GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

**RAJYA SABHA**

**UNSTARRED QUESTION NO.1543**
**ANSWERED ON 12.12.2025**

# ASSESSMENT AND SAFETY AUDITS OF RAILWAY BRIDGES TO AVOID ACCIDENTS

1543 SHRI R. GIRIRAJAN:

Will the Minister of RAILWAYS be pleased to state:

(a) whether the Union Government has taken adequate safety measures to ensure zero accident in Railways and if so, the details thereof;

(b) the total number of railway bridges which are more than 50 years old in the country, railway zone wise;

(c) the steps taken by Government to conduct stability assessment and safety audits on the railway bridges across the country; and

(d) the appropriate measures taken by Government to avoid accidents at level crossings?

## ANSWER

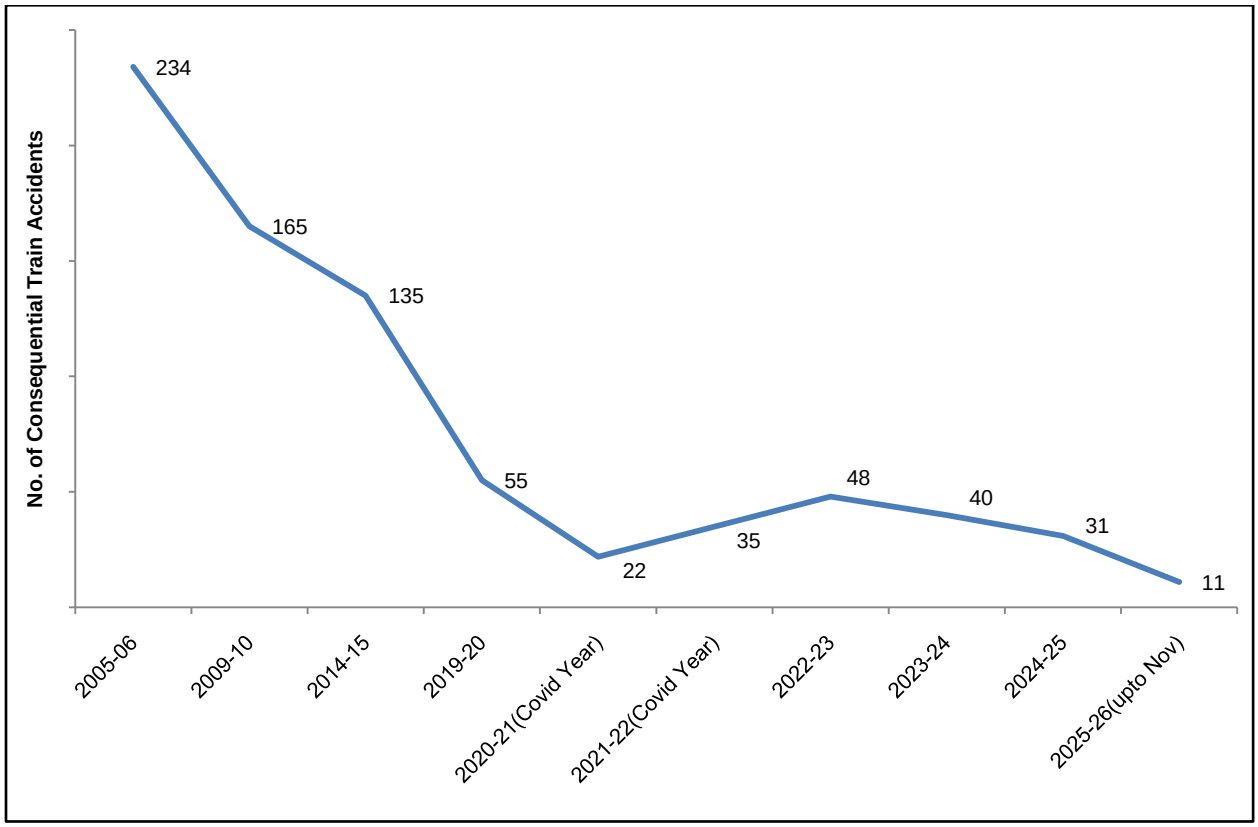
MINISTER OF RAILWAYS, INFORMATION & BROADCASTING AND ELECTRONICS & INFORMATION TECHNOLOGY

(SHRI ASHWINI VAISHNAW)

(a) to (d): Safety is accorded the highest priority on Indian Railways. 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 135 in 2014-15 to 31 in 2024-25 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 31 in 2024-25 and further to 11 in 2025-26 (upto November, 2025).

Another important index showing improved safety in train operations is Accidents Per Million Train Kilometer (APMTKM) which has reduced from 0.11 in 2014-15 to 0.03 in 2024-25, indicating an improvement of approx. 73% during the said period.




