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STANDING COMMITTEE ON RAILWAYS
(2024-25)

(EIGHTEENTH LOK SABHA)

MINISTRY OF RAILWAYS
(RAILWAY BOARD)

FOURTH REPORT

CONSTRUCTION AND MAINTENANCE OF RAIL TUNNELS AND BRIDGES INCLUDING ROAD OVER BRIDGES/ROAD UNDER BRIDGES

LOK SABHA SECRETARIAT

NEW DELHI

AUGUST, 2025/ SHRAVAN, 1947 (SAKA)

S.C.R. No. 248

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(2024-25)

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MINISTRY OF RAILWAYS
(RAILWAY BOARD)

CONSTRUCTION AND MAINTENANCE OF RAIL TUNNELS AND BRIDGES INCLUDING ROAD OVER BRIDGES/ROAD UNDER BRIDGES

Presented to Lok Sabha on 11.08.2025

Laid in Rajya Sabha on 11.08.2025

LOK SABHA SECRETARIAT

NEW DELHI

AUGUST, 2025/ SHRAVAN, 1947 (SAKA)

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COMPOSITION OF STANDING COMMITTEE ON RAILWAYS (2024-25)@

Dr. C.M. Ramesh - Chairperson

MEMBERS

LOK SABHA

2. Shri Damodar Agrawal
3. Shri Tariq Anwar
4. Shri T. R. Baalu
5. Shri Ummeda Ram Beniwal
6. Shri Chhotelal
7. Smt. Sangeeta Kumari Singh Deo
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29. Dr. Sumer Singh Solanki
30. Shri K. Vanlalvena
31. Shri Mukul Balkrishna Wasnik

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@ Constituted w.e.f. 26.09.2024 *vide* Lok Sabha Bulletin Part II No. 841 dated 26.09.2024.

LOK SABHA SECRETARIAT

1.	Shri Dhiraj Kumar	-	Joint Secretary
2.	Md. Aftab Alam	-	Director
3.	Smt. Savdha Kalia	-	Deputy Secretary
4.	Shri Ram Sharan Yadav	-	Assistant Executive Officer

List of Abbreviations

BG	-	Broad Gauge
BLT	-	Ballast Less Track
BMS	-	Bridge Management System
CR	-	Central Railway
CRN	-	Condition Rating Number
CRS	-	Commission of Railway Safety
ECOR	-	East Coast Railway
ECR	-	East Central Railway
ER	-	Eastern Railway
FOB	-	Foot Over Bridge
GAD	-	General Arrangement Drawing
GM	-	General Manager
GSV	-	Gati Shakti Vishwavidyala
HSFG	-	High Strength Friction Grip
IMD	-	India Meteorological Department
IRICEN	-	Indian Railways Institute of Civil Engineering
LC	-	Level Crossing
LHS	-	Limited Height Subway
MBT	-	Main Boundary Thrust
MG	-	Meter Gauge
MLC	-	Manned Level Crossing
MoRTH	-	Ministry of Railways and Ministry of Road Transport and Highways
NCR	-	North Central Railway
NER	-	North Eastern Railway
NFR	-	North Frontier Railway
NG	-	Narrow Gauge
NH	-	National Highways
NHAI	-	National Highways Authority of India
NITM	-	New Australian tunneling Method
NR	-	Northern Railway
NWR	-	North Western Railway
ORN	-	Overall Rating Number
RAT	-	Railway Affecting Tanks
RAW	-	Railway Affecting Works
RDSO	-	Research Designs and Standards Organization
ROB	-	Road Over Bridge
RORV	-	Remote Operated Robotic Vehicles
RUB	-	Road Under Bridge
R&R	-	Rehabilitation & Resettlement
SCR	-	South Central Railway
SECR	-	South East Central Railway
SER	-	South Eastern Railway

SR	-	Southern Railway
SWR	-	South Western Railway
TBM	-	Tunnel Boaring Machine
TuMS	-	Tunnel Management System
UMLC	-	Unmanned Level Crossing
USBRL	-	Udhampur–Srinagar–Baramula Rail Link
WCR	-	West Central Railway
WR	-	Western Railway
ZBTI	-	Zonal Bridge Training Institute

INTRODUCTION

I, the Chairperson, Standing Committee on Railways (2024-25) having been authorised by the Committee to submit the Report on their behalf, present this Fourth Report on the subject 'Construction and maintenance of Rail tunnels and Bridges including Road Over Bridges/Road Under Bridges'.

2. The representatives of the Ministry of Railways (Railway Board) briefed the Committee on the subject at their sitting held on 28.11.2024. Further, the Committee took oral evidence of the representatives of Ministry of Railways (Railway Board) on 25.06.2025.

3. The Committee considered and adopted this Report at their sitting held on 07.08.2025. The minutes of the sittings are given in the appendix to the Report.

4. The Committee wish to express their thanks to the representatives of the Ministry of Railways (Railway Board) for tendering evidence and placing before the Committee all the requisite material and information sought for in connection with the examination of the subject. They would also like to place on record their deep sense of appreciation for the valuable assistance rendered to them by the officials of the Lok Sabha Secretariat attached to the Committee.

5. For facility of reference and convenience, the observations and recommendations of the Committee have been printed in bold font in Part II of the Report.

New Delhi;
07 August, 2025
16 Shravan, 1947 (Saka)

DR. C.M. RAMESH
Chairperson
Standing Committee on Railways

REPORT

PART-I

I. INTRODUCTORY

1.1 The Indian Railways, one of the world's largest rail network under a single management which serves as the lifeline of the nation's transportation infrastructure. Integral to this vast network are railway bridges and tunnels, which facilitate uninterrupted rail operations across rivers, valleys and mountainous terrains including the strategic needs of the country. Indian Railways manages an impressive inventory of over 1.68 lakh bridges which are further classified on the basis of their span and importance into important, major and minor categories. These structures are meticulously inspected and maintained through a well-defined monitoring system, utilizing modern technologies such as drone surveys, 3D riverbed scanning and underwater inspections to ensure their operational integrity and public safety.

1.2 In addition to bridges, railway tunnels play a vital role in maintaining connectivity across difficult and mountainous regions, particularly in the Himalayan belt. Indian Railways currently operates over 577 tunnels, with total tunnel lengths exceeding 304 kilometers. The construction and maintenance of these tunnels require advanced engineering expertise due to complex geological conditions, seismic vulnerabilities and logistical challenges. Safety and structural stability remain paramount, with periodic inspections ensuring operational readiness.

1.3 Complementing this intricate network of rail bridges and tunnels are Road Over Bridges (ROBs) and Road Under Bridges (RUBs). With increasing urbanization and traffic density over the years now, Level Crossings pose a significant risks to both rail and road users. Recognizing these challenges, the Indian

Railways, in collaboration with the State Governments, NHAI and other local authorities, have prioritized the construction of ROBs and RUBs to enhance traffic mobility and safety. As of 01.04.2025, there are over 19,403 ROBs and RUBs operational across the country. The Indian Railways proactively undertook efforts to eliminate unmanned level crossings on Broad Gauge routes, achieving this goal by 31st January, 2019.

1.4 This report presents a consolidated overview of the status, inspection practices and construction activities concerning railway bridges, tunnels, ROBs and RUBs within Indian Railways. It highlights key statistics, infrastructural challenges and policy initiatives aimed at improving safety, mobility and operational efficiency. Additionally, it outlines strategic initiatives for strengthening infrastructure development priorities and formulating forward-looking strategies to support a safer, more efficient and modernized rail transportation system for the nation.

II. RAILWAY BRIDGES

Statistical Overview

2.1 The Committee have been informed by the Ministry of Railways that as on 01.04.2025, there are a total of 1,68,845 Railway Bridges in Indian Railways network. The Bridges have been classified into 3 types based on their placement on the waterway:-

(i) Important Bridges:

Bridges with their linear waterway of 300 meters or more or a total waterway of 1000 square meters or more and those bridges classified as important bridges by the Principal Chief Engineer/Chief Bridge Engineer.

(ii) Major Bridges:

Bridges with total linear water way of 18 meters or more or which have a clear opening of 12 linear meters or more in any one span are classified as major bridges.

(iii) Minor Bridges:

Bridges which do not fall in the above classification are classified as Minor Bridges.

2.2 The zone wise categorization of the important, major and minor bridges is reported to be as under:

BRIDGES STATISTICS AS ON 01.04.2025

S. No.	Rly	IMP	Major	Minor	Total
1.	CR	72	849	9392	10313
2.	ER	31	534	5154	5719

3.	ECR	47	1029	7565	8641
4.	ECOR	40	958	12613	13611
5.	NR	66	1578	20179	21823
6.	NCR	31	473	6761	7265
7.	NER	26	440	4513	4979
8.	NFR	36	1238	6879	8153
9.	NWR	38	422	7109	7569
10.	SR	48	1099	16547	17694
11.	SCR	46	1475	16957	18478
12.	SER	20	612	7961	8593
13.	SECR	27	488	5532	6047
14.	SWR	32	787	9563	10382
15.	WR	76	1159	9911	11146
16.	WCR	120	674	7638	8432
Grand Total		**756**	**13815**	**154274**	**168845**
%age		**0.45%**	**8.18%**	**91.37%**	**100.00%**

Inspection and monitoring of bridges

2.3 To a specific query, the Ministry of Railways have informed that there is an established system of inspection and monitoring of Railway bridges on the Indian Railway network All the bridges are inspected twice in a year, once before the onset of monsoon and thereafter when the monsoon recedes by the designated officials. In addition, certain bridges are also inspected more frequently depending upon their condition. 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. If corrective/remedial measures are expected to take a long duration due to the complexity of the site situation, etc., suitable safety measures like imposing speed restrictions and keeping such bridge under close watch are, taken till the bridge is

repaired/strengthened/rehabilitated/rebuilt. Various modern technologies like Drone Survey, 3D Scanning of River Beds and Water Level Monitoring have been adopted and are installed for the regular monitoring of the bridges as per site requirement.

2.4 The Committee have been informed that the Condition Rating Number (CRN) is allotted to each of the bridge components, based on its condition at the time of inspection, using the following scale :-

Condition Rating Number (CRN)	**Condition of bridge component**
1	This warrants immediate rebuilding/rehabilitation
2	Rebuilding/rehabilitation on a programmed basis
3	Condition requiring Major/special repairs
4	Condition requiring routine maintenance
5	Sound condition
6	Not applicable
0	Not inspected

Based on CRN of various components, Overall Rating Number (ORN) is derived. Every bridge is assigned Unique Rating Number (1 to 5) based on physical condition at the time of inspection. Lower the Overall Rating Number (ORN), more attention is required to the bridge. Rating No. 1 means bridge to be rehabilitated immediately.

2.5 To a query by the Committee, the Ministry have furnished the following details of Railway Bridges assigned overall Rating-1 in bridge inspection during last three years along with current status of maintenance/rehabilitation:

Year	Nos. of Bridge	Rehabilitation done
2022-23	1(BG - Bridge no 1159 UP of ECoR)	1(BG - Bridge no 1159 UP of ECoR)
2023-24	0	0
2024-25	3(NG -Bridge No 32 & 800 NR and BG - Bridge No 100 DN of WR)	1 (BG - Bridge no 100 DN of WR)
2025-26	2 (NG - Bridge No 32 & 800 NR)	1 (NG - Bridge No 800 NR)

2.6 When asked, whether the Indian Railways had any mechanism for continuous monitoring of the condition of the bridges on the rail network, the Ministry have informed that a Bridge Management System (BMS), a web-based IT application has been developed to facilitate 24x7 availability of information such as bridge drawings/design details, inspection details, photographs etc. for meaningful analysis, assessment of progressive deterioration and capacity to carry increased loads. Technical details & drawing of bridges has been uploaded on BMS. All bridge inspections details are recorded in BMS (Online). Compliance of the inspection is being monitored through the system. Based on periodic reports from BMS, management can take decision and priority for bridge rehabilitation works.

2.7 The Committee was further informed that in order to upgrade inspection techniques of Rail Bridges by Indian Railways, the following new and modern technologies are stated to have been introduced:

(i) Continuous water level measurement and monitoring system.

(ii) Inspection of bridges using Drones.

(iii) 3D scanning of riverbeds.

(iv) Continuous scour monitoring system near the pier/abutment in progress.

(v) Underwater inspection by deploying Remote Operated Robotic Vehicles (RORV) in progress.

(vi) Instrumentation of Bridges.

2.8 When enquired about the technologies used by Indian Railways for real-time monitoring of the structural health of bridges and tunnels, the Ministry informed as follows:

Real time monitoring of the following bridges are being done with the help of sensors for monitoring of strain, tilt, wind speed, temperature & other important parameters to access the condition of the bridge/validation of design.

(i) At Anji Bridge, first cable stayed bridge with main cable stayed span of 473.25meter.

(ii) At Chenab Bridge in NR, first steel arch bridge having height of 359 meter.

(iii) At Bogibeel Bridge in NFR, longest Rail cum Road bridge in India.

2.9 The committee desired to know whether any coordination mechanism had been devised with other agencies for assessing the impact of weather any water flow on the bridges of the Indian Railways, the Ministry replies in affirmative and have stated that:

Monitoring/maintenance of railway bridges is done by coordination with IMD, Ministry of Jal Shakti and local authorities as follows:

- Joint inspection of Railway Affecting Works/Railway Affecting Tanks (RAW/RAT) is done annually with the local authority.

- Regular dissemination of warnings by IMD to Divisional HQ control (for rain fall: https://webgis.imd.gov.in/webgis_DRMS/DRMS.html)
- Regular Visit to NDEM & NRSC Website for Flood Forecast https://ndem.nrsc.gov.in/#/cwc7day
- Regular Visit to CWC Website for Level of River https://ffs.india-water.gov.in/#/
- Manning of control centre.
- Deputing regular patrolling of track/vulnerable stretches, deployment of stationary watchmen etc.

