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**STANDING COMMITTEE ON RAILWAYS  
(2018-19)**

**(SIXTEENTH LOK SABHA)**

**MINISTRY OF RAILWAYS  
(RAILWAY BOARD)**

**TWENTY THIRD REPORT**

**MAINTENANCE OF BRIDGES IN INDIAN  
RAILWAYS : A REVIEW**



**LOK SABHA SECRETARIAT**

**NEW DELHI**

December, 2018/ Pausha, 1940 (Saka)

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**Presented to Lok Sabha on 03.01.2019**

**Laid in Rajya Sabha on 03.01.2019**



**LOK SABHA SECRETARIAT**

**NEW DELHI**

December, 2018/ Pausha, 1940 (Saka)

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**COMPOSITION OF STANDING COMMITTEE ON RAILWAYS (2017-18)**<sup>@</sup>

**Shri Sudip Bandyopadhyay - Chairperson**

***MEMBERS***

**LOK SABHA**

2. Shri Ram Tahal Choudhary
3. Shri Sudheer Gupta
4. Shri Chandra Prakash Joshi
5. Dr. Ramshankar Katheria
6. Shri Ramesh Chander Kaushik
7. Shri Ram Mohan Naidu Kinjarapu
8. Shri Gajanan Kirtikar
9. Shri P.K. Kunhalikutty
10. Shri Balabhadra Majhi
11. Shri K.H. Muniyappa
12. Shri A.T. Nana Patil
13. Sadhvi Savitri Bai Phule
14. Shri Vijaya Kumar S.R.
15. Shri R. Radhakrishnan
16. Shri Lakhan Lal Sahu
17. Shri Rajeev Satav
18. Shri G.M. Siddeshwara
19. Shri Ganesh Singh
20. Shri Uday Pratap Singh
21. Vacant \*\*

**RAJYA SABHA**

22. Shri A.K. Antony
23. Shri Shwait Malik
24. Shri Satish Chandra Misra
25. Shri Mukut Mithi
26. Shri Garikapati Mohan Rao
27. Shri T. Rathinavel
28. Shri Bashistha Narain Singh\*
29. Mahant Shambhuprasadji Tundiya
30. Shri Motilal Vora
31. Ms. Saroj Pandey#

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<sup>@</sup> Constituted w.e.f. 01.09.2017 vide Lok Sabha Bulletin Part II No. 5837 dated 26.09.2017.

\* Shri Bashistha Narain Singh retired w.e.f. 02.04.2018 vide Committee Branch-I note dated 16.01.2018 and re-nominated w.e.f. 02.06.2018 vide Bulletin Part II no. 6894 dated 07.06.2018.

# Ms. Saroj Pandey was nominated w.e.f. 02.06.2018 vide Bulletin Part II no. 6894 dated 07.06.2018 in place of Shri Darshan Singh Yadav who retired w.e.f. 02.04.2018 vide Committee Branch-I note dated 16.01.2018.

\*\* Shri Mekapati Rajamohan Reddy resigned w.e.f. 20.06.2018 vide Bulletin Part II No. 6904 dated 21.06.2018.

**COMPOSITION OF STANDING COMMITTEE ON RAILWAYS (2018-19)**<sup>@</sup>

**Shri Sudip Bandyopadhyay - Chairperson**

**MEMBERS**

**LOK SABHA**

2. Smt. Anju Bala
3. Shri Ram Tahal Choudhary
4. Shri Pankaj Chowdhary
5. Shri Sudheer Gupta
6. Dr. Sanjay Jaiswal
7. Shri Gajanan Chandrakant Kirtikar
8. Shri Kunhalikutty P.K.
9. Shri Balabhadra Majhi
10. Dr. K.H. Muniyappa
11. Shri Kinjarapu Ram Mohan Naidu
12. Shri A.T. (Nana) Patil
13. Shri Vijayakumar S.R.
14. Shri R. Radhakrishnan
15. Shri Lakhan Lal Sahu
16. Shri Rajeev Shankarrao Satav
17. Prof. (Dr.) Ram Shankar
18. Shri Gowdar Mallikarjunappa Siddheshwara
19. Shri Ganesh Singh
20. Shri Uday Pratap Singh
21. Shri Kukade Madhukarrao Yashwantrao

**RAJYA SABHA**

22. Shri A.K. Antony
23. Shri Shwait Malik
24. Shri Satish Chandra Misra
25. Shri Mukut Mithi
26. Ms. Saroj Pandey
27. Shri Garikapati Mohan Rao
28. Shri T. Rathinavel
29. Shri Bashistha Narain Singh
30. Mahant Shambhuprasadji Tundiya
31. Shri Motilal Vora

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<sup>@</sup> Constituted w.e.f. 01.09.2018 *vide* Lok Sabha Bulletin Part II No. 7332 dated 18.09.2018.

## **LOK SABHA SECRETARIAT**

1. Smt. Kavita Prasad - Joint Secretary
2. Shri Arun K.Kaushik - Director
3. Shri R.L. Yadav - Deputy Secretary
4. Smt. Banani Sarker Joshi - Sr. Exec. Asstt.

## **INTRODUCTION**

I, the Chairperson, Standing Committee on Railways (2018-19) having been authorised by the Committee to present the Report on their behalf, present this Twenty Third Report on 'Maintenance of Bridges in Indian Railways: A Review'.

2. This Report is based on facts and figures submitted by the Ministry of Railways and the depositions made by the representatives of the Ministry of Railways (Railway Board) before the Committee on 06.11.2017 and 20.11.2017. The Committee considered and adopted the Report at their sitting held on 20.12.2018. Minutes of the related sittings are given in the Appendix to the Report.

3. The Committee wish to express their thanks to the officers of the Ministry of Railways (Railway Board) for appearing before the Committee and furnishing the information that the Committee desired in connection with the examination of the 'Maintenance of Bridges in Indian Railways: A Review'. They would also like to place on record their appreciation for the assistance rendered to them by the officials of Lok Sabha Secretariat attached to the Committee.

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

New Delhi;

20 December, 2018

29 Agrahayana, 1940 (Saka)

**SUDIP BANDYOPADHYAY**

**Chairperson**

**Standing Committee on Railways**

## REPORT

1. The Indian Railways have a total track length of 67,368 kilometers which reach even the remotest areas of the country. Along with tracks, bridges form the lifeline of rail transport in respect of both the passenger and the freight traffic in the country. It is an established fact that bridges play a substantial role in the transportation infrastructure and therefore their safety and maintenance must be accorded paramount importance. The Engineering Department (Civil Engineering) of the Indian Railways is entrusted with the work of building, maintenance and safety of Railway Bridges.

