



# SECR'S POLICY COMPENDIUM

## SIGNAL & TELECOMMUNICATION 2.0

### 2025



#BharatKaKavach



## PROLOGUE

Ignorance is unnerving and **knowledge is all about knowing the things**. **Signalling** systems in Railways have undergone sea change over the time negotiating challenges to afford enormous augmentation in **traffic and high speed**. We accept ideas of signalling with a pinch of salt placing premium on safety. Without being abreast of latest developments and diktats on signalling matters, we often doubt veracity of our own understanding of the situation and refrain from preaching or performing. Incidences across Railways stare at us bearing testimony to perils of little or imperfect knowledge on signalling.

Experience, as such, led us to compile a handy compendium of policy circulars issued by various quarters, innovative endeavors by S&T/SECR, vital tips on sound construction practices etc. Maiden issue of the 'SECR compendium Signal & Telecom 1.0' was issued in year 2020 which became **quite ubiquitous a book** to lay hands on for ready reference. The 'checklist for new S&T installation', has come to be adopted all over SECR as a yardstick to evaluate quality of execution of works. S&T fraternity of SECR will remain indebted to our PCSTE, Shri S. K. Solanki, who has pioneered the idea and issue of this compendium during his incumbency as CSE/SECR.

It is incumbent upon us to revise the policy compendium by updating its contents addressing various addendum/corrigendum, latest policy guidelines/safety circulars issued by Railway Board/RDSO/S&T Hq etc in the intervening period and published as 'SECR's Policy Compendium Signal & Telecom 2.0'.

We convey our heartfelt appreciation of the meticulous effort put in by one and all from S&T/Hq office and congratulate them on publication of this edition.

All efforts have been made for a comprehensive revision of the compendium including all issues of relevance to present scenario of Signalling and Telecom matters on Railways. Suggestions for inclusion of any matter and modification to any provision contained herein are highly solicited and may be intimated to the office of PCSTE/SECR or can be mailed to [cse@secr.railnet.gov.in](mailto:cse@secr.railnet.gov.in) or [dycstesig@secr.railnet.gov.in](mailto:dycstesig@secr.railnet.gov.in) or [dycstednd@secr.railnet.gov.in](mailto:dycstednd@secr.railnet.gov.in). It is hoped that the officials dealing with various technical matters will find the compendium very useful. It will also come in handy for guidance of various construction agencies like RITES, IRCON, RVNL, CERL, CRCL, MRIDC, GSU, CONS etc who are executing major works on SECR.

We are indebted to our **GM**- Ms Neenu Ittyerah, **AGM**- Shri Vijay Kumar Sahu and **PCSTE**- Shri S.K. Solanki who kept us egging to do something more than routine. We are extremely grateful to all who directly or indirectly helped, encouraged and enabled us to roll out this revised version.

**TEAM S&T (Hq)**





**General Manager  
South East Central Railway**



**Foreword**

I am pleased to know that S&T department is publishing the compendium on the latest policies, rules, and regulations governing the Signal and Telecommunication (S&T) Department of the Indian Railways. This document is an essential resource for policymakers, engineers, and all stakeholders involved in ensuring the safe and efficient functioning of railway operations.

The Indian Railways, being one of the largest railway networks in the world, operates in a dynamic environment where safety, reliability, and efficiency remain paramount. The S&T Department forms the backbone of this operational excellence, enabling real-time communication, precise signalling, and robust technological interventions to meet the demands of increasing traffic and heightened safety expectations.

This document consolidates updated directives of the Railway Board and serves as a practical guide for engineers, supervisory staff, and policymakers to maintain compliance, enhance safety, and drive modernization efforts.

I commend the efforts of the PCSTE's team involved in compiling this exhaustive resource and hope it will serve as a cornerstone for advancing the objectives of the Signal and Telecommunication Department in achieving safer, smarter, and more efficient rail operations.

Neenu Ittyerah



## South East Central Railway



### MESSAGE

I congratulate Signal and Telecommunication Department for bringing out a comprehensive compendium of Zonal, Railway Board and RDSO policies which will be an asset for S&T Officers, Staff and for all others. It is hoped that this compendium will become a reference manual for working personnel in field.

It is also expected that the policies, guidelines for maintenance will be implemented by all sincerely so that our field assets are maintained well. This shall further improve reliability of fixed and communicating assets which are of prime importance in Railway Operations.

On this occasion, I wish the S&T Department 'All the Best' in their endeavour and expect many more such efforts in future.

शुभ कामनाओं के साथ

(VIJAY KUMAR SAHU)

AGM/ SECR

26/12/2024



## South East Central Railway



### MESSAGE

Signal engineering, as I understand, is all about the technology authorizing mobility of train vetted by deepest concerns for safety - obvious or visualised. All along its journey towards advancement for its adaptability to fast changing scenario, **safety stands out to be of paramount concern** besides the concern for reliability, availability and maintainability.

A mind with sound understanding of **Do's and Don'ts** of signaling and latest policy circulars issued by various quarters on the subject is truly productive in its sphere of management and maintenance. The mind filled with **ignorance and dark corners** is bereft of the zeal and will to contribute. With this conviction, the maiden issue, namely 'SECR's policy compendium 1.0', was issued in the year 2020 which came in handy for guidance of S&T staff working at every level for ready reference. It is a matter of great privilege for me to present the sequel, the refurbished version of the maiden issue, in the shape of '**SECR's policy compendium Signal & Telecom 2.0**' with enriched contents.

I, humbly, call upon every officer and supervisor of this department to keep one copy of this compendium at all times for guidance and pitch in with suggestions from time to time to maintain the dynamism of the process for its further enrichment.

With best wishes,

*S.K. Solanki*  
29/12/24  
(S.K Solanki)  
PCSTE/SECR

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# **SECR's Policies**



# दक्षिण पूर्व मध्य रेलवे SOUTH EAST CENTRAL RAILWAY



आपडेलन

प्रधान मुख्य संकेत एवं दूरसंचार इंजीनियर

द्वितीय चर

राष्ट्रिय जलन मुक्तालय बिल्डिंग

बिलासपुर-495004

Principal Chief Signal & Telecom Engineer

2nd Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)268059

Fax: (07752)415274

Policy Circular : 10/2020

Date : 20.07.2020

## Sub : Preparation of Detailed Project Plan (DPP) for major works

Construction and project units are executing very big projects without Detailed Project Planning. It is hereby decided that all works above 5 Cts Ls Gauge Conversion, New Line and Automatic Signaling, Modern Signaling, major yard remodeling will be commenced after preparation of Detailed Project Plan (DPP).

### Salient features of DPP will be as follows:

1. DPP will be prepared by executing authority (DyCSTE/Con or DyCSTE/Project) in consultation with SrDSTE of the division.
2. DPP will be made at the time of survey before commencement of work.
3. DPP will be signed by DyCSTE of the executing agency and SrDSTE of the division.
4. One Copy of the DPP will be sent to Hq.
5. The work will be executed as per the DPP and it will be incumbent upon sectional ADSTE to inspect it at minimum three stages - when 20% work is done, 50% work is done and 90% work is done.
6. SrDSTE will inspect as per his convenience, at least once during execution stage.
7. Joint inspection at JS/SS and JAG levels will be done at least 15 days in advance of SAG level inspection so that deficiencies are rectified by DyCSTE before inspection by SAG officers.
8. DPP will form a guiding document for the executing agency as well as O/L officials.
9. DPP can be modified as per latest policies and with mutual consent of executing agency and Open line.
10. DPP should contain all major items like new equipment/changes in existing equipment in indoor and outdoor, Service Building Plan, Power Supply Arrangement, Signal Plan, Cable Route, Equipment Disposition Plan, Indoor and Outdoor Wiring Plans, Schematic and drawings of each item, DO's and DON'Ts etc.
11. Checklist for new S&T installation issued by this office needs to be taken into cognizance while preparing DPP.

*(Signature)*

(एम. के. यादव M. K. Yadav)

प्रधान मुख्य संकेत एवं दूरसंचार इंजीनियर

राष्ट्रिय जलन मुक्तालय S.E.C. Railway, Bilaspur

No. SECR/S&T/Policy/433

Date : 20.07.2020

This policy circular is addressed to the following for strict adherence & compliance with immediate effect.

CSTE/Con/SECR, CSTE/Proj I & II/SECR, SrDSTE/Co & Line/BSP, SrDSTE/R & NGP, DyCSTE/RE/SC, GGM(S&T)/RITES/Gurgaon, CGM(S&T)/IRCON/New Delhi





दक्षिण पूर्व मध्य रेलवे  
SOUTH EAST CENTRAL RAILWAY



कार्यालय

प्रधान मुख्य संकेत एवं दूरसंचार इंजीनियर

द्वितीय तल

दपुनरे जंक्शन मुख्यालय बिल्डिंग

बिलासपुर-495004

Office of the  
Principal Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building,

Bilaspur-495004

☎ : (07752)260059

Fax : (07752)415274

Policy Circular : 07/2020

Date : 22.05.2020

**Sub : Standardization of outdoor cable to 6/12/24 core and 6 q jelly filled only.**

A wide variety of cables are being used in S&T department viz 6 Core, 12 Core, 19 Core, 24 Core, 30Core, 6 Quad cable etc. With the introduction of distributed EI, most of the burden of cables is being shouldered by OFC. OFC between goomty to goomty has reduced the consumption of copper cable by 50-60%. Further, directions for use of separate cables for detection and point operation has literally eliminated the use of 19 core cable. For ease of maintenance and better inventory management, it is incumbent upon us to reduce the number of cables used for signaling purpose.

Hence, it is decided that henceforth 6 Core, 12 Core, 24 Core (to be used sparingly in big yards only) and 6 Quad jelly filled cables shall only be used in all future works. No more procurement of any other copper cable will be done by any executive agency without prior approval of this office.

Use of cables for various purposes is illustrated in annexure.

(एम. के. यादव M. K. Yadav)

प्रधान मुख्य संकेत एवं दूरसंचार इंजीनियर

Principal Chief Signal & Telecom Engineer,

दपुनरे बिलासपुर S.E.C. Railway, Bilaspur

22/5/2020

No. SECR/S&T/Policy/2.19

Date: 22.05.2020

This policy circular is addressed to the following for strict adherence & compliance with immediate effect.

CSTE/Con/SECR, CSTE/Proj I & II/SECR, ED/S&T/RVNL, CGM/S&T/IRCON, GGM/S&T/RITES, SrDSTE/Co & Line/BSP, SrDSTE/R & NGP.

SN	Cable	Uses
a.	6-Core	<ol style="list-style-type: none"> <li>1. Track circuit tail cables from TLJBs to track feed/relay ends.</li> <li>2. Feeding of shunt signals and calling-ON signals from signal location to signal unit.</li> <li>3. Point detection circuit</li> <li>4. For automatic/distant signal, where only 2 inputs are required to be taken. (Refer Case Study IV, V dtd 02.07.18)</li> </ol> <p><b>Note: 6 Core cables not to be used for any other purpose than those mentioned above. Use of 6 core cable other than that for track circuit is for separation of feed of auxiliary signals from main signals.</b></p>
b.	12-Core	<ol style="list-style-type: none"> <li>1. Signal lighting circuit from goomty/center to signal location and from signal location to signal unit.</li> <li>2. Cutting in circuit for signals from goomty/center to signal location.</li> <li>3. 24V DC power and 18V DC for reset circuit for axle counter from goomty/center to axle counter location.</li> <li>4. 110V AC for track feed chargers.</li> <li>5. TPR circuit from track location to goomty/center.</li> <li>6. Crank handle circuit from goomty/center to Crank handle location.</li> <li>7. Any status exchange from goomtys to center to be taken on 12-Core cables.</li> <li>8. Point operation circuit from goomty/center to 'A' end of point.</li> <li>9. Point operation circuit from 'A' end of point to 'B' end of point.</li> </ol>
c.	24-Core	To be used sparingly (in big yards) where higher number of cores are required.
d.	6-Quad jelly filled	<ol style="list-style-type: none"> <li>1. Axle counter communication and reset box communication from goomty to axle counter location.</li> <li>2. ACPR, PPR circuits from axle counter location to goomtys.</li> <li>3. IB circuits.</li> <li>4. MSDAC and communication between stations and auto-goemty in Auto signaling.</li> <li>5. Block instrument/UFSBI communication from one station to other station.</li> <li>6. Other magneto telephone communications such as LC Gate telephone and IB Telephone.</li> </ol>



दक्षिण पूर्व मध्य रेलवे

SOUTH EAST CENTRAL RAILWAY



कार्यालय

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द्वितीय तल

दप्पुमरे जीनल मुख्यालय बिल्डिंग

बिलासपुर - 495004

Office of the

Principal Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur - 495004

Email: [csesecrbps@gmail.com](mailto:csesecrbps@gmail.com)

No. SECR/S&T/EI/Power supply schemes/IPS/754/

Date :09.10.2024

**CSTE/Con, CSTE/Project-I & II,  
CPM(GSU)/BSP, R & NGP,  
Sr. DSTE/Co/BSP, R & NAG,  
South East Central Railway.**

**Sub :** Schemes of Signalling Power supply for distributed EI Installations.

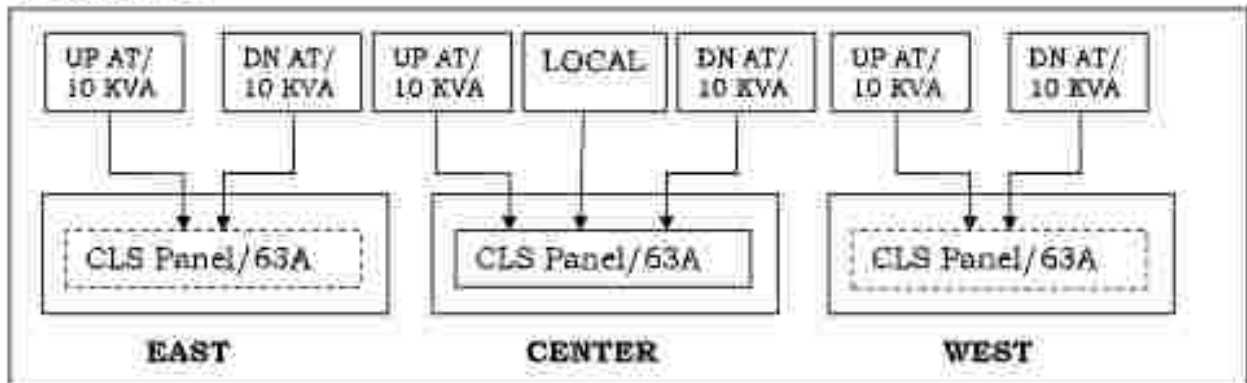
**Ref :** 1. Railway Board's letter no. 82/EEM/250/1 Part-3 E-3420012 dtd. 25.09.2023.  
2. This office letter no. SECR/ S&T/ EI / Power supply schemes/ IPS/ 954 dtd. 14.12.2023.

<<<<<<>>>>>>

Railway Board vide letter under reference-1, has communicated scheme of power supply for distributed EI installations for uniform implementation.

With inherent design of path diversification in distributed EI installations, extending selected supply itself from center to goomties through two different paths is more reliable an option than getting a direct supply from AT and another supply (selected) from center without path diversity. Therefore, the following 3 schemes in order of priority are recommended for uniform implementation:

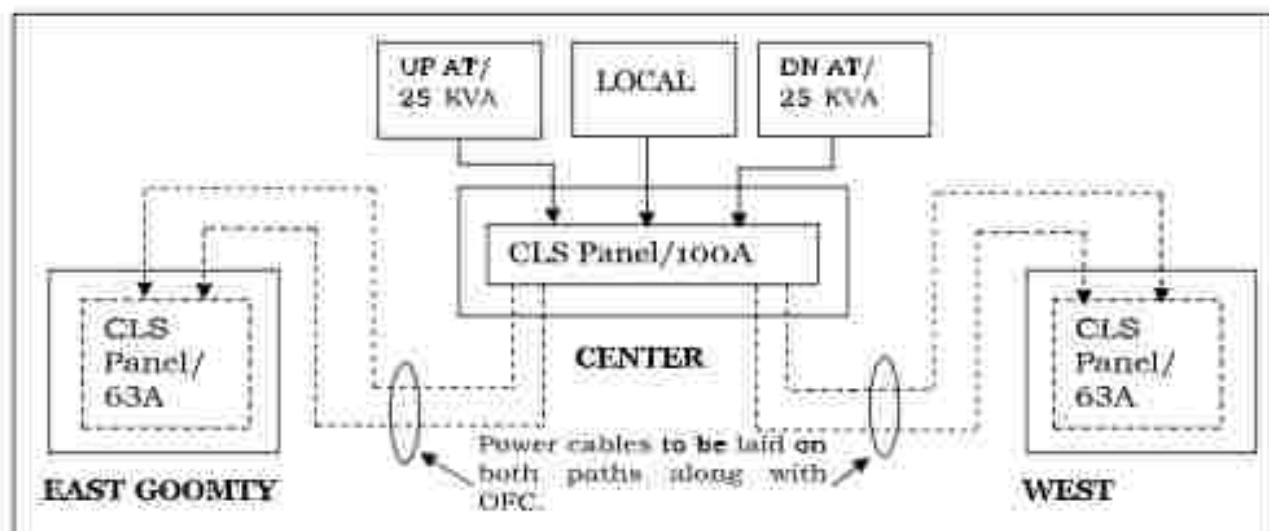
**PRIORITY-1**



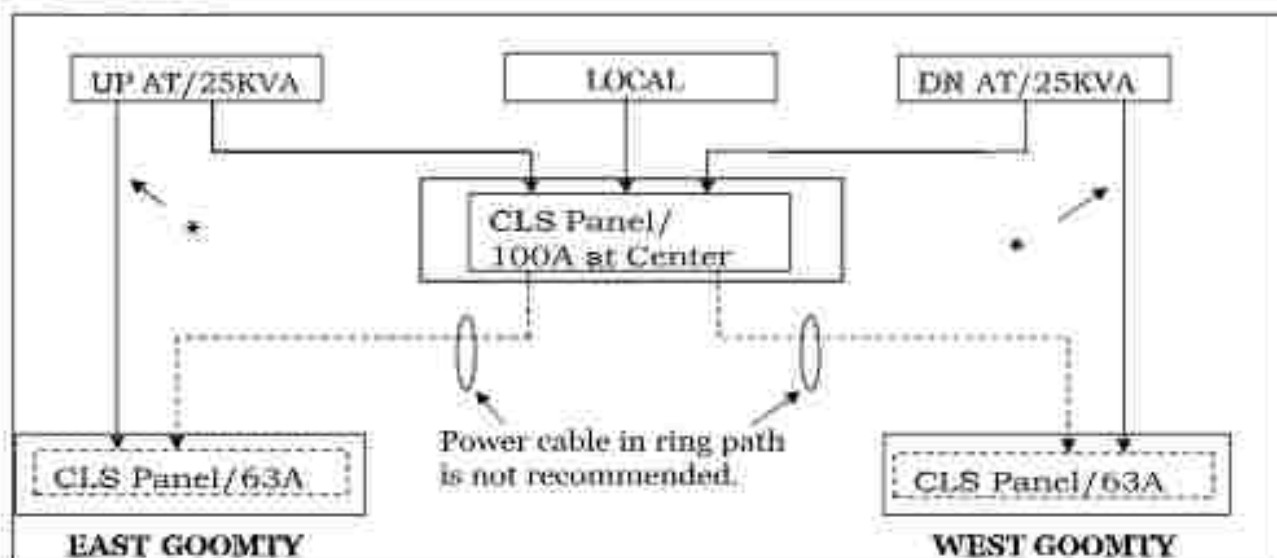
- This scheme is already in vogue as per HQ policy circular no. 06/2020.
- No power cable to be laid between center to goomties.



## PRIORITY-2



## PRIORITY-3



CLS panels at EAST/WEST goomties should be on direct feeding from UP/DN AT in default mode (\*)

### Note:

1. Above 3 schemes of AT supply are recommended as basic arrangement for standard layouts with 2 end goomties. For complicated yards with multiple goomties (huts), goomties (huts) may be grouped together on both sides of the station as per additional Para 2.4.5 to existing policy instructions issued vide RB's letter under reference. Each goomty in group should have individual CLS panels and supply to CLS panel of each goomty should be extended through two paths in ring.
2. Capacity of ATs should be worked out as per the actual load requirement.
3. Dotted lines (---) indicates the provisions under purview of S&T.
4. Local supply in goomties can be avoided if ACs are not provided. Lighting can be on selected supply through 4/6A fuse/MCB.

This has approval of PCSTE/SECR.

GAURAV  
SINGH

Digitized by Gaurav Singh  
2023-10-26  
12:25:01 +05:30

(Gaurav Singh)  
CSE/SECR



# दक्षिण पूर्व मध्य रेलवे SOUTH EAST CENTRAL RAILWAY



काकोडम

प्रधान मुख्य संकेत एवं दूरसंचार इंजीनियर

द्वितीय तल

दयूपुरे जीनाथ मुख्यालय बिल्डिंग

बिलासपुर-495004

Office of the  
Principal Chief Signal & Telecom  
Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)24059

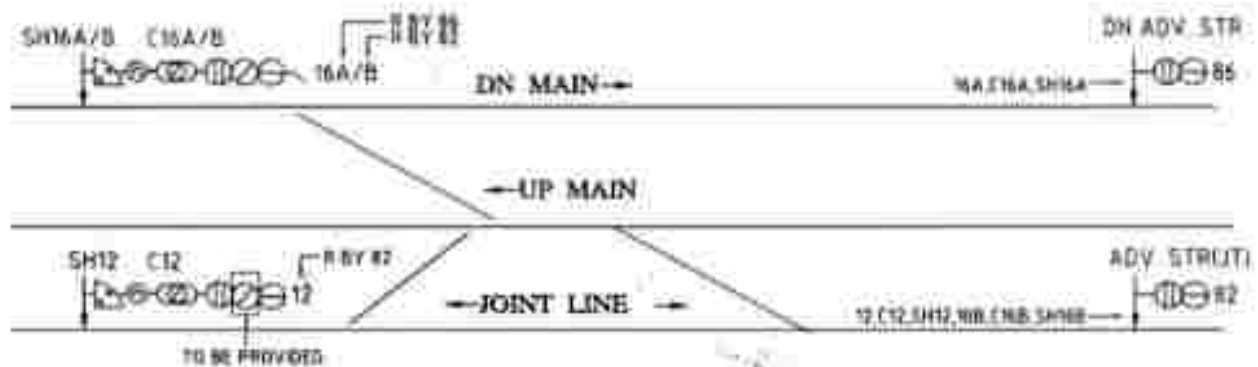
☎ : (07752)115271

Policy Circular : 05/2020

Date: 22.04.2020

## Sub : Provision of yellow aspect in M/L starter even in stations with 3<sup>rd</sup>/4<sup>th</sup> line

Starter released by advance starter with shunt and calling-on feature is norm for all main line starters at stations with 3<sup>rd</sup>/4<sup>th</sup> line. Normally yellow aspect is not provided on these starters. Looking at the benefits which can accrue by provision of yellow aspect, it is decided that all M/L starters will be provided with yellow aspect at stations with 3<sup>rd</sup>/4<sup>th</sup> lines also (as per scheme below).



Providing yellow will come handy at the time of exigencies i.e. when green aspect fails. It will prevent detention to trains in 3<sup>rd</sup>/4<sup>th</sup> line sections, where heavy traffic is expected. As a policy, yellow aspect may be retained in main line starter.

Sd/-

(एम. के. यादव M. K. Yadav)

प्रधान मुख्य संकेत एवं दूरसंचार इंजीनियर

Principal Chief Signal & Telecom Engineer,

दयूपुरे बिलासपुर S.E.C. Railway, Bilaspur

No. SECR/S&T/Policy/14

Date : 22.04.2020

This policy circular is addressed to the following for strict adherence & compliance with immediate effect.

CSTE/Con/SECR, CSTE/Proj I & II/SECR, GM/S&T/RVNL/BBS, SrDSTE/Co. I/BSP, R & NGP.

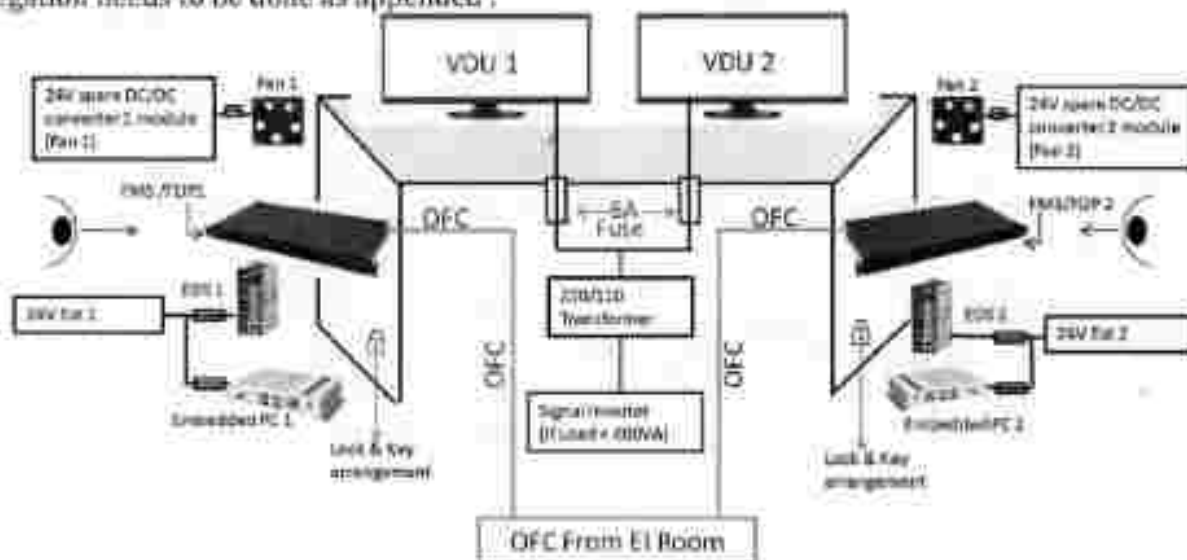


बिलासपुर-495004

File: 0000000413274

Date: 12.03.2020

Two VDUs are provided at every EI to ensure 100% redundancy. Use of common power supply/common FMS defeats the very purpose and doesn't give 100% result. Absolute power segregation needs to be done as appended :



- i. ODC for A & B system to be taken independently and need to be terminated underneath each VDU on separate counter/FMS/FDP.
- ii. If load > 400VA, separate 1 kVA/2 kVA inverter to be catered for in IPS. Transformer 230/110V need not be provided in that case.
- iii. One of the VDUs (VDU only) to be kept in off position to increase its longevity.
- iv. VDU 1 and VDU 2 to be used alternatively shift wise.
- v. 24V can also be derived from 110V by employing M/s Gallant (or similar DC-DC converter). Care to be taken to ensure separate pair of DC-DC converter for each object.
- vi. VDU with resolution of 4K or more or with latest technology to be used.

**Principal Chief Signal & Telecom Engineer,**  
बसपुर, बिलासपुर SEC Railway, Bilaspur

Date: 12.03.2020

CSTE/Con, CSTE/Proj I & II, GM/S&T/RVNL/BHS, GM/RITES, SrDSTE/Co/BSP, SrDSTE/R & NGP





# दक्षिण पूर्व मध्य रेलवे SOUTH EAST CENTRAL RAILWAY



कार्यालय

प्रधान मुख्य संकेत एवं दूरसंचार इंजीनियर

द्वितीय तल

राधामाई जोनल मुख्यालय बिल्डिंग

बिलासपुर-495004

Principal Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)268059

Fax : (07752)415274

Policy circular : 01/2020

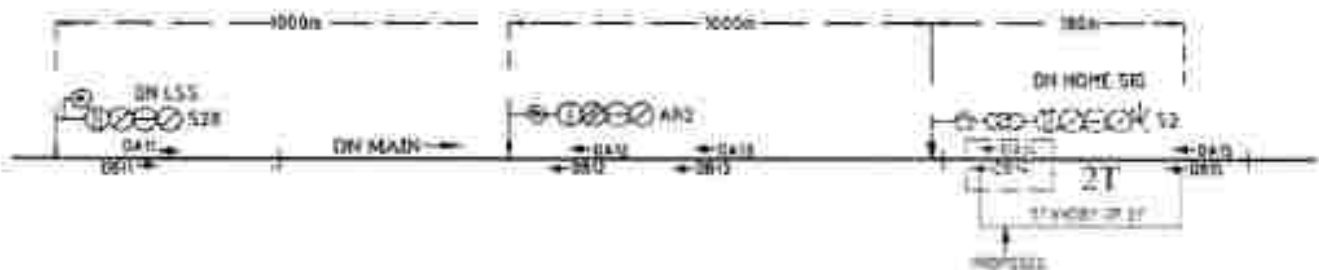
Date : 02.03.2020

**Sub : Provision of one DP at the foot of the Home Signal in auto signalling.**

**Ref : CSTE/Plg's noting on CSTE's sanction for Uslapur-Ghutku auto signalling.**

In auto signalling work, as per practice of SECR, 2T track circuit is required to be essentially proved in clearance of Calling-ON signal. Any failure of 2T track circuit leads to failure of Main Home signal as well as Calling-ON signal, thereby leaving only 'A' marker for reception of trains that too only on main line. No signalling movement can be contemplated on loop lines.

## PROPOSED ARRANGEMENT OF DP& IN AUTO SIGNALLING



To obviate this problem, for once and all, it is advised to provide one additional DP at foot of the Home signal to derive one additional track section in parallel to 2T subject to availability of track section in the existing evaluator.

महोदय 2/3/2020

(एम. के. यादव M. K. Yadav)

प्रधान मुख्य संकेत एवं दूरसंचार इंजीनियर,

Principal Chief Signal & Telecom Engineer,

राधामाई बिलासपुर S.E.C. Railway, Bilaspur

No. SECR/S&T/Policy/1894

Date : 02.03.2020

This policy circular is addressed to the following for strict adherence & compliance with immediate effect.

CSTE/Con/SECR, CSTE/Proj I & II/SECR, GM/S&T/RVNL/HBS, SrDSTE/Co & Line/BSP, SrDSTE/R & NGP.



दक्षिण पूर्व मध्य रेलवे  
SOUTH EAST CENTRAL RAILWAY



आज्ञापत्र

प्रधान मुख्य संकेत एवं दूरसंचार इंजीनियर

द्वितीय तल

रापुर जंक्शन मुख्यालय बिल्डिंग

बिलासपुर-495004

Principal Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)268059

Fax : (07752)415274

No. SECR/S&T/Tech-Signal/1153

Date : 19.11.2019

**All SrDSTEs**

**Sub :** Availability of "Deficiency cum Compliance Register" at every station.

- Ref :**
- Notes taken by CSE/SECR during inspection at the depot of SSE/Sig/Gondia (CSE/2018/06)
  - Notes taken by CSE/SECR during inspection of Depot of SSE/Signal/Raipur, Durg RRI & LC Gate no. 445 on 05/06.05.2018 (CSE/2018/10)
  - Notes taken by CSE/SECR during SAG Level Safety Audit conducted on 13.07.2018 in Raipur division (CSE/2018/15)
  - Notes taken by CSE/SECR during surprise night inspection of Sarona station and LC 421 conducted on 01/02.08.2018 in Raipur division (CSE/2018/16)

Time and again, instructions have been issued for keeping "Deficiency cum Compliance Register" at each station. It was also reiterated through above referred inspection notes issued by the undersigned.

However, it is seen that register is missing at most of the stations. You are advised to comply the instructions by 30.11.2019. An assurance to this effect may be conveyed by 1<sup>st</sup> December, 2019 without fail.

**ESM, SI & ADSTE/DSTE to invariably make entry whenever they visit the station.**

Performa of the register is appended :

SN	Date	Name & Designation	Maintenance /Inspection carried out	Deficiencies Noted	To be complied by	Complied on
1	2	3	4	5	6	7

(S. K. Solanki)  
Chief Signal Engineer  
/PCSTE/SECR/BSP



दक्षिण पूर्व मध्य रेलवे  
SOUTH EAST CENTRAL RAILWAY



आवास

प्रधान मुख्य संकेत एवं दूरसंचार इंजीनियर

द्वितीय तल

राष्ट्रीय जलमय मुख्यालय बिल्डिंग

बिलासपुर-495004

Office of the  
Principal Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)268059

Fax : (07752)415274

No. SECR/S&T/Policy/1038

Date : 24.10.2019

All SrDSTEs

**Sub : Enhancement of life of LMLA battery.**

As per extant practice LMLA batteries are being replaced after 04 years (on expiry of codal life) irrespective of its condition.

As advised earlier also sets are to be replaced on age cum condition basis only. With two battery sets in vogue, it is unlikely that both healthy set can give way concurrently, thereby causing catastrophic failure.

In view of above, henceforth, battery sets will be replaced on age cum condition basis only. On expiry of 4 years from the date of commissioning, ADSTE is empowered to extend its life by 06 months, on each occasion, on the basis of sustainability report submitted by SSE in-charge up to maximum 08 times.

It will be left to ADSTE to inspect the set prior to extending its life or issue extension memo on the basis of sustainability certificate and other parameters submitted by SSE in-charge.

(S. K. Solanki)

Chief Signal Engineer  
/PCSTE/SECR/BSP



दक्षिण पूर्व मध्य रेलवे  
SOUTH EAST CENTRAL RAILWAY



कार्यालय

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बिलासपुर-495004

Principal Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)260059

Fax : (07752)415274

No SECR/S&T/~~Morning Conference~~ 9333

Date: 10.10.2019

SrDSTE/Co/BSP, R & NGP

**Sub:** Revised schedule of cable insulation test as per the recommendations given by 85<sup>th</sup> Signal Standard Committee.

**Ref:** Item No. 1190 of 85<sup>th</sup> Signal Standard Committee meeting.

The recommendations of 85<sup>th</sup> Signal Standards Committee 2017 for agenda item No. 1190, **"With Provision of ELDs periodicity of cable insulation test may be reviewed"**, are as under –

With Technology like ELDs cable meggering schedule should be revised as under –

- i) Initial – All conductors after laying of Cable.
  - 1<sup>st</sup> Year – All conductors after 1<sup>st</sup> Monsoon after laying of cable.
  - 4<sup>th</sup> Year – All conductors.
  - 7<sup>th</sup> Year – All conductors.
  - 9<sup>th</sup>, 11<sup>th</sup>, 13<sup>th</sup>, ... – (till end of life) – All conductors.
- ii) After major work in a yard, all cables should be meggered and cycle at i) above, will be restarted.
- iii) Spare conductors will be tested every year.

The above recommendations of SSC are accepted subject to ELD to be calibrated and linked to Data logger.

Based on the above recommendations, divisions are advised to prepare a revised schedule of cable meggering of all the stations and submit to this office.

  
(S. K. Solanki) 10/10/19  
Chief Signal Engineer





# दक्षिण पूर्व मध्य रेलवे SOUTH EAST CENTRAL RAILWAY



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बिलासपुर-495004

Office of the  
Principal Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)260159

Fax : (07752)415274

Policy Circular No. 03/2019

Date: 06.05.2019

**Sub: Axle counter and track circuit schemes in sections having IBS.**

To ensure uniformity of signaling gears all over the zone, it is advised to follow either of the two schemes (as shown below) only:

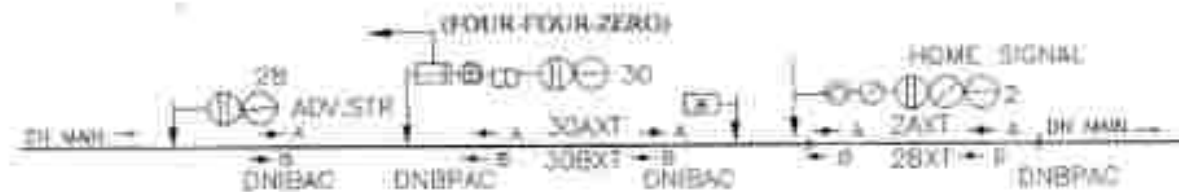
## 1. Scheme-I (FOUR-TWO-TWO/422)

4 Track sections of MSDAC, 2 Track sections of SSDAC, 1 DC Track at IB & 1 DC Track at Home Signal.



## 2. Scheme-II (FOUR-FOUR-ZERO/440)

4 Track sections of MSDAC (Main), 4 Track sections of MSDAC (Standby) & no DC Track at IB.



This scheme is only for IBS working. To be implemented in new works/proposed work in existing installations. One spare DP out of 5 DPs of MSDAC may be installed at the foot of home signal to derive 2T track circuit. This will circumvent the problem of piloting out at preceding station and piloting in through Calling-On at receiving station due to failure of conventional track circuit.

*(S K Solanki)*  
Chief Signal Engineer  
/PCSTE/SECR/BSP

No. SECR/S&T/Policy/174

Date: 06.05.2019

13.05.2019

This policy circular is addressed to the following for strict adherence & compliance with immediate effect:

CS&T/Con/SECR, CS&T/Proj/SECR, SrDSTE/Co/BSP, SrDSTE/Line/BSP, SrDSTE/R, SrDSTE/NGP



दक्षिण पूर्व मध्य रेलवे  
SOUTH EAST CENTRAL RAILWAY



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दण्डुमरे जौनल मुख्यालय बिल्डिंग

बिलासपुर-495004

Office of the  
Principal Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)268059

Fax : (07752)415274

Policy Circular No. 01/18

Date : 28.05.18

Sub : Policy for adoption of Block Instruments over SECR.

Ref : i) Railway Board's L No. 2015/Sig/PLN/Blue Print, New Delhi, dt 21.09.15.

ii) Railway Board's L No. 2015/Sig/PLN/Blue Print, New Delhi, dt 30.11.15.

The policy for adoption of Block Instruments irrespective of class of Routes (A, D, D-Spl & E) for all future works is as follows -

- Adoption of DLBI (Double Line Block Instrument as per existing practice) in Double/3<sup>rd</sup>/4<sup>th</sup> line sections shall continue.
- Adoption of SLBP (Single Line Block Panel with UFSBI) in place of TLBI/SLBI shall continue on Single Line and Bi-Directional Lines.

This policy circular shall supersede all instructions / guidelines issued on the subject in the past.

  
(S.K. Solanki)  
Chief Signal Engineer  
/PCSTE/SECR/BSP

No. SECR/S&T/Policy/331

Date: 28.05.2018.

This policy circular is addressed to the following for strict adherence & compliance with immediate effect.

CSTE/Con/SECR, CSTE(Proj)/SECR, GM/S&T/RVNL/R, GM/S&T/RITES/Gurgaon,  
GM/S&T/IRCON/BSP, SrDSTE(Co)/BSP, SrDSTE/R, SrDSTE/NGP & DyCSTE/RE/SC.



दक्षिण पूर्व मध्य रेलवे

# SOUTH EAST CENTRAL RAILWAY

आपका

मुख्य संकेत एवं दूरसंचार इंजीनियर

दिलीप लाल

दुधमरे जीवित मुख्यालय बिल्डिंग

बिलासपुर-495004

Office of the

Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)260059

Fax : (07752)415274

No. SECR/S&T/CSTE/PROJ/ISS/L

Date : 07.11.14

CSTE/Proj, CSTE/Con

All SrDSTEs.

**Sub :** Earthing for signalling equipments (Sound Construction practice)

**Ref :** CSTE's Inspection Note No. SECR/S&T/CSTE Insp/1710 dt 20.10.14

During various inspections and one cited above, it is noticed that no discipline is maintained while connecting earth with the equipments. The discrepancies/deficiencies are :

- 1] During the construction of earth, requisite supervision is not done. The earth deteriorates with the time. A supervisor from both sides - executing agency as well as open line shall jointly inspect the earth before filling of the pit and furnish a certificate of having ensured its construction as per the schedule. The certificate shall form part of handing over documents.
- 2] When more than one earth is being made for preparing a ring earth, value of each earth need to be recorded before allowing inter-connection between the earths.
- 3] After inter-connection of the earth, while connecting it to the equipments, the earth wire is laid in the most haphazard manner. Either it is laid on the ladder or across the ladder or through some other route at 8-9 feet height on the walls of the equipment room. **This is not done.** The earth should be isolated and laid separately along the walls on the ground level so that length of the path for flow of surges to earth is minimal. The length of earth wire need to be kept as small as possible to ensure proper earthing.
- 4] It is also observed, in one of the stations, that the power cable as well as earth wire, both were taken through the same circuitous route. Under no circumstances, the cable /earth wire length should be more and it should be restricted to the bare minimum to ensure less voltage drop and good earthing respectively.

This is for your information, wide circulation and for requisite compliance please.

(S. K. Solanki)

Chief Signal Engineer

/CSTE/SECR/BSP

C/- DyCSTE/Sig : One schematic diagram from each executing agency to be fetched to analyse the scheme.



दक्षिण पूर्व मध्य रेलवे  
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दफ्तरे जोनल मुख्यालय बिल्डिंग

बिलासपुर-495004

Office of the

Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)268059

Fax : (07752)415274

No. SECR/S&T/Signal Policy/25

Date : 27.03.14

SrDSTE/Co/BSP, SrDSTE/R, NGP.

**Sub : Failure of DN home signal at SLH on 26.02.14.**

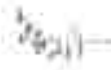
On 26.02.14 at about 23.31hrs, DN home signal S-3/4 was taken off for Line no-4 at SLH. HG and RG aspects along with route appeared causing detention to 12833, NXBSPC & 12859. After visiting the site, scrutinizing the circuits, following observations are made :

1. Modification work with Q-series relays was done without approved circuit diagram.
2. The tentative circuit diagram was available at site signed by SSE/R & ASTE/R. Even SrDSTE/R has not signed the circuit.
3. In the circuit diagram cascading arrangement was made with 3/4HECPR contact instead of 3/4HECR.
4. The internal-24 supply charger got defective and the battery voltage ran down to 17V DC.
5. The circuits connected to this internal charger were UP line TPR's & few repeater relays such as 3/4HECPR.
6. Due to running down of battery voltage, 3/4HECPR relay got dropped, which simulated the condition of yellow lamp not glowing (cascading arrangement) thereby giving feed to Red lamp. Consequently, Red aspect also lit along with yellow and lunar.
7. Signaling staff present at SLH were found to be wanting as far as knowledge of circuits is concerned. Requisite training is required.

To avoid such incidence in future, it is directed that :

1. No work to be carried out without approved circuit diagram.
2. Repeater relay of HECR/DECPR shouldn't be used in both limbs. Contact of main HECR/DECPR relay to be used in at least one of the limbs of the cascading circuit.
3. All stations should be checked for such discrepancies to avoid recurrence. SrDSTEs to fetch a certificate after getting all the stations checked. DyCSTE/Sig shall put up a report by 31<sup>st</sup> May 2014.
4. HECPR/DECPR needs to be picked up through fuse being used for picking up corresponding HR.

C/C

  
(S. K. Solanki)  
Chief Signal Engineer  
/CSTE/SECR/BSP

C/- DRM/R for info, pl.

{ C/- CSTE/conn for info, pl.

{ C/- CSTE/Proc for info, pl.





Policy Circular No:7/2013

**No. SECR/S&T/CSTE Policy/1985**

**Date: 23.10.13**

**Sub: Provision of parallel contacts in outdoor cutting-in relays in signal control circuits.**

To obviate the problem of high contact resistance, it is decided to provide parallel front contact of Cutting-in relays in Signal control circuit, i.e. A1-A2 parallel to B1-B2 in positive limb and C1-C2 parallel to D1-D2 in negative limb. A typical circuit diagram is enclosed.

This need to be implemented in all new works and also in the existing installations, progressively in a time bound manner.

Encl: Typical circuit diagram.

*A. K. Haldar*  
(A. K. Haldar) 23.10.13  
Chief Signal & Telecom Engineer,  
S.E.C. Railway, Bilaspur.

*This Policy Circular is addressed to the following for strict adherence & compliance, pl.*

1. CSTE/Con./SECR,
2. CSTE/Proj/SECR,
3. GM/S&T/RVNL/BSP,
4. Sr.DSTE/Co./BSP,
5. Sr.DSTE /R,
6. Sr.DSTE NGP.
7. Dy.CSTE/RE/SC

**Copy to:**

1. ED/S&T/RVNL/NDLS for information and necessary action please.
2. CSTE/CORE/ALD for information and necessary action please





# दक्षिण पूर्व मध्य रेलवे SOUTH EAST CENTRAL RAILWAY



कार्यालय

मुख्य संकेत एवं दूरसंचार इंजीनियर

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दपुमरे जोनल मुख्यालय बिल्डिंग

बिलासपुर-495004

Office of the

Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)268003

Mob : 97524-75802

No. SECR/S&T/CSTE POLICY/1163

Date : 07.09.2015

CSTE/Con/SECR,  
CSTE/Proj/SECR,  
GM/S&T/RVNL/BSP,  
SrDSTE/Co/BSP  
SrDSTE/R,  
SrDSTE/NGP  
DyCSTE/RE/SC

**Sub : Elimination of common mode failure of Main and Auxiliary signaling gear.**

It has been experienced many times that both the Main and Auxiliary signaling gears are failing simultaneously where gears are fed through the common cables, fuse, power supply and selection circuits etc. and thereby the very purpose of providing auxiliary system gets defeated.

To extract the full advantage of the auxiliary signaling gears, separate cable, fuse and selection of circuits need to be ensured in the following cases:-

1. Main stop signal and Calling On signal/A/AG marker.
2. Point and Crank Handle.
3. Main and Standby Axle Counter/Track circuit.

In addition to the above, where standby arrangement is provided, common power supply and common repeater relay for both the systems should not be used.