2.10 Elaborating further on the monetary mechanism during the oral evidence on 25.06.2025, the representative of Ministry deposed as under:

> "राज्य सरकार के द्वारा कहीं से पानी छोड़ा तो नहीं जा रहा है, इस हेतु आपके संज्ञान में लाना चाहूंगा कि वर्ष 2014-15 में भोपाल में जब फ्लड आया था, तो दो गाड़ियां एक ब्रिज पर गिर गई थीं। उससे रिलेटेड सबसे ज्यादा खतरा ऐसे फ्लड से रहता है। अत: हम लोग बहुत मॉनिटरिंग करके रखते हैं कि पानी किस तरह से छोड़ा जा रहा है, किस तरह से बढ़ रहा है और डाउन स्ट्रीम में कितने घंटे में पानी आ जाएगा, उसका पूरा ब्यौरा रखना पड़ता है। हमारे करीब 450 ब्रिजेज ऑनलाइन मॉनिटरिंग के द्वारा जुड़े हैं। विभिन्न नदियों में पानी किस हिसाब से चल रहा है, उसे हम देखते हैं। यह प्रोसीजर हम फॉलो कर रहे हैं।"

Repairing/Strengthening/Rehabilitation/Rebuilding of Bridges

2.11 The Ministry have informed that on the basis conditional assessment during the inspection the bridges are proposed for Repairing/Strengthening/ Rehabilitation/Rebuilding of bridges, which are sanctioned under Plan head-32 in annual works program. After sanction of bridge work, several activities are involved in bridge rehabilitation work such as preparation and finalization of General Arrangement Drawing (GAD), preparation and sanction of detailed estimate, land acquisition in some cases, obtaining Commission of Railway Safety (CRS) sanction,

finalization of tenders, execution of work etc. With regard to Planhead-32, the Ministry submitted that from 2004-2005 to 2013-2014, 11680 bridges were rehabilitated with expenditure of 3918 Cr and from 2014-2015 to 2023-24, 11918 bridges were rehabilitated with expenditure of 8254.45 Cr. In year 2024-25 (up to Oct'24) 1327 bridges were rehabilitated with expenditure of 1233 Cr .

Guidelines governing the Constructions and maintenance of rail bridges

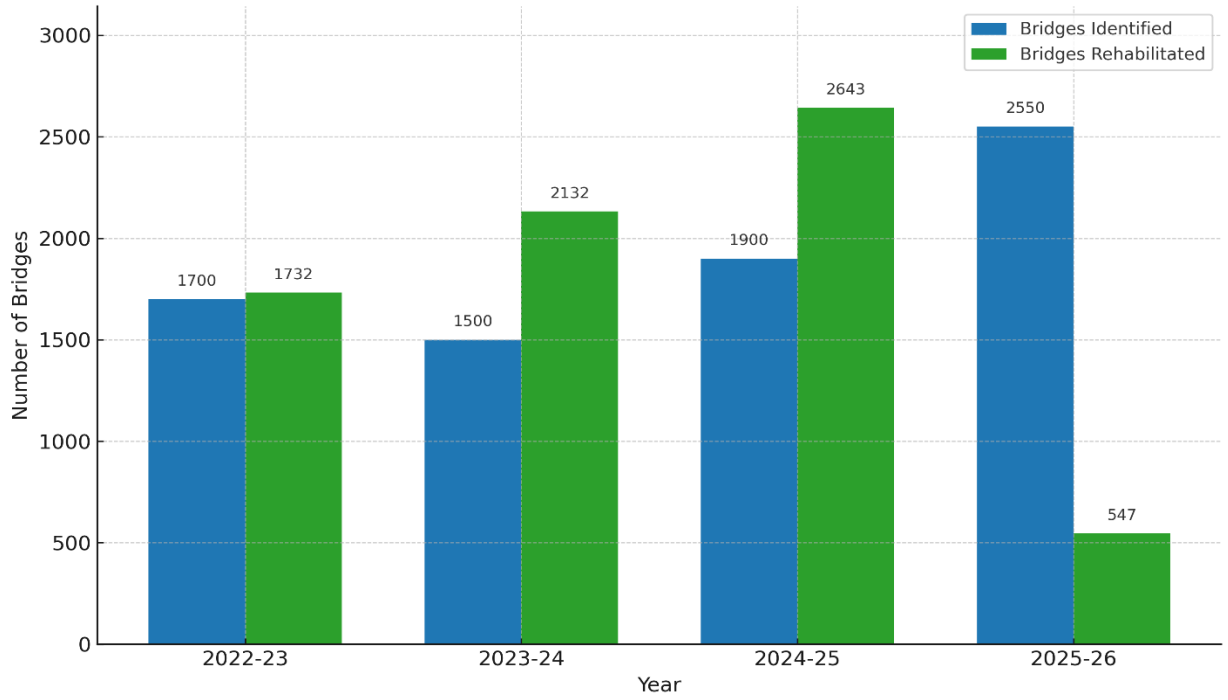
2.12 When asked about the key regulations and guidelines governing the construction and maintenance of rail bridges, the Ministry have submitted as under:

Designs are done as per provisions of various codes of IRS, BIS, IRC etc. duly considering safety, serviceability/maintainability and design life. The main factors taken into account during the design phase of rail bridges are:

1. Detailed geo-technical investigations to ascertain the type and quality of ground strata for founding the bridge.
2. Selection of type of foundation on the basis of geotechnical investigation report.
3. Hydrological study and calculation for estimation of discharge.
4. Design of waterway and fixing of span arrangements.
5. Calculation of Loads & Forces (such as Dead load, Live load, impact load, forces due to eccentricity and curvature, seismic forces etc.) as per IRS Bridge Rules.
6. River training works / Protection works.

Railway Steel bridges are designed based on expected annual railway traffic and a specified design life in years, type of structure and materials used (e.g., steel, reinforced cement concrete, prestressed concrete, composite sections, etc.), durability considerations.

2.13 The Ministry have provided the details of bridges identified for repair/rehabilitation and number of bridges rehabilitated in last three years (upto May, 2025) clearly indicating an upward trend in the number of bridges rehabilitated since 2022-23as under:



2.14 In response to a query regarding the number of railway bridges in India with speed restrictions, that need rebuilding and the status/progress of work on these bridges, the Ministry have provided the following information: Out of a total of 41 bridges with speed restriction.

- 39 bridges have been sanctioned for rebuilding

- Work completed :-2 bridges
- Work is in progress :-26 bridges
- Detailed drawing/Scheme under preparation/approval:-11 bridges

- Sanctionpending:- 2 bridges

2.15 While elaborating further during evidence dated 25.06.2025, the representative of Ministry deposed as under:

"एक प्रश्न यह था कि हमारे पास ऐसे कितने पुल हैं, जिसमें कि हमने स्पीड रिस्टिक्शन लगाए हैं। ऐसे 41 ब्रिजेज हैं, जिनमें हमने स्पीड रिस्टिक्शन लगाए हैं, उसमें से दो में कार्य पूरा हो चुका है और 26 ब्रिजेज, जिन पर काम चल रहा है, उसके संबंध में मैं आपके संज्ञान में लाना चाहता हूं कि दो ब्रिजेज इनमें से ऑलरेडी और एडवांस स्टेज में हैं और जो सभी 14 ब्रिजेज हैं, उनको वर्ष 2025-26 में पूरा कर लिया जाएगा। वर्ष 2026-27 में आठ ब्रिजेज रहेंगे और वर्ष 2027-2028 में चार रहेंगे। चूंकि यह लंबी प्रक्रिया है, इन सभी को वर्ष 2027-2028 में पूरा कर दिया जाएगा। इसके अलावा, जो शेष हैं, वह टेंडर की प्रक्रिया में हैं और नवम्बर 2025 तक हम इनकी टेंडर की प्रक्रिया भी पूरी कर देंगे। उसके बाद वह भी एग्जीक्यूशन के मोड में आ जाएंगे।"

2.16 To a specific query on mechanism to repair sub-structure of bridge under water, the Ministry have stated as under:

Underwater inspection of sub-structure is got done by engaging third party agencies for the bridges which are perennially under water. RORV (Remote operated robotic vehicle) and special equipment are used for the purpose. Specialized agencies are engaged for undertaking under water repairs by using special grouts for filling the minor cavity, sometimes repairs are being done by creating dry condition by creating cofferdams. Repair works have been undertaken in 98 nos. of bridges in last 5 years.

2.17 Regarding sanction/approval of the Commission of Railway Safety (CRS) for the construction of new railway bridges and the rehabilitation or repair of important/major railways bridges, the Ministry have stated as under:

According to the Railway opening rules,

- Commissioning of new important/major bridges requires approval/ sanction of Commissioner of Railway Safety.
- No approval of CRS is required for repairs to existing bridges.

CRS sanction was accorded on 26-11-2024 for Pamban Bridge &no bridges are commissioned without the mandatory approval of CRS.

2.18 The Committee desired to know whether the Indian Railways had any mechanism to assess the long term environmental impact on its tunnel and bridges, the Ministry have stated that the following steps are being taken to mitigate the environmental impact of constructing new railway tunnels/bridges:

I. Elevated alignment is preferred for preserving the ecology and protection of wild life protection.
II. Steel being a recyclable material is preferred in making large span bridges. These bridges are having lesser weight and have additional advantage of transferring reduced seismic load to sub-structure. This further reducing the size and material requirement in construction.
III. Steel bridges which are having lesser weight are preferred over concrete bridges for larger spans to mitigate environmental impact.
IV. Forest clearance is taken for the project and required afforestation are done.
V. Underpass/Overpass are constructed for safe passage of Wild Life Animal.

VI. Construction of Amrit Sarovar by using excavated earth in formation work leading to water conservation.

2.19 When asked about the challenges faced during the construction phase of the tunnel and bridge, the Ministry have stated that Railways is facing following technical issues during construction of rail tunnels and bridges in geologically sensitive terrains such as Himalayas section as under:

> "In Himalayas region, the railway alignment traverses through young Himalayas, which are tectonically active, geographically remote locations and dotted with many thrusts and faults. Main Boundary Thrust (MBT)/Reasi Thrust, Muree thrust, and Panjal Thrust are the major thrust zones which the alignment crosses. Lot of technical, geological, geographical and logistical challenges were faced during construction of long tunnels, mega bridges and Station Yards. These issues were aptly tackled in professional manner with the advice of various national & international experts.
>
> Some of the challenges faced during construction of tunnels and bridges such as heavy squeezing/swelling of tunnel profile and heaving of tunnel invert, tunnel collapses and cavity formations, complex geology and presence of localized shear zones, tunneling through Main Boundary Thrust-MBT, huge ingress of water requiring continuous heavy dewatering arrangements, presence of Methane gas in tunnel, inaccessible & remote location of tunnel portals required construction of extensive network of approach roads, extensive slope stabilization works etc."

2.20 The Committee desired to know about the steps taken by the Indian Railways for disaster management in Tunnels and Bridges, the Committee were informed that the following measures are adopted by Indian Railways to ensure the safety of tunnels and bridges during natural disasters like floods, earthquakes, or landslides :

Earthquake: Design provisions are made to takes care of seismic load while designing the Tunnel /Bridges as per the stage to resist the earthquake. However, after earthquake of specifies intensity the Bridges are being inspected by designated official.

Flood and Land slide: Water way of the Railway bridges are designed for maximum design discharge, which is calculated duly considering the entire catchment area drained by each bridge and considering the most severe flood.

Tunnels are designed taking care of drainage aspect by provision of waterproofing membrane of suitable thickness, concrete lining, provision of side perforated pipes, provision of central/side drains with gradient as per Guidelines for Design and Construction of Tunnels (RDSO/2012/GE:G-0017.

2.21 The Committee were informed that the following measures are also taken for safeguarding the tunnel and bridges :

(i) Watchmen are deployed during monsoon at specified location to ensure safety.
(ii) Monsoon patrolling are deployed during monsoon in specified section.
(iii) Automatic water level monitor provided at identified bridges.
(iv) Sounding of pier manually/by Scour level monitoring system.
(v) Dynamic Rock fall barrier are provided at identified locations.
(vi) Extension of the Portal of the tunnel.
(vii) Shotcreting of the unstable slope
(viii) Provision of lining in old lined tunnel

III. RAILWAY TUNNELS

3.1 In modern day transportation infrastructure development, tunnels play an important role in expansion of the rail network especially in mountainous terrain and even in dense urban areas. In this backdrop, the Committee were keen to know about the tunnel network of the Indian Railways.

Statistical Overview

3.2 When asked to provide the details of railway tunnels, the Ministry of Railways informed that as on 01.04.2025, the details of commissioned tunnels in Indian Railways are as under:

Gauge	No. of Tunnels	Length of Tunnels(in km)
BG	454	294.49
MG	18	1.36
NG	105	8.66

It includes the tunnels of Sangaldan-Katra section of USBRL which was inaugurated by Hon'ble Prime Minister on 6th June 2025.

Inspection and monitoring of rail runnels

3.3 The Committee desired to know whether similar to maintenance of bridges, the Indian Railways had any mechanism for inspection of its tunnels, to this the Committee were informed that :-

> There is established system of inspection and monitoring of Railway tunnels on Indian Railways. All the tunnels are inspected twice in a year, once before the onset of monsoon and another after the monsoon by the designated

officials. Repair/strengthening/rehabilitation/rebuilding of Railway Tunnels is undertaken whenever so warranted by their physical condition as ascertained during these inspections. On the basis conditional assessment during the inspection the tunnels are proposed for strengthening of tunnels, which are sanctioned under Plan head-32 in annual works program.

3.4 The Committee were keen to know whether the Indian Railways had developed any application for the continuous monitoring of its tunnel, the Ministry have informed that the Tunnel Management System (TuMS) has been developed in year 2024-25. Feeding of tunnel data of Indian Railway in TuMS is completed and validation of data is in progress.

