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

(An ISO: 9001-2015 Certified Organization)

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EXCELLENCE IN MAINTENANCE



Inspection Schedule of SSE/P.Way (In-charge), JE/SSE/P.Way (Sectional)

CAMTECH/C/2023-24/IS/SSE/JE/P.Way/2.0
(JAN – 2024)

General: - Time schedule of Inspection to the SSE/JE/P.Way and items to be checked during inspection is available in different code & manuals like IRPWM, IRWM, IRBM, USFD Manual, SOD, IRTMM, AT & FB Welding Manual, IRSEM and instruction issued by Railway Board and CEs/PCEs circulars. All the relevant information regarding above are taken from these manuals and reproduced below in a compiled form. So that information may be available at a glance.

Inspections	Periodicity	
	SSE/P.Way (in charge)	JE/SSE/ P.Way (sectional)
1. Foot Inspection/ Push Trolley Inspection *(Entire section including loops lines and yards)*		
1) Routes having speed above 110 Kmph and Multiple Line Routes (inspection by push trolley would preferably be under block protection. In case adequate numbers of blocks are not available, stipulated schedule of inspection would be completed predominantly through conduct of Foot Inspection.)	Once in 2 months. (By Foot Inspection/ Push Trolley)	Once in a fort night. (By Foot Inspection)
2) Other Routes		
i) By Foot Inspection	Once in a year	Once in 6 months.
ii) By Push Trolley	Once in 2 months.	Once in a fort night.

Items to be checked

1. Condition of track including track drainage, cuttings and formation. Specific items such as completeness and condition of fittings, greasing of ERC, toe load of ERC, soundness and squareness of PSC sleepers, creep in LWR track etc.
2. Attendance of Gang, gang work, equipment, gang chart/ diary, books with reference to prescribed schedule of track maintenance, counseling for safety and method of maintenance.
3. Check to ensure that every man in the gang is aware of safety rules by examining them periodically at least once in two months.
4. Routine check and review of inspection done by his subordinates.

Note: *In case of multiple lines running closely Parallel, inspection of all the lines would be covered in one Push Trolley/foot inspection as applicable else separate push trolley/ foot inspection will be required for each group of such lines.*

Inspections	Periodicity	
	SSE/P.Way (in charge)	JE/SSE/ P.Way (sectional)
2. Loco/Break van/Rear window	Once in fortnight	Once in a month
Items to be checked: Specifically riding quality of track and cleanliness & tidiness of Section.		
3. Level crossing	Once in a month on rotation by SSE/P.way (In-charge) and JE/SSE/P.Way (Sectional)	

Items to be checked

1. Serial Number of the Engineering Level Crossing and Class of the gate.
2. Gateman is on duty as per duty roster, competency certificate of the gate man.
3. Gate equipment as per list provided on the gate. Knowledge of gateman to use these equipment.
4. Whistle boards provided at adequate distance (600 m). Height: 2.10 m from RL.
5. In electrified section, height gauge is provided. The clear maximum height between the height gauge and the road surface is 4.78 m.
6. Condition of gate and its locking arrangements.
7. Cross levels and gauge are in order and condition of the drainage is all right.
8. Whether gate working rules are as per provision of station working rules and also available in local language.
9. Medical particulars of gateman;
   (1) Gateman should be certified fit in class A3 by the Medical Department.
   (2) PME: Every four years till 45 years and then every two years till 55 years and thereafter annually till retirement.
10. Educate gateman in rules and also conduct practical demonstration of protection of level crossing.
11. Last refresher course attended by the gateman (Once in 5 years).
12. Condition of the check rail, check rail blocks.
13. Overhauling of the gate (With each cycle of Machine packing or more frequent in no case more than 2 years).
14. Is the revolving unit of the lifting barrier in working order?
15. Working of Telephone.

