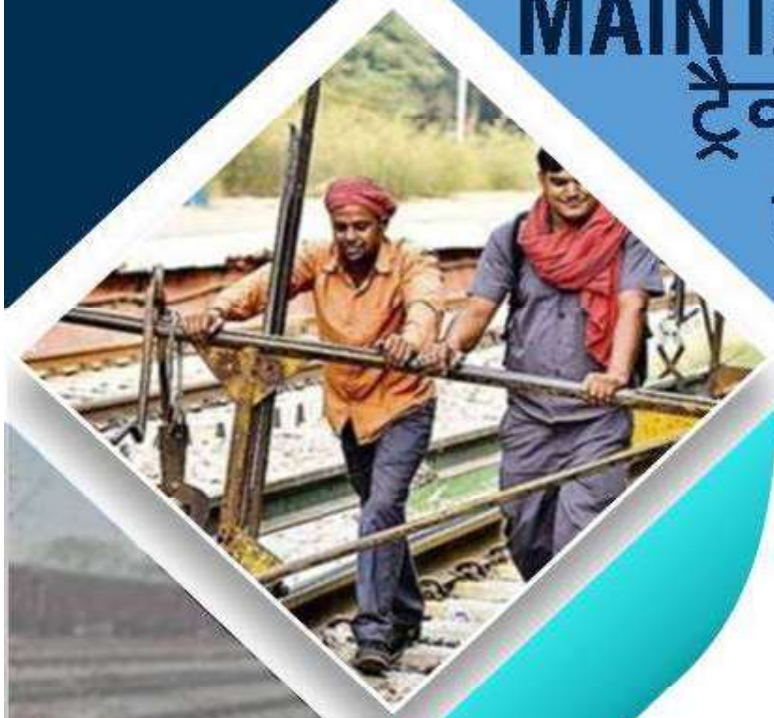
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GOVERNMENT OF INDIA - MINISTRY OF RAILWAYS
भारत सरकार – रेल मंत्रालय

INDUCTION COURSE FOR TRACK MAINTAINER

ट्रैक मैंटेनर के लिए प्रवेश पाठ्यक्रम



Part IV

Lubrication of Rail Joint

(English Version)



CAMTECH/2024/C/Induction Course Track Maintainer-Part IV/1.0

June 2024

EXCELLENCE IN MAINTENANCE

INDIAN RAILWAYS

Centre for Advanced Maintenance Technology (CAMTECH)

MAHARAJPURA, GWALIOR - 474005

Induction Course
(Track Maintainer)

Part - IV Lubrication of Rail Joint

Foreword

Indian railway holds the major chunk of civil engineering assets in the country in the form of structure and rail track. Maintenance of track components is the prime responsibility of field engineers of open line to keep the track in a satisfactory and safe condition for train movement on the Indian Railway.

CAMTECH has made a nice attempt to provide all the information about the Lubrication of Track Component as per training module prescribed for the Track Maintainers, who have initially joined the railways.

I hope this handbook will prove to be a valuable source of knowledge on topics and will be quite helpful to Track Maintainers working in the engineering department of the Indian Railways.

CAMTECH/Gwalior ***(----------)***
----------, 2024 ***Principal Executive Director***

Preface

Indian Railway having a vast network of rail track spread all over India. Whole track were maintained by Permanent way staff like SSE/JE/Mate/Keyman, Gateman, and the Track maintainers.

Railway Board vide RBE 3/2024 letter No. E(MPP)2019/3/46 dated 09.01.2024 has approved the training modules for Induction courses of Track Maintainers of the Civil Engineering department of Indian Railways. This handbook has been prepared to fulfill the requirement of Part-IV (Lubrication of Rail Joint) of induction course of track maintainer.

Every effort has been made to make this handbook useful to train the newly recruited track maintainer of the engineering department as per the training module. Most of the tracks of Indian Railways have been converted into Broad Gauge. Hence, this document is prepared keeping in mind for the Broad Gauge track. For other Gauges also, it will work as guide book. However, relevant documents should be referred for further details.

The document is not statutory & its contents are only for the purpose of knowledge dissemination. Most of the data & information in some form or the other are based on literature available and internet search. For more in-depth information/knowledge, the relevant detailed literature, IRPWM, IRBM, IRICEN/RDSO literature, etc. as available on the subject may be referred to.

I am grateful for the assistance given by Shri K.C. Shakya, SSE/Civil for his continuous study, hard work, sincere efforts & dedication to make this publication useful for open line maintenance personnel of Indian Railways.

We welcome valuable suggestions from our readers for further improvements to this document.

CAMTECH/Gwalior ***(Deepak Mehra)***
26th June, 2024 ***Director/Civil***

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संशोधन पर्चियों का प्रकाशन
ISSUE OF CORRECTION SLIPS

इस हस्तपुस्तिका के लिए भविष्य में प्रकाशित होने वाली संशोधन पर्चियों को निम्नानुसार संख्यांकित किया जाएगा:

The correction slips to be issued in future for this handbook will be numbered as follows:

केमटेक/2024/सि/इंडक्शन कोर्स ट्रैक मेंटेनर-भाग IV/1.0/सीएस# XX, दिनांक_____

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Where "XX" is the serial number of the concerned correction slip (starting from 01 onwards).

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CORRECTION SLIPS ISSUED

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1.0 INTRODUCTION

The main purpose of lubrication of track components is to reduce the wear and to prevent corrosion & seizure of its components, and to protect side wear of rails on curved track. Rail wears out by loss of material due to abrasion by the passing wheels and atmospheric corrosion.

2.0 LUBRICATION OF TRACK COMPONENTS

For better maintenance practice and to prolong life of track components, periodic lubrication/ greasing of following track components must be ensured.-

(1) Lubrication of Rail Joint
(2) Lubrication of Elastic Rail Clip & MCI inserts
(3) Greasing and Sealing Of Liner Contact Area
(4) Lubrication of Switch Expansion Joints
(5) Lubrication of Plate Screws and Rail Screws on PSC Sleepers on Turnouts, SEJs, Bridge Guard Rails & Level Crossings
(6) Lubrication at Point and Crossings
(7) Lubrication of Outer Rail of Curve
(8) Lubrication of Girder Bridges
(9) Lubrication at the site of Deep Screening, TSR And TRR

Indian Railway Permanent Way Manual (IRPWM 2020) provides in details correct procedures involved in these activities. However, it has been supplemented with PCE Circulars or other guidelines, wherever required. Now we will discuss each activity in details.

2.1 LUBRICATION OF RAIL JOINT

(Ref: Para 619 of IRPWM-2020)

The lubrication of rail joints retards the wear on the fishing planes of the rails and the fishplates. It also facilitates expansion of rails.



During lubrication of rail joints, opportunity should be taken to observe the rail ends carefully for presence of fine cracks. Non-lubrication of rail joints may induce buckling in the track.



Buckling: *It means sudden or gradual shifting of Track in lateral or vertical direction due to unbalanced thermal stress in rail / track.*
Fishing Plane: *It shows the area of Rail surface, where fish-plates are fixed.*

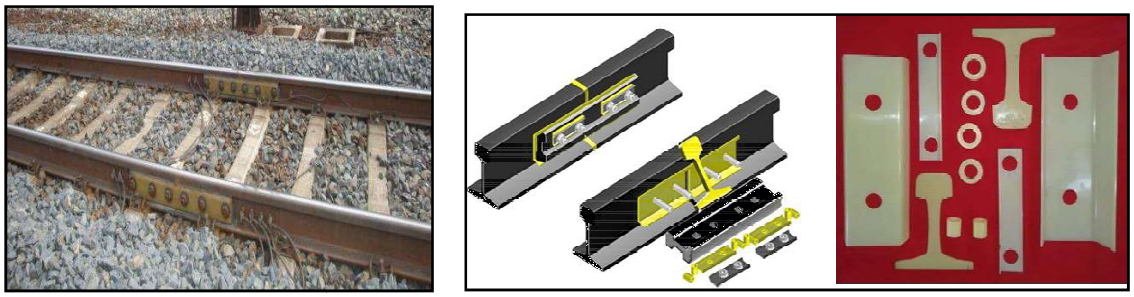
2.1.1 Material

i) A stiff paste of plumbago (Graphite) and Kerosene oil made in the proportion of 3 kg of plumbago to 2 kg of Kerosene oil is used as lubricant.
ii) Black oil or reclaimed oil is used for fishbolts and nuts.