*V. S. Singh*

(सत्यवीर सिंह)

मुख्य संकेत इंजीनियर  
द.पू.म.रेलवे, बिलासपुर



दक्षिण पूर्व मध्य रेलवे  
SOUTH EAST CENTRAL RAILWAY



कायदा

मुख्य संकेत एवं दूरसंचार इंजीनियर

बिलासपुर

सुमर जंक्शन, मुन्दागंज विडिगुड

बिलासपुर-495004

Officer of the

Chief Signal & Telecom Engineer

2nd Floor

SECR Zonal HQ Bilaspur

Bilaspur-495004

☎ 0661-2348870

☎ 0661-2348872

**Policy Circular No: 03/2015**

**Sub: - Standardization of Road Signals aspects at interlocked LC Gates:**

Maintaining uniformity with road traffic signalling system for road users, henceforth for all Road signals provided for protection of interlocked LCs, Lights and Hooter shall be placed on three aspect signal unit with the following order-

1. Red light at the top;
2. Yellow light at the bottom &
3. Hooter at the middle.

(Amit Kumar Haldar)

Chief Signal & Telecom Engineer,  
S.E.C. Railway, Bilaspur.

No. SECR/S&T/CSTE POLICY/1/17

Date: 22.04.2015

***This Policy Circular is addressed to the following for strict adherence & compliance with immediate effect.***

1. CSTE/Con./SECR,
2. CSTE/Proj./SECR,
3. GM/S&T/RVNL/BSP,
4. Sr.DSTE/Co./BSP,
5. Sr.DSTE /R,
6. Sr.DSTE NGP,
7. Dy.CSTE/RE/SC.





दक्षिण पूर्व मध्य रेलवे  
SOUTH EAST CENTRAL RAILWAY



संस्थापक

मुख्य संकेत एवं दूरसंचार इंजीनियर

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बपुमो जीनल मुख्यालय भित्तिद्वारा

बिलासपुर-495004

Office of the  
Chief Signal & Telecom Engineer

2nd Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)268039

☎ : (07752)415274

No. SECR/S&T/Policy/2805

Date: 11.03.2015

SrDSTE /Co, L/ BSP, SrDSTE/R & NGP.

**Sub :** Sound construction practice : Power supply arrangement for SSDACs.

**Ref :** Typical 43/15.

On 24.02.2015, an incidence occurred at RIG-KDTR IBH, wherein all axle counters failed. During measurement of load current of 24 V DC-DC convertor (for feeding Axle counter), by JE/KDTR, the positive lead wire came out of the terminal causing a catastrophic failure. All the four Axle counters along with standby system failed causing detention to train number 12860, 12410, 68736 & 2gds train. Though a typical 43/15 has been issued for arrangement of IPS for IBH/LC Gate/Auto Relay hut from hq, the same is not yet implemented, at site.

On checking it was noticed that power segregation for UP & DN Axle counter or main and standby system is not yet done. All the SSDAC units were fed from the common DC-DC convertor unit. Standard arrangements for feeding is issued vide typical 43/15, which clearly states that Converter 1 shall feed DPs of all UP/DN Axle counters and converter 2 shall be for standby system. Wherever standby is not provided, converter 1 shall be used for UP line and converter 2 for DN line.

1. I DC-DC ----- To all DPs of Axle counter of set 'A' (Main)
2. II DC-DC ----- To all DPs of Axle counter of set 'B' (Stand-by)

OR

1. I DC-DC ----- To all DPs of Axle counter of UP line.
2. II DC-DC ----- To all DPs of Axle counter of DN line.

A drive by division may be launched for such short fall and for segregation of power supply as per above guidelines.

This may please be treated as most urgent and compliance to be conveyed to undersigned by 30<sup>th</sup> June-2015.

*(Signature)*  
11/03/15

(S. K. Solanki)

Chief Signal Engineer

/CSTE/SECR/BSP

C/- CSTE/Cons, CSTE/Proj for compliance, pl, during commissioning of all future works.



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**SOUTH EAST CENTRAL RAILWAY**

कार्यालय

**मुख्य संकेत एवं दूरसंचार इंजीनियर**

द्वितीय तल

दणुसरे जंक्शन मुख्यालय बिल्डिंग

बिलासपुर-495004

Office of the

**Chief Signal & Telecom Engineer**

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)260038

Fax : (07752)415274

**Policy Circular No. 04/2014**

**Sub :** Guidelines for use of Polymeric Positive Temperature Coefficient (PPTC) type fuses

**Ref :** Dir/Sig-II/RDSO/LKO L No. STS/E/Fuses/Vol-IX dt 28.03.2014

A polymeric positive temperature coefficient device (PPTC, commonly known as a resettable fuse) is a passive electronic component used to protect against over current faults in circuits. These devices can be used to increase availability where replacement is difficult.

Due to self-resetting feature, these fuses are useful in selected signalling applications to avoid incidental fuses blowing cases due to fault currents of transient nature. These fuses are in use over SECR since a couple of years. However, there are no clear guidelines from Railway Board or RDSO, for precise applications of these fuses.

Following instructions are issued for uniform adoption & implementation over SECR.

1. Only those components from reputed manufacturers which are recognized by Underwriters Laboratories to UL thermistor standard 1434 and having UL recognition with valid UL file no. should be used. UL recognition (UL File no.) for a component may be verified from website [www.ul.com](http://www.ul.com). Some manufacturers for these products are LITTLEFUSES, FUZETEC, TYCO, BOURN, RAYCHEM etc.
2. The fuse should have an insulating coating of flame retardant epoxy to meet UL-94, V0 requirement.
3. Only Radial Leaded or fuses should be used.
4. Working temperature range -40°C to 85°C.
5. The leads should be tin plated copper. Suitable Copper lugs should be well crimped to the leads using proper crimping tool. With these lugs, PPTC fuse will fit nicely on the ARA terminals. The crimped area may also be filled by solder for better connection.
6. Products with clear marking over them as per manufacture's catalog must be used.
7. These fuses should be used in parallel to normal NDT fuses.

8. There may be a remote risk of flame in case of current more than the specified max. rating or improper use. Therefore, only selected outdoor signalling circuit installations in location boxes / end gooties are recommended to be provided with these fuses. A list of such circuit is given below.

Sr No	Location	External Circuit Circuits	Capacity of fues	Trip Current of PPTC fuse
1.	Location boxes / End gooties	i) Feed end of Track circuit	4 Amp	3.7-4.2 Amp
2.		ii) TPR fuse	2 Amp	2.0-2.2 Amp
3.		iii) EPD fuse (if provided) (EPD of mechanical signal)	2 Amp	2.0-2.2 Amp
4.		iv) NWKPR/RWKPR fuse (EPD of mechanical signal)	2 Amp	2.0-2.2 Amp
5.		v) Track feed charger 110 V AC input fuse	2 Amp	2.0-2.2 Amp
6.		vi) EJB fuse for analog axle counter	2 Amp	2.0-2.2 Amp
7.		vii) NKPR/RKPR fuse	2 Amp	2.0-2.2 Amp
8.		viii) Boom motor operation fuse (24 V / 110 V)	6 Amp	6 Amp
9.		ix) Location lamp fuse	2 Amp	2.0-2.2 Amp
10.		x) Signal motor operation fuse (for mechanical signaling)	4 Amp	3.7 Amp-4.2 Amp

This policy circular supersedes all instructions/guidelines issued on the subject in the past.

A K. Halder  
(Amit Kumar Halder)<sup>3314</sup>  
Chief Signal & Telecom Engineer  
SEC Railway, Bilaspur

No. SECR/S&T/CSTE Policy/ 866

Date : 07.07.2014

This Policy Circular is addressed to the following for strict adherence & compliance

CSTE/Con/SECR, CSTE/Pro/SECR, GM/S&T/RVNL/BSP, SrDSTE/Co/BSP, SrDSTE/R, SrDSTE/NGP, DyCSTE/RE/SC

C/- CSTE/CORE/ALD for kind information, pl.  
ED/S&T/RVNL/NDLS for kind information, pl.



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बिलासपुर-495004

Office of the

Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ (07752)268059

Fax : (07752)415274

**Policy Circular No : 03/2014**

**Sub :** Provision of flashing indication / Audio Visual alarms for monitoring health of ATs at Unmanned locations.

AT supplies provided at Unmanned/Remote locations like IBHs and Auto goomtles are required to be monitored at nearby stations to ensure their efficient working. Normally both ATs should be in working condition. As soon as one of the ATs goes defective, information need to be conveyed to TPC/Elect TRD for its immediate restoration.

As IBHs & Auto goomtles are unmanned, the only recourse to ensure above mentioned is to bring indications of both the ATs to nearby station. For ensuring uniformity, the procedure to be followed for providing indications at nearby stations is appended below :

- i) For Auto Goomtles provided with ATUs -  
Flashing indication for each AT shall be provided on the VDU/Monitoring panel provided to ASM. Normally steady Green indication for the ATs shall be available. During failure flashing Red shall be displayed to attract attention of ASMs.
- ii) For IBHs - Either flashing indication or Audio visual alarm shall be provided.
  - a) If flashing indication is provided, the same methodology as suggested at (i) shall be employed for VDU/Monitoring panel as well as for domino panels.
  - b) For Audio visual alarms - Under normal condition, steady Green indication shall be available. During failure, an alarm will be generated alongwith red steady indication. The alarm should be acknowledged by ASM. On acknowledgement, alarm will get muted.
- iii) For LC Gate Goomtles -  
Audio visual alarms to Gate man shall be provided as discussed in (ii)b. Instead of ASM, Gate man shall acknowledge and mute the alarm and report it to nearest Station Master.

These instructions should be followed uniformly at all new installations. Requisite modifications to be carried out at the existing installations also in a progressive manner.

This policy circular supersedes all instructions/guidelines issued on this subject in the past.

*A. K. Halder*  
(Amit Kumar Halder)

Chief Signal & Telecom Engineer  
SEC Railway, Bilaspur.

Date : 28.05.14

No. SECR/S&T/CSTE Policy/509

This Policy Circular is addressed to the following for strict adherence & compliance, pl.

CSTE/Con/SECR, CSTE/Pro/SECR, GM/S&T/RVNL/BSP, S&DSTE/Co/BSP, S&DSTE/R, S&DSTE/NGP, DyCSTE/RE/SC

C/- CSTE/Con/ALD for kind information, pl.

ED/S&T/RVNL/NDLS for kind information, pl. —



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बिलासपुर-495004

Office of the

Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)260059

Fax : (07752)415274

**Policy Circular No:** 02/2014

**Sub:** Employing QNA1 relays for indoor as well as outdoor circuits for small installations.

LC gate, IBH, Auto signalling huts, C-class stations etc are small signalling installations. These installations are quite small and need only about 40 to 50 relays, in totality. On such small installations, maintaining variety of relays is uneconomical. The problem can be surmounted by using QNA1 relays for both internal as well as external circuits.

Henceforth, scheme to be followed while commissioning such small installations shall be as follows:

1. Only AC immunized relays shall be used for both internal as well as external circuits.
2. Fuses/protection devices of adequate capacity as per extant guidelines and instructions shall be provided.
3. These instructions shall be applicable for installations having maximum of 50 relays (LC gates, IBH, Auto signalling huts, C-class stations, end goomties etc, where ever applicable).
4. Minimum three DC/DC converters for 24 V shall be provided.

This policy circular supersedes all instructions/guidelines issued on this subject in the past.

*A. K. Haldar*

(Amit Kumar Haldar)

Chief Signal & Telecom Engineer,  
S.E.C. Railway, Bilaspur.

No. SECR/S&T/CSTE Policy/ 298

Date : 05.05.14

This Policy Circular is addressed to the following for strict adherence & compliance.

CSTE/Con/SECR, CSTE/Proj/SECR, GM/S&T/RVNL/BSP, SrCSTE/Co/BSP, SrCSTE/R, SrCSTE/NGP,  
DyCSTE/RE/SC

C/- CSTE/Core/ALD for kind information, pl.  
ED/S&T/RVNL/NDLS for kind information, pl.





**Policy Circular No: 05/2013**

**No. SECR/S&T/CSTE Policy/933**

**Date: 26.06.13**

**Sub:- Provision of location boxes for 6 Quad cable termination carrying Signaling circuit & Axle Counter for IBS and Automatic Signaling.**

6 quad cable is used for Signaling circuits, Axle Counter of IBS & Automatic signaling work. These circuits are prone to failure due to the induced e.m.f. caused by 25 kV, AC traction. The level of induced voltage is directly proportional to the length of parallelism of OHE & Signalling conductor. Further, whenever there is a cable fault or theft/damage it becomes very difficult to restore quickly. Isolation of faulty section is another problem faced in the field during rectification of cable.

In view of above practical difficulties the following guidelines are issued for laying and jointing of 6 Quad cables for IBS & Automatic signaling work:

1. 6 Quad cables laid for IBS & Automatic signaling works shall be terminated in half location box at the end and starting of each cable drum.
2. 6 way ARA terminals shall be used for terminating the 6 Quad cables in location box.
3. Adequate earthing arrangement shall be provided to ground the armour of the both incoming and outgoing 6 Quad cables & the location box.
4. The earthing value should not exceed 5 Ohms. Multiple earth electrodes may be provided if required.
5. All conductors of the 6 quad cables shall be terminated on the ARA terminals & no conductors shall be left loose even though it may be spare one.
6. There shall not be any under ground joints on these cables.
7. In case of damage/theft, the cables shall be terminated in the location box. However to restore the circuit quickly, under ground joints may be used as a temporary measure & shall be terminated in location box at the earliest.
8. These instructions are not applicable for cables carrying Block circuits & Telecom circuits, these are applicable only for cables carrying signaling & Axle Counter circuits.

This policy circular supersedes all previous provisions on the subject.

Sd/-  
(Amit Kumar Halder)  
Chief Signal & Telecom Engineer,  
S.E.C. Railway, Bilaspur



**SOUTH EAST CENTRAL RAILWAY**

Office of the  
Chief Signal & Telecom Engineer  
2nd Floor, SECR Zonal HQ Building  
Bilaspur - 495 004

**No. SECR/S&T/Policy/252**  
**Date: 03.01.2013**

**Policy Circular No:- 1/2013**

**Sub:** Single Relay Room at one installation.

**Ref:** 1. SECR JPO No: SECR/S&T/JPO/465, Dated: 17.05.12  
2. Railway Board Letter No. 2011/Sig/A/ECOR, Dated: 13.03.12

\*\*\*

1.1 On many occasions Construction & Project organization approached for approval of Relay Room in two or multiple parts in a single location for one panel to facilitate extension/modification work. If Relay Room of a station/end cabin is parted, it will be very difficult for maintenance and failure rectification. Also it will not be in line with above referred JPO & instructions, as there will have to be multiple double locking arrangements.

1.2 Further it is felt that, the parted Relay Rooms may invite unsafe situations, as in case of indoor circuitry failure the maintainer (in most of the cases only one maintainer is available at a station) will have to trace the circuit fault across the two or more Relay Rooms. The situation will worsen if the Relay Rooms are not in close vicinity or at same level. More over interconnection of circuit between the parted Relay Rooms will have to be done through cables (outdoor cables if it is not in the same building) which will enhance cable requirement to an appreciable level.

2.0 In view of this, it is decided that, SECR shall follow one Relay Room Policy for all installations here after. Whenever there is modification work, new Relay Room should be constructed if there is no space in the existing Relay Room. In no circumstances Relay Room shall be parted.

*A. K. Haldar*  
3.1.13  
**(A. K. Haldar)**

**Chief Signal & Telecom Engineer**  
**South East Central Railway**  
**Bilaspur.**

C/- CAO, COM, PCE, CEE, CSO/SECR for kind information.

DRM/BSP, R & NGP for kind information.

CSTE/CON., CSTE/Proj./BSP for information & necessary action please.

Sr. DSTE/BSP, R & NGP, for information and necessary action.

GM(S&T)/RVNL for information and necessary action.



Office of the  
Chief Signal & Telecom Engineer  
SOUTH EAST CENTRAL RAILWAY  
Bilaspur - 495 004 (C.G)

No. SECR/S&T/Policy/1142

Dated: 27/07/10

The Sr. DSTE/BSP, R & NGP  
Dy. CSTE/Con/D&D-I & II/BSP  
GM(S&T)/RVNL/BSP,

**Sub.: Standardisation of Fuse rating for signal circuits.**

Para 19.87.2 of IRSEM (Part-II) specify standards for fuse rating for various circuits i.e. fuse rating should not be less than 2.5 times the rated current in the circuit. Hence, considering safety aspects, fuse rating may be designed in a range of 250% to 500% of rated current depending upon availability of standard RDSO approved fuses.

Superseding all previous instructions for fuse rating in different signalling circuits, it is advised that following standard ND fuse rating will be used :

S. N.	Fuse Rating	Circuits
1.	1 Amp	Signal lighting Circuits & All block circuits.
2.	4 Amp	All internal circuits, All external circuits, Panel Indication Circuits (up to 60 lamps), EKT circuits, Electronic timer, Axle-counters, Flasher Circuits etc.
3.	6 Amp	Track Relay Circuits (TR).
4.	16 Amp	Point operation Circuits (110V).

All above suggested ND fuses are manufactured by RDSO approved firms. The fuse base is common for all categories of fuses. Hence, it is further advised that rating of the fuse need to be marked above each/group of fuses during installation to avoid any future ambiguity during maintenance activity.

To ensure that proper rating of fuse is used in the signal circuits, it is also advised that the rating of fuse may be mentioned during design of circuits itself.

(S. C. Mishra)  
Chief Signal & Telecom Engineer,  
S.E.C. Railway, Bilaspur.

Copy to CSTE/Con & CSTE/Proj./BSP for inf. & implementation in all future works.

(S. C. Mishra)  
Chief Signal & Telecom Engineer,  
S.E.C. Railway, Bilaspur.



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दमनरे जेनरल मुख्यालय बिल्डिंग

बिलासपुर-495004

Office of the  
Principal Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)268059

Fax : (07752) 268219

Policy Circular : 01/2021

Date : 06.12.2021

Sub : Standardisation of Fuse rating in all Signal lighting circuits.

Ref : I. RDSO's TAN No. STS/E/TAN/2001 dated 04.06.2015.

II. S&T/HQ Policy Circular SECR/S&T/ Policy/1142 dated 27.07.2010

\*\*\*\*\*

As stipulated in Para 19.7.1 of IRSEM, the current rating of fuses in Signalling circuits should not be less than 2.5 times the rated current in the circuit. Vide RDSO's TAN No. STS/E/TAN/2001 dated 04.06.2015, fuse of 630 mA is specified to be used for all Signal lighting circuits.

Hence, superseding HQ's Policy circular under reference-II, on this matter, it is decided, with immediate effect, to make use of fuse of rating 630 mA in all Signal lighting circuits at new and existing installations.

This issues with approval of PCSTE/SECR.

  
(S. K. Solanki)

Chief Signal Engineer  
SEC Railway, Bilaspur

No. SECR/S&T/Policy/2021/764

Date : 06.12.2021

This Policy circular is addressed to the following for strict adherence & compliance with immediate effect.

CSTE/Con, CSTE/Project-I & II, SrDSTE/BSP, R & NGP, GM/S&T/ RVNL / BBS, DYCSTE/RE/SC, GGM/ S&T/RITES, CGM/ S&T/ IRCON.



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बिलासपुर-495004

Office of the

**Principal Chief Signal & Telecom Engineer**

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)268059

Fax : (07752) 268219

**Policy Circular : 02/2022**

**Date : 25.01.2022**

**Sub: Vital Guidelines on laying & utilisation of Signalling cables.**

- Ref:**
- 1) Guide lines on Signalling Cable laying issued by RDSO (Doc. No. RDSO/SIG/2010, Version- 1.1, Effective from- 04.02.2014)
  - 2) IRSEM (July- 2021)
  - 3) IRSEM Part-II (Old)
  - 4) Practice over SECR.
  - 5) SCER/S&T/HQ policy no. 07/2020 on types of cables to be used.

All over SECR, methods & procedures for trenching, cable laying and utilization of cable are drawn from RDSO guidelines under ref-1, IRSEM & experience gained over the time. In cases, it is noticed that application of provisions contained in RDSO guideline & IRSEM is not uniform in all works and some vital provisions are not being implemented at all. In the mean time, revised IRSEM (July-2021) have also been issued.

In view of above, on going through the manual provisions, RDSO's latest guidelines and fallout/advantages experienced on extant practice, an uniform policy as vital guidelines on methods of cable laying to be followed & optimum utilization of Signalling cables ensuring its reliability, availability & maintainability is issued as follows for adherence.

## **Basic corage planning to be followed-**

- 1) In terms of SECR/HQ policy 07/2020, 6 core, 12 core, 24 core (To be used in big yards) & 6 Quad cables shall be used for all future works.
- 2) For power supply to utility points over the yard ( 110 V AC for T/Chargers, 24/60V DC Ext. for TPRs, 24V DC Ext. for Axle counters etc.), 12 core cable shall be used.
- 3) Adequate spare conductors to a minimum of 20% of total conductors used shall be provided for each main cable up to Home signals, beyond this there shall be a minimum of 10% spare of total conductors used per cable. On Automatic section, mid section LC gates, IBS etc, spare conductors to a minimum of 20% of total conductors used shall be maintained per cable.
- 4) As per configuration of the installation, spares in terms of cables shall be maintained for supply of power from Central building to End Goomties/Goomties (When various utility goomties are distributed over the yard). All such supplies shall be done through AL power cables.



For supply of 230V AC, 2CX70 Sq mm AL cables shall be used & for other supplies e.g 110V AC/DC for Pt. Operation, DC-DC Conv. Modules, EI units, Signal feeding etc, 2CX25 Sq mm cables shall be used with optimum provision of spare cable. 100 % spare cable shall be provided for 230V AC & 110V DC (For EI only) supplies. For other supplies 20 % spare cables shall be provided with minimum provision being one cable. Health of spare cables shall be monitored monthly through continuity/insulation resistance test & kept in record.

- 5) Above Power supplies (SL no. 2) to be extended from Centre/ End goomties to utility points with redundancy i.e 2 cables for each circuit in form of ring. The redundant cable shall be connected to main cable in a ring manner. Ext supply to main and ring cable shall be done through separate fuses at Relay room/ Goomties. Integrity of main & ring path shall be monitored monthly & kept in record. This ring cable need not be provided with path redundancy.
- 6) The circuits/power supplies shall be so distributed amongst cable cores laid along a route that cables can be disconnected for maintenance purpose with least dislocation to traffic. **Line wise/Function wise cables shall be provided.** (As for example- 1. Ext. 24V DC/110V AC supply may be segregated for LIP/DN/Joint line etc. 2. Cores for HG/HHG/DG/RG & HPR/HHPR/DPR for a 4Asp Signal may be so distributed between the cables that in the event of damage to one cable, at least HG Aspect would remain functional).
- 7) **Separate signalling cables shall be used for Point operation & detection.**
- 8) In Distributed EIs with end goomties, OFC cable/Power cables/Quad cables, as applicable, laid from Centre to Goomties on Either side shall be with path redundancy (on either side of the track with the main & spare cables being distributed between the paths) in form of '8'. Path redundancy need not be provided in case of Centralised EI/PI with end goomties.
- 9) In distributed EIs, dedicated 2X12 core cables shall be laid from centre to Goomties on either end to be used in NI Panel in exigency. **Health of this dedicated cable shall be monitored monthly through continuity/insulation resistance test & kept in record. This cable need not be provided with path redundancy.**
- 10) 2 numbers of dedicate spare 12 core cables shall be laid from Home to Home on either side. These cables shall be through terminated in all locations passing through Central Relay room and Goomties for quick transfer of these dedicated conductors in case of failure of running cables and cable testing. Health of this redundant cable shall be monitored monthly through continuity/insulation resistance test & kept in record. These cables need not be provided with path redundancy.
- 11) **Auxiliary Signals shall be taken on different cables (C/on, Shunt & Illuminated A/AG markers).**
- 12) Number of location boxes shall be kept minimum.
- 13) **QNA1K 1000 ohm Relays may be used as long distance repeater to minimize requirement of cable cores for this purpose.**

#### **Basic Trenching/laying practices to be followed-**

- 1) Cable route plan shall be initiated after foot survey along the track to determine the best route. **Any future modification/ Doubling/3<sup>rd</sup> line/ 4<sup>th</sup> line shall be considered.**
  - a) As far as possible low laying areas, platform copings, drainages, hutments, rocky terrains, highly alkaline/acidic soils shall be avoided while charting out cable route.
  - b) **Cable route shall be drawn superimposed on Existing cable route showing presence of working Signal/ telecom cables, power cables (cables of S&T & Electrical Department).**
  - c) Cable route shall be identified giving offsets from permanent way or permanent structures showing track/ Road crossings, presence of bridges/ culverts and other points of importance.
  - d) Cable route plan shall also be approved by Engg. & Elect. Department of Division & S&T department of Open line (Wherever, cable route is being prepared by S&T deptt. Other than Open line organisation). In case of Construction works, cable route shall also be approved by Engg. & Elect. Department of Executing agency also.
  - e) Outside station limits, the cables shall generally be laid from not less than 5.5 mtrs from the centre of nearest track and within station limit the cable should generally be laid not less than 3 mtrs from centre of track the width of trench being outside 3 meter distance.
- 2) **Only manual trenching shall be done in station yard from Home to Home signal.** Beyond this into Block section, mechanized trenching may be adopted as per site condition. Trenches shall be straight as far as possible. Minimum width of trench should be 0.3 mtrs.
- 3) **Before starting of cabling, location boxes shall be first erected** so that cable after laying is directly taken inside location box and its multiple handling/ damage by re-digging and taking inside location box/ Relay room is eliminated.
- 4) **The cable laid parallel to track shall be buried at a depth of minimum 1.0 mtr (Topmost cable) from ground level.** Cables laid across the track shall be at a depth of minimum 1 mtr below the rail flange. It shall be achieved irrespective of number of cables laid in a trench. Accordingly, depth & width of the trench shall be ensured.
- 5) In case of tail cables serving location boxes/Signals/JB's, depth of cables shall not be less than 0.5 mtrs.
- 6) **Over theft prone area, anchoring of cable at every 10 mtrs shall be ensured.**
- 7) In the rocky ground, **the cable shall be laid over a layer of sand or sifted earth.** The depth over rocky terrain may be suitably reduced and the cable shall be protected with RCC ducts.
- 8) A distance of minimum 10 cm must be maintained between Signalling & telecommunication cable. The signalling cable must be separated from power cables by a row of bricks between them.

- 9) Cables, unavoidably, laid through acidic or alkaline or through sewages shall be laid through Concrete/ GI/ PVC/ DWC pipes properly jointed.
- 10) While cable is laid in residential area, the cable shall be specifically protected on both sides up to a distance about 300 mtrs beyond the building line. In such cases, the cable shall be protected as proposed for rocky soil.
- 11) For Cable laying through Road/ Railway track crossing, trenchless HDD method shall be adopted with the cable being laid through GI/DWC/HDPE Pipes as suitable. Separate pipes of suitable dia shall be used for Telecommunication, Signalling & Power cables. Wherever it is unavoidable, manual Road/ track crossing may be resorted to.
- 12) All cable entry points in cabins, relay room, battery room, SM's room, location boxes, junction boxes etc must be closed with suitable masonry works, sand covered and plastering to prevent entry of rats etc. RCC slab shall be provided on the cable pit of cabin/Relay room/ station.
- 13) Cable shall be protected up to a distance of 10 mtr beyond building line of cabin, relay room, battery room, SM's room on either side. In case of location boxes/ junction boxes cable shall be protected up to 1 mtr on either side through approved means.
- 14) Cable laying across bridges & culverts-
- a) Cable shall be taken on culverts through GI/DWC/HDPE Pipes conforming to sketch no. SDO/ CABLE LAYING/ 012 issued by RDSO. As per site condition, the cable may be taken underground across the drain bed with low flood level conforming to sketch no. SDO/CABLE LAYING/011 issued by RDSO.
  - b) Over metallic bridges, cables shall be laid through metallic troughs which may be filled with sealing compound conforming to sketch no. SDO/ CABLE LAYING/ 013 & 014 issued by RDSO.
  - c) In case of Arch bridges, cables shall be laid through GI/DWC/HDPE Pipes conforming to sketch no. SDO/ CABLE LAYING/ 015 & 016 issued by RDSO.
  - d) Adequate cable length to the extent of 2 to 3 mtrs shall be made available at the approaches of Bridges/ Culverts. Concreting of 50 mm shall be done throughout from entry/ exit end of cable up to diversion point including slope on either side. Entry/ Exit end of cables from pipe/ trough shall be concreted for 1 mtr minimum.
- 15) Cable route Markers-
- a) Only Concrete cable markers conforming to sketch no. SDO/ CABLE LAYING/020 shall be used over the route of main cables.
  - b) It shall be placed at 30-40 mtr interval and invariably at diversion points.
  - c) In approach of Relay room/ Goomties/Cable Huts, separation between markers may be suitably reduced for precise identification of route.
- 16) In RE areas, precautions to taken for cable laying stipulated in IRSEM shall strictly be adhered to.

- 17) Laying of cables in monsoon when precipitation is heavy shall be avoided.
- 18) As far as possible, laying of cable & back filling of trench shall be done in the same day.
- 19) Following records shall be maintained by JE/SSE/SSE in charge of the work-
- a) Cable route plan.
  - b) Cable cover plan.
  - c) Cable testing records before & after laying.
  - d) Cables at site record.
  - e) Drum & make wise cable laying record.

This issues with approval of PCSTE/SECR.

  
(एबीएण्डे A.B.Dahhade)  
मुख्य संकेत इंजीनियर,  
Chief Signal Engineer,  
द पून.रेलवे, बिलासपुर S.E.C. Railway,  
Bilaspur

No. SECR/S&T/Policy/02/2022/975

Date : 25.01.2022

This Policy circular is addressed to the following for strict adherence & compliance with immediate effect.

CSTE/Con, CSTE/Project-I & II, SrDSTE/BSP, R & NGP, GM/S&T/ RVNL / BBS, DYCSSTE/RE/SC, GGM/ S&T/RITES, CGM/ S&T/ IRCON.





दक्षिण पूर्व मध्य रेलवे  
SOUTH EAST CENTRAL RAILWAY



कार्यालय

प्र.मुख्य संकेत एवं दूरसंचार इंजीनियर

द्वितीय तल

दधुमरे जौनल मुख्यालय बिल्डिंग

बिलासपुर-495004

Office of the  
Pr.Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)3268059

Fax : (07752)415274

No. SECR/S&T/DRG/2061

Date : 23.03.2020

CSTE/Con

CSTE/Proj


Sub : Availability of updated and corrected drawings at S&T installations.

Ref : SrDSTE/R's letter No. S&T/R/JK/LC/s/20/114 dtd 29.01.2020.

Vide reference above, division has sent incomplete drawing for LC No. 383 & 436 for approval of Headquarter. On enquiry, it revealed that original circuit diagrams for LC No. 383 & 436 are missing at site, as same were not handed over by the Executing Agency. In absence of complete circuit diagrams, this office is unable to process the request of SrDSTE/R for part approval.

To obviate the above problem in future, it is advised to follow the following strategy and timeline for circuits and other drawings:

- (i) As soon as the station is commissioned, DyCSTE/Con or DyCSTE/Proj will handover two copies of as built drawing of circuits and other drawings duly signed by him for the corrections done and keep one copy at the station and other one with Depot in-charge of the open line. The copy at station should be made available from the first day of commissioning itself.
- (ii) One more copy will be made and sent to Construction/Project Hq for incorporating corrections in the tracings.
- (iii) The tracings duly approved by the concerned authority along with requisite number of sets (3 only) will be handed over to Hq and Division within three months of the date of commissioning.
- (iv) Once all the circuits are handed over and deficiencies are rectified **take over of the station will be done by open line.**
- (v) No deemed to be taken over concept will be entertained henceforth.
- (vi) SrDSTEs will apprise Executing Agency and PCSTE/CSE in case of non adherence to these time lines and will not allow till further commissioning. DRM may also be taken in the loop to ensure compliance to above.

  
(एम. के. यादव M. K. Yadav) 23/3/2020

प्रधान मुख्य संकेत एवं दूरसंचार इंजीनियर,  
Principal Chief Signal & Telecom Engineer,  
दधुमरे बिलासपुर S.E.C. Railway, Bilaspur

Copy to SrDSTE/Co/BSP, SrDSTE/R & SrDSTE/NGP for information and n.a.





दक्षिण पूर्व मध्य रेलवे  
SOUTH EAST CENTRAL RAILWAY



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प्रधान मुख्य सञ्चालन एवं दूरसंचार इंजीनियर

द्वितीय तल

दफ्तरे जोगल मुख्यालय बिल्डिंग

बिलासपुर-495004

Office of the  
Principal Chief Signal & Telecom Engineer  
2nd Floor, SECR Zonal Hq Buildg  
Bilaspur-4950

☎ : (07752)268059

Fax : (07752) 268219

Policy Circular : 02/2021

Date : 06.12.2021

**Sub : Standardisation of location of various maintenance tools to facilitate predictive/preventive maintenance of signalling gears.**

\*\*\*\*\*

Data logger, Earth Leakage detector, Automatic fuse changeover/alarm system & Maintenance terminal (PC) of EI are effective tools to assist predictive/preventive maintenance of signalling gears to avoid impending failures which otherwise can be of catastrophic nature. But, it is often noticed that these tools are not taken advantage of either due to their being in a state of disuse or installed away from regular access of maintenance staff.

In view of above, following policy guidelines are issued for strict adherence :

1. Data Logger PC along with printer will be installed in **Maintainer's Room** at the station.
2. Maintenance terminals of EIs will be installed in **Maintainer's Room**.
3. ELDs will be installed in Maintainer's Room/IPS Room & wired in Data logger.
4. Automatic fuse changeover cum Alarm system will be provided in Relay room and its common Audio visual alarm unit will be placed inside ASM's room as well as Maintainer's Room. Alarm is also to be provided at a central location (Control test room) through Data logger.

Division will ensure proper maintenance of above equipments.

This issues with approval of PCSTE/SECR.

  
06/12/21  
(S. K. Solanki)

Chief Signal Engineer  
SEC Railway, Bilaspur

No. SECR/S&T/Policy/2021/765

Date : 06.12.2021

This Policy circular is addressed to the following for strict adherence & compliance with immediate effect.

CSTE/Con, CSTE/Project-I & II, SrDSTE/BSP, R & NGP, GM/S&T/ RVNL / BBS, DYCSSTE/RE/SC, GGM/ S&T/RITES, CGM/ S&T/ IRCON.



# दक्षिण पूर्व मध्य रेलवे SOUTH EAST CENTRAL RAILWAY



कार्यालय

प्रधान मुख्य संकेत एवं दूरसंचार इंजीनियर

द्वितीय तल

दपुमरे जीनल मुख्यालय बिल्डिंग

बिलासपुर-495004

Office of the  
Principal Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)260059

Fax : (07752)415274

**Policy Circular: 01/2024**

**Date: 02.05.2024**

**Sub:** Guidelines for provision of Axle counter track sections in parallel to DC track circuits to improve availability.

In going for providing standby axle counters across DC track circuits, considering preparatory auto resetting of axle counters in all cases will improve safety in train operation instead of hard resetting by SM through LV. For this, reliability of DC track circuits has to be maintained in high order. Such provisioning is envisaged to cater to frequent and intermitted failures of DC track circuits on busy/ important yards/sections only.

In this connection, the following policy guidelines for provision of Axle counters in parallel to DC track circuits, duly considering the safety and other requirements, are issued as follows:

1. Provision of Axle counters in parallel to DC track circuits should not be a general approach. It should only be provided with proper justification thereof.
2. Wherever provided in parallel to DC track circuits, there should be provision for preparatory mode of auto resetting of Axle counter only. Auto-resetting of Axle counters to be actuated by clear status of DC track circuit.
3. Exception reports on failure of DC track circuit or Axle counter to be generated and SMS sent through data logger to concerned Staff/Officers as per extant practice for prompt response.
4. Manual resetting of Axle counters by SM through LV is not required.
5. Maintenance for reliability DC track circuits should be in high order.
6. No unsafe/short-cut practice shall be adopted under any circumstances.
7. No dead section greater than 2 mts. to be allowed.
8. Under no circumstances track circuit should remain in failure and for more than 12 hrs.
9. SSE/JE/ESM needs to draw exception report daily to ensure that both the systems are healthy. Test room at Divisional headquarters to also ensure it.
10. Axle counter shall not be provided in parallel to DC track circuits on Rusty Rail (IRSEM Para: 17.3.13).

11. Feedbacks on performance of standby axle counters provided in above manner over a period of 3 months after commissioning to be submitted to HQ for appreciation.

This issues with approval of PCSTE/SECR.

  
(शीला तिकी Sheela Turkey)

मुख्य संकेत अभियंता

Chief Signal Engineer

इ.पू.म.रेलवे,बिलासपुर S E C Railway,Bilaspur

No.: SECR/S&T/Policy/01/2024/133

Date: 02.05.2024

This policy Circular is addressed to the following for strict adherence & compliance.

**CSTE/Con, CSTE/Project-I & II, SrDSTE/BSP, R & NGP, GM/S&T/RVNL/BBS, DyCSTE/RE/SC, GGM/S&T/RITES, CGM/S&T/IRCON.**



दक्षिण पूर्व मध्य रेलवे  
SOUTH EAST CENTRAL RAILWAY



पदाधिकारी

प्रधान मुख्य संकेत एवं दूरसंचार इंजीनियर

द्वितीय तल

राजमहल जंक्शन मुख्यालय बिल्डिंग

बिलासपुर-495004

Office of the  
Principal Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752)268054

☎ : (07752)415274

Policy Circular: 02/2024

Date: 08.05.2024

**Sub:** Policy guidelines for implementation of SigDATE.

**Ref:** 1. RDSO letter no. RDSO-SIGOPRCJ(IIT)/1/2020 dtd. 07.02.2024.  
2. RB PRIME (2024-25)

SigDATE (Signalling Design Automation Tool for EI) is a fast evolving technology, being developed by RDSO with IIT Kharagpur, as a automation tool for following activities:

1. Generation of RCC from SIP.
2. Generation of application logic circuits for EI from RCC.

Since it was first rolled out on 23.08.2023 for generation of RCC (up to 100 routes) it has evolved up to its 4<sup>th</sup> version facilitated by corrective feedbacks from various Railways.

However, executing units on SECR has not been forthcoming on its implementation as on date to facilitate and familiarize the technology as advised by Railway Board from time to time. During VC with RB on 29.04.2024, implementation of SigDATE has been reiterated to be complied with due earnestness as vital PRIME item for year 2024-25.

Therefore, a policy based approach for implementation of SigDATE on SECR has been thought of and following stipulations are being issued for adherence by all concerned:

For commissioning of all new EIs up to 100 routes:

1. RDSO typical circuits for application logic design of EI version 2.0 (or latest) should be followed for commissioning with generation of RCC through SigDATE ver4.0 (or latest)
2. Application logic should be done through SigDATE ver4.0 (or latest) for some selected works as decided by HQ on trial basis till further decision on its universal implementation.
3. Feedback on SigDATE, if any, should be forwarded to HQ for onward forwarding to RDSO from time to time.
4. Certificate for Compliance of above as advised by HQ should be submitted as a checklist item in Applications for TSAA.

5. Els up to 100 routes should be commissioned with Goonly less architecture.

This issues with approval of PCSTE/SECR.

  
(शीला तिरकी Sheela Tirkey)  
मुख्य संकेत प्रभियंता  
Chief Signal Engineer  
द.पू.म.रेलवे, बिलासपुर S E C  
Railway, Bilaspur

No.: SECR/S&T/Policy/02/2024/148

Date: 08.05.2024

This policy Circular is addressed to the following for strict adherence & compliance.

CSTE/Con, CSTE/Project-I & II, SrDSTE/BSP, R & NGP, GM/S&T/RVNL/BBS,  
DyCSTE/RE/SC, GGM/S&T/RITES, CGM/S&T/IRCON.





दक्षिणपूर्व मध्य रेलवे  
SOUTH EAST CENTRAL RAILWAY



कार्यालय  
प्रधानमुख्य संकेत एवं दूरसंचार इंजीनियर  
द्वितीय तल  
रघुनारायणलाल मुकुंदलाल बिल्डिंग  
बिलासपुर-495004

Office of the  
Principal Chief Signal & Telecom Engineer  
2<sup>nd</sup> Floor, SECR Zonal Hq Building  
Bilaspur-495004  
☎ : (07752) 268059  
Fax : (07752) 268219

Policy Circular: 03/2022

Date: 04.03.2022

**Sub: Uniform policy on miscellaneous tests to be carried out during FAT.**

FAT testing on Application software is performed with computer simulation. Normally, conditions for route initiation/lowering of signals, auto route/overlap release, sectional route release and interlocking between routes/sectional routes/overlaps, point/crank handle control chart are prescribed to be checked in approved RCC with reduced timing in timer logic assigned to various functions. Interface with I/O card & communication between CIUs/ CPUs are not checked as EI hardware is not used in FAT. Hence, following tests are stipulated to be done during FAT -

- (i) RCC (including negative testing)
- (ii) Square sheet

However, it has been experienced that some problems in logic surface at SAT/Commissioning/ even after commissioning stage which are missed out to be checked during FAT. These issues are related to safety aspects, efficacy of design redundancies provided in approved logic, vital time delays assigned to various functions, emergency operations, working of counters, resetting features, Block working/Block release, auto normalization of functions etc which are not explicitly indicated in RCC.

In view of above, a checklist on miscellaneous checks to be carried out during FAT has been worked out conforming to extant design practices which shall be a essential part of FAT report jointly signed by OEM & Riys.

This issues with Approval of PCSTE/SECR

**Encl: Checklist**

  
(ए.बी.दाभाडे A.B.Dabhadre)  
मुख्य संकेत इंजीनियर  
Chief Signal Engineer,  
रघुनारायणलाल मुकुंदलाल बिल्डिंग, बिलासपुर S.E.C. Railway, Bilaspur

No.: SECR/S&T/Policy/03/2022/1164

Date : 04.03.2022

This Policy circular is addressed to the following for strict adherence & compliance:

CSTE/Con, CSTE/Project-I & II, SrDSTE/BSP, R & NGP, GM/S&T/ RVNL / BBS,  
DYCSTE/RE/SC, GGM/ S&T/RTES, CGM/ S&T/ IRCON.

**Checklist****Miscellaneous test check during FAT**

Name of the Work-

SIP No./RCC No. -

S/N	Items	Remarks by Drawing & Design unit.	Remarks by Official conducting FAT.
1.	<b>Interface</b> Bit position- Allotment of ports as per Approved Bit chart. • Output bits and their corresponding read back bits must be in the same Microlock to avoid dependency on communication between Microlocks which may lead to false setting of FCOR bit. (Relevant to HITACHI make EIs)		
2.	<b>Signals</b> Aspect control chart as per approved SIP. (Additionally It is to be checked that whenever Home displays Ywu & Main line starter goes to green, aspect of Home is unchanged).		
3.	Cascading arrangement in Signals.		
4.	In alteration works, it is to be checked that additional aspects of each signals are updated in concerned ECPR/OFFPR logics- where Starters are released by Adv Starters all starters should be checked for each aspect of Adv Starter.		
5.	Emergency route lease & working of counter.		
6.	Releasing of sectional routes (TRSR/TLRSR)		
7.	Calling On Initiation and working of counter.		
8.	Calling-on signal initiation in the same route of Home (For Calling on below Home sig) & Starter (For Calling on below starter). This is to verify that whenever main route is locked due to failure of T/cks, Calling on can be lowered for same route just by cancelling the main signals.		
9.	Checking 'Calling on Signals' when all track circuits in the route are dropped (except first track circuit in case of Calling on below Auto signals).		

S.N	Items	Remarks by Drawing & Design unit.	Remarks by Official conducting FAT.
10	UECR bit to be checked in concerned HR lowered over diversion (UECR Down concerned signal should fly back to danger).		
11	Time delay STR 5 sec to HR logic of Starter signals.		
12	Time delay STR 3 sec for ECPR logic of relevant stop signals.		
13	For single track circuit in route- 120 sec time delay for route release after clearance of route by train.		
14	For Starter signals having single track ckt in route- No time delay for run through or Starter released by Adv Starter case.		
15	For Wayside stations whenever shunting is done by Starter (having single track circuit in route)- 120 sec time delay for route release ( not for run through case).		
16	Adv. Starter initiation indications- separate indication through NRR as there is no track circuit beyond Adv Starter in S/L & D/L line sections.		
17	<b>Block/IBS working</b>		
	Efficacy of High Reliability Block release circuit for DLBI.		
18	Efficacy of TOLR circuit in DLBI release.		
19	Raising back of Adv. Starter in case of premature TOL in DLBI working should not happen.		
20	All Vital Output bit pick up state to be checked for concerned Block working (SLBP, DLBP, DLBI, TLBI etc).		
21	Time delay STR 5 sec to TAR logic (TLBI)		
22	Train runaway indication & resetting in IBS sections and working of Reset/permission counters.		
23	Vital Input/Output Bits for chubbing of IB Signals with station Signals wherever required.		
24	UP & DN AT of IBS audio visual indication (Normally- yellow & flashing red in case of failure).		

S.No	Items	Remarks by Drawing & Design unit.	Remarks by Official conducting FAT.
25.	Input/output bits for Soft resetting of Digital Axle counters.		
26.	Working of various buzzers/acknowledge functions.		
27.	<b>Points</b> Auto operation of points during Signal initiation.		
28.	Track locking/Emergency point operation & working of counter.		
29.	Emergency crank handle release in route locked condition & working of counter.		
30.	STR 5 sec to CHRPR for KLR circuit.		
31.	Time delay to EWNPR(For Emergency point operation wherever TPZR is provided)- • STR 10 sec for operation of points.		
32.	WZR logic testing- • CH out & operate the point- It does not take the command & Point indication is not disturbed. • Drop the controlling track circuits & operate the point- It does not take the command & Point indication is not disturbed.		
33.	Testing of NLPR/RLPR logic- • Disturb detection of a point—initiate signal over the point— point will operate automatically but route will not be set & locked due to failure of indication of this point— it shall not be possible to operate the point manually till cancellation of signal.		
34.	Flashing indication in case of failure in detection of control points.		
35.	<b>Auto Signalling feature in Station EI</b> Twin input of ECPR & HBPR of signal ahead.		
36.	Auto normalization of TSR after system reset.		