Construction and maintenance of rail tunnels

3.5 As the Indian Railways is giving importance to increasing rail connectivity in the Himalayan States including in the North East States where tunnels play an important role in seamless connectivity, the Committee desired to know whether the Indian Railways had any regulations and guidelines governing the construction and maintenance of rail tunnels. The Ministry in their reply have submitted as under:

"Tunnel design is done by Competent Consultants as per good international practices. Indian Railways had issued the Guidelines for Design and Construction of Tunnels (RDSO/2012/GE: G-0017- 2012), which provides comprehensive instructions for various aspects of tunnel design and construction. This guideline covers the key components/factors to be considered during design phase of rail tunnel. Some key factors are listed as follows:

1. Detailed geotechnical investigation and geological mapping.

2. Tunnel lay-out and rescue concept/evacuation facilities.

3. Adopting suitable cross section of tunnel, as per the envelope required as stipulated in IR-Schedule of dimension and to suit the tunnel construction method.

4. Alignment, gradient, curvature, and other geometric parameters to suit the prescribed term of reference of alignment design.

5. Drainage arrangements.

6. Tunnel overburden, quality, in-situ stress conditions, and strength of rocks.

7. Ground water and weak geological zones like thrust, faults, fold and discontinuities.

8. Seismic load, eventual water pressure etc.

9. Fire-protection facilities.

10. Electromechanical equipment.

11. Tunnel ventilation system."

Escape/service tunnel

3.6 The Committee then asked about the policy for the provision of Escape/service tunnels, the representative of Ministry of Railways during the meeting held on 28.11.24 informed as under:-

"…….we follow the international guidelines now. If the length of a tunnel is more than three kilometres, we call it a long tunnel. In long tunnels, it is

mandatory to have an escape tunnel. The old tunnels have not been provided any such arrangement……"

3.7 When asked about the major railway tunnels that do not have escape/service tunnel, as well as the policy of Railways regarding such tunnels, the Ministry submitted the following response:-

Escape tunnels with adits/lateral exits are provided for tunnels more than 3 km length. Details of tunnels more than 3 km without escape tunnel are as under:

SN	Railway	Tunnel No.	Section	Length of Tunnel (KM)	Remarks
1	NFR	9*	Lumding-Badarpur	3.25	Both Passenger & goods traffic
2	SCR	57A	Ubulavaripalli-Krishnapatnam	6.63	Only for goods traffic

***** The planning for Tunnel no. 9 was done prior to adoption of policy for mandatory provision of escape tunnel/service tunnel for tunnels longer than 3 km length.

3.8 The Committee desired further elaboration on the policy regarding the provision of escape tunnels, the Ministry stated that an escape tunnel is generally constructed as an emergency exit for longer tunnels to facilitate the evacuation of the passengers. The new line between Obulavaripalle and Krishnapatnam was constructed for the transportation of goods between Krishnapatnam Port to the hinterland. Since there is no passenger traffic on this section,as it is a dedicated goods line, an escape tunnel was not provided.

3.9 When asked if the Indian Railways was contemplating on the provision of the escape tunnel being used by road commuters/users for better economy and furthering the utilization of escape tunnels, the Ministry informed :

> *"I just wanted to mention that this was examined. A team from the Railway Board, RDSO and NHAI has been formed……a team has been formed between NHAI, RDSO and Railway Board. That is studying this. They will design a tunnel which can be used both for road as well as railway."*

IV. LEVEL CROSSINGS (LC), ROAD OVER BRIDGES (RUBs), ROAD UNDER BRIDGES (RUBs)

Statistical Overview

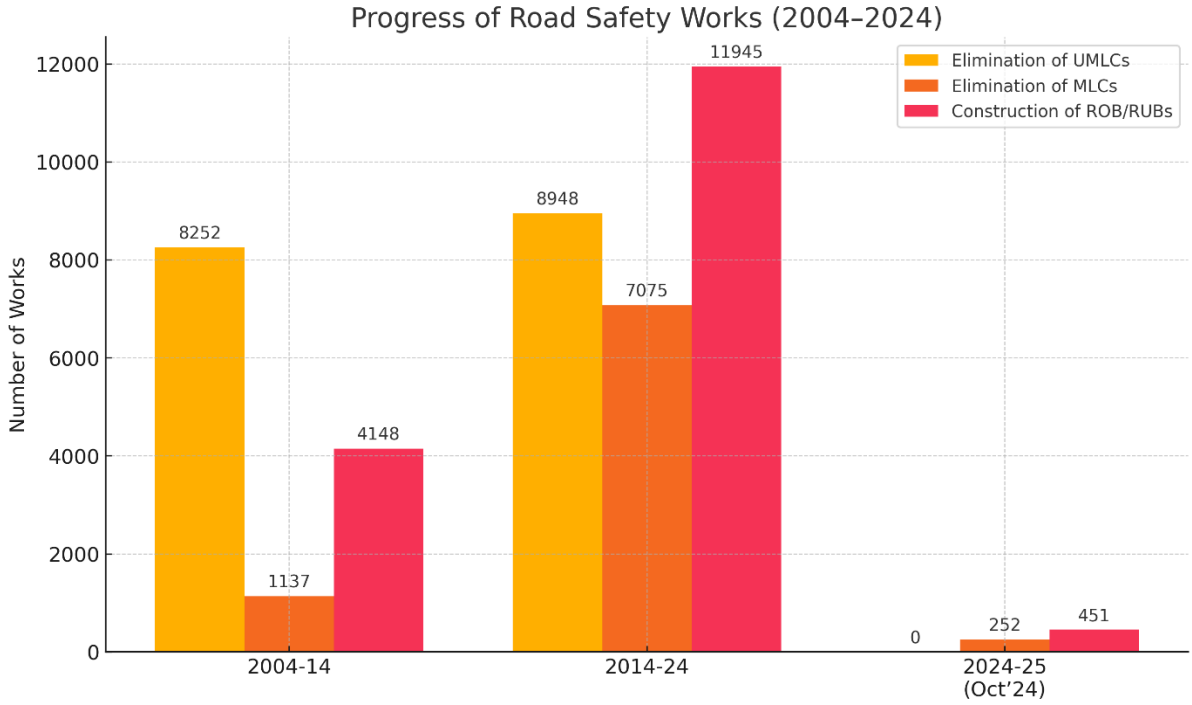
4.1 In response to a query regarding elimination of level crossings, the Ministry have informed that all Unmanned Level Crossings (UMLCs) on running lines of Broad Gauge network of Indian Railway have been eliminated by 31.01.2019. As on 01.04.2025, details of Level Crossings (LCs), Road Over Bridges (ROBs) and Road Under Bridges (RUBs) are as under**: -**

SN	Item	Nos.
1	Level Crossings (LCs) on Broad gauge	16,349
2	Road over Bridge (ROB)	4,658
3	Road under Bridge (RUB)	14,745
4	Total ROB/RUB	19,403*

*This includes 503 nos. ROBs constructed on NH by MoRTH/NHAI.

4.2 When enquired about the Railway plans to eliminate 513 unmanned level crossings on meter gauge and narrow gauge, the Ministry have informed that presently, there are 441 Nos. Unmanned level crossings (UMLCs) on Meter Gauge (MG) and Narrow Gauge (NG) sections over Indian Railway, which has been planned to be eliminated during the Gauge conversion of these sections.

4.3 While briefing the Committee on 28.11.2024, the Ministry provided comparative data on the elimination of Unmanned and Manned Level Crossings, as well as the construction of Road Over/Under Bridges (ROBs/RUBs), for the periods 2004–2014, 2014–2024 and 2024–2025 (up to October, 2024), as under :



4.4 The above graph illustrates the progress of road safety works undertaken by the Ministry over three time periods—2004–2014, 2014–2024, and 2024–2025 (up to October, 2024). A significant increase is observed in the elimination of Manned Level Crossings (MLCs) and the construction of Road Over/Under Bridges (ROBs/RUBs) during 2014–2024 compared to the previous decade, indicating a focused push toward enhancing safety infrastructure. All UMLCs on running lines of Broad Gauge network of Indian railways have been eliminated by 31.01.2019 reflecting the successful completion of this objective by 2019. The figures for 2024–2025 (up to October, 2024) show continued progress in MLC elimination and ROB/RUB construction, suggesting ongoing efforts toward comprehensive rail-road safety improvement.

Construction and maintenance of ROBs/RUBs and elimination of LCs

4.5 The Ministry of Railways in a written submission informed as follows:

"In order to improve safety in train operation and increase mobility, it is envisaged to eliminate LC on Indian Railway system in accelerated manner. With the development pace of country, there is a need to amend railways policy towards provision of road crossing even at locations where no level crossing exists, which in-turn will contribute towards improved safety in operations of trains& mobility of trains, ease of living and increasing economic activities in the country. In India level crossing locations have been noticed as major crossing points of rail/road accidents and hindrances to smooth movement of Rail Traffic. These not only pose risk of accidents but also create inconvenience for passengers by slowing down traffic. At level crossings, priority is given to railway traffic and hence when a railway crosses the junction of a road and rail, the road traffic is halted for particular time duration. Many accidents have occurred in the past due to negligent and hasty behavior of road commuters and drivers on these level crossings. Safety of road users is of paramount concern and is given due importance by the Government. Hence, for safe and smooth operation of vehicular traffic at such level crossings, it is necessary to construct road over bridges (ROBs) and road under bridges (RUBs)."

Policy initiatives

4.6 The Ministry of Railways have informed that the work relating to elimination of MLCs is now taken up in 'Mission Mode' in the overall interest of safety of both rail and road users. It will also help improve operations & achieve higher average speed of trains. The State Governments/Road Owning Authorities generally allocate limited funds for road crossing works. This leads to abnormal delays in sanction and completion of these works. The aim of Ministry of Railways is to accelerate road crossing works. Therefore, policy letters dated 02.03.2023 & 19.08.2024

(Annexure-I) have been issued to remove bottlenecks in sanctioning and progressing of these works at an accelerated pace. It is detailedasfollowing:-

Sanction and Execution of Road crossing works in lieu of Level crossings:

(i) For all LCs: 100% cost of work is being borne by Railways, except on National Highways (NH) and where State Government/Road Owning Authority/Local Authority wants to take-up the works at its cost. Rebuilding/replacement of existing ROBs/RUBs/public Foot Over Bridges (FOBs) on condition basis may be sanctioned at Railways cost. Priority of LC elimination shall be based on impact on safety in train operations, mobility of trains and impact for road users/public.

(ii) For ROB/RUBs sanctioned on 100% cost of Railway, the cost of land involving private land, R&R and utility shifting is being borne by railways for new works.

(iii) For ROB/RUBs sanctioned on 100% cost of State Government/Road Owning Authority, the cost of land acquisition, R&R and utility shifting is being be borne by State Government/Road Owning Authority/Local Authority.

(iv) Sanction and execution of road crossings works in lieu of LCs are taken upby Railways at its own cost [except LCs on National Highway Corridors and LCs where State Government/Road Owning Authority/Local Authority want to take up the works at their own cost]. These works are taken up in phases depending on priority, feasibility and availability of funds.

(v) Level Crossings are potential safety hazard for Road and Rail users. As a matter of policy, no new Level Crossings will be provided on existing lines.

Policy for Replacement of Level Crossings on National Highways (NHs)by ROBs/RUBs:

Further Memorandum of Understanding (MoU) between Ministry of Railways and Ministry of Road Transport and Highways (MoRTH)/National Highways Authority of India (NHAI) on 10.11.2014 to eliminate all level crossings on National Highway Corridors on single entity basis by MoRTH/NHAI by construction of ROBs/RUBs in lieu of level crossings on NH at their own cost has been signed. The Salient features of MOU are as under :

(i) MORTH/NHAI will replace all level crossings on NH Corridors by ROBs/RUBs in next five years subject to availability of funds.

(ii) MORTH/NHAI shall construct complete ROB/RUB (including railway bridge portion) on National Highways i.e. NH Corridors (NHDP & non-NHDP) in the country at their own cost on single entity basis. The existing ROBs, if any, will be upgraded as and when required by MORTH/NHAI.

(iii) MORTH/NHAI shall do the instrumentation in the railway super-structure across railway bridge portion. MORTH/NHAI shall not levy Supervision Charges, Departmental Charges, Maintenance Charges and Land Lease Charge where railway track crosses National Highways in case of New Railway Line/Gauge Conversion.

(iv) MORTH/NHAI shall construct a Subway to facilitate movement of pedestrian and vehicular traffic across the railway track to facilitate closure of level crossing by Railways. Construction of Subway within Railway Portion should be done under the supervision of Railways without any supervision charges. If subway is not possible, then suitable FOB with ramp should be provided wherever subway/FOB with ramp is not feasible at site, then in all such cases suitable footpath of appropriate width along with staircase should be provided on ROB. Wherever footpath on ROB is provided then in all such cases, height of kerb of ROB should be increased, so that in case of road accidents, chances of mounting of road vehicles on kerb and falling on railway track could be avoided.

(v) Ministry of Railway will not levy Supervision Charges, Departmental Charges, Maintenance Charges and Land Lease Charge for ROBs/RUBs being constructed by NHAI or NH- wing of State PWD on NH Corridors.

(vi) Ministry of Railways has developed a web-based programme for online submission for getting expeditious approval of various drawings related to ROBs/RUBs within 60 days. This programme includes all the RDSO standard span drawings, check list to be followed for preparation of GAD and standard MoU. Nominated officer of MORTH/NHAI or NH-wing of PWD shall fill up details of ROB/RUB proposed to be constructed on this web-based programme for expeditious approval of General arrangement Drawing (GAD) by Railways. To avoid unusual occurrence during launching of railway spans, Railway will supervise

and facilitate launching of girders across railway bridge portion without any supervision charges.

4.7 When asked about the policy of construction of ROBs/RUBs in lieu of Level Crossings on new lines, the Ministry have stated as under :-

"As per extant policy no new level crossings are being provided on existing line or new line project as level crossings are potential safety hazard for both rail and road users."

4.8 In response to a query regarding progress made in enhancing the online approval system used by the Ministry of Road Transport and Highways (MoRTH) and the National Highways Authority of India (NHAI) for granting approvals of General Arrangement Drawings (GAD) related to the construction of ROBs and RUBs, the Ministry have stated as under :

"A web based online approval system as IR-Rail Road Crossing GAD "IR-Rail Road Crossing GAD Approval System" (https://ircep.gov.in/RCApproval/) is being used by NHAI/MORTH/State agencies for all cases of GAD approval.