2.1.2 Frequency

i) Lubrication of rail joints should be done once a year after monsoon from October to February.
ii) Lubrication should not be carried out in extremes of weather both hot and cold.
iii) On non-running lines, this period may be extended to two years with the approval of the Chief Engineer.
iv) During all works such as relaying, rail renewals and renewals of turnouts, etc. rail joints should be lubricated. Fishing surfaces of rail and fish-plates should be greased before putting the fishplates in position. All such joints those have been lubricated by the gang should be checked and retightened by Keyman during his routine patrolling. Insulated joint fishplates should not be greased.

Relaying: *Replacement of Track structure with First class/ Second class material.*
Rail Renewals: *Replacement of rails with serviceable rails.*
Renewals of Turnouts: *Replacement of complete assembly i.e. tongue rail, stock rail, crossing and lead rails including fittings and fastenings.*
Insulated Joint Fishplates: *Insulated joint fishplates provide electrical insulation between the ends of the track circuited rails.*



Insulated Joint Fishplates

2.1.3 Pre-requisites

i) Creep in excess of 150 mm should be adjusted before the work of lubrication of rail joints is undertaken.
ii) The work should normally be carried out by gangs working under the direct supervision of at-least JE/P.Way.
iii) The work should be carried out under caution order arranged to be issued daily by the JE/SSE(P.Way).

iv) The work should be carried out under protection of engineering signals or under traffic block, as per *Para 806 of IRPWM-2020*.
v) Spare fish-plates and bolts should be available for replacement of cracked ones.

Creep: *It is the longitudinal displacement of the rail with respect to the sleepers.*
Caution Order: *It is an advice given by SM to Loco Pilot regarding cautiously/ restricted speed to drive the loco, and imposed by engineering official.*
Protection: *Track is secured by showing engineering temporary/ fixed signals. Temporary signals include hand signals. Fixed signals include indication boards.*
Traffic Block: *The rail traffic is suspended for certain time of period during work carried out i.e. breakage of track.*

2.1.4 Procedure

The fishing surfaces of rails and fish-plates are checked for wear. The fracture normally starts as a fine crack from the fish bolt or bond holes. During lubrication of rail joints, opportunity should be taken to observe the rail ends carefully for presence of fine cracks. If cracks are noticed, rails should be replaced. The procedure to be followed is as under:

The nuts are unscrewed and the fish bolts and fish-plates are removed.	
The fishing surfaces of the fish-plates and rails are then cleaned with a wire brush.	 

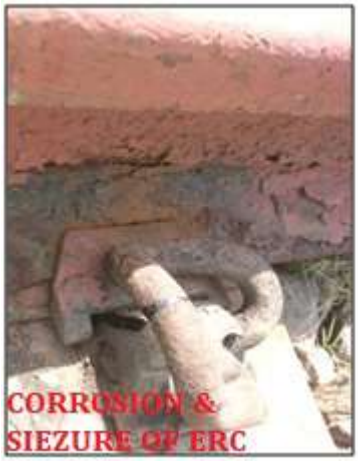
The rail ends and fish plates are inspected for cracks with the help of magnifying glass and a small mirror is helpful in examining the underside of rails.	 
The fishing surfaces of the rails and fish-plates including Nut-bolts are then lubricated.	 
The fish-bolts are then put back in reverse position, the inner two bolts being tightened first, then other two bolts tightened with standard fish-bolt spanner.	

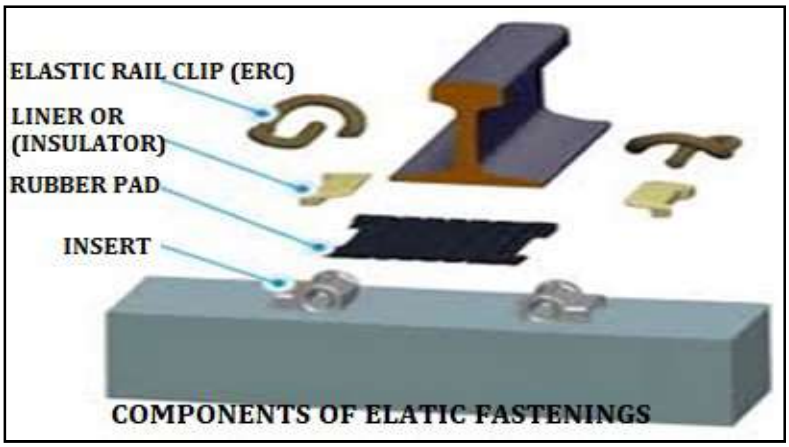
While tightening overstressing of bolts should be avoided.	

2.2 LUBRICATION OF ELASTIC RAIL CLIPS & MCI INSERTS

(Ref: Para-628(2) of IRPWM-2020)

To prevent corrosion and seizure of ERC with MCI insert, regular greasing and oiling of ERCs should be done.





2.2.1 Frequency of the lubrication of ERCs and inserts

The lubrication of ERCs and inserts at the time of initial Laying should be done and thereafter following schedule is prescribed.

i) In corrosion prone areas & platform lines : Once in a year
ii) In other areas : Once in 2 years or more frequently as decided by PCE

2.2.2 Material: Grease Graphite (Gr.0) of IS-408-1981

2.2.3 Instructions

i) Greasing shall not be done in extremes of summer & heavy rainfall.
ii) At a time, ERCs should not be removed from more than one sleeper.

iii) In case, mass lubrication of ERC is taken up, at least 15 sleepers shall be kept intact between any two sleepers taken up for lubrication of ERCs at the same time.
iv) ERC should be driven back up to correct length.

2.2.4 Procedure of lubrication at the time of Initial Laying

i) At the base depot, all the elastic rail clips and MCI Inserts should be thoroughly cleaned.
ii) Grease should then be applied on the central leg of the ERC and eye of the MCI insert, and then the clip should be driven at the time of assembly of the service panel.

2.2.5 Procedure of in-service lubrication

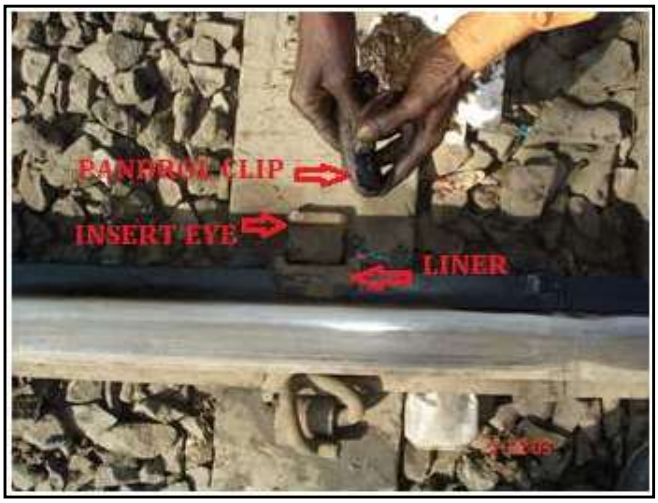
i) After removal of the ERC, the eye of the insert shall be cleaned with suitable brush. This brush may be used to clean inside of insert.



ii) The ERCs should be cleaned by wire brush & emery paper. The rail foot below the liner location should also be cleaned with wire brush and emery paper.



iii) After cleaning, grease graphite shall be applied to the inside surface of eye of insert and leg of ERC.
iv) Inside/outside ERCs should be interchanged and fixed again.
v) Central Railway has recommended that in routine Keyman is to do oiling & greasing of 20 sleepers (80 ERCs) per day. *(Ref: CR PCE Circular no 186-R1 dated 16.02.2022)*

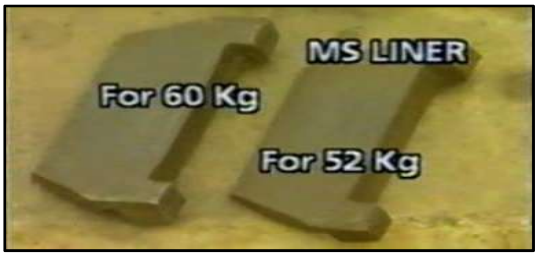


Insert Eye, Liner & Pendrol Clip

2.3 GREASING AND SEALING OF LINER CONTACT AREA

(Ref: Para-613(2)(c) of IRPWM-2020)

In identified corrosion prone areas, the rail liner seat should be greased using graphite grease IS-408-1981 Gr. O 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 rail foot.







