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CE's P. MAY CIRCULAR No. 75 (of 1991)
(Case No. 7/275/42/Pt. 1/4A)

Sub:- Stretches of track under machine maintenance.

On this Railway, track in some stretches is being partially maintained by heavy on-track tie tamping machines. Now on B.G. route and on M.G. route, new track renewals are being planned with prestressed concrete sleepers. Track structure with PSC sleeper has to be essentially maintained with the aid of on-track tie tamping machines to avoid damage to concrete sleepers and to ensure good running. Seater packing is prohibited on P.C sleepers track. Tracks laid with other type of sleepers could also be maintained by track machines provided that the sleepers are in fairly good condition and adequate cushion of uncalled ballast is available. Mechanised maintenance of track should be done in a systematic and scientific manner.

Stretches of track for machine maintenance must be very carefully selected, keeping in view the following criteria.

- (i) At least 150 mm clean cushion of ballast should be available to facilitate the penetration of tamping tools to full depth and with a view to ensure effective tamping of ballast.
- (ii) Such stretches should have enough quantity of ballast available to allow a general lift of about 20 mm in each tamping operation.
- (iii) Adequate quantity of ballast will be available to provide the standard profile.
- (iv) Stretches of track selected should have same type of sleepers to allow continuous tamping operation. Spacing of sleepers should be equal and sleepers also be square to the alignment.
- (v) Wooden sleepers which are generally left in track at welded joints while converting it from single rail to SRR (three rail panel) should be removed and track structure made uniform to the extent possible.
- (vi) Concrete sleepers being of greater depth need much more quantity of ballast to maintain the track in good health and shape.
- (vii) Conductors, bond wires and cables in such stretches should be suitably protected so as to avoid their damage by tamping tools.

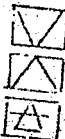
(viii) As far as possible, complete beat of gang should be included in the stretch selected for machine maintenance.

Instructions contained in para 226 of 1977 Manual (Annexure-I) should also be observed while selecting stretches of track to be brought under machine maintenance.

3.0 Selection of the stretches will be done personally by Sr.DEN/Sr.DEN, incharge of the section with the concurrence of the territorial Chief Engineer who will also satisfy himself by test checks and inspections. Stretches of track thus selected will be entered by PFI in the register of machine maintained track indicating track structure, gang number, ballast cushion available, date of deep screening, date of laying the track and conversion into L/R/C/R also giving details of expansion arrangement etc.

4.0 Gang charts in such gang lengths will have special legends. These legends to be used in connection with machine maintenance will be boldly shown on the top of right hand corner of the gang charts of gangs falling in machine maintained stretches. These legends will show the following tamping cycles, details:

- (a) Pre-tamping cycle.
- (b) Tamping cycle.
- (c) Post tamping cycle.



5.0 Tie-tamping machines will be deployed for maintenance as per annual programme of mechanised maintenance duly approved by CTE as per instructions contained in CE's Circular No.74 of 1991 issued vide letter No.7/275/4/Pt.I/4A dated 30.01.1991.

6.0 Sectional PFI will arrange to have the parameters of track geometry recorded in machine maintenance Register on the previous day (earlier to tamping by tie tamping machine). Alignment, cross level, versines and unevenness for every rail will be recorded as specified in (Annex.II). Care should be taken that fittings and fastenings are complete and well fitted in tight condition. P. Jay materials such as rails, sleepers and their fitting lying loose, carriage and wagon parts like brake blocks, springs, etc. or any other metal objects lying on the track will have to be removed before hand as these can damage the tie tamping machines. It is reiterated that adequacy of ballast, correct spacing and squareness of sleeper must be ensured before undertaking of tamping work.

As envisaged in para 226 of I.P.T. Manual-(Annexure-I) attention to track will be paid and action taken before the tamping machine is permitted to enter the block section. If considered necessary by Incharge/TTM inspection of the section should be done jointly with sectional P.W.I. and Incharge of TTM before packing by TT machine.