Consequential Train Accidents on Indian Railways and casualties (including railway passengers and railway personnel) therein are as follows:-

| Period | No. of Consequential Train Accidents | No. of Deaths | No. of Injuries |
|---|---|---|---|
| **2004-05 to 2013-14** | 1,711 | 904 | 3,155 |
| **2014-15 to 2023-24** | 678 | 748 | 2,087 |
| **2024-25** | 31 | 18 | 92 |

The various safety measures taken to enhance safety in train operations are as under:-

1. On Indian Railways, the expenditure on Safety related activities has increased over the years as under:-

| **Expenditure/Budget on Safety related activities (Rs. in Cr.)** | | | | |
|---|---|---|---|---|
| **2013-14 (Act.)** | **2022-23 (Act.)** | **2023-24 (Act.)** | **2024-25** | **2025-26** |
| **39,463** | **87,327** | **1,01,651** | **1,14,022** | **1,16,470** |

2. Electrical/Electronic Interlocking Systems with centralized operation of points and signals have been provided at 6,656 stations up to 31.10.2025 to reduce accident due to human failure.
3. Interlocking of Level Crossing (LC) Gates has been provided at 10,098 Level Crossing Gates up to 31.10.2025 for enhancing safety at LC Gates.
4. Complete Track Circuiting of stations to enhance safety by verification of track occupancy by electrical means has been provided at 6,661 stations up to 31.10.2025.
5. Kavach is a highly technology intensive system, which requires safety certification of highest order. Kavach was adopted as a National ATP system in July 2020. Kavach is provided progressively in phased manner. Initially, Kavach Version 3.2 was deployed on 1465 RKm of South Central Railway and 80 RKm of North Central Railway. Kavach specification Version 4.0 was approved by RDSO on 16.07.2024. After extensive and elaborate trials, Kavach Version 4.0has been successfully commissioned on Palwal-Mathura-Kota-Nagda section (633 Rkm) on Delhi- Mumbai route and on Howrah-Bardhaman section (105RKm) on Delhi-Howrah route. Kavach implementation has been taken up in balance sections of Delhi-Mumbai and Delhi-Howrah route. Further, Kavach implementation has been taken up on 15,512 RKm covering all GQ, GD, HDN and identified sections of Indian Railways.
6. 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.
7. System of disconnection and reconnection for S&T equipment as per protocol has been re-emphasized.
8. All locomotives are equipped with Vigilance Control Devices (VCD) to improve alertness of Loco Pilots.
9. 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.
10. 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.
11. Modern track structure consisting of 60kg, 90 Ultimate Tensile Strength (UTS) rails, Prestressed Concrete Sleeper (PSC) Normal/Wide base sleepers with elastic fastening, fan shaped layout turnout on PSC sleepers, Steel Channel/H-beam Sleepers on girder bridges is used while carrying out primary track renewals.

12. Mechanisation of track laying activity through use of track machines like PQRS, TRT, T-28 etc. to reduce human errors.
13. Maximizing supply of 130m/260m long rail panels for increasing progress of rail renewal and avoiding welding of joints, thereby improving safety.
14. Ultrasonic Flaw Detection (USFD) testing of rails to detect flaws and timely removal of defective rails.
15. Laying of longer rails, minimizing the use of Alumino Thermic Welding and adoption of better welding technology for rails i.e., Flash Butt Welding.
16. Monitoring of track geometry by OMS (Oscillation Monitoring System) and TRC (Track Recording Cars).
17. Patrolling of railway tracks to look out for weld/rail fractures.
18. The use of Thick Web Switches and Weldable CMS Crossing in turnout renewal works.
19. Inspections at regular intervals are carried out to monitor and educate staff for observance of safe practices.
20. Web based online monitoring system of track assets viz. Track database and decision support system has been adopted to decide rationalized maintenance requirement and optimize inputs.
21. Detailed instructions on issues related with safety of Track, e.g. integrated block, corridor block, worksite safety, monsoon precautions, etc. have been issued.
22. Preventive maintenance of railway assets (Coaches & Wagons) is undertaken to ensure safe train operations.
23. Replacement of conventional ICF design coaches with LHB design coaches is being done.
24. All unmanned level crossings (UMLCs) on Broad Gauge (BG) route have been eliminated by January 2019.
25. 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.
26. 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.
27. 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.

28. Regular counselling and training of staff is undertaken.
29. Concept of Rolling Block introduced in Indian Railways (Open Lines) General Rules vide Gazette notification dated 30.11.2023, 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 the Safety related works related to better maintenance practices, Technological improvements, better infrastructure and rolling stock etc. undertaken by Railways are tabulated below:-