Greasing and sealing of liner contact area

Frequency of Greasing and sealing of liners contact area:

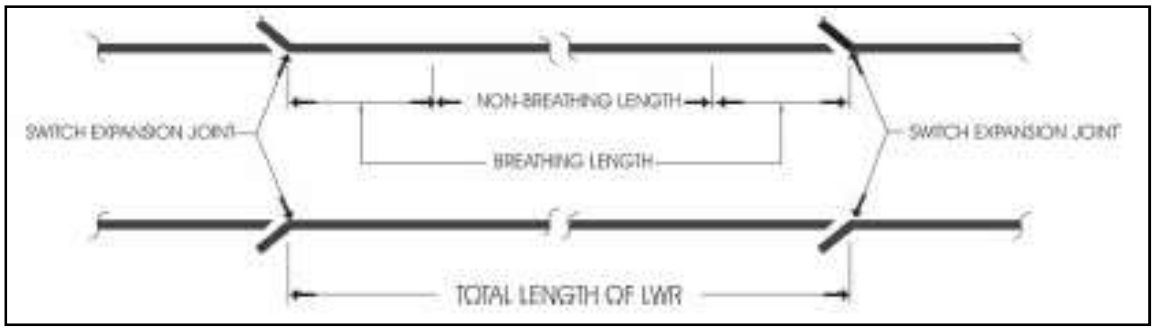
i)	In identified corrosion prone areas	- Once in a year for gauge face side and - Once in two years on non-gauge face side of rail.
ii)	In other areas	- At least once in two years on gauge face & non-gauge face side both may be adopted. *(Ref: NR PCE Circular no 283 dated 09.2023)*

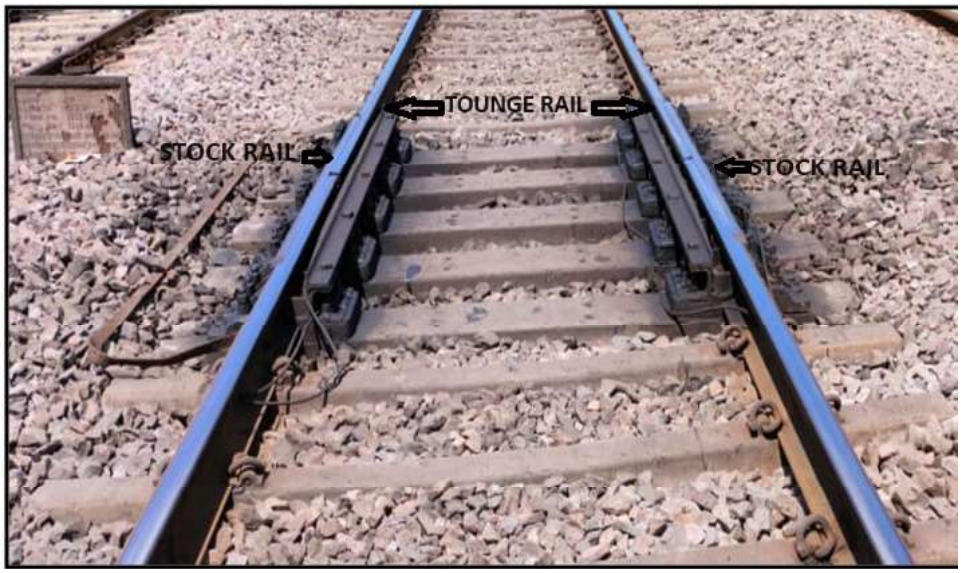
2.4 LUBRICATION OF SWITCH EXPANSION JOINTS

(Ref: Para 116(7)(a) & 345(6) of IRPWM-2020)

Switch expansion joint is installed at each end of LWR/CWR to permit expansion/contraction of the adjoining breathing lengths due to temperature variations.

Long Welded Rail (LWR) is a welded rail, the central part of which does not undergo any longitudinal movement due to temperature variations. A length of welded rail greater than 250m on Broad Gauge will normally function as LWR.





2.4.1 Frequency

Once in a fortnight SEJs shall be checked, packed and aligned if necessary. Oiling and greasing of tongue and stock rails of SEJ and tightening of fastenings shall be done simultaneously.

2.4.2 Instructions

i) Keyman will carry out oiling and greasing of SEJ.
ii) As a good practice, at the time of distressing of LWR, following procedure may be adopted for oiling and greasing of SEJ under traffic block. *(Ref: CE circular no.141 of SE Rly)*

2.4.3 Procedure: *(Ref: CE circular no.141 of SE Rly)*

1) Oiling and greasing of tongue and stock rails of SEJ and tightening of fastenings shall be done simultaneously.

This periodical oiling and greasing shall be done by keyman without dismantling/interferring with the SEJ. Necessary oil/grease should be applied externally on the fishing planes of various parts of SEJ.



2) The complete oiling and greasing of SEJ shall be done by dismantling the SEJ only at the time of de-stressing of the concerned LWR. The work shall be done in sequence described below under traffic block:



i) The nuts and chairs of SEJ shall be removed.
ii) A gap shall be created between tongue and stock rail and their interfaces shall be greased after cleaning the faces with wire brush.
iii) Similarly interfaces of chairs and tongue rails and that of chair and stock rail shall be greased after cleaning.
iv) The stock of tongue rails shall be reset.
v) Bolts of chairs shall be oiled and nuts tightened after replacing the chairs.

2.5 LUBRICATION OF PLATE SCREWS AND RAIL SCREWS ON PSC SLEEPERS ON TURNOUTS, SEJs, BRIDGE GUARD RAILS & LEVEL CROSSINGS

(Ref: NR PCE Circular no 283 dated 09.2023 & 261 R-1 dated 03.06.2015)

The Plate Screws & Rail Screws provided on PSC sleepers on Turnouts, Switch Expansion Joints, Bridge guard rails & Level crossings are getting corroded due to either aggressive environmental conditions or in stretches where passenger trains reach major destinations in the early morning hours.

Due to the excessive corrosion of Plate/Rail Screws, maintenance has been badly affected as the thickness of screws gets reduced and in turn they get jammed/ loosened, resulting in loosing grip with plates and sleepers become useless. To minimize the occurrence of this problem, as a preventive measure, Lubrication of Plate Screws and Rail Screws should be done. In this regard following procedure as recommended by Northern Railway may be adopted.

2.5.1 Frequency

i) At new Turnout/SEJ/Bridge guard rail/Level crossing renewal sites, the greasing of new Plate/Rail Screws should be done while providing in the track.
ii) In corrosion prone areas : Once in six months.

iii) In areas not prone to corrosion : Once a year

2.5.2 Material

i) Grease graphite used for this purpose shall be as per IS Specification number IS: 408, Grade '0'.
ii) Only galvanized plate screw/rail screw should be provided in place of corroded ones after applying '0- Graphite Grease/Black oil.

2.5.3 Procedure

i) Plate/Rail Screws should be removed one by one from track.
ii) Screw as well as Dowel be properly cleaned for corroded material from the surface with the help of wire brush and then dipped in Black oil uniformly both on the surface of Plate/Rail Screw and Dowel and fixed back.
iii) Head of Plate/Rail screw should also be either coated with hot Bitumen or other suitable anticorrosive paint to avoid corrosion.





2.6 LUBRICATION AT POINT AND CROSSINGS

2.6.1 Tongue rail *(Ref: Para 429(2)(l) of IRPWM-2020)*

Wear on switches can be reduced by lubrication of the gauge face of tongue rail.

