

North Eastern Railway
(Engineering Department)

CE's Circular No. 98 (Revision-I)

- Sub:(A) **Prevention of asset failures by rationalization of frequency of lubrication and inspection.**
(B) **Measurement of corrosion of rail foot due to liner biting and follow up action.**

CE's Circular No. 98 was issued vide this office letter No. CE/NER/Track Circular/2007/275/Pt-II/4A dated 15.11.2010 on the subject matter. Subsequently, Advance Correction Slip No. 124 dated 14.2.2011 to IRPWM para 250(2) on prevention of corrosion was also issued by Railway Board.

Now after incorporating the various other factors, CE's Circular No. 98 (Revision-I) is issued for guidance of the field officials accordingly.

(A) Corrosion below liners especially on gauge face sides of the rails of the track are still existing and rail fractures at such locations are severe safety hazards. Sections prone to corrosion of rails as identified are given below:-

- Main line section from Chhapra Kacheri to Lucknow.
- Sarnath to Manduadih.
- Jhusi to Allahabad Jn.
- Kanpur Anwarganj to Kalyanpur
- Raya to Mathura.
- All the passenger lines of the yards alongwith main line tracks within station limit of all the yards.
- Any other section subsequently approved by CTE as per the recommendation of the Divisions.

(B) Anti Corrosive Measures – Painting of Rails :

(i) In case of the new rails to be laid during track renewal/doublings/other construction projects in identified corrosion prone areas, anti-corrosive bituminous coating as per procedure mentioned below should be provided before laying in track.

(ii) In case of rails that are already laid in track in identified corrosion prone areas, anti-corrosive bituminous coating to rails should be given in the track itself as per procedure mentioned below [Para-250(2) to IRPWM].

Procedure :- Surface preparation of rails shall be done with the help of hand operated or power operated tools i.e. scrappers, wire brushes, sand paper, pumice stones etc. Wire brushing shall invariably be done at the end so as to obtain uniform rubbed surface. The surface prepared shall be checked visually for uniformity of surface. Special care should be taken in surface preparation at weld collars and liner contact areas. Surface preparation should not be done when ambient temperature is below 10°C or above 50°C, in rainy season, during night, in winter before 8AM, in summer between 11AM to 3PM and in extremely windy/misty/dusty conditions. Chemical should not be used for surface preparation. Painting should be done in two coats of thickness of 100 microns each by anti corrosive bituminous black paint conforms to IS: 9862 after an interval of 8 hours between two coats. All the liners and Elastic Rail Clips shall also be painted with anti corrosive black bituminous paint after duly cleaning the surface.

(iii) Rail flanges / web should be kept free of the muck particularly at stations.

(iv) Periodical cleaning of rubbish should be done in goods shed siding lines.

(v) Train watering arrangements should be avoided on the run through main lines as far as possible. Proper drainage should be ensured in yard/station lines including washing lines, washable aprons, train watering lines etc.

(C) Anti Corrosive Measures – Lubrications & Paintings :

To control incidences of asset failures, the frequency of lubrication and inspection of vital components of track, duly updated with ACS No.124 to IRPWM, is given below:-

S. No.	Track component	Frequency as per IRPWM / LWR Manual	Revised Frequency
1.	Lubrication of ERCs & eyes of inserts and Greasing & sealing of liner contact area (i) Corrosion prone area as per para 'A'.	IRPWM [Para-1411(5)(c)] and Para 250(2)(c)] Once a year. (a) Gauge face side – Once a year. (b) Non gauge face side – Once in two years.	Once a year on both sides of the rail.
	(ii) Other areas	Once in two years.	(a) Gauge face side – Once a year. (b) Non gauge face side – Once in two years.
2.	Bituminous Painting of rails:	IRPWM [Para 250(2)(iv)]	
	(i) In yards & corrosion prone area	(a) Once in a year on inside of gauge face including web and foot. (b) Once in three years on non gauge face side of rail including web and foot.	(a) Gauge face side – Once in a year. (b) Non gauge face side – Once in two years.
	(ii) Sections other than as mentioned in '(A)'		Once in two years on both sides.