2. The total number of bridges across the Indian Railways stands at a total of 1,47,523 bridges as on 01.04.2018. The Indian Railways have classified bridges under three broad categories based on their waterway:-

**(a) IMPORTANT BRIDGE:** Bridges with linear waterway of 300 metres or more or a total waterway of 1000 square metres or more and those Bridges considered as important by the Principal Chief Engineer/Chief Bridge Engineer, depending on considerations such as depth of waterway, extent of river training works and maintenance problems are classified as Important Bridges.

**(b) MAJOR BRIDGE:** Bridges with total linear waterway 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. and;

**(c) MINOR BRIDGE:** Bridges which do not fall in the above classifications are classified as minor Bridges.

3. The following table shows the number of bridges in each category

Important	:	700
Major	:	12,085
Minor	:	1,34,738
<b>Total</b>	:	<b>1,47,523</b>



4. To a query as to whether Road over bridges/ Rail under bridges/ Foot over bridges(ROBs/RUBs/FOBs) fall in the category of bridges as defined by the Railways, the Committee was informed that Railway bridges are defined as bridges meant for train movement. ROBs and FOBs are not categorized under railway bridges as they are meant for road vehicle/pedestrian movement. RUBs are considered as railway bridges as trains pass over them.

5. Since railways have been operational in India for more than 160 years it is only natural that a large proportion of rail infrastructure would be more than a century old. To a query on the total number of bridges on the Indian Railway that were more than 100 years old, the Ministry informed that such bridges were 37,689 in number. The Committee were however assured that the age of the bridge, does not have direct relevance on the safety of the bridge. Moreover regular repair/strengthening/rehabilitation/rebuilding of bridge is undertaken whenever so warranted by its physical condition and not on the basis of age. When it was pointed out to them that though, at the time of their construction such bridges were designed to handle much lighter traffic and loads yet with the advent of railway modernisation, heavier trains with greater loading capacity have become increasingly prevalent. Given this changing scenario the Committee wanted to know how the Ministry was ensuring safety on older bridges and those experiencing increased traffic with heavier loads. The Ministry in reply have informed that the bridges designed for the older lighter loading standards were strengthened/rebuilt to carry the enhanced loading standards. Currently the bridges situated on Dedicated Freight Corridor (DFC) Feeder Routes and 25 Traffic identified routes were being strengthened/rebuilt on case to case basis.

In this regard, the Member (Engineering) clarified during the evidence as under:

"We have codified some life of the bridges so that we can plan their replacement but merely, if a bridge is more than 100 years old, it does not mean that it has outlived its life or it has become unsafe. So, all the bridges as already have been told, are inspected prior to monsoon with the purpose that all required repairs have been done; and after monsoon, they are inspected with the purpose that whether any additional damage has happened during the passage of high flood. Depending upon the extent of repair required, they are repaired. They are

repaired with in-house machinery if they are minor in nature. Supposing any major damage has happened to the bridge either during the monsoon or due to any accident or any other reason, then a special project report is prepared. Then, bridges are sanctioned for taking major repairs.”

### **Bridge Management System**

6. The Ministry of Railways have already established the Track Management System. To a query on whether a similar system has been envisaged for Bridge management, the Ministry has submitted that the development of Bridge Management System (BMS) is in progress. The work for development of this web enabled IT application has been sanctioned for ₹9.85 crores. The work is being executed by CRIS. The Committee were further informed that an MoU has been signed with CRIS regarding the BMS in 2017 and the work was expected to be completed by March 2019

### **Safety on Railway bridges**

7. It is a well acknowledged fact that safety of bridges should be accorded paramount importance since bridges are more vulnerable as compared to tracks. Safety of Railway Bridges is entrusted with the Engineering Department (Civil Engineering) of the Indian Railways. The Committee were assured that safety of bridges was accorded very high priority on Indian Railways through a rigorous process of inspections spanning different levels across the railways. During the evidence before the Committee, Member (Engineering) also addressed the issue of infrastructural stability especially in the light of the pressures of modern day rail travel as under :-

“The majority of the bridges were constructed when the railway line was constructed, but gradually as the traffic has increased over the bridges, as the loading standard has increased, a regular technical audit is taken in association with, sometimes, RDSO, which is our centralised design team and most of the time by the Chief Bridge Engineer of Zonal Railways. As and when, those bridges require, they are strengthened on a programme basis to carry higher speed and higher load. In the last five years, more than 4,000 such bridges have been strengthened. All the time, bridges are kept in safe condition. If we feel that there are certain bridges where certain damage has taken place, then a speed restriction is imposed for a limited period of time during which they are brought down to the normal standard, and bridges are made fit to run at the normal speed. Whenever we are introducing any higher loading on any bridge, again we

apply to the Commissioner of Railway Safety through the Zonal General Manager and then, after due diligence, those bridges are cleared to carry the higher speed or higher axle load. Today, in spite of the bridges being old, because of very meticulous planning and well-established system, I can assure this august Committee that the bridges are safe, and there is no reason for any anxiety on that part."

Inspection system of Railway Bridges.

8. The Committee were apprised by the Ministry that the Indian Railways had a very well established and elaborate system of inspection and maintenance of railway bridges. The inspections of bridges are of two broad categories:

- (a) Routine inspections; and
- (b) Special inspections carried out at various levels.

The Ministry further elaborated that all the bridges (including bridges in sub urban areas) are inspected at least twice a year, one before the onset of monsoon and one detailed inspection after the monsoon 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 and not on the basis of their age. If the 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. All bridges are safe for train movement at permitted speed.

9. The Ministry was asked to outline the procedures followed and supervising mechanism involved in the different types of bridge inspections. The Committee were informed that bridges are inspected every year before monsoon by Section Engineer (Works) / Section Engineer (Permanent Way) which cover general condition of foundation, sub-structure, super-structure, obstructions of water ways, track and approaches of all the bridges. Every year after the monsoon, the bridges are thoroughly inspected by Assistant Divisional Engineers (ADENs) and detailed observations are

recorded in Bridge Inspection registers. In addition, detailed technical inspection of certain bridges is carried out by Section Engineer (Bridges) at specified interval. Instructions are given for carrying out repairs of defects noticed during these inspections. Bridge Registers are then sent for scrutiny and directions of Divisional Engineers (DENs/Sr DENs) and further to Chief Engineer/ Chief Bridge Engineer. Based on observations in the registers, bridges requiring inspection at higher level are again inspected by Divisional Engineers and the Chief Engineer/ Chief Bridge Engineer and the remedial actions are taken as required.