2.6.2 Cleaning and lubrication of points: *(Ref: Para 429(6) of IRPWM-2020)*

i) At all interlocked and partially interlocked stations, the Signal staff will be responsible for the periodical cleaning and lubrication of those slide chairs in which signaling and interlocking gears are connected (generally up to third sleeper from toe of switch) in all points interlocked with signals or provided with locks.



ii) The SSE/JE/P. Way shall be responsible for the cleaning and lubrication of slide chairs of all hand operated points on their sections and remaining slide chairs of all points interlocked with signals or provided with locks.

iii) Frequency: Once in fortnight. *{Ref: Annexure: 19-MS2 (Appendix-I, Maintenance Schedule Booklet, IRSEM-2021)}*

2.7 LUBRICATION OF OUTER RAIL OF CURVE

(Ref: Para 424 & 613 of IRPWM-2020)

It is well known that rail lubrication increases the wheel and rail life by preventing friction and decreasing the wear between the rail-wheel interfaces, saves energy, and can reduce wheel noise. It can also reduce lateral forces and flange climb forces that can lead to flange climb derailments.

a) Reducing side wear on rails (Gauge face of outer rails):

- On sharp curves where the tendency of wear on the outer rail is noticeable, lubricators should be installed or hand lubrication of gauge face should be done, care being taken not to apply the lubricant on the top of the table.



b) In case of hand lubrication, the Divisional Engineer may decide frequency of lubrication duly considering local conditions and traffic on the line. Northern Railway has recommended the frequency at once in a week using hand operated machines or by manual means by keyman/ trackman. *(Ref: NR PCE Circular no 283 dated 09.2023)*

c) Track mounted automatic Gauge Face Lubricators should be provided on curves of radius 875 m (2°) and sharper to reduce rail gauge face wear.

d) On routes where rail grinding is in practice, track mounted automatic Gauge Face lubricators should be provided on curves of radius 1400 m (1.25°) and sharper.

e) Lubrication should be done on new rails or on old rails, which do not have Gauge Corner Cracking or head checks.

f) While deciding the location of lubricators, following should be considered:-

i) It is located on tangent track at the beginning of transition curve where wheel flanging is just beginning to occur.

ii) On single lines, the lubricator shall be located in the direction of heaviest traffic.

iii) Lubricators should be located away from switches, crossings and other areas where discontinuity in LWR track may exist.

g) Weekly Hand Lubrication of gauge face of rails may also be done on work sites such as deep screening, PQRS, BCM & CTR works and other locations where heavy side wear of rails is observed. *(Ref: NR PCE Circular no 283 dated 09.2023)*

2.8 LUBRICATION OF GIDER BRIDGES

a) Greasing of Sliding and Roller & Rocker bearings of girder bridges:
- Once in three years. *(Ref: Para 222(2) (a) of IRBM)*

b) Lubrication of the bearings of bridges provided with rail-free fastenings and partly box- anchored (with single span not exceeding 30.5 metre and having sliding bearings at both ends) and LWR/CWR has been continued over such bridges- once in two years. *(Ref: Para 331(2)(d)of IRPWM-2020)*



c) Hook bolts, if not galvanized, should be oiled periodically to prevent rusting. *(Ref: Para 631 of IRPWM-2020)*

2.9 LUBRICATION AT THE SITE OF DEEP SCREENING, TSR AND TRR

(*Ref: CE Circular No. 186(R1) Dt.16.02.22*)

On the work site where work of disturbance of ballast bed such as deep screening, TSR or work of TRR is being done, it may be advisable to apply grease to gauge face of both rails.

3.0 PAINTING OF RAILS AND WELDS

The Rails in areas prone to corrosion/ deterioration and welds need painting to increase their life for maintaining their health to desired standards. It is, therefore, necessary to paint the Rails and Welds to the maximum possible extent for their effective utilization. Corrosion beyond 1.5 mm in the web or foot may be taken as the criterion for wear due to corrosion.



Rail



Weld

Corrosion is generally heavy in the following locations (*Ref: Para 612 (1) of IRPWM-2020*):

i) Platform lines where trains make prolonged halts.
ii) Sidings where saline or corrosive goods are dealt with.
iii) Near water hydrants due to insufficient drainage.
iv) Tunnels and deep cuttings.
v) Areas near the seacoast.
vi) Industrial belts.

a) Material

i) *Paint specification for rails:* Ready mixed paint, brushing bituminous black, lead free, acid, alkali, water and chlorine resisting, conforming to IS: 9862-2017 (with latest amendments).

ii) *Paint specification for weld:* Ready mixed paint, brushing bituminous black, lead free, acid, alkali, water and chlorine resisting, conforming to IS: 9862-2017 or bituminous emulsion to IRS: P-30-2020 High build epoxy paint conforming to RDSO specification no. M&C/PCN-111/2018 or latest.

b) Frequency

(1) Painting of weld collar should be done on all welds to protect them against corrosion immediately after the welding.
(2) In service painting (maintenance painting) of Thermit welds should be carried as per following frequency:
   a) Once in four years in areas not prone to corrosion.
   b) Every year at locations prone to corrosion as specified above.
   c) The frequency may be increased depending on the site conditions.
   d) On condition basis at locations which are prone to severe corrosion (areas of severe corrosion to be decided by Chief Track Engineer).

c) Procedure

(i) Painting should be done in two coats of thickness of 100 microns each by anti corrosive bituminous black paint confirms 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.



(ii) The procedure for painting of weld collar for Thermit welded rail joints to protect against normal corrosion and severe corrosion is outlined below as per AT Welding Manual (Revised -2022).

Protection against Normal Corrosion

New Welded Joint	*Old Painted Joint*
Surface preparation	
✓ Remove dust, loose rust and mill scale by wire brushing. ✓ Scrub welded area with water to make it free from slag and other water soluble compounds. Make it dry.	✓ Remove dust, dirt and flaked paint from the welded joint by wire brushing. ✓ Degrease the surface by petroleum hydrocarbon or any other suitable solvent, if oil or grease is present. Allow it to dry.
	
Painting Procedure	
✓ Apply one coat of ready mixed paint, brushing, bituminous black, lead free, acid, alkali, water and chlorine resisting, conforming to IS: 9862-1981 (with latest amendments) on the welded area and 10 cm on either side. ✓ After eight hours drying, apply a second coat of the same paint. ✓ Painting should be carried out by brush only.	✓ Apply one coat of ready mixed paint, brushing bituminous black, lead free, acid, alkali and chlorine resistant, conforming to IS:9862-1981 (with latest amendments) or bituminous emulsion to IRS: P-30- 2020 or latest on welded area and 10 cm on either side. ✓ If required, a second coat of the same paint may be applied after a minimum of eight hours drying. ✓ Painting should be carried out by brush.
	

Protection against Severe Corrosion

New Welded Joint	*Old Painted Joint*
Surface Preparation	
✓ Remove dust, loose rust and mill scale by wire brushing. ✓ Scrub welded area with water to make it free from slag and other water soluble compounds. Make it dry.	✓ Remove dust, dirt and flaked paint from the welded joint by wire brushing. ✓ Degrease the surface by petroleum hydrocarbon or any other suitable solvent, if oil or grease is present. Allow it to dry.
Painting Procedure	
✓ Apply one coat of high build epoxy paint (two pack) conforming to RDSO specification No. M&C/PCN-111/ 2018 or latest on the welded area up to 10 cm on either side.	✓ Apply one coat of high build epoxy paint (two pack) conforming to RDSO specification No. M&C/PCN-111/ 2018 or latest on the welded area up to 10 cm on either side. ✓ RDSO specification No. M&C/PCN-111/2018 is issued by M&C Directorate, RDSO and available at RDSO website www.rdso.indianrailways.gov.in.