	(iii) Other areas wherever signs of corrosion are seen in isolated patches.	Prompt action for anti-corrosive painting to be taken.	Prompt action for anti-corrosive painting to be taken.
3.	Painting of Weld Collars: (i) New welded joints (ii) In-service painting (Maintenance painting): (a) Areas not prone to corrosion (b) Locations prone to corrosion [As defined in para 249(i)] (c) Locations prone to severe corrosion.	(Para-5.7 of 'Manual for Fusion Welding of Rails by AT Process') Immediately after welding. Once in 4 years. Every year. (May be increased depending on the site conditions) On condition basis.	Immediately after welding. Once in 4 years. Once a year. Once in six months.
4.	Oiling & greasing of SEJ (tongue rail & stock rails)	Fortnightly [LWR Manual Para-6.2.6]	(a) Fortnightly along with cleaning and oiling & tightening of bolts also. (b) Detailed visual examination of stock rail & tongue rail after opening of M.S. bracket to detect any hair crack - every 3 months.
5.	Points & Crossing: (a) Greasing of gauge face of tongue rail.	To be done as per Para 237(2)(j) of IRPWM, but frequency not laid down.	Weekly
	(b) Oiling & greasing of bolts of points & crossings including stretcher bar bolt, rail screw of slide chair along with thorough cleaning.	Frequency not laid down.	Once in 3 months.

6.	(a) Lubrication of rail joints:	IRPWM [Para 241(3)]	
	(i) Main line & run through yards including bridges.	Once a year from October to February.	Once in a year in October/November before onset of winter.
	(ii) Other Yards	Once in two years.	Once in a year in October/November before onset of winter.
	(b) Visual examination of rail ends -		
	(i) Bridges	Important girder bridges and their approaches – Twice a year [Para-252(2) to IRPWM].	On all girder bridges and their approaches - Every six months.
	(ii) Fish plated joints adjacent to CMS Crossing.	-	Visual examination at every 3 months.
7.	Lubrication of gauge face on curves of radius 600m & less on BG and 300m & less on MG.	To be done as per Para 427 of IRPWM, (Frequency not laid down).	Weekly
8.	Detailed inspection of glued joint & fittings	Frequency not laid down.	Once in 3 months.

More intensive frequency can be decided by Sr.DEN depending on the site conditions.

(D) Measurement of corrosion of rail foot due to liner biting:

As per IRPWM para – 250(2), in corrosion prone areas identified in accordance with para (A), measurement of depth of corrosion pits both vertically and laterally (reduction in bottom flange width of rail), shall be done using straight edge and feeler gauge or any other suitable device at a fixed periodicity of once in a year on every 100 sleepers by removing Elastic Rail Clips and liners and such measurements shall be recorded in a register to be maintained by each Section Engineer (P.Way) as per proforma given below.

Proforma for Measurement of Liner bite / Corrosion of rail

[Para-250(2), Annexure-2/20 to IRPWM].

Division..... Section..... Between stations
Track Structure (Rail) Sleeper density Annual GMT
Whether corrosion prone area (Yes/No)

Date of recording	Location (Km/TP)	Sleeper No.	Corrosion depth (in mm)								Remarks with signature
			Left Rail				Right Rail				
			Vertical		Lateral		Vertical		Lateral		
			GF	NGF	GF	NGF	GF	NGF	GF	NGF	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)

The register should be cross checked by ADEN/DEN/Sr.DENs during their inspections and necessary action to implement corrosion control measures should be taken.

For those locations where incidence of corrosion is more than the limit, Division after detailed survey as suggested above, will submit proposals for renewal in Works Programme (as per IRPWM Para 302) duly supported with relevant records and documentation alongwith reports of steps taken for prevention of corrosion.

Further, it is to be noted that where corrosion pit depth is more than 3mm to 4mm, operation of distressing may result into shifting of liner contact area beyond sleeper seat which will become more prone to fracture and as such distressing should be avoided at these locations. Such locations should be kept under close supervision till renewal. Conditions of the fittings like rubber pads, ERCs & liners should be in good condition in liner biting locations to control the gap at fractured locations and at SEJs.

Further, patrolling in LWR is to be done when rail temperature is less than $t_d - 30^\circ\text{C}$ and as per directions given in LWR Manual.

However, where corrosion depth due to liner biting is 5mm and more, such winter patrolling to be started when rail temperature is less than $t_d - 25^\circ\text{C}$.

It is also to be noted that where corrosion is excessive, say more than 5mm to 6mm, suitable speed restrictions may be imposed as per site conditions to ensure safety especially in winter season [Board's (ME's D.O.) letter No. 2013/CE-II/Accident/3 dated 24.12.2013]. Further necessary action plan for protection of such rails by joggling or fish plating with two far end bolts etc should be taken. Their replacement is to be planned promptly.



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Principal Chief Engineer

(No. CE/NER/Track Circular/2007/275/Pt-II/4A

Gorakhpur dated .02.2014)