16. Whether private numbers are being recorded correctly at gate?
17. Fencing provided along the track (15 m) intact.
18. Cleaning of the check rails being done properly at the gate and check rail clearance within limit (51–57 mm), Clear depth (38 mm).
19. Condition of speed breakers, Road signs on the approaches, approach road & the protection diagram at gate.
20. Visibility of gate from road and from Rail line.
21. Availability of extra shoulder ballast in the approaches of level crossing track to arrest the extra stress in rails during extreme hot weather.

Inspections	Periodicity	
	SSE/P.Way (in charge)	JE/SSE/ P.Way (sectional)
4. Curves		
1) For curves > 2 degree	Once in six months on rotation by SSE/P.Way (In-charge) and JE/SSE/P.Way (Sectional)	
2) For curves ≤ 2 degree	Based on results of TRC/OMS/ FP and inspection details of JE/SSE/P.Way (Sectional)	Once in a year

Items to be checked

1. Curve Board at both ends of curve with details of degree, radius, Super Elevation (SE) & TL.
2. Marking of Station Numbers for measuring Versine and Super Elevation are indicated on rail and is legible. (10 m apart on inside of web of outer rail).
3. The wear of rails of curves having radius 600 m or less shall be recorded during curve inspection. The Lateral wear, Vertical wear and total loss of section should be recorded and proper record of measurements maintained.
4. Measurement of Versine and Super Elevation.
5. Shoulder width on outer rail on LWR track (350 mm shoulder ballast on straight and inside of curve, 500 mm outside of curve).
6. Shoulder ballast of 600 mm over a length of 100 m on both side of the common point of a reverse curve would be provided.
7. Availability of Rail posts at Transition Tangent Point (TTP) and Common Tangent Point (CTP).
8. Whether extra clearances for curves have been provided;

   (1) On platforms: (i) Inner side of curve: 27330/R + 5L/4 – 51 mm

   (ii) Outside of curve: 29600/R – 25 mm

   (2) Adjacent Track: 27330/R+29600/R+2L/4 mm, Where R is radius of curve in meter and L is Lean. (L = h/g X S; where S is the super elevation, g is the gauge of the track)

5. Points & Crossings	
1) Passenger and running lines	Once in three months on rotation by SSE/P.Way (In-charge) and JE/SSE/P.Way (Sectional)
2) Other lines and yard lines	Once in six months on rotation by SSE/P.Way (In-charge) and JE/SSE/P.Way (Sectional)

Note: *The detailed inspection as per proforma given in Annexure - 4/3 should be done once in a year and all other intermediate inspections should be carried out as per proforma given in Annexure - 4/3 (A) of IRPWM.*

Items to be checked

1. Condition of ballast, drainage and sleepers.
2. Condition of stock rail and tongue rail (chipped/cracked, formation of burr & wear);
   A tongue rail may be classified as worn/damaged when it is chipped/ cracked over small lengths aggregating to 200 mm within a distance of 1000 mm from its toe. Chipped length will be the portion where tongue rail has worn out for a depth of more than 10 mm over a continuous length of 10 mm.
3. Throw of switch, Squareness of tongue rails. (Straight switch: 95 mm, Curved switch: 115 mm, Thick web switch: 160 mm)
4. Proper housing of tongue rail against stock rail.
5. The gap between the top of the leading stretcher bar and bottom of stock rail should be between 1.5 mm to 5 mm.
6. Fittings of tongue rail & crossing are intact and effective.
7. Gauge and cross level.
8. Max permissible vertical wear at Actual Nose or wing rail of crossing: 10 mm.
   For reconditioning purpose on Rajdhani/ Shatabdi route; (1) Built up Xing: 6mm ,
   (2) CMS Xing: 8mm
9. Proper clearance of check rail opposite nose of crossing/ wing rail at nose of crossing.
   (1) 44 to 48 mm. (2) 41 to 45 mm for turnouts laid with 1673 mm gauge.
10. Proper packing is given in switch and crossing portion.
11. Extra shoulder ballast of 150 mm should be provided on outside of the turn-in curve.
12. Compliance of previous inspection.