Total time allowed for complete process of GAD approval has been recently reduced from 70 days to 50 days. Also, other features in application like revalidation of GAD & approval of structural drawings have also been added in consultation with NHAI/MoRTH for improved coordination/better monitoring.

For further improvement to streamline the process, railway is conducting meetings with MoRTH/NHAI on regular basis. Last meeting at Ministry level was held on 04.06.25."

4.9 When enquired about the current status of construction of ROBs on National Highways and the steps being taken by the Railways for early construction of ROBs on National Highways, the Ministry have stated as under :

> "All LCs on NH corridors are to be replaced by ROBs/RUBs by Ministry of Road Transport and Highways (MORTH)/ National Highways Authority of India (NHAI) at their cost as per the MoU signed between Ministry of Railway & MoRTH/ NHAI dt. 10.11.2014. As on 01.04.2025, there are total 359 nos. LCs on NH which are yet to be eliminated. Presently, work for construction of ROB/ RUB at 93 Nos. LCs on NH is being executed by MoRTH/ NHAI.A web based online approval system as IR-Rail Road Crossing GAD "IR-Rail Road Crossing GAD Approval System" (https://ircep.gov.in/RCApproval/) has been developed for monitoring of GAD approval presently being used by NHAI/MORTH/State agencies. Also, other features in application like revalidation of GAD & approval of structural drawings have also been added in consultation with NHAI/MoRTH for improved coordination/ better monitoring."

4.10 In reply to a query regarding details separately for construction and maintenance of ROBs/RUBs, State-wise and Zone-wise, the Ministry of Railways have furnished State-wise and Railway Zone wise data of existing ROB/ RUB and ongoing works in **Annexure-II**.

4.11 In response to a query regarding State-wise details of total number of level crossings on National Highways, along with the number of level crossings eliminated in last 5 years through the construction of ROBs/RUBs, NHAI have furnish the information as follows :

Sr. No.	State	Total No of Level Crossings on NH	No. of Level Crossings eliminated in last Five Years (Year-wise)					
			2020	2021	2022	2023	2024	2025 (Till Date)
1	Andhra Pradesh	4	0	3	0	0	0	1
2	Assam	18	0	0	0	0	1	0
3	Bihar	11	0	0	0	4	0	0
4	Chhattisgarh	5	0	0	2	0	2	0
5	Gujarat	11	0	0	0	0	0	0
6	Haryana	4	0	2	0	1	0	2
7	Himachal Pradesh	7	1	0	0	0	0	0
8	Jammu and Kashmir	0	0	0	0	0	0	0
9	Jharkhand	6	0	0	0	0	0	0
10	Karnataka	18	0	0	2	2	2	0
11	Kerala	0	0	0	0	1	1	0
12	Madhya Pradesh	0	0	0	0	0	0	0
13	Maharashtra	13	0	0	2	2	5	0
14	Odisha	10	0	0	0	0	0	1
15	Punjab	1	0	0	0	1	0	0
16	Rajasthan	4	1	0	0	0	1	2
17	Tamil Nadu	7	0	1	0	1	1	1
18	Telangana	1	0	0	0	0	0	0
19	Uttar Pradesh	28	1	3	2	8	2	2
20	Uttarakhand	4	0	1	1	0	1	1
21	West Bengal	11	0	0	0	3	1	0

4.12 When enquired about the existing policy framework for maintenance of non-railway portion of ROBs and RUBs constructed on National Highways by NHAI and issues faced by NHAI in timely maintenance of these portions by the concerned authorities, NHAI have submitted as under:

"The non-railway portion of ROBs and RUBs are being maintained as part of NH network by NHAI through various Concessionaires / Contractors as per

the terms and conditions of their respective Concession/Contract Agreements. The maintenance practices follow the standards and specifications set forth in IRC Codes / SOP for maintenance of National Highways and issues (if any) are dealt accordingly as per provisions of CA and relevant Codal provisions."

4.13 NHAI have also informed that the following innovative construction technologies, materials, and design solutions are being adopted by NHAI for construction of ROBs and RUBs to expedite project timelines and improve structural longevity :

"The Railway Portion of ROBs and RUBs are mostly designed as per the standard designs finalised by Research Design and Standards Organization (RDSO). Recently, NHAI, in consultation with RDSO, have standardised Came-back Type Truss Girder for certain lengths which have superior structural durability as compared to some earlier structure types."

4.14 During the oral evidence on 25.06.2025, the representative of Ministry deposed regarding the coordination between the Ministry and MoRTH/ NHAI as follows:

"हम एनएचएआई के साथ मॉनिटरिंग करते हैं। हमारा पूरा एक ऑनलाइन सिस्टम बना हुआ है, इस पर मेरे स्तर पर भी और सेक्रेटरी एमओआरटीएच के स्तर पर भी एक विस्तृत चर्चा हुई है। हमने बुलेट प्वाइंट में भी लिखा है। इसमें पहले 70 दिन लगते थे, लेकिन अब यह काम 50 दिन में हो जाता है। इस प्रक्रिया को पूरा ऑनलाइन बना दिया गया है। इस प्रक्रिया में थोड़ा और सुधार करने की जरूरत है, इसके लिए हम और सेक्रेटरी एमओआरटीएच काम कर रहे हैं, जिससे जीएडी अप्रूवल जल्दी से जल्दी हो सके।"

4.15 With regard to the role of State Governments in approval of General Arrangement Drawing (GAD), the Ministry have stated as under :-

Approach alignment of ROB/RUB is fixed jointly with State Government. Accordingly, GAD is prepared/approved. Sometimes, fixing of approach alignment is getting delayed due to requirement expressed by public which is resolved through meeting with Railway authorities. The alignment is generally decided keeping in view the functional requirements, keeping the land acquisition requirement as low as possible, to avoid shifting of existing utilities & encroachments.

4.16 Regarding difficulties faced in construction of ROBs/ RUBs, the Ministry have stated as under :

"LCs are safety hazard for bothroad user as well as train operations. Elimination of LC in densely populated urbanareas is desirable to avoid inconvenience to road user. Normally, Railway used to construct ROB in Railway portion whereas approaches are constructed by State Government. There is no problem in construction of ROB in Railway portion. However, construction of approaches of ROB is used to be difficult due to various reasons enumerated as under (which were used to be generallyresponsibility of State Government/Road owning agencies):

(i) Land acquisition requirements & Rehabilitation & Resettlement.

(ii) Coordination issues.

(iii) Allocation of requisite funds by State Government as required.

(iv) Old Sanctioned cost sharing works, but stalled, due to no response regarding cost sharing from State Government."

4.17 Regarding no response for cost sharing from State Governments for construction of ROBs and RUBs, the Ministry have stated that in case of no response

by State Government *w.r.t.* to cost sharing, LC elimination works already sanctioned on cost sharing basis will be undertaken at 100% Railways cost. Construction of ROB/RUB works is a continuation and dynamic process, which depends on various factors like consent for closure of LC, fixing of approach alignment, approval of General Arrangement Drawing (GAD), land acquisition, removal of encroachment, shifting of infringing utilities, and statutory clearances from various authorities. So far 52 Nos. of cost sharing work, have now been taken up at 100% railway cost as per railway requirement.

Maintenance of ROBs and RUBs

4.18 With regard to maintenance of Road-over- Bridges (ROBs) and Road-under-Bridges (RUBs), the Ministry have stated as under :-

> "As per extant rule the portion of Flyover (ROB)/underpass (RUB) within railway land area shall be maintained by Railways at its own cost. The remaining portion outside railway land area including maintenance and lighting of the roadway of the bridge and its approaches will be maintained by State Government/Road owning Authority/Local Authority at its own cost. All such ROBs & RUBs are inspected periodically as per schedule prescribed for Railway bridges."

4.19 When enquired about the reasons for not assigning the work for construction and maintenance of ROBs/RUBs and measures being taken to resolve the issues, the Ministry have stated as under :-

> "Assigning of the work to an executing agency is a dynamic and continuous process which depends upon specific site conditions/ request from the State Government/requirement of work. As per policy, all works should be executed on a single entity basis as far as possible. In case any Road owning

authority/ State Gov insists, the GM may permit them to execute the work either on single entity basis or dual entity basis i.e., construction of approaches by road owning authority & Railway portion by Railways on specific locations."

Level Crossings to prevent trespassing

4.20 When enquired about the policy for providing RUB/FOB/pedestrian subway at such locations where no Level Crossings exists, but proper road is already existing/in use upto railway land boundary to check trespassing, the Ministry have stated that additional road crossing works at non –LC location may be taken up as part of Road project by Road Owning Authorities/ state Govt/ NHAI. However, in exceptional cases, provision of railway track crossing work (Subway / FOB) may be taken up by Railways, if the location is affecting safety in train operations, mobility of trains and conditions of infrastructures adversely due to trespassing, in phases depending on its priority, feasibility and availability of funds.

4.21 While elaborating further, the Ministry have categorized and outlined sanctioned and the execution of additional crossings as under:

Category A (Permission of water-way Bridge opening for road/ pedestrian movement):

- Vehicular as well as pedestrian traffic is not permitted through the Railway water way bridges.
- However in case of demands for allowing use of Water Way Bridge for vehicular as well as pedestrian crossings and if it is a source/potential source of trespass, affecting safety in train operations, mobility of trains and fixed infrastructure of railway, subways/FOBs etc. may be provided at a suitable nearby location as per feasibility at railways cost.

Category B (Provide RUB/FOB/pedestrian subway at locations where no LC exists or LC closed in past) :

– If location is a source of trespass, affecting safety in train operations, mobility of trains and fixed infrastructure of railway, Railway may consider providing suitable subways/FOB etc. as per feasibility at railways cost.

Category C (Provide RUB/FOB/pedestrian subway at locations where no LC exists, but proper roads already in use up to railway land boundary):

In exceptional cases, where the location is a source of trespass, affecting safety in train operations, mobility of trains and fixed infrastructure of railway, Railway may consider providing suitable RUBs/ LHS/ FOBs as per feasibility at railways cost.

Construction of ROBs/RUBs in major cities

4.22 With regard to status of ROBs/RUBs construction to replace Level Crossings in major cities, the Ministry have submitted as under :-

"There are 46 nos. of Major cities (having population more than 10 lacs) in India. There are 305 Level Crossings (LCs) existing in these major cities. Out of which 123 LCs are sanctioned for elimination by ROB/RUB. Completion & commissioning of ROB/RUB works depends on various factors like cooperation of State Governments in giving consent for closure of LC, fixing of approach alignment, approval of General Arrangement Drawing (GAD), land acquisition, removal of encroachment, shifting of infringing utilities, statutory clearances from various authorities, law and order situation in the area of project / work sites, duration of working season in a year for the particular project / area due to climatic conditions etc. All above factors affect the completion time of the projects / works."

Traffic congestion near Level Crossings

4.23 Regarding steps being taken by the Railways to address traffic congestion near Level Crossings, the Ministry have stated as under:

"Indian Railways is implementing several measures to alleviate traffic congestion at level crossings, aiming to enhance safety and streamline transportation.

- Elimination of Level Crossings: The Railways are replacing level crossings to facilitate uninterrupted traffic flow by:-
  i. road over bridges (ROBs) and/or
  ii. road under bridges (RUBs)/ Limited Height Subways(LHS)
- Up-gradation of Infrastructure: Timely maintenance of Road surface at level crossing, provision of speed breaker, signage etc and widening of level crossing.
- Awareness programs are also conducted to educate the public about the dangers of crossing tracks and the importance of using designated crossings, thereby reducing accidents and congestion."

Water-logging in Road Under Bridges (RUBs)

4.24 The Committee enquired about the design, maintenance and persistent water logging issues in RUBs and about the specific measures being adopted by the Railways to minimize these issues. The Ministry in this regard stated as under:

"Railways have taken following remedial measures to mitigate the problem of water logging.

- Adequate drainage arrangement has been made as integral part of planning of new Road under Bridge (RUB)/Subways.
- In existing RUBs/subways following remedial measures

i. Water flow diversion to nearby bridge and nallahs/drains,
ii. Provision of cover shed on approach roads,
iii. Provision of hump at entry to Road under Bridge (RUB),
iv. Provision of cross drains,
v. Sealing of joints
vi. Pumping arrangement

As on 01.04.2025, there are 14745 nos. of RUBs/ LHS over Indian Railways. The inspection of Subways/RUBs is conducted before and after the onset of the monsoon. The monitoring of Subways/RUBs to prevent water logging is an ongoing process and redressal is undertaken whenever so warranted. The following measures are being taken to prevent waterlogging:

a) **Providing the cover sheds over subways/RUBs:** Presently,2119 Nos. of Subways/RUBs are having cover shed on their approaches and works for providing cover sheds at 375 Nos. Subways/ RUBs are at different stages of planning, sanction and execution.
b) **Enhancing pump capacity:** In 3995 RUBs, pumps are provided as per the requirement including 1298 nos. RUBs, where pump capacity has been increased recently.
c) **Increasing the sump size at Subways/RUBs:** The works of increasing the size of the sump at 585 nos. Subways/RUBs have been completed and the works of increasing the sump size at 163 nos. Subways/RUBS are at different stages of planning, sanction and execution.

All above measures will help in addressing water-logging problems during Rains.“

4.25 When further enquired as to whether the present ROBs and RUBs withstand flooding, especially in flood-prone areas and remedial measures proposed to be

taken for upcoming ROBs and RUBs in flood prone areas, the Ministry have stated as under:

"ROBs and RUBs are means to cross the railway track and to connect the existing road network. Flooding in adjoining area will affect road network approaching to ROB and RUB & traffic movement over it.

However, construction of RUB is planned after detailed site investigation including issues related with localized flooding.

