

**SUMMARIZED OBSERVATION OF ZONAL RAILWAYS:**

**A. Robel Clamp:** For conducting the field trial on nominated Zonal Railways, nodal Railway has procured 120 nos. of Robel clamps. The field trials of Robel clamps (Ver. 13 & Ver. 06) has been conducted on Western Railway (WR), Northern Railway (NR) and North Central Railway (NCR). The details are as under:

**1. Western Railway:** Western Railway conducted field trials of 07 **nos.** High performance-Robel Clamp in Ratlam and Ahmedabad divisions. The details of the trials are as under:

**A. Ratlam Division:** The division conducted the field trials of Robel clamps Ver. 13 & Ver. 06 for IR fishplate drawing nos. RDSO/T-5916 (1000mm, 60kg) & RDSO/T-5915 (1000mm, 52kg) respectively. The details are as under:

- 1. Performance report of 02 nos. clamps under SSE/P.Way/RTM:**  
Submitted the performance report of field trials of Ver. 13 with RT-5916 at MRN Yard for 30kmph on L/L Track and subsequently on M/L for speed potential of 30kmph & 50kmph respectively at section GDA-RTM. Satisfactory performance has been shared.
- 2. Performance report of 01 nos. clamps under SSE/P.Way/JAO:**  
Submitted the performance report of field trials of Ver. 06 with RT-5915 at DHWS Yard for 30kmph on L/L Track and subsequently on M/L for speed potential of 30kmph & 50kmph respectively at NLI Yard. Single long version 06 of Robel clamp has been used during field trial in rail joint. Satisfactory performance has been shared.

**B. Ahmedabad Division:** The division conducted the field trials of Robel clamps Ver. 13 & Ver. 06 for IR fishplate drawing nos. RDSO/T-5916 (1000mm, 60kg) & RDSO/T-5915 (1000mm, 52kg). The details are as under:

- 1. Performance report of 02 nos. clamps under SSE/P.Way /DHG:**  
Submitted the performance report of field trials of Ver. 13 with RT-5916 at SUK Yard for 30kmph on L/L Track and subsequently on M/L for speed potential of 30kmph & 50kmph respectively at section DHG-MALB. Performance has been shared with observation for 50kmph as 'Outer fishplate displaced about 55 mm w.r.t. inner fishplate towards traffic direction, even torque was intact.' It is considered as 'un-satisfactory' for speed potential of 50kmph as major shifting of fishplate is reported.
- 2. Performance report of 02 nos. clamps under SSE /P.Way /VG:**  
Submitted the performance report of field trials of Ver. 06 with RT-5915 at JKS Yard for 30kmph on L/L Track and subsequently on M/L for speed potential of 30kmph & 50kmph respectively at section BKD-JKS. Satisfactory performance has been shared.

**2. North Central Railway:** North Central Railway conducted field trials of 08 **nos.** High performance-Robel Clamp in Prayagraj division. The details of the trials are as under:

1965597/2024/Track-I  
**A. Prayagraj Division:** 2024/Track-I/8(1)/HPRC The division conducted the field trials of Robel clamps Ver. 13 & Ver. 06 for IR fishplate drawing nos. RDSO/T-5916 (1000mm, 60kg) & RDSO/T-5915 (1000mm, 52kg) respectively. The details are as under:

1. **Performance report of 02 nos. clamps under SSE/ P.Way /ALJN:**  
 Submitted the performance report of field trials of Ver. 13 with RT-5916 at ALJN Yard for 30kmph on L/L Track and subsequently on M/L for speed potential of 30kmph & 50kmph respectively at section TDL-GZB. satisfactory performance has been shared with observation as "50mm inner plate shift in 12hrs".
2. **Performance report of 02 nos. clamps under SSE/ P.Way/ ALJN:**  
 Submitted the performance report of field trials of Ver. 06 with RT-5915 at ALJN Yard for 30kmph on L/L Track and satisfactory performance has been shared.  
  
