

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

EF No. 2022/CE-II/CS/IRPWM2020

New Delhi, dated 04.01.2023

The General Managers (Engg.)- CR, ER, ECR, ECoR, NR, NCR, NER, NFR, NWR, SR, SCR, SER, SECR, SWR, WR, WCR and Metro Railway/Kolkata.

The General Manager (Const.), N.F. Railway, Guwahati.

The General Manager/CORE/Prayagraj

Principal Financial Advisor, All Indian Railways

The CAO/Const. All Indian Railways.

The General Managers (Engg.) – ICF/Chennai, RCF/Kapurthla, BLW/Varanasi, CLW/Chittranjan, Rail Wheel Factory /Yelahanka, Bangalore & PLW/Patiala.

The Director General (Track), RDSO/Alambagh, Lucknow.

Chief Commissioner of Railway Safety, Lucknow.

Managing Director, IRCON, New Delhi.

Managing Director, RITES Bhawan, 1, Leisure Valley Rd, Sector 29, Gurugram, Haryana

Managing Director, DMRC, Metro Bhawan, Barakhamba lane, New Delhi.

Managing Director, CONCOR, New Delhi.

Managing Director, RVNL, August Kranti Bhawan, Bhikaji Cama Place, New Delhi.

Managing Director, DFCCIL, Pragati Maidan, Metro Station, New Delhi.

Managing Director, PIPAVAV Railway Corp. Ltd., 14th Floor, B-Wing, Statesman House 148, Barakhamba Road, Canaught Place New Delhi Central Delhi

Managing Director, MRVC, Church Gate station Building 2nd Floor, Mumbai – 400020.

Managing Director, RLDA, Unit No.702-B, 7th Floor, Konnectus Tower-2, DMRC Building, Ajmeri Gate Delhi 110002

Managing Director, Konkan Railway Corporation Ltd, Belapur Bhawan, Sector-11, CBD Belapur. Mumbai. Pin - 400614.

Director General, IRICEN, Pune.

Director General, IRIEEN, Nasik.

Director, IRISSET, Secunderabad.

Director, IRIMEE, Jamalpur.

Director General, IRITM, Vill. Kanausi, Hardoi, Manik Nagar, Lucknow.


Director General, NAIR, Vadodara.

Genl. Secretaries, AIRF, NFIR, IRPOF, FROA, DAI (Railways) Rail Bhawan, New Delhi.

Sub: Correction Slip No.11 to the Indian Railways Permanent Way Manual 2020.

Ministry of Railways (Railway Board) has decided that correction/addition as indicated in the enclosed Correction Slip No.11 dated 04.01.2023, to relevant para of IRPWM-2020 be made.

Receipt of this letter may please be acknowledged.


4/1/2023

(Pradeep Nagar)
Director Civil Engg.(P)
Railway Board

Copy to:-

Sr. PPS/PS to CRB & CEO, MF, MI, M(T&RS), M(O&BD), Secretary.
AM(CE), AM(Works), AM(Budget), AM(Traction), AM(Fin.), AM(Sig.), AM(Plg.),
AM(Mech.Engg.), AM(PU.), AM(Tele.), AM(Traffic), AM(M&BD), AM(T&C), AM(Comml.).

PED(Bridge), PED(Vigilance), PED(Safety), PED(Staff), PEDCE(P), PEDTT(M),
EDTK(M&MC), EDCE(G), EDCE(B&S), ED(L&A), ED/SD & Transf., ED/GS(Civil)-II,
EDV(E), ED/GS(Civil)-I, ED(Safety), EDF(X)I, EDF(X)II, DTK(MC), DTK(M), DTK(P&P),
DCE(B&S), Dir./GS(C)-III, Dir./GS(Civil)-I, DVE-I & DVE-II,