S.No	Items	Remarks by Drawing & Design unit.	Remarks by Official conducting FAT.
37.	LSS & Main line starter to follow same aspect in Auto mode.		
38.	Indication of AR & AWR of relevant LC gate indication in VDU.		
39.	Approach locking of Home & Main line starter- Route releases immediately after cancellation of signals if approach track is not occupied.		
40.	Picking up of AR & AWR bits (for Approach lock & Approach warning) for LC gates in Auto section relevant to EI logic.		
41.	UP & DN AT of Auto goes with audio visual indication (Normally- yellow & flashing red in case of failure).		
42.	Input/output bits for Soft resetting of Digital Axle counters.		
43.	UP train/ DN train approach warning/acknowledge functions.		
44.	<b>LC gates/ Siding control</b> Design provision for releasing of LC gate whenever locked by Signal route.		
45.	Vital Input/ Output bits for chubbing of gate signals with Station signals wherever required.		
46.	Emergency Gate release & working of counter.		
47.	Siding control Vital input/ Output bits.		
48.	<b>Vital features of EI</b> Line Block/Unblock feature for individual Signal routes.		
49.	Signal, Point, CH, LC gate, Siding Point Block/Unblock features wherever provided.		
50.	When PC control key is out, all Signal Cancellation/ Blocking of functions should be ensured and It should not be possible to initiate Signals/Un-blocking of functions.		
51.	Auto normalization of CH/Siding/LC gate controls, ALSRs, SRs (DLBI working), BRs (IBS working) etc after System reset.		
52.	VDU Layout as per standard practice.		
53.	Operation of Control terminal (VDU) through key board (with detailed functional chart).		
54.	Checksum/CRC of FAT version.		



S.No.	Items	Remarks by Drawing & Design unit.	Remarks by Official conducting FAT.
	<b>Additional items, if any</b>		

Note:

- Design official shall certify the checklist specific to the logic being tested incorporating additions/ deletions if any.
- Certified checklist shall be handed over to official entrusted with FAT for joint testing with OEM.
- TRSR/TLRR locking with routes should be checked through TRSR/TLRR chart.
- Overlap locking with routes should be checked through OV chart.
- Checksum/CRC History of Application logic of the station from the stage of approval of Application logic by Railways up to final service version for the station shall be obtained from the OEM for record.

Checklist certified.

Checked during FAT

(Drawing & Design Official)

(Rep. Of Rly)

(Rep. Of OEM)

9 ✓

# **Railway Board's Policies**

(भारत सरकार) GOVERNMENT OF INDIA  
(रेल मंत्रालय) MINISTRY OF RAILWAYS  
(रेलवे बोर्ड) RAILWAY BOARD

No. 2013/Sig/01/(pt)Dup

New Delhi, dt. 19.11.2020

**General Managers**  
**All Indian Railways**

**DG**  
**RDSO**

**CMD**  
**RVNL, RCIL, IRCON, RITES, KRCL**

**Sub:** System Improvement in works contract for commissioning of Electronic Interlocking (EI) System.

**Ref:** Vig Dte's File No. 2020/V3/S&T/03-PC(R) dated 14.10.2020.

In reference to preventive checks done by Vigilance on few Railways and PSUs following system improvement in works of EI as suggested by Vigilance Directorate has been agreed to –

1. While clubbing of works, EI works of two specifications RDSO/SPN/192/2019 ver 2 and RDSO/SPN/203/2011 ver 1 or latest should not be clubbed together.
2. S&T works tender for EI may be floated once ESPs are finalized and tentative SIP is ready, to be enclosed in the tender document to enable bidders to estimate quantity of cards/modules, wiring material etc. Further, if the works are part of joint work like doubling, gauge conversion & new lines etc. progress S&T works should be carefully planned.
3. Railways to closely monitor inspection / supply of EI materials against all future works contracts and as far as possible the contractor may be asked to supply high value items commensurate with the progress of connected field works, thereby eliminating unnecessary blockage of railway revenue. Further, as maintenance spares are to be used only after the end of the warranty period, supply of these items may be made after the installation is commissioned.
4. Zonal Railways/PSUs should urgently publish Schedule of Rates (SORs) of all major S&T items including EI.
5. While bidding in the tender for EI works, the tenderer must take OEM/its RDSO approved Indian partner's authorized breakup of numbers of each cards/modules & other accessories.
6. This shall result in ensuring uniformity and reasonable accuracy while undertaking the work. A few Railways/PSUs mention number of functions in EI Tender Schedule. Bidder may quote as per their card configuration and list should be attached as Annexure.
7. Railways shall be advised to consider latest rate available in the purchase order of stores procurement of an item being included in the estimate for a work. In the TC also, the available rates from stores contract may be discussed to assess the reasonability of rates.
8. While bidding, bidder should submit the authorization of RDSO approved source (OEM or its RDSO approved source) from which the EI is being taken. After the award of the contract, MOU with the same RDSO approved source whose authorization is taken at the time of bidding covering supply of the equipment of EI, installation, testing and commissioning of EI by the same RDSO approved source including after sales-support required during the warranty period and beyond the warranty period, before supply of equipment is undertaken.

This has the approval of Board (Member/Infrastructure).

Sd/-  
(Arjun Singh Tomar)  
Executive Director (Signal)  
Railway Board/New Delhi

Copy to – DG/IRISET – for kind information please.

भारत सरकार (GOVERNMENT OF INDIA)  
रेल मंत्रालय (MINISTRY OF RAILWAYS)  
रेलवे बोर्ड (RAILWAY BOARD)

No. 2012/Sig/ATSS/Pt.

New Delhi, Dt. 14.02.2024

PCSTEs  
Zonal Railways  
CORE/Prayagraj,  
KRCL, Metro/Kolkata

PED/S&T  
RDSO  
Lucknow

DG/IRISET  
Secunderabad

**Sub:** Technical System Application Approval (TSAA) of Electronic Interlocking.

**Ref:** (i) ED/Sig-/RDSO's LNo. RDSO-SIG0EI(TAN)/1/2022 dtd. 04.08.23  
(ii) RB's LNo. 2012/Sig/ATSS dtd. 02.09.15.  
(iii) RB's LNo. 2023/Sig/ATSS dtd. 10.01.2020,  
(iv) RB's LNo. 2021/Sig/25-Conf/5/SSC dtd. 26.02.21,  
(v) RB's LNo. 2012/Sig/ATSS/Pt. dtd. 28.02.2023.

Vide letter under reference (iii) above, PCSTEs were empowered for granting Technical System Application Approval (TSAA) of Electronic Interlocking for all EI installations upto 100 routes which was further enhanced to 200 routes vide reference (iv) & (v) above. Policy guidelines were also issued for obtaining TSAA in case of alterations in EI vide reference (ii) above.

2. Based on RDSO's letter (Ref i above), the criteria for granting TSAA has been reviewed and henceforth, the following will be the guidelines for TSAA:

- PCSTEs are empowered to grant TSAA for all EIs having routes up to or less than 200 routes including alterations thereof till total number of routes surpasses 200, in that case TSAA shall be granted by RDSO.
- For alterations in EIs having more than 200 routes, TSAA shall be granted by PCSTE in case there is no addition to number of CPUs. However, if alteration involves provision of additional CPU, TSAA shall be granted by RDSO.
- For EI with initial installation case of new vendor/new model on the Zonal Railway, TSAA shall be granted by RDSO.

  
(रामचंद्र मीना)  
कार्यकारी निदेशक (सिग्नल)  
edsignal@rb.railnet.gov.in



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



No. 2017/Sig/WP/Works Progress/1

New Delhi, Date: 18.05.2023

The General Manager,  
All Indian Railways

The General Manager,  
CORE

**Sub:** Gazette Notification for exemption in 'The Railway Act 1989' –  
Dispensation of CRS sanction for identified signalling works.

**Ref:** (i) Gazette Notification no.S.O.2184(E) dated 16.05.2023  
(ii) Railway Board's letter no.2017/Sig/WP/Works Progress/1 dtd.  
10.05.2018 & 23.11.2022

1. Please find enclosed herewith a copy of the Gazette Notification no. S.O. 2184(E) dated 16.05.2023, regarding exemption from the application of sections 21, 22 & 23 in 'The Railway Act 1989'.
2. Following specific signalling works are dispensed with from CRS sanction as provided in the above Gazette Notification:
  - (a) Introduction of Double Distant signalling alongwith corresponding changes at adjacent stations without yard remodeling;
  - (b) Introduction of new Intermediate Block signaling except in section with Slip siding and Catch siding, alongwith corresponding changes at adjacent stations without yard remodeling; and
  - (c) Introduction of new Automatic Block Signaling except in section with Slip siding and Catch siding, alongwith corresponding changes at adjacent stations without yard remodeling.
3. The alternate procedure to be followed by Zonal Railways for ensuring safety is detailed below:
  - a) The sanction to execute and open above mentioned works shall be accorded by the General Manager of zonal railway with no further delegation.
  - b) For seeking sanction of the General Manager, all necessary documents required including as laid down in "The Railway Opening for Public Carriage of Passengers Rules, 2000" shall be prepared in the formats as applicable.

Page 1 of 2



- c) For automatic block signalling works, joint inspection report of the section by the Chief Electrical Loco Engineer/Chief Electrical Engineer (Operation), Chief Signal Engineer (CSE) and Territorial Chief Engineer of the zonal railway, shall be made, before sanction to open the work by the General Manager.

Zonal Railway may take necessary action for opening of item (a) to (c) as per above alternate procedure. Consequent to the gazette notification, the necessary amendments to Rule & Manuals will follow.

DA: as above

  
18.05.2023  
श्याम वर्मा /Shyam Verma  
कार्यकारी निदेशक/सिग्नल (विकास)  
Executive Director/Signal (Dev.)  
[edsd@irb.railnet.gov.in](mailto:edsd@irb.railnet.gov.in)

No. 2017/Sig/WP/Works Progress/1

New Delhi, Date:18.05.2023

Copy forwarded for kind information to:

**The Chief Commissioner of Railway Safety**, Office Compound of DRM/NER,  
Ashok Marg, Lucknow.

**(भारत सरकार) GOVERNMENT OF INDIA**  
**(रेल मंत्रालय) MINISTRY OF RAILWAYS**  
**(रेलवे बोर्ड) RAILWAY BOARD**

**No. 2020/Sig/G/2/RDSO**

**New Delhi, dated 23 .04.2024**

**PCSTEs**

**All Indian Railways**

**Sub: Automatic Block Signalling (ABS) - train detection system provided in redundancy.**

**Ref: (i) RB's letter no. 2012/Sig/M/DAC/DD dtd. 31.12.2013**

**(ii) RB's letter no. 2023/ABS Committee/Railway Board dtd. 16.11.2023**

**(iii) RB's letter no. 2007/Sig/M/7/Genl. Dtd. 16.11.2023**

**(iv) RDSO's TAN no. STS/E/TAN/Dir.Sig.VII Dtd.13.02.2015**

The guidelines regarding provision of dual detection and design redundancy to ensure safe & reliable train detection system have been issued vide references above. These include locations and conditions, diversity, resetting, mismatch monitoring through data logger, disconnections etc. However, instances have come to notice in which Zonal Railways have not adhered to implementation of contents of the guidelines. Some important instructions regarding the same to ensure availability of Signalling system with safe and reliable train detection system are reiterated/ given below.

1. All Automatic Block signalling shall be done with Axle counters with design redundancy. Both systems should be monitored separately through data logger along with generation of exception reports/alarms, to be transmitted to S&T staff/ Signal Control about mismatch / failure of the system, which should be attended promptly.
2. Axle Counter DPs to be preferably clamp mounting type, on different rails, with required stagger.
3. During failure of any one of the systems in dual detection, the resetting shall invariably be activated automatically i.e. Auto resetting of failed system by other healthy system with prescribed time delay.

4. Resetting of axle counters shall always be in preparatory mode.
5. In case of failure of both systems in dual detection, Resetting arrangement shall be kept in ASM room and manual resetting to be done with cooperation of ASMs of adjacent stations after ensuring no train in section on the concerned line on which resetting is performed.
6. Redundancy to ensure availability of system has to be designed right from the stage of power supply with separate DC to DC converters for each system, separate cables for main and standby system with cabling in separate paths.
7. Provision of AT supply as per extant guidelines should be ensured along with IPS.
8. Monitoring of auto hut door lock through data logger to be provided.
9. For safety of staff, while working in big groups, provision of lookout person should be adopted.
10. Provision of VHF sets, including 25W sets at auto huts, if required, should be ensured for better communication during maintenance and attending failures.
11. Barring exceptional circumstances, Porta cabins not to be used for S&T works. Auto huts to be provided with proper fencing and earthing arrangements, at approximately 3 KMs or as required. Auto huts to have future space for telecom equipments with separate entry.

  
23/04/2024  
(रामेश्वर मीना)

(Rameshwer Meena)

कार्यकारी निदेशक(सिगनल)

Executive Director (Sig)

E-mail: [edsignal@irb.raillimit.gov.in](mailto:edsignal@irb.raillimit.gov.in)

**भारत सरकार/GOVERNMENT OF INDIA**  
**रेल मंत्रालय/MINISTRY OF RAILWAYS**  
**(रेलवे बोर्ड/RAILWAY BOARD)**

No. 2023/TT-1/27/8 (efile 3440611)

New Delhi, dated 09.10.2024

**General Manager,  
All Indian Railways**

**Sub:** Signal Spacing in Automatic Block Signalling territory.

**Ref:** Board's order No ERB-1/2024/23/37 dated 28.06.2024.

\*\*\*\*\*

A committee vide Board's letter under reference was constituted by Ministry of Railways to review the spacing of signals in Automatic Block Signalling.

2. Based on the recommendations of the committee, Board has approved the following guidelines for spacing of signals in Automatic Block Signalling territory:

- I. For ABS Signalling territory, signal spacing shall be as defined in IRSEM Para 7.1.14(h), 20.1.1(e) and they shall be normally located with a spacing of one km from each other subject to other criteria and headway required.
- II. Locations of signals may be planned by zonal railways based on site requirement like gradient etc. after joint survey by Signal Sighting Committee.
- III. There shall not be wide variation in spacing of Signals in contiguous sections to avoid confusion to loco pilot.
- IV. The spacing of ABS Signals for lines on Dedicated Freight Corridors or lines exclusively used for freight traffic may normally be kept at 2 kms as per existing practice of WDFC and EDFC.
- V. All efforts to be made to segregate passenger and freight traffic in sections with 3rd /4th lines to get maximum benefit from ABS.
- VI. Elimination of LC gates shall be expedited to enable uniform spacing of Signals in ABS territory.

This issues with approval of Board (MOBD, MI, MTRS and CRB & CEO).

Sd/-  
(Shyam Verma)  
Executive Director (Signal dev.)

Sd/-  
(Pradeep Kr. Ojha)  
Executive Director (TT/Freight)

Copy to: For kind info pl

- 1) PSOs/Sr. PPSs/PPSs/PSs to CRB & CEO, MI, MTRS, MO&D, DG/Safety, Railway Board.
- 2) Sr.PPS/FPS to Secretary, Railway Board, Sr.PPSs/PPSs/PSs to AM(CE), AM(M & BD), AM(Traction), AM(ME), AM(Pg), AM(Signal), AM(T&C), AM(Traffic), AM(Works), AM(Telecom), AM(RE), AM(PL), AM(RS).
- 3) Sr.PPSs/FPS/PSs to PED/CE(P), PED/Infra, PED/EERS, PED/Safety, PED/GS, PED/EE(Dev.), PED/TTM, PED/Tr/(M&MC), PED(Chg.), PED/SM, PED/S&T(Dev.)
- 4) PCSTES & PCOMs, Indian Railways.

(भारत सरकार) GOVERNMENT OF INDIA  
(रेल मंत्रालय) MINISTRY OF RAILWAYS  
(रेलवे बोर्ड) RAILWAY BOARD

No.2023/ABSCOMMITTEE/RailwayBoard

New Delhi, dated 16.11.2023

General Manager  
All Indian Railways

**Sub: Guidelines for provision of Automatic Signalling and Twin Single line working over Indian Railways.**

**Ref: (i). Signal Directorate Letter no. 2021/Sig/WP/Action Plan dated 14.06.2022.**

**(ii).RB order no. ERB-I/2023/23/50 dated 05.09.23**

1. Vide above reference letter no (i), guidelines for provision of Automatic Signalling (ABS) on Indian Railways were issued on 14.06.2022.
2. Subsequently, a committee, vide ref (ii), was constituted by Ministry of Railways to review the guidelines for selection of sections for ABS, provision of Twin Single Line working and spacing of common loop.
3. Based on the recommendations of the committee, revised guidelines for provision of ABS are as under:-
  - a. All sections on HDN Routes on IR.
  - b. Sections on HUN routes identified by Zonal Railways based on Traffic density.
  - c. All notified "sub-urban sections".
  - d. ABS shall be provided on sections where 3<sup>rd</sup> and/or 4<sup>th</sup> line works are being undertaken. Further, in future works, on routes where corridors of similar speed trains are not possible and there is heavy mixed traffic with high speed differential, 3<sup>rd</sup> and 4<sup>th</sup> line may be planned along with ABS. Also, alignment of 3<sup>rd</sup> and 4<sup>th</sup> line shall be planned to avoid Permanent Speed Restrictions (PSRs). Possibility of bypassing major junctions depending on traffic patterns may be contemplated while planning 3<sup>rd</sup> and 4<sup>th</sup> line.
  - e. ABS may also be planned for any other section identified by Zonal Railways based on traffic requirements.
  - f. While planning ABS works, safety and feasibility should be examined based on site requirements like gradient etc. Accordingly, location for Signals in ABS shall be decided by Zonal Railways. For this joint survey by inspectors of traffic, TRO, Engineering and S&T may be done before finalisation of Roll Diagram/ SIP of auto sections.
  - g. ABS works shall be done with dual detection as per existing policy guidelines to improve availability. RDPMS may also be planned for ABS territory as per RDSO specifications.



- h. At Major Junctions, integrated master plan for traffic from all directions shall be prepared. Upto three block sections on approach of Major Junctions shall be provided with ABS to minimize congestion. Further, based on site requirements, bypass chord/ ROR around Major Junctions may be planned to address congestion. These chord line/ROR and other related works can be part of traffic facilities works in proposed Amrit Junction umbrella.
- i. Balance ABS works identified in Mission 3000 MT shall be sanctioned and all ABS works under Mission 3000 MT may be commissioned by 2026-27 to get maximum benefits of enhanced line capacity.

Further, following guidelines regarding Twin Single line and Common loop may be followed:-

- i) Twin Single line working improves operation flexibility. Zones may plan implementing twin single line while planning doubling works based on traffic pattern and maintenance requirements.
- ii) Common loop shall be planned as per standard layouts issued by Board vide letter No.2015/Sig/WG/Standardise Layout dated 12.07.2017. Normally, common loop shall be planned at every 4th station. However, in case of Gatishakti cargo terminals, good sheds or other terminals, common Loop may be planned as per site requirement.

This issues with approval of Board (MI, MOBD and CRB & CEO).

  
(Jonal Chaudhary)  
JD/Gati Shakti/S&T

**Copy to:**

- (1) PPS to MI- For kind information of MI.
- (2) PPS to MOBD- For kind information of MOBD.
- (3) PPS to MF- For kind information of MF.
- (4) PED/GS, PED/CC- For kind information.
- (5) PCOMs, All Zonal Railways- For kind information and necessary action.
- (6) PCSTEs, All Zonal Railways- For kind information and necessary action.
- (7) CAO/Cs, All Zonal Railways- For kind information and necessary action.

Brief Summary of Authorities to LP/Motorman/ Train Manager for train operation during failure of Automatic Signalling.

Ref: Railway Board letter no: 2024/TT-IV/12/10 dtd. 16.08.2024 (Unified SR to GR 9.12)

**Working of trains in Automatic section during failure of Auto signalling**  
**(Double line section)**

SL No.	Failure Condition	Authorities to LP/Motorman/Train manager (As applicable)
1.	For passing defective Manual stop signals / Semi Automatic stop signals (working as a Manual stop signal) at 'ON'.	<b>T/369(3b).</b> Speed should not exceed 15 Kmph.
2.	Failure of Signal(s) between two or more block stations in Automatic section (when prolonged failure is not declared)	<b>As per GR 9.02.</b> (LP shall stop in rear of the Automatic signal at ON for 01 min by day & 02 min by night). <b>Speed:</b> <ul style="list-style-type: none"><li>• Shall not exceed 15 Kmph (In normal conditions of visibility).</li><li>• Shall not exceed 10Kmph (Whenever owing to curvature, during dense fog, rain or dust storm or any other cause impairing visibility).</li></ul>
3.	Failures of Auto signal/ signals when communication available. (when prolonged failure is declared)	<b>Authority: T/D 912</b> <b>Speed:</b> First train: <ul style="list-style-type: none"><li>• Speed shall restricted to 25 Kmph (When view ahead is cleared)</li><li>• Speed shall be restricted to 10 Kmph (when view ahead is not cleared)</li></ul> Subsequent trains: normal speed. Special attention: all midsection gates to be passed after with hand signal of Gate Keeper. <b>Reception of trains at next station:</b> As per the aspect of Reception signal/calling on. Or Pilot in through T-369(3b) if signal is defective. <b>Speed over Facing points:</b> should not exceed 15 Kmph.

4.	Failures of Auto signal/ signals when no communication available. (when prolonged failure is declared)	<p><b>Authority: T/B 912</b></p> <p><b>Speed:</b></p> <ul style="list-style-type: none"> <li>• Not exceeding 15 Kmph (when view is clear)</li> <li>• Not exceeding 10 Kmph (when view-ahead is impaired)</li> </ul> <p>Interval between dispatch of subsequent train: 25 min.</p> <p>Reception of trains at station in Advance- T/369(3b)</p> <p><b>Speed over Facing points:</b> should not exceed 15 Kmph.</p>
5.	Relief engine/ Train on the obstructed line in case of Obstruction or accident in an Automatic Block Signalling Section.	<p><b>Authority: T/C 912</b></p> <p><b>Speed:</b></p> <ul style="list-style-type: none"> <li>• Shall not exceed to 15 kmph (Over Straight with Clear view)</li> <li>• Shall not exceed to 10 kmph (When view ahead is impaired).</li> </ul>
6.	Working of Trains under the Automatic Block System during obstruction of one line when signals are operative and communication Available (On Double Line Section).  (TSL working in Double line when Signals are operative and Communications available).	<p><b>Authority: T/E 912</b> (To LP/Motor Man &amp; TMR all trains on Right &amp; wrong Line)</p> <p><b>Speed:</b></p> <p>a) <b>Wrong direction:</b></p> <ul style="list-style-type: none"> <li>• <b>For every first train:</b> Shall not exceed 25 kmph subject to other speed restriction in force.</li> <li>• <b>Subsequent Trains:</b> Sectional speed subject to other speed restriction in force.</li> </ul> <p>b) <b>Right direction:</b></p> <ul style="list-style-type: none"> <li>• <b>For every first train:</b> Shall not exceed 25 kmph subject to other speed restriction in force.</li> <li>• <b>Subsequent Trains:</b> Sectional speed subject to other speed restriction in force.</li> </ul> <p><b>Speed over Facing Points:</b> Shall not exceed 15 kmph.</p> <p>1. First Train LP in wrong line to stop and inform all Gateman and Gangman on the way for introduction of TSL working.</p> <p>2. LP of wrong line will switch on flasher light.</p>

		<p><b>Reception in next station:</b></p> <ul style="list-style-type: none"> <li>• <b>Train running in Wrong line</b> LP of Train running in wrong line to stop before outermost point/any stop signal or shunt signal protecting the outermost point in wrong line/stop reception signal of right line whichever comes first. After that admitted by T/510</li> <li>• <b>Train running in right Line:</b> Train will be admitted by the aspect of Reception signal/calling on signal. If signal defective, it will be pilot-in by T/369(3b).</li> </ul>
7.	<p>Single Line working on Double Line Section in Automatic Block System when due to obstruction of one line when no means of communication available in case of Failure of Automatic Signalling.</p> <p><b>(TSL in Double line with no means of Communication &amp; Failure of Signal)</b></p>	<p><b>Authority:</b></p> <ul style="list-style-type: none"> <li>• <b>For Right Direction:</b> T/A 912 (To pass Station dispatch Stop Signals as well as intervening Automatic/ Semi- Automatic/ Manual/ Gate Stop Signals in "ON".</li> <li>• <b>For Wrong Direction:</b> T/A 912 (To pass Station dispatch Stop Signals as well as intervening Automatic/ Semi- Automatic/ Manual/ Gate Stop Signals in "ON" &amp; T/511 for reception of train on wrong line.</li> </ul> <p><b>In addition for both cases:</b></p> <p><b>T/B 602:</b> An "Authority for opening of Communication during Total interruption of Communication on Single Line Section".</p> <p><b>As per requirement:</b></p> <p><b>T/F 602:</b> Conditional Line Clear reply Message.</p> <p><b>T/E 602:</b> line clear enquiry message.</p> <p><b>T/G 602 &amp; T/H 602:</b> Conditional Line Clear Ticket.</p> <p><b>T/I 602:</b> Message on restoration.</p> <p><b>Speed:</b></p> <p><b>For opening communication:</b></p> <ol style="list-style-type: none"> <li>1. Not exceeding 15 kmph (Day &amp; view ahead is clear).</li> </ol>

		<p>2. Not exceeding 10 kmph (Night &amp; view ahead is not cleared).</p> <p>3. In thick, foggy or Tempestuous weather or dust storm: Walking place preceded by Two men on foot with Red light and Fog Signals.</p> <p><b>Interval for sending subsequent Trains:</b> 30 min.</p> <p><b>Speed :</b> With Caution Order Not exceeding 25 kmph (Straight &amp; view ahead is clear) &amp; 10 kmph (When view ahead is not clear).</p>
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**Working of trains in Automatic section during failure of Auto signalling**  
**(Single line section)**

<b>SL No.</b>	<b>Failure Condition</b>	<b>Authorities to LP</b>
1.	For passing defective Manual stop signals / Manual stop signals (working as a Manual stop signal) at 'ON'.	<b>T/369(3b).</b> Speed should not exceed 15 Kmph.
2.	Failure of Signal(s) between two or more block stations in Automatic section <b>(when prolonged failure is not declared)</b>	<p><b>As per GR 9.07.</b> (LP shall stop in rear of the Automatic signal at ON for 01 min by day &amp; 02 min by night).</p> <p><b>Speed:</b></p> <ul style="list-style-type: none"> <li>• Shall not exceed 15 Kmph (In normal conditions of visibility).</li> <li>• Shall not exceed 10Kmph (Whenever owing to curvature, during dense fog, rain or dust storm or any other cause impairing visibility).</li> </ul>
3.	Failures of Auto signal/ signals when communication available. <b>(when prolonged failure is declared)</b>	<p><b>Authority: T/D 912</b></p> <p><b>Speed:</b></p> <p>First train:</p> <ul style="list-style-type: none"> <li>• Speed shall restricted to 25 Kmph (When view ahead is cleared)</li> <li>• Speed shall be restricted to 10 Kmph (when view ahead is not cleared)</li> </ul>



		<p>Subsequent trains: normal speed.</p> <p>Special attention: all midsection gates to be passed after with hand signal of Gate Keeper.</p> <p><b>Reception of trains at next station:</b> As per the aspect of Reception signal/calling on. Or Pilot in through T-369(3b) if signal is defective.</p> <p><b>Speed over Facing points:</b> should not exceed 15 Kmph.</p>
4.	Relief engine/ Train on the obstructed line in case of Obstruction or accident in an Automatic Block Signalling Section.	<p><b>Authority:</b> T/C 912</p> <p><b>Speed:</b></p> <ul style="list-style-type: none"> <li>• Shall not exceed to 15 kmph (Over Straight with Clear view)</li> <li>• Shall not exceed to 10 kmph (When view ahead is impaired).</li> </ul>
5.	Working of Trains in Single Line Section in Automatic Block System when no means of communication available in case of Failure of Automatic Signalling. [Total interruption of Communication in Single Line]	<p><b>Authority:</b> T/A 912 (To pass Station dispatch Stop Signals as well as intervening Automatic / Semi-Automatic / Manual/ Gate Stop Signals in "ON".</p> <p><b>T/B 602:</b> An "Authority for opening of Communication during Total interruption of Communication on Single Line Section".</p> <p><b>As per requirement:</b> <b>T/F 602:</b> Conditional Line Clear reply Message. <b>T/G 602 &amp; T/H 602:</b> Conditional Line Clear Ticket. <b>T/I 602:</b> Message on restoration.</p> <p><b>Speed: For opening communication:</b></p> <ol style="list-style-type: none"> <li>1. Not exceeding 15 kmph (Day &amp; view ahead is clear).</li> <li>2. 10 kmph (Night &amp; view ahead is not cleared).</li> <li>3. In thick, foggy or tempestuous weather or dust storm: Walking place preceded by Two men on foot with Red light and Fog Signals.</li> </ol> <p><b>Interval for sending subsequent Trains:</b> 30 min.</p>

		<p><b>Speed :</b> With Caution Order for not exceeding 25 kmph (Straight &amp; view ahead is clear), 10 kmph (When view ahead is not cleared).</p>
6.	<p>Working of Trains in Single Line Section in Automatic Block System when means of communication available but direction of Traffic cannot be established.</p>	<p><b>Authority:</b> T/D 912.</p> <p><b>Speed :</b>  <b>First Train:</b> Speed shall be restricted to 25 kmph (When view ahead is clear) &amp; Speed shall be restricted to 10 kmph (When view ahead is not clear)  <b>Subsequent Trains:</b> Normal speed.  <b>Special attention:</b> All midsection gates to be passed after ensuring the gates are closed for road traffic with hand signal of Gate Keeper.  <b>Reception of trains at next station:</b>  As per the aspect of Reception signal/calling on.  or  Pilot in through T-369(3b) if signal is defective.  <b>Speed over Facing Points:</b> Should not exceed 15 kmph.</p>

**Note:**

The above summary is indicative. Please refer USR to GR para 9.12 communicated vide Railway Board letter no: 2024/TT-IV/12/10 dtd. 16.08.2024 for details.

**GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS  
(RAILWAY BOARD)**

No. 2015/Sig/Air-Conditioning

Dated 07.12.15

**General Manager  
All Zonal Railways,  
& CORE/Allahabad  
All PSUs,**

**Sub: Provision of Air conditioning for signaling installation.**

**Ref: Railway Board's letter 2002/Elect(G)/150/9 Dated 09/14.6.2006.**

In supersession to Railway Board's letter no. 2002/Elect(G)/150/9 dated 09/14.6.2006, as a policy, air-conditioning may be provided for every Signalling interlocking (PI/RR1/EI) installation with routes more than 100 numbers, subject to:-

- (i) For other signaling installations, with less than 100 routes, air-conditioning may be provided for those installations which are prone to dust (coal dust, stone dust, iron ore etc.) or are in vicinity of chemical /fertilizer/other industrial factories releasing harmful fumes or are in areas with extreme temperature with the agreement of CSTE & CEE.
- (ii) AC equipment shall be provided and maintained by Electrical deptt. At all such locations. Such ACs should be connected with the local supply available only from DISCOMs/SEBs and should not be fed from AT supply.
- (iii) Temperature of Air-Conditioner shall be maintained at 28°C - 30°C and it should be operated only during day time.
- (iv) The switch to operate AC at such installations shall be outside the relay room at a suitable location.
- (v) Provisioning of ACs should merely be and additional aid and non-functioning of ACs due to non-availability of power supply leading to signaling failures on account of relay/equipment failure should not be on Electrical account.

2. This issues with the approval of Board (ML).

Sd/-  
(Pranay Kumar)  
Director Elec. Engg. (I'S)  
Railway Board

Sd/-  
(Parag Kumar Goyal)  
Director Project (S&I)  
Railway Board

**GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS  
RAILWAY BOARD**

No. 2018/Trans.Cell/AC of Panel and Relay Rooms

Dated: 07.06.2019

The General Manager, All Indian Railways/PUs, NF(Cou), CORE  
The DG/RDSO/Lucknow, DG/NAIR/Vaidodan

**Sub: Air Conditioning of Relay Room provided with Electronic Interlocking System.**  
**Ref: Railway Board letter no. 2015/Sig/Air-Conditioning dated 07.12.15.**

In order to improve the reliability of Signalling System, safety of train operation and extended Codal life of Electronic Interlocking system, Board (MST, FC & CRB) have approved the following:

1. In view of the effect of operating temperature and thermal cycling on Electronic equipments and its reliability, **Relay Rooms housing Electronic Interlocking (EI) Systems will be provided with Air Conditioning (AC) along with the installation of the project.** The cost will be charged to the project and the equipments will be included in the composite tender (indoor) or as considered by the Zonal Railway.
2. For the existing installed Electronic Interlocking systems, AC in Relay room will be provided by Electrical General Branch through work sanctioned under LAW Book/Pink Book, as the case may be, under Plan Head-36.
3. Board (MST) will constitute a committee to study the aspect of increase of Codal life of the EI system provided with AC.
4. The AC equipments shall be provided on the wall(s) which are not catering to the S&T wiring and the S&T equipments and shall be provided at safe distance to avoid/reduce damage due to fire, if any. Necessary instructions issued by Board in this regard may be followed.
5. Relay Room is a safety installation and directly related to train operation. It is therefore essential that adequate care is taken to provide ACs of proper/reputed make as decided by PCEE/S/DEE (C) & PCSTE/S/DSTE.
6. Other extant instructions/guidelines issued from Board on the subject shall remain unchanged or as modified from time to time.

This Issues with the concurrence of Associate Finance of Transformation Cell of Railway Board.

  
07.06.19  
(Umesh Balanda)  
Executive Director/S&T  
Transformation Cell

No. 2018/Trans.Cell/AC of Panel and Relay Rooms

Dated: 07.06.2019

1. PFAs, All Indian Railways & Production Units
2. The ADAR (Railways), New Delhi
3. The Director of Audit, All Indian Railways

  
(Sanjeeb Kumar)  
Executive Director Accounts  
Transformation Cell

Copy: As per list attached.

**GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS  
(RAILWAY BOARD)**

No. 2011/SIG/RHS/AT

New Delhi, dated : 13.07.2012

The General Manager,  
Eastern Railway, 17, Netaji Subhas Road,  
Kolkata-700001

**Sub: Location of Signals – Provisions in SEM.**

**Ref: 1. CSTE/ER's letter no. SG.210/0/1 dated 22.12.2011.**

**2. GM/ER's letter no. SG.210/0/1 dated 13.2.2012.**

Eastern Railway has raised following issues vide reference (2) above:

- (i) Two signals located at extreme left hand side of track.
- (ii) Arrow on Signal post erected on Right Hand Side.
- (iii) Position Light Shunt Signal as per RDSO drawing.

Above issues have been examined in Board's office in consultation with Safety Directorate. It is clarified that signals shall be erected as per provisions given in GR & IRSEM, which are re-iterated as under:

**1. Para 3.04(I) of GR:**

Fixed signals shall be clearly visible to the Loco Pilot of trains approaching them and shall be placed immediately to the left of or above the line to which they refer, unless otherwise authorized by special instructions.

**2. Para 7.1.1 of IRSEM on Locations of Signals:**

Signals shall be so located and aligned as to

- (a) Display the best possible view of their aspects to Drivers of approaching trains;
- (b) To avoid, as far as possible the possibility of the aspect of one signal being mistaken for the aspect of another, and
- (c) Avoid confusion between the lights of running signals and the lights of subsidiary signals or and the lights.

Action may therefore be taken as per G&SR under special instructions. All such signals should be notified in the SR and WTT of the Railways. This may be done till such time gantry of appropriate design suitable for RE area is developed by RDSO where it is not possible to erect signal post between two tracks. RDSO has already been advised in this regard vide Board's letter no. 2011/Sig/M/1 dt.02.12.2011.

**Signal erection on RHS:**

For existing signals erected on Right Hand Side, illuminated arrow marker lit on the Signal may be provided on such signal posts after it is standardized by RDSO. In case of new signal, approval of GM would be required for not locating Signal on Left Hand Side.

Sd/-  
(Rajmal Khoiwal)  
Director (Signal)

**For Signal erection on Right Hand Side, Railway Board vide its letter No. 2018/Safety(A&R)/19/24, dated 19.11.2018 mentioned that:**

*"Some of the Zonal Railways have pointed out that the above instructions of Board contravene provision contained in GR 3.01 (1) and needs to be withdrawn. The issue has been considered in Board's office and it has been decided to withdraw the provision requiring the approval of GM for not locating signal on left hand side as contained in last para of Board's letter dated 13/07/2012 referred to above."*



(भारत सरकार) GOVERNMENT OF INDIA  
(रेल मंत्रालय) MINISTRY OF RAILWAYS  
(रेलवे बोर्ड) RAILWAY BOARD

No.2020/Sig/G-2/RDSO

New Delhi, dated 25.06.2024

PED/S&T,  
RDSO, Manak Nagar,  
Lucknow


**Sub:** Hazard of point position not corresponding to the detection received in interlocking.

**Ref:** (i) RDSO letter no. RDSO-SIG0EI(CKT)/1/2020 dated 30.05.2024  
(ii) RDSO's letter no. RDSO-SIG0EI(CKT)/1/2020 dated 13.11.2023

In connection with the above subject, based on the feedback of the trials, RDSO recommended vide letter under ref (i) the proposed circuits as below, for adoption in "Standard typical circuits of EI" :

**"New bits NDKR1/ RDKR1 by direct proving of point detection and use of NDKR1 / RDKR1 in PCOR logic".**

In order to enhance safety, Boards agree to incorporate the proposed alteration in Standard Circuits for uniform adoption over all zonal railways.

  
25.06.2024  
श्याम वर्मा /Shyam Verma  
कार्यकारी निदेशक, सिग्नल (विकास)  
Executive Director/Signal (Dev.)  
edsd@rb.railnet.gov.in



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

२८/०१/२०२४  
२८/०१/२०२४

२८/०१/२०२४  
२८/०१/२०२४

No. 2020/Sig/12-SFTYMTR/1/CCRS/CRS

New Delhi, Date: 19.01.2024

PCSTE,  
East Central Railway,  
Hajipur

**Sub:** Merger of track circuits to manage fouling protection.

**Ref:** ECR's Letter no. EC/S&T/DRG/Corres./2021 dated 15.01.2024.

PCSTE/ECR vide his letter referred above has asked for clarification regarding merger of track circuits in connection with stipulation of CRS while granting sanction for Daniyawari station.

The proposal regarding merger of track circuit no. 59AT with 60AT & 6T with 52T at Daniyawari station of Danapur Division of ECR based on stipulations of CRS Eastern Circle has been examined in this office and following clarifications are issued:

1. Track circuits of different point zone need not be combined / merged. These should be kept separate for each point zone, if feasible at site, for ease of maintenance, lesser MTTR (Mean Time To Repair) during track circuit failure and lesser complexity in series jumpering of track circuits.
2. To ensure safety, fouling track circuits protection should be achieved through circuit design as per provision of IRSEM.

२८/०१/२०२४  
(रामेश्वर मेना)

(Rameshwer Meena)

कार्यकारी निदेशक/सिग्नल

Executive Director/Sig

E-mail: cdsignal@rb.railnet.gov.in

Cc: 1. CRS Eastern Circle for kind information.

2. PCSTE, All Zonal Railways for kind information.



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



No.2021/Sig/WP/Action Plan  
Date:04.10.2023

New Delhi,

The General Manager,  
All Zonal Railway.

**Sub: Requirement of OFC cables for Modern S&T works**

Presently a number of modern Signaling and Telecom works like ABS, Kavach, LTE-4G, IPMPLS etc. involving laying of OFC cable, are ongoing on various Zonal Railways. Further, with ingress of technology, various other departments will also be requiring communication networks on OFC back bone. A tentative list of such applications of various departments is attached (Annexure). The list is not exhaustive.

2. It is seen that during execution of the works, the OFC cable laying activities are being carried out mainly specific to the work being executed, without an overview of all the works sanctioned in the same section resulting in repetitive OFC cable activities. In view of above, the issue of OFC cable laying has been reviewed by Board and in order to avoid duplicity of OFC cable laying works, the following has been decided:

- (i) There should be 2 OFC cables of 48 fibers each (96 fibers) on each side of the track.
- (ii) Zones shall carry out section wise gap analysis for provision of 2x48 fibers (96 Fibers) on each side of track duly taking in account the already laid OFC cable in last 10 years in the section and existing various provisions of OFC already covered in sanctioned works.
- (iii) The balance quantity of OFC, worked out based on above, is to be covered by the zonal railways through revision in the estimates of already sanctioned works of Kavach/ABS/LTE etc. The same shall be done in terms of **Advance Correction Slip No. 59 & 60 to Para No. 1110 & 1112 of Indian Railway Code of Engineering, issued vide Board's letter No. 2022/CE-I/CT/S/Engg. Code Revision dated 26.09.22 & 20.10.22 respectively i.e. without treating it as "Material Modification"**. However, target of these works shall not be delayed on this account.
- (iv) Once sanction for entire provision is available to avoid duplicity/multiplicity of works, laying of balance 2x48 OFC (96 Fibers) on both side of track shall be planned by Zonal Railway.
- (v) The proposed scheme of 96-Fiber OFC cables (2x48) on each side of the track shall be implemented in Phased manner preferably in the order of priority as below:
  - a. **1<sup>st</sup> Priority:** To sections & works of Kavach/ABS/LTE/IP-MPLS on GQ/GD routes where work is already in progress (i.e. DLI-MMCT, DLI-HWH sections (~3000 Rkm))
  - b. **2<sup>nd</sup> Priority:** To balance section and works of Kavach/ABS/LTE/IP-MPLS on GQ/GD routes.
  - c. **3<sup>rd</sup> Priority:** To sections & works of Kavach/ABS/LTE/IP-MPLS on other than

GQ/GD on HDN, HUN routes.

d. 4<sup>th</sup> Priority: To balance sections & works of Kavach/ABS/LTE/IP-MPLS on other routes.

This issues with the concurrence of Finance Directorate and approval of full Board (CRB & CEO, M/F, MI, M/T&RS, M/O&BD).

Signed by Shyam Kumar  
Verma

Date: 04-10-2023 12:51:39

Reason: Approved

गणेश दास /Shyam Verma

महोदय निदेशक/सिग्नल (देव)

Executive Director/Signal (Dev.)

No.2021/Sig/WP/Action Plan

New Delhi, Dated: 04.10.2023

1. The Principal Director of Audit, All Indian Railways.
2. The PFAs, All Indian Railways
3. Dy. Comptroller and Auditor General of India (Railways), Room No.224, Rail Bhavan, New Delhi.

Signed by

Sanjay Kumar Singh

Date: 04-10-2023 16:19:28

For Member (Finance) Railway Board

Copy To:

1. PSOs/Sr. PPSs/PPSs/PSs to CRB & CEO, MF, MI, M/T&RS, MOR&D, AM/Sig., AM/Tel, PED/S&T/Dev, PED/SM, Railway Board.
2. PCSTEs, All Indian Railways
3. F(x)-II & Budget Branch
4. MD/CMDs of All PSU's

The tentative list of various applications identified for data communications on OFC backbone across various disciplines :

S. No.	Application Details	Data Communication requirements
1	<b>Electrical (RS/General):</b>	
(1a)	Power Controls, Lobbies, Running Rooms, Workshops, Sheds, PUs, Training Centers, interconnection network of in-motion/desktop based Simulators shall have data communication provisions.	These are Bandwidth requirements in actual and provided by last mile connectivity of OFC to be provisioned by end user with Router/Power supply in estimate. No additional fibre required.
(1b)	i) On Board Loco/EMU/MEMU/VB data communications (REMMLOT, Data of ESMON, On Board real time locomotives/Rolling Stock location, Condition monitoring systems - used by loco/EMU/MEMU/VB sheds, trip sheds, workshops to be maintained with CRIS). ii) Way side locomotive/RS condition monitoring data communications and systems (real time wheel measurement system, Pantograph condition monitoring and similar assembly/subassembly system). iii) Real time external and cab video and voice recording system. (CVVRS, EVRS, Railway Driver Assistance System)	<ul style="list-style-type: none"> <li>Data communicated through RTIS or in built 4G-SIMs. Data being captured through 4G SIMs to shift to LTE-R once rolled out on IR network.</li> <li>Data to be taken to the nearest 'Network Point' on last mile OFC</li> <li>Provision of Ethernet connectivity in the Edge Devices to be ensured</li> <li>IP networking to be setup by S&amp;T in mid section network point.</li> <li>Provision of last mile OFC, networking Router etc. needs to be done by end user in estimate</li> <li>Two Fiber to be earmark in OFC on each side for path redundancy (for item ii, iii).</li> </ul>
(1c)	SCADA - Data Communication	Two Fibres are earmark in OFC on each side for path redundancy.
(1d)	Other General Services - Data Communication (Water pumps, Lifts, Escalators etc.)	A local requirement at station and no data to central server. No additional fiber reqd.
2	<b>Mechanical:</b>	
	WILD, HAHW, OMRS - Data is currently maintained by OEMs. For OMRS, data is stored centrally at Data Control Centre at Delhi Kishanganj/NR. Data should be centrally maintained with CRIS	<ul style="list-style-type: none"> <li>Data is communicated through in built 4G-SIM till LTE-R SIM's rolled out.</li> <li>Data to be taken to nearest to the 'Network Point' on last mile OFC.</li> <li>Provision of Ethernet connectivity in the Edge Devices to be ensured.</li> <li>Provision of last mile OFC, networking Router etc. needs to be done by end user in estimate.</li> <li>IP networking to be setup by S&amp;T in mid section network point.</li> </ul>



		- Two Fibres to be earmark in OFC on each side for path redundancy.
3	<b>Bridges &amp; Structures:</b>	
	Water level monitoring system – Local Need Bridge Health Monitoring System – Futuristic	Data requirement is local in application, which can be thro. in built 4G-SIM till LTE-R SIM is rolled out. Data can be transmitted to central server & action as pointed out in para 2 above. No additional fiber reqd.
4	<b>Track :</b>	
4a)	Broken Rail Detection system	Data communication is very similar to WILD/OMRS and similar action as in item no.2 would serve the purpose. - Two Fibres to be earmark in OFC on each side for path redundancy.
4b)	Track Health Monitoring system (futuristic)	Provision for two fibres, as mentioned in 4a) above will serve the purpose.
4c)	Vehicle mounted track monitoring systems – TRC, OMS, UABAMS, Instrumented Revenue Train Mounted system.	Data is communicated through in built 4G-SIM/ DVD Recording and will continue with LTE-R through LTE-R SIMs/DVD.
4d)	Track Management System	No additional fibre reqd.
5	<b>C&amp;IS Dte :</b>	
	No separate requirement of OFC cable other than RLDA-DC cloud to CRIS-HQ (which is last mile) is conveyed other than the bandwidth required for connecting data	Requirement of bandwidth for connecting Data Centres would be available through IP-MPLS network being built on IR. Edge devices/last miles are required to be connected to nearest v/mid section network point (LC gate hut, Auto Hut) on local OFC to be provisioned by end user with Router/Power supply in estimate.
6	<b>Signal &amp; Telecom Dte :</b>	
		2 x 48 Fibre OFC cables on each side of the track (i.e. 96-Fiber each side). One 48-fiber cable for short haul (i.e. terminated at every LC, IBS, ABS hut in block section) and other 48-fiber cable for long haul (i.e. station to station).

**GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS  
(RAILWAY BOARD)**

No. 2022/GS/IR/Cable laying policy

Dt. 29.03.2023

To,

**General Managers  
All Indian Railways,**

Sub: Guidelines for S&T cable laying in Ducts.

Ref.: Board's letter No. 2023/AW-I/Genl/CAO/C/Conference.PL.7, dated 16.03.2023.

Zones have been advised to provide proper quality pre-fabricated/precast cable ducts to avoid cable cuts in future vide above referred letter item No. 10 (vii).

In continuation of the same, kindly find enclosed herewith guidelines for S&T cable laying in ducts at Annexure "A" ( 3 pages). Zones are requested to plan their projects in accordance with these guidelines.

This issues with concurrence of Associate Finance and approval of Board (MI).

  
(Sudeep Shrivastava)  
Executive Director/Gati Shakti (S&T)  
Railway Board,  
Rly. 030-44320

Copy to:

C/-DG/RDSO/Lucknow: RDSO is requested to issue necessary specifications for the duct and chamber for S&T cable laying in accordance with the enclosed guidelines within one month.

C/- CMD-IRCON, RVNL, RITES, RAILTEL, DFFCIL for information and necessary action please.

Guidelines for S&T Cable Laying in DUCT

I. Cable Laying in New Projects

- 1) Cables shall be laid as per the approved plan/GAD in pre-fabricated/ precast ducts close to track on both sides at suitable location. However, in block section, the duct shall be laid beyond embankment unless unavoidable.
- 2) The path of duct shall be kept parallel to the track alignment and any zig-zag path of duct shall be avoided.
- 3) Duct and chamber work shall be done under the supervision of Engineering Department.
- 4) Laying of cables in all works shall be done by S&T Department.
- 5) In cases where duct and chamber is constructed in Engineering contract, the duct and chamber constructed shall be handed over to S&T after joint inspection confirming quality and alignment.
- 6) Routine maintenance of ducts and chamber shall be done by S&T Department. However, any major repair/replacement activity of duct and chamber shall be done under the supervision of Engineering Department.
- 7) The duct and chamber shall be laid after surface has been properly leveled.
- 8) The ducts and chambers shall be as per following norms :
  - Inner dimension of duct shall normally be kept 300 mm x 300 mm. The top of the duct cover shall normally be 300 mm below the surface of soil.
  - At suitable intervals, not more than 500 m along the duct and at each location of track crossing, a chamber shall be provided with a lid & locking arrangement.
  - The size of the chamber shall preferably be 1200 mm x 1200 mm x 1500 mm (depth). Further, proper arrangements should be made so that there is no water logging in the duct and chamber.

- Chamber cover shall normally be kept 100 mm below the surface of soil. In theft prone areas, depth of chamber cover can be increased depending on the local conditions.
  - If there are more numbers of cables to be laid in large yards, then more than one duct may be placed side by side based on requirement of S&T department.
- 9) Provision for cable duct shall invariably be made in the GAD for all platforms, stations, culverts and bridges. No drawing for stations or bridges shall be approved without the provision of cable duct.
- 10) In places where laying of cable duct is not possible due to site conditions, cable shall preferably be laid by HDD method or as feasible.
- 11) Following may normally be ensured while laying cables :
- a) Cables may be tied together at every 50m or so meter by suitable tie/GPS tape after laying & before closing of cable duct.
  - b) Entry and exit of cable in chamber shall be properly sealed to avoid theft and entry of rodents. Sealing through bitumen/suitable compound can be done at the entry & exit of cable chamber to arrest cable theft.
  - c) Partial sand filling of duct after cable laying may be considered to deter theft.
  - d) RFID marker or GPS tapes shall be provided along with the cables in duct at regular interval as per requirement and at every diversion to ensure identification of the cable route.
  - e) GIS mapping of entire duct shall be made available to all concerned stakeholders.
  - f) Cable route markers where ever provided above the ground, shall be of concrete.
  - g) Cable at the track crossing and road crossing shall be laid in HDPE pipe or concrete duct of specified/approved cross section and strength.

- h) In station section, Location box shall normally be kept on or adjacent to the duct route.
  - i) For extending the cable for derivation at Location box, Signals, LC gates, SSP, SP etc. duct of 300mm x 100 mm or HDPE pipe of specified diameter shall be used.
  - j) HDPE pipe may also be laid in duct to blow OFC in future, where ever considered necessary.
  - k) All entry points of cable in building must be secured through suitable measures.
- 12) Zones shall finalize drawings for cable duct as per above guidelines and site requirements. Specifications of pre-fabricated/ precast ducts and chambers shall be issued by RDSO in accordance with these guidelines ensuring adequate strength, no water logging, safety of cables from rodents and fire, durability, maintainability etc.
- 13) Digital Integrated Signalling and Telecom Cable route shall be prepared and made available online by Zonal Railways over Railnet.
- 14) After availability of online integrated S&T cable routes plans, the same shall be uploaded as utility layer on PM Gati Shakti BISAG portal.

## **II Additional steps for protection of cables in new projects:**

Existing cables shall be protected as per latest directions/policies/IPO issued by Railway Board. In addition following precautions shall be taken in new projects:

- 1) Executing agency for works shall survey the route along with open line using 'cable route tracer (Scanner/Metal detector)' to identify the existing old functional cables en-route in the section. Necessary provision may be made in the contract, if needed.
- 2) Cable route/zone identified through scanner or as per approved plans for existing cable shall be marked (White chalk / Lime) on site by executing agency, in presence of open line staff before the start of excavation or digging work.



**भारत सरकार (GOVERNMENT OF INDIA)  
रेल मंत्रालय (MINISTRY OF RAILWAYS)  
रेलवे बोर्ड (RAILWAY BOARD)**

**No.2023/Safety (A&R)/19/35**

**New Delhi, dated 20.02.2024.**

**General Managers  
All Zonal Railways**

**Sub: Safety measures for train operation during water submerging of track  
in suburban section & during Pre-NI.**

**Ref:** (i) RB letter No. 2010/Sig/SGP/Point Machine dated 29.05.2019  
(ii) RB letter No. 2022/Safety(A&R)/19/35 dated 23.06.2023  
(iii) CR letter No. TR/G&SR/Genl/102 dated 18.07.2022  
(iv) WR letter No. T 202 /S/3(R) dated 30.06.2023  
(v) NCR/Const/Targeted Project/2023-24 dated 19.08.2023

Railway Board vide letter under reference (iii) above, have issued instructions to the Zonal Railways regarding reviewing the provision of subsidiary rules [SR 3.51] and withdraw any provisions regarding carrying out temporary modification in signalling circuits from the Subsidiary Rules.

Some of the Zonal Railways have indicated that complete withdrawal of these instructions may impact train operation severely during submergence of track in suburban sections and Pre-NI works for removal of turnouts.

The matter has been examined in Railway Board and it is clarified that any sort of temporary modification in signalling circuits regarding points/turnouts shall not be allowed except in extreme exigencies of complete water logging at station/yards of suburban sections where large number of trains are handled and during planned Pre-NI works, etc., subject to the following:

1. The work must be undertaken in a planned and supervised manner with issuance of Temporary Working Order/Instructions specifically for the purpose and signed by concerned officers, as specified in IR Operating Manual.
2. Due regard to safety must be ensured, taking all necessary conditions including clamping/bolting and padlocking of the points, in addition to physical verification by operating staff in line with GR provisions. After

removal of any existing crossovers/turnouts it shall also be ensured that signals & points leading to reverse position are made inoperative.

3. Adequate deployment of manpower/resources to ensure supervision and safety in train operations.
4. Speed restriction as applicable not exceeding 30 kmph shall be applied for train operation on the affected lines during such exceptional period.
5. The first train on the affected lines and over the affected points shall be passed with written Authority or Calling-On Signal/A-Marker in the Absolute/Automatic block section territory.
6. Subsequent trains over the affected points in the route and overlap may pass the concerned Signal with aspect restricted to "Yellow" subjected to meeting all other conditions of signal clearance including clamping/bolting and padlocking of the points in route, overlap as well as in isolation, in addition to physical verification.
7. Joint testing by signalling and operating staff for site correspondence of signalling gears shall be ensured before restoration of normal train operation.
8. In case of submergence of track, train speed would be governed as per caution order issued by SSE/P-Way.
9. Above temporary modifications in point circuits shall not apply in case of failures or routine maintenance activities.

Zonal Railways may frame detailed guidelines based on above, taking all other safety measures.

This issues with the approval of **Board (MI & MOBD)**.

**Brijender  
Mani Tripathi**

Digitally signed by Brijender Mani  
Tripathi  
Date: 2024.02.20 11:23:20 +05'30'

(ब्रजेन्द्र मणि त्रिपाठी)  
कार्यकारी निदेशक /संरक्षा (संकेत एवं दूरसंचार)  
रेलवे बोर्ड

**Copy to:**

1. AM/T, AM/CE & PED/SM, Railway Board: for kind information please.
2. PCOMs, PCSTEs, PCEs & PCSOs, All Zonal Railways: For kind information and n/a.



GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS  
(RAILWAY BOARD)



No. 2020/Safety(A&R)/19/07

New Delhi, dated 23.12.2022

The General Managers (All Indian Railways),  
Railway Electrification, Allahabad,  
Managing Director, Koukan Railway Corporation Ltd.

**Sub: Notification of Indian Railways (Open Lines) General Rule- increasing speed of trains to 30 KMPH during NI working**

**Ref: GSR 168(E) dated 12.03.2020 and letters of even number dated 18.03.2020 as modified vide letter dated 05.09.2022.**

Please refer to amended GR 4.10 as notified vide GSR 168(E) dated 12.03.2020 to facilitate running of trains at speed upto 30 Km/h during NI working. Further, necessary precautionary measures were also issued vide Board's letter of even number dated 18.03.2020 as modified vide letter dated 05.09.2022. Now a reference has been received from a Zonal Railways reporting difficulty in following the condition as laid down in para 2(i) of Board's letter dated 05.09.2022. The matter has been re-examined and it has been decided to modify the precautionary conditions as contained in above letters to read as follows:

- i) Speed can be raised up to 30 Km/h with clamp padlocking of points by using suitable clamps.
- ii) No separate temporary panel is needed and free Home signal should be made available during NI. In addition free Starter signal can be provided as per site feasibility & operational requirement.
- iii) Integrity of point shall be checked by Operating staff as per extant practice adopted during NI.
- iv) Physical verification of track shall be done by SMT physically.
- v) Necessary safety directions should be incorporated in temporary working instructions for non-interlocking at maximum speed 30 Km/h with suitable infrastructural support as deemed necessary by the Zonal Railways.

Zonal Railways are requested to issue necessary instructions as brought out above and take appropriate precautions.

  
(K.P. Yadav)

Exec. Director, Safety-II

011-23389987

[kp.yadav11@gov.in](mailto:kp.yadav11@gov.in)

Copy to : CMD, DFCCIL for information

Room No.355, Raj Bhawan, Raisina Road, New Delhi 110001

भारत सरकार/GOVERNMENT OF INDIA  
रेल मंत्रालय/MINISTRY OF RAILWAYS  
रेलवे बोर्ड/RAILWAY BOARD

No.2024/TT-IV/12/28

Date: 16.12.2024

The General Managers (All Zonal Railways),  
and CMD, KRCL, Navi Mumbai.

Sub: Unsafe practices of using free Advance starter Signal during NI period.

Ref: (i) CCRS letter No: N-21011/01/24-T.W./197 dated 22.10.2024.


(ii) Railway Board's letters No. 2020/Safety(A&R)/19/07 dated  
18.03.2020, 05.09.2022 and 23.12.2022

\*\*\*\*\*

It has come to the notice of the Railway Board that certain Zonal Railways are permitting the provision of free Advance Starter during Non-Interlocked (NI) periods. The guidelines on this subject were previously communicated vide Railway Board's letters referenced at (ii) above.

2. The above-mentioned issue has been reviewed by Board (MO&BD) and it has been decided that no Free Advance Starter (i.e the Advanced Starter is not interlocked with the Block instrument) should be given during NI. All Zonal Railways are requested to ensure strict compliance of the same.

DA: As Above

  
16/12/2024

(J.S. Schrawat)

Deputy Director Traffic Transportation-I

Room No. 257/C, 2<sup>nd</sup> floor

Railway Board

Email Id: [j.schrawat@gov.in](mailto:j.schrawat@gov.in)

Copy to: PCOMs, All Zonal Railways.



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



No. 2012/Sig/SF/2(Policy)

New Delhi, Date: 20.07.2023

General Managers,  
All Indian Railways.

**Sub:** Commissioning of New works or Attention to existing signalling installation

**Ref:** (i) Rly Bd's letter no. 2012/Sig/SF/2(Policy) dated 09.04.2012 and 30.12.2016

(ii) Rly Bd's JPO no.2021/Sig/21/Safety Performance dtd.10.06.2023

(iii) Rly Bd's JPO no.2023/TT/IV/9/2 dttd.16.06.2023

In connection with above subject, detailed instructions/guidelines were circulated vide board letter dated 09.04.2012 under reference (i) to ensure adequate precautions, preparations, adequate deployment of competent personnel for completing verification/validation, correspondence checks & testing to ensure operational safety during and after completion such works.

It is seen that at number of locations proper protocol for alteration work are not being followed. Zonal railways are advised to ensure implementation of existing guidelines regarding the alteration works. Some important instructions regarding the same are reiterated below:

- i. Completion drawing shall be available before taking up any alteration work.
- ii. Fresh wiring should be done by wires tagged with different color tags for ease of identification of circuits & to distinguish from existing wiring. Terminal/Fuse/Relay contacts positions shall be reconfirmed before a wire is tagged / terminated.
- iii. Old wires including those getting released should be rechecked jointly by concerned work executing supervisor and maintenance supervisor from base point to tag block and tag block to tag block in relay room, control panel, location box etc. before starting of the work.
- iv. Before start of any alteration work all necessary approved drawing/plan/wiring diagrams etc. shall be available at work site as per IRSEM. For changes in



existing wiring in relay room, guidelines issued vide JPO under ref.(iii) shall be followed.

- v. Correspondence test of each function being affected by wiring, has to be done before & after wire/cable terminations between relay room, control panel, location box & up to respective gear. Necessary guidelines issued vide JPO under ref.(iii) shall be followed prior to acceptance of reconnection by SM.
- vi. After completing the work all necessary drawing such as wiring diagrams, contact & fuse analysis sheet, terminal details etc. shall be updated for the changes, duly signed by concerned supervisors and officers with their name, designation and date. Completion drawing shall be based on the physically verified diagram and shall be provided at site at the earliest.
- vii. The permission to carry out wiring alteration in existing signalling installation shall be granted after due deliberations by competent authority.

This is for kind information and necessary action.

  
26.07.2023  
श्याम वर्मा /Shyam Verma  
कार्यकारी निदेशक/सिग्नल (विकास)  
Executive Director/Signal (Dev.)  
[edsd@rb.railnet.gov.in](mailto:edsd@rb.railnet.gov.in)

**TECHNICAL ADVISORY NOTE**

<b>Subject</b>	<b>Cyber Security aspects of Electronic Interlocking system</b>		
<b>Document No.</b>	<b>EI/TAN/Security</b>	<b>Version</b>	<b>1.0</b>
<b>Date</b>	<b>01.03.2023</b>	<b>Pages</b>	<b>2</b>

Ref: Railway Board's letter no. 2021/Sig/CI1 dated 01.09.2022.

Cyber security OT audit of Electronic Interlocking system has been done by NSCS (National Security Council Sectt.) Audit and Assessment Team (NAAT) at few installations over Indian Railways. Based on the audit done by the agency, few important observations/ suggestions related to security of Electronic Interlocking systems and Data logger system have been received. Few important points are given below for compliance:

1. Any unauthorized software should strictly be prohibited in VDU PC, MT PC and Data logger PC. Only those software should be allowed which are essential for operation of these PCs. A list of software (with version number) installed in the PCs should be maintained at stations.
2. Internet connection and installation of remote access software like "Any Desk" on VDU PCs, MT PC and Data logger PC should strictly be prohibited.
3. Wireless keyboard and mouse should not be used on VDU PCs, MT PC and Data logger PC. If any such PC is using wireless keyboard and mouse using a bluetooth USB dongle, this may be replaced with the wired keyboard and mouse.
4. At one installation, Data logger PC was using windows 7 operating system and the operating system was not genuine version of Windows. It is recommended to use only genuine operating system and other software products in the system. It is suggested to install anti-virus software in the MT PC and Data logger PC.
5. The officials must use username and password for accessing HMI frames (VDU PCs and MT PC). It is advised that the password used may contain a mix of alpha, numeric and special characters. Employees should be sensitized and properly trained to keep passwords in secure manner.
6. It has been observed that employees are trained and well aware of the operational aspect of the EI system but lack knowledge related to security. Employees may be given training on security aspects.
7. It has been observed that Network switches are having unused network ports. These should be configured keeping priority to security. Unused ports should be disabled.
8. In general, the system documentation lacks the software related information like software version, revision history. System documentation should have software related information like software version, revision history etc.



9. At many places, it has been seen that the user authorization levels for accessing logs and data are not defined and documented. Railways must document the different user authorization levels for accessing logs and data. The responsibility of management and security of log data is not defined. The management of log data and its security must be assigned to an individual. A network administrator level official from Railways is suggested to monitor the activities at the Centralized Data logger room.
10. Railways should maintain visitor records at data centres. At one station, it was observed that physical access to RTU room was restricted using key but key accessing logs are not maintained properly.
11. Modification in the control logic and controller configuration should be done with due approval of competent authority of the zonal railway. Log of modification of control program (Application logic) should be documented.

Compliance of above guidelines are essential to ensure security of Electronic Interlocking system from various cyber security threats.

Digitally Signed by Amit  
Misra

Date: 01-03-2023 09:40:04

Reason: Approved

अमित मिश्र | Amit Misra  
कार्यकारी निदेशक | Executive Director  
सिग्नल-1 | Signal-I

मुख्य महानिदेशक/सिग. एवं दूर. | for Director General/S&T

(भारत सरकार) GOVERNMENT OF INDIA  
(रेल मंत्रालय) MINISTRY OF RAILWAYS  
(रेलवे बोर्ड) RAILWAY BOARD

2024/GS/Sig/SCR/Misc

New Delhi, Dtd.26.04.2024.

General Manager,  
South Central Railway.

Sub: Guidelines for phased commissioning of station in connection with Tripling work.

Ref: 1. CAO/C/SCR letter no W.Con.153/N/95/Vol.XII dated 26.02.2024.

2. Technical Policy Circular No 12/2022 dated 16.11.2022 issued by CSTE/Plg/SCR.

Vide reference 1 above, CAO/C/SCR has requested Railway Board to issue guidelines for phased commissioning of station in connection with tripling works.

It is noted that situation may vary from yard to yard and uniform approach cannot be adopted in all such cases. However, at locations where entire yard within station limit (within outermost signals and beyond as required) is ready in all respects (Civil, S&T, TRD etc), Railway may commission the station in single phase with minor sanction of CRS as per approved final ESP and SIP.

Further on case to case basis, depending on site feasibility, signal movement for lines which are not functional may be disconnected with all safety precautions in place. It shall be ensured that Signal for such disconnected movements cannot be taken Off and all such disconnected movements shall be annexed with safety certificate.

Safety measures to be followed in such cases shall be issued at Zonal level. Further, the procedure for train operations from the time of commissioning of station and till such time when all lines are fully functional shall be clearly legislated in Temporary Working Order which shall be part of submissions to CRS while applying for sanction.

This issues with the approval of Board (MI and MO&BD).

  
(Jonal Chaudhary)  
Dir/GS/S&T  
Railway Board

C/- All General Managers- For kind information please.

भारतसरकार/ Government of India  
रेलमंत्रालय/ Ministry of Railways  
(रेलवे बोर्ड/ Railway Board)

No. 2024/GS/S&T/CRS/Inspection


Rail Bhawan, New Delhi  
Date : 12/06/2024

Chief Administrative Officers/ Con.,  
All Zonal Railways.

Sub.: Common minimum deficiencies/defects observed during the statutory inspection of New Lines.

Chief Commissioner of Railway Safety has communicated common deficiencies/defects observed with regard to engineering, & S&T while conducting statutory inspections in newlines. Since these deficiencies/defects are being observed across all Zonal Railways, therefore, it is advised that these concerns raised by CCRS in enclosed letter (other than item 2.10 which are policy issues), are addressed during the course of execution and proper quality controls/ checks shall be ensured during construction. Further, a check-list shall be prepared before offering the sections for CRS inspections.

This may be treated as "Most Urgent".

  
12.6.24,  
(N.C. Karmali)  
Executive Director (Coord.)/Gati Shakti  
Railway Board

Copy to: PCSTEs/ All Zonal Railways for kind information.

DA : As enclosed





भारत सरकार  
वायव्य विमानन मंत्रालय  
(रेल सुरक्षा आयोग)

GOVERNMENT OF INDIA  
MINISTRY OF CIVIL AVIATION  
(COMMISSION OF RAILWAY SAFETY)



मुख्य रेल सुरक्षा आयुक्त कार्यालय,  
पुणे नगर रेलवे, अ. १. ३. कार्यालय परिसर,  
१६ अयोध्या मार्ग, लखनऊ - २२६००१

Chief Commissioner of Railway Safety,  
N.E. Railway, DDM Office Campus,  
16, Aishik Marg, Lucknow - 226001

संख्या : M-15013/01/2017-18-TW(Vol-II)/30

दिनांक : 31.05.2024

सेवा में,

सदस्य (अवसंरचना)  
रेल मंत्रालय (रेलवे बोर्ड),  
नई दिल्ली

**विषय : Common Defects/Deficiencies Observed During The Statutory Inspection of New Lines.**

During statutory inspections for the opening of new Railway lines, several defects/deficiencies are consistently being observed across all the Zonal Railways. A summarized list, albeit not a comprehensive list, is as under.

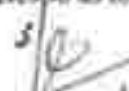
**1. Engineering:**

- 1.1. **Defects in AT welds:** For AT welding with three-piece mould, the USFD defect rate of the AT welding should be limited to 0.4% as per IRS T-19-2021 but normally the defect rate of 2% to 3% is observed at almost all the sites. At few locations, defect rate is as high as 6%. Further the dimensional tolerances of the rail welds are also not being adhered earnestly. This indicates that the quality of AT welding is not as per the expected standards. There is need to improve upon welding work.
- 1.2. **Traceability of AT welds:** A distinctive mark for traceability in future by punching on non-gauge face of the weld is not being done, as specified in para 5.6 of Fusion welding manual.
- 1.3. **Inadequate housing of tongue rail against stock rail for Thick Web Switches/Curved Switches.**
- 1.4. **ERCs are found under/over driven.** Railways should adopt mechanized system such as pin puller or some similar equipment to ensure the proper fastening of ERCs.
- 1.5. **Inadequate Ballast Cushion:** In terms of para 212 of IRPWM, 350 mm ballast cushion is required to be provided in new works. However, at most of the locations, ballast cushion is found short of above stipulation. Further the ballast profile is also found inadequate as per the IRPWM.
- 1.6. **Common Defects in formation work:**
  - 1.6.1. **Improper formation side slope and cross slope:** steeper side slopes w.r.t. 2H:1V and flatter transverse cross slopes w.r.t. 1 in 30 is being observed which is not as per RDSO/2020/GE: IRS-0004. This may result into formation cutting in monsoon season and liquefaction. Formation being the initial stage of construction, there is a need to have greater emphasis on formation.
  - 1.6.2. **Inadequate compaction in approaches of Major Bridges:** It is observed that approach of Major bridge settles very badly during first monsoon because of improper compaction of earthwork on approach of Major bridges. A proper work procedure for compaction is required to ensure proper compaction.
  - 1.6.3. **Provision of transition systems:** Railways had committed to provide the transition system on bridge approaches as mandated in RDSO's Report No. GE: R-50(Rev-1) but the issue got diluted due to the withdrawal of transition systems based on dry lean concrete (DLC) vide Railway Board/RDSO letter no. GE/Gen/112-Transition dated 29.11.2023. However, there is a need to enforce the provision of transition system on approach of bridges with suitable methodology.
- 1.7. **Construction for major bridges:**
  - 1.7.1. **Tests on Pile:** Railways have started carrying out Pile load tests as per IS 2911(Part-4):2013 and pile integrity tests as per RDSO letter no. CBS/DWF dated 29.11.2023. Generally, these tests are being carried out through third party. knowledge of officers and staffs of construction department need to be upgraded to properly interpret the results of above tests and take the corrective action.
  - 1.7.2. **The quality of construction of RCC girder at site is inferior in comparison with quality of RCC girder constructed in casting yards.** It is therefore suggested that the RCC girder should be constructed in the casting yard.
  - 1.7.3. **Various tests related to HSFG bolt and it's tightness:** HSFG bolts are generally found under/over tightened during the inspection. Proper training of the staff associated with the work of HSFG bolts tightening should be ensured. RDSO guideline for HSFG bolts shall be ensured.

*sp*

- 1.8. Improper fittings at LCs:
- 1.8.1. Proper fittings are not being used on level crossing. At most of the place "F" type clips are provided inside the track, against the required ERC. This is resulting in inadequate toe load.
- 1.8.2. Lifting barriers are fixed at random locations at site & do not conform to the specifications provided in IRPWM.
- 1.9. Drainage arrangement at Subways: Subways are being constructed with improper drainage arrangement, which results into stagnation of water in monsoon season. Railways has already issued the guidelines regarding this vide letter no. 2017/CE-IV/RUB/88 dated 04.10.2017, needs to be implemented.
- 1.10. Construction of Loops at Inadequate Distance: The SOD has been found infringing (In terms of item-8 (iii) (a) Chapter-I Schedule-I of IRSOD (Revised 2022)) with foundation of OHE mast and Signals due to construction of loop line at inadequate track Centre.
2. **S&T Deficiencies:**
- 2.1. Earthing of S&T equipment remains incomplete. Further wire mesh arrangements found to be missing for signals coming within 2m vicinity of live OHE. (IRSEM 19.11.3)
- 2.2. ELD (Earth Leakage Detector) always found to be not calibrated properly till the date of inspection.
- 2.3. At many locations, Data logger not connected with relay room doors/ELD/Fire alarms and SMS not getting generated through control.
- 2.4. At many locations, CTR writing work and its validation is not proper/completed till the time of CRS inspection. Loose and unused signaling wires lying behind the CTR in relay room.
- 2.5. Railways has issued the provision of ACs in EIS vide letter no. 2018/Trans.Cell/AC of Panel and Relay Rooms, dated 07.06.2019. However, it is observed that ACs in relay rooms are normally provided with inadequate capacity. Further, no mechanism is provided to intermittent shut down of AC, this may cause fire cases of AC in future.
- 2.6. The cabling work executed at the site is generally found to be improper according to the approved Cable Route Plan/Cable Core Plan. Furthermore, the diversion from the approved plan is not approved by competent authorities.
- 2.7. Automatic fire detection and alarm system normally consists of Smoke sensors, Linear Heat Sensing cable and Aspirating type smoke detector as mentioned in RDSO specification issued vide document no. RDSO/SPN/217/2021. It is found that at many places these are not provided as per the guidelines.
- 2.8. Lack of uniformity in signal plan preparation and TOCs (Route control chart) creation among different units (Construction, Projects, RVNL, RITES, Divisions (CSTE-Plg), etc.) within the same Zonal Railway.
- 2.9. Responsibility for works executed by RVNL/RITES lacks clarity. SIPs and TOCs approved by CSTE Projects/headquarters, minor sanctions signed by DRM/CSTE Proj. and safety certificates signed by Sr. DSTE. This setup leads to inadequate scrutiny of signaling drawings/documents and approval without proper checking, as there's no clear executive in charge.
- 2.10. Standardization of layouts for Longer Loops and yards with Slip Siding/Catch Siding in doubling additional lines is necessary. Railway Board has provided standard layouts for stations, whereas nothing has been for stations with Longer Loops and Slip Siding/Catch Siding.
- 2.11. Violation of Railway board guidelines regarding integration of third line at a distance of 30 kms or after 3-4 stations in terms of Railway board ltr. No. 2013/PL/19/1(Policy) dated 30.9.2023 leading to complexity in signaling arrangements in all yards.
- 2.12. Common mistakes noted in SIPs:
- SIPs not prepared in standard scale.
  - Placement of Starters in violation of para 17.2.5 (iii) of SEM.
  - Mistakes in Aspect control chart in SIPs.
  - Merger of track circuits for different point zones, in violation of Railway board ltr. No. 2020/Sig-12-SFTYMTR/1/CCRS/CRS dated 19.1.24.

It is requested that above issues may be advised to all concerned executing agencies so as to ensure proper quality control/checks during construction.

  
 (जनक कुमार गर्ग) 31/05/24  
 मुख्य रेल संरक्षा आयुक्त

प्रतिनिधि:- रेल संरक्षा आयुक्त, सम्मस्त परिमंडल

**(भारत सरकार) GOVERNMENT OF INDIA**  
**(रेल मंत्रालय) MINISTRY OF RAILWAYS**  
**(रेलवे बोर्ड) RAILWAY BOARD**

No. 2018/Sig/18/ EI/Gen.

New Delhi, dated 04.09.2024

**PCSTEs,  
All Zonal Railways.**

**PED/S&T,  
RDSO, LKO.**

**Sub:** Provision of Kavach ready Interfaces in Electronic Interlocking.

**Ref:** (i) RDSO letter no. RDSO-SIG0MISC(GEN)/1/2021Part(1) Dtd 17.08.2024  
(ii) Rly Bd's letter nos 2020/Sig/TCAS Estimates dtd. 18.05.2023 & 29.05.2024

RDSO vide letter under reference (i) on the subject has submitted the scheme for provision of dedicated port with allocation of Kavach bits required for Kavach interface. It is decided that the scheme to be made part of signalling work during the design stage itself for commissioning new EI or during modification in EI. This would facilitate Kavach ready EI installations without requiring design & testing of EI when Kavach is installed at later. A copy of the RDSO guidelines is enclosed herewith for ready reference.

2) Zonal Railways are advised to incorporate the provision based on RDSO guidelines in all the future EI tenders, whenever new works of EI or modifications in EI is undertaken.

3) RDSO may circulate the same among EI and Kavach OEM's/Vendors for necessary compliance.

DA: As above

Shyam Kumar Verma Digitally signed by  
Shyam Kumar Verma  
Date: 2024.09.04  
12:17:26 +05'30'

**श्याम वर्मा / Shyam Verma**  
**कार्यकारी निदेशक सिग्नल (विकास)**  
**Executive Director/Signal (Dev.)**  
**edsd@rb.railnet.gov.in**





भारत सरकार - भारत सरकार  
 Government of India -  
 Ministry of Railways  
 Research, Design & Standards  
 Organization  
 NEW DELHI - 200001  
 एच.एच.एच. - 200001



For : 011-221-2452112  
 My phone : 011-221-2452112  
 Email phone : 011-221-2452112  
 E-mail : rdsosig@rediffmail.com  
 rdsosig@rediffmail.com

No: RDSO-SIG0MISC(GEN)/1/2021Part(1)

Date: 17.05.2024

Executive Director/Signal (Dev.)

Railway Board

New Delhi

Sub.: Provision of Kavach interfaces in Electronic Interlocking.

Ref.: Rly Bd's letter No. 2020/Sig/16/EM/Gen dt. 28.05.2024

To integrate the Stationary Kavach system with Electronic Interlocking using an OEM proprietary protocol converter, it was advised (vide reference letter mentioned above) to study the incorporation of a Kavach port into the Electronic Interlocking during the design and commissioning stages. After the study, the following is proposed:

- Redundant communication ports for Kavach bit allocation should be predetermined during the Electronic Interlocking design phase. These ports should initially be disabled when the Electronic Interlocking is commissioned and enabled once the Stationary Kavach is installed.
- The redundant communication interface for Kavach can include options such as RS232/RS485 serial or Ethernet connections, preferably over Optical Fiber Cable (OFC) or copper.
- A Bit Allocation Chart or Relay Interface circuits should be provided to indicate the specific order for exchanging relay information between the Electronic Interlocking and Stationary Kavach systems. The preferred order should be all Track-proving relays, Lamp check relays (Main, Shunt, Auto, Block Signal), Point indicating relays, Gate proving relays, and Block proving relays. Data transfer should comply with Safety Integrity Level 4.
- Protocol converters supplied by the Stationary Kavach OEMs as part of the Stationary Kavach system should be capable of handling these logical bit inputs and should display an "error state" in case of any issues.
- The Electronic Interlocking should provide real-time communication of bit status to the Stationary Kavach at intervals not exceeding 500ms.
- Details of the configuration, including interface types, Electronic Interlocking identity, application logic version, endian types, baud rates, and IP addresses, should be included in the Station documentation.
- IP addresses and port numbers should be allocated according to the guidelines in Annexure A3 of the KAVACH Specification, with an extract provided below:

A3.4 : Configuration of IP address and port number of KAVACH entity.

A3.4.1 : The 1st octet of IP addresses of Stationary KAVACH to Electronic Interlocking shall be 192.

A3.4.2 : All the vital entity shall be connected through redundant ring on Ethernet (i.e. BLUE ring and RED ring). The 2nd octet of BLUE RING and RED RING shall be 254 & 255 respectively.

A3.4.3 : Not applicable.

A3.4.4 : The 3<sup>rd</sup> and 4<sup>th</sup> octet shall be calculated based on the unique ID of KAVACH entity. Unique ID number shall be converted into hexadecimal number and most significant byte shall be used as 3<sup>rd</sup> octet after converting into decimal and least significant byte shall be used as 4<sup>th</sup> octet after converting into decimal.

**Example**

Conversion of unique ID 503 into Hex format = 0x01F7.

Conversion of most significant byte into decimal i.e. 01=1

Conversion of least significant byte into decimal i.e. F7=247

3<sup>rd</sup> and 4<sup>th</sup> octet station IP address derived from KAVACH entity ID = 1.247 [0x01 .0xF7]

BLUE Ring KAVACH entity IP address - 192.254.1.247

RED Ring KAVACH entity IP address - 192.255.1.247

A3.4.5 : Port number of KAVACH entity shall be as per below table

Primary partner	Secondary Partner	Port No start	Range
Stationary KAVACH	Electronic Interlocking	65001	65001-65534

Note: All numbers mentioned in the above clauses shall be configurable and shall not require FAT from EI side.

- h) Stationary Kavach identity shall be assigned by the Zonal Railway's planning section as follows:

The first two digits are allotted to each zonal railway as shown in the table below and Zonal railways may decide the last three digits for the stations. A proper record shall be maintained by the Zonal Railways to avoid repetition of number as station ID should be unique number.

Sl. No	Name of the Railway Zone	Allotted code	Sl. No	Name of the Railway Zone	Allotted code
1.	South Central Railway	00-02	11.	North Western Railway	30-32
2.	Northern Railway	03-05	12.	West Central Railway	33-35
3.	North Eastern Railway	06-08	13.	North Central Railway	36-38
4.	Northeast Frontier Railway	09-11	14.	South East Central Railway	39-41
5.	Eastern Railway	12-14	15.	East Coast Railway	42-44
6.	South Eastern Railway	15-17	16.	East Central railway	45-47
7.	Southern railway	18-20	17.	Metro Railway Kolkata	48
8.	Central railway	21-23	18.	Konkan Railway	49
9.	Western Railway	24-26	19.	RDSO, Lucknow	50
10.	South Western Railway	27-29	20.	South Coast Railway	51-53
			21.	MUSSETI	54

This letter is issued with the recommendation of ED/Sig-1/RDSO and approval of PED/S&T/RDSO.

Digitally Signed by Pavan Kumar Gudavalleti

Date: 17-06-2021 13:02:27

(G. Pavan Kumar)  
Executive Director/Info-II  
For Director General/S&T

C/- ED/Sig-1/RDSO for information please.



भारत सरकार GOVERNMENT OF INDIA  
रेल मंत्रालय MINISTRY OF RAILWAYS  
रेलवे बोर्ड (RAILWAY BOARD)

No.2020/Sig/TCAS/Estimates

New Delhi, Dated:29.05.2024

PCSTEs,  
All Indian Railways.

PED/S&T,  
RDSO/LKO.

**Sub:** Signalling Alteration/Modification works in existing/proposed Kavach territory.

**Ref:(i)** Railway Board letter of even no. dated 18.05.2023.


(ii) OSD/COE letter no. IRISST/CoE/Kavach/Misc dated 31.01.23

A number of infrastructure works are ongoing in sections where Kavach works are being undertaken. In order to ensure that Kavach functions properly in such sections, it is necessary that Kavach and the Signalling system are in sync at all times.

For this purpose, for any works related to change in Signalling, guidelines as below shall be followed for Kavach territory:

- 1) Provision required for alterations due to Kavach works, should be kept in the estimates of all future works, as already conveyed vide Board's letter under Ref.(i).
- 2) All signalling changes shall be carried out with corresponding change in the Kavach component in existing/proposed Kavach territory.
- 3) Train operations in Kavach territory shall be clearly defined in Station working Rules / Pre-NI/NI instructions.
- 4) On these sections safety certificate at the time of commissioning should incorporate commissioning of Kavach also.
- 5) RDSO shall suitably include execution of Kavach related works in Pre-commissioning check list for EI (New/Alteration/Modification) wherever required.

This is for information and necessary action please.

  
29.05.2024  
श्याम वर्मा /Shyam Verma  
कार्यकारी निदेशक/सिग्नल (विकास)  
Executive Director/Signal (Dev.)  
edstb@rb.railnet.gov.in



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



No. 2020/Sig/TCAS/Estimates (e3316629)

New Delhi, Dated: 18.05.2023

The General Managers,  
Indian Railways


**Sub: Components of Kavach/CTC inclusion in yard remodeling  
/ABS/ LC gate/signalling works.**

Works of IR-ATP system "Kavach" and CTC are being implemented on IR. It has been noticed that while commissioning of various signalling works due to Yard Remodelling, Multi-tracking, Automatic Block Signalling, Track works (affecting gradients/ speed restrictions /detouring /layout), LC Gates (Elimination/ Introduction/ Interlocking), other Signal works etc., corresponding changes in the commissioned Kavach & CTC are not being carried out. As a result Kavach & CTC for that section becomes inoperative.

The matter has been examined in Board's office and the following has been decided:

- 1) In section where Kavach works have already been commissioned, the component required for Kavach/CTC on the section should be included in detailed/revised estimate as the case may be.
- 2) Similarly for non Kavach Territory also where Kavach/CTC works have already been sanctioned, the component required for Kavach/CTC shall be included in estimates of works.

This is issued with the concurrence of Finance Directorate of Ministry of Railways and approval of Board (M/Infra).

  
श्याम वर्मा /Shyam Verma  
कार्यकारी निदेशक/सिग्नल (विकास)  
Executive Director/Signal (Dev.)

No. 2020/Sig/TCAS/Estimates

New Delhi, Dated: 18.05.2023

1. The Principle Director of Audit, All Indian Railways
2. The PFAs, All Indian Railways
3. Dy. Comptroller and Auditor General of India (Railways), Room No.224, Rail Bhavan, New Delhi.

  
For Member (Finance)/Railway Board

Copy to:

1. PCSTEs, All Indian Railways
2. F(x)-II & Budget Branch

**INDIAN RAILWAY SIGNAL ENGINEERING MANUAL  
(JULY 2021 EDITION)**

**Addendum and Corrigendum Slip No. 1**

Replaced existing para 9.2.1(d), (e); 9.2.2(c), added new para 9.2.2(j) and replaced existing para 22.3.1(a), (b) as under.

**Chapter 9, Para 9.2.1**

Existing Sub Para of 9.2.1 of Chapter 9 of IRSEM, 2021 edition may be replaced as:-

<b>Under Para 9.2.1</b>	
Existing sub para (d)	(d) Interlocking of level crossing, catch siding and slip sidings etc.
Replaced as	(d) Interlocking of catch siding and slip sidings etc.
Existing sub para (e)	(e) Closing of Manned Level Crossing, gates after approval of district administration obtained by Engineering department.
Replaced as	(e) Deleted

**Chapter 9, Para 9.2.2**

Existing Sub Para of 9.2.2 of Chapter 9 of IRSEM, 2021 edition may be replaced as:-

<b>Under Para 9.2.2</b>	
Existing sub para (c)	(c) Interlocking of existing L.C. Gates within already existing interlocked station yard by existing signals in the same or shifted location.
Replaced as	(c) Interlocking of L.C. Gates.
Added New sub para (j)	(j) Provision of Automatic Train Protection system at Station/BS/LC Gates/ABS huts etc. subject to certification by an Independent Safety Assessor.

# INDIAN RAILWAY SIGNAL ENGINEERING MANUAL

(JULY 2021 EDITION)

## Addendum and Corrigendum Slip No. 1

### Chapter 22. Para 22.3.1

Existing Sub Para of 22.3.1 of Chapter 22 of IRSEM, 2021 edition may be replaced as:-

Sub Para 22.3.1	
Existing sub para (a)	a) The distance between the signal post and traction mast shall be as large as possible. In case the traction mast is located in front of the signal post, the distance between the traction mast and signal post should not be less than 30 meters. In addition, it should be ensured that no traction mast is located in advance of the signal post at a distance less than 10 meters.
Replaced as	a) The distance between the signal post and traction mast shall be as large as possible. In case the traction mast is located in front of the signal post, the distance between the traction mast and signal post should not be less than 30 meters. In addition, it should be ensured that no traction mast is located in advance of the signal post at a distance less than 10 meters.  Layout plan (LOP) showing placement of traction mast and signal shall be approved by PCSTE (or his authorized representative) with concerned Electrical officer.
Existing sub para (b)	b) PCSTEs and PCEEs of the zonal railways shall give dispensation for reduction in the distance of placing mast in front of the signal from 30 meters to 10 meters on straight track after ensuring staggering for proper visibility of signal as per provisions of ACTM and SEM.
Replaced as	b) In case, minimum distance stipulated in para (a) above cannot be adhered due to field constraints, PCSTE & PCEE (jointly) are empowered to give dispensation for further reduction in distance, keeping in view visibility of signal and safety of maintenance staff.

BY ORDER

  
31.03.23

(Shyam Verma)  
Executive Director/Signal Development  
Railway Board

Case No. 2022/Sig/33/1/SEM/Misc  
New Delhi, dated 31.03.2023

(Page 2 of 2)

**INDIAN RAILWAY SIGNAL ENGINEERING MANUAL**  
**(JULY 2021 EDITION)**


**Addendum and Corrigendum Slip No.4**

**New para 7.8.10:**

New para 7.8.10 added in Chapter 7: **"Essential of Signalling"**, Section 8: **"An overview- Design, Installation, Testing, Commissioning & Maintenance of Signalling Equipment"** of IRSEM as under :

<b>New Para 7.8.10</b>	<b>Rolling Block Programme and Maintenance Planning :</b> (a) Planned Maintenance (repair & replacement) and execution of infrastructure work shall normally be executed as per Rolling Block Programme as per GR para 15.02(c).  (b) Maintenance Planning:- Every SSE/Signal (in-charge) should prepare a perspective maintenance plan of his section in advance based on various testing/schedules, exception reports, Non Interlocking planned etc. This requirement should also take into account of items noticed during trolley/footplate inspections, yard/section inspections and inspection notes of higher officials. Every SSE/Signal (in-charge) should also ensure that necessary arrangements are made for adequate materials, tools, labour, man power and necessary disconnection/ caution orders/blocks, as may be necessary as per the approved rolling block programme. The maintenance planning shall be based broadly on week/fortnight/month /annual schedule and to include:  (i) System integrity tests (ii) Maintenance, repair and replacements of Signals, Point, Block Instruments, Track detection etc. (iii) Cable Meggering (iv) Execution of Signalling & Telecom related infrastructure works signalling gears. (v) Any other activity which require disconnection of working signalling gears.
--------------------------------	---

Case No. 2022/Sig/33/I/SEM/Misc  
New Delhi, dated 22.12.2023

  
श्याम वर्मा /Shyam Verma  
कार्यकारी निदेशक/सिग्नल (विकास)  
Executive Director/Signal (Dev.)  
[edst@irb.railnet.gov.in](mailto:edst@irb.railnet.gov.in)



**INDIAN RAILWAY SIGNAL ENGINEERING MANUAL  
(JULY 2021 EDITION)**

**Addendum and Corrigendum Slip No.6**

**Chapter 7, Section 4,**

**Sub Para 7.4.10 (c) is modified as under:**

Existing sub para 7.4.10(c)	<p>Detailing Switches on main or through line.</p> <p>In order to maintain safety for through running, Points for *trap sidings/derailing switch shall not be inserted in the main or through line. However in exceptional circumstances, they may be allowed under approved special instructions, only in those cases where:</p> <p>(i) Owing to grades in or near stations, it is necessary to prevent -</p> <ul style="list-style-type: none"> <li>• Trains being brought to a stand at a Stop Signal on a rising grade, or</li> <li>• Vehicles running away from the station.</li> </ul> <p>(ii) It is operationally required to receive trains from different directions at the same time.</p>
Modified para 7.4.10(c) as	<p>In order to maintain safety for through running, Points for *trap sidings/derailing switch shall not be inserted in the main line. However in exceptional circumstances, they may be allowed under approved special instructions, only in those cases where:</p> <p>(i) Owing to grades in or near stations, it is necessary to prevent -</p> <ul style="list-style-type: none"> <li>• Trains being brought to a stand at a Stop Signal on a rising grade, or</li> <li>• Vehicles running away from the station.</li> </ul> <p>(ii) It is operationally required to receive trains from different directions at the same time.</p>


**Sub Para 7.4.10 (d) is modified as under:**

Existing sub para 7.4.10(d)	At stations where Points for trap sidings/derailing switch are inserted on Main lines or through line for reasons given at (c) above, through running shall be permitted only under approved special instructions.
Modified para 7.4.10(d) as	At stations where Points for trap sidings/derailing switch are inserted on Main lines for reasons given at (c) above, through running shall be permitted only under approved special instructions.

