SOUTH CENTRAL RAILWAY

Safety.387/Fly Leaf/02/2020

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Attention...Engineering Officials

SUMMER PRECAUTIONS

(CTE Lr. No. D.O.No.W.T-5/P/SP-WP/Vol.IV dated 22.02.2020)

Summer is fast approaching. In fact when the weather changes from winter to summer, variations in the rail temperature are greater. 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 behaviour

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

DO's

1.0 **GENERAL**

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 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 on other than PSC track and ensure that 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. Wooden sleeper track between level crossing on one side and metal sleeper track on the other.

v. Wooden sleeper track in the vicinity of insulated joints and switch expansion joints.

vi. Short patches of wooden sleepers on arch bridges and slab top bridges in a metal sleeper track.

vii. Avoid mixed sleepers in one LWR length with uniform Standard rail sections. Replace Ballast less bridge/Steel girder with precast slab bridge or PSC girder at an earliest possible date.

viii. Addendum or Corrigendum No.9 to LWR Manual (1996) 4.4.1 (ii): In one LWR two different rail sections are not permitted. In case of any change in rail section, LWR should be isolated by providing SEJ.

1.8 Educate Mates, Keymen and Trackmen to detect tendency towards buckling of track and protect the track in case of emergencies.

1.9 JEs/SSEs (P.Way)/ADEN and the other inspecting Officials should trolley their Sections during the hottest part of the day for noticing the behaviour of the track.

1.10 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.

1.11 Attend to local adjustment of curves wherever abrupt variation between adjacent stations in versines at isolated locations are noticed.

1.12 Track should be boxed up before break for lunch.

1.13 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.

2.0 <u>SHORT WELDED RAILS (SWR) :</u>

(i) Restrict all the regular maintenance operations when the temperature is within $t + 25^{o}$ C. On curves, restrict these works when the temperature is below $t_m + 15^{o}$ C. In emergencies, if maintenance operations have to be undertaken at a temperature higher than the above limits, do not open more than 30 sleeper spaces in one continuous stretch. (where t_m = Mean rail temperature)

(ii) Follow the above instructions for run-down track also.

3.0 <u>LONG WELDED RAILS (LWR) :</u>

I. Know the De-stressing temperature (t_d) of your section for 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. Regular maintenance work shall be completed well before the on-set of summer and regular track maintenance operations should be confined to the hours when the rail temperature is below $t_d + 10^{o}$C.

V. The precautions regarding the consolidation of track and speed restrictions, such as, if rail temperature after a maintenance operation exceeds $t_d + 20^{o}$ C, then during the period of consolidation (as per Para 1.18 of LWR manual), "<u>a speed restriction of 50 kmph on Broad Gauge (BG) and 40 kmph on Metre Gauge (MG) shall be imposed</u>" when shoulder and crib compaction has been done and 30 kmph and 20 kmph respectively when shoulder and crib compaction has not been done, in addition to posting of mobile watchman (As per Para 6.2.1 (i) (a) of Addendum to **Corrigendum No.9 of 2005 to LWR Manual (1996).**

VI. 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.

VII. Ballast deficiency, if any, should be left only in the crib portion of the track but not at the shoulder location.

VIII. Get your switch expansion joints (SEJ) oiled & greased once in a month as per ESO No.12 without fail.

IX. Patrolling equipments should always be handy and Hot weather patrol should be introduced, **when the temperature exceeds t_d + 20 degree centigrade where sleeper density is less than 1540 Nos/Km. If more than 1540/km t_d +25 degree centigrade.**

X. Educate the patrolmen in their duties and ensure that they carry the tools and equipment as prescribed.

XI. Ensure that all fastenings are complete and fully secured.

XII. Keep the bolts of buffer rails always tight.

XIII. Check the gaps of SEJs once in a fortnight during the hottest part of the day.

XIV. Launch a drive for 15 days to inspect all LWRs to ensure that all shortcomings are made good.

XV. Observe all precautions to avoid chances of buckling.

XVI. Keep close watch on pedestrian and cattle crossings, where the ballast is always disturbed. Make up ballast deficiency promptly.

XVII. 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.

XVIII. Renew fittings other than GRSP only on one sleeper at a time out of 15 sleepers without lifting the track.

XIX. Ensure no loose packed sleepers exist. If exist, pack those sleepers without lifting or opening track.

XX. Attend only one or two sleepers out of 30 sleepers at a time for adjusting fittings while removing a kink.

XXI. Pay special attention to SEJs, breathing lengths, curves, approaches to level crossings, unballasted bridges, horizontal and vertical curves.

XXII. Check that reference posts at SEJ and in fixed portion of LWR are correctly maintained. Ensure no disturbance to the reference pillars located initially.

XXIII. Pay special attention for crib and shoulder packings of ballast on CST-9 track.

XXIV. 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.

XXV. Supervisors/ P.Way, MATES AND KEYMEN should learn what to do when there is symptom of buckling or Rail/Weld fracture in the track.

XXVI. 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° to t_d - 30° C.

2.0 <u>SHORT WELDED RAILS (SWR)</u> :

(i) Do not allow more than two joints consecutively jammed at t**m** in SWR.

(ii) Do not disturb SWR track if more than two consecutive jammed joints are noticed at tm.

(iii) Do not undertake major works like major lifting, major aligning of track, deep screening and removal of sleepers in continuous stretch without suitable precautions when the temperature is above t_m + 15 degree centigrade. Even then do not fail to impose suitable speed restrictions till the track is consolidated.

(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.

3.0 <u>LONG WELDED RAILS (LWR)</u> :

(i) Do not open track for more than 30 sleepers at a stretch when the temperature is within t_d + 10° 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.

(iii) 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.

(iv) Do not allow the sleeper exist without shoulder ballast.

(v) Supervisors/P.Way, MATES AND KEYMEN should not touch the track unnecessarily unless specifically instructed by JEs/SSEs/P.Way.

(vi) Do not open shoulder and crib ballast simultaneously.

(vii) Do not try to lift the track while packing sleepers for replacement of ERC & Liners and slewing with crow bars.

(viii) Do not renew more than one sleeper within 30 sleepers at a time.

(ix) Do not renew fastenings not requiring lifting on more than one sleeper within 15 sleepers at a time.

(x) Do not renew fastenings requiring lifting on more than one sleeper within 30 sleepers at a time.

(xi) Do not allow loose, missing or ineffective fastenings to remain in track.

(xii) Do not neglect checking and attending to the breathing lengths of LWR in a fortnight.

(xiii) Do not lift track by more than 50 mm even if temperature is within de-stressing temperature t_d.

CHIEF SAFETY OFFICER

SAFETY ORGANISATION