INDIAN RAILWAYS PERMANENT WAY MANUAL 2020
ADDENDUM AND CORRIGENDUM SLIP NO.11 DATED 04.01.2023

1. A new **Para 326(5)(g)** is added as under:

326 (5) (g) LWR/CWR on Ballast Less Track (BLT)-


- (i) LWR/CWR shall also be laid on ballastless track (BLT) with approved matching fastening system with minimum in-service longitudinal rail restraint of 15 KN/m/rail. Test plan and Technical criteria of fastening system are enclosed at **Annexure-3/18**.
- (ii) Minimum Rail Section to be used shall be 60 Kg/m.
- (iii) LWR/CWR on BLT may be laid on curves upto 350 m radius and permitted steepest gradient shall be 1 in 80.
- (iv) At the junction of BLT and Ballasted track, transition track of suitable design shall be constructed to smoothen the change in stiffness of track from BLT to ballasted track. To improve the lateral stability of ballasted track on the approach of BLT at junction, a suitable ballast retaining wall shall be provided for a length of 100 meters from the junction of BLT and ballasted track.
- (v) In case LWR/CWR on ballastless track is required to be isolated from ballasted track due to field constraints, SEJ shall be provided in the ballasted track at a minimum distance of 30 m from the junction of BLT and ballasted track.
- (vi) The movement of SEJ towards BLT is governed by the effectiveness of fastenings on BLT. Longitudinal track resistance of BLT is more than ballasted track, therefore movement at SEJ will be less for LWR/CWR on BLT as compared with movement at SEJ for LWR/CWR on ballasted track. Gap at SEJ towards BLT shall be compared with the values given in **Annexure-3/9**. If the movement at SEJ reaches the limits prescribed in **Annexure-3/9**, the effectiveness of fastenings on BLT shall be checked by measuring the clamping force.
- (vii) The Creep of LWR/CWR track in ballasted track approach at the junction with BLT shall be monitored upto a length of 500 meters by providing creep posts at interval of 100 m. If the creep exceeds 10mm in 500 m length, ballasted track shall be de-stressed for a length of 1000 m.

2. Existing **para 330** is modified as under:

330 Bridges with Ballasted Deck and Ballast Less Track (BLT) (with bearings):

Detailed calculations shall be done by the Design office of Chief Bridge Engineer/CAO(C) to ascertain the effect of LWR on such bridges and its effect on the sub-structure of the bridge as per **Para 2.8.1.2** of "*Bridge Rules*".


The LWR/CWR may be permitted on a case-to-case basis based on the above calculations. In case detailed calculations are not done, LWR on ballasted deck bridges (with bearings) may be permitted as per **Para 331** below for bridges with un-ballasted deck. The LWR/CWR on BLT Bridges may only be permitted, if found satisfactory on the basis of above calculations. Chief Bridge Engineer/CAO(C) may further permit use of special arrangements to control RSI effects as stipulated in the RDSO report no. BS-114.


4/1/2023

Test Plan and technical criteria for fastening systems for Ballastless Track

The rail fastening system shall be tested in accordance to the following specifications for different technical parameters and should meet the acceptance criteria as mentioned in the following table. The testing shall be done for Category-C as specified in EN-13481-1:2012 & EN-13481-5:2022 with rail section to be used in proposed BLT system.

SN	Technical Parameters	Test Method	Acceptance Criteria	Remarks
1	Longitudinal Rail Restraint	EN-13146-1:2019	15 KN/m/rail (Min.)	This has to be tested before repeated load test.
2	Vertical static stiffness of complete fastening system assembly	EN-13146-9:2020	52 KN/mm (max.)	No sliding, yield or cracking is allowed for the fastener parts.
3	Dynamic/Static stiffness ratio	EN-13481-5:2022	1.4 (Max.)	Ratio is calculated by dividing the dynamic stiffness to static vertical stiffness.
4	Clamping Force	EN-13146-7:2019	18 KN per rail seat (Min.)	This has to be tested before repeated load test.
5	Electrical Resistance	EN-13146-5:2012	5 kΩ (Min.)	Higher value may be specified, if required by Railways for track circuit.
6	Effect of severe environmental conditions	EN-13146-6:2012	The fastening assembly shall be capable of being dismantled, without failure of any component & reassembled using manual tools provided for this purpose after exposure to the salt spray test.	-
7	Effect of repeated loading	EN-13146-4:2020	No wear or deformation.	-
7A	On Vertical Static Stiffness	EN-13146-4:2020	Variation \leq 25% of the initial value	No sign of bond failure/fracture/slippage.
7B	On Longitudinal Rail Restraint	EN-13146-1:2019	Variation \leq 20% of the initial value	Except the rail and fastener, no sliding, yield or cracking is allowed for fastener parts. Longitudinal load/deformation curve shall fall in the envelope of upper and lower limit which is to be submitted along with the report.
7C	On Clamping Force	EN-13146-7:2019	Variation \leq 20% of the initial value	-


 4/11/2023