To prevent water logging of Road over Bridges/ Road under bridges (ROBs/ RUBs) the Ministry of Railways has taken up following remedial measures:-

(i) Adequate drainage arrangement has been made integral part of planning of new RUBs/Subways,

(ii) Water flow diversion to nearest bridge & nallahs, provision of covered shed on approach roads, provision of hump at entry to RUBs,

(iii) Provision of cross drains, sealing of joints etc. as per site suitability,

(iv) Pumping arrangement has also been made in identified RUBs/LHS to drain out water expeditiously in case of water logging."

V. TECHNOLOGICAL INNOVATIONS AND CAPACITY BUILDING

5.1 In response to a query regarding adoption of technological innovations for the constructions, monitoring and maintenance of railway bridges and tunnels, the Ministry have informed that the following technological innovations have been implemented for the first time on Indian Railways for the construction, monitoring and maintenance of railway bridges and tunnels :-

(i) At Pamban Bridge, first vertical lift span bridge has been constructed with welded connection. Polysiloxasin based painting scheme having long life of 35 year has been adopted as per corrosion environment of the location.

(ii) At Anji Bridge, first cable stayed bridge on Indian Railway has been constructed at Anji Khad near Reasi with main cable stayed span of 473.25m. Inbuilt sensors for monitoring of strain, tilt, wind speed, temperature & other important parameters have been provided for validation of design.

(iii) At Chenab, first steel arch bridge having height of 359 mtr has been constructed.

(iv) Use of High Strength Friction Grip(HSFG) Bolts are provided in new designs of Steel Girder Bridges.

(v) NITM (New Australian tunneling Method) has been suitably modified to suit the Himalayan Geology.

(vi) Tunnel Boaring Machine (TBM) is used for tunneling in Himalayan geology Rishikesh –Rudraprayag section.

(vii) Tunnels in new projects are being provided with Ballast Less Track(BLT) for reducing maintenance.

5.2 Elaborating further on technological innovations in construction and maintenance of ROBs and RUBs, the Ministry have stated as under :

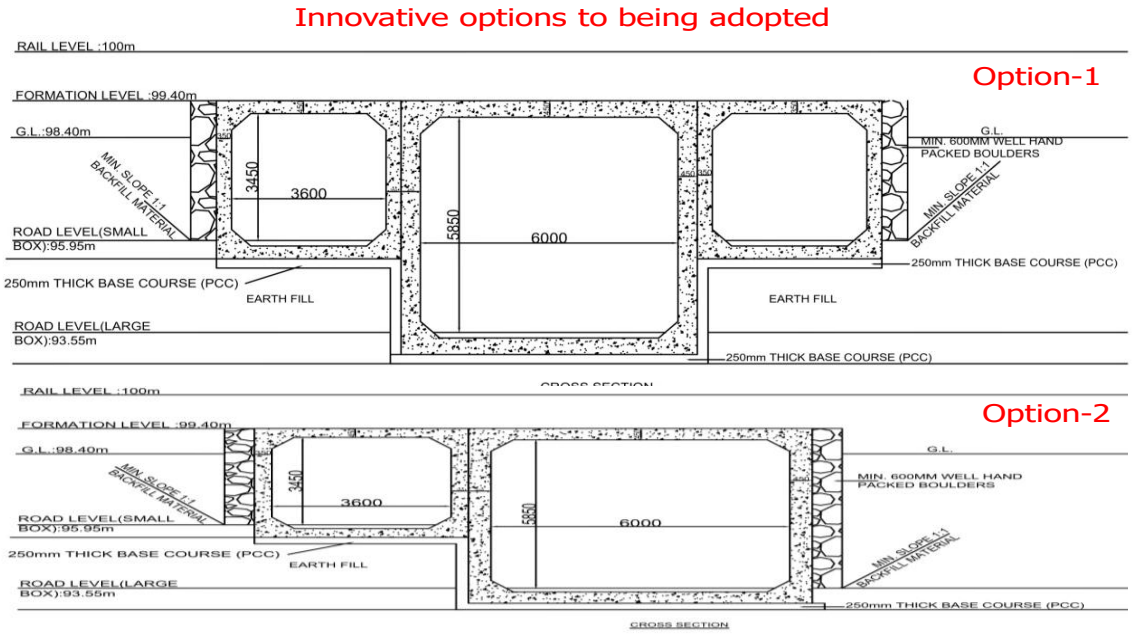
Innovative Designs:

Guidelines have been issued to adopt pre-cast construction in piers/pier caps, girder in the approaches for faster execution with better control on quality.

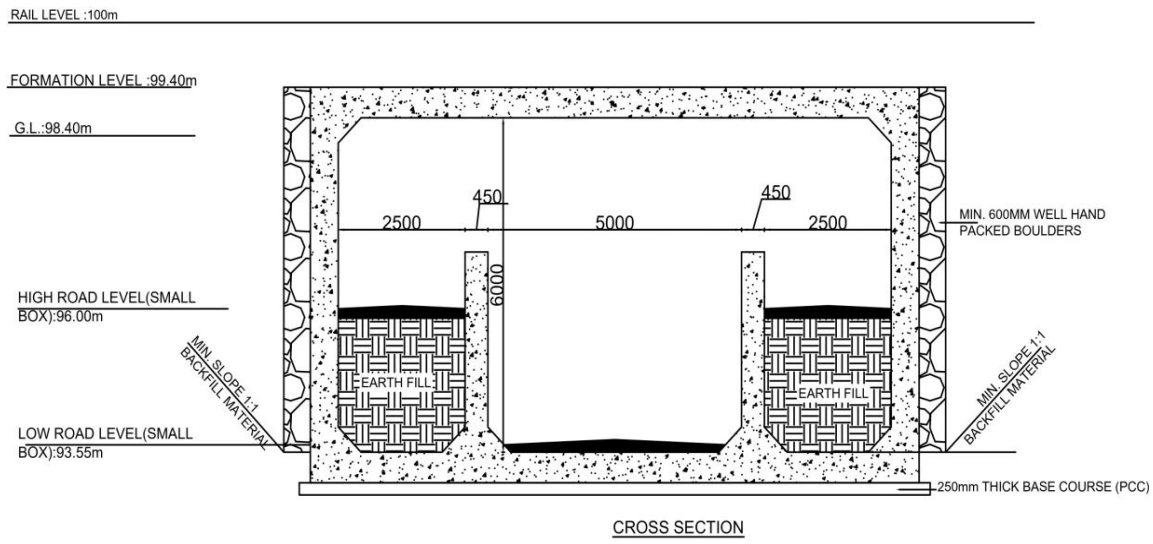
Additionally, guidelines have also been issued to Zonal Railways for use in planning and execution of grade separator works to ensure all weather LHS/RUB & pedestrian friendly ROBs.

1. RUBs/Subways with combination of openings with different heights and differential road levels:
2. ROB with Subway/Ramp:

RUBs/Subways with combination of openings with different heights and differential road levels

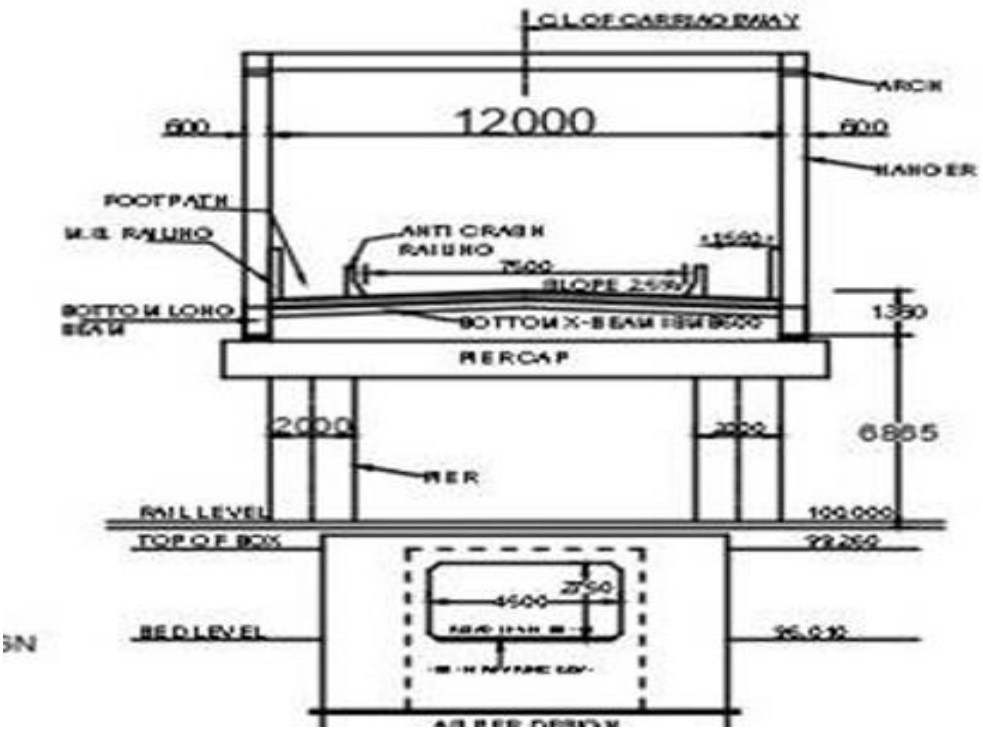


Option-3



CROSS SECTION

ROB with Subway



5.3 Regarding educational programme offered by Gati Shakti Vishwavidyala (GSV) in Bridge & Tunnel Engineering, the Ministry have stated that Gati Shakti Vishwavidalaya (GSV) is presently offering a course in B. Tech in Civil Engineering. GSV also conducted a two-week training program on "Design, Fabrication, Launching, and Maintenance of Steel Girder Bridges" during November/December 2024 in which 37 officers across Indian Railways, PSUs and other organisations participated. A one-week training program on "Steel Bridge Design, Fabrication & Inspection" is scheduled to be held from June 23 to 28, 2025. Further, an M.Tech Program in Bridge and Tunnel Engineering from the Academic Year 2025-26, commencing in August 2025 has been proposed at GSV. Officials training is conducted at IRICEN Pune and in ZBTI (Zonal Bridge Training Institute) at DDU (ECR) & Manmad (CR).

PART-II

OBSERVATIONS/RECOMMENDATIONS

Monitoring of Railway Bridges

1. The Committee note that Indian Railways have established a comprehensive system for the inspection and monitoring of bridges, with all the bridges being inspected twice in a year, once before the onset of monsoon and another after the monsoon by the designated officials supplemented by additional checks for vulnerable structures. The Committee further note that the adoption of modern technologies such as drone surveys, 3D riverbed scanning and continuous water level monitoring have been adopted for enhancing the reliability and efficiency of inspections. The implementation of the Bridge Management System (BMS) for data recording and monitoring has further streamlined decision-making and prioritization of rehabilitation works. The Committee note with appreciation that real time monitoring of Anji Bridge, Chenab Bridge and Bogibeel Bridge are being carried out using sensors to monitor strain, tilt, wind speed, temperature and other important parameters to assess the condition of the bridges and validate their design. The Committee desire the Ministry to develop a comprehensive database of railway bridges located in vulnerable areas such as flood-prone zones, landslide-prone regions and other high-risk locations. The Committee are of the view that these bridges require special inspections during the peak monsoon period, in addition to the regular inspections conducted before and after the monsoon. The Committee also urge the Ministry to expand the scope of the real-time bridge monitoring system to include these bridges. Furthermore, the Committee

emphasize the need to strengthen inter-agency coordination particularly with agencies such as the IMD, Ministry of Jal Shakti and local authorities to ensure timely information exchange, advance warnings and prompt joint action for safeguarding bridge infrastructure and ensuring uninterrupted and safe rail operations during adverse weather conditions.

Inspection of underwater bridge sub-structures

2. The Committee note that the Ministry have established a mechanism for underwater inspection of bridge sub-structures, particularly for those perennially submerged, by engaging third-party specialized agencies and deploying advanced technologies such as Remote Operated Robotic Vehicles (RORV) and other specialized equipment. The Committee appreciate that underwater repair works have been carried out on 98 bridges over the last five years. However, the Committee recommend that the Ministry further enhance the capacity and availability of such specialized services, ensure periodic review of underwater inspection protocols and explore the adoption of newer, more advanced underwater inspection and repair technologies. Currently, the quality of underwater structure inspection is heavily dependent on human skill and the effectiveness of inspection is not consistently reliable. The Committee urge the expanded and extensive use of advanced technologies like RORV which can provide precise location and extent of defects while simultaneously minimizing risks to human operators who can remotely operate the vehicle from surface. Such technological intervention will improve the safety, durability and operational reliability of railway bridges, especially in flood-prone and vulnerable areas.

Mitigation of environment impact in construction of railway bridges/tunnels

3. The Committee appreciate the Ministry's efforts to mitigate the environmental impact of constructing new railway tunnels and bridges. Notably, the preference for elevated alignments to preserve ecology and wildlife as well as the use of steel, a recyclable material, for large-span bridges, demonstrates a commitment to sustainability. The Committee commend the initiative of constructing *Amrit Sarovar* by utilizing excavated earth from formation works. The Committee are of the view that this innovative approach not only ensures the productive use of surplus soil but also contributes significantly to water conservation and ecological balance within the project area. The Committee recognize that the concept of *Amrit Sarovar* aligns well with sustainable practices, such as reducing earth disposal issues, promoting rainwater harvesting, aiding groundwater recharge, supporting local biodiversity and creating community water sources. While the Committee applaud the concept as sound and potentially highly valuable, its success depends on the quality of its execution, ecological planning and post-construction maintenance. Therefore, the Committee strongly emphasize that *Amrit Sarovar* should not be treated as a mere checkbox activity or mere formality for compliance. Instead, it must involve thorough catchment planning, effective water retention measures, community participation and a long-term sustainable maintenance strategy. In light of its multiple environmental and community benefits, the Committee recommend that Ministry actively incorporate the development of *Amrit Sarovar* into all major railway infrastructure projects, particularly in water-stressed and ecologically sensitive regions.

