

2010-11

**GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS
(RAILWAY BOARD)**

No. 2010/CE-II/CS/1

New Delhi, dt. 23.11.2010.

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 CAO/Const. All Indian Railways.
Managing Director, Konkan Railway Corporation Ltd, Rail Bhawan, New Delhi.
Managing Director, IRCON, New Delhi.
Managing Director, RITES, New Delhi.
Managing Director, DMRC, N.B.C.C. Building, Pragati Vihar, New Delhi.
Managing Director, CONCOR, New Delhi.
Managing Director, RVNL, August Kranti Bhawan, Bhikaji Cama Place, New Delhi.
Managing Director, DFCCIL, 2nd Floor, Palika Bhawan, Sec.13, R.K. Puram, New Delhi.
Managing Director, PIPAVAV Railway Corp. Ltd., 1st Floor Jeeven Tara Building, Gate No.4, Parliament Street, New Delhi.
Managing Director, MRVC, Church Gate station Building 2nd Floor, Mumbai – 400020.
Managing Director, RLDA, IRCON Office Compound, Next to Safdarjang Rly. station, Motibagh-I, New Delhi.
The Chief Project Officer, DMRC, Pragati Vihar, New Delhi.
Director, IRICEN, Pune.
Director, IRIEEN, Nasik.
Director, IRISSET, Secunderabad.
Director, IRIMEE, Jamalpur.
Director, IRITM, Vill. Kanausi, Hardoi, Manik Nagar, Lucknow.
Director General, Railway Staff College, Vadodara.
FA & CAO, All Indian Railways.
The Director General (Track), RDSO/Alambagh, Lucknow.
Chief Commissioner of Railway Safety, Lucknow.
Genl. Secretaries, AIRF, NFIR, IRPOF, FROA, AIRPFA, DAI (Railways) Rail Bhawan, New Delhi.

Sub: Advance Correction Slip No. 122 to the Indian Railways Permanent Way Manual.

Ministry of Railways (Railway Board) have decided that correction/addition as indicated in the enclosed Advance Correction Slip No.122 dated 23.11.2010, to relevant para of the IRPWM, be made.

Receipt of this letter may please be acknowledged.


(P.K. Sharma)
Director Civil Engg.(P),
Railway Board.

please issue track letter
3/11

No. 2010/CE-II/CS/1

New Delhi, dt. 23.11.2010.

Copy to : CRB, ME, ML, MS, MM, MT, FC, Secretary.

AM(CE), AM(W), AM(Budget), AM(Elect.), AM(Fin.), AM(Sig.), AM(Plg.), AM(MS), AM(Mech.), AM(PU.), AM(Tele.), AM(Traffic), Adv(Vig.), Adv(L&A), Adv(Safety), Adv(Project).

EDF(X)-II, EDCE(P), ED(Works), EDW(Plg.), EDV(E), EDTK(M), EDTK(MC), EDTK(P), EDCE(G), EDCE(B&S)I, EDCE(B&S)II, ED(L&A)I, ED(L&A)II, ED(L&A)III.

DTK(MC), DTK(M), DTK(P), Dir(Works)I & II, Dir. Works(Plg.), Dir(L&A), DCE(B&S), DVE-I & DVE-II, JD(B&S), IPWE(I), OSD(ME),

INDIAN RAILWAYS PERMANENT WAY MANUAL

ADVANCE CORRECTION SLIP No. 122 dated 23.11.2010

(I) A new **para 238(2)(g)(iii) and 238(2)(g)(iv)** may be added to Indian Railways Permanent Way Manual as under:-

Para 238(2)(g)(iii) - Deep Screening with BCM (Ballast Cleaning Machine) and followed by Tamping and Stabilisation of Track with TTM (Tie Temping Machine) and DTS (Dynamic Track Stabiliser) respectively for BG - The work is to be carried out in stages on various days after the start of the screening operations and the speed restriction recommended to be imposed are indicated in the schematic representation in table – III below. According to the schedule, normal sectional speed can be resumed on the 8th day.

Table – III

Schedule of speed restriction for deep screening by BCM followed by Tamping and Stabilisation by TTM and DTS machines for BG

Details of Work	Days of Work	Speed Restriction
Deep screening of track by BCM, ballast equalisation followed by initial packing and initial stabilization by DTS.	1 st day	40 Kmph
First round of tamping followed by stabilization of track by DTS.	2 nd day (1 st Tamping)	40 Kmph
Survey of track for design tamping mode as per Annexure 5.3 of IRTMM-2000, boxing of ballast section and tiding.	3 rd day	40 Kmph
Second round of tamping followed by stabilization of track by DTS.	4 th day (2 nd Tamping)	40 Kmph
Survey of track for design tamping mode as per Annexure 5.3 of IRTMM-2000, boxing of ballast section and tiding.	5 th day	40 Kmph
Third round of tamping in design mode followed by third round of stabilization by DTS.	6 th day (3 rd Tamping)	75 Kmph
Inspection of track, boxing of ballast section and tiding.	8 th day	Normal speed of the section.