Note:

a. *The epoxy based paint recommended is a two pack system with a pot life of around five hours. Hence prepare only that much quantity of paint which can be consumed in less than five hours.*
b. *The paint should be procured along with the thinner recommended by the manufacturer of the paint. No other thinner i. e. kerosene oil etc. should be used.*
c. *The painting shall be carried out by brush only. Brush shall be cleaned by the thinner after use.*

4.0 PROTECTION OF TRACK DURING WORK

The following points should be kept in view, while protecting the track in the cases mentioned in sub-Para (1) and (2) below-

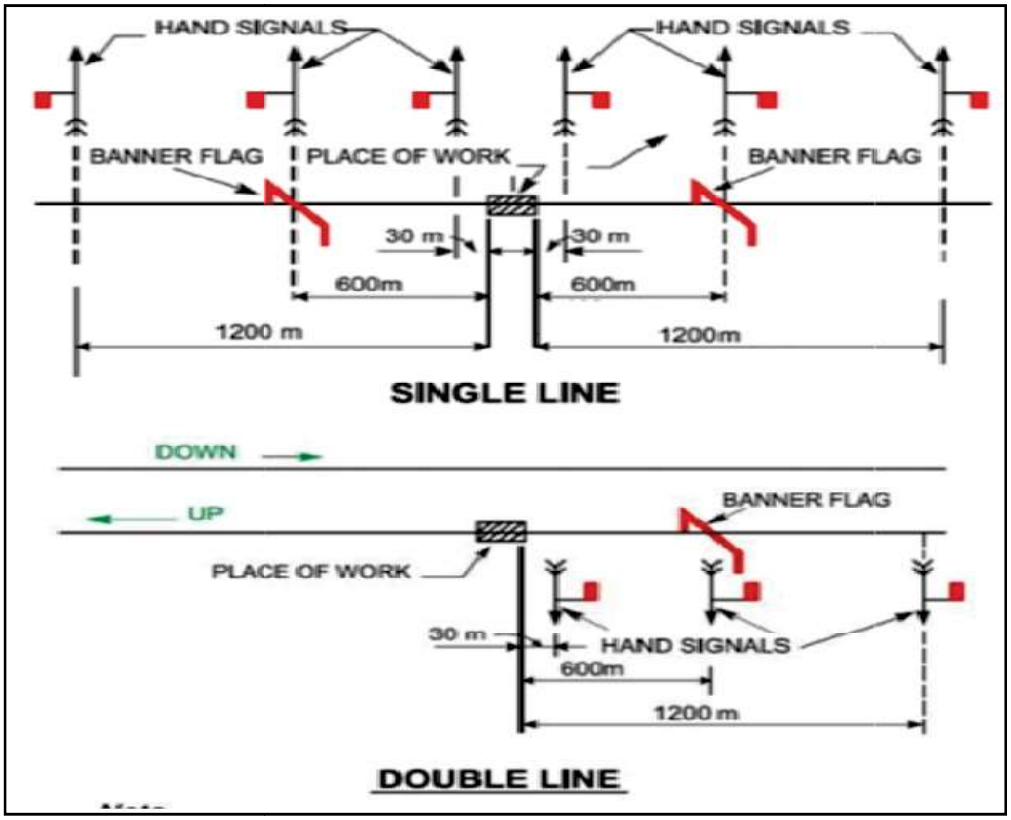
- At places where there are curves or falling gradients and at times of poor visibility the distances laid down in following Para may be suitably increased wherever necessary and intermediate flagman posted to relay hand signals.
- In case of night working, red light must be exhibited in the direction of approaching trains in place of red hand signaling flags and banner flags.

(1) When the train can pass over the work spot at restricted speed in Block section
(Ref: Annexure - 8/2 - Para 806(2), IRPWM 2020)

- ✓ Post a flagman exhibiting caution hand signals at a distance of 30 metres from the place of obstruction.
- ✓ Post a flagman exhibiting caution hand signals at a distance of 1200 metres for Broad Gauge from the place of obstruction.
- ✓ Post an intermediate flagman with hand signals at a distance of 600 metres for Broad Gauge from the place of obstruction. He will also place a banner flag across the track.

The intermediate banner flag must be kept across the line until the speed of the train has been reduced, after which the banner flag shall be removed and the train hand signaled forward.

- ✓ The railway servant at the site of work should give proceed hand signals to indicate to the Driver, that he may resume normal speed after the train has been hand signaled past the site of work**.**

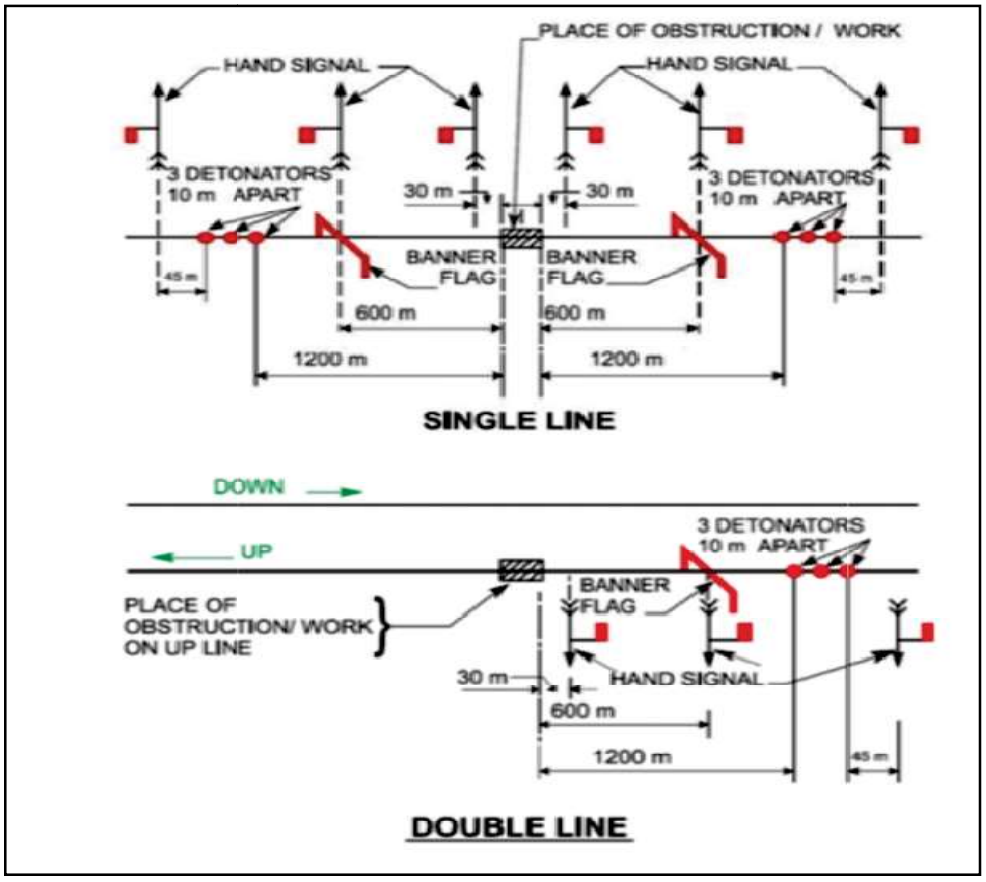


Protection of line in case of reduced speed
(Ref: Annexure - 8/2 - Para 806(2), IRPWM 2020)

(2) When the train is required to stop at the site of work in Block section
(Ref: Annexure - 8/1 - Para 806(1), IRPWM 2020)

- ✓ Post a flagman with hand signals at a distance of 30 meters in rear of the place of obstruction, to show stop hand signals.
- ✓ Post a flagman with hand signals and place a banner flag across the track at a distance of 600 meters in rear of the work. The flagman will show stop hand signals.
- ✓ Post a flagman with hand signals and detonators at a distance of 1200 metres in rear of the work. The flagman shall fix three detonators on the line 10 metres apart and stand at a place not less than 45 metres from the three detonators, from where he can obtain a clear view of the approaching train. He will show stop hand signals.

- ✓ The man at the site of obstruction shall give proceed hand signal to indicate to the Driver, when he may resume normal speed after the train has been hand signaled past the obstruction.



Protection of line in case of Stop dead Restriction
(Ref: Annexure - 8/1 - Para 806(1), IRPWM 2020)

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Revised Training Module for Induction Course of Track Maintainers

RBE No. 03/2024

भारत सरकार Government of India
रेल मंत्रालय Ministry of Railways
(रेलवे बोर्ड) (Railway Board)

No. E (MPP)/2019/03/46 **New Delhi, dated: 09.01.2024**

The General Manager,
All Zonal Railways/PUs
Metro Railway, Kolkata
CORE, Allahabad
DG/RDSO/Lucknow
CAO/DMW/ Patiala
CAO/COFMOW/New Delhi
ED/CAMTECH/Gwalior

DG/NAIR/Vadodara
DG/IRITM/Lucknow
DG/IRIEEN/Nasik
DG/IRICEN/Pune
DG/IRISET/Secunderabad
DG/IRIMEE/Jamalpur
DG/ IRIFM/ Secunderabad
DG/ JRRPF/ Lucknow

Sub. Revised Training Modules of Non Gazetted Staff of Civil Engineering Department.

Vide Board's letter no. E (MPP) 2019/03/46 dt. 24.12.2021 (RBE no. 94/2021), revised training module of non- gazetted staff of civil engineering department was circulated to all Zonal Railways/ PUs and uploaded on railnet under heading **MPP Training Circulars**.