Tunnel Management System (TuMS)

4. The Committee note that Tunnel Management System (TuMS) has been developed in year 2024-25 which is a positive step toward the digital management of tunnel infrastructure. The Committee further note that the feeding of Indian Railways tunnel data into TuMS has been completed and data validation is currently underway, indicating proactive efforts in data management and quality assurance. The Committee desire the Railways to ensure regular updation and integrate inspection, maintenance and safety audit records into TuMS to enable real-time monitoring, predictive maintenance and timely decision-making for tunnel infrastructure safety and reliability. The Committee recommend the Ministry to expedite the completion of validation of data for all operational railway tunnels into the Tunnel Management System (TuMS) and ensure its full operationalization at the earliest.

Escape/service tunnels

5. The Committee note that as per current norms, escape tunnels with adits or lateral exits are provided for tunnels exceeding 3 km in length. The Committee also observe that certain existing tunnels, such as Tunnel No. 9 on the Lumding-Badarpur section (3.25 km), which carries both passenger and freight traffic, and Tunnel No. 57A on the Obulavaripalli-Krishnapatnam section (6.63 km), used for goods trains, do not have escape tunnels. The Committee further note that the planning for Tunnel No. 9 was undertaken prior to the introduction of the policy mandating such provisions. Given the critical importance of passenger and staff safety in case of emergencies, the Committee recommend that the Ministry examine the feasibility of providing escape tunnels or suitable alternative evacuation arrangements for all existing

tunnels longer than 3 km. The Committee also urge that tunnels currently used exclusively for goods movement should be considered for escape tunnel provision, bearing in mind the potential future use for passenger traffic. Additionally, the Committee observe that Railways is actively expanding its network in regions like the North East, Jammu & Kashmir and other mountainous areas where tunnels and bridges constitute a major part of the infrastructure. In light of this, the Committee urge the Ministry to conduct a comprehensive review of all operational and under-construction railway tunnels — including those shorter than 3 km — with priority given to those located in vulnerable zones such as seismic areas, flood-prone stretches and regions with challenging geology. Wherever feasible, the Ministry should consider the provision of escape routes, cross passages or alternative evacuation facilities to enhance safety measures and ensure preparedness for emergencies. Further, the Committee would like to be apprised of the findings of the team comprising representatives from the Railway Board, RDSO and NHAI which is examining the feasibility of utilising escape tunnels for road commuters to ensure optimum utilization of the infrastructure being developed.

<u>Construction of ROBs/RUBs</u>

6. The Committee have reviewed the status submitted by the Ministry regarding the construction of Road Over Bridges (ROBs) and Road Under Bridges (RUBs) in major Indian cities for the replacement of existing level crossings. The Committee note that out of 305 level crossings in 46 cities with populations exceeding 10 lakh, works for 123 have been sanctioned. The Committee appreciate the continuous and dynamic approach adopted by Railways in sanctioning such works based on operational safety, mobility impact and feasibility. However, the Committee are concerned over the slow

pace of implementation and completion of these sanctioned projects, which is impeded by delays in land acquisition, utility shifting, encroachment clearance, statutory approvals and coordination with State Governments. Recognizing the critical importance of eliminating level crossings in congested urban areas for both rail safety and city traffic management, the Committee recommend that the Ministry devise a city-specific action plan in collaboration with State Governments and urban local bodies to fast-track pending ROB/RUB projects in major cities. The Committee further observe that delays in the construction and completion of such projects cause public inconvenience, resource wastage and cost escalation. The Committee urge the Ministry to ensure elimination of level crossing on National Highways on pilot project mode basis with clearly established timelines in coordination with NHAI/MORTH. The Committee also urge the Ministry to set clear timelines, conduct periodic joint review meetings with all stakeholders and explore public-private partnership (PPP) models to expedite the construction of these vital infrastructure projects, thereby ensuring seamless movement of both rail and road traffic.

<u>Cost-sharing in construction of ROBs/RUBs</u>

7. The Committee note the Ministry's submission regarding the challenges faced in obtaining consent and financial participation from State Governments and Road Owning Authorities for the construction of Road Over Bridges (ROBs) and Road Under Bridges (RUBs) on a cost-sharing basis. The Committee appreciate the proactive approach of Railways in examining such cases and, wherever feasible and necessary, deciding to fully fund these projects in the interest of improving operational safety and train mobility. The Committee also note that 52 such cost-sharing projects have already been undertaken at 100% railway cost. However, considering the critical importance

of eliminating level crossings to enhance public safety and streamline train operations, the Committee recommend that the Ministry formulate a structured framework for prioritizing and independently funding such critical projects, wherever persistent delays arise due to non-cooperation or lack of response from State Governments. Additionally, the Committee urge the Ministry to strengthen coordination mechanism with State Governments to secure timely consent and support for approach alignments, land acquisition and utility shifting. The Committee also recommend exploring alternative funding models including central assistance schemes for projects of high public utility and importance.

<u>Level crossings to prevent trespassing</u>

8. The Committee note the Ministry's policy framework for addressing the provision of Road Under Bridges (RUBs), Foot Over Bridges (FOBs) and pedestrian subways at locations where no level crossings (LCs) exist, but where public movement continues, either through existing roads leading up to the railway boundaries without LC or at sites where LC have been discontinued. The Committee observe that many such locations exist, particularly, where proper roads extend up to railway boundaries, yet serve as informal access points for trespassing. This situation results in recurring safety hazards, unauthorized crossings and potential disruption to train operations. The Committee recommend that the Ministry conduct a comprehensive joint survey of these locations across the railway network to assess safety risks, public demand and traffic density. This exercise should be carried out in coordination with State Governments, NHAI, and local civic bodies. Based on the survey findings, a time-bound action plan should be prepared for the provision of RUBs, limited or restricted height subways (LHSs), FOBs or pedestrian

subways, wherever technically feasible and operationally essential on priority basis. Further the Committee desire that such infrastructure works be integrated with nearby road development or urban infrastructure projects to optimize resources utilization, improve public access to enhance operational and public safety.

Traffic congestion at Level Crossings

9. The Committee note the various measures undertaken by Railways to ease traffic congestion and enhance safety at level crossings, including the progressive elimination of level crossings through the construction of Road Over Bridges (ROBs) and Road Under Bridges (RUBs), regular infrastructure upgradation such as maintenance of road surfaces, speed breakers, signage and widening where needed. The Committee appreciate the public awareness programs educating the dangers of unauthorized track crossings and promoting use of designated pathways. However, the Committee observe that despite complete elimination on unmanned level crossing and significant sale up during 2014-2024 for complete elimination of the man level crossing, traffic congestion near several busy level crossings continues to be a persistent issue, particularly in urban and semi-urban areas. Therefore, the Committee urge the Ministry to intensify efforts to expedite sanctioning and execution of ROB/RUB projects and prioritize level crossings at high-traffic zones. Additionally, the Committee urge the Ministry to collaborate more closely with State Governments, municipal bodies and road authorities to integrate railway crossing elimination works with local traffic decongestion and urban transport plans. Public awareness campaigns should be further expanded using modern communication strategies and community outreach to improve compliance and reduce trespassing and congestion near level crossings.

Water-logging in RUBs

10. The Committee note the various measures taken by Railways to address recurring water-logging problems in Road Under Bridges (RUBs) and subways, including integrating adequate drainage systems in new RUBs designs diversion of water to nearby natural drains, provision of humps and cross drains, sealing of joints and installation of high-capacity pumps at vulnerable sites. The Committee also appreciate the provision of cover sheds at many locations and the systematic inspection of RUBs before and after the monsoon to identify and resolve issues. However, despite these efforts the Committee observe that water-logging during heavy rainfall remains a significant problem in several regions, causing traffic disruptions, safety hazards, and public inconvenience. The Committee recommend that the Ministry prepare a comprehensive inventory of all water-logging prone RUBs and subways and prioritize remedial works in a time-bound initiative. Further, the Committee urge Railways to actively coordinate with municipal bodies and local authorities to ensure seamless integration of railway drainage with civic drainage systems. The Committee also desire the Ministry to establish a clear protocol for temporarily halting road traffic during exceptionally heavy rainfall to safeguard commuters.

Capacity Building in Bridge and Tunnel Engineering

11. The Committee note the initiatives by Gati Shakti Vishwavidyalaya (GSV) bridge and tunnel engineering, including the ongoing B.Tech program in Civil Engineering and the successful two-week specialized training on "Design, Fabrication, Launching, and Maintenance of Steel Girder Bridges," benefitting officers from Indian Railways, PSUs, and other organizations. The

Committee appreciate the proposal to start an M.Tech program in Bridge and Tunnel Engineering from the academic year 2025-26 and recommend the Ministry to ensure timely commencement of this program. The Committee also suggest introducing short-term certificate and diploma courses focused on modern technologies in bridge and tunnel construction and inspection. The Committee emphasize integration of Artificial Intelligence and technology in designing and monitoring techniques to build a specialized and skilled technical workforce equipped to manage the growing demands and challenges in railway bridge and tunnel infrastructure. Further, the Ministry should explore collaborations with specialized global institutes/organizations to develop curricula and programmes on cutting edge infrastructure technologies. The Committee emphasize that these initiatives will empower indigenous talent and reduce reliance on foreign consultants and contribute to more cost effective infrastructure development.

Institutional mechanism for the active involvement of People's Representatives during the planning and execution of ROB/RUB Infrastructure Projects

12. The Committee observe that the construction of Road Over Bridges (ROBs) and Road Under Bridges (RUBs) faces significant challenges such as land acquisition, rehabilitation and resettlement issues, poor coordination among stakeholders, delays in approval of General Arrangement Drawings (GADs), shifting of utilities, removal of encroachments and obtaining necessary statutory clearances. Moreover, cost-sharing complications particularly in the case of older sanctioned works which often result in stalled projects due to the absence of timely response from State Governments regarding their share also lead to delays. The Committee note that as per existing norms, the portion of a

ROB/RUB falling within railway land is to be maintained by the Railways, whereas the portion beyond railway limits, including the approach roads and lighting, falls under the maintenance responsibility of the concerned State Government/road-owning agency or local authority. The Committee express concern over the recurring issue of faulty designs, water-logging, public inconvenience and traffic stalling in RUBs and stress the need for long lasting solutions. While appreciating the efforts of the Railways in adopting innovative designs to tackle water-logging and enhance user convenience, the Committee feel that more practical and sustainable solutions are required. In light of these challenges, the Committee desire the Ministry to establish a structured and institutional mechanism with proper implementation framework for the active involvement of people's representatives during the planning and execution stages of ROB and RUB projects in a constituency.The Committee are of the considered opinion that their engagement will play a crucial role in addressing local concerns, ensuring early consensus for land acquisition and resettlement, facilitating smoother coordination with State and local authorities for utility shifting and clearances thereby help in timely completion and better maintenance of RUBs. The Committee are of the view that such participatory planning will lead to more efficient, transparent and community-responsive railway infrastructure development.

New Delhi;
07 August, 2025
16 Shravan, 1947 (Saka)

DR. C.M. RAMESH
Chairperson
Standing Committee on Railways

ANNEXURE-I

No.2017/CE-IV/LX/Misc./244(LCs)pt.-Part(1)

I/3103095/2024

भारत सरकार (GOVERNMENT OF INDIA)
रेल मंत्रालय (MINISTRY OF RAILWAYS)
रेलवे बोर्ड (RAILWAY BOARD)

2017/CE-IV/LX/Misc./244 (LCs) Pt. **Dated : 19.08.2024**

General Managers
All Zonal Railways

Sub: Policy for Road crossing works (ROB/RUB/LHS/FOBs/Subway) to eliminate Level Crossings and Trespassing areas under PH-30.

Ref: Board's letter No. 2017/CE-IV/LX/Misc/244(LCs)/Pt dated 02.03.2023.

Level crossings (LC) are potential source of safety hazard and impact train operations and mobility adversely. In order to improve safety in train operation and increase mobility, it is envisaged to eliminate LC on Indian Railway system in accelerated manner. Further, most of the railway routes are several decades old. During this period, lot of developments has taken place on either side of the tracks. This development has accelerated in 21st century substantially; consequently the needs for crossing railway tracks have also multiplied. Development of habitation on either side of existing railway lines is making such locations prone to trespassing, runover, disturbance/damage to railway formation and affects railway operations. Large numbers of requests are being received by railways for providing additional crossings. Thus, there is a need to amend railways policy towards provision of road crossing even at locations where no level crossing exists, which in-turn will contribute towards improved safety in operations of trains & mobility of trains, ease of living and increasing economic activities in the country.

The State Governments/ Road Owning Authorities generally allocate limited funds for road crossing works. This leads to abnormal delays in sanction and completion of these works. The aim of Ministry of Railways is to accelerate road crossing works. This policy letter is being issued to remove bottlenecks in sanctioning and progressing of these works at an accelerated pace.

Following amended policy should henceforth be followed:

1. Sanction and Execution of Road crossing works in lieu of Level crossings:

1.1 Road crossing works for all Level crossings (LCs) at 100% Railways cost (irrespective of TVU) ,except on National Highways (NH) and where State Govt./ Road Owning Authority/ Local Authority wants to take-up the works at its cost.

1.2 **Rebuilding/replacement of existing ROBs/RUBs/public FOBs on condition basis** may be sanctioned at Railways cost duly justified and recommended by DRM and approved by GM.

1.3 Priority of LC elimination shall be based on impact on safety in train operations, mobility of trains and impact for road users/public, and shall be decided by GM.

1.4 All works should be executed on single entity basis as far as possible. In case any

Road owning authority/ State Gov insists, the GM may permit them to execute the work either on single entity basis or dual entity basis i.e. construction of approaches by road owning authority & Railway portion by Railways on specific locations.

1.5 Feasibility study for road crossing work shall be undertaken along with preparation of Technical feasibility report /Detailed Project Report (DPR) as per priority and overall planning for the Zone. The planning of proposals for all such works including carriageway width must be done keeping in view the width of approach roads, TVU of LC (4 lane for LC having TVU more than 3 lacs), planned/sanctioned road widening works of Road owning agency, requirement/growth of industry in the area, road users and requirement of railway for providing an equitable and safe solution.