### **Condition Rating System for bridges**

10. The structural reliability of bridges depends upon a methodical inspection system. The Indian Railways follow a condition rating system for its bridges. Every bridge is assigned Numerical rating (1 to 5) based on physical condition at the time of inspection. The system helps in identifying progressive deterioration, if any, in the condition of the bridge. Lower the overall rating number (ORN), more attention is required to the bridge. Bridges with ORN-1 rating indicates that bridge require immediate rehabilitation/rebuilding of whole bridge or one or more of its components whereas bridges with ORN-2 rating require rehabilitation/rebuilding of the whole bridge or one or more of its components on programmed basis. Thus, bridges with ORN-2 rating do not require immediate rehabilitation/rebuilding and/or imposition of speed restriction.

11. To a query on the number of bridges that have been given an ORN of 1 or 2, the Committee were informed that presently, there is no bridge with ORN-1 rating. There are 233 bridges assigned with ORN-2 rating, out of which 190 bridges have been approved for required rehabilitation/rebuilding. Out of these, 90 bridges are planned for rehabilitation during 2018-19. The Committee were further informed that during 2017-18, 379 speed restrictions have been removed from the bridges. As on 01.04.2018, there are 149 Speed Restrictions on bridges, out of which 121 speed restrictions are planned for removal during 2018-19. So far, 89 speed restrictions have been removed till September, 2018.

12. When the Committee sought clarifications on the factors that are taken into account while imposing speed restrictions on bridges, the Ministry informed as under:

“All bridges requiring rehabilitation may not require speed restriction. It is not possible to lay down standardized guidelines for imposing speed restrictions. Based on the detailed inspection and evaluation, the inspecting official may impose a suitable speed restriction as considered appropriate. Each case has to be judged and assessed on its merits by the inspecting officer, keeping in view the nature and severity of deficiencies noticed. Every such bridge may not require speed restriction.”

13. The Committee wanted to know about the factors included in the procedure involving detailed examination of the bridge. The Ministry in reply have provided the information that inspections include the examination of following:

- Flooring & Foundations: To ascertain whether there is any scour around piers/abutments, settlement of foundations etc.
- Masonry in sub-structure: To ascertain whether there is any crack, bulging, tilting, deterioration due to weathering in the masonry etc.
- Protective works and water ways: To ascertain whether protective works such as pitching, guide bunds, approach banks, flooring etc. are in sound condition and whether water way is adequate and clear of obstructions.
- Girder alignment and seatings: To ascertain whether bed blocks and bearings are in sound condition, girder alignment is correct etc.
- Structural condition of girders: To ascertain whether there is any loss of cambers in triangulated girders, distortion of members, incidence of loose rivets / bolts, corrosion in steel members etc.
- Track structure on bridge: To ascertain the condition of rails, sleepers, fittings etc.

### **Under Water Inspection (UWI):**

14. Bridges have an additional component wherein part of the structure remains permanently submerged under water. For such bridges there is an elaborate system of underwater inspections (UWI). Under Water Inspection (UWI) is carried out of only those bridges whose substructures remain under water throughout the year. The detailed UWIs of the underwater portion of such bridges are required to be carried out only once in every five years. The Ministry has further informed that such inspections are presently being carried out by the zonal railway through outsourcing. When it was pointed out that given the very large number of bridges on its network, did the Indian Railways not feel it necessary to put in place an in-house system of underwater inspection of bridges instead of relying on outsourced agencies, which may result in reduced accountability as well as increased costs, the Ministry in reply have stated that UWI is a highly specialized job and is carried out by the specialized agencies engaging divers, specialized equipments etc. They have further clarified that as compared to the total population of the bridges, only a small fraction of bridges requires UWI, which is fulfilled by outsourcing and therefore as such no need has been felt for developing the in-house expertise for UWI.

### **Staff for bridge maintenance**

15. The Committee wanted to know the details with regard to staff specially dedicated for maintenance and inspection of bridges in the Indian Railways. In reply the Ministry have informed that the substructure of all the bridges and superstructure of small span bridges (less than 12.2 m span) are inspected and maintained by the Divisional staff (SSE/Works, SSE/PWay units). The superstructure of bridges having spans of 12.2 m and more are inspected and maintained by the Bridge Organization (SSE/Bridge Units) directly under the Head Quarter of Zonal Railway.

16. To a query on the staff position of SSE/Bridge Units across IR, the Committee have been informed that while the sanctioned strength is 7669 the actual strength is only 4517. Thus, there is a short fall of around 3152 personnel. The vacancies are

being filled up through Railway Recruitment Cell (RRC)/Railway Recruitment Board (RRB).

17. On being further queried whether such a high rate of vacancy is affecting the conduct of annual inspections of bridges, including under water inspection, the Ministry has replied that there is no shortfall of Annual Inspections of bridges. Under Water Inspection (UWI) of only those bridges whose substructures remain under water throughout the year is required to be carried out. The detailed UWIs of such bridges are required to be carried out once in five years. The Ministry has added that though by and large, the inspection schedule of UWI has been adhered to yet there have been slight shortfall in the underwater inspections of some bridges in North East Frontier Railway due to reasons beyond control such as early onset of monsoon rendering very less working period, law and order situation in certain areas of Assam, very high turbidity of water, etc. They however assured the Committee that they were ensuring that all the overdue underwater inspections are completed during current year 2018-19.

### **Security of bridges.**

18. The Committee sought to know about the arrangements regarding the security of bridges in Indian Railways. The Ministry have informed that as far as security of the bridges are concerned, as per extant provisions protection and security of tracks, bridges and tunnels are the responsibility of District Police of concerned States. The Committee also wanted to know about the coordinating mechanism between the Railways and various agencies entrusted with bridge security. The Ministry informed that Railways through the Railway Protection Force (RPF) were maintaining close coordination with Government Railway Police (GRP) and District Police of concerned States for ensuring smooth train operations over Indian Railways.

19. As an additional measure and for further strengthening of coordination with concerned States, State Level Security Coordination Committees for Railways (SLSCRs) have been constituted in each State under DGPs of respective States with representatives of RPF, GRP, State Intelligence and IB. Constitution of SLSCRs has led

to regular review of security over Railways with an aim to address railway related security issues, including security of railway tracks, bridges and tunnels, at appropriate level. SLSCR have also been formed with States having border areas, those affected with insurgency and naxalism etc.