2. IRICEN has now submitted the revised training module for Induction & Refresher training course of Track Maintainers, which has been reviewed in Board's office and the same has been approved by Board (Member/Infrastructure).

3. Accordingly, the revised training modules for Induction & Refresher training of Track Maintainers, have been scanned and uploaded under **MPP Training Circulars** and can be viewed or downloaded from **Railnet/Indian Railways website.**

4. This disposes of NR's letter no.1-WO/Training of Non-Gazetted P Way Staff dated 05.09.2022

5. Kindly acknowledge receipt.

Encl. : (Revised Training Modules 05 pages)

3/1/24
(Amit Singh Mehra)
Director/Man Power Planning

No. E (MPP)/2019/03/46 **New Delhi, dated: 09.01.2024**

Copy to:

1) The General Secretary, NFIR, 3 Chelmsford Road, New Delhi for information (Copy may be downloaded from E(MPP) Training Circulars/Railnet/Internet).

2) The General Secretary, AIRF, 4 State Entry Road, New Delhi for information (Copy may be downloaded from E(MPP) Training Circulars/Railnet/Internet).

3) The Secretary General, FROA, R.No.256-A, Rail Bhavan, New Delhi for information (Copy may be downloaded from E(MPP) Training Circulars/Railnet/Internet).

4) The Secretary General, IRPOF, R.No.268, Rail Bhavan, New Delhi for information (Copy may be downloaded from E(MPP) Training Circulars/Railnet/Internet).

5) All Members, Department Council & Secretary Staff side National Council 13-C, Ferozeshah Road, New Delhi (Copy may be downloaded from E(MPP) Training Circulars/Railnet/Internet).

6) The Secretary General, AIRPF Association, Room No.256-D, Rail Bhavan, New Delhi (Copy may be downloaded from E(MPP) Training Circulars/Railnet/Internet).

7) General Secretary, All India SC & ST Railway Employees Association, 171/B-3, Basant Lane Railway Colony, New Delhi (Copy may be downloaded from E(MPP) Training Circulars/Railnet/Internet).

For Principal Executive Director (IR) /Railway Board

No. E (MPP)/2019/3/46 **New Delhi, dated: 09.01.2024**

Copy to:

i) PS & ED(PG) to MR, MoSR (D) & MoSR (J)

ii) PSO/Sr.PPS to CRB, MF, M(Infra.), M(TRS), M(O&BD), DG(HR), DG(RHS) & DG(RPF)

iii) Sr.PPS/PPS/PS to AM(Budget), AM(CE), AM(C&IS), AM(Comml.), AM(Traction), AM(Fin), AM(Mech.), AM(Plg.), AM(Project), AM(PU), AM(Sig.), AM(Staff), AM(RS), AM(T&C), AM(Tele), AM(TT), AM(Works), PED(Vig.), PED(Safety), PED(Coaching) LA,

iv) ED(Plg.), ED(Accts.), EDCE(B&S), EDCE(G), EDCE(Plg.), ED(CHG), ED(CC), ED(C&IS), ED(E&R), EDEE(Dev), EDEE(G), EDE, ED(RRB), EDE(N), EDE(Res), EDF, EDF(B), EDF(X)I, EDF(X)II, ED(H), JS(C), EDME(Chg.), EDME(Fr.), ED(PC)I, ED(PC)II, EDRE, ED(Safety), ED(Safety)-II, IG./RPF(Hqs), ED(Sig.), ED(SP), EDRS(G), EDRS(S), ED(TD), EDTC(R), EDCE(P), ED(PM), ED(FM), EDPG, EDTT(F), EDTT(S), EDV(E), EDV(Elect), EDV(T), EDVE(S), ED(W).

v) Chief Commissioner of Railway Safety, Lucknow.
vi) E(Trg.), E(NG)I, E(NG)II, E(G), F(E)I, F(E)II, F(E)III, E(SCT)I, E(SCT)II branches of Railway Board.

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Room No. 27A, Ground Floor, Rail Bhawan, New Delhi-110001

TRAINING MODULE FOR INDUCTION COURSE (T-9) (Revised)

CATEGORY: TRACK MAINTAINER **DURATION: 30 DAYS (240 PERIODS)**

TOPIC	TOPIC DETAILS	Periods	
		Existing	Revised
	PART – I INTRODUCTION	**6**	**6**
1.1	Railway's Organizational Structure, Role of Track-maintainer in Railways.	2	2
1.2	Classification of Routes.	1	1
1.3	Duties & Responsibilities of Track-maintainer (IRPWM Para 149). Duties of Trackman as per para 2.11 of GR.	3	3
	PART – II PERSONAL SAFETY	**21**	**29**
1.1	Precaution during work on running lines, **including Double / Multiple lines, vicinity of LCs, important major yards, shunting / marshalling lines etc.**	1	2
1.2	Precaution during routine maintenance activity, handling/ transporting materials **including while working in Block, Speed Restriction etc**	1	2
1.3	Precaution during Track machine working **including pre, post and during tamping, BCM working, sharp look out on adjoining lines etc**	2	4
1.4	Precaution during working on sharp Curves/Curves with poor visibility. Precaution during working at accident spots, congested locations like bridge, tunnel. in High speed locations, **Use of Rakshak and other such warning systems**	1	3
1.5	Precautions in track circuited areas, electrified areas, **including working with Cranes, JCBs, earth moving equipment etc.**	2	3
1.6	Precaution while working during heavy rain, Safety against Snake/Insect Bite Precautions during night working **at Monsoon Patrolling / Hot / Cold weather Patrolling etc**	1	2
1.7	Safety during working in Ghat sections. Personal safety- Dos & Don'ts	1	1
1.8	**Hands on**: Repairs to Trolley Refuges/ Man refuges	4	4
1.9	**Hands on**: Exchange of hand signals. Fixing detonators	4	4
1.1	**Field visit** for demonstration of various safety drills.	4	4
	PART – III RAILS, SLEEPERS, FASTENINGS & BALLAST	**23**	**23**
1.1	Types of rails, Fish plates, Fish bolts.	1	1
1.2	PSC sleepers for main line and other locations viz. level crossing, SEJ, bridge and its approach, turnout, sharp curves, etc.	2	2
1.3	Elastic Fastenings: Types of ERC – ERC mark III, ERC mark V, zero toe load, GJ clip. Rubber pads: Different types. Liners : Different types, GFN liners, metal liners, combination liners Modern elastic fastenings viz. Vossloh, Nabla etc.	2	2
1.4	Glued joints, Block Joint, SEJs, Points & Crossing.	2	2
1.5	**Model room** showing different types of rails, sleepers, elastic fastenings, SEJ, Glued joint, block joint, points and crossing.	2	2
1.6	**Field visit** for showing items mentioned at 1.5 above.	8	8
1.7	Ballast profile at different location, Steps to prevent Pedestrian/ Cattle Crossing	2	2
1.8	**Hands on** Ballast Handling, adjustment of ballast in profile, measurement of ballast cushion	4	4
	PART – IV LUBRICATION OF RAIL JOINTS	**14**	**14**
1.1	Lubrication of Rail Joints (IRPWM Para 241)	1	1
1.2	**Hands on**: Lubrication of Rail Joints	4	4
1.3	Greasing of ERCs, sealing of liners.	1	1
1.4	Painting of Rails and Welds.	1	1
1.5	Lubrication of gauge face of outer rail on curves, turnouts, SEJ etc.	1	1
1.6	**Hands on**: Lubrication of ERC, Curves, Turnouts, SEJ.	6	6
	PART – V TRACK MAINTENANCE ACTIVITIES	**57**	**57**
1.1	Through Packing (IRPWM Para 224), Slack Picking (IRPWM Para 229).	2	2
1.2	**Hands on**: Manual through packing.	8	8
1.3	Systematic Overhauling of Track(IRPWM Para227)	1	1
1.4	**Hands on**: Systematic Overhauling	4	4
1.5	Mobile Maintenance Units (IRPWM Para228)	1	1
1.6	Introduction to Small Track Machines. Safe operation of Small Track Machines available on Indian Railways on running track.	2	2
1.7	Basic knowledge regarding consumables being used in Small Track Machines.	1	1
1.8	**Hands on:** Repair & maintenance of Small Track machines, troubleshooting of Small Track machines.	4	4