Inspections	Periodicity	
	SSE/P.Way (in charge)	JE/SSE/ P.Way (sectional)
6. LWR / SEJ		
1) During two hottest and two coldest months.	Once in fortnight on rotation by SSE/P.Way (In-charge) and JE/SSE/P.Way (Sectional)	
2) Other than coldest & hottest months.	Once in two months on rotation by SSE/P.Way (In-charge) and JE/SSE/P.Way (Sectional)	

Items to be checked

1. Whether de-stressing is done at stipulated periods, date and temperature are recorded on LWR board.
2. The profile of the ballast section especially at pedestrian/ cattle crossings, curves, approaches of level crossings, points and crossings and bridges. Look out for kinks.
3. Conditions of SEJ i.e. tongue rail, stock rail, sleepers & fittings.
4. Gaps at SEJ and creep/movement at central portion of LWR/CWR.
5. Saw marks on the reference pillars at each SEJ & at the centre of LWR/ CWR, corresponding paint marks on the non-gauge face of the rail.

7. Track on Bridges		
1) The track on Bridges and approaches	Once in a year in a prescribed month before monsoon	---
2) Channel sleepers	Once in 6 months on rotation by SSE/P.Way (In-charge) and JE/SSE/P.Way (Sectional)	

Items to be checked

1. Rails including its fastenings, Creep and joint gaps.
2. Condition of steel Sleepers including its fittings.
3. Maximum Sleeper spacing centre to centre (600 mm), clear distance between joint sleepers not more than 200 mm.
4. Hook Bolts: - Position of arrows on top of the bolts should be at right angles to the rails pointing towards the rail.
5. Clearance between guard rail and running rail: 250± 50 mm.
6. Adequacy of side Pathways and Walkways.
7. PSC Sleepers for Guard rail & Bridge approaches;

   (1) For 60 kg UIC /52 kg running rail & 60 kg UIC /52 kg/90R guard rail on bridge approaches. (RT: 4088-4097)

   (2) Wider PSC sleepers for 25T axle load for BG 60kg (UIC) running rail and 60 kg (UIC) guard rail on bridge approach. (RT-8672-8680)
8. Date of last painting of girder.

Inspections	Periodicity	
	SSE/P.Way (in charge)	JE/SSE/ P.Way (sectional)
8. AT Welding Site	At least once each welding team in a month	---

Items to be checked

1. Availability of complete T & P and consumables at site.
2. Portions details: (1) Manufacturer (2) Date of manufacture (3) Condition of polythene packing Sealed/Broken (4) Condition of portion Wet/Dry (5) Portion no. & UTS.
3. Welding Team including Skilled Artisan.
4. Competency for technique to be used & is valid competency certificate.
5. Details of Rails being welded:

   (1) Section & UTS (2) Old or new, If old then GMT carried out (3) Rail is free from corrosion or excess wear (4) Rails has been USFD tested before welding. (5) Condition of rails Good/ Satisfactory/ Not Satisfactory.
6. Condition of Rail ends: (1) Battering (2) Hogging (3) End cuts are truly vertical (4) Ends are cleaned by K-oil & wire brush (5) Fish bolt holes have been eliminated or not.
7. Traffic Block Time: Minimum 70-75 minute duration, depending upon the type of preheating technique adopted.
8. Gap in mm: 25 ± 1 mm.
9. The two rail ends, after alignment with 1m straight edge: (1) Lateral : ± 0.5 mm, (2) Higher by (i) For 72 UTS: 3 to 4 mm (ii) For higher UTS (2 to 2.4 mm)
10. Fastening of 5 adjacent sleepers removed.
11. Mould shoes are fixed correctly (Should be perfectly vertical shall not be skew).
12. Pressure in preheating arrangement.

    (1) Air- Petrol: 7 ± 0.70 kg/cm^2; (2) Compressed Air-Petrol: 0.2 to 0.3 Kg/cm^2.

