

SOUTH CENTRAL RAILWAY

Safety.387/Fly Leaf/02/2022

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Attention...Engineering Officials

SUMMER PRECAUTIONS

(CTE Lr. No. D.O.No.W.T-5/P/SP-WP/Vol.V dated 25.02.2022)

Summer is fast approaching. In fact when the weather changes from winter to summer, variations in the rail temperature are higher. It becomes essential to take summer precautions especially in Long Welded Rails (LWR) territory. The sections are required to be inspected with a view to identify deficiencies in the form of missing fittings, ballast deficiency and consolidation etc. De-stressing must be carried out for the stretches of LWR based on their behavior.

Do's and Don'ts for your special and immediate attention are given below.

DO's

1.0 GENERAL :

- (a). For ready reference a brief list of instructions in the form of DO's and DON'T's in LWR and SWR territory are enclosed. All the JE/SSE/P.Way under your control should be thoroughly conversant with the above instructions and adhere to the same meticulously. They may be counseled during the Line Inspection besides periodical meetings in the Divisional Headquarters. Similarly Safety Meetings may also be conducted in the ADENs Office to high light the summer precautions to be taken by the field staff.
 - (b). SSE/P.Way in charge of section to ensure Mate/Keyman working in LWR territory should have a valid Competency Certificate issued by DCETI of the Division concerned, before on set of summer
- 1.1 Check the accuracy of the rail thermometer supplied to the gangs and those installed at the SSE/JE/P.Way Headquarters station and other places.
 - 1.2 Pay particular attention to stretches of track, which are liable to creep.
 - 1.3 Provide extra shoulder ballast on the outside of all the curve locations.
 - 1.4 Check the joint gaps wherever necessary, in the case of single rail track and SWR track. Never allow more than 6 continuous jammed joints, in case of single rail track, and more than 2 jammed joints in SWR track at Mean Rail Temperature (t_m).
 - 1.5 Take adequate precautions to reduce creep (i.e., Replace ineffective fastenings).
 - 1.6 Provide rail anchors other than PSC track and ensure the anchors wherever provided always butting against the sleepers.
 - 1.7 Take extra precautions at the following locations vulnerable to buckling.
 - (i) Short stretches of wooden sleepers in metal sleeper track.
 - (ii) Short stretches of wooden sleepers between short welded panels with anti-creep fastenings.

- (iii) Junction of track laid with anti-creep fastenings and track laid on wooden sleepers without anti-creep fastenings.
 - (iv) Short patches of wooden sleepers on arch bridges and slab top bridges in a metal sleeper track.
 - (v) Avoid mixed sleepers in one LWR length with uniform Standard rail sections. Replace Ballast less bridge/Steel girder into precast slab bridge or PSC girder at an earliest possible date.
- 1.8 In a LWR/CWR, two different rail sections are not permitted. In case of LWRs laid on concrete sleepers having different rail section on either side of SEJs, combination SEJ to RDSO Drg. No T-6782 (52kg / 60 Kg) shall be provided. Alternatively, two 3 rail panels (39 m), one of each rail section shall be provided with combination fish plated joint, between the two panels. (Para 326 (5) (c) & (d) of IRPWM-2020).
- 1.9 Educate the Gang Mates, Keymen and Trackmen during trolley inspections about the provisions of LWR Manual regarding maintenance, especially such as the items which are prohibited at work spot.
- 1.10 JEs/SSEs (P.Way)/ADEN and the other inspecting Officials should trolley their Sections during the hottest part of the day for noticing the behavior of the track.
- 1.11 Identify locations where continuous falling of keys, ERCs are predominant like loosening/missing of fastenings in sabotage prone area i.e. station approaches and take appropriate action.
- 1.12 Attend to local adjustment of curves wherever abrupt variation between adjacent stations in versines at isolated locations are noticed.