TRAINING MODULE FOR INDUCTION COURSE (T-9) (Revised)

CATEGORY: TRACK MAINTAINER **DURATION: 30 DAYS (240 PERIODS)**

TOPIC	TOPIC DETAILS	Periods	
		Existing	Revised
1.9	**Hands on** training for operation of small Track Machines including weld trimmer, grinder, rail cutting, hole drilling, chamfering, etc.	4	4
1.1	Works involved in the maintenance of Points &Crossings, Curves, Level crossings and Bridges.	2	2
1.11	**CREEP**: Creep and its effect, pulling back of creep, fixing of anchors, recoupment of missing fittings, renewal of ineffective fittings.	1	1
1.12	Attention to SEJ, Glued Joints, insulated block joints.	1	1
1.13	Observance of Sleepers under passage of Traffic(IRPWM Para 230)	1	1
1.14	Observance of train for seized bearings/hot axles, hanging parts of rolling stock.		
1.15	**Technical films/ video clips/ photographs** showing various Track Maintenance activities.	1	1
1.16	**Hands on**: Casual rail renewal	4	4
1.17	**Hands on**: Casual sleeper renewal	4	4
1.18	**Hands on**: Measurement of Gauge, Cross level, Check-Rail Clearance, Versine, Cant.	2	2
1.19	**Hands on**: Change of Crossing and Switches in yards.	4	4
1.2	Welding of Rails.	2	2
1.21	**Hands on**: Assisting in welding of rail joint.	4	4
1.22	**Technical films/ video clips/ photographs** on use of weld trimmers &Grinders, Rail cutting machine, Rail drilling Machine, Chamfering machine, Impact Winch for bolt tightening, Toe load measurements.	2	2
1.23	**Hands on**: Maintenance in Electrified territories: precautions involved during maintenance of Track-Circuited sections, Felling/ Cutting/ Pruning of trees close to OHE	2	2
	PART – VI LONG AND SHORT WELDED RAILS (LWR/SWR)	**24**	**24**
1.1	Introduction to LWR/SWR track.	1	1
1.2	Rail temperature-types of Rail Thermometers, measurement of temperature and working range.	1	1
1.3	**Hands on**: Measurement of Rail temperature	1	1
1.4	Competency to carry out various Maintenance and Repair works in LWR.	1	1
1.5	Do's and Don'ts for LWR and SWR track.	2	2
1.6	Hot and Cold Weather Patrolling	1	1
1.7	Action to be taken in case of rail/weld failures.	1	1
1.8	**Hands on** : for attending emergency repair of rail/weld fracture	4	4
1.9	Action to be taken in case of buckling	1	1
1.1	De-stressing of LWR.	2	2
1.11	Different types of SEJ – Inspection and Maintenance	1	1
1.12	**Hands on**: Cold / Hot Weather Patrolling, Monsoon Patrolling.	8	8
	PART – VII RAIL FRACTURES AND WELD FAILURES	**7**	**7**
1.1	Introduction to Rail/ weld failures.	1	1
1.2	Marking of USFD Flaws, Action for protection / removal of defective welds/rails	2	2
1.3	**Hands on**: Attention to various types of USFD Flaws	4	4
	PART – VIII TRACK RENEWALS	**21**	**21**
1.1	Scope, activities involved & method for execution of Through Rail Renewal, Through Sleeper Renewal, Through Bridge Timber Renewal, Through Fittings Renewal, Through Turnout renewal	3	3
1.2	Deep Screening (IRPWM Para 238), Lifting/Lowering of track, **Working of Track machine such as BCM, SBCM, DTS, Unimat, T-28**	3	3
1.3	Working of Ballast Train / DMT working	2	2
1.4	**Hands on**: Ballast train/ EUR unloading.	8	8
1.5	**Technical films/ video clips/ photographs** of various types of Track machine on Railway	1	1
1.6	**Hands on**: Pre & Post tamping activities, Attention during Track-Machine tamping	4	4
	PART – IX LEVEL CROSSINGS	**10**	**10**
1.1	Classification of Level Crossing, Equipment at LC.	2	2
1.2	Visibility at LC, Speed breakers, Road sign boards and W/L boards at level crossings, Location of various LC Boards	1	1
1.3	Introduction to working of gateman, competency, Refresher & medical Examination.	1	1
1.4	Action during Gate failures, Height Gauge damage, Breakdown of vehicle at LC	1	1

TRAINING MODULE FOR INDUCTION COURSE (T-9) (Revised)

CATEGORY: TRACK MAINTAINER **DURATION: 30 DAYS (240 PERIODS)**

TOPIC	TOPIC DETAILS	Periods	
		Existing	Revised
1.5	**Technical films/ video clips/ photographs** showing operation of Level Crossing and its components.	1	1
1.6	**Hands on**: Visit to nearest level crossing	4	4
	PART – X PATROLLING OF TRACK (Ch-X of IRPWM)	16	12
1.1	Types of Patrolling	2	2
1.2	Duties of Patrolman, Equipment of patrolman, Reporting of unusual. Understanding of patrol chart and diary.	2	2
1.3	Action to be taken during emergency by Patrolman.	1	1
1.4	Duties of Stationary watchman at vulnerable location	1	1
1.5	**Hands on:** rainfall reading with rain gauge	2	2
1.6	**Hands on:** Patrolling Duty	8	4
	PART – XI Rail Dolly/Trolley/Dip Lorry Working	15	11
1.1	Working of Trolley, Lorry and Rail dolly.	2	2
1.2	**Technical films/ video clips/ photographs** on working of Rail Dolly/Dip Lorry.	1	1
1.3	**Hands on**: working of Trolley, Lorry, Rail dolly and Protection	4	4
1.4	**Tutorial on** preparation on various memo viz. track unsafe memo, caution order, track safe memo with caution order, etc.	8	4
	PART – XII BASICS OF SIGNALLING & PROTECTION OF TRAUR	13	13
1.1	Various types of Signals& Their Aspects	2	2
1.2	Station limit, block sections, different types of territory (absolute/automatic).	1	1
1.3	Various method of protections: HS Flags, banner flags, HS lamp, detonator, tri-color torches, heaters etc.	1	1
1.4	Protection during short duration/long duration works.	2	2
1.5	Engineering Indicator boards for various speed restriction/ stop dead, Location of boards at work site.	2	2
1.6	**Hands on** for Fixing of Indicator Boards at Work site	4	4
1.7	Training on disaster management including fire safety	1	1
	PART – XIII ESTABLISHMENT MATTER	5	5
1.1	Leave & Pass Rules	1	1
1.2	DAR	1	1
1.3	HOER	1	1
1.4	Avenues of career progression in Railways	1	1
1.5	Introduction to Civil defense organization in Railways	1	1
	PART – XIV FIRSTAID	4	4
1.1	Knowledge on medicines provided in first aid box. Training and demonstration on first aid to be given to injured having bone fractured/ dislocation, precaution while carrying injured staff in absence of stretcher.	4	1
	PART – XV MISCELLANEOUS	4	4
1	Exam, Viva-Voce, Reporting/Relieving etc	4	4
2	**Self development (physical & emotional)**		
2.1	Jogging/ yoga exercise one hour daily in morning session (7am to 8am).		
2.2	Breathing exercise, meditation, relaxation daily one hour in evening session (5.30pm to 6.30pm).		
	Grand Total	240	240
	NOTE: 30 days= 30 x 8 pds = 240 pds of 45mins each		

SUMMARY

A	**CLASSROOM LECTURES**	95	103
B	**TECHNICAL FILMS/ VIDEO CLIPS/ PHOTOGRAPHS**	6	6
C	**FIELD VISITS**	12	12
D	**HANDS ON**	113	109
E	**MODEL ROOM**	2	2
F	**TUTORIAL**	8	4
G	**MISCELLANEOUS**	4	4
	GRAND TOTAL	240	240

Note: The aspect of personal safety is covered in Part-II- of both (Induction and Refresher) course modules, however to cover more safety aspects some additional topics are also added in the existing module like, working in Double / Multiple lines, safety during machine working, use of Rakshak and other such warning systems, safety during patrolling, safety while transporting materials and working with Cranes, JCBs, earth moving equipment etc For which the time period for personal safety in Induction Course has been increased from 21 periods to 29 periods (each duration 45 minutes) by suitably modifying the time allotted to other topics keeping total training duration unchanged as 30 days.