    (3) Oxy- LPG: oxygen and LPG cylinders shall be adjusted in the range of 7.0-8.0 kg/cm^2 and 2.0-2.5 kg/cm^2 respectively.

13. Preheating time (in minutes)

    (1) Air- Petrol Pre-heating: 10 to 12 (2) Compressed Air-Petrol: 4 to 5.5

    (3) Oxy- LPG Pre-heating: 2 to 2.5

14. Tapping time in seconds (20 ± 3).
15. Mould waiting time (4-6 minutes).
16. Trimming is done by Weld trimmer.
17. Grinding is done with the help of Mechanical grinder.
18. Wedges were removed after 20 minutes.
19. Visual Inspection of weld (All the welded joints shall be cleaned and examined carefully to detect any visible defect like cracks, blow holes, shrinkage, mismatch, surface finish (smooth surface finish required) etc.
20. Tolerances of finished weld: (1) Vertical alignment with 1m straight edge (+1.0, -0.0 mm)

    (2) Lateral alignment with 1 m straight edge (± 0.5mm)

    (3) Finishing of top surface at the end of 10 cm straight edge (+0.4, -0.0 mm)

    (4) Finishing on sides of Rail head at the centre of 10 cm straight edge (± 0.3mm)

21. First train was passed after 30 minutes have elapsed since pouring of weld metal with restricted speed.
22. Weld is serially numbered.

Inspections	Periodicity	
	SSE/P.Way (in charge)	JE/SSE/ P.Way (sectional)
9. USFD Test check *(Minimum two hours during regular trolley inspection)*	Monthly	---

Items to be checked

1. Check on sensitivity settings and Calibration setting. Sensitivity setting of machine last done and gain level employed.
2. Quality of testing:

   (1) Cross-Check on testing Work. Check of last days/week/month work (Comparison with last round testing done by SSE/JE (P WAY)/ (USFD)

   (2) Checking of IMR/DFWR of Rails/Welds.

3. Availability of Requisite Tools & plants.
4. General up-keep of machine and trolley.

10. Night Inspection	Once in a month	---

Items to be checked

1. Gateman at Level crossings & watchman at vulnerable locations are alert, vigilant and in proper uniform.
2. They are looking for hot axle, spring breakage, hanging parts and other dangerous conditions on the through passing trains.
3. Loco Pilot and Guard are looking for danger signals from the gateman/watchman.

Inspections	Periodicity	
	SSE/P.Way (in charge)	JE/SSE/ P.Way (sectional)
11. Monsoon Patrolling	Once in a month	Once in fortnight by train and inspection by trolley- as per the schedule laid down by administration.
Items to be checked 1. Presence of monsoon patrolman as per the patrol chart. 2. Equipments of monsoon Patrolman. 3. Knowledge of Rules and Signals of patrolman. Protection of track and secure safety of trains in case of obstruction. 4. Patrol Books 5. Knowledge drilling to patrolman for action taken when damage is observed.		
12. Hot Weather Patrolling *When introduced*	Once in a month	---
Items to be checked 1. The work of Patrolman during day time (preferably between 12:00 to 16:00 hrs.) either by Train/Push trolley/Motor Trolley. 2. Knowledge of Rules and Signals of patrolman. Protection of track and secure safety of trains in case of buckling, rail fractures, or any abnormal behavior of track. 3. Knowledge drilling to patrolman for action taken when obstruction is observed.		
13. Night foot plate inspection		
Inspection should preferably be done between 00.00 hours to 04.00 hours.	Once in a month	
Items to be checked Alertness of Gateman /Station staff, Patrolmen, Stationary watchmen, observance of speed limits by Loco Pilots, visibility of signals/ engineering fixed signals/ hectometre posts, riding quality etc.		
14. Bridge Inspection		
All Bridges in a prescribed month before monsoon.	Once in a year	---
Items to be checked 1. The track and approaches of all bridges. 2. Run off frames and foot-paths over bridges, if any. 3. Obstruction to water ways, if any.		
15. Tunnels		
All tunnels after monsoon *(Tunnels condition which warrants special attention to be inspected more frequently)*	Once in a year	---
Items to be checked 1. The track and approaches: – track Parameters, condition of track fittings and their tightness. 2. Drainage: – Clean and function satisfactorily.		