*However, due to non-availability of 52 kg section for Main Line track, trials could not been conducted for speed potential 30 & 50kmph.*
3. **Performance report of 02 nos. clamps under SSE/ P.Way/ Churk:**  
 Submitted the performance report of field trials of Ver. 06 with RT-5915 at LUSA Yard for 30kmph on L/L Track and satisfactory performance has been shared. Further, Trials for speed potential of 30 & 50kmph completed and reported satisfactory performance.
4. **Performance report of 02 nos. clamps under SSE/ P.Way/ Chunar:**  
 Submitted the performance report of field trials of Ver. 13 with RT-5916 at LUSA Yard for 30kmph on L/L Track and Satisfactory performance has been shared. Further, Trials for speed potential of 30 & 50kmph completed and reported satisfactory performance.

**3. Northern Railway:** Northern Railway conducted field trials of 04 nos. High performance-Robel Clamp in UMB and DLI divisions. The details of the trials are as under:

**A. Ambala Division:** The division conducted the field trials of Robel clamps Ver. 13 for IR fishplate drawing nos. RDSO/T-5916 (1000mm, 60kg). The details are as under:

1. **Performance report of 02 nos. clamps under SSE/ P.Way/ RPJ:**  
 Submitted the performance report of field trials of Ver. 13 with RT-5916 at RPJ Yard for 30kmph on L/L Track and subsequently on M/L for speed potential of 30kmph & 50kmph respectively at section UMB-LDH. Satisfactory performance has been shared.

**B. Delhi Division:** The division conducted the field trials of Robel clamps Ver. 13 for IR fishplate drawing nos. RDSO/T-5916 (1000mm, 52kg). The details are as under:

1. **Performance report of 02 nos. clamps under SSE/ P.Way/ FDB:**  
 Submitted the performance report of field trials of Ver. 13 with RT-5916 at FDB Yard for 30kmph on L/L Track and subsequently for speed potential on M/L track for 30kmph & 50kmph respectively. Satisfactory performance has been shared.

2024/Track-I/8(1)/HPBC  
 1965597/2024/Track-I-1 **Performance report of 02 nos. clamps under SSE/ P.Way/ HNZN:**  
 Submitted the performance report of field trials of Ver. 06 with RT-5915 at L/L track for 30kmph and subsequently for speed potential on M/L track for 30kmph & 50kmph respectively. Satisfactory performance has been shared.

**B. Codiun Clamp:** For conducting the field trial on nominated Zonal Railways, nodal Railway has procured 108 nos. of Codiun clamps. The field trials of Codiun clamps (MK-8 & MK-2) have been conducted on South Central Railway (SCR), South East Central Railway (SECR) and East Central Railway (ECR). The details are as under:

**1. South Central Railway:** South Central Railway conducted field trials of **30 nos.** High performance-Codiun Clamp in Hyderabad and Secunderabad divisions. The details of the trials are as under:

**A. Hyderabad Division:** The division conducted the field trials of Codiun clamps MK-8 for IR fishplate drawing nos. RDSO/T-5551 (490mm, 52kg), RDSO/T-3714 (1100mm, 60kg), RT-5915 (1000 mm, 52kg) and MK-2 for RDSO/T-5848 (686mm, 52kg). The details are as under:

**1. Performance report of 14 nos. clamps under SSE/ P.Way/ MED:**  
 Submitted the performance report of field trials of MK-8 with RT-5551, MK-8 with RT-3714(60kg) & MK-2 with RT-5848 at AKE yard and MK-8 with RT-5915 (two locations) & MK-2 with RT-5848 at MZE yard for 30kmph and subsequently on M/L for speed potential of 30kmph & 50kmph respectively at section MED-MOB & CVB respectively. Satisfactory performance has been shared with gap variation 06-14mm with variation of temperature in the free joint.