2.0 SHORT WELDED RAILS (SWR) :

Regular track maintenance operations like packing, lifting, aligning, local adjustment of curves, screening of ballast other than deep screening and scattered renewal of sleepers may be carried out without restriction when the rail temperature is below $t_m + 25^{\circ}\text{C}$ in the case of zone I & II and $t_m + 20^{\circ}\text{C}$ in the zone III and IV. However, on curves of less than 875 metre radius in Broad Gauge or yielding formation, the above temperature limit shall be restricted to $t_m + 15^{\circ}\text{C}$ in the case of Zone I and II and $t_m + 10^{\circ}\text{C}$ in the case of Zone III and IV (Para 324 (1) of IRPWM).

Follow the above instructions for run-down track also.

a. LONG WELDED RAILS (LWR) :

- (i) Know the De-stressing temperature (t_d) of your section or particular LWR panel and make your staff be conversant with it.
- (ii) Keep the thermometers with green, yellow & red paint markings showing the limiting temperature ranges for various works for easy identification by Trackmen/Keyman/Mate.
- (iii) Carry the appropriate equipments as prescribed for LWR territory without fail during inspections.
- (iv) Consolidation of track can be achieved by the following:-
 - (a) For Existing track where maintenance activity involving disturbance to ballast compaction (tamping operation) has been undertaken.

(i) For the track structure consisting of concrete sleepers, passage of at least 50,000 gross tonnes of traffic or a period of two days whichever is later.

(or)

(ii) At least one round of stabilization by Dynamic Track Stabilizer (DTS).

(b) For newly laid track (CTR/TSR) or freshly deep screened Track. Three rounds of packing, last two of which should be by on-track tamping machines.

(c) Temporary speed restriction as indicated in **Annexure - 3/8** shall be imposed on the length of track where welded panels are joined by 1 m long fishplates with special screw clamps or joggled fishplates with slotted grooves & bolted clamps (Para 337 (5) & (6)).

4.0 The regular track maintenance in LWR/CWR shall be confined to hours when the rail temperature is between $td+10^{\circ}\text{C}$ and $td-30^{\circ}\text{C}$ and shall be completed well before onset of summer. If rail temperature after the maintenance operation exceeds $td+20^{\circ}\text{C}$ during the period of consolidation, then the speed restriction of 50 Kmph shall be imposed (Para 345 (1) a & b) of IRPWM-2020).

- (i) The track should not be disturbed during the summer months as far as possible. The ballast should be opened to the barest minimum required to ensure lateral and longitudinal stability. The ballast in the shoulders once removed, should be put back immediately after attention to track and the ballast in shoulder and crib should be consolidated using wooden mallets.
- (ii) Ballast deficiency, if any, should be left only in the crib portion of the track but not at the shoulder location.
- (iii) LWR/CWR may be continued through reverse curves. Shoulder ballast of 600mm over a length of 100 m on both side of the common point of a reverse curve would be provided. In case there is a straight track between the reverse curves, this 100m would be considered from the center of the straight track. No such measure would be required if the length of straight track between the reverse curves is more than 50 m.
- (iv) Keep the rail thermometer with proper markings with limiting temperature ranges thereon in proper working order. Learn the limits of temperature restrictions as marked on thermometers for various operations.
- (v) Ensure that all fastenings are complete and fully secured.
- (vi) Keep the bolts of buffer rails always tight.
- (vii) Check the gaps of SEJs once in a fortnight during the hottest part of the day.
- (viii) Launch a drive for 15 days to inspect all LWRs to ensure that all shortcomings are made good.
- (ix) Observe all precautions to avoid chances of buckling.
- (x) Keep close watch on pedestrian and cattle crossings, where the ballast is always disturbed. Make up ballast deficiency promptly.
- (xi) Keep sharp look out for severe alignment defects in summer. Supervisors/ P.Way, MATES & KEYMEN should protect the trains in case of emergency and report to superiors.
- (xii) Renew fittings other than GRSP only on one sleeper at a time out of 15 sleepers without lifting the track.