3. Refuges: – well maintained and free of vegetation and other growth.
4. Any infringements in moving dimension.
5. Lighting equipment and special tools with the maintenance gang. (1002 of IRBM)
6. Any loose boulders at tunnel approaches.
7. Catch water drains on the approaches and on the top of tunnel.
8. Side drain and drainage inside the tunnel.

Inspections	Periodicity	
	SSE/P.Way (in charge)	JE/SSE/ P.Way (sectional)
16. Cutting		
1) Immediately after monsoon.	Once in a year	---
2) Before monsoon.	---	Once in a year

Items to be checked

1. The track and approaches - track Parameters, condition of track fittings and their tightness.
2. Drainage – Clean and function satisfactorily.
3. Refuges – well maintained and free of vegetation and other growth.
4. Any loose boulders at cutting.
5. Any tree is precariously standing on the top of approach cutting and slopes.
6. Catch water drains on the approaches and on the top of cutting.
7. Side drain and drainage inside the cutting.
8. Condition of ballast walls, where provided in cuttings including cleaning of weep holes.

17. Private Siding	Once in Six months	Once in Three months

Items to be checked: Condition of track for safe running of trains.

18. Inspection of Land Boundary and Encroachment		
1) Land Boundary	Once in a year	---
2) Encroachment	Once in Three months	---

The SSE/ (P. Way) shall inspect and maintain the Railway land boundaries between stations and at unimportant stations. Para 813 (C) of IRWM.

Items to be checked

Item to be checked: Details of missing boundary stones between kilometers shall be entered in Proforma for 'Land Boundary Verification Register' as Proforma given below as per Annexure 8.1(a) of IRWM.

Details of boundary stones between kilometre.....and.....

Date of Inspection	Detail of missing boundary stone	
	L	R

Inspections	Periodicity	
	SSE/P.Way (in charge)	JE/SSE/ P.Way (sectional)
19. Side drains, catch water drains, bridge waterways	Once in a Year before onset of monsoon.	Once in a year in the month of April prior to monsoon.
Items to be checked: Condition of drains and obstruction in water way, if any.		
20. Accompanying TRC/OMS Run	Each Run	----
21. Small Track Machines	Once in Three months	---
22. Work of Other Organization like RVNL, DFCCIL, Construction etc.	As much as possible during Foot plate/Trolley Inspection	
Items to be checked 1. Quality of on-going work and safety of the running trains on adjacent lines. 2. Presence of competent Railway's & Contractor's Supervisors at site. 3. Proper fencing between railway track and work site. 4. Execution of work as per approved drawings. 5. Any deficiency in the work executed should be conveyed to concerned organization in writing for rectification. 6. Provision of proper drainage and trolley refuge, if required. 7. Protection of worksites be rechecked for correct locations of caution boards, flagmen, etc.		
23. Inspection of washable apron	Once in three months on rotation basis by SSE/P.Way (In-charge) and JE/SSE/P.Way (Sectional)	
Items to be checked 1. Condition of rails, sleepers, rubber pads, insulated liners, ERC, glued joints and rail joints. 2. Cleanliness on track. 3. Obstruction in drains. 4. Track parameters and missing fittings.		
24. Inspection of Yard lines (All yard lines)	Once in six months on rotation basis by SSE/P.Way (In-charge) and JE/SSE/P.Way (Sectional)	
Items to be checked 1. Condition of track and its fittings & fastenings. 2. Obstruction in drains. 2. Track parameters and missing fittings. 4. Cleanliness & tidiness of yard.		
25. Sand humps and dead end (All sand humps and dead end)	Once in a month on rotation basis by SSE/P.Way (In-charge) and JE/SSE/P.Way (Sectional)	
Items to be checked 1. Condition of track & fittings up to 18 m from ANC. 2. In further 30 m length: brick work, clean course sand filling up to 85 mm over rail head. 3. Earth filling from end of the brick work up to the end in 30 m length with 4 m width and having side slope of 1 in 1.5. 4. Not be obstructed for any purpose.		
26. Joint Inspection with S&T Department		
1) Points & Crossings	Once in three months on rotation basis by SSE/P.Way (In-charge) and JE/SSE/P.Way (Sectional)	
2) Inspection of insulated Steel Sleepers on bridges	Once every six months on rotation basis by SSE/P.Way (In-charge) and JE/SSE/P.Way (Sectional)	