1.6 Technical feasibility report/ DPR shall be submitted for sanction of all new works as per policy already laid down. Feasibility study and assessment shall be carried out before sanction of any work. Any works, if required for feasibility study/DPR shall be sanctioned under PH-30.

1.7 Advance consent of State Govt. for closure of Level Crossing for sanction of work is not mandatory. However, consent for closure of LC should be obtained before tendering.

1.8 **Roles and responsibility** of Railways and State Govt./Road owning authorities regarding Land acquisition, Utility shifting etc in approaches.

1.8.1. The portion of ROB/RUB within railway land area shall be maintained by Railways at its own cost. The remaining portion outside railway land area will be maintained by State Govt./ Road Owning Authority/ Local Authority at its own cost.

1.8.2. As far as possible, the available land of State Govt./Road Owning Authority shall be utilized for construction of ROBs/RUBs free of cost. However, any additional land required for construction of ROBs/RUBs need to be acquired shall be dealt as under:

a) For ROB/RUBs sanctioned on 100% cost of Railway, the cost of land acquisition involving private land, R&R and utility shifting shall be charged to the project and kept in the estimate at the time of sanction and shall be borne by railways.

b) For ROB/RUBs sanctioned on 100% cost of State Govt./Road Owning Authority, the cost of land acquisition project, R&R and utility shifting shall be charged to the project and kept in the estimate at the time of sanction and shall be borne by State Govt/ Road Owning Authority/ Local Authority.

1.9 All LCs may be eliminated while executing doubling/multi tracking Projects. Work of elimination of LCs may be undertaken by revising estimate, if not provided in the original estimate (such revision shall not be treated as material modification). If it is not possible to sanction such works as a part of the original project, new work may be sanctioned on priority under PH-30.

1.10 LC elimination works already sanctioned on cost sharing basis shall be examined by GM for funding entire project through Railways in case of inadequate response/ unwillingness of State Govt./ Road Owning Authority as this will improve safety in train operations & mobility of trains. In such cases, the estimate may be revised as per Railway requirement and sanctioned considering the variation w.r.t. combined sanctioned cost of work as per limits defined in SOP. The change will not be treated as material modification. The details of all such works where estimate has been revised, shall be informed to Board after sanction.

I/3103095/2024

1.11 Zonal Railway may sanction additional works under PH-30 for rectification, improvements and up-gradation in already completed work, including making good the deficiency. Additional works may include such as providing additional RUB/LHS/ FOB/ Ramp/ subway etc, where ROB/RUBs has been commissioned. Additional works for RUBs may include solutions for water-logging and other functional problems.

2. Sanction and execution of additional crossings

2.1. The demand/need for such additional crossing arrangements can be considered as under: -

2.1.1. Demand for permitting Water-Way Bridge for road/ pedestrian movement: Use of Water-way bridge openings for road/ pedestrian crossing shall not be permitted on technical considerations for safety of bridge. However, if the location is a source/potential source of trespass, affecting safety in train operations, mobility of trains and fixed infrastructure of railway, and impacting mobility of nearby inhabitants, subways/ FOBs etc may be provided at a suitable nearby location as per feasibility at railways cost.

2.1.2. Demand for providing RUB/ FOB/ pedestrian subway at locations where no LC exists or LC closed in past: If the location is a source of trespass, affecting safety in train operations, mobility of trains and fixed infrastructure of railway, Railway may consider providing suitable subways/FOB etc. as per feasibility at railways cost.

2.1.3. Demand for providing RUB/FOB/ pedestrian subway at locations where no LC exists, but proper roads already in use up to railway land boundary: In exceptional cases, if the location is a source of trespass, affecting safety in train operations, mobility of trains and fixed infrastructure of railway, Railway may consider providing suitable RUBs/LHS/FOBs as per feasibility at railways cost.

2.2. Proposals for additional road crossing can generally be considered looking at presence of habitation on either side of tracks. All such proposals should be examined as per Railway board Policy letter no. 2023/CE-IV/LX/Misc/244(LCs) Pt. dated 11.09.2023 & letter no. 2017/CE-IV/LX/Misc/244(LCs) Pt. dated 16.04.2024.

2.3. Consideration of proposals under PH-30 as above shall be based on demand, justification and priority with approval of General Manager.

3. This supersedes previous policy issued vide even no letter dated 02.03.2023.

This is issued with the approval of Board (MI, MoBD, MF, and CRB& CEO).

Signed by Ravindra Kumar Goel
Date: 19-08-2024 16:31:00
Reason: Approved

(Ravindra Kumar Goel)
Principal Executive Director/ Bridge

No. 2017/CE-IV/LX/Misc./244(LCs) Pt New Delhi, Date:19.08.2024

Copy to:

I/3103095/2024

1. The PFA, all Zonal Railways for information and necessary action please.
2. Dy. Comptroller & Auditor General of India (Railways), Room No. 224, Rail Bhavan, New Delhi.

Signed by
Sanjeet Kumar
Date: 19-08-2024 11:45:52
for Member/ Finance

Copy to:

1. Concerned PSO for kind information of Chairman cum CEO, M/Infra, M/O&BD, M/Finance, M/TRS Railway Board.
2. Adv./MR, EDPG/MR, OSD/MR, OSD(Co-ord)/MR
3. AM/B, AM/Works, AM/CE, AM/Plg., AM/Sig., AM/Ele. Railway Board for information please.
4. PED/GS, PED/CE(P), EDCE/B&S, ED/GS-I&II, ED/CE(G), EDW/Plg., ED/L&A, ED/Sig, ED/Tele, EDF/X-1, EDF/X-II, ED/Acc., ED/Plg., EDRE, EDEE(G), EDFE, Railway Board for information please.
5. The Pr.CE, CAO/C all Zonal Railways for information and necessary action please.
6. The DG/IRICEN, Pune for information and record please.
7. The DG/RDSO, PED/Infra-II/RDSO Lucknow for information and record please.
8. CMD/IRCON, CMD/RVNL, CMD/RITES, MD/MRVC, CMD/KRCL, MD/DFCCIL for information please.
9. DRM's, all Divisions of Indian Railway for information and necessary action please.

भारत सरकार (GOVERNMENT OF INDIA)
रेल मंत्रालय (MINISTRY OF RAILWAYS)
रेलवे बोर्ड (RAILWAY BOARD)

2017/CE-IV/LX/Misc./244 (LCs) Pt. **Dated: 02.03.2023**

General Managers
All Zonal Railways

Sub: Policy for Road crossing works (ROB/RUB/LHS/FOBs/Subway) to eliminate Level Crossings and Trespassing areas under PH-30.

Ref:- i). Board's letter No. 2017/CE-IV/LX/Misc/244(LCs)/Pt dated 28.07.2022.
ii). Board's letter No. 2017/CE-IV/LX/Misc/244(LCs)/Pt dated 14.02.2023.

Level crossings (LC) are potential source of safety hazard and impact train operations and mobility adversely. In order to improve safety in train operation and increase mobility, it is envisaged to eliminate LC on Indian Railway system in accelerated manner. Further, most of the railway routes are several decades old. During this period, lot of developments has taken place on either side of the tracks. This development has accelerated in 21st century substantially; consequently the needs for crossing railway tracks have also multiplied. Development of habitation on either side of existing railway lines is making such locations prone to trespassing, runover, disturbance/damage to railway formation and affects railway operations. Large numbers of requests are being received by railways for providing additional crossings. Thus, there is a need to amend railways policy towards provision of road crossing even at locations where no level crossing exists, which in-turn will contribute towards improved safety in operations of trains& mobility of trains, ease of living and increasing economic activities in the country.

The State Governments/ Road Owning Authorities generally allocate limited funds for road crossing works. This leads to abnormal delays in sanction and completion of these works. The aim of Ministry of railways is to accelerate road crossing works. This policy letter is being issued to remove bottlenecks in sanctioning and progressing of these works at an accelerated pace.

Following amended policy should henceforth be followed:

1. Sanction and Execution of Road crossing works in lieu of Level crossings:

1.1. For all LCs: 100% cost of work shall be borne by Railways, except on National Highways (NH) and where State Govt/ Road Owning Authority/ Local Authority wants to take-up the works at its cost.

1.2. **Rebuilding/replacement of existing ROBs/RUBs/public FOBs on condition basis** may be sanctioned at Railways cost duly justified and recommended by DRM and approved by GM.

1.3. **Priority of LC elimination** shall be based on impact on safety in train operations, mobility of trains and impact for road users/public, and shall be decided by GM.

1.4. All works should be executed on **single entity basis** by Railway. In case any Road owning authority/ State Govt. wants, the GM may permit them to execute the work on single entity basis.

1.5. **Feasibility study** for road crossing work shall be undertaken along with preparation of Technical feasibility report /Detailed Project Report (DPR) as per priority and overall planning for the Zone. The planning of proposals for all such works including carriageway width must be done keeping in view the width of approach roads, anticipated traffic, needs of road users and requirement of railway providing an equitable and safe solution.

1.6. Technical feasibility report/ DPR shall be submitted for sanction of all new works as per policy already laid down. Feasibility study and assessment shall be carried out before sanction of any work. Any works, if required for feasibility study/DPR shall be sanctioned under PH-30.

1.7. Advance consent of State Govt. for closure of Level Crossing for sanction of work is not mandatory. However, consent for closure of LC should be obtained before tendering.

1.8. **Roles and responsibility** of Railways and State Govt./Road owning authorities regarding Land acquisition, Utility shifting etc in approaches.

1.8.1. The portion of ROB/RUB within railway land area shall be maintained by Railways at its own cost. The remaining portion outside railway land area will be maintained by State Govt./ Road Owning Authority/ Local Authority at its own cost.

1.8.2. As far as possible, the available land of State Govt./Road Owning Authority shall be utilized for construction of ROBs/RUBs free of cost. However, any additional land required for construction of ROBs/RUBs need to be acquired shall be dealt as under:

a) For ROB/RUBs sanctioned on 100 % cost of Railway, the cost of land acquisition involving private land, R&R and utility shifting shall be charged to the project and kept in the estimate at the time of sanction and shall be borne by railways.

b) For ROB/RUBs sanctioned on 100 % cost of State Govt./Road Owning Authority, the cost of land acquisition, R&R and utility shifting shall be charged to the

project and kept in the estimate at the time of sanction and shall be borne by State Govt/ Road Owning Authority/ Local Authority.

1.9. All LCs may be eliminated while executing doubling/multi tracking Projects. Work of elimination of LCs may be undertaken by revising estimate, if not provided in the original estimate (such revision shall not be treated as material modification). If it is not possible to sanction such works as a part of the original project, new work may be sanctioned on priority under PH-30.

1.10. **LC elimination works already sanctioned** on cost sharing basis shall be examined by GM for funding entire project through Railways in case of inadequate response/unwillingness of State Govt./Road Owning Authority, as this will improve safety in train operation and mobility of trains. The same should be submitted for sanction of Railway Board. Estimate shall be revised for such changes, and this change will not be treated as material modification.

1.11. Zonal Railway may sanction additional works under PH-30 for rectification, improvements and up-gradation in already completed work, including making good the deficiency. Additional works may include such as providing additional RUB/ LHS/ FOB/ Ramp/ subway etc, where ROB/RUBs has been commissioned. Additional works for RUBs may include solutions for water-logging and other functional problems.

2. Sanction and execution of additional crossings

2.1. The demand/need for such additional crossing arrangements can be considered as under:

2.1.1. Demand for permitting Water–Way Bridge for road/ pedestrian movement: Use of Water-way bridge openings for road/ pedestrian crossing shall not be permitted on technical considerations for safety of bridge. However, if the location is a source/potential source of trespass, affecting safety in train operations, mobility of trains and fixed infrastructure of railway, and impacting mobility of nearby inhabitants, subways/ FOBs etc may be provided at a suitable nearby location as per feasibility at railways cost.

2.1.2. Demand for providing RUB/ FOB/ pedestrian subway at locations where no LC exists or LC closed in past: If the location is a source of trespass, affecting safety in train operations, mobility of trains and fixed infrastructure of railway, Railway may consider providing suitable subways/FOB etc. as per feasibility at railways cost.

2.1.3. Demand for providing RUB/ FOB/ pedestrian subway at locations where no LC exists, but proper roads already in use upto railway land boundary: In exceptional cases, if the location is a source of trespass, affecting safety in train

operations, mobility of trains and fixed infrastructure of railway, Railway may consider providing suitable RUBs/ LHS/ FOBs as per feasibility at railways cost.

2.2. Proposals for additional road crossing can generally be considered looking at presence of habitation on either side of the tracks.

2.3. Consideration of proposals under PH-30 as above shall be based on demand, justification and priority with approval of General Manager.

3. This supersedes previous policy issued vide even no letter dated 28.07.2022 & 14.02.23.

This is issued with the approval of Board (MI, MoBD, MF, and CRB& CEO).

DA/- as above)

02.03.2023

(Vijay Pratap Singh)
Principal Executive Director/ Bridge

No. 2017/CE-IV/LX/Misc./244(LCs) Pt **New Delhi, Date:02.03.2023**

Copy to:

1. The PFA, all Zonal Railways for information and necessary action please.
2. Dy. Comptroller & Auditor General of India (Railways), Room No. 224, Rail Bhavan, New Delhi

***for* Member/ Finance**

Copy to:

1. Concerned PSO for kind information of Chairman cum CEO, M/Infra, M/O&BD, M/Finance, M/TRS Railway Board.
2. Adv./MR, EDPG/MR, OSD/MR, OSD(Co-ord)/MR
3. AM/B, AM/Works, AM/CE, AM/Plg., AM/Sig., AM/Ele. Railway Board for information please.
4. PED/GS, PED/CE(P), EDCE/B&S, ED/GS-I&II, ED/CE(G), EDW/Plg., ED/L&A, ED/Sig., ED/Tele, EDF/X-I, EDF/X-II, ED/Acc., ED/Plg., EDRE, EDEE(G), EDFE, Railway Board for information please.
5. The Pr.CE, CAO/C all Zonal Railways for information and necessary action please.
6. The DG/IRICEN, Pune for information and record please.
7. The DG/RDSO, PED/Infra-II/RDSO Lucknow for information and record please.
8. CMD/IRCON, CMD/RVNL, CMD/RITES, MD/MRVC, CMD/KRCL, MD/DFCCIL for information please.
9. DRM's, all Divisions of Indian Railway for information and necessary action please.