It is also recommended that after completion of 30 days institutional training, newly recruited track maintainers, should also be given a 2 days practical safety training by the concerned JE/SSE P.Way supervisor before allowing them for field work. The same should be advised by divisions to SSE (P.Way) incharge.

TRAINING MODULE FOR REFRESHER COURSE T-10 (Revised)			
CATEGORY: TRACK MAINTAINER	DURATION: 6 DAYS (48 PERIODS)		
TOPIC	TOPIC DETAILS	Periods	
		Existing	Revised
	PART- I INTRODUCTION	1	1
1.1	Duties & Responsibilities of Track-Maintainer (IRPWM Para 149).	1	1
	PART- II PERSONAL SAFETY	6	9
1.1	Precaution during work on running lines, routine maintenance activity, handling/ transporting materials. **including Double / Multiple lines, vicinity of LCs, important major yards, shunting / marshalling lines etc.**	1	2
1.2	Precaution during Track machine working, working on sharp curves/ curves with poor visibility, working at accident spots, congested locations like bridge, tunnel **in High speed locations, Use of Rakshak and other such warning systems**	2	3
1.3	Precautions in track circuited areas, electrified areas, **including working with Cranes, JCBs, earth moving equipment etc.**	1	2
1.4	Safety during working in Ghat sections. Personal safety- Dos & Don'ts	1	1
1.5	Precaution while working during heavy rain, Precautions during night working.	1	1
	PART- III LUBRICATION OF RAIL JOINTS	2	2
1.1	**Hands on** : Lubrication of Rail Joints (IRPWM Para 241), Lubrication of gauge face of outer rail on Curves, Turnouts, SEJ etc. **Hands on**: Greasing of ERCs, sealing of liners, Painting of Rails and Welds.	2	2
	PART- IV TRACK MAINTENANCE ACTIVITIES	9	9
1.1	**Hands on**: Through Packing, Slack Picking, Systematic Overhauling of Track, Observance of Sleepers under passage of Traffic(IRPWM Para 230), Observance of train for seized bearings/hot axles, hanging parts of rolling stock.	2	2
1.2	**Hands on**: attention to points &Crossings	2	2
1.3	Introduction to Small Track Machines. Handling &Safe operation of Small Track Machines required specially during rail welding.	1	1
1.4	**Technical Film/ Video Clip/ Photographs** on use of weld trimmers &Grinders, chamfering machine, rail cutting, rail drilling impact winch for bolt tightening, toe load measurements	1	1
1.5	Attention to SEJ, Glued Joints, insulated block joints.	1	1
1.6	**Technical Film** on maintenance of concrete sleeper track and discussions.	2	2
	PART- V LONG AND SHORT WELDED RAILS (LWR/SWR)	7	6
1.1	Introduction to LWR/SWR track.	1	1
1.2	Rail temperature: types of rail thermometer, measurement of temperature, permitted temperature limits for carrying out various maintenance operations.	1	1
1.3	Do's and Don'ts for LWR and SWR track.	1	1
1.4	Hot and cold weather patrolling	1	1
1.5	Action to be taken in case of rail/weld failures & buckling	1	1
1.6	Different types of SEJ, De-stressing of LWR.	2	1
	PART- VI RAIL FRACTURES AND WELD FAILURES	2	2
1.1	Introduction to Rail/ weld failures.	1	1
1.2	Marking of USFD Flaws, Action for protection / removal of defective welds/rails	1	1
	PART- VII TRACK RENEWALS	3	3
1.1	Deep Screening (IRPWM Para 238), Lifting/Lowering of track (IRPWM Para 233/234).	2	2
1.2	Working of Ballast Train / DMT working	1	1

TRAINING MODULE FOR REFRESHER COURSE T-10 (Revised)			
CATEGORY: TRACK MAINTAINER		DURATION: 6 DAYS (48 PERIODS)	
TOPIC	TOPIC DETAILS	Periods	
		Existing	Revised
	PART- VIII LEVEL CROSSINGS	3	3
1.1	Classification of Level Crossing, Equipment at LC.	1	1
1.2	Visibility at LC, speed breakers, road sign boards and W/L boards at level crossings, Location of various LC Boards.	1	1
1.3	Duties of gatekeeper & action during gate failures, Height Gauge damage, Breakdown of vehicle at LC	1	1
	PART- IX PATROLLING OF TRACK	4	4
1.1	Types of Patrolling	1	1
1.2	Duties of Patrolman, Equipment of patrolman, Reporting of unusual, Understanding of patrol chart and diary.	1	1
1.3	Action to be taken during emergency by patrolman.	1	1
1.4	Duties of Stationary watchman at vulnerable location	1	1
	PART- X Rail Dolly/Trolley/Dip Lorry Working	3	2
1.1	Working of Trolley, Lorry and Rail dolly.	1	1
1.2	**Tutorial** on preparation on various memo viz track unsafe memo, caution order, track safe memo with caution order etc.	2	1
	PART- XI BASICS OF SIGNALLING & PROTECTION OF TRACK	3	3
1.1	Various types of signals& Their Aspects Station limit, block sections, different types of territory (abooluto/automatic).	1	1
1.2	Various method of protections: HS Flags, banner flags, HS lamp, detonator, tri-color torches, hooters, during short duration/long duration works etc.	1	1
1.3	Engineering Indicator boards for various speed restriction/ stop dead, Location of boards at work site.	1	1
	PART- XII FIRSTAID	2	1
1.1	Knowledge on medicines provided in first aid box. Training and demonstration on first aid to be given to injured having bone fractured/ dislocation, precaution while carrying injured staff in absence of stretcher.	2	1
	PART- XIII MISCELLANEOUS	3	3
1	Reporting, Valedictory, Exam, Viva-Voce, etc.	3	3
2	**Self development (Physical & Emotional)**		
2.1	Jogging/ yoga exercise one hour daily in morning session (7am to 8 am).		
2.2	Breathing exercise, meditation, relaxation daily one hour in evening session (5.30pm to 6.30pm).		
	Grand Total	48	48
	NOTE: Total 6 days = 6 x 8 pds = 48 periods of 45mins each		

NOTE: *To cover more safety aspects some additional topics are also added in the existing Refresher module like safety while working in Double / Multiple lines, working with Cranes, JCBs, earth moving equipment etc. and use of Rakshak and other such warning systems, for which time period for personal safety in Refresher Course has been increased from 6 periods to 9 periods by suitably modifying the time allotted to other topics, keeping total training duration unchanged as 6 days.*

REFERENCES

S. No.	Description
1.	*IRPWM-2020*
2.	*CR PCE Circular no 186-R1 dated 16.02.2022*
3.	*CE Circular no.141 of SE Rly*
4.	*NR PCE Circular no 283 dated 09.2023 & 261 R-1 dated 03.06.2015*
5.	*Annexure: 19-MS2 (Appendix-I, Maintenance Schedule Booklet, IRSEM-2021)*
6.	*Para 222(2) (a) of IRBM*
7.	*CE Circular No.186(R1) Dt.16.02.22*

NOTES

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CAMTECH is continuing its efforts in the documentation and up-gradation of information on maintenance practices of Civil Engineering assets. Over the years a large number of publications on Civil Engineering have been prepared in the form of Handbooks, Pockets Books, Pamphlets and Video Films, etc. These publications have been uploaded on the Internet as well as Railnet.

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If at any point contradiction is observed, then Indian Standards, regulations issued by Government bodies, Railway Board/ RDSO guidelines shall be referred.

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हमारा उद्देश्य

अनुरक्षण प्रौद्योगिकी और कार्यप्रणाली को उन्नयन करना तथा उत्पादकता और रेल्वे की परिसंपत्ति एवं जनशक्ति के निष्पादन में सुधार करना जिससे अन्तर्विषयों में विश्वसनीयता, उपयोगिता और दक्षता प्राप्त की जा सके।

यदि आप इस संदर्भ में कोई विचार और सुझाव देना चाहते हों तो कृपया हमें इस पते पर लिखें।

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Our Objective

To upgrade Maintenance Technologies and Methodologies and achieve improvement in productivity and performance of all Railway assets and manpower which inter-alia would cover Reliability, Availability, and Utilisation.

If you have any suggestion & comments, please write to us:

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