Items to be checked

1. Conditions of slide chair, stretcher bars, sleepers and fastening.
2. Condition of ballast & drainage.
3. Condition of tongue and stock rails like worn out /damaged.
4. Housing of Switch rail against stock rails.
5. Level and packing of point portion.
6. Gap between stretcher bar and bottom of the rail.
7. Percentage of missing liners for track circuit length not to exceed 3%. (Para 17.3.9 of IRSEM)
8. The point machine for tightness and free from rust & dirt. Cleaning, graphite/oiling of slide chairs and assembly up to 3 sleepers from the toe of switch by Signal staff. (Annexure: 19-MS2 of IRSEM)
9. The insulation of Gauge tie plate, all stretcher bars, P/D brackets & driving lug for damaged/broken.
10. Function of lock detection with & without test piece.
11. Squareness of lock rod with reference to split stretcher bar. Squareness of Ground connections.
12. Condition of lock and detection where provided.
13. Whether pin snug fit in D bracket and ground connection without hammering.
14. Condition of insulated rail joints.

Inspections	Periodicity	
	SSE/P.Way (in charge)	JE/SSE/ P.Way (sectional)
27. Inspection of Track Machine		
When working in section	During supervision of pre-block, during block and post-block works, but not less than once a week.	

1. Pre Block Inspection:- (Para 115 (1) (a) of IRTMM)

1) Staff accommodation/facilities.
2) Infrastructural facilities like sidings, rest house, water supply and electrical connection etc.
3) Knowledge of safety rules of MCM, TMM & machine assistants.
4) Working of emergency backup system for clearing block in case of machine failure.
5) Adequate safety of staff working in block section against danger of incoming trains on adjacent lines.

2. During Block Inspection:- (*Para 115 (1) (b) of IRTMM*)

1) Inspecting officials shall inspect working of the machine(s) and safety precautions and practices observed, during traffic block in addition to attention to pre-requisites, works to be done during and post machine-working activities.
2) Tamping parameters: - (*Para 206 of IRTMM*)

i. Condition of tamping tools: Tools with more than 20% wear of the original surface area should not be used,

ii. Tamping depth: Desirable gap between top edge of the tamping tool blade and bottom edge of sleeper 15-20 mm,

iii. Squeezing time: (0.8 to 1.2 second),

iv. Squeezing pressure: Plain track: 110-120 Kg/cm^2, Pts & xing (PSC): 125-135 Kg/cm^2

v. Vibration pressure: (150-210 Kg/cm^2)

vi. General lift: 20-50 mm

vii. Ramp in and ramp out: 1 in 1000

viii. Slew, versine values, SE etc.

ix. Tamping quality.

3. **Post Block work: –** As detailed for various machines in IRTMM.

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REFERRENCE

IRPWM-2020 (Corrected Upto ACS-16), IRBM (Corrected upto ACS-40), IRWM (Corrected upto ACS-11), USFD Manual-2022 (Corrected upto ACS-1), Manual for Fusion welding of Rails by AT process-2022, Manual for FB welding of Rails (Corrected upto ACS-02), IRTMM (Corrected upto ACS-02), IRSOD & IRSEM.

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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 Utilization.

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

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