**B. Secunderabad Division:** The division conducted the field trials of Codiun Clamps i.e., MK-8 for use with fishplate drawing no. RDSO/T-5551 (490mm, 52kg), RDSO/T-3714 (1100mm, 52kg), RT-5915 (1000 mm, 52kg) & RDSO/T-5849 (686mm,60kg) and MK-2 with RDSO/T-5848 (686mm,52kg). The details are under:

**1. Performance report of 08 nos. clamps under SSE/ P.Way/ GT:**  
 Submitted the performance report of trials of MK-8 with RT-3714 (60 kg) & RT-5849 at GT & GT yard (BG-WP) and BN & BN Yard for 30kmph for period of 7 days and subsequently on M/L for speed potential of 30kmph(3days) & 50kmph(7days) respectively. Satisfactory performance has been reported with gap variation of 03-16mm & 03-12mm with variation of temperature in the free joint at GT Yard and BN Yard respectively. With the performance report the respective has suggested as *"While opening of outer nut sometimes inner nut also moves so I recommend to use a normal D spanner (36size) in inner nut while opening outer nut of clamp."*

**2. Performance report of 08 nos. clamps under SSE/ P.Way/ LPI:** The details of performance report are as under:

a) Submitted the performance report of field trials of MK-8 with RT-5850 at LPI for speed potential of 30kmph for a period of 7 days on L/L (160/41) track. In the performance "Nut seized" has been reported and further stated that "after pouring the oil given by the agency problem

1965597/2024/Track-I

resolved". And report of MK-8 with RT-5551 at LPI submitted as satisfactory performance for speed potential of 30kmph on L/L (160/39) track. No report submitted for MK-8 with RT-5850 & RT-5551 for M/L track with speed potential of 30kmph & 50kmph.

However, trial on RT-5851 and RT-5849 has been conducted on M/L (147/17 & 147/18) track and accordingly performance report have been submitted in continuation of RT-5850 & RT-5551 respectively. The details of performance report for RT-5851 & RT-5849 have been mentioned at **Para-c** & **Para-e** below respectively.

- b) Satisfactory performance report of MK-8 with RT-5850 & RT-5551 at SKP Yard has been submitted for 30 kmph for period of 7 days on L/L(140/12 & 140/10) track. No report submitted for MK-8 with RT-5850 & RT-5551 for M/L track with speed potential of 30kmph & 50kmph.

However, trial on RT-5851 and RT-5849 has been conducted on M/L (147/17 & 147/18) track and accordingly performance report have been submitted in continuation of RT-5850 & RT-5551 respectively.

The details of performance report for RT-5851 & RT-5849 have been mentioned at **Para-d** & **Para-e** below respectively.

- c) In continuation to Para-a above, satisfactory performance report of MK-8 with RT-5851 at NPL-SKP for speed potential of 30kmph for period of 3days on M/L (147/17) track has been reported with observation as "Clamp fixed in normal condition but during 50kmph caution order there is movement in fishplate, hence after 7 days both clamp is fixed in opposite direction and no movement in fishplates."

Subsequently, Satisfactory performance of MK-8 with RT-5851 for speed potential of 50kmph on M/L (147/17) for a period of 7 days. Satisfactory performance has been reported with observation as *"There is movement in fishplate on both side 3 days continuous (inner side 85mm, outer side 35mm), two times rectified in presence of agency, but again after some time there is movement in fishplate, hence in this location also clamp is fixed in opposite direction and **movement of fishplates stopped and no problem detected.**"*

- d) In continuation to **Para-b**, satisfactory performance for other location for MK-8 with RT-5851 for speed potential of 30kmph on M/L (147/18) track has been reported with remarks *"Both clamps fixed in opposite direction, no movement in fishplates detected."* Subsequently 50kmph performance has been reported on M/L (147/18) track as satisfactory for a period of 7 days.
- e) Performance report of MK-8 with RT-5849 for two locations (147/17 & 147/18) for M/L line for speed potential of 30 kmph for 3 days is reported as '**Satisfactory**' with remarks *"Both clamps fixed in opposite direction, no movement in fishplates detected."* Subsequently reported for speed potential of 50kmph on M/L (147/17 & 147/18) track for a period of 7days as **"Satisfactory"**.



