

**East Coast Railway
Engineering Department
CE Circular No. 38**

Sub.: Anti-corrosive treatment of Rails.

Corrosion of Rails has been a cause of concern in East Coast Railway due to proximity of sea in the entire B route, Cuttack – Paradeep and KUR-PURI sections. This leads to premature renewal of rails apart from increased incidences of rail fracture in severely corroded and liner beaten areas having corrosion pits.

Corrosion is caused not so much by the dampness as by acid gases dissolved in the filler of moisture which frequently coats the rail. Based on rail renewals works accrued on corrosion criteria in the past, the following sections are identified as corrosion prone.

SL. No	Divisions	Sections/Locations
1	KUR	BHC-KUR-PSA, KUR-PURI, CTC-PRDP
2	SBP	Nil
3	WAT	PSA-VSKP-DVD
4	All passenger platform lines at all stations of all divisions.	
5	All tunnels of all divisions	
6	All cuttings in approaches of Major Towns of all divisions	

In corrosion prone areas, measurement of depth of corrosion pits both vertically and laterally (reduction in bottom flange width of rail) shall be done using straight edge with filler gauge or any 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).

For new line, doubling projects, corrosion prone area shall be identified by CAO/Con in consultation with PCE.

In case the new rails to be laid in track renewal/doubling/ and other construction projects in identified corrosion prone areas, anti-corrosive bituminous coating as per CS-124 of IRPWM should be provided before laying the track. This should be preferably be done in Flash Butt Welding Plants.

Anti-corrosive treatment of Rails.

(i) Painting of new rails.

All new rails shall be painted as per IRPWM para No 250(2) read with AC slip No 124 dated 14.02.2011, with two coats of Bituminous Black-Paint conforming to IS 9862.


(ii) Painting of in-service rails.

Painting of in-service rails shall be carried out as per IRPWM para No 250(2) read with AC slip No 124 dated 14.02.2011, with frequency every year on inside of gauge face including web and foot and once in three years on non-gauge face side of rail including web and foot.

- (iii) For severe corrosion prone areas, wherever possible, Zinc Metalisation in lieu of bituminous painting in centralized plant/ Flash Butt welding Plant can also be done. In ECoR KUR-PSA-VSKP-DVD section is identified as severe corrosion prone area.

In other areas, wherever signs of corrosion are seen in isolated patches, prompt action for anti-corrosive painting shall be taken.

Painting of weld collars shall be done along with painting of rails.


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2-5-18
Chief Track Engineer

No.: W-1/374/CE/Circulars /Pt.1/3767

Date: 02.05.2018

Copy to:

1. Secy. to GM for kind information of GM.
2. PHODs/CHODs for information and n.a. please
3. CAO/Con/BBS, FA&CAO/BBS, for information and n.a. please
4. RVNL & other PSU's for information and n.a. please
5. DRM/KUR, DRM/SBP & DRM/WAT for information and n.a. please
6. Sr. DEN/Co-ord/KUR, SBP & WAT for information and n.a. please
7. Sr. DEN/Estate/BBS, KUR WAT & SBP for information and n.a. please
8. EDCE/G, Railway Board for information please.

The existing sub para (2) of para 250 of Indian Railways Permanent Way Manual shall be replaced as under:

250(2) *Prevention of corrosion* –

(a) *Identification and measurement* - (i) Areas prone to corrosion of rails shall be identified by the Principal Chief Engineer of the Railway on the basis of reports sent by Divisional Engineers.

(ii) In corrosion prone areas identified in accordance with above para, 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 Annexure- 2/20.

(iii) For new line/gauge conversion projects, corrosion prone areas shall be identified by CAO(C)/Chief Engineer(C) in consultation with Principal Chief Engineer.

(b) *Anti-corrosive painting* – (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 in (iii) below should be provided before laying in track. This should preferably be done in Flash Butt Welding Plants. For severe corrosion prone areas, wherever possible, Zinc metalisation in lieu of bituminous painting in centralized plant/ Flash Butt Welding plant can also be done. The Zinc metalisation shall be done as per procedure laid down in RDSO Circular no. CT/ACP dated 24-02-2006.

(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 in (iii) below.

(iii) 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.

(iv) In identified corrosion prone areas, bituminous painting of rails shall be done once in a year on inside of gauge face including web and foot and once in three years on non-gauge face side of rail including web and foot. In other areas, wherever signs of corrosion are seen in isolated patches, prompt action for anti-corrosive painting shall be taken.

(c) *Greasing and sealing of liner contact area* – In identified corrosion prone areas, the rail liner seat should be greased using graphite grease to the RDSO specification after proper cleaning. The grease is also applied all around the liner on the rail foot on gauge face side to prevent the ingress of toilet droppings in the gap between the liner and the rail foot. Greasing and sealing of liners contact area shall be done once in year for gauge face side and once in two years on non-gauge face side of rail.

(d) *Shifting of liner locations* – Shifting of liner location on rail foot at regular intervals is desirable to ensure that the effect of corrosion is not allowed to build up at liner locations and render rails vulnerable to fractures due to increased depth of liner bite pits. After new rails are laid in an identified corrosion prone area, regular watch on the effect of corrosion shall be kept by taking measurement of depth of pits and shifting of the liner biting locations by de-stressing of rails in LWR track and pulling back rails in SWR/fish-plated track as per frequency and guidelines approved by the Chief Track Engineer based on local conditions.

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

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

(g) Train watering arrangements/Water columns 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.