20. An additional point was made by the Committee on the impact of non-railway related activity on the safety of bridges and how the Railways were tackling it. The Ministry replied that District Authorities or Local Authorities have no direct role to play in safety of the bridge which is the sole responsibility of the Engineering Department of the Railways. They further pointed out that however in certain cases, safety of the bridge could be endangered due to the presence of Railway Affecting Works (RAW) (*e.g.* some dam/water storage tanks etc. being constructed/upgraded on the upstream of the bridge) being carried out by the Local Authorities. To address such concerns the Railways hold regular meetings with State/Local Authorities for maintenance/upkeep of the RAWs.

#### Safety of staff involved in bridge inspection

21. As much as safety and security of bridges is vital, equally important is ensuring the safety of staff associated with it during maintenance or inspection works etc. The Committee took cognizance of this fact and put forward a query to the Ministry and sought their position in this regard. The Ministry in their reply have summarized that the inspection arrangements are provided at the bridges and man refuges / side pathways are also being provided wherever required for safety of the inspection / maintenance personnel. Apart from this, the safety equipments such as helmets, shoes, gloves etc. are also provided to the staff. Regarding training targeted towards staff involved in inspection and maintenance of bridges, the Committee were informed that regular training as well as refresher courses were conducted for the railway staff from time to time. Counselling of staff of the contractors/outsourced staff is also done by the field officials.



### **Strengthening / Rehabilitation / Rebuilding of bridges**

22. Safety of bridges is accorded high priority on Indian Railways. The Committee were apprised that repair/rehabilitation/rebuilding/strengthening of bridges is a continuous process on Indian Railways and is undertaken on the following basis:

- Based on physical condition ascertained during the regular inspections.
- Based on design considerations for enhanced loading due to higher axle load trains, High Powered Locomotives etc.
- Elimination of Obsolete materials (cast iron screw piles, early steel girders etc.)
- Additional openings based on hydrological considerations to provide adequate waterway.
- Replacement of small span steel girders to maintain more uniformity in track structure and to reduce maintenance efforts.

23. When it was inquired from the Ministry on the protocol being followed for older bridges, the Ministry clarified that the age of the bridge does not have direct relevance on the physical condition of the bridge. Instead, the repair/strengthening / rehabilitation / rebuilding is undertaken whenever so warranted by its physical condition and not on the basis of age. Based on the condition of the bridge, if required, suitable safety measures like imposing speed restrictions and keeping such bridge under close watch are taken till the bridge is rehabilitated/rebuilt. The bridges are maintained to ensure safe running of trains all the time at permitted speed.

### **Sanction of Bridge Rehabilitation/Strengthening/Rebuilding works**

24. The Committee sought details about the bridge sanctioning works and the process involved for the same. The Ministry informed that bridge rehabilitation works are normally carried out as Plan expenditure under Plan Head-32 of Demand no. 16. The Committee also sought information on the process followed in the sanctioning of bridge works in Indian Railways. They were apprised that bridge works were proposed

by the Zonal Railways online on IRPSM (Indian Railways Projects Sanctions & Management) portal about one to four months before the Annual Budget and were sanctioned by Railway Board in the concerned Budget Year. Thus, the decision of sanctioning the bridge works proposed by the Zonal Railways is taken in the same year itself.

25. The bridge works of more than ₹2.5 Crore each are sanctioned by Railway Board and works of less than ₹2.5 Crore are sanctioned by zonal railways themselves at Headquarter & Divisional Level.

**Progress of construction of new bridges and strengthening / rehabilitation / rebuilding of bridges**

26. The Ministry was asked to provide the details of the current status of bridge works in the Railways. The Committee were informed that during last three years (2015-16 to 2017-18), 8611 new railway bridges have been commissioned on account of commissioning of new lines, doubling etc. 2347 existing bridges have been rehabilitated / rebuilt by the Ministry during the same period. Regarding the status of bridge rehabilitation, the Ministry have stated that presently, 3017 railway bridges have been sanctioned for rehabilitation/rebuilding. The Ministry also informed that though in general the total time required for completion of a bridge work, after its sanction in budget, is three to four years, yet, for important bridges, time required is sometimes greater due to the various complexities involved.

**Allocation, Expenditure and Progress of Bridge works**

27. The Budget allocations since 2013-14 under Plan Head- 32 (Bridges) is as under:-

<b>Year</b>	<b>BE</b>	<b>RE</b>	<b>Expenditure</b>
2013-14	513	382.69	390.19
2014-15	403	465.04	441.09
2015-16	559.9	491.39	520.01

2016-17	588.53	591.91	494.75
2017-18	746.40	705.30	452.98

28. Every year, several hundreds of bridges are taken up for strengthening/rehabilitation/rebuilding. The progress of rebuilding/rehabilitation/ strengthening of bridges in Indian Railways during the last five years since 2012-13 is given in the Table below.

Year	Physical Progress ( No of bridges)	
	Target	Progress
2012-13	702	806
2013-14	591	739
2014-15	620	672
2015-16	670	705
2016-17	750	753
2017-18	800	889
Total	<b>4133</b>	<b>4564</b>

29. Additionally, the Committee was apprised that during 2001-02 to 2010-11, a total of 12650 railway bridges were rehabilitated/rebuilt under the Special Railway Safety Fund (SRSF). This exercise was undertaken with a view to clear the backlog of rehabilitation/replacement of railway bridges in Indian Railway. This gave impetus to work of rehabilitation/rebuilding during the said period.

### **Recommendations of the Kakodkar Committee Report**

30. The Ministry had appointed a High Level Safety Review Committee under the Chairmanship of Dr. Anil Kakodkar in 2012 to review the safety of the Indian Railways and recommend improvements. The Committee desired to know about the recommendations of the Committee on different aspects of bridges, such as safety, maintenance, etc. They also sought information on the status of implementation of such recommendations. In reply the Ministry have provided the information as tabulated below:

<b>Recommendation</b>	<b>Decision of the Board</b>	<b>Status</b>
<p>For recording and monitoring the condition of distressed bridges, photographs should be taken using modern hand held electronic cameras and should be posted on MIS/sent through Internet to all concerned expert engineers having vast experience. (Para 5.5)</p>	<p>Accepted</p>	<p><b>i.</b> For modernizing the Bridge inspection and minimizing the human errors, inspection of railway Bridges by Drones has been considered. This will help in capturing the Photographs / Videos of different parts of bridges including inaccessible parts. Zonal railways have been advised to do Drone Inspection of identified mega bridges in the first phase.</p> <p><b>ii.</b> A separate work of developing Bridge Management System (BMS) has been sanctioned in Budget 2016-17. This will be a web based IT application that will facilitate 24x7 availability of information for meaningful analysis related to the safety item. This will help in improving maintainability and safety of bridges. BMS will also be integrated with instrumentation on bridges so as to record the bridge parameters in real time. The work is being executed by CRIS.</p>
<p>Vulnerable bridges should be fitted with water level gauges and turbine flow meters to measure flow which should be interlocked in a way to warn the driver of the approaching train. (Para 5.5).</p>	<p>Recommendation partially accepted Water level gauges should be provided.</p>	<p>Zonal Railways have identified 151 bridges for installation and commissioning of water level monitoring system. At 117 locations system has been installed and commissioned. On the balance bridges the system is expected to be</p>

		<p>installed before Monsoon 2019. Possibility of using Hooter System at station to warn the driver is being explored. Scour-cum-Water Level Monitoring System is also being explored.</p>
<p>Distressed and vulnerable bridges should be instrumented in terms of deflections/displacements, water level and flow velocity on a continuous basis and data should be communicated to the office of the concerned Chief Bridge Engineer for monitoring. Advanced scientific measurement and inspection for the condition assessment of the under-side of the bridges using mobile and articulating platform is essential. (Para 5.6)</p>	<p>Recommendation partially accepted. Suitable arrangements for measuring important parameters of selected distressed/vulnerable bridges would be provided.</p>	<p>The following actions have been taken with respect to the important items required to be monitored for vulnerable bridges:</p> <p><b>Under Water Inspection of Railway Bridges by Remote Operated Vehicle (ROV) technology:</b> A trial inspection using ROV technology has been undertaken in NR.</p> <p><b>Drone Survey of Bridges:</b> 5 Zonal Railways viz. NR, NFR, WCR, SR and SER have undertaken trial inspection using Drone Survey method.</p> <p><b>Water Level Monitoring system:</b> The system has so far been successfully installed in 10 bridges in ECoR, 7 bridges in SCR, 10 bridges in NFR and 7 bridges in SR.</p> <p><b>3D Scanning of river beds in proximity of Railway Bridges:</b> Scanning has been conducted on 2 nos. of bridges in NR viz. New Yamuna Bridge and Ganga Bridge at Garhmukteshwar.</p>

## **New Technologies in Bridge Construction**

31. On being asked about the new technologies that have been implemented by the Ministry in the sphere of bridge construction, the Ministry in their written submission furnished as under:-

"The following new technologies have been adopted by Indian Railways in the field of bridge construction & maintenance:

(i) **Use of Modern Spherical & Cylindrical Bearings on Bridges:**

With the introduction of higher axle load trains and powerful locomotives, the bridges are required to be designed accordingly. Bearings are also to be designed to transmit higher axle load and longitudinal forces safely with required translational and rotational movement. Conventional bearings being used on IR are not able to transmit higher forces. In this regard, modern spherical / cylindrical bearings are able to transmit higher loads with required translational and rotational movements. In addition, these bearings match the life of the bridge thereby avoiding the need for replacement during service life of bridge.

This type of bearings is being used worldwide and it has been used for the first time on Indian railways on recently commissioned new Jubilee Bridge across Hooghly River, Jhajjar Bridge in J&K Project and under construction Bogibeel bridge across Brahmaputra River near Dibrugarh. Spherical bearings are also being used in several mega bridges under construction in J&K Project.

Keeping in view the benefits associated with the spherical bearings, it has been decided to use them for bridges of longer spans of 61.0 m. It is being planned to permit spherical bearing for lesser spans also.

(ii) **Girder launching using Cable cranes:**

Launching of steel girders for tall and long span bridges is a herculean task. Now a days cable cranes are being used worldwide for launching of such type of girders. On Indian railways, this technology is being used for the first time in under construction Chenab Bridge in J&K project. Cable crane assembly including pylons at span of 915 meters for launching of arch segments of the bridge is the longest in the world. The height of the pylons is staggering 127m. This technology is also envisaged for construction of many more bridges being constructed in hilly terrain.

**(iii) Continuous Water Level Monitoring system at bridges:**

Flood Water level at the identified railway bridges are required to be regularly monitored so as to take appropriate action as and when the water level reaches/crosses the threshold limit for safe movement of rail traffic. Presently, water level is monitored by stationary watchman. This system requires lot of manpower and also prone to human errors. In order to remotely monitor the water level, a pilot project on Continuous Water Level Measuring Instrument (WLMI) has been successfully completed in 2015. In this system, water level can be monitored from anywhere through SMS alerts. It eliminates the need of posting stationary watchman. It has been decided to install the system on all important/vulnerable bridges. In the first phase, Railways have identified 151 bridges, out of which system has been installed and commissioned on 117 bridges.

**(iv) Stainless steel reinforcement for corrosion protection:**

Prevention of corrosion in reinforcement is essential for overall durability of RCC / PSC structures and also to enhance the life of the structure. It is more important for Major and Important Bridges as replacement or retrofitment of these bridges possess big challenges.

In order to enhance the life of concrete bridges, decision has been taken to use stainless steel reinforcement bars for new bridges and other structures in corrosion prone areas.

**(v) Use of Completely Welded Steel Girders:**

Presently, the steel girders being used on IR are welded cum riveted / bolted. In this design, the built-up members are welded but the connections/joints are bolted. The current trend is to use completely welded girders in advanced countries. The fully welded girders are not only aesthetically pleasing but are also lighter in weight as compared to conventional welded girders having riveted/bolted joints. These girders require less maintenance also.

For the first time in India, completely welded steel girders are being used in construction of Bogibeel rail cum Road Bridge across mighty Brahmaputra River at Dibrugarh, Assam. Now, it is being contemplated to use completely welded girders in big way on Indian Railways by improving the design, quality of field welding and weld testing procedures.

**(vi) Under Water Inspection of Bridges:**

Those parts of the bridge which remain under water throughout the year are required to be inspected as these parts are prone to deterioration due to scouring, effects of chemical in water, deterioration of the sub structure, weathering etc. Presently, the detailed under water inspection is carried out by

trained divers by visual inspections, with NDT equipments, still and video cameras which have lot of subjectivity.

In order to minimize human intervention, advanced technology of using robotic remote operated vehicle (ROV) has been adopted on trial basis at one bridge each in Southern Railway and Northern Railway. Using this technique, dependency on diver is eliminated and all the submerged parts of the bridge can be inspected and monitored remotely from the Bridge/Bank."