## 2. South East Central Railway: 2024/Track-1/8(1)/HPRC

The Railway has conducted the field trials of 26 nos. Codiun Clamp on Bilaspur Division as detailed under:

A. **BSP Division:** The division conducted the field trials of Mk-8 with IR fishplate drawing no RT-5916 (1000 mm, 60kg). The details are under:

1. **Performance report of 02 nos. clamps under SSE/ P.Way/ RIG:**  
Submitted the satisfactory performance report of trials of MK-8 with RT-5916(1000 mm, 60kg) at BEF Yard for 30kmph on L/L (602/15) track for period of 7 days and subsequently on M/L (602/18) for speed potential of 30kmph (3days) & 50kmph (7days) respectively. Satisfactory performance has been reported with gap variation 03-15mm with variation of temperature in the free joint. With the performance report, it has also been suggested as *"While opening of outer nut sometimes inner nut also moves so I recommend to use a normal D spanner (36size) in inner nut while opening outer nut of clamp."*
2. **Performance report of 02 nos. clamps under SSE/ P.Way/ CPH:**  
Submitted the satisfactory performance report of trials of MK-8 with RT-5916 at CPH Yard for 30kmph for period of 7 days on L/L (665/887) track and subsequently for speed potential of 30kmph (3days) on M/L (665/490) & 50kmph (7days) on M/L (666/70) track reported with gap variation 03-12mm with variation of temperature in the free joint.
3. **Performance report of 02 nos. clamps under SSE/ P.Way/ KRBA:**  
Submitted the satisfactory performance report of trials of MK-8 with RT-5916 at SRBA for 30kmph for period of 7 days on L/L track (687/13) and subsequently on M/L (688/05) for speed potential of 30kmph (3days) & 50kmph (7days) with remarks as *"Clamps are in the same direction in all the locations i.e. outside of the track. The clamps are not in loosen condition in this trial and no reduction observed in the torque. No movement observed in the fishplate also. But the variation in gaps in the free joints is from 3mm-15mm."*
4. **Performance report of 02 nos. clamps under SSE/ P.Way /BSP:**  
Submitted the satisfactory performance report of trials of MK-8 with RT-5916 at BSP (BSP-DPH) for 30kmph for period of 7 days on L/L (719/01) track and subsequently on M/L (719/25) for speed potential of 30kmph (3days) & 50kmph (7days) reported with observation as *"While fixing HPRC made gap of 6mm and after that gap was varied from 6-13mm according to temperature variation & while opening of outer nut sometimes inner nut also moves to open along with outer nut."*
5. **Performance report of 02 nos. clamps under SSE/ P.Way/ KGB:**  
Submitted the satisfactory performance report of trials of MK-8 with RT-5916 at KGB Yard (KGB-KLTR) for 30kmph for period of 7 days on L/L (750/17) track and subsequently on M/L (747/16) track for speed potential of 30kmph (3days) & 50kmph (7days) reported with observation as *"Clamps are fixed in the running track. The clamps are not in loosen condition in this trial and no reduction observed in the torque. No movement observed in the fishplate also. But the variation in gaps in the free joints is from 04mm-13mm."*
6. **Performance report of 02 nos. clamps under SSE/ P.Way/ PND:**  
Submitted the satisfactory performance report of trials of MK-8 with RT-

1965597/2024/Track-1  
 5916 at PND yard (PND-SBRA) for 30kmph for period of 7 days on L/L (818/31) track & reported as satisfactory performance and subsequently on M/L (818/02) track for speed potential of 30kmph (3days) & 50kmph (7days) & reported the performance with observation *"Shifting of FP observed during field application when rails were undergoing expansion and contraction either of fishplate were displacing from their original position & After passing of 3 days of application of torque on the bolts were found loose. Hence the fishplate and clamp are refastened with the application of suitable torque-400N-m."*

