

SOUTH CENTRAL RAILWAY

Safety.387/Fly Leaf/5/2015

Fly Leaf No. 05/2015

Attention.....

ENGINEERING OFFICIALS

SUMMER PRECAUTIONS – TRACK MAINTENANCE

When weather changes from Winter to Summer, variations in the rail temperature are greater. It becomes essential to take summer precautions especially in 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.

Salient points calling for special and immediate attention are highlighted below in LWR territory:-

1. All shortages of ballast in long welded rails and newly created welded rail sections should be made good before onset of Summer.
2. Ensure proper profile of ballast on LWR section. This may need balancing or adjustment of ballast. Gangs to be directed to carryout shoulder ballast compaction to improve the lateral stability especially outside of all curves to increase lateral ballast resistance.
3. Ensuring enough ballast in shoulder and crib portion in general and on bridge approaches, LC approaches and trespass locations in particular.
4. De-stressing of LWRs based on behaviour of LWR, stretches of LWR where renewals / deep screening had been carried out in recent past, stretches where new LWRs have been laid.
5. Renew ineffective fittings to ensure adequate toe load.
6. Locations wherever de-stressing was done at lower temperatures than as specified in the LWR Manual should be de-stressed once again at the standard rail temperature.
7. Recouperment of fittings to ensure zero missing fittings in theft prone locations after that report submitted to RPF staff by Keyman.
8. Planning of Hot Weather Patrolling “period of hot weather patrolling shall be laid down by the Chief Engineer for each section and patrol charts prepared where necessary. Patrolling shall be organised by SSE accordingly. In addition, SSE/JE and the Gangmate shall be vigilant during Summer and on hot days. Patrolling will also be introduced when the rail temperature rises above.
 - (i) $T_d + 25^{\circ}\text{C}$ on PSC sleeper track with sleeper density 1540 numbers per KM and above.
 - (ii) $T_d + 20^{\circ}\text{C}$ on PSC sleeper track with sleeper density with less than 1540 numbers per KM and track other than PSC sleeper.
(Para 9.1.2 (i) of LWR Manual) with reference to Addendum and Corrigendum Slip No. 12 of 2009).
 - (iii) All the P. Way Officials should be absolutely clear regarding DO's & DON'Ts while working on LWR. They shall be well trained and possess competency.
 - (iv) Special watch has to be kept on the areas where deep screening works are on hand, strict adherence to the manual provisions such as proper isolation,

temporary de-stressing in case of LWR and correct sequence of following operations are necessary.

- (v) All the Gangs should have rail thermometers in working condition. Knowledge of the gangs in rules should be tested particularly with regard to the limit of rail temperature in different colour painted (Green, Yellow & Red) for normal gang work and for introducing hot weather patrolling, also action to be taken for maintenance when the rail temperature goes high.
- (vi) Stretches of 10 rail panel should have a TSR of 50 KMPH till converted into LWR and patrolling to be done during day time. JE/SSE/P.Way should ensure gaps at all the rail joints in the morning in all such locations.
- (vii) Footplate inspection of complete section should be done during 11.00 to 16.00 hours as frequently as possible till June 2015.
- (viii) LWR details fed into TMS should be immediately scrutinised, if not already done. De-stressing of LWR should be undertaken based on inspection of SEJ as per schedule.
- (ix) SEJ should be oiled and greased once in a month.
- (x) Sr.DEN/DEN should give his certification on LWR/CWR about satisfactory behaviour in his jurisdiction and an exception report should be submitted to Headquarters.
- (xi) **SWR territory**: It is essential to look after the SWR track and free rail track to ensure proper gaps at joints, gap survey, pulling back creep and adjusting of gaps along with the lubrication of rail joints should be completed before the onset of Summer or else misalignment or buckling may take place in such stretches.