### **Use of Modern/alternative technology in monitoring of Bridges**

32. The Indian Railways is currently using the Indian Space Research Organisation's (ISRO) satellite based system to prevent accidents and for track surveillance. The Ministry was asked whether they were adopting the same technology for monitoring bridges for strength, safety, etc. In reply, the Ministry provided the information that ISRO's satellites are not being used for monitoring bridges. However, they were envisaging the use of drones for inspection of bridges. The Ministry is of the view that the highly inaccessible parts of the bridges can be reached with great ease without the need of costly vehicles, ladders etc. with the help of drones. The details (photographs, videos etc.) captured by drones can be analyzed to assess the condition of the components. The Committee was apprised that with the data captured by drones, 3D modelling would become possible which in turn would be a highly beneficial and cost-effective alternative to the conventional methods of inspection and maintenance currently in practice. Regarding the current status, the Ministry informed that instructions have been issued to zonal railways to carry out trials for taking further decision in this regard.



## **RECOMMENDATIONS/OBSERVATIONS**

**1. The Committee note that the Indian Railways has a staggering 1,47,523 number of bridges across its immense network. The Committee further note that the Indian Railways have classified bridges under three broad categories which are based on the breadth of their waterway. Bridges with a linear waterway of 300 meters are classified as Important Bridges and those with a linear waterway of 18 meters are classified as Major Bridges. All other bridges are classified as Minor Bridges. This classification effectively relegates 92 percent of the bridges in the Indian Railways to the Minor Bridge category. The Committee feel that such a categorization is too broad and may lead to exclusion of large number of bridges and in view of the fact that there exists different parameters for inspections, maintenance etc. of bridges, such a wide difference would result in unequal weightage/importance being given to only a few bridges as compared to vast majority. The Committee express their reservations on the above mentioned classification and recommend that the Ministry should re-evaluate their classification of bridges in order to bring about some parity. They also recommend that this re-evaluation should take into account the changing dynamics of modern rail transportation which sees the use of heavier and faster trains and higher density of traffic regardless of the measurement of waterways. The Committee strongly feel that such a step would result in augmented safety and security of bridges.**

**2. The Committee find to their surprise that though the 37,689 number of bridges on its network are 100 years or older, yet the Railways do not classify them as a special/separate segment. Rather they are kept at par with the existing newer/modern bridges when it comes to inspections and maintenance. The Committee express serious doubts over such an action and opine that these bridges have been planned for lesser loads and service conditions that have changed radically over time. Axle loads and traffic**

density have increased with the advent of faster and heavier trains and safety of these old bridges may be severely compromised which may lead to safety failures. The Committee are of the considered opinion that the (now) obsolete technology and materials used in these old bridges may not be compliant with modern rail paraphernalia and hence there would be a requirement of a different protocol when it comes to their upkeep and sustenance. The Committee also opine that deficiencies related to aging bridges can become a major concern for their structural safety. As such, the Committee do not concur with the contention of the Ministry that the age of a bridge has no direct bearing on its safety and it is only the physical condition of the bridge that is taken into account while classifying a bridge. The Committee wish to remind the Ministry that such a generalization would be detrimental to the health of a bridge since the archaic technology/materials of these older bridges may not be able to withstand the rigors of modern rail transport equipment. It should also be taken into account that these bridges have withstood the stress and rigours of over a century suffering corrosion, distress, wear and tear. The Committee would like to emphasize that with the advent of modern rail transportation, older bridges may be unable to withstand higher load and speed, resulting in accidents or compromise with punctuality. The Committee also take cognizance of the fact that several of these structures have formidable heritage value and are intrinsically linked to the history of the country and overuse or misuse of these structures may erode their historical value. While the Committee are aware of the commercial concerns as well as financial limitations of the Ministry yet they feel that safety is paramount and should not be compromised at anytime. They therefore advise the Ministry to devise a protocol of inspection and maintenance to include a greater degree of safety/safeguards for bridges which come under this category while keeping their commercial interests intact.

**3. The Committee find that the Ministry have laid the groundwork for a bridge management system. This would serve as a long run structural health management system for bridges. The Committee appreciate this endeavour of the Ministry, but at the same time they wish to remind the Ministry that the deadline of completion *i.e.*, March 2019 should be strictly adhered to in order to gain maximum benefit from such an excellent venture. The Committee would like to be kept apprised of any action in this regard.**

**4. Taking note of the elaborate system of inspection and maintenance laid down for bridges across the Indian Railways, the Committee are of the firm opinion that bridges being more vulnerable than tracks require a more robust system of inspection. According to the Ministry inspection of bridges are multi-tiered and meticulously inspected under a codified system at fixed intervals of time. The Railways treat the physical condition of the bridge as the primary indicator while deciding on the quantum of maintenance or rehabilitation. The Committee also find that till such time as repair /rehabilitation of a bridge is complete, the Ministry takes a number of steps to ensure safe passage such as speed restrictions. Although very few bridges requiring rehabilitation have speed restrictions, yet the Committee feel that in an already congested rail network any delay is likely to over-burden the system. Since major repairs take a considerable periods, prolonged periods of speed restrictions can be counter-productive and negatively impact punctuality. Nonetheless it cannot be denied that maintenance negligence and delayed actions invariably lead to heavy costs in future or risk of deterioration of assets. The Committee acknowledge that the introduction of the Indian Railways Projects Sanctions & Management (IRPS&M) system has simplified the process of identification of bridges and getting approval of the competent authorities for their rehabilitation. The Committee, therefore, recommend that the Ministry should pragmatically approach the matter by striking a balance between maintenance and safety of bridges while at the same time adhering to realistic timelines.**

**5. The Committee find that the Indian Railways depends on a methodical system of inspection where conditional ratings are given based on the physical condition at the time of assessment by the inspecting authority. The Committee also find that the Ministry relies heavily on the visual perception and evaluation of the inspecting official. The Committee feel that such a system puts an undue heavy strain on the wisdom of the inspector and their adherence to prescribed norms/procedures. In such a scenario there is a distinct possibility of subjectivity creeping in as perceptions are often open to interpretations. The Ministry have also themselves admitted that they do not have a standardised guideline for imposing speed restrictions. They, therefore, recommend the Railways to formulate definitive guidelines for bridge inspections including those for speed restrictions in order to eliminate the need for speculation on the part of the assessing officer. Such guidelines should be comprehensive, unambiguous and include all aspects or possible scenarios of bridge inspections. Further, the Committee recommend that the Railways should design intensive training courses/modules for officials connected with bridge inspections keeping in mind the latest technological expertise in the sphere of bridge management/ maintenance etc. being adopted across the world.**