7. **Performance report of 02 nos. clamps under SSE/ P.Way/ APR:**  
 Submitted the satisfactory performance report of trials of MK-8 with RT-5916 at APR Yard for 30kmph for period of 7 days on L/L (869/32) track and subsequently for speed potential of 30kmph (3days) on M/L (869/07) & 50kmph (7days) on M/L (869/26) track reported with observation as *"Nut of the Codiun clamp got jammed two times during opening after 1st stage and 2nd stage trial, which was attended by HPRC representative."*
8. **Performance report of 02 nos. clamps under SSE/ P.Way/ SDL:**  
 Submitted the satisfactory performance report of trials of MK-8 with RT-5916 at SDL Yard (SDL-NGP) for 30kmph for period of 7 days on L/L (910/14) track and subsequently for speed potential of 30kmph (3days) on M/L (906/24) & 50kmph (7days) on M/L (909/16) track reported with observation as *"Clamps are fixed in the same direction in all the locations i.e. outside of the track. The clamps are not in loosen condition in this trial and no reduction observed in the torque. No movement observed in the fishplates also. But the variation in gap in the free joints is from 03-15mm."*
9. **Performance report of 02 nos. clamps under SSE/ P.Way/ BJRI:**  
 Submitted the satisfactory performance report of trials of MK-8 with RT-5916 at BJRI yard (HRV-KTMA) for 30kmph for period of 7 days on L/L(916/17) track and subsequently for speed potential of 30kmph (3days) & 50kmph (7days) on M/L (900/10) track reported with observation as *"Clamps are fixed in the same direction in all the locations i.e. outside of the track. The clamps are not in loosen condition in this trial and no reduction observed in the torque. No movement observed in the fishplates also. But the variation in gap in the free joints is from 03-13mm."*
10. **Performance report of 02 nos. clamps under SSE/ P.Way/ MDGR:**  
 Submitted the satisfactory performance report of trials of MK-8 with RT-5916 at UKR Yard for speed potential of 30 kmph for period of 7 days on L/L (938/4) track. Subsequently, for the speed potential of 30 kmph for a period of 3 days on M/L (926/44) at section BRND-UKR and further for the speed potential of 50 kmph for period of 7 days on M/L(943/16) track at section of MDGR-CHRM reported with remarks as *"Clamps are fixed in the same direction in all the locations i.e. outside of the track. The clamps are not in loosen condition in this trial and no reduction observed in the torque. No movement observed in the fishplates also. But the variation in gap in the free joints is from 03-7mm."*
11. **Performance report of 02 nos. clamps under SSE/ P.Way/ HGR:**  
 Submitted the satisfactory performance report of trials of MK-8 with RT-5916 at HGR for speed potential of 30kmph for period of 7 days on L/L (568/10) track and subsequently for speed potential of 30kmph (3days) on M/L (547/32A) & 50kmph (7days) on M/L (550/28N).

1965597/2024/Track-1  
 12. **Performance report of 02 nos. clamps under SSE/ P.Way/ BRJN:**

Submitted the satisfactory performance report of trials of MK-8 with RT-5916 at IB yard for 30kmph for period of 7 days on L/L (IB Yard 3rd Line) track and subsequently for speed potential of 30kmph (3days) on M/L (525/16A) & 50kmph (7days) on M/L (544/22) track reported with observation as "After getting initial issue in Nut of clamps, firm attended the issue and rectified. Further observed satisfactory 30kmph(L/L), 30 kmph(M/L) and in case of 50kmph a little creep observed inside fishplate & attended by firm & rectified and working further found satisfactory report"

13. **Performance report of 02 nos. clamps under SSE/ P.Way/ UMR:**

Submitted the satisfactory performance report of trials of MK-8 with RT-5916 at RPD for 30 kmph for period of 7 days on L/L (1013/14) track and subsequently for speed potential of 30kmph on M/L (1016/07) for period of 3 days.