DOs

- ✓ Check the accuracy of rail thermometer.
- ✓ Pay attention to stretches of track which are liable to creep.
- ✓ Provide extra shoulder ballast on the outside of all curve locations.
- ✓ Check the joint gaps. Never allow more than 6 continuous jammed joints in case of single rail track and more than 2 in SWR at mean rail temperature (t_m).
- ✓ Take adequate precautions to reduce creep.
- ✓ Provide creep anchors on other than PSC track and ensure that they are abutting against the sleepers.
- ✓ Take extra precautions at short stretches of wooden sleepers in metal sleeper track, short stretches of wooden sleepers between short welded panels with anti-creep fastenings, junction of track laid with anti-creep fastenings and track laid on wooden sleepers without anti-creep fastenings. Also, at wooden sleeper track in the vicinity of insulated joints and SEJs, on arch bridges and slab to bridges in a metal sleeper track. Avoid mixed sleepers in one LWR length with uniform standard rail sections, replace ballastless bridge / steel girder into precise slab bridge or PSC girder.
- ✓ Ensure that 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.
- ✓ Engineering Officials shall trolley their section during hottest part of the day for noticing the behaviour of the track.
- ✓ Track should be boxed up before break for lunch.
- ✓ SWR – Restrict all the regular maintenance operations when the temperature is within $t_m + 25^{\circ}\text{C}$. On curves restrict these works when the temperature is below $t_m + 15^{\circ}\text{C}$. In emergencies, if maintenance operations have to be undertaken at a temperature higher than these limits, do not open more than 30 sleeper space in one continuous stretch. Also, follow this rule for run down track also.
- ✓ LWR – Know the de-stressing temperature (t_d) of the section or particular LWR panel and make staff conversant with it. Keep the thermometers with colour markings showing the limiting temperature ranges for various works for easy identification. Carry the appropriate equipments without fail during inspections. Regular maintenance work should be completed before the onset of Summer. Consolidation of track and speed restrictions, such as, if rail temperature exceeds $t_d + 20^{\circ}\text{C}$, SR of 50 KMPH on BG and 40 KMPH on MG shall be imposed. When shoulder and crib compaction is done SR of 30 & 20 KMPH should be imposed respectively for BG/MG. Also, post one Watchman. The track should not be disturbed as far as possible. Ballast should be opened to the minimum to ensure lateral and longitudinal stability. Ballast in the shoulders once removed should be put back immediately after attention to track and the ballast in shoulder and cribs should be consolidated using wooden mallets.
- ✓ Ensure that all bridges and their approaches have zero missing fittings at all times and are regularly tightened, if found loose.

DON'Ts

- ✗ Do not undertake deep screening and track renewals without imposing SR and without the supervision of JE/SSE-P.Way.
- ✗ Avoid inadequate expansion gap, failure to counteract creep in time, non-lubrication of rail joints, failure to remove rail closures from track, inadequate of ballast.
- ✗ Do not allow jammed joints continuously for 6 joints in case of free rail fish plated track and 2 in SWR at mean rail temperature.
- ✗ Do not tighten the fish bolts.
- ✗ Do not undertake greasing of fish plates after hot weather patrolling.
- ✗ Do not undertake through packing after onset of Summer.

- ✘ **Do not carry out maintenance operations when the temperature is high. Follow the rail temperature range** ($t_d + 10^{\circ}\text{C}$ to $t_d + 30^{\circ}\text{C}$).
- ✘ **SWR** – Do not allow more than 2 joints consecutively jammed at t_m in SWR. Do not disturb SWR track if more than two consecutive jammed joints are noticed at t_m . Do not undertake major works like major lifting, aligning of track, deep screening and removal of sleepers in continuous stretch without suitable precautions when the temperature is above $t_m + 15^{\circ}\text{C}$. Do not open shoulder and crib ballast at one and the same time. Do not permit slewing of track during hottest period of the day and while slewing there should not be any lifting effect.
- ✘ **LWR** – Do not open track for more than 30 sleepers at a stretch when the temperature is within $t_d + 10^{\circ}\text{C}$. Keep atleast 30 fully boxed sleepers between adjacent lengths opened during annual maintenance. Do not lift or align track when rail temperature is above $t_d + 10^{\circ}\text{C}$. Do not open the adjacent length before 24 hours in case of BG carrying more than 10 GMT. Do not allow the sleeper exist without shoulder ballast. P. W. Supervisors including Mate & Keyman should not touch the track unnecessarily unless specifically instructed by JE/SSE-P.Way. Do not open shoulder and crib ballast simultaneously. Do not tray to lift the track while packing sleepers for replacement of ERC and liners and slewing with crow bars. Do not renew more than one sleeper within 30 sleepers at a time. Do not renew fastenings requiring lifting on more than one sleeper within 30 sleeper at a time. Do not allow loose, missing or ineffective fastenings to remain in track. Do not neglect in checking and attending to the breathing lengths of LWR in a fortnight. Do not lift track by more than 50mm even if temperature is within de-stressing temperature t_d .

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