**New sub Para 7.4.10 (e) is added before \*Note as under:**

New para 7.4.10(e)	However, if detailing switch is provided on loop lines/branch line joining main line, through movement on such lines is permitted.
--------------------	--

Case No. 2022/Sig/33/1/SEM/Misc  
New Delhi, dated 28.08.2024

  
**Shyam Verma**  
 कार्यकारी निदेशक-सिग्नल (विकास)  
 Executive Director:Signal (Dev.)  
 edsdl@rrb.railnet.gov.in

## **Guidelines for Disposal of VHF sets**

**(which are Non-repairable/outlived its Codal life)**

**(Ref.: Telecom Circular No. 22/2013 vide Railway Board's letter No. 2010/Tele/9(1) Pt, dated 23.10.2013)**

- 1.1 The list of sets which have outlived its codal life and are beyond repair may be prepared (having details of make, model number, Serial number, procurement details etc.) by user/consignee. These details shall be sent to Division/Zonal Headquarter as decided by CCE of Zonal Railway with a certificate that these sets have outlived its codal life and are beyond repair.
- 1.2 The VHF Sets (which have outlived its Codal Life and are Non-repairable) along-with list may be collected at nominated depot and necessary action for condemnation may be initiated with the approval of competent authority as per Schedule of Power of concerned Zonal Railway.
- 1.3 For Condemnation/Deletion of VHF Sets, it is mandatory to submit copies of Condemnation-Certificate obtained from Dealer possession License (DPL) Holder of WPC or Nominated Regional Head Quarter (RHQ) Officers of WPC Wing (WPC)/Nominated Wireless Monitoring Organization (WMO).
- 1.4 Nominated officials of Division/Zonal Headquarter may intimate/co-ordinate with any of the agencies mentioned in Para 1.3 for technical condemnation of VHF Sets. The Condemnation-Certificate (as enclosed as Annexure-A) is being issued by these agencies after ensuring following:
  - i) All connecting elements have been cut and sets have been rendered totally unusable.
  - ii) All valves, semiconductor and ICs have been made totally unusable.
  - iii) All active and still usable components have been totally removed from the chassis and separately disposed off.
- 1.5 Presently, VHF sets on Indian Railways have been predominantly equipped with Ni-MH batteries and these shall be disposed off separately as per extant environmental regulations. As per information available following procedure is generally adopted for disposal of Ni-MH batteries:

"Nickel-metal-hydride batteries contain nickel and electrolyte, which are considered semi-toxic. If no disposal service is available in an area, the depot should consider disposing of the packs in a secure waste landfill. The better alternative is bringing the spent batteries to a neighborhood drop-off bin for recycling."
- 1.6 "Guidelines for Environmentally Sound Management of E-Waste" issued by Ministry of Environment & Forests, Central Pollution Board, available on website <http://envfor.nic.in/> may also be taken care off by Zonal Railways.
- 1.7 The waste may preferably be handed over to the agencies which undertake disposal of electronic wastes as per green norms.

**UNSERVICEABILITY/CONDEMNATION CERTIFICATE**

MODEL NO. ....

MAKE.....

NO. OF SETS.....

1. Certified that the two ends of the joints of all connecting elements have been cut and rendered totally unusable.
2. Certified that all valves, semi-conductors & ICs etc. have been broken & made totally unusable.
3. Certified that the equipment have been totally reduced to scrap & disposal off without any other utility.
4. Certified that active & still usable components have been totally removed from the chassis & separately disposed – off.

Equipment have been totally condemned & made unserviceable.



भारत सरकार (GOVERNMENT OF INDIA)  
रेल मंत्रालय (MINISTRY OF RAILWAYS)  
रेलवे बोर्ड (RAILWAY BOARD)



No. 2021/Tele/11(6)/3(AT Supply) (3377589)

New Delhi, Dated:12.05.2023

The GMs/CMD/MD/PCAO/CAO,  
All Indian Railways, PUs, CORE, KRCL  
(As per Standard List)

DGs/Directors  
RDSO, NAIR, All CTIs

**TELECOM CIRCULAR NO.05/2023**

**Sub: Provision of AT supply for Telecom equipments related to both Train Operations as well as Passenger Amenities.**

**Ref: Board's letter No.62/RE/250/1 dated 13.09.2002.**

\*\*\*

Vide Railway Board letter dated 13.09.2002, guidelines for provision of AT supply for various equipment were issued in 2002. Since then a lot of technological changes have happened and Railways have adopted new technologies, some of which aid in operational communication and some provide vital train information to passengers at station.

Hence, the above guidelines have been reviewed and following has been approved by Board (Member/Infra and Member/Traction and Rolling Stocks)

- (i) AT supply shall be extended to telecommunication systems such as MTRC, Tunnel Communication, IP-MPLS, VOIP based train control communication system, etc which are related to train operations. Further, based on the requirement and reliability of Local Power Supply, AT supply can also be extended to CCTV Systems (VSS & ISS) and Passenger Amenity Systems like IPIS, Coach Guidance, Electronic Display Boards etc.
- (ii) To meet the above additional AT supply requirement, wherever spare capacity of existing ATs (for S&T equipment) is sufficient to cater the additional Telecom load, AT supply may be drawn through these existing ATs. Wherever the demand for additional AT Supply cannot be met through existing ATs, Railways may replace the existing ATs with new AT of suitable capacity as per RDSO specs, to cater to the increased Telecom load. The cost of installation of such new ATs and their associated equipment shall be borne in PH-33.

- (iii) The equipment installed by Electrical department (AT supply cable from AT till changeover panel and changeover panel) will be maintained by Electrical department and those equipment (supply cable/wiring from changeover panel to telecom equipment, etc.) provided by Telecom department will be maintained by S&T department.
- (iv) For drawing of AT supply for above telecom equipment, guidelines issued vide Railway Board's Letter dated 13.09.2002 under reference above shall be followed.

This issues with the concurrence of Finance Directorate of Ministry of Railways.

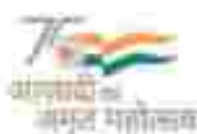
  
12-05-23  
Director/Electrical/PS

  
12/05/23  
Director/Telecom

**Copy to:**

1. F(X)-I and Budget Branches, Railway Board.
2. Principal Chief Signal & Telecom Engineers, All Indian Railways.
3. Principal Chief Electrical Engineers, All Indian Railways.
4. CMD, RCIL, New Delhi.





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



सं.2023/Tele/8(3)/2(3433098)

नई दिल्ली, दिनांक: 12.07.2023

The General Manager  
All Indian Railways

(Telecom Circular No.10/2023)

**Sub.: Hiring of Services for Disaster Management Communication**

\*\*\*\*\*

Availability of communications at disaster/accident sites is vital to rescue, relief and restoration efforts. With a view to establishing quick and effective channel of communication, Board (MI) has approved the following arrangements/provision to be made at Divisional level:

- (i) Hiring of Video Conferencing services from RailTel for the disaster management communication at the accident site @ ₹4,11,000+GST per day/per camera. This cost includes the cost of bandwidth, configuration, manpower, networking equipment, power supply etc.
- (ii) Last mile connectivity charges shall be as per the actual cost plus the RailTel management charges @8.5%.
- (iii) RCIL may be asked to arrange the live Drone view of the site by integration of Drone with VC codec. Charges for the Drone services may be paid as per actual cost of hiring plus RCIL management charges @8.5%.
- (iv) Each Railway Division is authorized to hire above VC services from RCIL at the rates mentioned above with 10% escalation every year. The rates will be valid till the validity of arrangement for hiring of VC services for VVIP events with RCIL.
- (v) Sr. DSTE's at Divisions are empowered to hire such VC services from RCIL with the approval of DRM/ADRM. For Drone services, Sr.DSTE, on request from respective Sr.DME, may hire Drone services from RCIL with the approval of DRM/ADRM.
- (vi) The above arrangement/relaxation in payment terms is for disaster/accident cases only.

Continued on Page- 2/-

1/3072334/2023

-2-

(vii) This issues with the concurrence of Finance Directorate of Ministry of Railways

Signed by

(Charman/अध्यक्ष)

Date/दिनांक: 07-अप्रैल-2023

दूरभाष: 011-47843013, 030-43013

ई.मेल: dtele@rh.railnet.gov.in

#2023/Tele/8(3)/2(3433098)

नई दिल्ली, दिनांक: 12.07.2023

**Copy to:**

1. The Principal Financial Adviser, All Zonal Railways
2. Deputy Comptroller and Auditor General of India(Railways) 224, Rail Bhawan, New Delhi

Signed by

Jagdish Pandey

Date: 12-07-2023 16:05:51  
for Member Finance/Railway Board

**Copy to:**

- (i) P(X)-I and Budget Branches, Railway Board
- (ii) Principal Chief Signal & Telecom Engineers, All Zonal Railways
- (iii) Chairman & Managing Director, RailTel Corporation of India Ltd., Plot-A, 6th Floor, Office Block Tower-2, East Kirti Nagar, New Delhi-110023



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



No.2022/Tele/14(1)/1

New Delhi Dated: 05.09.2023

General Manager,  
All Indian Railways.

(Telecom Circular No. 11/2023)

Subj: Exclusive 10 Additional Frequency spots for Kavach.

Ref: DoT WPC Letter No. L-14022/02/2015-WF(P1.) Dated 01.09.2023(Copy enclosed)

WPC had earlier assigned 05 frequency spots 428.875, 427.625, 429.525, 427.075 and 429.800(all in MHz) for Kavach. WPC was further requested to assign exclusive 10 (Nos.) additional frequency spots for Kavach from the frequencies which were earlier assigned to DPVCS.

Vide WPC OM dated 01.09.2023, WPC has allocated exclusive 10 (Nos.) additional frequency spots to Kavach viz 425.575, 426.475, 426.675, 426.975, 425.275, 425.850, 428.275, 427.450, 428.275 and 428.575(all in MHz)(these were earlier used for DPVCS).

Zonal Railways are advised to utilize the above additional 10 (Nos.) frequency spots exclusively for Kavach. Since Kavach is a safety related application, frequency spots meant for Kavach shall not be used for any other application.

Signed by  
Dharmendra Singh

Date: 05-09-2023 14:01:38

(धर्मेन्द्र सिंह)

निदेशक: दूरसंचार

दूरभाष 030-44613

ईमेल [telecom@indiainfo.railnet.gov.in](mailto:telecom@indiainfo.railnet.gov.in)

Copy: PCSTEs and PCSEs All Zonal Railways and PUs for information and n/a.

Government of India  
Ministry of Communications  
Department of Telecommunications  
Wireless Planning & Coordination Wing

P Group, 6<sup>th</sup> Floor  
Sanchar Bhavan, 20, Ashoka Road  
New Delhi-110001

No: L-14022/02/2015-WF(Pt.)

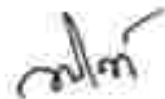
Date: 01/09/2023

To,  
The Director (Telecom)  
Railway Board, Ministry of Railways  
New Delhi- 110001

Sub: Exclusive 10 additional Frequency spots for Kavach reg. :

Sir,

I am directed to refer to your letter No. 2022/Tele/14(1)/1 dated 23.08.2023 on the subject and to convey this Ministry approval for assigning of 10 additional frequency spots ie. 425.575, 426.475, 426.675, 426.975, 425.275, 425.850, 426.275, 427.450, 428.275, 428.575 (all in MHz) for KAVACH system out of the total 75 frequency spots earmarked for Distributed Power Control Systems (DPWCS).



(Manish Sheelwant)  
Deputy Wireless Advisor

1/3079502/2023



भारत सरकार (GOVERNMENT OF INDIA)  
रेल मंत्रालय (MINISTRY OF RAILWAYS)  
रेल बोर्ड (RAILWAY BOARD)



No.2023/Tele Dev/Trusted Sources

Date: 11.10.2023

The General Manager/Director General,  
All Zonal Railways/ RDSO/ PUs/ CTIs.

## Telecom Circular No. 12/2023

Sub: Use of Trusted Products from Trusted Sources for backbone telecom network of IR

Ref: DOT's letter No. from File no 20-1236/2021-AS-I dt 30.03.2021

Indian Railway is setting up its LTE and IP/MPLS network covering its entire route. The backbone network will support all applications and network of Indian Railways including those that are critical. Looking in to the fact that this network will carry information of booking, freight operation, train control (Kavach) etc., it is considered that only trusted product from trusted sources should be used in the backbone network of Railways.

2. National Security Council Secretariat (NSCS) of the Government of India has set up a Trusted Telecom Portal (TTP) for ensuring only trusted telecom equipment are being used by the Telecom/Internet Service Providers in India from trusted sources with an aim to address the security concerns of the telecom networks.

3. In this regard, National Security Council Secretariat (NSCS) has allowed access of Trusted Telecom Portal (TTP) by Railways.

4. Accordingly, it has been decided that to begin with, the LTE e-Node-B, cell site routers, switches and the IP/MPLS routers that will be used on Indian Railways, should be got cleared through the Trusted Telecom Portal before the supply of equipment. This is applicable with immediate effect for all equipment being procured.

5. This issue with the approval of Additional Member (Telecom).

6. Kindly acknowledge the same and ensure compliance.

Signed by Rakesh Ranjan

Date: 11-10-2023 11:01:58

Reason: Approved

(राकेश रंजन)

आईसीटी निदेशक (सुरक्षा व विकास)

रेल मंत्रालय

011-47847012

E-mail id [edtd@rb.railnet.gov.in](mailto:edtd@rb.railnet.gov.in)

Room No.103-A, First Floor

Copy to:

- PCSTE/CSTE (Const), All Zonal Railways for kind information and necessary action.
- PED/S&T/RDSO for incorporation in the relevant specification/TAN.





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



No. 2020/Tele/22(1)/20Part.1 (3316368) New Delhi, Dated: 12.01.2024

General Managers, All Zonal Railways, Production Units & CORE,  
Director Generals, RDSO, NAIR and All CTIs.

**Telecom Circular No.01/2024**

**Sub:** Extension for procurement of Cloud Based Video Conferencing services by Zonal Railways/Divisional offices/Production Units/CTIs.

**Ref:** Telecom Circular No.01/2023 dated 16.01.2023.

Vide Telecom Circular No.01/2023 dated 16.01.2023, each Zonal Railways/Divisional HQs/Production Units, CTIs were authorized to purchase Cloud based VC Host Admin from GeM for one year.

2. It has now been decided with the approval of Board (Member Infra) to allow procurement of Cloud Based Video Conferencing services by Zonal Railways, Divisional HQs, Production Units, CTIs for subsequent years with following conditions:

- i. All Zonal Railways, RDSO, Divisional HQs, Production Units are authorized to purchase one Cloud based VC Host Admin each.
- ii. Centralized Training Institutes except IRISSET are also authorized to purchase 3 such hosts each for online training/VC.
- iii. IRISSET is authorized to purchase 5 such hosts for online training/VC since it conducts training for supervisors also.
- iv. Tentative approved cost for procurement of each host is Rs.24,578/- (including GST) per year.
- v. The procurement should be done through GeM only.

3. This issues with the concurrence of Finance Directorate of Railway Board.

Kindly acknowledge receipt.

Signed by

Dharmendra Singh

Date: 12-01-2024 13:28:34

(धर्मनंद सिंह)

निदेशक दूरसंचार

L/3D/6476/1024

No. 2020/Tele/22(1)/20Part.1 (3316366)

New Delhi, dated: 12.01.2024

Copy to:

1. The Principal Financial Adviser, All Zonal Railways/PLs.
2. The Deputy Controller & Auditor General of India (Railways), Room No. 224, Rail Bhawan, New Delhi.

Signed by

Jagdish Pandey

For Member (Finance), Railway Board

Date: 12-01-2024 15:39:39

Copy to:

1. FDS-I and Budget Branches, Railway Board.
2. PCSTEs, All Indian Railways.



1/3104840/2024

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

E.2023/Tele/6(3)/1(3359840)

Rail Bhawan, New Delhi-110001

Dated: 09.09.2024

General Manager,  
All Zonal Railways

Telecom Circular: 07/2024

Subj: Maintenance of OFC & other Telecom Assets by Railways  
Ref: Board's letter of even number dated 04.12.23

\*\*\*\*\*

Railway Board, vide above referred letter, had advised Zonal Railways not to transfer the OFC assets being created to RailTel. In this respect, Railways are advised that besides OFC, no new Telecom assets created shall be transferred to RCH.

2. Railways are also advised to maintain these Telecom assets which have not been transferred to RCH, including OFC, on their own. The maintenance of these assets can be outsourced, if desired, by Zonal Railways.

3. For outsourcing, tentative guidelines for OFC and Tower are given in Annexure, which may be adopted by Zonal Railways. These guidelines are not exhaustive. Railways can modify these guidelines, if required, and incorporate further special conditions in the Tender as per their specific requirements. Open Tender may be invited for outsourcing. These Tenders may include the detailed scope of maintenance with defined parameters, preventive maintenance, frequency of maintenance, rectification of faults so as to ensure the availability of asset of the highest order. Penalty provisions shall also be incorporated in case of any deficiency in maintenance.

This issued with the approval of AN/Tele/Railway Board.

Signed by

Dharmendra Singh

Date: 09-09-2024 14:05:23

(Signature)

दिनांक / प्रमाण

दूरभाष 011-47843013, 030-43013

ईमेल dtele@rb.railnet.gov.in

Copy: PCSTEs, All Zonal Railways.

1/31041840/2024

Following can be included in the outsourcing for OFC network maintenance:

1. **OFC and Associated Telecom Equipment Maintenance:** At least one team for maintenance in a section length of 200 Km. Besides OFC maintenance, associated Telecom equipment maintenance like power plant, DG sets if available, Air Conditioners if available and not maintained by Electrical, minor repairing of shelters/building like Porta Cabin which are not maintained by Engineering, Earthing arrangements etc.
2. **Preventive Maintenance of OFC:** Details for Preventive maintenance for Cable Protection like regular patrolling and surveillance of OFC Route to have preventive OFC link disruptions. Attending to/Safe-guarding against any signs of damage or potential damage. Details of Planned repairs to existing joints/terminations and Preventive maintenance of OFC Cable(measurements with OTDR and Power equipment), restoration of OFC cuts, mean time to repair, response time, restoration time, record of fault repair time, monitoring and maintenance at equipment locations etc.
3. **Maintenance Plan Requirements:** Details to be submitted in Maintenance plan by Contractor. Details of the man-power and equipment proposed to be located at different sites to cover the jurisdiction for the maintenance of the OFC network. Details of Installation of Joint Closure & Splicing of OFC, upkeep of Power equipment (Charger, battery etc.)
4. **Penalty Provisions:** Details of Penalty provisions for non-compliance/deficiency in the maintenance of OFC, Power equipment and other associated equipment.

Following can be included in the outsourcing for Tower maintenance:

1. **Tower Maintenance and structural checks:** Details of maintenance for Feeder and Power Cables between RR Station and tower, Earthing and its meggaring and maintenance, Verticality check and level of top of foundations, Painting/Galvanizing and its finishing, Protection against lightning, Cleaning of towers, foundation checking and attending the same in case of settlement or damage, Structural stability, tilt of the tower and settlement of foundation if any, Buckling/distortion of members, if any, permissible tilt and if beyond the permissible limit then action for arresting the same and then rectification, Corrosion, Foundations and stability, Connections, looseness of bolts, Checking distortion of members using plumb wire and scale, if necessary, Tower aviation lights.
2. **Responsibilities in case of natural disasters:** Responsibilities in case of damage / disturbances due to heavy rain/heavy wind/cyclone, etc. restoration to be done to the extent possible within provisions of maintenance agreement. In case such damage/disturbance, requires additional work like replacement of damaged tower member, fitting arrangements, aviation lamps, earthing, re-alignment, re-painting etc., cost to be assessed by Railways for both material and labour portion and with mutual consent can be executed by the contractor.
3. **Call-Based Maintenance:** Also, in normal conditions, call-based attending of failure/deficiency noticed to be done within reasonable time, as decided by Railway.
4. **Penalty Provisions:** In the event of failure of contractor to complete the work or deficiency, suitable penalty may be imposed.

**Note:** RCIL has been maintaining Railway OFC and Tower assets and have outsourced the maintenance of these assets. Railways may refer to RCIL Tender document/ conditions for maintenance of such assets before finalizing their tender conditions.

1/3107106/2024



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

#2024/Tele/11(3)/1(3451974)

रेल बोर्ड, नई दिल्ली - 110001

दिनांक: (To signed)

The General Manager,  
All Zonal Railways

Director General,  
R.D.S.O.,  
Lucknow

(Telecom Circular No. 08/2024)

Sub.: Use of Digital VHF sets over Indian Railways

Ref.: i. RDSO's letter No.RDSO-TELE01LKO(SPEC)/9/2019 dated 08.10.2024  
ii. Board's letter of even number dated 27.06.2024

\*\*\*\*\*

Communication between Loco pilot and Guard is very critical from safety point of view. This communication needs to be reliable with clarity in speech. In this respect, Zonal Railway were advised vide Board's letter of even number dated 27.06.2024 to submit feedback on the performance of Analog and Digital SW VHF sets to RDSO. Further RDSO was asked to submit recommendation on this issue. RDSO vide letter dated 08.10.2024 has submitted the following:

- (i) Presently 3 types of SW Walkie-Talkie sets are available. Analog Walkie-Talkie set with basic feature, Digital with basic feature & Digital with high end facilities. Purchaser decides which types of set are to be procured. Digital Walkie-Talkie sets which comply with RDSO specifications, can communicate with Digital as well as Analog sets.
- (ii) A performance comparison between SW Analog and Digital Walkie-Talkies has been submitted vide Annexure-II (copy enclosed), wherein RDSO has brought out that in terms of speech quality, coverage range, channel capacity, battery backup, the performance of Digital sets is superior to Analog sets. Further, the Analog sets can communicate with only Analog whereas Digital sets can communicate with both Analog as well as Digital sets.

2. In order to harness the advantages offered by Digital technology based VHF sets, following has been approved by AM/Tele/Railway Board:

- i. Henceforth only Digital SW Walkie-Talkie sets will be procured over Indian Railways.
- ii. Tenders for VHF sets which have been floated for Analog Walkie-Talkie sets, but not finalized (i.e. LCA not issued on date) shall be reprocessed to procure only Digital Walkie-Talkie sets.

...2/-

अध्यास सं.124, रेल बोर्ड, राजकीय रोड, नई दिल्ली - 110001



1/3107106/2024

- iii. Digital SW Walkie-Talkie sets procured/available in Railways may be utilized for Loco Pilot, ALP, SMs & Train Manager (Guard) on first priority. When in a particular section, all the above officials are provided with Digital Walkie-Talkie sets, action may be taken for switching of Analog based 25W & 5W VHF sets to Digital 25W & 5W VHF Sets operation.
- iv. SW Sets released/spared from above may be handed over to maintenance departments and Security.
- v. RDSO is advised to work towards broadening the vendor base for digital SW Walkie-Talkie sets.

Signed by

Dharmendra Singh

Date: 11-10-2024 19:27:33

(धर्मनंद सिंह)

निदेशक/दूरसंचार

दूरभाष 011-47843013, 030-43013

ईमेल dtele@rfta.railnet.gov.in

**Copy to:**

1. AM(RS), Railway Board
2. PCSTE, All Zonal Railways

-2/-

Phone : 0522 - 2459686  
Fax : 0522 - 2462635  
E-mail : vijay-garg79@gmail.in



राष्ट्र सरकार, रेल मंत्रालय  
अनुसंधान, अभिकल्प और मानक संगठन  
लखनऊ-226 011  
Government of India - Ministry of Railways  
Research Design & Standards Organisation  
LUCKNOW - 226011



Date: As signed  
Through e mail

Director Tele  
Railway Board  
New Delhi  
Email:dtele@rb.railnet.gov.in

- Sub. : Feedback on Digital/Analog 5W VHF sets over Indian Railways.  
Ref. : 1. Railway Board letter no 2024/Tele/11(3)/1 (3451974) Dated 27-06-2024.  
: 2. This office letter of even no. Dated 27-08-2024.

5W VHF sets are used in Indian Railways for Communication between Driver, Guard and Station Master. With the increasing use of Long Haul trains, it has become important to improve the quality of VHF transmission.

Presently as per RDSO specification RDSO/SPN/TC/107-2018 Ver 2.1, three type of VHF Walkie-Talkie sets are available for procurement i.e. Analog, Digital and Digital with high end facilities. Purchaser has to decide which type of sets is to be procured. Both type of 'Digital Walkie-Talkie' sets as per RDSO specification can communicate with Digital set as well as Analog set. Many of the VHF manufacturers have stopped the production of Analog Radios.

In reference and continuation to RB Letter at Ref (1) Zonal Railways were requested to give feedback for performance of Analog/Digital Walkie-Talkie set. Inputs were received from 11 ZR i.e. ECoR, ER, WCR, SCR, WR, NR, NER, CR, NCR, SWR, SR and same are summarized and attached as Annexure -1. From the feedback received from different Zonal Railway and taking inputs from other sources a comparison between Analog and Digital Walkie talkie sets has been prepared and attached as annexure II).

In view of the better speech clarity, more battery backup and more coverage area in the Digital Walkie Talkie sets, Zonal railways may be advised to procure Digital Walkie Talkie sets only. No analog set may be procured in future.

This has the approval of PED/S&T.

Digitally Signed by Vijay  
Garg  
Date: 08-10-2024 13:24:02  
Reason: Approved  
(Vijay Garg)  
Director /Telecom-1  
for Director General/ Telecom

**Innovations**

**Innovation in design: High reliability Signal control and lighting circuits.**  
(The design has been approved on 28.01.15 and implemented in automatic signaling)

**Preface :**

With the inception of LED lamps, signal failures on account of fusing of lamps have come down drastically. However, signal failures due to other factors still form a sizeable proportion and need to be minimized further to improve reliability. An innovative in house design for “**High Reliability Signal Control and Lighting Circuits**” has been developed which is safe, highly reliable and cost effective. It is the simplest solution to enhance the throughput. The design addresses all the issues. Huge benefits will accrue in new works pertaining to 3<sup>rd</sup> line, gauge conversion, new line, auto-signalling, IBS & LC Gate interlocking etc by implementing this design.

**Objective:**

The objective of this design is to minimize/eliminate signal failures due to:

- i. Fuses getting blown off.
- ii. High contact resistance offered by outdoor relays.
- iii. Superfluous cascading path.

The added advantages apart from above are :

- a. Enormous reduction in copper cable conductors for lighting signals.
- b. Elimination of bobbing of signal aspects due to design improvement.

**Cost Benefits:**

The innovative design not only enhances reliability to a large extent but also contemplate massive saving by way of reduction in requirement of cables and relays. It is estimated that around 20 lac can be saved for a four line station by implementing this design. The detail economics of design is enclosed as annexure ‘B’. The circuits are enclosed as annexure ‘C’.

## **Innovation in design: High Reliability Last Stop Signal (Minimization in raise up/failure cases of Last Stop Signal and subsequent piloting out of trains)**

### **Preface:**

Last stop signal (LSS) is one of the most important signals of the station which controls the entry of train into the block section. With the advent of token less block instrument, the exit track circuit commencing from foot of the signal plays pivotal role in the control of LSS. Even a momentarily bobbing of this exit track circuit can lead to failure of LSS and thereby leading to piloting out of train. It is pertinent to mention here that LSS has an inbuilt safety feature which doesn't allow ASM to re-clear the signal once it is raised due to bobbing of track circuit. Thus piloting out is the only recourse available with ASM in such contingencies. This is not only time consuming but also with a lesser safety standard as manual intervention is required at both ends for ensuring block working. Raising up of signal is not a desirable feature from the driver's point of view also. Such incidences lead to depletion in driver's confidence. The abrupt application of emergency brake is also an undesirable feature.

An innovative in house design for **High Reliability Last Stop Signal** has been developed by Hq drawing office which is safe, highly reliable and cost effective. It is the simplest solution to enhance the throughput. The design addresses all the issues. Huge benefits are going to accrue in new works pertaining to third /fourth line, gauge conversion, RE work (G-BPQ), new line, IBH etc.

### **Objective:**

By ingenuity and out of the box alteration in circuits, DC exit track has been done away with and replaced by existing BPAC track circuit to not only serve the purpose but also to serve it in a better way as BPAC track circuit is not amenable to bobbing. The objectives achieved are:-

- i. Elimination of failure of LSS and Block Working resulting on account of bobbing/failure of DC track circuit.
- ii. Reduction in recurring maintenance cost by elimination of DC exit track circuits.
- iii. Direct saving of installation cost at new installations.
- iv. Indirect recurring saving by reducing LSS & Block Failures. Piloting out is more or less eliminated due to bobbing menace. Standby BPAC further reduces the possibility.
- v. Reduction in application of emergency brake by elimination of raise up of LSS on account of bobbing of track circuit.

### **Cost Benefits :**

The innovative design not only enhances reliability to a large extent but also contemplate massive saving by way of reduction in signal failures & number of track circuits. It is estimated that around 6 Lacs can be saved alone by not installing two exit track circuits for a four line station by implementing this design. On an average 1 Lac per year can be saved per station perpetually on maintenance cost. In addition to above indirect benefit by reduction in failures; raising up of LSS, elimination of emergency braking may accrue in crores. The detail economics of design is enclosed as annexure 'B'. The circuits are enclosed as annexure 'C'.

### **Approval & Implementation of the design:**

This design has been approved on 25.03.2015 and implemented at Dewaigaon (DEW) and Arjuni (AJU) stations in May-2015 and shall be carried out for all future installations also.



**Innovation in design: "High Reliability First Stop Signal (Minimization in raise up/failure cases of First Stop Signal) and modified D/L Block Release Circuit"**

**Preface:**

First stop signal (FSS) is one of the most important signals of the station which controls the entry of train into the Station section. In the prevailing design, two straight DC Track circuits are provided ahead of FSS before 1<sup>st</sup> Point zone to ensure sequential Block Release. Out of the box it has been pondered and inferred that in terms of IRSEM Para 18.24, sequential Block Release can be achieved using Calling-ON track circuit and one straight track circuit ahead of Home Signal. Under that situation, one Track Circuit ahead of Home Signal is becoming redundant which has been dispensed with in the design and thereby failure of Home Signal for all routes on account of failure of the redundant Track Circuit has been eliminated. Elimination of one Track Circuit shall also reduce on approach raising up of Home Signal. Raising up of signal is not a desirable feature from the driver's point of view also. Such incidences lead to depletion in driver's confidence. The abrupt application of emergency brake is also an undesirable feature.

An innovative in house design for **High Reliability First Stop Signal (Minimization in raise up/failure cases of First Stop Signal) and modified D/L Block Release Circuit** has been developed by Hq drawing office which is safe, highly reliable and cost effective. It is the simplest solution to enhance the throughput. The design addresses all the issues. Huge benefits are going to accrue in new works pertaining to third/fourth line, gauge conversion, RE work (G-BPQ), new line, IBH etc.

**Objective:**

By ingenuity and out of the box alteration in circuits, DC Track Circuit ahead of FSS has been done away with and in terms of IRSEM Para-18.24, Sequential Block Release has been modified suitably utilizing existing Calling-ON Track Circuit without any compromise with safety standard.

The objectives achieved are:-

- i. Elimination of failure of FSS on account of bobbing/failure of an additional and unwarranted DC track circuit.
- ii. Reduction in recurring maintenance cost by elimination of one DC track circuits.
- iii. Direct saving of installation cost at new installations.
- iv. Indirect recurring saving by reducing FSS Failures. Piloting in is reduced.
- v. Reduction in application of emergency brake by elimination of raise up of FSS on account of bobbing/failure of the redundant track circuit.

**Approval & Implementation of the design:**

This design has been approved on 23.12.2015 and implemented at JDI (DOC: 29.02.2016), SGRD (DOC: 01.03.2016), SKT (DOC: 05.03.2016), BUA (DOC: 09.03.2016) and KHS (DOC: 14.03.2016) stations for new line only during 3<sup>rd</sup> Line work and being carried out for all future installations also.

## **Innovation: FOUR-TWO-KA-ONE Innovative Design for Sliding Barrier.**

### **Preface:**

At present, SECR has 315 numbers of Interlocked Level Crossing Gates. Out of these 147 are provided with Sliding barrier arrangement and 5 are provided with twin barriers. In case of breakage/defect of lifting barriers, the sliding barriers can be operated by Gatekeeper and after its operation the train can be passed by taking OFF the relevant signals. This arrangement avoids piloting in/out of trains thereby saving the time to a great extent.

### **Objective:**

In the existing arrangement, in case of any one of the booms getting damaged by outsiders, all the sliding barriers of the gate are required to be operated which takes a considerable amount of time. In case of twin barriers (as provided in some of the busy gates of this Railway) this time becomes four times of that required for the operation of single sliding barrier.

To obviate this problem, a new and simple design has been proposed by S&T Drawing & Design team of Hq. In this new design, if any one of the lifting barriers gets damaged/defective, only the corresponding sliding barrier has to be operated by gatekeeper. Combo of mechanical sliding boom and electrically operated intact boom is employed to tide the crisis.

### **Advantages:**

1. The operation time gets reduced. It is nearly half as compared to the existing arrangement. In case of twin barriers, the operation time becomes one fourth. Thus it is a tremendous time saving innovation.
2. Operation is easier than the existing arrangement. Effort required and pressure on Gatekeeper also reduces. This helps in better discharge of duty.
3. After passage of train, the waiting time becomes less for the road users as only one of the sliding booms is only required to be pulled back.
4. As the operation time reduces so signal failure time also reduces which results in better MTTR.
5. Waiting time is also reduced to half for road users. This is directly enhancing safety and giving direct benefit to public.

## **Innovation: DIRECTION SETTING PANEL FOR SINGLE LINE AUTOMATIC SIGNALLING**

### **Preface:**

To fulfill the requirements of Automatic Signalling in single line, direction of traffic has to be established for a section before starting the train movement in that direction. For establishing direction of traffic, Line Clear has to be obtained from the station in advance.

The movement of trains is controlled by the Automatic Stop Signals in the direction, for which the direction of traffic has been established, while the Automatic Stop Signals in opposite direction should display ON aspect.

One such system is provided for the newly commissioned joint line in the section RSM-RJN. This joint line is not connected to the intermediate stations Parmalkasa (PMS) & Murhipar (MUP). For movement of trains in the joint line direction of traffic has to be established first similar to that of Automatic Signalling.

A separate set of UFSBI and block panel is employed in the section only for the purpose of establishing direction of traffic in the section.

### **Objective:**

In the existing arrangement in RSM-RJN, four separate sets of UFSBI and Block panel are provided. One set which is provided end to end only for establishing direction of traffic and another sets for normal operation of trains which are provided for controlling trains into each block section. Thus, for sending a train in the section on joint line, all the four block panels need to be operated which is complicated and more time consuming. In addition to this, failure of Block panel (i.e. communication/link failure equipment failures will hamper the movement of trains. One such failure has recently occurred on 15.06.2018 in RSM-RJN section, which caused 8 trains to lose punctuality.

To obviate this problem, a simple relay based directional panel has been designed by S&T Drawing & Design team of HQ. In this new design, conventional panel is used for establishment of direction of traffic which is easier to operate and less time consuming.

### **Advantages:**

1. It can be realized using conventional panel instead of UFSBI with block panel which costs approximately Rs. 9 Lakhs. Thus a direct cost saving of Rs. 9 lakhs approximately.
2. Sufficient redundancy is provided in new design, which minimizes the chances of failures. 3 tier redundancy is provided—
  - a. Redundancy in track circuits/axle counters.
  - b. Redundancy in cables (OFC, Quad & Signalling cable).
  - c. Relay redundancy.

Due to this much of redundancy, reliability of the system will obviously get improved.

3. In spite of redundancy, if any track section detection is failed, an emergency operation for establishment of direction is also provided.
4. Maintenance of conventional panel is easier as compared to UFSBI. Signalling staff is familiar with the conventional panel, which makes it easier for failure rectification than that in the case of UFSBI.
5. Only end stations have to operate. Thus no need of provision of block instruments/panels at intermediate stations.
6. Circuit is simpler than that provided at RSM-RJN. Therefore maintenance will be easier.

## **INNOVATION : HIGH RELIABILITY BLOCK RELEASE CIRCUIT FOR DOUBLE LINE BLOCK INSTRUMENT**

### **Preface:**

Double line Block Instrument (DLBI) is one of the most important signaling equipments. It controls the entry of the train into the block section. There are two important circuits associated with DLBI. One is **"Last Stop Signal (LSS) Control Circuit"**, at sending station and another is **"Block Release Circuit"** at receiving station. **LSS is controlled by BPAC (Block Proving by Axle Counter) track section (in advance of LSS). Block release circuit is released by arrival of train through sequential clearance of two track circuits at receiving station plus BPAC track section.** Failure of track circuit just in advance of home signal leads to double jeopardy – **Piloting out at sending station and Piloting In/reception on calling ON signal at receiving station.** This literally kills the operations due to detention at two stations.

This is a bizarre situation wherein failure of one of the track circuits just in advance of Home signal at receiving station affects LSS at sending station. This is despite the fact that the block section is clear up to Home signal plus 180m beyond it at the receiving station. In other words despite clear BPAC track section, LSS can't be cleared due to this bottleneck.

### **Objective:**

High Reliability Block Release Circuit is developed by Hq drawing office to surmount this bottleneck by innovative design of providing one alternate path by employing another combination of existing two track circuits along with BPAC in clear condition. This circuit is safe, highly reliable and cost effective. Merging two track circuits employed in Block Overlap into one also help in simplifying the design and maintenance. Reduction in cost is an added advantage.

### **Advantages:**

By ingenuity and out of the box alterations, following advantages are expected to accrue:

1. It will save the cost of installation of two track circuits per double line station.
2. Reduction in recurring maintenance cost by reduction in the number of track circuits.
3. Elimination of the block failures on account of track circuit failures. The trains may be dispatched from the rear station on signal and may be received on Calling On signal at the station where track circuit failure has occurred. Thus it will result in huge saving in terms of punctuality.

The system will become safer by reducing the manual intervention at both the block stations.



## **OPTIMIZED CABLE COREAGE PLAN FOR STANDBY BPAC FOR DOUBLE LINE**

### **Preface:**

Block proving by axle counter is provided in all block sections over all routes in SECR. Digital axle counter (SSDAC/MSDAC) has been provided as means in all block sections which includes single line/double line/multiple lines, IBS, auto signaling etc.

Initially failure rate of DAC (mostly of M/s CEL make) was very high. This led to piloting out of trains at the dispatch station very frequently. To improve availability of BPAC, provision of standby equipment was planned with auto reset feature and trial in two block sections was carried out. In case of failure of both the systems, SM on duty is allowed to apply reset to both the systems from one command. Till now 209 number of block sections (out of 232) have been provided with standby DAC comprising of 738 track sections.

### **Objective:**

Principle of providing standby was not comprehensive. Still the arteries, vein and heart were common. In other words, power supply from dc/dc converter (heart), cable carrying 24V to each electronic junction box (arteries), cable carrying communication/display (veins) were common. Failure of any one of them caused failure of both the systems. The very purpose of providing standby got defeated under this calamity.

To obviate this problem, came the idea of duplicating everything from the word go. DC/DC converter feeding power supply to cable along with cable for both power supplies and communication are segregated to have best of both the worlds. Communication between station is also envisaged on two different media i.e. OFC and quad or E1 and VF channel. Such improvisation can cost mullah. An innovative and cost effective design was developed to ensure this scheme by optimization of cable at various levels.

### **Practice in vogue :**

SN	Type of Cable	Purpose
1.	2x12 Core Signaling cable	For carrying power
2.	2x18 Core Signaling cable	For Vital and Reset circuit
3.	2x6 Quad Cable	For communication and display circuit

### **Proposed scheme :**

SN	Type of Cable	Purpose
1.	2x12 C Signaling cable	For carrying power
2.	2x12C Signaling cable	For Reset circuit
3.	2x6 Quad Cable	For vital circuit, communication and display

### **Advantages:**

1. Saving of 12 core per circuit.
2. Set 'A' is completely isolated from Set 'B'.
3. Use of spare conductors of quad cable for vital relays give more resilience to the circuits and improves reliability at no extra cost.
4. The scheme envisages use of only two types of cable against three types in vogue. Inventory management becomes easier and cheaper.





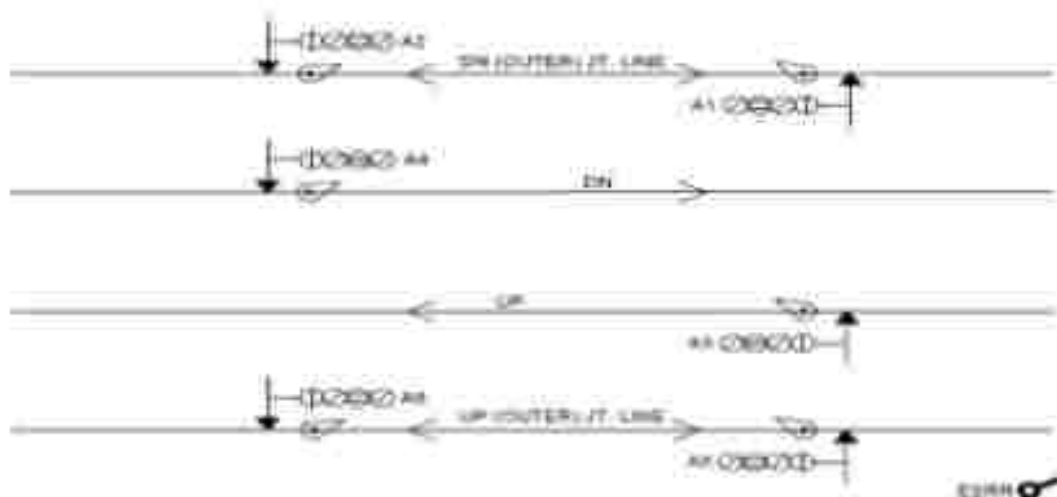
**INNOVATION: Single button operation for taking off the gate signal at LC Gate in auto section.**

In recent years, auto signalling works have come up in a big way. Also, multiple lines are being provided with auto-signalling. LC gates are one of the main obstacles in speeding up the train movement. Many failures and detentions have been reported on account of wrong/late operation by gatemen. Many signal knobs and operations are nightmare for gatemen. In this connection Drawing and design section of Signal and Telecommunication department of SECR/HQ has introduced a new innovation to enhance the flexible operation of LC gates "Single button operation for taking off the gate signal at LC Gate in auto section".

**LC Gate Working**

SN	Earlier LC gate working	Proposed LC gate working
1.	Reverse ESRR button, reverse individual signal buttons to lower signal for corresponding line.	Reverse ESRR button, reverse signals will lower as per aspect controlling in auto section.
2.	Signal Knobs have to be reversed and normalized for every operation.	Signal knob will always be kept in reverse only. It can be normalized in emergency to restrict signal for any particular line.
3.	For opening LC gate, ESRR and all signal knobs have to be normalized.	For opening LC gate, only ESRR knob has to be normalized.

**Quantitative analysis (example 4 line section)**



1. No. of operations in earlier gate working:
  - a. While giving signal for all lines = 05 (4 + 1 ESRR)
  - b. While normalizing signals to open LC gate = 05 (4 + 1 ESRR)
2. No. of operations in proposed gate working:
  - a. While giving signal for all lines = 1 ESRR
  - b. While normalizing signals to open LC gate = 1 ESRR

### **Implementation**

This innovation is introduced at following LC gates successfully:

SN	LC Gate no	Section	Commissioning date
1.	CG-21	URGA-KRBA	08.11.2023
2.	CG-23		
3.	CG-24		
4.	CG-29	KRBA-KBS	23.09.2023
5.	CG-30		
6.	LC-440	BIA-BQR	07.04.2023

### **Advantages:**

1. Minimize the failure related to signal button.
2. Increase flexibility in gate operation for gate men and reduce the gate opening time.
3. No extra cost required.
4. Prevention of failure and detention at LC gates.
5. Consonance to SR.
6. Less work for gateman. He can now focus more on passing trains/detecting hot axle/unusual sound/ hanging parts etc.
7. Time lost in reversing and operating signal switch whenever LC gate barriers were required to be opened is eliminated.
8. Mobility gets improvised.
9. Very useful and convenient for section with three/four lines.