Further, trial has been conducted for speed potential of 50kmph on M/L (1015/27 & 1016/21) for period of 8 days at section RPD-JLW. Satisfactory performance has been reported for the trials.

**3. East Central Railway:** The Railway has conducted the field trials of **8 nos. Codiun clamps** on Sonapur (SEE) and Pt. Deen Dayal Upadhyay (DDU) Divisions. The details are as under:

**A. SEE Division:** The division conducted the field trials of MK-8 with IR fishplate drawing no RT-5915 (1000 mm, 52kg) and MK-2 with RT-5848 (686 mm, 52kg). The details are under:

1. **Performance report of 02 nos. clamps under SSE/ P.Way /SEE:**

Submitted the performance report of field trials of MK-8 with RT-5915 at HJP Yard for speed potential of 30 kmph for period of 7 days on L/L(266/39) track and performance reported as "Shifting of fishplate toward traffic direction: (i) 3mm(inner side) & (ii) 5mm(outer side) and further suggested that While opening of inner nut moves during opening of outer nut so additional spanner is required." Subsequently for speed potential of 30kmph (3days) & 50kmph (7days) on M/L (4004/HJP) of 2.1<sup>0</sup> curve at section HJP-GWH. The performance reported as "Shifting of fishplate toward traffic direction: (i) 12mm(inner side) & (ii) 40 mm(outer side) & Shifting of HPRC Clamp: (i) 5mm GWH end (ii) 25 mm HJP end and further suggested that while opening of inner nut moves during opening of outer nut so additional spanner is required." It is considered as '**un-satisfactory**' for speed potential of 30 & 50 kmph as shifting of fishplates and clamps are reported.

2. **Performance report of 02 nos. clamps under SSE/ P.Way /SEE:**

Submitted the performance report of field trials of MK-2 with RT-5848 at HJP Yard for speed potential of 30 kmph for period of 7 days on L/L ( 266/39) track and performance reported as "Shifting of fishplate toward traffic direction: (i) 5mm(inner side) & (ii) 7mm(outer side) and further suggested that While opening of inner nut moves during opening of outer nut so additional spanner is required." Subsequently for speed potential of 30kmph (3days) & 50kmph (7days) on M/L (4004/HJP) of 2.1<sup>0</sup> curve at section HJP-GWH. The performance reported as "Shifting of fishplate

1965597/2024/Track-I

2024/Track-I/8(1)/HPRC

toward traffic direction: (i) 25mm(inner side) & (ii) 10 mm(outer side) & Shifting of HPRC Clamp: (i)10mm GWH end(ii) 18 mm HJP end and further suggested that while opening of inner nut moves during opening of outer nut so additional spanner is required.” It is considered as ‘unsatisfactory’ for speed potential of 30 & 50 kmph as shifting of fishplates and clamps are reported.

**B. DDU division:** The division conducted the field trials of MK-8 with IR fishplate drawing no RT-5916 (1000 mm, 60kg) and RT-5849 (686 mm, 60kg). The details are under:

1. **Performance report of 02 nos. clamps under SSE/ P.Way/ CDMR:**  
Submitted the satisfactory performance report of field trials of MK-8 with RT-5916 at DDU-SSM for speed potential of 30 kmph for period of 7 days on L/L(657/1014) track and subsequently for speed potential of 30kmph (3days) & 50kmph (7days) on M/L (629/22) of straight track at section DDU-SSM with suggestion as “While opening of inner nut moves during opening of outer nut so additional spanner is required.”
2. **Performance report of 02 nos. clamps under SSE/ P.Way/ CDMR:**  
Submitted the satisfactory performance report of field trials of MK-8 with RT-5849 at DDU-SSM for speed potential of 30 kmph for period of 7 days on L/L (657/1014) track and subsequently for speed potential of 30kmph (3days) & 50kmph (7days) on M/L (629/22) of straight track at section DDU-SSM with suggestion as “While opening of inner nut moves during opening of outer nut so additional spanner is required.”