| S.N. | Item | 2004-05 to 2013-14 | 2014-15 to 2024-25 | 2014-25 Vs. 2004-14 |
|---|---|---|---|---|
| | **Technological Improvements** | | | |
| **1.** | Use of high-quality rails (60 Kg) (Km) | 57,450 Km | 1.43 Lakh Km | More than 2 times |
| **2.** | Longer Rail Panels (260m) (Km) | 9,917 Km | 77,522 Km | Nearly 8 times |
| **3.** | Electronic Interlocking (Stations) | 837 Stations | 3,691 Stations | More than 4 times |
| **4.** | Fog Pass Safety Devices (Nos.) | As on 31.03.14: 90 Nos. | As on 31.03.25: 25,939 Nos. | 288 times |
| **5.** | Thick Web Switches (Nos.) | Nil | 28,301 Nos. | |
| | **Better Maintenance Practices** | | | |
| **1.** | Primary Rail Renewal (Track Km) | 32,260 Km | 49,941 Km | 1.5 times |
| **2.** | USFD (Ultra Sonic Flaw detection) Testing of Welds (Nos.) | 79.43 Lakh | 2 Crore | More than 2 times |
| **3.** | Weld failures (Nos.) | In 2013-14: 3699 Nos. | In 2024-25: 370 Nos. | 90 % reduction |
| **4.** | Rail fractures (Nos.) | In 2013-14: 2548 Nos. | In 2024-25: 289 Nos. | More than 88% reduction |
| | **Better Infrastructure and Rolling Stock** | | | |
| **1.** | New Track KM added (Track Km) | 14,985 Km | 34,428 Km | More than 2 times |
| **2.** | Flyovers (RoBs)/ Underpasses (RUBs) (Nos.) | 4,148 Nos. | 13,808 Nos. | More than 3 times |

| | | | | |
|---|---|---|---|---|
| **3.** | Unmanned Level crossings (Nos.) on BG | As on 31.03.14: 8,948 | As on 31.03.24: Nil (All eliminated by 31.01.19) | Removed |
| **4.** | Manufacture of LHB Coaches (Nos.) | 2,337 Nos. | 42,677 | More than 18 times |

**Railway Bridges:-**

As on 01.04.2024, there are 1,63,810 Railway Bridges on Indian Railways' Network of varying ages. All Bridges are maintained in good physical condition irrespective of its age by periodic inspection & repairs.

There is an established system of inspection of Railway bridges on IR. Annual Inspection of all the bridges is conducted to ascertain the physical condition of the bridge and repairs / rehabilitation/regirdering/rebuilding measures are taken up wherever required. Detailed technical inspection of identified bridges is carried out as per specified frequency by designated officials. In addition, certain bridges are also inspected more frequently depending upon their condition. Special technical audit is also conducted and follow up action is taken up.

Indian Railways has developed a Bridge Management System (BMS), a comprehensive digital platform that stores detailed information of every bridge, including maintenance history and inspection records. The system helps identify bridges in vulnerable such as flood-prone, landslide-prone etc. and records any unusual incidents for easy access.

Repair/strengthening/rehabilitation/rebuilding of railway bridges is a continuous process and is undertaken whenever so warranted by their physical condition as ascertained during these inspections. All bridges are safe for train movement at permitted speed.

Railways follow a Numerical Rating System for assessment of physical condition of the Bridge. Every Bridge is assigned an Overall Rating Number (ORN) based on outcome of post monsoon inspection. Based on ORN of a bridge, the repair /rehabilitation measures are taken up. Repair/Strengthening/ Rehabilitation/Rebuilding of bridges is a continuous & ongoing process and is undertaken based on inspections of bridges. During 2014-2025 (upto Nov'2025), 16,369nos of railway bridges were repaired / rehabilitated/ strengthened /rebuild in Indian Railway.

**Measures taken by Government to avoid accidents at Level Crossings:-**

All Unmanned Level Crossings (UMLCs) on running lines of Broad Gauge network of Indian Railway have been eliminated by 31.01.2019.

Elimination of level crossings (LCs) is a continuous and dynamic process of Indian Railway. Such works are taken up on the basis of its impact on safety in train operations, mobility of trains & impact for road users and feasibility etc.

MLCs are eliminated either by providing Road Over Bridges/Road Under Bridges (ROBs/RUBs) in lieu of LCs or through direct closure (for low traffic LCs) or by diversion of road traffic to nearby ROB/RUB/LC depending upon the site conditions.

Sanctioning and execution of works of Road Over Bridges/Road Under Bridges (ROBs/RUBs) is a continuous and ongoing process on Indian Railways. Such works are prioritized and taken up on the basis of its impact on safety and mobility in train operations and impact on road users.

Nos. of ROBs/RUBs constructed on Indian Railways during the period 2004-14 vis a vis 2014-25 (Oct'25) is as under:-

| Period | ROBs/ RUBs constructed |
|---|---|
| **2004-14** | 4,148 Nos. |
| **2014-25 (Oct'25)** | 13,653 Nos. |

As on 01.11.2025, 4,689 Nos. of ROBs/RUBs are sanctioned at cost of Rs. 1,11,583 Cr. on Indian Railways which are at various stages of planning and execution.

Further, Railways have taken following measures to expedite the progress of work:-

**i.** Joint survey with concerned State Govt./Road Owning Authority is done before finalizing the General Arrangement Drawing (GAD) to ensure smooth execution.

**ii.** Periodic meetings of Railway & State Government officials are done to resolve various issues related to ROB/RUB works.

**iii.** Standardization of superstructure drawings for various combinations of span, skewness and width of road on Railway portion has been done to avoid delays during the design approval. This has been issued in the form of compendium, which can be directly adopted for Road Over Bridge across Railway lines for expeditious planning.

**iv.** ROB/RUB works are planned to be executed on a single entity basis by Railway wherever possible. In case any Road Owning authority/State Govt. wants then Railway may permit them to execute the work on a single entity basis.

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