**Provision of resetting arrangement of SSDAC (Main & Standby) through EI VDU itself rather than through external circuit.**

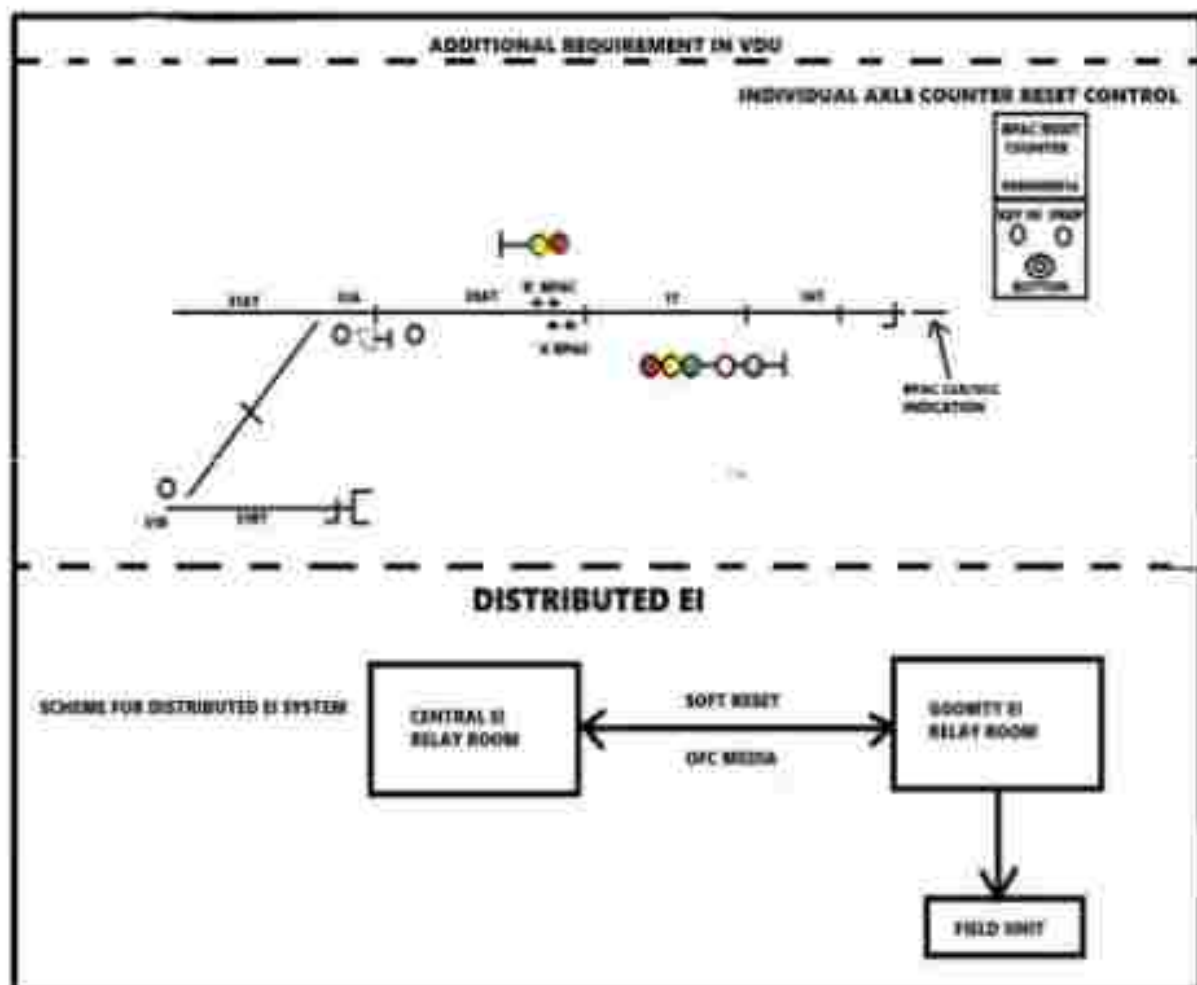
Currently, all BPACs/MSDACs have been provided with dual detection with provision for auto-resetting the other device when one device has failed. However, in case of failures of both devices at a time, SM has to manually reset the axle counter through a physical reset box. In a station with 4 lines and IB section such as Robertson, 6 reset boxes are required on each side of the station. This occupies a lot of space in SM's room. SM's room is already cluttered with so many devices and communication gadgets on either side. To facilitate the SM, this resetting facility has been given in VDU itself. Since all operation is being done from VDU, it is easier to locate and operate from single window.

**OBJECTIVES:**

Typical circuit for provision of reset of BPAC/MSDAC has been approved by drawing and design office and circulated to field units for execution.

**ADVANTAGES:**

- Ease of operation for SM.
- Efficient use of space in SM room.
- Reduction in no. of physical relays.
- Reduction in wiring.
- Reduction in reset boxes.



# **Checklist for New S&T Installations**





**दक्षिणपूर्व मध्य रेलवे**  
**SOUTH EAST CENTRAL RAILWAY**



कार्यालय  
प्रधानमुख्य संकेत एवं दूरसंचार इंजीनियर  
द्वितीय तल  
सुमारेजीनरसमुदाय विजिडन  
बिलासपुर-495004

Office of the  
Principal Chief Signal & Telecom Engineer  
2<sup>nd</sup> Floor, SECR Zonal Hq Building  
Bilaspur-495004  
☎ : (07752) 268059  
Fax : (07752) 268219

No: SECR/S&T/Checklist/Version 2.0/ 217

Date: 28.05.2024

**CSTE/Con.,**  
**CSTE/Project-I&II,**  
**SrDSTE/BSP, R & NGP**

**Sub:** Checklist for New S&T Installation- Version 2.0.

Please find attached herewith "Checklist for New S&T Installation- Version 2.0" to replace its previous version provided in SECR Policy Compendium Signal & Tele 1.0 from page- 80 to 93, for guidance of all concerned.

Ever since the debut issue of this checklist came into being in July 2020, this collection of instructions on nitty-gritty of S&T installations has been adopted as yardstick for evaluating, checking and cross-checking the quality of execution of works on SECR as envisaged by its pioneers. Going by its wholehearted acceptance by executives and manifest efficacy, it was decided to update the contents to publish its next version addressing various addendum & corrigendum/policy guidelines issued by Railway Board, RDSO and S&T/HQ in the intervening period, issues appreciated through direct observation at site and feedbacks from various quarters.

In essence, this checklist offers most of its guidelines reasoned by commonsense. Such guidelines pertain to constructional features of S&T service buildings, general power supply arrangements, installation of indoor equipments, installation of location boxes etc. There are guidelines for adherence to practices, policies, innovations and typicals exclusive to SECR and some guidelines are provisions in latest guidelines issued by Railway Board, RDSO and S&T/HQ aptly reiterated in the context.

Executives at every level are advised for implementation of this checklist in real earnest and offer feedbacks and valuable suggestions from time to time to maintain the dynamism of the process for its further enrichment.

**Encl:** Checklist for New S&T Installation- Version 2.0 (16 pages).

  
(S.K.Solanki)  
PCSTE

**Note:**

For works executed by PSUs/other units like RVNL, RITES, IRCON, MRIDC, CERL, CEWRL etc, concerned Sr.DSTEs are advised to see that works are being executed in accordance with the checklist.

**Copy to:**

GM/S&T/RVNL/HBS, DyCSTE/RE/SC, GGM/S&T/RITES, CGM/S&T/IRCON, any other executing agencies of S&T works for kind information and compliance, please.

### **Checklist for New S&T Installation 2.0**

**(To also be used during JAG/SAG's inspection as a prelude to CRS' inspection)**

- 1.0 Safety- The first and foremost:**
- 1.1** JPO circular no: SECR/S&T/JPO/RR/1/2012/Rev./2023/748 dated 17.10.2023 for Opening/Closing of Relay room shall be followed.
- 1.2** JPO circular no: SECR/S&T/JPO/RR/Alt./362 dated 03.07.2023 for carrying out alteration in existing Relay room shall be followed.
- 1.3** HQ's guidelines for carrying out alteration works issued vide letter no: SECR/S&T/Safety/RR/Alt./ 486 dated 29.07.2023 should be adhered to.
- 1.4** Railway Board's guidelines for carrying out alteration works issued vide letter no: 2012/Sig/SF/2(Policy) dated 20.07.2023 should be adhered to.
- 1.5** All writing works should be completed before commissioning of the work.
- 1.6** Engineer in charge of the work shall make duly signed As-made drawings available at site before commissioning of the work.
- 1.7** Old/As-made/Completion drawings to be maintained at each installation as per HQ's guidelines issued vide letter no: SECR/S&T/Completion/As-built/Docs/Urg/958 dated 14.12.2023.
- 1.8** Joint safety checks should be ensured before commissioning of the work.
- 1.9** RB's letter no: 2023/Safety (A&R)/19/35 dated 20.02.2024 shall be adhered to.
- 1.10** Zonal Safety circular no. 05/2018 for conducting NI issued vide letter no: CSO/Safety/Safety circular/163/573 dated 06.08.2018 should be adhered to.
- 1.11 Personal safety:**
  - a. Use retro reflective jacket by staff working on and around the track to be ensured (both for departmental & contractual staff).
  - b. To avoid using mobile while working in the vicinity of the track.
  - c. To keep at least one person as 'look out' man.
  - d. To avoid unnecessary discussion while working in the vicinity of track.
  - e. Daily counseling of the staff during progress of work.
  - f. Extra care needs to be taken while working on bi-directional lines.
  - g. A gadget (as a **second line defense**) can be used so that it can be put at an adequate distance on both sides for giving approach warning on high volume hooters.
- 2.0 General Signalling & Telecom arrangement:**
- 2.1** Signalling and Interlocking arrangement shall be in accordance with G & SR, IRSEM including all the latest amendments, Railway Board's circulars & guidelines, RDSO specifications & guidelines, CRS's stipulations and latest typical drawings, circulars, guidelines and practices of S&T/SECR. S&T installations shall confirm RE standards. **DPP to be prepared as per policy circular 11/2020. Without DPP, work will not be allowed.**
- 2.2** All signalling & Telecom items shall be procured from RDSO approved sources.
- 2.3** Green DG sets (Eco friendly) shall be installed in open space adjacent to power room (in Non RE area only).
- 2.4** Air-conditioning shall be provided in all relay/EI rooms.
- 2.5** Communication to each goomty and location/Hut from centre is preferable.
- 2.6** With availability of one AT, local supply and UPS with double battery backup of 8 hrs duration, DG can be done away with. Final approval to be solicited case by case.
- 2.7** In the long block sections where UPSBI is not functioning properly on quad cable, it is advised that **two VF channels should be derived from two separate MUX** to have media diversity. As a policy this may be done at all stations in branch line.
- 2.8** Communication between UPSBIs on dark fibre mode as per requirement and feasibility.
- 2.9** OPC hut and telephone exchanges should be a part of main building (SECR Typical).
- 2.10** Signal and Telecom depot should have common premises.
- 2.11** Centralized EI should be provided up to 100 routes.

- 2.12 'No end goomty' in centralized EI should be the norm.
- 2.13 SM's room should be at ground floor.
- 2.14 In future, no ducts in IPS room and battery room to be envisaged. Bare minimum provision of ducts should be there in relay rooms up to CTRs only.
- 2.15 No porta cabin should be used in any S&T installation.
- 2.16 HQ policy circular no. 02/2021 should be followed for standardization of location of various maintenance tools to facilitate preventive/ predictive maintenance of signalling gears.
- 2.17 Qualified engineers should be engaged by the contractor for safe and reliable execution of works.
- 2.18 Power supply arrangement for distributed EI installation should be as per RB's letter no. 82/HEM/250/1 part-3 E-3420012 dated 25.09.2023.

### 3.0 Civil Work of Panel Building & End Goomties:

#### 3.1 Typical building plan of SECR shall be followed

- a) Standard building drawing for for LC Gate/IBH/Auto Goomty (Typical No. 70/2020 A1,T-A).
- b) Standard building drawing for housing EI/PI for 3<sup>rd</sup> / 4<sup>th</sup> line section (Typical No. 71/2020).
- c) *The building constructed for extension of existing relay room should not have a common wall with the existing relay room. It should be followed in case of extension of any room wherever required.*
- d) The executive agency should economize on the size of building as per actual requirement.

#### 3.2 Optimization of Goomties :

Optimization of signals and goomties is highly desirable from maintenance point of view during execution of auto signalling works. Preliminary survey & joint inspection need to be done with open line to explore the possibility of reducing signals & goomties in new sections. In future :

- a) Two goomties within the vicinity of less than 2 km in mid section should not be equipped with IPS and battery room. Common IPS may be used if goomties are within 2 km as per feasibility.
- b) Only those goomties wherein AT supply is provided should have this feature.
- c) If unavoidable, two gates can be controlled by single signal.
- d) If the gate is proposed to be closed in near future, signal of this gate needs to be controlled from nearby installation. No goomty to be built at such locations.

#### 3.3 Height of the structure from floor level to roof level should be at least 3.5 meter.

#### 3.4 The level of station building should be kept at least 3 feet above level of high level platform.

#### 3.5 Common stairs should be provided for access to relay room, battery room and IPS room whenever the goomty/ hut is at a raised level (constructed over low laying area).

#### 3.6 Entry in goomty should be through equipment room and not through battery room.

#### 3.7 All mid section goomties should be provided with additional collapsible grill doors.

#### 3.8 EI/Relay room should have one additional glass door.

#### 3.9 Windows shall be of aluminum frame with sliding doors from inside as well as outside for EI/PI. All glasses to be protected by expanded metal.

#### 3.10 The main door should not be of plywood.

#### 3.11 False ceiling should not be provided.

#### 3.12 Opening of exhaust fans in IPS & Battery room should be made during construction itself along with lintel protection.

#### 3.13 Openings of both exhaust fans should be on same wall for effective heat dissipation.

- 3.14 All gaps between windows/gates & walls should be properly sealed.
- 3.15 All windows should be provided with wire mesh and lintel.
- 3.16 **High tension wires should not run over the goomty or relay room.**
- 3.17 All cable entries should be covered in order to avoid rodent entries. All required holes to be done **using drilling machine only. No wall to be broken with hammer.**
- 3.18 Following should be ensured during new work –
  - a) Staff quarters at strategic locations/stations for maintenance staff in consultation with Division.
  - b) Office buildings and godowns in consultation with concerned Division.
  - c) Furniture in station buildings & S&T service buildings.
- 3.19 Before start of earth work in the vicinity of stations, prior approval of Sr. DSTE needs to be sought. Existing signal and telecommunication cable/assets, if any, shall be shifted/protected by the agency who will execute the work.

#### 4.0 **Electrical Work of Panel Building & End Goomties:**

- 4.1 It is to be ensured that power supply in –
  - a) EI/Relay Room is 100% on AT supply.
  - b) Other S&T service building to be at least 50% on AT supply.
- 4.2 No local to be extended to goomties. Lighting to be on selected supply as it is being done for Auto relay huts.
- 4.3 Provision of two Exhaust fans should be ensured in IPS room, battery room & OFC battery room (1 main & 1 standby).
- 4.4 Ceiling fans to be provided in Relay room, IPS room & Battery room.
- 4.5 ACs should be provided for all EIs with main + standby arrangements.
- 4.6 Centralized AC shouldn't be provided.
- 4.7 Provision of flashing indication/Audio Visual alarms for monitoring health of AIs at unmanned locations to be provided as per policy No. 03/2014.
- 4.8 MCB and switching arrangements of ACs provided in Relay room should be outside relay room (preferably in IPS room).

#### 5.0 **Relay Room:**

- 5.1 Availability of **proximity switches for Relay Room/goomty door** monitoring is must and needs to be incorporated in data logger (two switches for double door).
- 5.2 "Is it necessary to open the relay room?" to be mentioned on the door of relay room.
- 5.3 **False ceiling and centralised ACs are prohibited.**
- 5.4 **Toilet should not be constructed abutting wall or roof of the relay room.**
- 5.5 Fire alarm systems should be provided at the station. In terms of Railway Board's letter no. 2015/Sig/A/Fire/Pt. Dated 08.11.2016, Automatic fire detection and alarm system (AFDAS) shall be provided at all stations.
- 5.6 AFDAS to be wired in data logger for SMS generation. Testing to be ensured before commissioning.
- 5.7 Minimum fire alarm sensor should be provided in manned rooms.
- 5.8 Fire alarm sensor inside VDU cupboard to be ensured.
- 5.9 Fire sensors should not be provided on beam.
- 5.10 Fire alarm system should be on AT supply.
- 5.11 **Single Relay Room at one installation to be ensured. Policy circular No. 01/2013.**
- 5.12 In relay room, nomenclature of relays, terminals & other necessary details should be written.
- 5.13 All wires/cables should be bunched properly.
- 5.14 Relay racks should not be installed facing each other.
- 5.15 Wire ends to be properly crimped with correct size of lugs.



- 5.16 It is to be ensured that fuses are of standard rating & with standby fuse changeover system.
- 5.17 Proper testing of fuse alarm system to be ensured before commissioning.
- 5.18 It is to be ensured that all relays and connectors which have been used are of same make.
- 5.19 A gap of one relay after two relays should be the disposition of relays on the rack and location box etc.
- 5.20 Metallic trays carrying cables should be earthed.
- 5.21 Earthing arrangement should be provided as per latest drawing and guidelines.

#### 6.0 SM Room:

- 6.1 Termite proof/ water proof ply like kit ply with longevity of 30 years should be used for S&T installations. The cut surface should be covered with teak patti to improve aesthetic and endurance.
- 6.2 All control phones, gate phones need to be provided with battery backup.
- 6.3 The lacing and dressing for telephones and other S&T equipments should be done properly.
- 6.4 Provision of emergency S&T key should be ensured at SM's room as per JPO circular no. SECR/S&T/JPO/RR/1/2012/Rev./2023/748 dated 17.10.2023.
- 6.5 Well framed coloured yard diagram to be provided in SM's room.
- 6.6 Standby control and gate telephones should be kept on a table at the back side of SM to avoid congestion on main desk.

#### 7.0 CLS PANEL:

- 7.1 Following Power supply instructions should be pasted on CLS panel (in Hindi).

**स्टेशन मास्टर/सहायक स्टेशन मास्टर के लिए दिए निर्देश**

- 1 आनेवाली सप्लाय का LED संकेत – प्रत्येक घंटी में LED संकेत जांच करें।
  - 2 बहिर्गामी सप्लाय का LED संकेत – प्रत्येक घंटी में LED संकेत जांच करें।
  - 3 बहिर्गामी MCB गिर जाता है और संकेत बुझ जाता है तो MCB उगार करके जांच करें। समस्यादि न मिले  
आने पर सम्बन्धित TPC/Electrical & S&T staff से सम्पर्क करें।
  - 4 BUZZER बजने पर ACKNOWLEDGE करके सम्बन्धित TPC/Electrical & S&T staff से सम्पर्क करें।
- 7.2 Auto-changeover panel should preferably be installed in such a way that it is in front of on duty SM's eyes. He should be able to see the indications and monitor its proper health.
  - 7.3 230V AC extended from CLS panel to end goomties should be segregated by separate MCBs.
  - 7.4 Aluminium conductor should not be used from CLS panel to IPS. 02 pair of copper cable (one main and other standby) should be provided.
  - 7.5 MCBs of adequate rating should be provided at input & output in CLS panel.
  - 7.6 Electrical wiring inside the panel should not be haphazard. All cables/wires should be deemed properly inside CLS panel.
  - 7.7 Open joints should be avoided. Proper soldering/lacing & termination should be done.
  - 7.8 Bi-metallic strip should be provided in CLS panels.
  - 7.9 Proper nomenclature should be written on each indication, button/switch inside & outside the CLS panel.
  - 7.10 Joint Procedure Order for Electrical Safety Audit of RRI/EI/PI installation in SECR issued vide no. SECR/Elect/427 dt 05.08.2015 to be followed.

#### 8.0 SSDAC/MSDAC/BPAC/UFSBI:

- 8.1 SECR policy 01/2020 should be followed for "Provision of one DP at the foot of the Home signal in auto signaling"
- 8.2 Policy circular No. 01/18 for adoption of block instruments over SECR to be adhered to if it can't be incorporated in EI.



- 8.3 Axle counter and track circuit schemes in sections having IRS should be as per policy circular 03/2019.
- 8.4 Sound construction practice: Power Supply arrangement for SSDACs as per policy circular SECR/S&T/Policy/2805 dt 11.03.2015.
- 8.5 Provision of Double Rail Earth as per typical 65/18 to be adopted.
- 8.6 RDSO approved type SSDAC/MSDAC with standby arrangement should be used for Block proving.
- 8.7 BPAC track should not to be used in calling on track circuit.
- 8.8 Wherever advance starter track is retained, axle counter track should be proved in parallel in concerned circuit (after ensuring the DP of axle counter is within stipulated distance from advance starter), so that the signal does not fly back to danger in case of track hobbing. In double line, track circuit beyond LSS is not warranted. Even if track circuit are there for holding of LCs, they should not be proved in LSS.
- 8.9 Soft resetting of axle counter should be provided in all future commissioning of EIs.
- 8.10 In UFSBI, rack input and output of lightning arrester should be duplicated.
- 8.11 **Knob switch of Manual media changeover should be covered in a glass box.**
- 9.0 **IPS:**
- 9.1 Following typical should be followed :
  - i. Typical issued by SECR Hq vide no. 69/2020 - Arrangement of IPS at Centre/Goomty for Distributed EI with Dual VDU.
  - ii. Typical issued by SECR Hq vide no. 68/2020 - Arrangement of IPS for Centralised EI (Goomty Less) with dual VDU.
  - iii. Typical issued by SECR Hq vide no. 43/15 & 55/16 - Arrangement of IPS for IBH/LC Gate/Auto Relay Hut.
  - iv. Capacity and no of modules should be as per actual load requirement. Separate (203/110V) transformers to be provided for Optg. & Maintenance VDUs.
  - v. The system should provide for switching off of all SMRs at a time during battery sustainability test.



- 9.3 Concept of laying minimum power cable between goomties & goomties to center location should be the bottom line. If at all it is provided, it should be with auto changeover facility.
- 9.4 Employing VRLA battery at goomty could be a better option
- 9.5 Main and standby power supply should have different fuse.
- 9.6 Power supply must be protected by external fuse with proper rating if internal fuse is not provided in IPS.
- 9.7 Double lead wire for battery should be ensured.
- 9.8 Ensure insulation of IPS & connecting ladders from ground & walls.
- 9.9 Ladders of power cables should be insulated from walls.
- 9.10 Distilled water plant wherever supplied should be installed at a suitable place before commissioning.
- 9.11 **SSE/ open line should be associated with initial charging of batteries invariably. A joint certificate is must before commissioning.**
- 9.12 The checklist for maintenance of batteries covering all parameters should be indicated at an appropriate place inside battery room.
- 9.13 RDSO's TAN shall be followed for Earthing and lightning protection (latest).
- 9.14 Indicative type B & C class SPDs to be provided with PF contacts to be monitored through data logger.
- 9.15 Audio alarm should be ensured for SMR/DC-DC Converters/Transformers module of IPS. Its monitoring through data logger should be jointly checked.
- 9.16 All goomty IPS should be connected to status monitoring panel ( to be provided in SM's room)
- 9.17 Status monitoring panel to be tested by generating various fault condition in IPS before commissioning.
- 9.18 Dual battery backup should be provided as per SECR practice. 300AH cells need not be procured in future.
- 9.19 All SMRs should put on load except the one which is cold standby.
- 9.20 If required, DG set with acoustic enclosure may be installed in open area. Foundation of DG set should be isolated from all other buildings. **With availability of one AT, local supply and IPS with double battery backup, DG & Solar panel can be done away with.**
- 9.21 OEM certificate to be made available before commissioning.
- 9.22 Main and standby power cables should be connected to different terminals of IPS.
- 9.23 Normal capacity of 'AT's should be 200% of peak load.
- 9.24 ATs to be provided at IBH/LC/Auto goomties also.
- 9.25 Separate power supply for standby systems to be ensured.
- 9.26 **Power Supply Arrangement for all distributed EI installation should be as per RB's letter no. 82/EEM/250/1 Part-3 E 3420012 dated 25.09.2023.**
- 10.0 **EI:**
- 10.1 Possibility of incorporating Block Instrument in EI to be explored.
- 10.2 RDSO approved EI of latest version shall be provided with hot standby and installation shall be done in accordance with RDSO TAN No. STS/E/TAN/3012 Ver 3.0, dt. 28.06.2021.
- 10.3 Documentation for application of TSAA should be as per HQ letter no. SECR/S&T/EI/TSAA dated 23.08.2022.
- 10.4 Interlocking pattern for yard up to 100 routes should be as per RDSO standard typical circuit ver. 2 or latest amendment thereto.
- 10.5 Distributed EI system wherever provided shall be with hot standby arrangement on OFC back bone.
- 10.6 Emergency crank handle release facility in case of EI failure/VDU failure shall be provided (Policy circular No. 02/2015 & Typical No. 20/11).
- 10.7 RDSO's TAN shall be followed for earthing and lightning protection (TAN No. STS/E/TAN/3006, dt 26.11.2012)
- 10.8 Dual VDU of 55/65" with 4K resolution should be provided.

- 10.9 VDU & Maintenance PC shall be Industrial grade with software as per latest RDSO guidelines (RDSO TAN NO. STS/E/TAN/3007 dt 2.11.2012)
- 10.10 'A' Class protection with earthing arrangement to be provided.
- 10.11 EI trouble shooting charts on vinyl board should be provided inside the EI room along with the code interpretation manual. Similarly communication diagram clearly indicating each connection should be made on a vinyl board.
- 10.11 Minimum one spare of each hardware to be ensured and should be kept at every station. Suitable store for keeping such vital spares should be ensured.
- 10.12 Training should be conducted of maintenance as well as operating staff and certificate by OEM should be issued.
- 10.13 Air-conditioner shall be provided in all EI rooms.
- 10.14 Training of Open line staff on Installation/troubleshooting/ maintenance of EI/SSDAC/MSDAC/UFSH etc by OEM to be ensured.
- 10.15 Patch cords used in EI should not be under tension or bent condition.
- 10.16 Both standby and main supply should have separate fuses.
- 10.17 Power terminals should be of phoenix type not ARA type. Wago terminals will not be used in location box.
- 10.18 Pre commissioning checklist and OEM certificate of EI should be available at site.
- 10.19 Integrity of standby power supply provided for EI should be checked during SAT.
- 10.20 Audio visual alarm should be provided if OFC breaks or switch gets defective in providing communication between distributed EI.
- 10.21 Potential free contact of DC-DC converter of EI to be wired in data logger.
- 10.22 Electrostatic wrist band and mats should be provided.
- 10.23 Protocol convertor of approved design shall be provided for monitoring of status of internal bits of EI through data-logger.
- 10.24 Bit chart of appropriate size may be fixed in front of EI rack.
- 10.25 All contacts of QNA1 relays in goomties and locations should be paralleled.
- 10.26 Implementation of **High reliability signal circuit** should be ensured.
- 10.27 RDSO's technical application approval shall be obtained for all EI installations having more than 200 routes. and up to 200 routes PCSTE's approval shall be obtained vide RB's letter no. 2012/Sig/AT55/Pl. Dated 28.02.2023. Installation should conform to RDSO's Technical Advisory Note No. STS/E/TAN/3012 Ver. 3.0 dated 28.06.2021 or latest.
- 10.28 OFC for A & B system to be taken independently to each VDU and need to be terminated underneath each VDU on separate counter/FMS as per SECR Policy 02/2020.
- OFC for A & B system to be taken independently to each VDU and need to be terminated underneath each VDU on separate counter/FMS/FDP.
  - One of the VDUs (VDU only) to be kept in off position to increase its longevity.
  - VDU 1 and VDU 2 to be used alternatively. VDU 1 on odd days, VDU 2 on even days.
  - 24V can be derived from 110V by employing M/s Gallant (or similar). Care to be taken to ensure separate pair of DC-DC convertor for each object.
- 10.29 Policy circular 08/2020 for "**Location of Evaluators for Auto Signalling in 3<sup>rd</sup>/4<sup>th</sup> line work**" should be followed.
- 11.0 **VDU**
- 11.1 **On VDU, following improvisations to be done :**
- "PC SM's Key" should be renamed as "**SM's Authority Key Icon**"
  - SM may forget to un-block the signal after completion of block or inadvertently block the line under this situation, the concerned signal will not take off. To avoid this confusion, following should be done :
    - In the pop-up menu for initiation of signals, the line block information should be provided alongside the signal route.
    - Flashing type indications of line block should be prominently provided on the line itself.
- 11.2 In VDU, all failure indications should be of flashing type in red.
- 11.3 In VDU, all healthy indications should be steady type in yellow/white.
- 11.4 On VDU, twin lunar indication (Left & Right) should be provided for signals.

- 11.5 Size & configuration of Maintenance & Optg. VDU should be identical.
- 11.6 Unused ports in VDU PC may be disabled.
- 12.0 **ACs**
- 12.1 ACs should be quite away from wires and equipments.
- 12.2 Power supply switches/MCB of ACs must be from outside the relay room (preferably inside IPS room).
- 12.3 ACs to be installed on one wall.
- 12.4 All relay racks/equipments/ wiring leaders should be at least 4-feet away from wall on which ACs are provided.
- 12.5 **To avoid direct heat, film to be provided on window glasses.**
- 12.6 In Relay/EI/Equipment room, 03 walls should only be used for installation purpose so that ACs can be installed on the remaining 4th wall.



- 13.0 **Data loggers :**
- 13.1 Data-Loggers of RDSO approved design shall be provided.
- 13.2 Data logger should be powered by selected 230V AC supply instead of DC supply from IPS.
- 13.3 Data-Loggers shall be connected on DFC back bone with ring protection and shall be connected to the main data-logger at DLMC.
- 13.4 Validation and networking of data logger needs to be ensured prior to commissioning. All test operations to be recorded in data logger.
- 13.5 Synchronisation of EI's clock and data logger clock through CMU in network condition must be certified at minimum Assistant officer's level.
- 13.6 All inputs external relays should be connected to Data logger.
- 13.7 Closing of doors of Relay rooms and Goomties shall be monitored through data-logger.
- 13.8 Auto generation of Signal failure SMS to concerned Railway officers shall be provided.
- 13.9 RTU shall be provided at IBH/LC/Auto goomties. It is to be ensured that analog inputs of UP & DN ATs are incorporated in RTU and SMS alerts are being generated. Generation of SMSs to be checked and ensured regularly during maintenance/inspection.
- 13.10 Both AT inputs and selected output of CLS Panels at IBH/LC/Auto goomties shall be monitored by adjacent SM through provision of **audio visual alarm in VDU/CCIP.**
- 13.11 **SAT should be recorded in data logger.**
- 13.12 During SAT, the concerned officer and SSE/JE should sign alongside each route being tested.
- 13.13 FAT & SAT should be done by separate officials. Sample check at JAG level should be done.
- 13.14 Fresh safety certificate should be issued on effecting any alteration in service version logic.
- 13.15 Bell test to be done on approved interface circuits only.
- 14.0 **LC Gate :**
- 14.1 As per Railway Board letter **Normal aspect of gate signal** as per interlocking is provided even when the gate signal is working with **Sliding Boom.**
- 14.2 Provision of sliding Boom at all interlocked gate to be ensured.
  - a) Fixing of sliding boom shall always be outside lifting barrier (present & future both) to ensure safety of road users as well as trains.
  - b) Boom should be locked directly by E type lock rather than through chain.



- c) Stop indicator should be Retro Reflective type.
- d) Clearance of boom from Road surface to be withing 0.8 to 1 mtr.
- 14.3 Provision of proper quality of retro-reflective strips to the LC booms.
- 14.4 ELBs of RDSO approved design shall be provided along with **EKT less** design of SECR (typical no. 33/14)
- 14.5 Only AC immimized type Q-series relays shall be used (Policy Circular No.02/14).
- 14.6 Policy circular no. 02/19 regarding indications and instructions for gate working to be followed.
- 14.7 Concrete Goomty shall be constructed for interlocking equipments (Relay Room/IPS Room and Battery Room etc).
- 14.8 Mini IPS and RTU shall be provided.
- 14.9 Pedestal & lock post should be clear from soil as Pedestal & lock post get rusty over the period.
- 14.10 Implementation of FOUR-TWO-KA-ONE circuit with double ESRR for LC gate working should be ensured.
- 14.11 **Kaycee make or similar** heavy duty (4NO/4NC) switches at LC gate panel to be provided.
- 14.12 2 gate telephones preferably ~~on~~ on different pair to be provided.
- 14.13 Use of 6l cells may be discontinued with provision of alkaline cells.
- 14.14 All cables of pedestal lock post & operating panel to be earthed.
- 14.15 Approach locking of LC gates to be ensured.
- 14.16 Lock post of ELB, sliding boom to be connected with rail earth.
- 14.17 LC gate booms to be protected by rail post to prevent boom damage.
- 14.18 Gate should open even when axle-counter/track circuit is in failed condition.
- 14.19 In all future works, LC gates should be RKT less.
- 14.20 **Provision of Level crossing gates shall be avoided and in lieu ROB/RUB/LHS may be provided.**
- 14.21 RKT should not be used in any signaling circuit, which is vulnerable to failures. This has already been directed vide this office letter No. SECR/S&T/DRG/3045 dated 30.03.2011.
  - a) KLR should be used in normal course for Crank Handle interlocking. Crank Handle operation keys should be **riveted** to KLR keys.
  - b) Under no circumstances, it should be attached to RKT/XLR's key through ring.
- 14.22 Requirement of dead approach locking in yard under unoccupied condition of berthing portion should be reviewed.
- 15.0 **Earthing:**
- 15.1 Earthing for signalling equipments to be provided as per policy issued vide CSTE/BSP's Letter No. SECR/S&T/CSTE/Policy/1856, dt 07.11.14.
- 15.2 The minimum clearance between equipment earth and electrical earth provided by Electrical department should be ensured.
- 15.3 Provision of maintenance free earth for EI (ring earth) with earth value less than 1 ohm to be ensured.
- 15.4 All earthing values should be jointly checked and record to be maintained.
- 15.5 Earthing of location boxes and signal posts should be done using 8 SWG wire wrapped on MS plate connected at one end to location box and other with earth pit. Proper soldering of cable armour in location boxes to be ensured.
- 15.6 Nearby conventional earth may be connected in parallel to enhance conductivity.
- 15.7 Earth enclosures should be painted properly. Its earth value should also be mentioned on it.
- 15.8 When more than one earth is being made for preparing a ring earth, value of each earth need to be recorded before allowing inter-connection between the earths.
- 16.0 **OFC Hut:**
- 16.1 Separate B & C type lightning protection is to be provided for telecom installation and earthing connection for the same to be ensured.
- 16.2 Selected AT supply to be made available for OFC hut.
- 16.3 SMPS for STM need to be wired into data logger. Voltage needs to be monitored through

data logger.

**17.0 Location Box:**

- 17.1 Location box should be fixed perpendicular to Track and not leaning.
- 17.2 01 coat of paint should be done in depot/centralized place.
- 17.3 Soldering of cable armour with catenary to be precisely ensured.
- 17.4 **Rubber coat should be provided at the bottom.**
- 17.5 Fabrication & cutting of hylum sheet and lettering work should be done at centralized place.
- 17.6 Proper fixing and provision of at least 03 nut-bolts at either side with spring washer & check nut should be ensured for hylum sheet.
- 17.7 **Cut-in relays should be provided on powder coated patti with at least 02 nut-bolts on either side with spring washer & check nut.**
- 17.8 Only SS nut-bolts should be used.
- 17.9 The internal surface of location box should be painted with at least 03 coats to improve longevity.
- 17.10 Location Box should be fitted properly with foundation bolts.
- 17.11 Sufficient space should be kept for maintainers work.
- 17.12 L/Box, inside & outside should be painted with red oxide firstly & then by aluminium paint.
- 17.13 L/Box, shelves should be painted.
- 17.14 Cable Termination chart should be displayed on door inside.
- 17.15 Inside wiring, equipment fixing, cable terminations should be in order.
- 17.16 Sand filling & plastering of location boxes should be ensured.
- 17.17 Anti theft arrangement for location boxes should be ensured.
- 17.18 Earthing of all cables in location box should be ensured.
- 17.19 Proper sealing should be provided in location box.
- 17.20 **Lamps with switches should also be provided in location boxes to facilitate rectification in case of exigencies at night.**
- 17.21 All relays in location box should be fixed with spring washer & check nuts.
- 17.22 Proper soldering of cable armour in location boxes to be ensured.
- 17.23 High voltage terminals should be covered.

**18.0 Signals:**

- 18.1 High reliability signal circuit should be implemented.
- 18.2 Starter signal shall be located in accordance with Railway Board's Letter No. 2012/Seg/SEM-II/Misc dated 10.10.12 which is 3m from block joint/glued joint/DPs with 5 second time delay with HR circuits.
- 18.3 Policy 05/2020 should be followed for **"Provision of yellow aspect in M/L starter even in station with 3<sup>rd</sup>/4<sup>th</sup> line"**.
- 18.4 **Standby fuses with auto changeover to be provided for all fuses.**
- 18.5 Clearance of signals should be checked from OHE wire.
- 18.6 Infringement should be checked as per SOT.
- 18.7 Distance from track centres should be painted on signal base.
- 18.8 It should be ensured that all signals are on LHS of the Track.
- 18.9 Earthing of signal body & cable should be checked jointly.
- 18.10 In RE area, screening to be provided if signal is infringing live part of OHE within 2 m.
- 18.11 Double contacts in parallel of HPR/ DPR etc relay to be used in signal locations.
- 18.12 Signal implantation to be checked jointly and noted down.
- 18.13 It is to be ensured that integrated LEDs of latest version and similar type of LED must be used for all main and auxiliary signals in entire yard. Warranty certificate of LED lamps should be handed over to open line for record.
- 18.14 Signal sighting report and its compliance should be ensured.
- 18.15 Visibility of Signals shall be certified by the Signal Sighting Committee.
- 18.16 In RE area, OHE mast should be at least 10 m behind signal post or at least 30 m in front of signal post.

- 18.17 Signal not in use to be provided with "wooden cross".
- 18.18 Gasket should be provided on signal unit.
- 18.19 Only junction type route indicator shall be provided.
- 18.20 LED matrix with direction (junction) type route indicator shall be provided on the main signal for indicating more than three diversions on either side.
- 18.21 It is to be ensured that wires connected to RG aspect are cut to such size that it cannot reach HG aspect and so forth and so on for other aspects also.
- 18.22 Calling on legend board shall be provided wherever applicable.

#### 19.0 Track Circuit :

- 19.1 Double lead wire to be ensured.
- 19.2 Traction Bonding should be fitted properly & as per plan. Transverse bonds and continuity bonds shall be provided with double wires/wire ropes.
- 19.3 At feed & relay ends, T1,IIIs with 4 way terminals to be used.
- 19.4 Batteries to be placed on wooden platform in location box.
- 19.5 PPTC fuse to be provided at feed end.
- 19.6 Cut pieces of 6 core signal cables may be used as lead wires for track circuits.
- 19.7 All cables in track circuit locations to be connected to earth & soldered properly.
- 19.8 Length of DC single rail track circuit shall not be more than 350m with QTA2 relay.
- 19.9 Length of last berthing track circuit in rear of starter signal below which calling on signal is provided shall not be more than 350m under any circumstances [ Ref. SECR Policy circular 01/2014].
- 19.10 Dead sections on Point Zone track circuits shall not be more than 1.8m.
- 19.11 Track chargers should have potential free contacts for monitoring through Data-logger.
- 19.12 Glued joints shall be covered by Rubber paint to reduce shorting by iron flakes and dusts.
- 19.13 Policy 04/2020 should be followed for "Housing of QSPA1 (first repeater of track relay) in goomties".
- 19.14 Record for initial charging of all track batteries to be ensured under supervision of SSE/IE of Open line.

#### 20.0 Axle counters :

- 20.1 Axle counters of RDSO approved design shall be provided.
- 20.2 All track detection in block section shall be provided with standby arrangement with auto-healing facility.
- 20.3 Axle counters may be provided as standby to DC track circuits at locations with low Ballast resistance tracks.
- 20.4 Axle counters may be provided in lieu of DC track circuits where rails are rusty due to rare/no train movements.
- 20.5 Proper earthing with resistance value less than 1Ω shall be maintained.
- 20.6 Main & standby axle-counters shall have diversity in power supply and communication media. Typical of Optimised Cable Coreage Plan issued on 17.01.2020 to be used.

#### 21.0 Points :

- 21.1 Ground connection of point machine should be as per Standard design.
- 21.2 More and more thick web switches (TWS) should be provided to improve maintenance and fewer requirement for replacement of switches.
- 21.3 Initial installation of TWS to be ensured strictly as per RDSO guidelines
- 21.4 Point machine should be properly overhauled, greased, oiled & tested adequately before installation.
- 21.5 Point machine cover locking & crank handle mechanism should be in working order.
- 21.6 Pin, Split pin, Nut & Bolts sizes should be as per std & tightened properly.
- 21.7 Operation current/slip current, terminal voltages should be measured and recorded.
- 21.8 Policy No. 09/2020 for use of QBCA1 relay for point operations in EI to be followed.

#### 22.0 Cable Laying:

- 22.1 RDSO approved cables shall only be used. Refer SECR policy circular 07/2020.

- 22.2** Joint testing report of quad cable and OFC with all parameters should be made available.
- 22.3** Policy for laying of OFC cable for Modern S&T installation issued vide RB's letter no 2021/Sig/WP/Action Plan dated 04.10.2023 should be followed.
- 22.4** All emergency sockets to be tested jointly with open line.
- 22.5** Joint Cable meggering shall be done with Open Line before commissioning.
- 22.6** RDSO approved Earth Leakage Detector for monitoring cable health to be provided and to be incorporated in data logger.
- 22.7** Cable Route Markers to be provided.
- 22.8** Every joint of 6 Quad & OFC cable should be supervised by SSE/JE (Open line also). Cable joint location on the plan should have the names of SSE/JEs who have supervised the same.
- 22.9** Register should be maintained for recording of supervision of joints done by concerned persons. Name to be mentioned.
- 22.10** End to end testing to be jointly done by ASTE/Open Line before making it live for carrying circuits.
- 22.11** No trenching should be done on made up soil.
- 22.12** Cable laying in the vicinity of TSS/SSP/SP as far as possible.
- 22.13** Before laying of cable, complete videography of the trench to be done. Open line to associate them self during this work.
- 22.14** Depth of trench and laying to be video graphed.
- 22.15** Measurement of trench should be done at every meter.
- 22.16** Separate cables for Main and Auxiliary Signals on the same post to be laid.
- 22.17** Cable laying on bridge/culvert :
- Cables should not be in exposed condition at the end of the bridge.
  - Mesh concreting should be provided on either side up to 5-6 meters.
  - 'U' type flat circular patti/clamps should be provided on joints.
  - 'U' type clamp & Brackets should be of adequate thickness.
  - Only SS/GI Nuts & bolts should be provided.
- 22.18** No cable should be laid in river bed.
- 23.0** Telecommunications
- 23.1** The following communication arrangements shall be provided at new stations:
- Communication to each goomty and location/Hut from centre is preferred.
  - Phone communication to all manned level crossing gates controlled from the station.
  - Voice recorder to be provided at all non interlocked manned LC gates.
  - Communication arrangements with sidings: Mode of communication shall be decided by Railway Administration depending on site conditions.
  - BSNL or Telephone of other service provider (Where ever required using WLL phone) shall be provided.
  - S&T controls shall be provided connecting SE/JE (S&T)'s Offices and residences of Technicians (S&T) etc. This shall however be subject to availability of channel in the main communication system.
  - Communication arrangements for block working to suit the system of working being provided shall be installed.
  - In electrified territory, TPC phone shall be provided. SCADA on TCP/IP with standby LAN extenders to be provided.
- 23.2** Besides telecommunication facilities, one or more following passenger amenity facilities are to be provided depending on the importance of the stations.
- Platform clocks.
  - PA systems for announcements on the platforms.
  - CCIV
  - Railway and BSNL Telephones for Train Enquiry Communication.
  - IPIS with Auto announcement systems.
  - Train Indication Board as per Railway Board's guidelines.
- 23.3** 100 % CUG mobile network coverage shall be ensured.



- 23.4 25 watt VHF set with **battery back up** at each station to be provided. Adequate number of 5 watt walkie-talkie sets shall be provided in consultation with Railway.
- 23.5 Emergency communication with socket at every 1 km (max) on rail post and also at PP/SP/SSP, long river bridges, tunnels, LC gates and any other important locations shall be provided along the route.
- 23.6 Control communications TC, TPC, TLC, Engg control, S&T control etc. to be provided.
- 23.7 Video surveillance system shall be provided at PRS/UTS locations and important stations.
- 23.8 All the communication and power supply equipments shall be properly earthed.
- 23.9 Additional communication facilities shall be provided in electrified sections in accordance with Chapter IV of the 25KV AC traction manual.
- 23.10 OFC link connectivity diagram should be on Vinyl board. It should be updated regularly.

#### 24.0 **Documentation:**

##### 24.1 **Following should be ensured :**

Signal Interlocking plan, Selection table or Route Control Chart /LT & Dog-Chart, Control Cum indication diagram or Front Plate Diagram in case of PI/EI/RR1, Indoor Wiring diagrams, Outdoor Wiring diagrams, Contact Analysis, Fuse distribution chart for PI/EI/RR1 & Wire counts details in case of RR1, Cable Route Plan, Cable termination plan in relay room and location boxes, Cable Corage Plan, Power supply arrangement plan, Track circuit bonding plan, Joint testing records of cables meggering, equipment, earthing, battery charging, points, Records of joint inspections with open line officials, FAT, SAT report with cross sheet testing, sighting committee reports, signal implantation reports of new signals.

- 24.2 Copies of drawings and documents as per SECR practice shall be handed over to concerned Division. Original approved tracings along with soft copies shall be submitted in the office of PCSTE/SECR/Bilaspur. Policy for submission of completion drawing and associated data base issued vide HQ's letter no. SECR/S&T/DRG/Completion/381 dated 07.07.2023 should be adhered to.