**6. The Committee feel that the Ministry should explore the use of modern technology for inspection of bridges which may be beneficial in early detection of damage and lower maintenance costs. The Committee also desire the Ministry to study the modern methods being used by the Railways of other countries and endeavour to bring/implement such technologies and systems across our own network. The Committee are happy to note that the Ministry is utilizing satellite imagery for detecting faults on its tracks and feel that they should extend this initiative for bridges also which would vastly minimize human error and reduce maintenance costs. The Committee wish to put forward the viewpoint that to improve or inculcate new bridge technology or newer methods of inspection, the Railways must engage with**

global partners such as Railways of other countries and premier institutions such as the Indian Institutes of Technology (IITs) etc. Such a collaboration may provide stimulus and encourage rail research and lead to innovations in technology in respect of bridges. The Committee feel that in addition to introduction of new technologies the Ministry should also study their efficacy or impact on the system. The Committee therefore recommend that the Ministry should make a comprehensive survey/study to analyse the benefits as well as effectiveness accrued and whether there has been a marked improvement in rail/bridge safety as a result of the implementation of such technologies.

7. The Committee find that under water inspection of bridges are carried out only once in every 5 years on bridges which have structures partially submerged underwater permanently. The Committee feel that with the pressure of expansion of rail traffic such an interval is too large. Heavier/faster trains at greater frequency is bound to put greater stress and hasten the wear and tear of the bridge structure. Given such a situation, the Committee would like the Ministry to consider increasing the frequency of underwater inspections of bridges to preserve their worthiness and preventing untoward incidents. The Committee also find that that under water inspections are carried out by outsourced agencies. The Committee do not concur with the Ministry's justification that since underwater inspections are highly specialized they are required to be carried out by specialized agencies. The contention of the Ministry that since only a small percentage of bridges required underwater inspections hence the capability was not developed in-house is not acceptable to the Committee. The Committee have been informed that the Ministry has started a trial of using a remote operated vehicle (ROV) for conducting underwater inspections of bridges. The Committee laud this initiative and recommend that the Ministry should give greater impetus to proliferation of this technology as it would not only be cost effective but also gradually negate the need of physical examination

currently being followed. This would consequently reduce the dependence on the outsourced agencies.

8. The Committee find that the Indian Railways have dedicated category of staff for inspection and maintenance of bridges. However the Committee find to their chagrin that there exists a very high rate of vacancy in this category of staff. As against a sanctioned strength of 7669, the actual strength is only 4517 indicating a vacancy of around 40 percent. Admittedly, the lack of manpower have negatively affected their inspection routine and most acutely in the northeast frontier Railway. The Committee feel that this is a grave lapse on the part of the Ministry in ensuring safety of rail traffic. As earlier observed, the bridges are the most vulnerable link on the Railways and lack of manpower in this segment is bound to create gaps in inspection and maintenance which may compromise Railway safety. The Committee, therefore, direct the Ministry to shake off its inertia and fill up these vacancies in the shortest possible time and in the right earnest. The Committee also recommend that till the time such vacancies are filled the Ministry should set up some temporary measures like filling up these posts through deputation etc. to tide over the shortage. They can approach other government agencies which have bridge features such as defence, highway authorities, road agencies etc. to help fill up these posts temporarily. The Committee would like to be kept apprised of steps taken in this regard.

9. The Committee are of the opinion that natural calamities/hazards like earthquakes, fire, cyclones, floods etc. have a greater devastating impact on the structural stability of bridges as compared to other rail infrastructure. It is seen that even if the bridge is structurally sound yet damage caused by natural calamities are amplified due to their vulnerability. These instances not only cause loss in terms of social, economic and financial terms but they also disrupt rail traffic. Further it is pointed out that in certain remote parts of the country Railway bridges often form the lone lifeline for

**communications and transportation and any damage to them totally isolates them from the rest of the country. Since there is no prevention or control over natural calamities the Ministry should have a prior planning for prompt rehabilitation and protection from injuries, loss of life, property damage, and destruction of bridges in the eventuality of natural calamities.**

**10. The Committee find that in the last 3 years the Railways have commissioned 8611 new bridges on account of expansion of rail network. Moreover 4027 existing bridges have been approved for rehabilitation. The Committee also find that in the last 3 years 2347 existing bridges have been rehabilitated. The Committee wish to remind the Ministry that with a total bridge population of over 1.4 lakh bridges these numbers are highly insignificant and in their opinion not proportionate to the number of bridges requiring upgradation. As regards the physical performance of bridge works the Committee was informed that targets are set on a yearly basis. The Committee are happy to note that the Ministry has been achieving the targets and exceeding them in some years. They, however, feel that the targets being set by the Ministry are too modest and unrealistic and recommend that the Ministry make a realistic evaluation of its bridge infrastructure and set targets appropriately. At the same time the Committee wish to caution the Ministry against setting ambitious targets that neither receive allocation nor abide by timelines. However in terms of allocation and utilization the Ministry appears to be falling short. In most years, the allocation was reduced at the RE stage significantly yet the Ministry was unable to fully utilise the resources. In the light of the fact that the Railways have been experiencing severe funds limitations in the last two decades, unspent funds point to lack of proper planning by the Ministry in executing works of such paramount importance. The Committee are unhappy to note that year after year there have been a reduction at the RE stage. The Ministry cannot take recourse to their oft quoted excuse of lack of funds in this regard. The Committee are of the strong opinion that reduction of funds**

at RE stage points to the inefficacy of the planning process of the Ministry or short sightedness in assigning targets. The Committee therefore urge the Ministry to keep a strong grip on its finances and set realistic targets and goals. The Committee note with concern that with the exception of financial year 2014-15, the monies have been greatly reduced. They, therefore, recommend that the Ministry take proactive steps in order to fully utilize its allocations keeping with the timelines.

11. The Committee find that the Ministry had set up High Level Safety Review Committee under the Chairmanship of Dr. Anil Kakodkar in 2012 to review the safety of the Indian Railways and recommend improvements thereto. This Committee had made some recommendations regarding safety and maintenance of bridges. However to their disappointment, the Committee find that even after a gap of 6 years the Ministry has only partially accepted some of these recommendations. The Committee are dissatisfied to note that there have been numerous occasions when the Ministry has disregarded or overlooked the recommendations of these Committees whose sole purpose is to suggest better methods for rail management. They recommend the Ministry to prescribe a time bound implementation of the recommendations of this Expert Committee and their implementation should be monitored at the highest level. The Committee would like to be kept apprised of any actions taken in this regard.