ANNEXURE-II

Status of ongoing ROB/RUBs as on 01.04.2025 (State-wise)

SN	State	Ongoing ROB/RUBs		Total
		No. of ROBs	No. of RUBs	
1.	Andhra Pradesh	174	117	291
2.	Assam	19	42	61
3.	Bihar	112	106	218
4.	Chandigarh	-	-	-
5.	Chattisgarh	38	74	112
6.	Delhi	9	7	16
7.	Goa	3	1	4
8.	Gujarat	153	182	335
9.	Haryana	53	82	135
10.	Himachal Pradesh	-	-	-
11.	Jammu & Kashmir	2	0	2
12.	Jharkhand	48	104	152
13.	Karnataka	90	33	123
14.	Kerala	130	10	140
15.	Madhya Pradesh	158	132	290
16.	Maharashtra	155	130	285
17.	Manipur	-	-	-
18.	Mizoram	-	-	-
19.	Nagaland/ Meghalaya/ Arunachal	-	-	-
20.	Odisha	161	96	257
21.	Puducherry	2	0	2
22.	Punjab	28	60	88
23.	Rajasthan	94	447	541
24.	Tamilnadu	113	122	235
25.	Telangana	64	55	119
26.	Tripura	-	-	-
27.	Uttar Pradesh	228	508	736
28.	Uttarakhand	3	6	9
29.	West Bengal	128	123	251
Total		**1965**	**2437**	**4402**

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Status of existing works of ROB/RUBs as on 01.04.2025 (State-wise)

SN	State	Existing ROB/RUBs		Total
		No. of ROBs	No. of RUBs	
1.	Andhra Pradesh	220	1025	**1245**
2.	Assam	84	329	**413**
3.	Bihar	197	452	**649**
4.	Chandigarh	1	2	**3**
5.	Chattisgarh	76	221	**297**
6.	Delhi	62	64	**126**
7.	Goa	9	12	**21**
8.	Gujarat	296	1026	**1322**
9.	Haryana	153	569	**722**
10.	Himachal Pradesh	20	20	**40**
11.	Jammu & Kashmir	34	146	**180**
12.	Jharkhand	246	425	**671**
13.	Karnataka	249	842	**1091**
14.	Kerala	216	147	**363**
15.	Madhya Pradesh	240	1195	**1435**
16.	Maharashtra	492	1157	**1649**
17.	Manipur	3	2	**5**
18.	Mizoram	0	0	**0**
19.	Nagaland/ Meghalaya/ Arunachal	3	29	**32**
20.	Odisha	162	725	**887**
21.	Puducherry	2	20	**22**
22.	Punjab	152	423	**575**
23.	Rajasthan	237	1918	**2155**
24.	Tamilnadu	493	822	**1315**
25.	Telangana	173	720	**893**
26.	Tripura	85	101	**186**
27.	Uttar Pradesh	562	1535	**2097**
28.	Uttarakhand	12	60	**72**
29.	West Bengal	179	758	**937**
Total		**4658**	**14745**	**19403**

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Status of ongoing ROB/RUBs as on 01.04.2025 (Railway-wise)

SN	Zones	No. of ROBs	No. of RUBs	Total
1	CR	104	87	191
2	ER	99	78	177
3	ECR	131	135	266
4	ECOR	206	108	314
5	NR	150	277	427
6	NCR	121	258	379
7	NER	45	185	230
8	NFR	30	79	109
9	NWR	54	436	490
10	SR	248	135	383
11	SCR	180	161	341
12	SER	83	107	190
13	SEC	96	81	177
14	SWR	80	29	109
15	WR	192	219	411
16	WCR	146	62	208
Total		**1965**	**2437**	**4402**

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Status of existing works of ROB/RUBs as on 01.04.2025 (Railway-wise)

SN	Zones	No. of ROBs	No. of RUBs	Total
1	CR	377	827	1204
2	ER	199	498	697
3	ECR	257	412	669
4	ECOR	171	825	996
5	NR	597	1618	2215
6	NCR	244	880	1124
7	NER	134	573	707
8	NFR	228	764	992
9	NWR	248	1729	1977
10	SR	714	1003	1717
11	SCR	387	1787	2174
12	SER	136	450	586
13	SEC	163	526	689
14	SWR	253	886	1139
15	WR	408	1169	1577
16	WCR	142	798	940
Total		**4658**	**14745**	**19403**

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APPENDIX - I

MINUTES OF THE FOURTH SITTING OF THE STANDING COMMITTEE ON RAILWAYS (2024-25)

The Committee met on Thursday, the 28th November, 2024 from 1500 hrs. to 1630 hrs. in Committee Room 'B', Parliament House Annexe, New Delhi.

PRESENT

Dr. C.M. Ramesh – Chairperson

MEMBERS

LOK SABHA

2. Shri Damodar Agrawal
3. Shri Chhotelal
4. Smt. Sangeeta Kumari Singh Deo
5. Shri Kaushalendra Kumar
6. Shri Balabhadra Majhi
7. Shri Khagen Murmu
8. Adv. Adoor Prakash
9. Shri Awadhesh Prasad
10. Shri Sudama Prasad
11. Shri M.K. Raghavan
12. Shri Bharatbhai Manubhai Sutariya

RAJYA SABHA

13. Shri Narhari Amin
14. Shri Subhasish Khuntia
15. Shri Upendra Kushwaha
16. Dr. K. Laxman
17. Smt. Sadhna Singh
18. Shri K. Vanlalvena
19. Shri Mukul Balkrishna Wasnik

SECRETARIAT

1. Smt. Suman Arora - Additional Secretary
2. Md. Aftab Alam - Director
3. Smt. Savdha Kalia - Deputy Secretary

REPRESENTATIVES OF THE MINISTRY OF RAILWAYS (RAILWAY BOARD)

1.	Shri Satish Kumar	Chairman & Chief Executive Officer, Railway Board & Ex. -officio Principal Secretary to the Government of India
2.	Shri Naveen Gulati	Member(Infrastructure), Railway Board & Ex. -officio Secretary to the Government of India
3.	Ravindra Kumar Goel	PED/Bridge, Railway Board

2. At the outset, the Chairperson welcomed the Members of the Committee and the representatives of the Ministry of Railways (Railway Board) to the sitting. The Chairperson then informed that the meeting has been convened to have a briefing from the Ministry of Railways (Railway Board) on the Subject 'Construction and maintenance of Rail tunnels and Bridges including Road Over Bridges/Road Under Bridges'. The Chairperson also drew the officials' attention to the provisions of Direction 55 of the Directions by the Speaker, Lok Sabha emphasizing that the proceedings must be treated as confidential.

3. The representatives then briefed the Committee on the bridge management system and technologies being used in inspection of railway bridges and tunnels. The Committee was further informed that all unmanned Level Crossings had been eliminated on Broad Gauge, and all the Level Crossings on the National Highways Corridor would be eliminated through the construction of Road Over Bridges (ROBs) by the National Highway Authority of India. The Committee was further apprised that a team comprising NHAI, RDSO, and the Railway Board had been formed to study the design aspects of escape tunnel in the Rishikesh – Karnaprayag new rail project.

4. The Committee then sought clarifications on several issues, including the delay in the completion of the Reasi–Bakkal tunnel project, the timely completion of railway bridges, ROBs, RUBs, drainage system in RUBs, and traffic-related concerns. The Committee also inquired about media reports raising safety concerns regarding the new railway sea bridge at Pamban. The representatives replied to some of the queries. The Chairperson thanked the officials of the Ministry for providing valuable information and directed the Ministry to submit replies to the queries for which the information was not readily available.

5. A copy of verbatim record of the proceedings of the Committee has been kept.

The Committee then adjourned.

APPENDIX – II

MINUTES OF THE THIRTEENTH SITTING OF THE STANDING COMMITTEE ON RAILWAYS (2024-25)

The Committee met on Wednesday, the 25th June, 2025 from 1100 hrs. to 1300 hrs. in Committee Room 'B', Parliament House Annexe, New Delhi.

PRESENT

Dr. C.M. Ramesh – Chairperson

MEMBERS

LOK SABHA

2. Shri Damodar Agrawal
3. Shri Tariq Anwar
4. Shri T.R. Baalu
5. Shri Ummeda Ram Beniwal
6. Shri Chhotelal
7. Dr. Amol Ramsing Kolhe
8. Shri Kaushalendra Kumar
9. Shri Khagen Murmu
10. Adv. Adoor Prakash
11. Shri M. K. Raghavan
12. Dr. Swami Sachidanand Hari Sakshi
13. Shri Bharatbhai Manubhai Sutariya
14. Shri Gopal Jee Thakur

RAJYA SABHA

15. Dr. Sarfraz Ahmad
16. Shri Narhari Amin
17. Shri Upendra Kushwaha

18. Dr. K. Laxman
19. Shri K. Vanlalvena
20. Shri Mukul Balkrishna Wasnik

SECRETARIAT

1.	Shri Dhiraj Kumar	-	Joint Secretary
2.	Md. Aftab Alam	-	Director
3.	Smt. Savdha Kalia	-	Deputy Secretary

REPRESENTATIVES OF THE MINISTRY OF RAILWAYS (RAILWAY BOARD)

1.	Shri Satish Kumar	Chairman & Chief Executive Officer, Railway Board & Ex. -officio Principal Secretary to the Government of India.
2.	Shri Naveen Gulati	Member (Infrastructure) Railway Board & Ex.-officio Secretary to the Government of India
3.	Shri Anand Bhatia	Additional Member, Civil Engineering, Railway Board
4.	Shri Ravindra Kumar Goel	PED/Bridge, Railway Board

2. At the outset, the Chairperson welcomed the representatives of the Ministry of Railways (Railway Board) to the sitting of the Committee. The Chairperson then informed that the meeting has been convened for oral evidence by the representatives of the Ministry of Railways (Railway Board) on the subject "Construction and maintenance of Rail tunnels and Bridges including Road Over Bridges/Road Under Bridges". He also drew the officials' attention to the provisions of Direction 55 of the Directions by the Speaker, Lok Sabha emphasizing that the proceedings must be treated as confidential.

3. Based on the responses received to the list of points sent to the Ministry, the representative of the Ministry of Railways subsequently gave a detailed visual presentation before the Committee on the design and construction of railway

tunnels and bridges, with particular emphasis on their safety specifications. The Committee were apprised of the system of regular inspections of bridges and tunnels and progress achieved in the removal of speed restrictions of bridges. The Committee were informed about the ongoing works for elimination of level crossings through construction of Road Over Bridges (ROBs) and Road Under Bridges (RUBs), challenges faced in their execution, steps taken for early resolution and recent policy initiatives aimed at streamlining approval processes for timely project delivery. The Committee were also apprised about the technological innovations used in construction of RUBs and to mitigate the issue of water logging.

4. The Committee then sought clarifications on several important matters, including the timely construction and maintenance of Road Over Bridges (ROBs) and Road Under Bridges (RUBs), coordination with concerned agencies and ensuring environmental sustainability in railway infrastructure projects, technological innovations being adopted in the construction of rail tunnels. Further, the Committee stressed the importance of establishing a structured mechanism for the active involvement of people's representatives in the planning and execution of ROBs/RUBs; addressing persistent challenges such as land acquisition, utility shifting in railway infrastructure projects particularly related to ROBs/RUBs; strengthening coordination with local authorities for resolving issues like water logging in RUBs and improving associated drainage systems.

5. The representatives replied to some of the queries. The Chairperson thanked the officials of the Ministry for providing valuable information and directed the Ministry to submit replies to the queries for which the information was not readily available.

6. A copy of verbatim record of the proceedings of the Committee has been kept.

The witnesses then withdrew.

The Committee then adjourned.

APPENDIX – III

MINUTES OF THE FOURTEENTH SITTING OF THE STANDING COMMITTEE ON RAILWAYS (2024-25)

The Committee met on Thursday, the 7th August, 2025 from 1500 hrs. to 1530 hrs. in Committee Room No. 3, Parliament House Annexe Extension, New Delhi.

PRESENT

Dr. C.M. Ramesh – Chairperson

MEMBERS

LOK SABHA

2. Shri Damodar Agrawal
3. Shri Tariq Anwar
4. Shri Ummeda Ram Beniwal
5. Shri Chhotelal
6. Smt. Sangeeta Kumari Singh Deo
7. Dr. Amol Ramsing Kolhe
8. Shri Kaushalendra Kumar
9. Shri Khagen Murmu
10. Shri Awadhesh Prasad
11. Shri Sudama Prasad
12. Shri M K Raghavan
13. Smt. Satabdi Roy
14. Dr. Bhola Singh
15. Shri Bharatbhai Manubhai Sutariya
16. Shri Vijayakumar Alias Vijay Vasanth

RAJYA SABHA

17. Dr. Sarfraz Ahmad
18. Shri Narhari Amin
19. Shri Subhasish Khuntia
20. Shri Upendra Kushwaha
21. Dr. K. Laxman
22. Smt. Sadhna Singh
23. Dr. Sumer Singh Solanki

SECRETARIAT

1. Shri Dhiraj Kumar - Joint Secretary
2. Md. Aftab Alam - Director
3. Smt. Savdha Kalia - Deputy Secretary

2. At the outset, the Chairperson welcomed the Members to the sitting of the Committee. Thereafter, the Committee took up for consideration the following draft Reports :-

(i) Construction and maintenance of Rail tunnels and Bridges including Road Over Bridges/Road Under Bridges.

(ii) ***** ***** ***** *****

The Committee adopted the above-mentioned Reports without any modifications.

3. The Committee authorized the Chairperson to finalize and present the Reports to the Parliament.

The Committee then adjourned.

*** Not related to the Report**