Old/As-made/Completion drawings to be maintained at each installation as per HQ's guidelines issued vide letter no: SECR/S&T/Completion/As-built/Docs/Dir/958 dated 14.12.2023.

- 24.3 **Policy circular No. 01/2019 for checking and approval of S&T drawings to be complied with.**
- 24.4 AMC / ARC facility for EI, SSDAC, MSDAC, Data-logger, IPS etc. for three years following expiry of warranty shall be inbuilt in tender for execution.

#### **DO's**

- Separate fuse with standby cum auto changeover arrangement for all aspects. Same to be ensured for all power supplies to EI ie 110V.
- Double set of batteries for IPS.
- Fire alarm for all installations.
- ESM duty cum emergency store room at all central locations. Washroom to be constructed separately with no common wall with service building to prevent seepage.
- Suitable storage for keeping spares of EI.
- 4 NO/NC contacts equipped switches to be used wherever required.
- Mid section gounties to be provided with additional collapsible grill door.
- Contacts in location boxes to be paralleled.
- Air conditioning in all EI rooms.
- Keep at least 4 feet clear space from walls on which ACs are to be installed.
- Remote monitoring of all IPS alarm panel at centre.
- Sectional Route Release for EI above 100 routes.
- Cancellation of route by Dy SS with a delay of 2 mins.



- All signals to be provided with cut in relays.
- KLR to be used for CH interlocking. CH Keys are to be rigidly riveted to KLR key.
- Only SS nut bolts and washers to be used.
- The bottom portion of all location boxes to be given two coat of rubber paint before transportation/installation.
- Potential free contacts of DC/DC converter of IPS/EI to be wired in data logger.
- Joint measurement of individual earth to be done before connecting it in ring. Documentation with name to be ensured.
- In built maintenance period of 3 years in EI to be catered for in all contract.
- Media diversity for main and standby BPAC, one on quad and other one on OFC or both on channels derived from two different MUX or on MAPLE to be ensured.
- In rooms having low roof level, ceiling fans should be fixed carefully keeping a safe height from floor.
- Welded joints for extension of MS plate for earthing.
- Videography of trench before laying.
- Daily work progress register should be maintained.
- Mandatory correspondence test and safety checks before commissioning.
- Double set batteries for IPS.
- No standby fuse in DECR (lunar) circuit.
- Cutting -in relays should invariably be provided for all signals lighting circuit irrespective of length of feeding.
- Circuit design should be such that failure of single track circuit/track section should not cause failure of multiple signals.
- Released by feature on auto section should be avoided.

#### **DON'Ts**

- No HKT
- No local supply in goomties except for ACs.
- DG/Solar panel for signalling in RE area should normally be not envisaged.
- Block Instrument should normally not to be envisaged separately in EIs.
- Common wall of extended part of the room with existing room.
- Goomty IPS in conjunction with main IPS of different make.
- Toilet abutting roof/wall of relay room.
- SM's room on first floor

SN	Important recent Letters & amendments	About
01	RB's letter no. 2012/ Sig/ SF/ 2 (Policy) dtd. 20.07.2023	Alteration works in existing Relay rooms.
02	RB's letter no. 2020/Sig/G/2/RDSO dtd. 23.04.2024	Dual detection & other provision in AHS
03	RB's letter no. 2023/Safety (A&R)/19/35 dtd. 20.02.2024.	Train operation during water submerging of track in suburban section & during Pre-NI & SR 3.51.
04	RB's letter no. 82/EEM/250/1 Part-3 E 3420012 dated 25.09.2023.	Power supply arrangement for distributed EI installation.
05	RB's letter no. 2021/Sig/WP/Action Plan dtd. 04.10.2023	Policy on laying OFC cables in S&T works.
06	RB's letter no. 2022/GS/IR/Cable laying policy dtd. 29.03.2023	Guidelines for S&T cable laying in ducts
07	RB's letter no. 2023/Safety(inquiries)/16/2 dtd. 12.12.2023.	Installation of signals on Gantry.
08	RDSO letter no. RDSO-SIG-EI(TAN)/1/2022 dtd.	Revised Checklist for TSAA

	19.02.2024	
09	RB's letter no. 2012/Sig/ATSS/Pt. 28.02.2023	TSAA for alteration & New EI
10	RDSO letter no. RDSO-SIG0EI (GEN)/1/2020 Date: 03.11.2022	Corrigendum of TAN 3012 ver 3.0 for use of 110V AC for VDU monitor.
11	RDSO DOC/No. EI/TAN/Security Version 1.0 dtd. 01.03.2023.	Cyber Security aspects of Electronic Interlocking system
12	RB's letter no. 2017/Sig/WP/Works Progress/1 dtd. 8.05.2023	Dispensation of CRS sanction for identified signalling works (Double distant/ABS/IBS without yard remodeling).
13	CRS/SE Circle letter no. CRS/SEC/Checklist/1279 dtd. 19.01.2024	Application format for opening of New section/ Doubling/ 3rd line/ 4 <sup>th</sup> line/GC/Permanent diversion.
14	RB's letter no.2024/Sig/25 Conf./B9th SSC Mtg. New Delhi, Dt. 13.03.2024	1st level of checking to competent SSE(Signal)/SSE(D&D), on trial basis for a period of 1 year subject to —
15	RB's letter no. 2020/Safety (A&R)/19/07 dtd. 23.12.2022	30 KMPH during NI in amendment of para 4.10 of G&SR & safety guidelines.
16	CCRS letter no. 5-19014/1/98-RS dtd. 30.11.2022	Keeping TC-35 in abeyance.
17	RB's letter no.2023/ABSCOMMITTEE/Railway Board New Delhi, dated 16.11.2023.	Guidelines for provision of Automatic Signalling and Twin Single line working over Indian Railways.
18	Correction slip-1 to IRSEM July-21, dtd. 31.03.2023	Amendment to para 9.2.1, 9.2.2 & 22.3.1 (Commissioning of works).
19	Correction slip-2 to IRSEM July-21, dtd. 20.06.2023	Replacement of Annexure-B-A2 of Para of 8.1.1 -b and existing para- 8.1.4 -b (Drawing & design).
20	Correction slip-3 to IRSEM July-21, dtd. 08.11.2023	Replaced existing Chapter 2 : Duties of Signal and Telecommunication Engineers with revised Chapter 2.
21	Correction slip-4 to IRSEM July-21, dtd. 22.12.2023	Inclusion of Rolling blocks programme and maintenance planning.
22	G.S.R. 160(E) dtd. 07.03.2024	Amendment to GR para 9.04 & 9.06
23	G.S.R. 535 (E) dtd. 11.07.2023	Amendment to GR para 3.47, 3.13, 3.70 & 3.81
24	G.S.R. 526 (E) dtd. 10.07.2023	Amendment to GR para 5.16, 8.05(3) & 8.10(2)
25	G.S.R. 870 (E) dtd. 29.11.2023	Amendment to GR para 15.02
26	Addendum and Corrigendum Slip (ACS) No.02 to Schedule-I IRSD (BG), Revised - 2022	Amendment to Note (d)(i) of Para 2 of Chapter-II of Schedule-I.

The checklist may not be exhaustive. Latest guidelines on various parameters/instructions in the checklist and various addendum & corrigendum issued to policy circulars/guidelines referred to in the checklist issued by RB/RDSO/Zonal HQ from time to time shall be adhered to.

# **Joint Procedure Orders**

**GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS  
RAILWAY BOARD**

No. 2017/Sig/SEM-II/MISC

New Delhi, Dt. 24.05.2019

**Joint Procedure Order**

**Sub:** Minimum distance between signal post and traction OHE mast in 25kV RE area.

1. Clause 18.11 of Volume II Part II of ACTM and Para 22.3.1 (a) mandates minimum distance between signal post and OHE mast.

Clause 18.11 of ACTM appendix I Vol. II Part II

*"No mast shall be located beyond a signal post at a distance less than 10m. In case the OHE mast is located in front of the signal the distance between the OHE mast and signal post should not be less than 30m".*

Para 22.3.1(a) of SEM

*"The distance between the signal post and traction mast shall be as large as possible. In case the traction mast is located in front of the signal post, the distance between the traction mast and signal post should not be less than 30m. In addition, it should be ensured that no location mast is located in advance of the signal post at a distance less than 10m".*

2. With the approval of SSC minutes vide signal directorate's letter no. 2017/Sig/3/85- SSC dated 3/7/2018 and RE directorate's letter no. 2013/RE/161/21Pt.I dated 26/7/2018; PCSTEs and PCEEs of the zonal railways have been empowered to give dispensation for reduction in the distance of placing mast in front of the signal from 30m to 10m on straight track after ensuring staggering for proper visibility of signal as per provisions of ACTM and SEM.
3. In spite of above relaxation, OHE masts are being erected at a distance of less than 10m due to various constraints and all these cases are being referred to Railway Board for condonation. To ensure that condonation is sought only in exceptional unavoidable cases following procedure order shall be followed:
- i) Approval of Layout plans shall continue to be governed as per policy guidelines issued vide Board's letter No. 2015/RE/161/22 dated 17.11.17.
  - ii) LOP should be prepared indicating location of signals as per existing approved Signal Interlocking Plan (SIP).
  - iii) All such instances where distance between OHE mast & Signal post is less than 30 mtrs in front and 10 mtrs in rear shall be brought to notice of Dy CSTE of the project by Dy CEE concerned; along with relevant extract/details of the LOP.
  - iv) Dy CSTE of the project should; after studying the LOP shall suggest alternatives like relocation of signal/mast to avoid the condonation requirement duly ensuring design principles of OHE.

- v) Dy CSTE of the project may also consult Sr DSTE of the Division concerned for possibility of relocation of the signal post and other issues arising out of the situation. In case relocation of signal is being considered, a joint inspection of the site at the level of Dy CSTE/Dy CEE along with Sr DSTE/Sr DEE TRD shall be carried out.
- vi) Dy CSTE & Dy CEE of the project after due deliberations on the matter will draw a joint minutes on agreed plan for adoption and further execution.
- vii) In case of disagreement between Dy CEE/Dy CSTE and Sr DSTE/Sr DEE TRD, the joint minutes will be put up to CPD for final decision who shall consult PCSTE before taking a final decision.
- viii) In case of executing agencies other than CORE (i.e. RVNL, IRCON, PGCIL, RITES); Dy CEE and Dy CSTE shall be replaced by Electrical & Signal Engg. Officer incharge executing the project. CPD shall be replaced with HOD/Executive Director/GGM incharge of the project in HQ.
- ix) Entire process of joint minutes shall be completed within 3 working days from the date matter is referred by Dy CEE to Dy CSTE.
- x) Any condonation case in respect of LOPs approved after date of issue of this JPO shall be accompanied with joint agreed minutes as above.

Sd/-  
**(Rajeev Sharma)**  
**AM/Signal**

Sd/-  
**(Manju Gupta)**  
**AM/Electrical**



## **SOUTH EAST CENTRAL RAILWAY**

No. SECR/ELECT/427

Date: 03.08.2015

### **JOINT PROCEDURE ORDER FOR ELECTRICAL SAFETY AUDIT OF RRI/EI/PI INSTALLATION IN SECR**

- 1.0 All RRIs of SEC Railway are to be jointly audited by Electrical and S&T Departments of Division once in a quarter at the Inspectors' level and half yearly at the Officers' level to ensure Electrical Safety. This must include one inspection at B.O.'s level of the Division in a year.
- 2.0 All EIs and PIs are to be jointly audited for electrical safety, once in a 06 months at the Inspector's level and once in a year at the Officer's level.
- 3.0 Special attention is to be given for any temporary electrical joint, loose hanging electrical wire, separation of electrical power cable and interlocking cable, non-standard electric wiring. FRLS cable is to be only used for indoor wiring etc.
- 4.0 All the arisings are to be attended within a time bound manner. Safety items are to be attended on top priority. All records of the above electrical safety audit reports are to be kept with the concerned RRI In-charge along with concerned Electrical Inspector including compliance. Divisional Officers need to monitor the same and annual reports need to be sent to HQ by the concerned Department.
- 5.0 All fire related safety items like fire buckets, fire extinguishers, fire alarm etc at suitable location are also to be ensured for the electrical system. Water/moisture accumulation near electrical system etc need to be critically inspected along with rectification.
- 6.0 No material should be stored near electrical panel. No inflammable material like petrol, kerosene, diesel, etc to be kept near any electrical panel room etc. "No smoking is to be ensured in the entire area of RRI/PI/EI.
- 6.1 Auto changeover panel need to be also inspected along with above inspection to ensure proper load, efficacy of buzzer, all indications, rotary switch, working of auto mode, proper rating of fuses and MCBs, knowledge of ASMs/Gateman during exigencies etc.

Sd/-  
(S. K. Solanki)  
CSE

Sd/-  
(Bipradas Naskar)  
CEGE

**Check list for Electrical Audit of RRI/EI/PI Installation  
(Maintained by Electrical Department)**

S. N.	Items to be checked	Requirement	Available at site	Remarks
1	Electrical load of the RRI/EI/PI	Within permissible rating of source		
2	Rating of Circuit Breakers, i.e. MCB's & fuses etc.	As per circuit load		
3	Size of the cables.	As per load		
4	Types of wires.	FRLS copper wire		
5	Rating of the plug-sockets and switches.	As per load		
6	Cable termination	Termination should be with proper lugging.		
7	Segregation of Electrical and S&T cables & wires etc.	Segregation to be made, if not available.		
8	Codal life of the wiring.	Not more than 10 years		
9	Illumination of the RRI/EI/PI buildings.	Adequate illumination required		
10	Earth continuity of wiring.	Earth continuity is essential		
11	Condition of earth electrode.	Should not be corroded/damaged etc.		
12	The earth values of the installation.	Should be below 8 Ohms		
13	Working of power supply indications in CLS panel and functioning of Auto-Change over switch.	Power indication & Auto function is must		
14	Voltmeter & Ammeter of CLS panel.	Should be functional.		
15	Loose and hanging wires.	Not to be permitted		
16	Electrical wires for cut, defects, sharps bends etc.	Not to be permitted		
17	Temporary extension cords.	Not to be permitted.		
18	Working of ACs if provided.	ACs should be functional.		
19	The presence of inflammable materials in RRI/EI/PI buildings.	Strictly not permitted.		
20	Stocking of any material near electrical panels in RRI/EI/PI buildings.	Strictly not permitted.		

**Check list for S&T Audit of RR/ET/PI Installation  
(Maintained by S&T Department)**

S.N	Items to be checked	Requirement	Available at site	Remarks
1	Size of cables from AT Main switch to S&T ACP/IPS.	Size of cable as per load.		
2	Size of cable from stabilizer to various type of Transformers	As per load		
3	Working of Power supply indication in ACP/IPS & functioning of ACP panel.	Power indication and Auto function must		
4	Size of wire for S&T Internal circuit.	As per permissible load		
5	Correct size of fuse at ACP & IPS.	As per load		
6	Cable termination of ACP, IPS, Stabilizer, Rectifiers & Transformers etc.	Termination should be with proper lugging		
7	Voltmeter & Ammeter of ACP & IPS.	Should be functional		
8	Loose and hanging wires of S&T equipments and temporary extension cords.	Not to be permitted.		
9	Equipments wires for cut, defects, sharp bends etc.	Not to be permitted.		
10	Proper functioning of DG sets	Weekly testing		
11	Availability of fuels and lub indicator level of DG set.	Must		
12	Measurement of various equipments load current.	Measurement of total load		
13	Functioning of smoke detectors	Must be functional		
14	Functioning of cable load detectors	Must be functional		
15	Fire fighting /Alarm equipments	Must be functional		
16	Condition of equipments, like Battery chargers, Stabilizers, S&T equipment transformers, Rectifiers & Batteries etc.	Over ageing not permitted		
17	Condition of Batteries with Lug date	Over ageing not permitted		
18	Condition of earth electrode.	Should not be corroded/damaged etc.		
19	The earth values of the installation.	Should be below 5 Ohms		
20	Earthing of all S&T equipments.	Must		

**Point to be checked during joint inspection of Auto Changeover Panel**

SN	Items to be checked	Status/Value	Remarks	Compliance
1	LED indications for each incoming supply.			
2	LED indications for each outgoing supply.			
3	Buzzer with muting facility.			
4	Rating of each fuse.			
5	Rating of each MCB.			
6	Rating of each cable.			
7	Rating of each feeder wire from AT etc.			
8	Whether all three input supplies are available.			
9	Output of all three inputs through Auto Changeover Panel (ACP).			
10	Functioning of auto/manual switch.			
11	Check correct size of internal circuit cable wire, as per RDSO specification.			
12	Correct size/rating of power cable used from AT to ACP.			
13	Whether fuse grip and fuse provided below AT is of correct size and rating.			
14	Whether all components, wires and fuses not in heated condition.			
15	Any sign of burning or spark in the cable connection and terminals.			
16	Measure current and voltage at load.			
17	Size of cable from ACP to IPS.			
18	Measurement of insulation through Megger.			
19	Measurement of earth resistance of ACP.			
20	Whether any temporary twisted joint.			
21	Check for temporary joints in power carrying wires/cables.			
22	Check for use of non-standard termination practice.			
23	Separation of power supply cable from signalling cabling by at least 1 m.			
24	Indoor cable wiring should be far away from the walls (at least 1 m away).			
25	Power supply to Air conditioner to be routed through external wall surface.			
26	No wiring will run above any Power supply board.			
27	Electrical cables for indoor wiring should be of fire proof grade.			
28	Check for efficacy of Fire alarm, if any.			
29	Check for availability of Fire buckets (sand and water)			

30	In case of RRI, fire extinguishers shall be visible. Check for their validity date.			
31	No spare S&T materials to be stored in relay room.			
32	No inflammable materials like petrol, kerosene, Diesel etc shall be used or stored in signalling equipment room.			
33	Smoking in the relay room need to be strictly prohibited.			
34	Whether Exhaust fan, Ceiling fan and Lamp etc are functional & as per RDSO guidelines.			

JE/SSE (Sig)

JE/SSE/Electrical (G)



**South East Central Railway****JOINT PROCEDURE ORDER FOR ISSUE OF DISCONNECTION NOTICE FOR UNDERTAKING REPAIR AND MAINTENANCE OF SIGNALLING GEARS**

In pursuance of CRB's XXR message No. 2012/Safety (A&H)/19/9 dt. 04.10.12 and MLs DO letter No. 2012/Sig/Safety Performance/1 dt. 19.09.12, following instructions are issued for undertaking repairs and maintenance of signaling gears (by issuing Disconnection Notice):

**Requirement of Disconnection for maintenance activities:**

Gear wise maintenance activity and requirement of disconnection based on maintenance schedule for electrical signaling equipment (Annexure 30 of chapter XIX SEM Pt-II), Maintenance schedule for Mechanical signaling equipment (Annexure 7 of Chapter XII SEM Pt-II), Maintenance Schedule for Level Crossing Gates (Annexure 11 of Chapter XIV of SEM Pt-II) and instruction vide RB LNo. 2005/Sig/SEM/U/Pr-I dated 31.01.2007:

N	Maintenance activity	Duration of Disconnection normally required	Frequency	Effect on train running
1.	Maintenance of each point machines.	1 hour	Fortnightly	Movement over the point to be carried out by clamping, pad locking as per SR 3.51.04.
2.	Maintenance of each Electrical point detector (EPD), lock bar, facing point lock (FPL) and associated cranks of a mechanical point.	30 Minutes	Fortnightly	Movement over the point to be carried out by clamping, pad locking as per SR 3.51.04.
3.	El. Switching over of A & B System, diagnostic test, log download, vacuum cleaning, checking of DC-DC converters, terminals, replacement of defective parts etc.	30 Minutes	Monthly	Trains to be piloted in/out from all signals.
4.	Maintenance of each signal.	30 Minutes (Changing / Rewiring)	Whenever required	Concerned signal shall not be taken "Off".
5.	Maintenance of each track circuits.	30 Minutes (Replacing, Track Charger/TLJB/ Track relay etc.)	Whenever required	Trains to be piloted in/out from Main Signal routes involving concerned track circuits. Calling on signal wherever available can be taken "Off".
6.	Maintenance of each Block Proving Aids	30 Minutes	Monthly	PLC to be issued and all trains to be piloted out from

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	counter, 6 quad cable, OFC etc.			Advance starter or IB signal.
7.	Maintenance of each panel: Cleaning, Checking of buttons, counters, keys etc. and replacement of defective parts.	1 Hour	3 Months	Trains to be piloted In/Out from all signals or preferably a traffic block.
8.	Maintenance of each interlocked LC Gate (Electrical/Mechanical lifting barrier), checking of integrity of signals and locking of boom gate.	30 Minutes	Fortnightly	Trains to be piloted at Gate signals.
9.	Maintenance of Rod run, cranes, compensators, basement rodings, lever frame etc.	1 Hour	Fortnightly	List of disconnected gears will be given by JE/SE applying for disconnection.
10.	Maintenance of power supply equipment, checking of parameters, replacement of defective parts etc.	30 Minutes	As per requirement	List of disconnected gears will be given by JE/SE applying for disconnection.
11.	System Integrity Test of each PI/EI/RRI stations.	Total 48 hrs. for a 04 line station in a single spell/ Multiple spell. Note: Duration shall vary depending upon the size of the yard.	Three yearly	All Trains to be piloted In/Out. Free Signals can be given on demand in presence of DTI. NI to be undertaken.
12.	Cable Insulation testing for one station.	Total 12 hrs for a 04 line station in a single spell/ Multiple spell. Note: Duration shall vary depending upon the size of the yard.	Yearly	List of disconnected gears affecting trains running will be given by S&T staff applying for disconnection.
13.	Overhauling of each lever frame.	NI for 12 Hrs and multiple thereof for a lever frames up to 20 levers and higher.	Three yearly	All Trains to be piloted In/Out. NI to be undertaken.
14.	Testing of each lever frame	NI for 12 Hrs and multiple thereof	Yearly	All Trains to be piloted In/Out. NI to be undertaken.

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		for a lever frames up to 20 levers and higher.		
15.	Testing of each SMs slide frame	2 Hours	Yearly	Precautions to be taken by on duty SM (SEM Para 13.10.3: (a) Cabin man should be instructed to see that no signals are taken "Off" by him unless permitted by SM on duty. (b) It should be ensured that no electric slot or key is transmitted in an unauthorized manner and that no conflicting slot or key is transmitted.
16.	Maintenance & Safety checks on each Block Instrument (Double & Single line)	1 Hour	Fortnightly	PLC to be issued and all trains to be piloted out from Advance starter or IB signal.
17.	Checking and maintenance of each EKT (Electrical key Transmitter)	15 minutes	Fortnightly	List of disconnected gears will be given by JE/SE applying for disconnection.

Note : The duration mentioned in the above table is indicative and actual requirement may be mentioned in the disconnection notice.

**1. Advance Program of Disconnection for major activities:**

**1.1** Disconnections notices are required to be issued for following activities:

- (a) Maintenance
- (b) Failure rectification/break down
- (c) Cable Insulation Test
- (d) System Integrity Test
- (e) Modification/Alteration/New work (Pre NI, NI)
- (f) Overhauling of lever frames.
- (g) Testing of Lever Frames & SM's slides.

**1.2** For the following major activities, SrDSTE should submit month wise program to SrDOM at the beginning of the financial year, indicating names of the stations for :

- (a) Cable Insulation Test
- (b) System Integrity Test
- (c) Overhauling of lever frames
- (d) Testing of Lever Frames & SM's slides

  
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- 1.3 On every Friday Joint program for the activities mentioned in Para 1.2 should be issued for next week indicating time & duration by SrDSTE & SrDOM.
- 1.4 As far as possible activities should be integrated & planned utilizing traffic blocks. Corridor Blocks allotted for P-way, Electrical, construction works etc and also breakdowns. However, it should be noted that, testing/overhauling schedule should not become overdue under any circumstances.
- 1.5 Once the joint program is notified all efforts must be made to ensure that the disconnection is permitted as planned.
- 1.6 Additional traffic staff (DTI, ASM, Porters etc.) should be deputed for piloting In/Out of trains for cable insulation test, system integrity test, modification/Alteration/New work (Pre NI, NI). Overhauling of lever frames, Testing of lever frames & SM's slides etc.

**2. Procedure for Disconnection required for maintenance :**

- 2.1 JE/Technician should issue Disconnection Notice on the form S&T/DN as per requirement & above joint program issued by SrDSTE and SrDOM under intimation to signal test room.
- 2.2 Section control should be immediately informed by SM on duty on placement of S&T disconnection memo. If the disconnection notice is not allowed by SM on duty within 60 minutes of its placement, JE/Technician should inform divisional S&T control, who in turn should inform SrDSTE/DSTE who shall coordinate with SrDOM/DOM.
- 2.3 Refusal/Postponement of disconnection shall be done personally by SrDOM or in his absence by DOM.

**3. Reconnection after the work:**

- 3.1 When the work is completed, the official of the signal department shall issue a reconnection memo on the relevant portion of the form S&T/DN to the station master as a certificate of rectification and obtain his signature as an acknowledgement.
- 3.2 The station master before acknowledging such memo shall test the signaling gear and satisfy himself that it is in proper working order.
- 3.3 Thereafter, the station master shall make necessary entries in the train signaling register, diary, caution order register and disconnection register. He will also inform section controller.
- 3.4 Signal maintainer shall not leave any gear in disconnected condition and in unavoidable eventuality, a specific advice to be given to on duty SM duly acknowledged by him.

**4. Disconnection required for attending failures and undertaking repairs:**

- 4.1 Before taking up work SIM/JE/SE shall first obtain failure memo from SM/ASM in writing in accordance with provision of S.R.3.68.04 for each failure recorded in the signal failure register and then issue disconnection notice on the form S&T/DN.
- 4.2 Disconnection notice will be issued by S&T staff at the earliest after a failure of signaling gear and will be accepted by SM on duty without delay to facilitate timely rectification of failure.

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- 4.3 When the defect has been rectified, the official of the Signal Department shall reconnection memo on the relevant portion of the Form S&T/DN to the station Master as a Certificate for rectification of the defect and obtain his signature. The Station Master before acknowledging such memo shall test the signal and satisfy himself that the signal is in proper working order.
- 4.4 Thereafter the Station Master shall make necessary entries in the Failure Register, Train Signal Register, Diary, Caution Order Register and disconnection register. He will also inform section controller.
5. **Working during disconnection :**
- 5.1 Station Master shall not operate the signaling gears for which disconnection notice has been served and accepted and failure memo has been issued till such time proper rectification message is received.
- 5.2 Clamping of points must be ensured and all procedure as per G&SR shall be followed before piloting of trains when disconnection notice is issued.
6. **Monitoring of Disconnection Notices :**
- 6.1 SrDSTE & SrDOM should put up fortnightly position to DRM, CSTE & COM as per the format enclosed in Annexure-A. of Disconnection issued, allowed and work done during disconnection separately for maintenances work and for attending failures.
- 6.2 CSTE & COM shall compile the position and put up monthly summary to GM & Railway Board as per MT's D.O No. 2012/Safety/ (A&R)/19/9 dated 03.10.2012.
7. **General :**
- 7.1 Under no circumstances Signal Staff should adopt shortcut methods in collusion with Operating staff even on the pretext of detention of trains. Supervisors of Operating and S&T Department should sensitize the staff working under them.
- 7.2 All works of S&T Department to be done under disconnection as per SEM shall invariably be done under approved disconnection as per above procedure. There shall not be a single exception to this.
- 7.3 S&T and Operating staff having tendency to dishonor the JPO shall be identified through the statistics correlating to actual requirement. They shall be kept under constant watch and shall be counseled for improvement.
- 7.4 Prompt & swift action should be taken against operating and signaling staff involved in collusion, who take short cuts leading to unsafe situations.
- 7.5 Disconnection should be taken for the equipments as required under SEM. Disconnections are to be judiciously taken by planning and grouping 5 to 6 activities together and pooling the resources so that the no. of disconnections is reduced. While taking Disconnections Test Room/Control shall be informed.

  
(Arvind Mittal)  
CSTE/SECR

  
(G. D. Sharma)  
COM/SECR 6/7/15

No : SECR/S&T/JPO/700

Date : 02-07-15  
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- C/- Secretary for kind information of GM/SECR.  
C/- DRM/BSP, DRM/R & DRM/NGP for information and n/a, pl.  
C/- SrDOM/BSP, SrDOM/R & SrDOM/NGP for n/a pl.  
C/- SrDSTE/Co/BSP, SrDSTE/R and SrDSTE/NGP for n/a pl.



**SOUTH EAST CENTRAL RAILWAY****JOINT PROCEDURE ORDER FOR RENEWAL OF POINTS & CROSSING  
OF EXISTING 52/60 KG LAYOUT ON PSC SLEEPERS****1. General**

- 1.1 The procedure detailed in circular shall be followed by each division of SECR while executing the following works:

SN	Brief work description
1(a)	Renewal of tongue rail - 1 no. without welding.
1(b)	Renewal of tongue rail - 1 no. with one welding.
2(a)	Renewal of ½ set switch i.e. one stock rail & one tongue rail - without welding.
2(b)	Renewal of ½ set switch i.e. one stock rail & one tongue rail - with welding.
3(a)	Renewal of 1 set switch i.e. two nos. stock rail & two nos. tongue rail - without welding.
3(b)	Renewal of 1 set switch i.e. two nos. stock rail & two nos. tongue rail with welding.
3(c)	Renewal of 1 set switch i.e. Two nos. stock rail & two nos. tongue rail - with welding**.
4	Renewal of 1 set turnout i.e. Switch, lead & crossing with welding.
5	Renewal of one crossing
6	Renewal of one crossing with landing rail & welding.

- 1.2 The branch officer in charge of Engineering, Traffic and S&T department shall make monthly programme of replacement and before undertaking the actual work at site, shall ensure that preparatory works are completed and the procedures are explained to and understood by the staff.
- 1.3 A monthly programme work indicating number of points to be replaced at each station shall be jointly issued by SrDOM, SrDEN and SrDSTE at the beginning of last week of each month with the approval of DRM.
- 1.4 A joint inspection of TI, SE/SIG and SE/PWay (& SE/TRD in case slewing/shifting of point) shall be conducted to assess the quantum of work involved taking into account the local site conditions. The team shall assess the work involved pertaining to its department and record the same.

**2. Pre-block works**

- 2.1 All the pre-block works required by Engineering and S&T department should be ensured before taking the block.

**3. Drill for alternative routes**

- 3.1 A meeting of SE/PWay, SE/Signal, (SSE/TRD, in case slewing/shifting of point), DTI and Station Staff shall be conducted to explain the movement of trains during the block period. SR 3.51.4 shall be followed in this respect.
- 3.2 During this meeting, movement of traffic on alternative routes for single line working during the block period shall be decided. The Station Manager/station staff shall be explained as to what points shall be clamped and locked during the period of block for movement of trains.

**3.3** A record note of this meeting shall be kept by all the 3 senior subordinates and sectional AEN/ASTE shall ensure that this meeting has taken place before the commencement of work.

**4.** Requirement of blocks for renewal of turn out work as per 1.1 and activities to be executed by Engineering and S&T departments are tabulated as below

S.N.	Brief work description	Block requirement (In minutes)		Disconnection (free unclamped time)	Remarks
		A	B		
		S&T	Engg.	S&T	
1(a)	Renewal of tongue rail - 1 no. without welding.	15	30	30	
1(b)	Renewal of tongue rail - 1 no. with one welding.	15	105	30	One set of welding team required
2(a)	Renewal of ½ set switch i.e. one stock rail & one tongue rail - without welding.	20	60	40	
2(b)	Renewal of ½ set switch i.e. one stock rail & one tongue rail - with welding.	20	120	40	Two set of welding team required
3(a)	Renewal of 1 set switch i.e. Two nos. stock rail & Two nos. tongue rail - without welding.	20	90	45	
3(b)	Renewal of 1 set switch i.e. Two nos. stock rail & Two nos. tongue rail - with welding.	20	185	45	Two set of welding teams required
3(c)	Renewal of 1 set switch i.e. Two nos. stock rail & Two nos. tongue rail - with welding.	20	150	45	Four set of welding teams required
4	Renewal of 1 set turn out i.e. Switch, lead & crossing with welding.	30	180	45	Four set of welding teams required
5	Renewal of one crossing	10	30	10	
6	Renewal of one crossing with landing rail & welding.	10	80	15	one set of welding team required

A - For removal of fittings (S&T)

B - For Engineering

C - Free time for S&T work after point is taken over by S&T.

5. SE/JE/P-Way and SE/JE/Signal shall give a memo to Station Master/SS in advance that requisite preparatory works have been completed at the time of applying for traffic block. The SS/Station Manager shall ensure that traffic block is preferably granted between time period 9.00 hrs to 15.30 hrs.
6. Engineering block of prescribed duration shall be granted by Station Superintendent/Station Manager. SE/Signal shall issue disconnection memo for the relevant points before granting of traffic block. In case the site conditions warrants longer block, Sr.DOM shall be notified in advance giving reasons. Operating officer shall ensure in all cases that AEN/ASTE concerned have certified that preliminary work as required, has been completed before the blocks are granted.
7. On completion of Engineering work - Engineering fit memo for traffic will be issued.
8. Trains will be received on pilot memo by clamping and pad locking of points. After passage of one or two trains, free time shall be granted for carrying out signaling work. The tentative free time for S&T work shall be as per para-4 column 'C'.
9. **Point fit memo for S&T connection** will be issued by SE/P-Way. SE/P-Way & SE/Sig shall ensure proper setting for point as per para no 12.40 & Annexure-5 of IRSEM-II. S&T time shall be reckoned from the juncture of taking over of point by SE/Sig under proper memo. For connecting the ground gears to the point and testing of interlocking, SE/P-Way shall be available with his staff to attend to any discrepancies, if arise during S&T work. The tentative free time for S&T work shall be as per para-4 column 'C'. DTI shall ensure availability of free time for S&T work by unclamping the point.
10. On completion of signaling works and issue of reconnection memo by Signalling staff the normal train operation shall be resumed. One round of packing shall be carried out after consolidation.
11. Officers and staff of Electrical department and TRD shall also be involved wherever slewing of points & crossings is to be done.

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(S. K. Solanki)  
CSE

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(D.C. Pattnaik)  
CEDE

Sd/-  
(C.R. Swain)  
CFTM

- \* Necessary holes for structural bonds will be provided by Engineering department and bonds shall be provided by TRD staff in the replaced T/Os.

SOUTH EAST CENTRAL RAILWAY

No. SECR/S&T/IPO/1064

Dt. 16.07.13

**JOINT PROCEDURE ORDER  
FOR THEFT & MISCREANT ACTIVITY OF S&T GEARS and RESTORATION WORK**

1. Signal staff, if they find any missing/damaged signalling/telecommunication gears at location boxes, goomties, cabins, relay rooms, power equipment rooms, in the station yard or in the block section, shall at once report the matter directly to the RPF in-charge concerned on his CUG mobile as also to concerned RPF Post/Out Post, Divisional Security, Signal and Coaching controls.
2. The details of location, date & time, missing gear or damages to the gear, identity of reporting person shall be reported.
3. Security Control shall inform the matter to divisional authority and direct the in-charge of the concerned RPF/Post & Out Post to visit the place of occurrence immediately.
4. Divisional Security, Signal and Coaching controls shall inform such miscreant activity to respective Zonal Security, Signal and Coaching controls.
5. On receipt of such information RPF personnel shall proceed immediately to the place of occurrence along with concerned Signal staff and conduct enquiry jointly. The joint enquiry report shall be prepared at the place of occurrence. The joint enquiry report shall be sent to Security, Signal and Coaching controls after completion of the enquiry.
6. If Security staff is unable to reach the site within 45 minutes after reporting the miscreant activity, Signal staff shall restore the signalling and telecommunication gears to avoid the detention of trains. In such a case, before restoration Signal staff shall photograph the site of incidence for evidence in presence of a witness such as station porter, gang man, electrical staff etc..
7. If Signalling incidence is caused on account of miscreant activity, the detention shall be accounted appropriately to head "Miscreant Activity" and under subhead "Other than Passenger theft" in ICMS.

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**SOUTH EAST CENTRAL RAILWAY**  
**JOINT PROCEDURE ORDER REGARDING DEEP SCREENING**  
**OF POINT & CROSSING BY BCM**

Based on the experience gained in "Deep screening of points and crossings by ballast screening machine" the following instructions are issued for clearly defining the process and ensuring smooth and efficient completion of the blocks of this nature.

**I. INTRODUCTION:**

Keeping in view the physical obstructions likely in most of the Points & Crossings, each fan shaped layout of 1 in 12 or 1 in 8-1/2 requires about 4 to 4½ hours of BCM working for completing deep crossing as a system on busy routes. In case stipulated blocks of 4 to 4½ hours are not available then it is advisable to carry out deep screening of each fan shaped lay out in 2 days with a block of 2½ to 3 hours each. Accordingly the traffic block and staff to be arranged and if blocks are planned in night then proper illumination at site should be arranged.

**II. PRE BLOCK ACTIVITIES**

1. Joint survey of the station yard to be conducted at least three to four days in advance by the inspectors in-charge of Engineering, S&T, TRD and Electrical General wings wherever necessary along with the concerned SS/TI.

While doing so each department in-charge will:-

- (i) Assess the work involved.
  - (ii) Identify the activities/obstacles.
  - (iii) Chalk out the programme of the work.
  - (iv) Decide the detailed course of action.
  - (v) Plan/Nominate the deployment of manpower required.
  - (vi) Nominate an official not below the rank of "JE" from Engineering, S&T, TRD and Electrical General departments.
  - (vii) Advise their respective Engineering and Signal control regarding the programme of the work.
  - (viii) Put forth for any additional assistance/equipment/T&P required from adjacent sections to their next higher official.
2. One day in advance of the block a joint message is to be given by Supervisors of Engineering and S&T confirming taking up preliminary work with brief timings of proposed block. Detailed break up of timings and traffic repercussions are to be advised to Engineering control shall in-turn appraise the Chief Control.
  3. After confirming the readiness of all the concerned branches, the Engineering official shall impose SR 30 kmph at site at least one day in advance to enable completion of preliminary works by their respective staff without leaving any scope of time loss during traffic block on the following day.

**Preliminary works of Engineering Department**

1. Adjust the PSC sleepers for insertion of cutter bar.
2. Make a trench to allow cutter bar to work freely.
3. Filling up of ballast in gunny bags and kept nearby for filling up immediately after deep screening in packing zone under rail seat to facilitate quick setting of switch portion and lead portion.



4. Insertion of cutter bar duly extending with 2 extension pieces.
5. Engineering department should have about 30 labours with crow bar and beaters and manila ropes to break and remove any obstruction like old concrete pedestal/rail peg etc.
6. It is necessary to have one gas cutting equipment to be used for removal of the obstruction.
7. It is necessary to keep one no. Jim Crow in the BCM machine/at site to rectify setting of switch portion, if necessary.

#### **Preliminary works of S&T Department**

1. Dig cable trench and ascertain the actual depth of the cable if they are crossing the track at the proposed portion of BCM to be worked.
2. Cables which are less than 0.75 meters depth from the rail flange level coming across the track are to be identified in advance and if possible they may be taken down to the possible extent or they are to be removed during the block time to avoid damage.
3. To carry out S&T preliminary works, Engineering officials shall spare minimum four to five able bodied track men/contractor's labour to assist S&T staff as required at least one day in advance of block as required as per site conditions. The staff shall be continued under S&T until the completion of S&T work after the block.
4. The full complement of S&T staff, Comprising of one SSE/JE, 02 SM, 02 KSt and 04 Engg labour of Engg Department, are to be deputed. S&T staff should fully equip themselves to attend the block with adequate tools, drilling machines, cable bits, wired TLJBs, cable termination boxes etc.
5. If any cable laying is required and feasible, the same shall be done at an adequate depth across the affected track portion with engineering co-operation.

### **III. ACTIVITIES DURING BLOCK PERIOD**

1. Concerned TV/SS shall arrange for clamping of points and crossing / piloting of trains as required from time to time.
2. Engineering department will arrange for removal of traction bonds and cross bonds in presence of TRD staff. JPO of Railway Board issued vide letter No. 2005/Elect/G/161/8 Punct. Pt.II dt. 17.08.12 and JPO No. SECR/ELECT/TRD/200A/Bonds dated 18.06.12 issued from HQ should be followed.
3. The BCM machine has cutter bar extension facility only on the RHS. In case the sleepers 3 & 4 on which point machine/ground frame lever is mounted is on LHS as seen from facing direction additional 25 minutes duration is to be planned. The sleepers 3 & 4 shall be dropped immediately after block is permitted to facilitate cutter bar movement.
4. Steps to be taken when BCM tackles the switch portion of the point.
  - (i) It is required to start its work at least 2 rail length ahead of SRJ wherever feasible.
  - (ii) It takes about 20 to 30 minutes for a BCM, after entering the block, before it could become fully functional for doing the work.

(iii) During this period, S&T staff should remove their installations including track circuit, axle counters, point motor rodings etc.

(iv) Also Engineering staff should simultaneously take out sleeper Nos 3 & 4 (i.e. point motor sleepers) wherever required as para 2 of the above.

The steps will ensure minimization of the block period.

5. When the machine reaches 37th sleeper in case of 1 in 12 fan shaped lay out during block with extension pieces, the further 2 pieces (total 4 extension pieces) are required to be inserted duly stopping of BCM.

#### **At this juncture**

(i) Engineering staff immediately keep the sleepers nos. 3 & 4 i.e. point motor sleepers in position, besides clearing of ballast dust/dirt from all unwanted locations and recoup ballast wherever required with already filled up bags and do packing of switch portion sleepers.

(ii) Engineering Department to ensure proper setting and working of points to the satisfaction of S&T supervisor at work site & obtain written acknowledgement on the fit memo to be given to operating staff.

(iii) While doing so, S&T staff too should fix the point motor in position and re-connect all the installations to satisfy themselves regarding housing of point in normal and reverse setting. The Engineering officials shall extend necessary help to ensure proper leveling alignment and housing of point. The efforts shall be to make point ready by the time BCM work is completed.

6. The S&T staff shall be allowed about 30 to 45 minutes (45 minutes to 1 hour) for completing the work and giving reconnection after clearing of the BCM machine.

7. In case the point setting etc. is not perfect the S&T gang will work next day for setting the gear in proper fettle.

8. The Operating staff shall ensure co-ordination with S&T and Engineering Department for testing the point before reconnection. Trains shall be dealt only after reconnection and receipt of joint memo from S&T and Engineering Supervisors at site by the Station Manager.

9. In the first block, work can be carried out upto sleeper No. 55 to 60, thereafter further extension of cutter bar by another 2 pieces will be necessary (total 6 extension pieces) before consequent day block as a pre block activity for 2nd day block.

10. Deep Screening can be completed from 55 to 96th sleeper in subsequent day's block without involvement of S&T.

11. If the block is taken during night hours, adequate lighting to be provided while the BCM machine is in working. The lighting arrangements should be continued till completion of Engineering work and to facilitate completion of S&T works for reconnection, adjustment and restoration of normal working of point, track circuits and axle counters etc.

#### **12. General**

In all cases, where BCM working is planned i.e. station area or where S&T gears are encountered:

- (i) S&T staff should also remove wire/rod transmission if any available at LC gates and also to remove/Divert other obstructing cables wherever required.

- (ii) In unavoidable circumstances, BCM working to be sparingly skipped to prevent damage of cables etc, wherever it is felt that further lowering of the cables is not found feasible on the previous day due to site constraints.
- (iii) The axle counter track devices & track circuit connections including TLJB shall also be removed in advance of BCM work and reconnected once BCM work is finished.

#### **IV. ACTIVITIES DURING POST BLOCK PERIOD**

1. Engineering department will arrange for connection of traction bonds and cross bonds in presence of TRD staff as soon as machine clears a given area. JPO of Railway Board issued vide letter No. 2005/Elect/G/161/8 Pund. Pt.II dt. 17.08.12 and JPO No. SECR/ELECT/TRD/200A/Bonds dated 18.06.12 issued from HQ should be followed.
2. It is necessary to attend packing of deep screened points and crossing by off track tampers/UNIMAT as the case may be for improving the surfacing and relax caution order. However for passage of first train at 20kmph, manual packing with crow bars/off track tampers under CMS crossing only is considered to be adequate.
3. Proposed schedule for speed relaxation after deep screening of point & crossing:

Details of Work	Day of work	Speed restrictions and their lengths
Deep screening with initial packing...	1	20 kmph
First machine packing.....	2	
Picking up slacks as required.....	3	45 kmph
	4	
	5	
Second machine packing.....	6	75 kmph
Picking up slacks as required.....	7	
	8	
Third machine packing.....	9	
	10 onwards	Normal sectional speed

**Note:** If machine packing is not done as per above programme due to any reason the number of days for speed restriction will get increased correspondingly.

4. Lot of muck gets accumulated after deep screening and same to be removed and thrown away by Engineering Department to improve drainage.
5. Engineering department should ensure availability of one or two track men at station for attending the failure due to non-setting of point till packing by UNIMAT.

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(07752) 415501 (O)  
(07752) 247020 (R)  
9752475801 (Mob)  
(07752) 415573 (Fax)

## **SOUTH EAST CENTRAL RAILWAY**

No: SECR/S&T/Policy/ 959

Date: 16.07.12

**CAO/Con,COM/SECR,  
PCE/SECR,CEE/SECR,  
CSO/SECR,CSC/SECR,  
DRM/BSP,R & NGP**

**Sub: JOINT PROCEDURE ORDER FOR UNDERTAKING EARTH  
WORK IN THE VICINITY OF CABLES.**

**Ref :** Joint Procedure Order No: SECR/S&T/Policy/889,Dated 05.07.12

Joint Procedure Order issued by CPTM,CEGE,CTE,CSE,CE/Con-II,CEE/Con & CSTE/Con for undertaking Earth Work in Vicinity of Cables, is forwarded herewith for information and necessary action please.