The period of the schedule shown above can be suitably increased to suit local conditions of the track consolidation.

Para 238(2)(g)(iv) - Precautions to be taken during deep screening of track by BCM followed by TTM and DTS machines;

- (i) All precautions laid down in LWR manual (specially those in para no.6.3.2) shall be strictly followed.

- (ii) Hard Sal wood blocks of size 600 X 300 X 300mm (six numbers) duly end bounded shall be arranged for supporting ends of three adjoining sleepers where cutter bar is left in the track and remains untamped.
- (iii) Sleepers of cutter bar area shall be manually packed and ballast under cutter bar location sleepers shall be removed only half an hour before the expected traffic block. Adequate care shall be taken to ensure that wooden blocks are not dislodged before arrival of BCM at site.
- (iv) Fish-plated joint shall not be located in cutter bar location.
- (v) Ramp shall not be located in locations like level crossing, girder bridge, transition portion of curve etc. It shall be kept minimum two rail length away.
- (vi) In case of fracture or cut in CWR/LWR, a speed restriction of 20 Km/h shall be imposed till it is repaired as per para 7.2.3 of LWR Manual.
- (vii) In case of malfunctioning of TTM and/ or DTS, deep screening shall be stopped and track which has not been tamped and stabilized shall be attended manually by ballast ramming and correction of track geometry to ensure safety of running trains. Speed restriction shall be imposed and relaxed in terms of IRPWM para 238 (2) (g) (i) or (ii) which ever is the case.
- (viii) In case of non-availability of traffic block on subsequent days of deep screening by BCM, speed restrictions shall be imposed and relaxed in terms of IRPWM para 238 (2) (g) (i) or (ii) which ever is the case.
- (ix) When BRM is not deployed, adequate track men shall be deputed to recoup ballast, particularly in shoulder and maintain ballast profile after machine working.
- (x) Lifting of track shall be resorted after ensuring adequate availability of ballast for maintaining ballast profile for planned lifting.
- (xi) Adequate arrangements for supply and training out of ballast prior to deep screening should be made. Special care shall be taken by deploying watchman on stretches overdue for rail renewal.

(II) The existing sub paras 257(4), (6) & (7) and para 917 of Indian Railways Permanent Way Manual shall be replaced by the following:-

Para 257 (4) - Reports of Rail failures – In addition to the records maintained in the section register, as detailed above, a report has to be prepared as per **Annexure 2/10** in all cases of rail failures occurring in track with the exception of the cases noted below -

- (a) Rail failures occurring in non-running lines.
- (b) Non-standard and obsolete rails.
- (c) Rails removed due to casual renewals on account of accidental damages to the rails such as wheel burns and scabbings, buckling, kinks, derailments, abnormal slipping of loco wheels, excessive wear, loss of section by corrosion, battering, elongation of holes etc.
- (d) Machined rails such as mitred joints, switch expansion joints, switches and crossings.

For this purpose, the Permanent Way Inspector will prepare a ‘Rail failure’ Report in quadruplicate as per proforma at **Annexure 2/10** and shall forward 3 copies to the Assistant Engineer, who will transmit all the copies with his remarks to the Divisional Engineer, for onward transmission of one copy each to the Chief Engineer and Executive Director (M&C)/RDSO/Lucknow. In case of

failures requiring metallurgical investigation, the report should be prepared in quintuplicate, the extra copy being sent to the Chemist and Metallurgist of the Zonal Railway along with the samples as detailed in the *sub-para (7)* below. Efforts should be made by Divisional Engineer so that the report reaches the Executive Director (M&C)/RDSO within a **fortnight** of the rail failure. Sketches illustrating the fractures will be prepared and submitted with the failure reports on each case, care being taken that the running face of the rail is indicated thereon. It is particularly essential to record the type of failure in the failure reports against **item No. 5.3 as per R.D.S.O. monograph “Rail Failures - Description, Classification and Reporting”**. The Executive Director (M&C) will arrange to carry out analysis of rail failures from the reports received from the Permanent Way Inspectors and the Chemist and Metallurgist and publish reports with suggestions for reducing failures. In most cases, it is possible to determine the cause of the failure by visual examination/ultrasonic detection without the need for metallurgical investigation. However, in cases mentioned in **sub-para (5)** below, it is obligatory to take up full metallurgical examination by the Chemist and Metallurgist of the Railway concerned with a view to ascertaining the exact cause of failure. In such cases the rail failure report should be made out in the prescribed proforma inserting the most probable code of failure against **item No. 5.3** and indicating whether the sample has been sent to the Chemist and Metallurgist for metallurgical investigation.