- (xiii) Ensure no loose packed sleepers exist. If exist, pack those sleepers without lifting or opening track.
- (xiv) Attend only one or two sleepers out of 30 sleepers at a time for adjusting fittings while removing a kink.
- (xv) Pay special attention to SEJs, breathing lengths, curves, approaches to level crossings, unballasted bridges, horizontal and vertical curves.
- (xvi) Check that reference posts at SEJ and in fixed portion of LWR are correctly maintained. Ensure no disturbance to the reference pillars located initially.
- (xvii) Supervisors/ P.Way, MATES AND KEYMEN should learn the six items to attend (a) missing and loose fastenings, (b) shortage of ballast, (c) misalignment (d) slewing, (e) Lifting (f) improper packing, about which they should be very careful to avoid buckling.
- (xviii) Supervisors/ P.Way, MATES AND KEYMEN should learn what to do when there is symptom of buckling or Rail/Weld fracture in the track.
- (xix) Ensure that all bridges and their approaches have zero missing fittings at all times and are regularly tightened if found loose.

DON'T's:

1.0 GENERAL:

- 1.1. Do not undertake deep screening and track renewals without speed restriction and the supervision of JE/SSE/P.Way
- 1.2 Avoid the following conditions which are susceptible for buckling.
 - (i) Inadequate expansion gap.
 - (ii) Failure to counteract creep in time.
 - (iii) Non-lubrication of rail joints.
 - (iv) Failure to remove rail closures from track.
 - (v) Inadequacy of ballast.
- 1.3 Do not allow jammed joints continuously for 6 joints in the case of free rail fish plated track and 2 continuous jammed joints in SWR at mean rail temperature (t_m).
- 1.4 Do not over tighten the fish bolts.
- 1.5 Do not undertake greasing of fish plates after hot weather has commenced.
- 1.6 Do not undertake through packing after the onset of summer months.
- 1.7 Do not carry out maintenance operations when the temperature is high. Follow the rail temperature between $t_d + 10^\circ$ to $t_d - 30^\circ$ C.

2.0 SHORT WELDED RAILS (SWR) :

- (i) Do not disturb SWR track if more than two consecutive jammed joints are noticed at t_m .
- (ii). Major lifting, major alignment of track, deep screening and renewal of sleepers in continuous length- Each of these operations shall be done under suitable precautions and normally when the rail temperature is below $t_m + 15^\circ\text{C}$ in the case of Zone I and II, and $t_m + 10^\circ\text{C}$ in the case of Zone III and IV. If it becomes necessary to undertake such works at rail temperature exceeding the above values, adequate speed restrictions shall be imposed (As per Para 324 (4) of IRPWM-2020).
- (iv) Do not open shoulder and crib ballast at one and the same time.
- (v) Do not permit slewing of track during hottest period of the day and while slewing there should not be any lifting effect.
- (vi) Adequate number of joggled fish plates with special clamps shall be provided to the gangs for use in emergency (Para 324 (5) of IRPWM-2020).

3.0 LONG WELDED RAILS (LWR) :

- (i) Do not open track for more than 30 sleepers at a stretch when the temperature is within $t_d + 10^\circ\text{C}$. Keep at least 30 fully boxed sleepers between adjacent lengths opened during manual maintenance.
- (ii) Do not lift or align track when rail temperature is above $t_d + 10$ degree centigrade.
- (i) Do not open the adjacent length before 24 hours in the case of Broad Gauge (BG) carrying more than 10 GMT and 2 days in the case of other BG and MG routes.
- (ii) Do not allow the sleeper exist without shoulder ballast.
- (iii) Supervisors/P.Way, MATES AND KEYMEN should not touch the track unnecessarily unless specifically instructed by JEs/SSEs/P.Way.
- (iv) Do not open shoulder and crib ballast simultaneously.
- (v) Do not try to lift the track while packing sleepers for replacement of ERC & Liners and slewing with crow bars.
- (vi) Do not renew more than one sleeper within 30 sleepers at a time.
- (vii) Do not renew fastenings not requiring lifting on more than one sleeper within 15 sleepers at a time.
- (viii) Do not renew fastenings requiring lifting on more than one sleeper within 30 sleepers at a time.
- (ix) Do not allow loose, missing or ineffective fastenings to remain in track.
- (x) Do not neglect checking and attending to the breathing lengths of LWR in a fortnight.
- (xi) Do not lift track by more than 50 mm even if temperature is within de-stressing temperature (t_d).

PRINCIPAL CHIEF SAFETY OFFICER

SAFETY ORGANISATION