12. The Committee find that the Railways have adopted and implemented a number of new technologies in the sphere of bridge construction. At the same time, they are also trying to develop new technologies under the aegis of the 'Make in India' initiative. They also note that the Ministry is considering the use of drones for use in assessing the condition of bridges. The Committee feel that such aerial devices are not only cost effective but they are more efficient and less hazardous for inspecting staff. They can also be used much more frequently than traditional methods of inspections.



**Moreover 3D mapping of bridges can help authorities with long term repair/maintenance plans. The Committee laud this unique initiative of the Ministry to harness new technologies and advise them to begin its implementation at the earliest.**

New Delhi;  
20 December, 2018  
29 Agrahayana, 1940 (Saka)

**SUDIP BANDYOPADHYAY**  
**Chairperson**  
**Standing Committee on Railways**

## APPENDIX

### MINUTES OF THE SECOND SITTING OF THE STANDING COMMITTEE ON RAILWAYS (2017-18)

The Committee met on Monday, the 6<sup>th</sup> November, 2017 from 1100 hrs. to 1300 hrs. in Committee Room 'C', Parliament House Annexe, New Delhi.

#### PRESENT

**Shri Sudip Bandyopadhyay** - **Chairperson**

#### MEMBERS

##### LOK SABHA

2. Shri Ram Tahal Choudhary
3. Shri Sudheer Gupta
4. Shri Chandra Prakash Joshi
5. Shri Ramesh Chander Kaushik
6. Shri K.H. Muniyappa
7. Shri R. Radhakrishnan
8. Shri Rajeev Satav
9. Shri Uday Pratap Singh

##### RAJYA SABHA

10. Shri Satish Chandra Misra
11. Shri Mukut Mithi
12. Shri Bashistha Narain Singh
13. Shri Motilal Vora

#### SECRETARIAT

1. Smt. Abha Singh Yaduvanshi - Joint Secretary
2. Shri Arun K. Kaushik - Director
3. Shri Ram Lal Yadav - Deputy Secretary

#### REPRESENTATIVES OF THE MINISTRY OF RAILWAYS (RAILWAY BOARD)

1.	Shri Ashwani Lohani	Chairman, Railway Board & Ex-officio Principal Secretary to the Government of India
2.	Shri Mohd. Jamshed	Member-Traffic, Railway Board & Ex-officio Secretary to the Government of India
3.	Shri Ravindra Gupta	Member-Rolling Stock, Railway Board & Ex-officio Secretary to the Government of India
4.	Shri Mahesh Kumar Gupta	Member-Engineering, Railway Board & Ex-officio Secretary to the Government of India

2. At the outset, the Chairperson welcomed the Members to the sitting of the Committee. xxxx                      xxxx                      xxxx                      xxxx

3. Thereafter, the Chairperson welcomed the representatives of the Ministry of Railways (Railway Board) to the sitting and invited their attention to the provisions contained in Direction 55 of the Directions by the Speaker, Lok Sabha regarding the proceedings to be treated as confidential.

5. The representatives of the Ministry of Railways (Railway Board) then briefed the Committee on the subjects (i)xxxx    xxxx    xxxx (ii)Maintenance of Bridges in Indian Railways: A Review.

6.        xxxx                      xxxx                      xxxx                      xxxx

7. On the issue of Bridges in Indian Railways, he informed that they have roughly 1,44,698 bridges of which more than 37000 bridges are more than 100 years old. However, he stated that the Railways have a very robust system of maintenance and inspection of bridges across all levels from Board, Zone to Division level.

6. The Committee, then, sought certain clarifications from the Chairman, Railway Board on the subjects under examination and also gave various suggestions in this regard. The Chairperson directed the Ministry to provide written replies to the queries which remained unanswered. The evidence remained inconclusive.

7. A verbatim record of the sitting has been kept.

**The Committee then adjourned.**

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*xxxx not related to the Report.*

**MINUTES OF THE THIRD SITTING OF THE STANDING COMMITTEE ON  
RAILWAYS (2017-18)**

The Committee met on Monday, the 20<sup>th</sup> November, 2017 from 1130 hrs. to 1310 hrs. in Committee Room No.'2', Parliament House Annexe Extension Building, New Delhi.

**PRESENT**

**Shri Sudip Bandyopadhyay - Chairperson**

**MEMBERS**

**LOK SABHA**

2. Shri Ram Tahal Choudhary
3. Shri Chandra Prakash Joshi
4. Shri Ramesh Chander Kaushik
5. Ram Mohan Naidu Kinjarapu
6. Shri A.T. Nana Patil
7. Shri S.R. Vijayakumar
8. Shri Mekapati Raja Mohan Reddy
9. Shri Lakhan Lal Sahu
10. Shri Rajeev Satav
11. Shri Uday Pratap Singh

**RAJYA SABHA**

12. Shri A.K. Antony
13. Shri Satish Chandra Misra
14. Shri Garikapati Mohan Rao
15. Shri Bashistha Narain Singh

**SECRETARIAT**

1. Smt. Abha Singh Yaduvanshi - Joint Secretary
2. Shri Arun K. Kaushik - Director
3. Shri Ram Lal Yadav - Deputy Secretary



## **MINUTES OF THE THIRD SITTING OF THE STANDING COMMITTEE ON RAILWAYS (2018-19)**

The Committee met on Thursday, the 20<sup>th</sup> December, 2018 from 1500 hrs. to 1520 hrs. in Committee Room No. 2, Block-A, PHA Extn. Bldg., New Delhi.

### **PRESENT**

**Shri Sudip Bandyopadhyay - Chairperson**

### **MEMBERS**

#### **LOK SABHA**

2. Smt. Anju Bala
3. Shri Ram Tahal Choudhary
4. Shri Gajanan Kirtikar
5. Shri Balabhadra Majhi
6. Shri K.H. Muniyappa
7. Shri A.T. Nana Patil
8. Shri Rajeev Satav
9. Shri Uday Pratap Singh
10. Shri Kukade Madhukarrao Yashwantrao

### **SECRETARIAT**

1. Smt. Kavita Prasad - Joint Secretary
2. Shri Arun K. Kaushik - Director
2. Shri R.L. Yadav - 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) xxxx                xxxx                xxxx                xxxx

(ii) 'Maintenance of Bridges in Indian Railways: A Review'

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

3. The Committee also authorized the Chairperson to finalise the Reports and present the same to Parliament.

**The Committee then adjourned.**

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*xxxx not related to the Report.*