For the cases of rail failures detected visually, a short piece of rail approximately **1m long(500mm+500mm)** has to be sent to the Zonal Railway’s Chemist and Metallurgist by the Permanent Way Inspector direct, along with a copy of the rail failure report, only for such cases which come under the category listed *in sub-para (5)* below. In other cases, i.e., those detected by ultrasonic flaw detectors, the rail pieces **of 1m length (500mm + 500mm) containing the flaw shall** be sent for metallurgical test only from those rails which are removed from track based on the criteria for removal of rails and falling in the category listed *in sub-para (5)* below. The test pieces for metallurgical examination are to be sent only for rail failures which occur within **test free period subject to maximum of 10 years of rolling and for** which detailed reports are to be prepared. ***In case of repetitive failures of rails of same rolling mark, irrespective of the type of fracture/flaw, short rail piece of approximately 1m long (500mm + 500mm) containing the fracture/flaw detected visually or by ultrasonic flaw detector should be sent to the Chemist and Metallurgist together with a rail failure report for metallurgical investigation. Chief Track Engineer of zonal railway shall forward the cases of repetitive failure of rails of same rolling mark on account of chemical & metallurgical reasons to Executive Director/M&C/RDSO along with investigation reports from Chemist and Metallurgist. The rail pieces of approximately 1m long (500mm + 500mm) containing the fracture should be sent to Executive Director (M&C)/RDSO together with a rail failure report for metallurgical investigation where rail/ weld failure is prima facie cause of train accident.*** To sum up, before sending the test pieces to the Chemist and Metallurgist or RDSO, it should be ensured that –

- (i) The rail failure is within **test free period subject to maximum of 10 years of rolling of rail, irrespective of the type of fracture/flaw.**
- (ii) The rails have been removed from track as a result of visual or ultrasonic detection and **rail failure falls in categories listed in sub para (5) below.**
- (iii) The rail where rail/ weld failure is prima facie cause of train accident should be sent to RDSO.
- (iv) **The rails with repetitive failure of same rolling mark irrespective of type of failure.**

In cases of failures of imported rails occurring within guarantee period, stipulation of **sub para (6) shall be followed.**

Para 257 (6) - Failure of imported rails within the Guarantee period - In all cases of failure of imported rail occurring within the guarantee period, irrespective of the type of fracture/ flaw **rail piece approximately 1m long (500mm + 500mm)** containing the fracture/ flaw detected visually or by ultrasonic flaw detector should be sent to the Chemist and Metallurgist together with a rail failure report for metallurgical investigation.

Para 257 (7) - Procedure for sending samples for metallurgical investigation - In case of fractured rail, both the pieces **of approximately 500 mm long each i.e. total 1m long** containing fractured faces/**flaw** should be sent to the Chemist and Metallurgist for investigation. To avoid damage in transit, the fractured faces shall be protected with mineral jelly and suitably covered with hessian cloth. Cracked rails may also be suitably protected at the crack location to avoid damage in transit. Pieces having internal defects may be dispatched as such.

The Chemist and Metallurgist of the Railway will carry out metallurgical investigation, as required, and forward one copy of the report each to the Chief Engineer of the Railway and the Executive Director (M&C)/RDSO.

In case of failures of imported rails within the guarantee period, attributable to manufacturing defects as revealed by metallurgical investigation, the Chief Engineer should immediately lodge a provisional claim with the manufacturer pending Executive Director (M&C)'s confirmation of the findings submitted by the Chemist and Metallurgist of the Railway. The Executive Director (M&C)/RDSO will scrutinize the report submitted by the Chemist and Metallurgist and if he agrees with the findings as submitted, inform the Chief Engineer accordingly. Where the Executive Director (M&C)/RDSO feels the need for carrying out further investigation before giving his verdict, he will call for the sample from the Chemist and Metallurgist of the Railway and carry out confirmatory tests, as necessary and intimate the findings to the Chief Engineer. On the basis of Executive Director (M&C)'s advice, the Chief Engineer will then finalise the claim with the manufacturer.

In case of failures of rails other than imported, the Executive Director (M&C)/RDSO will call for samples from the Chemist and Metallurgist, for confirmatory test, where necessary. Based on the trend indicated by the numerical analysis of the rail failures for the period under review, the Executive Director (M&C) will bring to the notice of the indigenous manufacturers and **Inspecting Agency**, any predominance of failures attributable to manufacturing defects, to enable corrective action being taken.