6.0 After track has been inspected and necessary preparations as required in para 4 above having been made, traffic block will be arranged by sectional P.W.I. in terms of S.E.'s Circular No.74 (P. Jay). sectional P.W.I. or his Addl. P.W.I. should accompany the tie tamping machine and ensure that tamping on the track is done to his entire satisfaction. He will also render necessary assistance to incharge of TTM as and when required such as in the case of failure of machine or due to any other unforeseen reason. Sectional P.W.I. will ensure that proper run off ramp to track is given before and after the tamping. This is essential as the general lift upto 20mm is given along with tamping of track by TTMs. In case of night working the arrangements of adequate lights, telephone facilities, security arrangements should be made by the concerned A.S.I. & P.W.I.

7.1 Sectional P.W.I. accompanying the TTM will record the parameters of track in respect of alignment, unevenness, cross level and versine after the tamping. The parameters will be recorded in the machine maintenance register opposite to the parameters recorded before tamping of track. Sectional P.W.I. will satisfy himself about the quality of tamping and improvement in the track parameters after the tamping is over. In case sectional P.W.I. is not satisfied about the quality of tamping, he will ask for re-tamping of the stretch in the next traffic block. It is the responsibility of Incharge TTM to ensure that tamping is done to the following tolerances:-

Cross level	...	± 2 mm	To be recorded on every 4th sleeper.
Unevenness	...	3 mm	To be recorded at every 3.6m (3G)/ 2.71 (L3).
Alignment.	...	± 2 mm	On straight on 10m chord.
Versine (variation over theoretical versine)	...	± 2 mm	On 20 m chord.

7.2 Sectional P.W.I. should ensure that before traffic is permitted track is fit for the sectional speed. He will impose a suitable speed restriction in case it is established that quality has deteriorated for safe running of trains after tamping. During tamping operations as required in terms of para 226 of I.P.T. Manual requisite action will be taken by sectional P.W.I. and Incharge/TTM for efficient and safe working.

8.0 During summer months, maintenance by TT machine should be restricted to hours when rail temperature is below $T_d + 10^\circ\text{C}$ for LJR/ CJR and $T_m + 10^\circ\text{C}$ for SRT track. In case if temperature rises above $T_d + 20^\circ\text{C}$ / $T_m + 20^\circ\text{C}$ a speed restriction of 50 kmph on BG and 40 kmph on MG should be imposed. Restriction will continue, till passage of 50,000 Gross tonnes of traffic on BG/20,000 gross tonnes on MG or a period of two days whichever is later for proper consolidation of ballast. Instructions contained in para- 7.2 (Reproduced as Annexure-III) of Manual of instructions on long welded rails (1979) should be strictly followed.

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9.0 After the tamping, sectional P.W.I. will ensure crib consolidation with the help of maximum vibratory or Earth Master rammers. Holes left by T.M. tools will be filled, compacted and ballast dressed to proper profile.

10.0 Post tamping attention as required per para 226 of I.R.P.W. manual will be ensured by Sectional P.W.I.

11.0 Till sufficient experience is gained by the supervisors of this Railway in respect of maintenance of track by T.M.s, one tamping cycle per year will be given on track laid with concrete sleepers and two tamping cycles on track laid on other sleepers. The no. of cycles of attention will be reduced after necessary experience is gained by the staff.

12.0 No through packing will be given to track maintained by the tamping machines. Nevertheless spot attention will be paid by Sectional gangs. In addition to above, attentions like periodical overhauling, cess repair, curve re-alignment, weeding etc. etc. have to be regularly given by the Sectional P.W.I. Spot maintenance should be planned by light off track tampers like Chinese Tampers where available. Scatter packing for spot attention is allowed only on track laid with sleeper other than concrete sleepers.

13.0 Reduction in gang-strength.

On section nominated for maintenance under mechanised maintenance programme by heavy on-track tampers the gang strength should be reduced as per Mly. Bd's letter No. 85/75C/TZ/29 dated 30.5.88 issued as annexure in CE's P. Way Circular No. 74 of 1991.

14.0 This circular would apply to the mechanised maintenance of track by heavy on-track tampers only. A separate circular for deployment of heavy on-track tampers when they work behind the CTR works for raising speed in stages will be issued separately.

This issues with the approval of the Chief Engineer

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