**FUNCTIONAL REQUIREMENT SPECIFICATION FOR HPRC CLAMPS****FUNCTIONAL REQUIREMENT SPECIFICATION(FRS) FOR HIGH PERFORMANCE RAIL CLAMP WITH STANDARD/JOGGLED FISH PLATE ON INDIAN RAILWAYS.**

1. EXISTING TRACK STRUCTURE ON INDIAN RAILWAYS:  
60Kg/ 52 Kg Rail laid on Pre-stressed Concrete Sleepers at sleeper density 1540/1660 nos. per km with elastic fastenings and ballast cushion of 300/350 mm on important Broad Gauge routes.
2. OPERATING CONDITIONS OF IR:
  - (i) Axle load and Speed
 

Traffic Type	Axle Load	Speed upto
Goods	25T	100 kmph
Passenger	20T	160 Kmph
  - (ii) Electric Traction (Minimum) : 25 KV AC.
  - (iii) Track Circuits : DC (2 – 6 volts) / AC 110V & AFTC
  - (iv) Gauge : Broad Gauge, Nominal (1676 mm)
  - (v) Ambient Temperature : (-) 5°C to 50°C.
  - (vi) Rail Temperature : (-) 15°C to (+) 76°C.
  - (vii) Humidity : Max. 100%
3. The clamping system with standard fish plate/joggled fish plate should be compatible with the existing track structure and operating conditions as given in 1 and 2 above. It should enable passing of trains at a higher speed.
4. The clamp should be made up of durable material so that the clamp is in usable condition for a minimum period of 8-10 years. The details of the material used in the manufacturing of the clamp shall be furnished. Reports of tests conducted on clamps relating to its quality, type of material, strength of material etc. shall be provided.
5. Clamp should be of compact design, lightweight with less maintenance and should be mounted directly on standard or joggled fish plate on rail /weld joint without drilling of a hole in the rail. The detailed installation procedure should be furnished along with dimensional drawings and pictures.
6. The firm would specify the clamping force for the system. The minimum clamping force for the complete system (including all the clamps) should not be less than 30 KN.
7. The jaw of the clamp may be connected by suitable arrangement to exert a requisite clamping force on fish /joggled fish plate such that the clamp is capable of fixing the rails to proper alignment.
8. The screw or nut of the clamping arrangement should be secured by some locking arrangement to protect from the loosening of clamps due to the movement of traffic.

Signature Not  
VerifiedDigitally signed by  
AMI CHAND  
Date: 2026.06.12  
17:06:03+05'30'  
Reason: IREPS-CRIS  
Location: New Delhi

Initial tightening torque and resulting clamping force for the arrangement shall be furnished.

9. The clamp should not lose the tightening torque by more than 20% of the initial tightening torque in 30 days, when put in service in running track. The frequency of inspection/maintenance of the system would be furnished. The corresponding nature of traffic and detailed items of inspection /maintenance would be furnished.
10. Minimum ballast excavation should be required in ballasted track and the system should also be usable on ballastless track. Mounting and dismounting of clamps should be easy. The clamp should also enable unhindered working of track machine.
11. Certificate for satisfactory performance in running track at a minimum speed of 50Kmph (100 Kmph desirable) from world railway networks, where it is in use, shall be provided along with track structure and operating conditions of that railway. The duration of use on that railway shall also be provided.

\*\*\*\*\*

Signature Not  
Verified

Digitally signed by  
AMI CHAND  
Date: 2026.06.12  
17:06:03+05'30'  
Reason: IREPS-CRIS  
Location: New Delhi