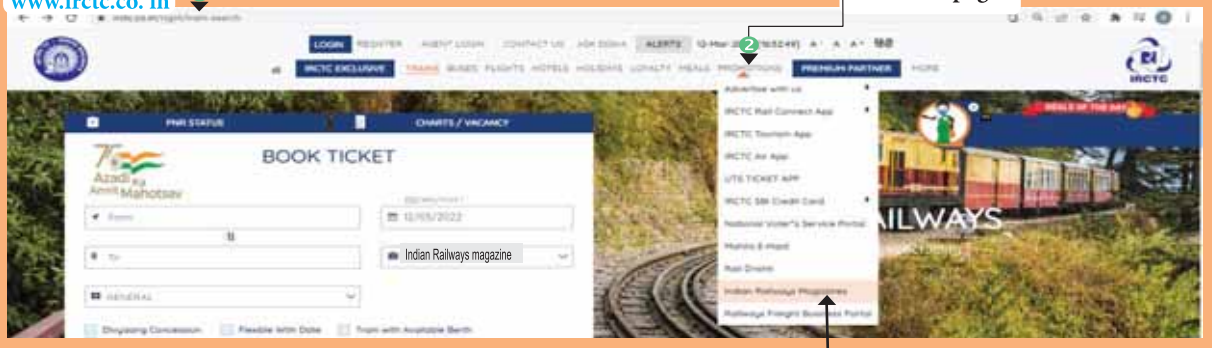
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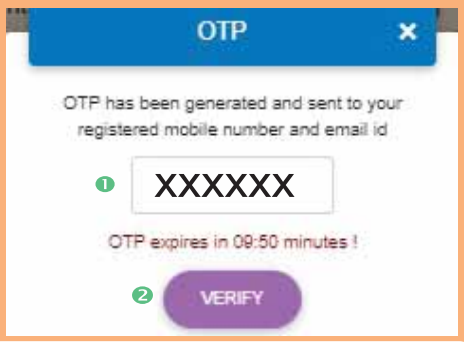


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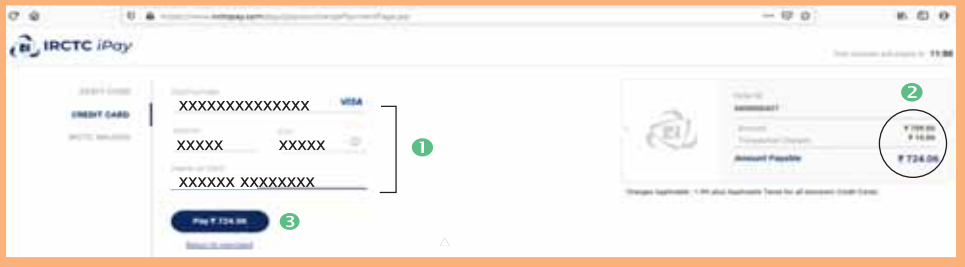
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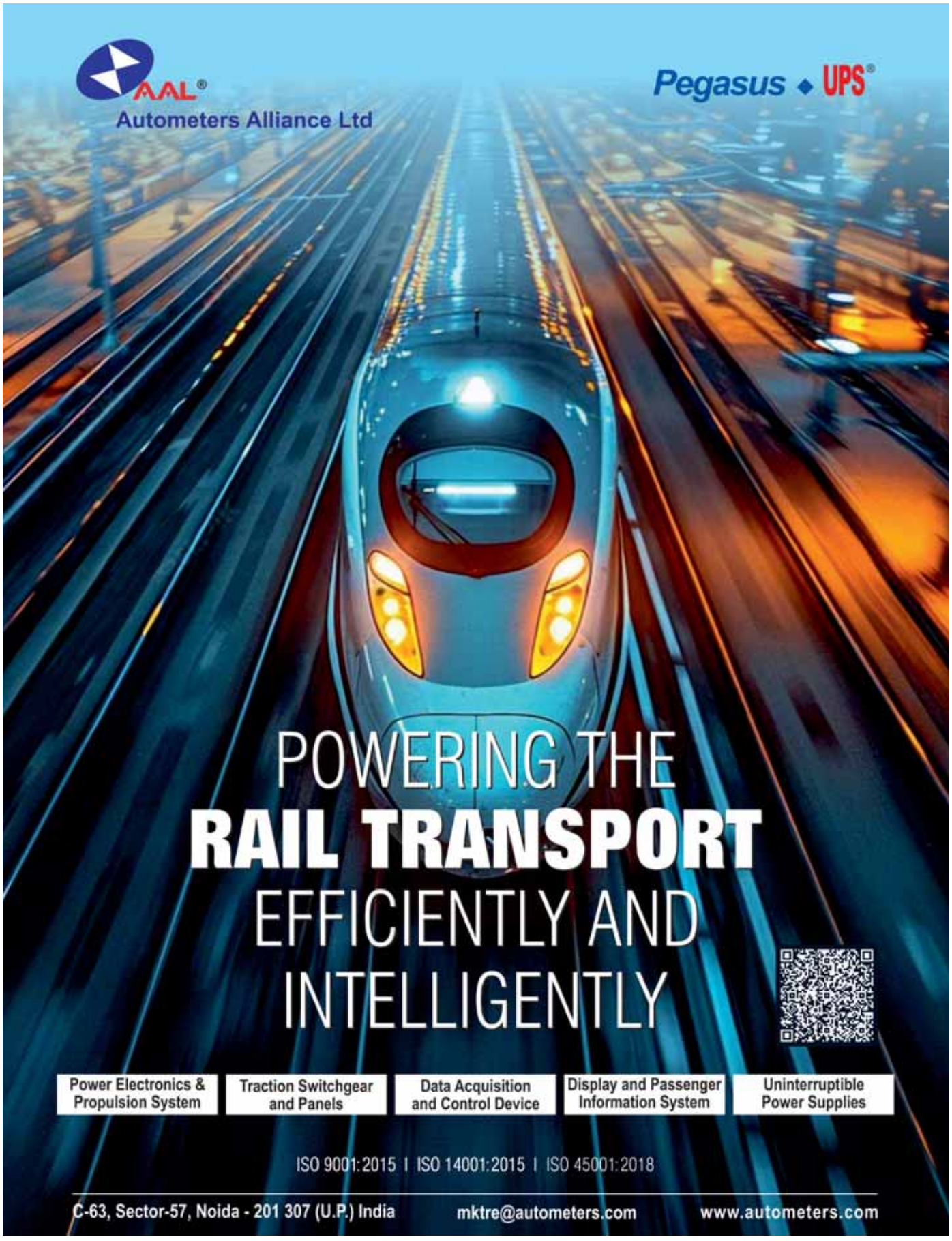
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