This JOINT PROCEDURE ORDER supersedes the earlier JOINT PROCEDURE ORDER SECR/S&T/Policy/767, dated 12/18.06.2012 on the subject issued vide L.No SECR/S&T/Policy/769, dated 19.06.2012.

The earlier JPO stands withdrawn.

This is for your information and necessary action please.

**Encl:** Joint Procedure Order No: SECR/S&T/Policy/889,Dated 05.07.12.

**(Satyavir Singh)  
Chief Signal Engineer,  
For CSTE/SECR/BSP.**

C/- Secretary to GM for kind information.

C/- CPTM,CEGE,CTE,CSE,CE/Con-II,CEE/Con & CSTE/Con for information.

C/- Sr.DSTE/Co/BSP,Sr.DSTE/R & NGP

C/- Sr.DOM/BSP,R & NGP.

C/- Sr.DEN/Co/BSP,R & NGP.

C/- Sr.DEE/BSP, R & NGP.

C/- Sr.DSO/BSP,R & NGP.

} for information & necessary action.



SOUTH EAST CENTRAL RAILWAY

No. SECR/S&amp;T/Policy/829

Dated: 05.07.2012

JOINT PROCEDURE ORDER FOR UNDERTAKING EARTH WORK IN THE VICINITY OF CABLES

The JPO is applicable to Construction, Open line, RVNL & RE organizations.

1. Before taking up any earth work, executing officer shall convey intention in writing in Performa 'A' to concerned nodal officers viz. Sr. DEN, Sr. DEE and Sr. DSTE at least 10 days in advance.
2. On receiving the above request, nodal officers shall depute responsible supervisors within 02 days for joint inspection of the site with executing supervisors. The supervisors of Nodal officers will identify cables as per the cable route plan, suitable cable route tracer and by digging of pilot trenches/ pilot pits and provide physical cable marking on the ground. Digging of pilot trenches/ pilot pits shall be arranged by the executing supervisor. Nodal officers shall provide NOC based on the joint report signed by supervisors.
3. If cables are present in the area, work will not be done by JCB / Spades till such time cables are diverted. Such cable diversion work shall be supervised by supervisors of nodal officers.
4. In case of minor works, the executing Contractor shall be advised to take out the cables carefully in the presence of supervisors of nodal officers and place it properly alongside at a safe location before starting the earth work. Further, till such time these cables are in exposed condition, they will be guarded to avoid theft.
5. For doing earth work in embankment where no excavation is involved, NOC will be given within 7 days on receipt of the letter of intention. Executing agency will assist nodal officers for immediate diversion of the cables.
6. The concerned SSE supervising the work of the contractor shall ensure that the existing emergency sockets are not damaged.
7. In spite of following the JPO, if there is an incidence of cable cut, it should be enquired & analyzed by ADRM of the division and remedial action to avoid recurrence shall be taken. A register of cable cut cases should be maintained by Nodal officers & proper documentation should be done for each case.

  
(S. Gagerin)  
CFTM

  
(Kishore V. Madavi)  
CEGE

  
(K.C. Saini)  
CTE

  
(Satyvir Singh)  
CSE

  
(S.K. Gupta)  
CE/Con-II

  
(R.K. Tiwari)  
CEE/Con

  
(R.O. Das)  
CSTE/Con



- 8 In case cable is damaged by the contractor due to fault of his personnel, a penalty of Rs. ONE LAKH ONLY for each case, shall be imposed on the contractor for the loss caused to the Railway.
- 9 In case cable is damaged due to negligence of Railway Supervisor(s), a DAR action shall be initiated for each case on the defaulter supervisor(s). Such DAR action shall be personally monitored by ADRM of the division.
- 10 As a proper and long term measure, following special conditions shall be included in the Engineering Contracts as well as all those contracts where earth work is involved:

"The contractor shall take utmost care while carrying out the works including excavation so as not to cause any damage to the existing Railway underground and other cables.

In case cable is damaged by the contractor due to fault of his personnel, he is liable for a penalty of Rs. ONE LAKH ONLY for each case, for the loss caused to the Railway. His work is also liable to be stopped till such time he takes measures which are certified to be satisfactory by the executing supervisor."

No Fe: This JOINT PROCEDURE ORDER supersedes the earlier JOINT PROCEDURE ORDER SECR/S&T/Policy/767 dated 12/18.05.2012 on the subject Issued vide L.No. SECR/S&T/Policy/769 dated 19.06.2012.

The earlier JPO stands withdrawn.

						
(S. Gargan) CPTM	(Kishore V. Malavi) CEGE	(K.C. Saini) CTE	(Satvir Singh) CSE	(S.K. Gupta) CE/Con-II	(R.K. Tiwari) CEE/Con	(R.D. Das) CSTE/Con

**Performa 'A'**

Format for Earth Work / Excavation by executing department (Electrical / Signal & Telecom / Engineering) of Open Line & Construction departments.

Before commencing work and for extension of program for Earth Work / Excavation

Sr.	Item	Details
1.	Name of work	
2.	(a) Contract Agreement No. & date	
	(b) Name of agency with address	
	(c) Contact telephone Nos. of executing supervisor of agency	
3.	Location where earth work / excavation is proposed (sketch GAD to be enclosed) (km & between stations, line UP/DN)	
4.	Brief description of nature of work	
5.	Duration of work	
6.	Proposed date of commencement of work	
7.	Provision of manpower to facilitate execution of work	
Signature of Sectional Engineer of concerned department		

 (S. Gaganit) CPTM  
 (Kashore V. Madavi) CEGE  
 (K.C. Saini) CTE  
 (Satyavir Singh) CSE  
 (S.K. Gupta) CE/Con-II  
 (R.K. Tiwari) CEE/Con  
 (R.D. Das) CSTE/Con  
 6/7/12



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



### **Telecom Circular No.09/2023**

सं.2021/Tele/5(2)/3-Part(1)(3425647)

नई दिल्ली, दिनांक: 12.06.2023

The GM/CMD/MD/PCAO/CAO,  
All Indian Railways, KRCL, PUs, CORE, COFMOW  
(As per standard list)

The DGs/Directors  
RDSO, NAIR, All CTIs

**Sub.:** Procedure for undertaking digging work in the vicinity of Signalling, Electrical and Telecommunication cables

**Ref.:** JPO issued vide Board's letter No.2003/Tele/RCIL/1Pt.IX dated 24.06.2013 (Telecom Circular No.17/2013)

\*\*\*\*

A Joint Procedure Order (JPO) for undertaking digging work in the vicinity of underground Signalling, Electrical and Telecommunication cables was issued last vide Board's letter No.2003/Tele/RCIL/1Pt.IX dated 24.06.2013 (Telecom Circular No.17/2013). Notwithstanding the provisions contained in the JPO for protection of cables, a significant number of cable-cut incidents and practical difficulties in implementation of certain provisions of the said JPO were reported.

Board, therefore, constituted a committee of SAG officers to revisit the JPO. Based on the recommendations of the committee, Board (MI) has approved broad guidelines for procedure to be adopted by Zonal Railways for protection of cables while undertaking digging work in their vicinity (**Annexure**). These guidelines are in supersession of JPO issued vide reference above.

Zonal Railways are requested to issue local instructions/guidelines/JPO implementing these broad guidelines within a month of issue of this letter. Zonal Railways may also ensure that these local instructions/guidelines/JPO are also made part of all tenders for works in the vicinity of cables in accordance with the instructions issued by Civil Engineering Dte of Railway Board vide letter No.2023/CE-1/EDCE(G)/Misc. Dated 18.04.2023.

DA: As above

*(Signature)*  
12/6/23  
(राफेल रंजन)

कार्यकारी निदेशक (दूरसंचार विकास)  
दूरभाष: 011-47843012, 030-43012  
ई.मेल: edtd@rb.railnet.gov.in

**Annexure**

**Guidelines for protection of cables while doing work its vicinity**

1. Cable route marking for all types of cable must be made available block section wise on Railnet.
2. Before allowing the contractor to work near the tracks, the work executing agency (like SrDSTE/SrDEN/SrDEE or DyCSTE/DyCEE/DyCE etc.) shall ensure that the permission has been granted by the division to the contractor in accordance with the local instructions / JPO to work in the vicinity of the cables. Zonal railways shall devise suitable mechanism and timelines for the obtaining/granting such permission.
3. In case of works being taken up by the State Government, National Highway Authority etc., zonal railways shall devise mechanism for shifting the cables or for proper protection of cables before granting permission to work.
4. The engineering control shall keep all the information regarding any works being done near the track. S&T and electrical control shall obtain this information from engineering control. These controls shall coordinate among themselves to ensure that no work is done in the vicinity of the track without proper permission.
5. The concerned SE/P.Way/SE/Works/SE/Sig/SE/Tele SE/Electrical (TRD or G) or RailTel supervisors supervising the work of the contractor shall ensure that the existing emergency sockets are not damaged due to their importance in providing communication during accident/emergency.
6. For all new works, cable shifting should be a mandatory part of DPR and estimate. For ongoing works, Zonal Railways may sanction works for cable shifting if necessary through contingency/supplementary/revised estimate where provision does not exist. However, in case zonal railways decide not to shift cables (due to any reason) then protection of cable shall be ensured by the zonal railways during execution of the work.
7. Penalty to be imposed for damages to cable shall be as under:

Cable damaged	Penalty per location
Only Quad cable or Signaling cable	₹ 1.0 Lakh
Only OFC	₹ 1.25 Lakh
Both OFC & Quad	₹ 1.5 Lakh
Electrical Cable	₹ 1.0 Lakh





8. Penalty should be levied on the contractor when they work without permission or resort to careless working without making arrangements for protecting cables and other utilities. Based upon the local conditions and practices, zonal railway shall devise its own conditions for examining and levying penalty. For each cable cut, a joint report at the level of supervisors should be prepared on the same day and it should become the basis for levying penalty and fixing responsibility. Joint note should be forwarded by SrDSTE/SrDEE to the executive in-charge of the work. The executive in-charge of the work should act and decide on the cable cut case within 15 days under information to SrDSTE/SrDEE as the case may be. There should be provision of appeal by contractors within one month of notice for levying penalty at ADRM level. Decision of ADRM shall be final and binding upon both parties.
9. Railways will not lodge FIR with RPF in cases of works being executed by authorized contractors of Railways who have been duly permitted to execute the works.
10. Zonal Railways shall issue local instructions/JPO for protection of cables while undertaking works in the vicinity of railway tracks in line with this guideline. Zonal Railways shall also ensure that such instructions become part of their tender document within one month of the issue of the local instructions. Suitable action against erring officials shall also be incorporated in these instructions if the same is not adhered to.





## SOUTH EAST CENTRAL RAILWAY

JOINT PROCEDURE ORDER FOR SAFETY MEASURES IN CONNECTION WITH COMMISSIONING A STATION IN GC, NEW LINE OR 3<sup>rd</sup> LINE (WHERE THERE IS NO CHANGE IN EXISTING DOUBLE LINE WORKING) WORKS; IN A SINGLE GO, WITHOUT RESORTING TO PHASING AND REPEATED NI WORKING.

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In case of GC, New line or 3<sup>rd</sup> Line works in long sections, commissioning is often required to be done in parts. Hence, the commissioned line at the end station of the section remains unconnected to the next station until the work is executed and commissioned for subsequent section and station.

The execution of works at the end station, in phased manner involves following constraints and additional works while executing/commissioning the subsequent section:-

I. Additional, avoidable expenses towards execution of Signaling works for the alteration of newly commissioned station.

II. Involvement of repeated NI working for the alteration/modification of recently commissioned end station. The period of NI working is considerably high in case of 3<sup>rd</sup> Line works which is mostly on trunk routes and yards are also comparatively big and the impact on train operation is more.

III. Work in terms of drawings (approval of ESP, SIP, SWR, SWRD, RCC, Application logic, Interface Diagram, etc.), testing (FAT/SAT, etc) and processing of documents (CRS application etc) gets doubled for the same station without any tangible output. This will consume valuable man power adversely affecting the progress of targeted works.

To eliminate the above practical constraints while executing the signaling works at the end station, it is decided to execute the signaling works for the End station with full complement of signaling without resorting to phasing, with the following additional steps for ensuring safety in train working—

**A. Period in between commissioning of End Station and before taking up ENGG MACHINE WORKING/MATERIAL TRAIN for next block section.**

1. Yard shall be constructed as per approved CE's Plan in all respect with full complements of Points, DS, Sidings, etc and at least 400 meters of track, beyond the outermost point.

  
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PCOM/SECR  
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CE/CON/NGP  
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PCE/SECR  
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2. All the signaling works are to be commissioned with full complement of signaling as per approved Signal Interlocking Plan and the station to be commissioned as per minor sanction obtained from CRS in this regard.

3. Before commissioning the end station yard of the section, **Dead End** of suitable design shall be provided at a distance 400 meters beyond outermost point.

2. The **GREEN /OFF ASPECT** of all concerned signals in the direction towards unconnected block station shall be made non-functional by electrical disconnection supported with due certificate of S&T official.

3. The Block instrument for the next section where the other end block station shall be made non-functional by electrical disconnection supported with due certificate of S&T official.

**B. For working of ENGG MACHINE/ MATERIAL TRAIN for the next block section.**

When the track for the next block station becomes ready to carry engg machine/ material:

1. One **DS (non interlocked)** with **locking arrangement** shall be provided at a distance 400 meters beyond outermost point, deleting the **DEAD END** provided earlier. The DS shall be kept in open condition, pad locked and the key shall be kept in the custody of Dy. SS of the end station.

2. The **ENGG MACHINE/ MATERIAL TRAIN** shall work in the subsequent block section based on 'TEMPORARY WORKING INSTRUCTION' duly signed by Dy CE/CON; Dy.CSTE/Con; Sr.DEN, Sr.DOM and Sr.DSTE, as per the provision in operating manual, ensuring safe working of trains.

**C:** With the commissioning of subsequent block section and station, DS shall be deleted and new line working shall be restored to normal condition with a joint certificate signed by DyCSTE/Con & DyCE/Con.

  
CSTE/CON/BSP  
(CHEELA TIRKEY)

  
CE/CON/NGP  
(H.P. TRIPATHI)

  
CSE/SECR  
(N. N. MATHIEWS)

  
PCOM/SECR  
(P. K. JENA)

  
PCE/SECR  
(S.K. GUPTA)

## **SOUTH EAST CENTRAL RAILWAY**

Circular No: SECR/S&T/JPO/RR/Ait./362

Date: 03.07.2023

### **Sub: JPO for carrying out Circuit alteration works in Relay Room**

Minor/major circuit alteration works inside Relay room (Center/End Goomties/LC gate/IBS/any other Relay huta) are required in connection with commissioning of new works by various executing agencies including the Division itself, minor safety reliability improvement works by Division (Standby axle counters, sliding barriers, Replacement of MLB to ELB, EKT less circuits for ELBs, Closure of LC gates etc) and completion changes by executing agencies subsequent to commissioning of the work etc.

In the light of Railway Board's letter no. 2023/TT-IV/9 dtd. 16.06.2023, following JPO is issued on modalities for circuit alterations to be carried out in Relay room(s) for strict adherence to ensure safety during and after execution of works.

#### **1.0 GENERAL**

- 1.1 **Circuit Alteration works, where change in existing wiring is to be carried out in Relay room, should be done during traffic block/ Non interlocking only.**
- 1.2 Requirement for carrying out alteration to existing wiring may be required at one Relay Room or multiple Relay Rooms at a time.
- 1.3 Double locking of Relay room (by Operating & S&T locks) and monitoring thereof through Datalogger shall be ensured before taking up wiring alteration works since the starting of pre-works.
- 1.4 In case the work is executed by an agency other than the Division, authorization to SSE/JE/Technicians of Railways of or on behalf of executing agencies for opening of Relay room shall be issued by SrDSTE of the Division. No authorization for opening of Relay room shall be given to Group-D/Assistant category staff.
- 1.5 All pre-works without involving interference in running circuit like installation of additional racks/equipments, fixing & wiring of additional relays/equipments, writing works etc shall be completed in all respect for which disconnection/ traffic block/NI is not required.
- 1.6 For preparatory works required by S&T Construction/Project/ Open line/PSUs etc, relay rooms are required to be opened continuously for longer period which even requires entry of persons other than Railway Employees. Staff of Railways (SSE/JE/Technicians) of or on behalf of the executing agency shall personally remain present in the Relay room whenever access to contractual staff/ persons other than Railway employees is given to enter the Relay room. In case, he has to leave the Relay room for some reason or for taking break for a substantial time, then the contractual staff/persons other than Railway Employee shall be asked to leave the Room and after that the Relay room shall be closed if there are no Railway Employee to work inside Relay room. A register shall be maintained in the Relay room noting the name and designation of the Railway staff and name and number persons other than Railway employee available inside Relay room from time to time on daily basis.

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- 1.7 Duration for testing after the alteration work allotted in the planning of block/NI shall commensurate with the extent of alteration jointly decided by SrDSTE and Sr.DOM on application of Executing agency represented by Railways.

**2.0 AUTHORIZATION FOR OPENING/CLOSING OF RELAY ROOM.**

- 2.1 Keys for opening of Relay room shall be issued only to SSE or JE or Technician of Railways or on behalf of the executing agencies.
- 2.2 For works executed by Railway units under the Zone (Const./Project/GSU/Division etc), key of Relay room shall be issued to SSE or JE or Technician of the concerned executing agencies.
- 2.3 For works executed by RE and PSUs (RVNL, RITES, IRCON etc), key of Relay room shall be issued to SSE or JE or Technician of the Division, preferably, in charge of the maintenance of the station/location where the alteration work is proposed to be taken up.
- 2.4 In case the executing agency is a private entity or PSUs for siding works, key of the Relay room shall be issued to SSE or JE or Technician of the supervising unit of Railways (Const./Project/Division).
- 2.5 Keys of Relay room to be issued under express authorization of SrDSTE by name of the staff to be issued the key on application by Executing agency/Supervising unit of Railways. Number of staff to be authorized shall be proposed by Executing agency/Supervising unit of Railways as per the requirement. No such authorization is required for Divisional staff.
- 2.6 For Opening and Closing of Relay room JPO circular No. SECR/S&T/JPO/RR/1/2012 dtd. 17.05.2012 with latest amendment, if any, shall be followed. Keys of Relay room to be issued to staff authorized by SrDSTE only.
- 2.7 During the period of execution of pre works, the Relay room shall be opened only during the day time for the purpose.
- 2.8 SSE/Signal of Divisional control office will prepare daily statement on duration of opening and closing of Relay room ascertained through control message from station to be corroborated by exception reports through Data logger for appraisal of SrDSTE.

**3.0 EXECUTION, COMMISSIONING & TESTING OF THE ALTERATION UNDER NI/TRAFFIC BLOCK.**

- 3.1 Disconnection/Reconnection protocols shall be followed as per provisions contained in IRSEM and GR by authorized personnel with valid competency certificate.
- 3.2 After completion of alteration work (during NI/traffic block) SAT/Simulation testing, as applicable, of the alteration works to be carried out in conformity with provisions of IRSEM by the Executing agency jointly with concerned sectional Officer and staff of the Division.
- 3.3 After reconnecting the field gears correspondence test of all field gears to be done under direct supervision of the sectional officer of the Division and officer of Railways representing the executing agency.
- 3.4 CDTI/Sectional DTI of the section with staff shall be available to assist the correspondence test and depute staff from operating side to assist and witness the correspondence tests at site.

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- 3.5 SS on duty assisted by SSE/JE of the station and SSE/JE of Railways of or on behalf of Executing agency, shall at all time be available at VDU/Control panel during the correspondence tests to assure himself of correctness of various indications on the panel corresponding to the field gears being tested.
- 3.6 After completion of correspondence test, safety certificate from the officer of Railways of or on behalf of executing agency shall be obtained as per provision of IRSEM prior to giving the reconnection memo.
- 3.7 After reconnection memo is received by SS under his acknowledgement, the first train to pass on Main line should be dealt as under:
- a) The reception of the first train should not be on green aspect of first stop signal.
  - b) The departure signal for run through trains should be taken off once the train has occupied the berthing portion by seeing the relevant indications on panel/VDU.
  - c) This should be applicable for all UP and DN direction trains.
  - d) Exception to these instructions will be in case of stations where reception or reception and departure signals are kept in 'Off' position to avoid stalling of loads due to rising gradients or site conditions. Necessary instructions may be incorporated in working rules to admit these trains into the yard at restricted speed by keeping the departure signal 'On'.
- 3.8 Subsequent to commissioning, the Relay room may be kept open for further 1 to 2 hrs depending upon the extent of alteration carried out for observation of performance of the altered work. Thereafter, the Relay room should be closed and keys handed over with suitable entries in Key register as per extant rule.

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PCSTE

(S. K. SOLANKI)  
03/09/23

(RAHUL AGARWAL)

PCOM

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## SOUTH EAST CENTRAL RAILWAY

Circular No. SECR/S&T/JPO/RR/1/2012/Rev./2023/748

Date: 17/10/2023

### **Sub: Revised Joint Procedure Order for Opening/Closing of Relay Room.**

To streamline provisioning of locking arrangement at relay rooms/huts/goomties and opening of Relay rooms as per requirement, following procedures shall be adopted.

#### **1.0 Locking of Relay Rooms**

- 1.1 Relay room should be provided with double locks and door opening shall be monitored through data logger as per Para 21.2.2 of IRSEM. This includes provision of double locks at all Relay rooms, relay huts, goomties and cabins provided as an extension of station Relay room to cater to/pertaining to signaling gears in station yard i.e. in station section.
- 1.2 Double locking arrangement should be provided at all level crossing gate relay huts/goomties within station section housing S&T equipments/circuits of LC gates and point/track circuits/signals.
- 1.3 Gate goomty/cabin housing S&T equipments/circuits in station yard i.e. in station section should be treated as relay hut.
- 1.4 The proforma for handing over/ taking back of the key by the SM on duty shall have a column specifying that the location for which the key had been taken by maintenance staff has been properly closed and locked by the maintenance staff who is returning the key.
- 1.5 Locks of genuine reputed make should be provided as necessary.

#### **1.6 Operating lock.**

One lock shall be provided on the door of Relay room by the Station master. This lock is named as operating lock. First key shall be kept in the safe custody in key box with the ASM on duty. Spare key/keys shall be kept under the custody of SM(Incharge) of the section.

#### **1.7 S&T lock.**

Likewise one lock shall be provided on the door of relay room by the Signal maintainer/Signal supervisor (SSE/JE). This lock is named as S&T lock. First key shall be kept in the safe custody of concerned Signal maintainer/Signal supervisor (SSE/JE) of the station/section. Spare key/keys of the S&T lock shall be kept under the safe custody of Depot-incharge SSE/Signal of the section. In addition, E-type lock is also to be provided at theft prone relay huts. Key of this lock shall be with Signal maintainer.

#### **1.8 Emergency S&T key(s).**

A spare key(s) of S&T lock(s) shall be kept in sealed wooden box with glass door

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fixed on wall. This key(s) is(are) named as emergency S&T key(s) to be used by on duty ASM during exigencies whenever S&T staff with access to S&T key is not available (especially during Off hours or the concerned S&T staff is not expected to reach station in a reasonable time depending upon the gravity of exigencies).

## 2.0 Opening of Relay room.

2.1 **Duties of S&T staff.** Whenever relay room is to be opened either for maintenance schedule or during failures or for other maintenance activity activities/ construction works, the concerned Maintainer/Signal supervisor shall :

- 2.1.1 First obtain the serial number of the day with time from Section Engineer/Signal/HQ of the respective Divisional Control Office.
- 2.1.2 Then record the same in the Relay Room Key register with reason. Relay Room key register to be maintained in following format:

SN	Date	Time taken from	Signature of		Date	Time handed over to SM	Whether properly stored & locked the Relay room/ Relay huts/ Gantries/ cabins for which the key has been taken. (to be signed by the SSE/JE/ ASM who is returning the key)	Signature of		purpose
			SSE/ SSE/ JE	SM on duty				SSE/ SSE/ JE	SM on duty	

2.2 **Duties of Operating staff.** When ASM on duty is requested for the key by the S&T staff, he shall :

- 2.2.1 The ASM shall give the key of operating Lock to S&T staff after the entry is made in the Relay Room key register and also with red ink in TSR.
- 2.2.2 Relay Room key shall be handed over by ASM to SSE/JE/Technician of S&T department.
- 2.2.3 Advise Section Controller of the time of handing over of the key of Relay room who will record it in the Control chart.

## 3.0 Closing of Relay room:

3.1 **Duty of S&T Staff** - On completion of work the concerned Signal maintainer/ Signal supervisor shall:

- 3.1.1 First properly close the Relay room door and lock it with both the locks,

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- 3.1.2 Then return the key of Operating lock to the ASM on duty and make the entry in Relay room key register.
- 3.1.3 Advise Section Engineer/signal/HQ at Division Control Office of the time of closing the relay room.
- 3.2 **Duties of Operating staff** when the operating lock is returned by S&T staff to ASM on duty, he shall:
- 3.2.1 First keep the key in the safe custody and acknowledge it on the Relay Room Key Register.
- 3.2.2 Advise Section Controller of the time of closing the relay room who will record it in the Control chart.
- 4.0 **The procedure, frequency and authority for opening Relay rooms in four categories are appended below:**
- 4.1 **For attending failures of S&T gears within relay rooms:** Following steps shall be taken for opening relay rooms for attending failures inside the relay rooms when necessary.
- 4.1.1 **By ASM:** Entry to be made in S&T failure register by ASM on duty and failure memo to be issued to S&T staff. The S&T staff shall not take the Relay Room key for attending failures and open the Relay Rooms unless failure is recorded in SFR.
- 4.1.2 **By S&T staff:**
- If Disconnection is required, disconnection Memo to be given by S&T staff to ASM on duty.
  - Failure Memo should be acknowledged and entry in Relay room Key register to be made by S&T staff before obtaining Station Master's key.
- 4.2 **For Periodical Maintenance of Relay Room:** Relay room key for schedule maintenance shall be taken only once in a calendar month during monthly inspection by Sectional Supervisor.
- 4.3 **Opening for Special Activities and Works:** The Relay Room can also be opened and closed by following the procedure as given in Para 2 and 3 respectively to carry out the activities as and when required for:
- 4.3.1 Special maintenance activities like cable meggering, block/Disconnection memos, selection/locking table testing, maintenance work inside relay room by Electrical & Engineering staff, during failures, data logger resetting and inspection by divisional and Headquarter officials. During maintenance by Electrical & Engineering staff, it shall be ensured that responsible S&T official shall be present during maintenance work and he/she shall also ensure that no outside interference is involved with the S&T installation which may endanger safety.
- 4.3.2 Track Circuit adjustments & Voltage monitoring during monsoon and whenever required during rains.
- 4.3.3 Works required by S&T construction/Project/PSUs and Open Line staff for

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preparatory works and during commissioning. In each such case, the construction staff shall follow the detailed guidelines issued vide SECR's JPO circular no. SECR/S&T/JPO/RR/Alt./362 dtd. 03.07.2023 regarding authorization for opening of Relay room, permitting staff of executing agencies, permitting persons other than Railway employees inside Relay room and working on signalling gears under the charge of Open line which is reiterated as below:

**AUTHORIZATION FOR OPENING/CLOSING OF RELAY ROOM**

- a) Keys for opening of Relay room shall be issued only to SSE or JE or Technician of Railways or on behalf of the executing agencies.
- b) For works executed by Railway units under the Zone (Const./Project/GSU/Division etc), key of Relay room shall be issued to SSE or JE or Technician of the concerned executing agencies.
- c) For works executed by RE and PSUs (RVNL, RITES, IRCON etc), key of Relay room shall be issued to SSE or JE or Technician of the Division, preferably, in charge of the maintenance of the station/location where the alteration work is proposed to be taken up.
- d) In case the executing agency is a private entity or PSUs for siding works, key of the Relay room shall be issued to SSE or JE or Technician of the supervising unit of Railways (Const./Project/Division).
- e) Keys of Relay room to be issued under express authorization of SrDSTE by name of the staff to be issued the key on application by Executing agency/Supervising unit of Railways. Number of staff to be authorized shall be proposed by Executing agency/Supervising unit of Railways as per the requirement. No such authorization is required for Divisional staff.
- f) For Opening and Closing of Relay room para 2.0 & 3.0 shall be followed. Keys of Relay room to be issued to staff authorized by SrDSTE only.
- g) During the period of execution of pre works, the Relay room shall be opened only during the day time for the purpose.
- h) SSE/Signal of Divisional control office will prepare daily statement on duration of opening and closing of Relay room ascertained through control message from station to be corroborated by exception reports through Data logger for appraisal of SrDSTE.

**4 Emergency cases:**

**1 In case emergencies such as fire, flood, earthquake etc. the following actions to be taken:**

**1 In case S&T staff with access to S&T key is available at station at the time of emergency:**

- a) Open line SSE/JE(Signal)/Signal Maintainer and the ASM shall jointly decide the need for opening the relay room.
- b) Section engineer/Signal/HQ at Divisional Control Office and Section Controller shall be informed respectively.
- c) In case of communication failure during such emergencies, Open line Signal Maintainers/Supervisors and ASM on duty shall jointly decide the

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need of opening the Relay room and communicate later on to respective controls.

4.4.1.2 In case S&T staff with access to S&T key is not available (especially during Off hours or the concerned S&T staff is not expected to reach station in a reasonable time depending upon the gravity of exigencies):

- a) Section Controller shall at once be advised by ASM on duty regarding the exigency and the situation warranting requirement of emergency S&T key. Section controller shall immediately advise Section engineer/Signal/Control/HQ at Divisional control office about the situation so communicated by ASM.
- b) On duty ASM shall break the seal of the S&T emergency key box and take out the appropriate S&T key(s) to open the affected Relay room(s).
- c) In case of communication failure during such emergencies, ASM shall immediately follow the procedure mentioned at (b) and inform the Section controller later on.
- d) Use of emergency S&T key(s) shall be mentioned in TSR with red ink and recorded in Relay room key register.

4.4.2 **In case Key is lost/misplaced:**

- a) It shall be reported to S&T control as well as Section Controller for either lock.
- b) In normal course the spare key with respective custodians shall be used. In emergency situation lock may be broken under advice to Section Controller as well as S&T control.
- c) New lock shall be procured and provided.

4.5 **Unauthorized opening:** In case ASM on duty comes to know Relay room opening by unauthorized means or by unauthorized person/staff, the signalling system shall be suspended by him and matter immediately reported to section controller.

5.0 **Reporting and recording of opening Relay Room:**

5.1 **Control office:** A record of Relay Room opening will be kept on the control chart by the Section Controller.

5.2 **Divisional HQ:** Section Engineer/Signal/HQ at divisional control Office will prepare daily statement and also compile a 30 days report for day to day periodical perusal of Sr.DSTE/DSTE and Sr.DOM/DOM.

5.3 **Sectional SSE/TI:**

5.3.1 Sr. Section Engineer(Signal) and TI of the respective section will check the station records of Relay Room opening during their inspections and cross check it with data logger/counter readings. Discrepancy if any shall be immediately inquired into and advised to Sr.DSTE/SrDOM by the numbered control message from the station immediately.


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5.3.2. Sr. Section Engineer (Signal) and TI of the respective section will send monthly report of opening of Relay Rooms of all stations in their beat to the DSTE and DOM respectively. Any discrepancy will be brought to the notice of Sr. DSTE and Sr. DOM by the numbered control message from the station immediately.

- This JPO supersedes previous JPO Circular No. SECR/S&T/JPO/RR/1/2012 dtd. 17.05.12 on the subject.

  
(S.K. Solanki) 16/10/23  
**PCSTE**

  
(Pradeep Kumar)  
**PCSO**

  
(Rahul Agarwal)  
**PCOM**

**SOUTH EAST CENTRAL RAILWAY**

No. SECR/S&T/Auto Sig./JPO/1

Dated: 24.09.2024

**Joint Procedure Order**

**Sub: Joint Procedure Order for adopting procedures for rectification of Auto Signal failures between two stations during failures in Automatic Signalling Territory.**

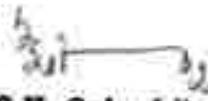
1. Whenever a loco pilot passes any Automatic signal / Semi-Automatic Gate Stop Signal at 'ON' position between two stations, he shall report the number and description of the Automatic Signal passed at 'ON' position by available means of communication to the SM of the next Station ahead in compliance to SR 9.11.01.
2. On obtaining the information from the loco pilot in this regard or on knowing by himself, the On Duty Station Master of the concerned block station in advance shall inform the Station Master of block station in rear. Both the Station Masters shall verify the cause of passing the signal at 'ON' position from Auto section-indication VDU / reset box provided at the stations and also by ascertaining number of trains already in the block section.
3. If it is not an axle counter failure as visible on Auto section VDU / reset box, then the SM in rear shall follow the procedure at para.7 below.
4. If it is a MSDAC / Axle Counter failure, so ascertained by continuous failed (Red) indication of concerned track section as visible on Auto section VDU / reset box, the Station Master shall apply manual reset as per the procedures prescribed in the Station Working Rule (SWR) in the reset axle counter box provided, when no train is in the affected section.
5. If preparatory indication appears subsequent to resetting, then on duty SM in rear will allow one train into the section to clear the track section (as per procedure in SWR).
6. However, if the MSDAC / Axle Counter is not reset even after manual reset due to any reason and the cause of signal at 'ON' position is not known, the Station Master on Duty shall inform the Station Master of station at the other end of the section and section controller about the failure of signal gear with diary entry messages.
7. The Station Master on Duty of the block station in rear shall inform about the failure to concerned S&T Maintainer and failure memo shall be issued at the station to the S&T Maintainer. If the S&T Maintainer is physically not available or not responding to VHP/Mobile Phone, then the Station Master will ensure that he has informed the S&T Controller through section controller on control phone about the failure.
8. On receiving the failure memo, the S&T Maintainer shall issue disconnection memo wherever required. The Signal Maintainer will write clearly about the signal gear where failure has occurred by observing the Auto section VDU/ through Data logger. He will clearly mention the gear for which disconnection is required and its repercussion on signals.

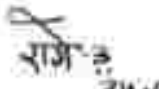
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9. On reaching the site, the Signal Maintainer will disconnect the link of Yellow, Double Yellow and Green aspect of concerned signal in that particular Goomty/Auto Hut/location so that the loco pilot will not get any Green, Yellow or Double Yellow aspect during failure period.
10. After rectification of Axle Counter (if it is failure of axle counter), Signal Maintainer will request on Duty Station Master to apply resetting as per the procedure laid in the SWR by available means of communication. Once Axle Counter accepts preparatory reset, one train has to be passed in order to clear the Track Section / Axle Counter as per SWR.
11. If Axle Counter has been reset and the section becomes clear and once "Clear" indication appears in the reset box/Auto section VDU, the Station master will inform the same to Signal Maintainer.
12. Further, as ascertained by the Station Master that there is no train in the block section in rear of the affected signal, the Signal Maintainer shall connect the links of Green, Double Yellow and Yellow Aspects.
13. After rectification of failure (if it is a failure of signal circuit), action shall be taken as per para 12 above.
14. The Signal Maintainer shall then advise Station Master of the concerned station to verify the rectification of signal from the Auto-section VDU wherever provided by joint correspondence test (SM shall check in VDU and S&T staff shall check at site). The Station Master, on satisfying himself that the signal is showing 'OFF' aspect corresponding with the position of the series of Auto signalling section ahead, shall inform the S&T staff about the same.
15. S&T staff will then record the rectification time in his diary with details of signalling gear failed and inform the same to the S&T Controller. S&T Controller will in turn inform the Section Controller about the rectification.
16. After joint correspondence test, the S&T Maintainer on reaching at station shall issue reconnection memo/ rectification memo to the Station Master to that effect and record in the Signal Failure Register.
17. Till such time, all trains will observe the Auto-Signalling rules as per G&SR.

  
(S.K. Solanki)  
PCSTE

  
(Ramendra Kumar Tewari)  
PCEE

  
(Rahul Agarwal)  
PCOM

**Miscellaneous**

**Checklist for Handing/Taking over of Commissioning related documents to Division**

<b>Name of Station:</b>		<b>Commissioned on:</b>		
<b>To suit SIP No.:</b>				
<b>Description of work:</b>				
SN	Documents	Qty	H/over	Remarks, if any
1	Completion SIP	6 Nos	Yes/No	
2	Completion Front Plate Diagram	3 Nos	Yes/No	
3	Completion Wiring (Circuit diagrams for Relay Rooms and Goomties	3 Sets	Yes/No	
4	Completion Route Control Chart	3 Sets	Yes/No	
5	Cable Layout Plan for Station and Mid Sections(both sides)	3 Sets	Yes/No	
6	Cable corage Plan	3Sets	Yes/No	
7	Track Bonding Plan	3 Sets	Yes/No	
8	Contact Analysis Chart	3 Sets	Yes/No	
9	SWRD	3 Nos	Yes/No	
10	Panel Termination Chart	3 Sets	Yes/No	
11	Location Diagrams (Termination, wiring & equipment details)	3 Sets	Yes/No	
12	Cable Term.& Relay Disposition Chart in-	R.Room	3 Sets	Yes/No
13	Cable Term.& Relay Disposition Chart in-	Goomty	3 Sets	Yes/No
14	Fuse analysis	3 Sets	Yes/No	
15	Floor Plan of Relay Room	3 Sets	Yes/No	
16	Earthing arrangement diagram	3 Sets	Yes/No	
17	Block Section Cable Root Plan-	QUAD	3 Sets	Yes/No
18	Block Section Cable Root Plan-	OFC	3 Sets	Yes/No
19	IPS/Power Supply Load table & Distribution Diagram	3 copies	Yes/No	
	IPS-Pre-commissioning check list signed by OEM	3 copies	Yes/No	
	Data-Logger details	3 copies	Yes/No	
20	Data-Logger Pre-commissioning check list signed by OEM	3 copies	Yes/No	
	EI details	3 copies	Yes/No	
	i) Checksum & CRC certification jointly by OEM & Railways (Signed by JS/SS & Countersigned by JAG)	3 copies	Yes/No	
	ii) FAT Certificate	3 copies	Yes/No	
	iii) SAT Certificate	3 copies	Yes/No	
21	IV) TSAA certification & approval details	3 copies	Yes/No	
	V) Details of "A" class protection	3 copies	Yes/No	
	VI) Details of Perimetric Bonding Earth	3 copies	Yes/No	
	VII) Card files details & Application software	3 copies	Yes/No	
	VIII) Approved interface Diagrams	3 Sets	Yes/No	
	(X) Application logic equivalent circuits mentioned with Checksum &CRC No. In each sheet	3 Sets	Yes/No	
22	DAC-Pre-commissioning check list signed by OEM.	3 copies	Yes/No	



23	Soft Copy of SIP, SWR & SWRD, FPD, RCC, Indoor/Outdoor Drgs	1Set	Yes/No	
24	Original tracing of all field drawings item No. 6 to 18 above	1 Set	Yes/No	
25	Commissioning message	3 copies	Yes/No	
26	Safety Certificate	3 copies	Yes/No	
27	CRS/CSTE Sanction letter	3 copies	Yes/No	
28	Para wise compliance to CRS Sanction, if any	3 copies	Yes/No	
29	Approval/Condonation/Dispensation papers, if any from Railway Board	3 copies	Yes/No	
30	Dispensation papers, if any from-CRS	3 copies	Yes/No	
31	Dispensation papers, if any from-COM	3 copies	Yes/No	
32	Dispensation papers, if any from-CSTE	3 copies	Yes/No	
33	Signal Sighting Committee Report	3 copies	Yes/No	
34	List of infringements to SOD if any & dispensations there to	3 copies	Yes/No	
35	Letter for Handing over of Completion drgs and Station building to concerned Sr.DEN	3 copies	Yes/No	
36	Wire count & Bell test details in case of P/E/RR/I	1 copy	Yes/No	
37	Earth Resistance value measurement register for all S&T Equipments/Gears	1 copy	Yes/No	
38	Battery History Card /Register	1 copy	Yes/No	
39	Track circuit test Card	1 copy	Yes/No	
40	Cable Insulation Test Card	1 copy	Yes/No	
41	Signal Location Cards	1 copy	Yes/No	
42	EC Socket particulars	1 copy	Yes/No	
43	Quad cable utilization & allocation chart	3 copies	Yes/No	
44	Quad cable Jointing particulars	3 copies	Yes/No	
45	Quad cable testing particulars especially for Axle counters	3 copies	Yes/No	
46	Joint inspection report & compliance	1copies	Yes/No	
47	Any other relevant documents	1 copy	Yes/No	
48	Station Working Rules	3 copies	Yes/No	
49	Details of Tools and Plants and spares	1 copy	Yes/No	

Handed over by

Signature, Name & Designation

Taken over by

Signature, Name & Designation

**Notes taken by CSE/SECB during inspection of site measurement register of JHP-NIR-BTC section on 18.09.2019**

**1. Schedule Sr. No. 1**

**Item Description:** Location survey of cable route \_\_\_\_\_ documented and bound with plastic covers).

Sr. No.	Date	Location Start/End Section	Quantity Executed	Quantity Completed	Remarks	Signature
1	18.09.18	KR-012	20 Km		Cable route documented	Signature

**Observations:**

- Logically it should be from km to km.
- Details of landmarks, bridges, culverts, difficult terrains, joints, cable route markers, joint markers, etc. needs to be endorsed with chainage.
- Section surveyed by ASTE & DyCSE to be earmarked exclusively.
- Normally survey has to be 100% by ASTE (just like foundation items) and not 20%. Survey has to be done at officer level to derive the maximum mileage. Same is true for RDSO inspected items. 100% Quantity check vis a vis inspection certificate has to be carried out duly keeping one thing in mind that consignee is supreme and he can even reject RDSO inspected items if it is not as per the specification. Quantity check has to be 100% by ASTE for all items.

**2. Schedule Sr. No. 9(c)**

**Item Description:** Fixing of concrete cable route marker \_\_\_\_\_ written as "RLY TELE" (both side).

Sr. No.	Date	Location Start/End Section	Quantity Executed	Quantity Completed	Remarks	Signature
1	20.09.18	KR-012	100 No		RLY TELE fixing	Signature
2	21.09.18	KR-013	100 No		RLY TELE fixing	Signature

**Observations:**

- Exact location of cable route marker should be endorsed in the register.

**3. Schedule Sr. No. 2(a)**

**Item Description:** Excavation of trenches \_\_\_\_\_ Depth 1.2 Mtr. & Width 0.3 Mtr.

S. No.	Date	Location Start/End Section	Quantity Executed	Quantity Completed	Remarks	Signature	
						Contractor	Railways
1	11/11/16	KR-012 13A-14A	1.0 Km	24-25%	Drom No 6735 Length 10.15 m	Signature	Signature
2	31/5/16	KR-012 14A-15A	0.902 Km		Drom No 6736 Length 10.04 m	Signature	Signature
3	11/11/16	KR-012 15A-16A	1.010 Km		Drom No 6737 Length 10.17 m	Signature	Signature

**Observations:**

- The measurements are required to be done at every meter.
- There should be no gap in the chainage.
- Depth of trench and cable laying to be videographed. Videography may be done with mobile phones but it should have timestamp.
- The other attributes like culverts, bridges, LSS, LHS, ROB, Hard rock, cabling with RCC pipes/GI pipes etc. which fall within this jurisdiction needs to be brought out in brief in chronological order along with trench starting from 0 milestone to last milestone.

e.g. supposing from km 1011/17-19 to 1011/29-31, there is a continuous trench of 1.2 m measured at an interval of 1m then recording will be as follows in the work register –

S N	Date	Location Station/ Section	Quantity Executed	Cumulative quantity	Remarks	Signature with date			
						Contractor	SSE/JE	ASTE	DyCSTE
1	4/2/18	6-539	320m	320m					
CULVERT OF 30m									
2	9/2/18	569-700	174m	494m					
HARD ROCK OF 20m									
3	11/2/18	720-850	130	624m					
TRACK CROSSING OF 30m									
4	14/2/18	890-920	30m	654m					
BRIDGE OF 40m									
5	16/2/18	920-1000	170m	824m					

- e) Clear cut details of items inspected by ASTE & DyCSTE should be endorsed against entries. Seen makes no sense.
- f) If ASTE/DSTE doesn't demarcate the items inspected by them then they are responsible for 100% else for the items for which they have endorsed in the register/MB book only s/t 20% minimum.

#### 4. Schedule Sr. No. 12

Item Description: Transportation & execution of following kinds of joints back filling and ramming after jointing.

S N	Date	Location Station/ Section	Quantity Executed	Quantity Cumulative	Remarks	Signature	
						Cont.	Railways
1	24/02/18	KER-680	5 Nos.		WJ 5M		

#### Observations:

- a) Every joint on OFC as well 6Quad cable should be supervised by SSE/JE (Open line) along with SSE/JE (Con). Cable joint location on the plan should have the names of SSE/JEs who have supervised the same.
- b) Every joint to be video-graphed.
- c) Register should be maintained for recording of supervision of joints done by concerned person.
- d) Earth testing shall be done jointly with the open line before connecting two earths.

#### 5. Additional precautions:

Peripheral Earth is provided at all Els. For this number of maintenance free earths are required to be made and need to be connected in parallel. There is no record of joint testing of individual earth. Open line and construction organization should jointly test and issue certificate with all parameters after construction of each earth and before connecting in parallel so that quality of each earth is ensured. This is applicable to all works being done by open line, project & construction unit.

(S. K. Solanki)  
Chief Signal Engineer  
South East Central Railway

No. SECR/S&T/CSE Insp/BS6

Date : 24.09.2019

C/- All SrDSTEs and field officers of Cons/proj. for information and n/a pl.

## Summer and Monsoon Precautions for Signalling Systems

### 1. FIRE SAFETY:

(a) The availability of Fire extinguishers in prescribed size and numbers, removal of bushes/ waste from around porta cabins particularly for signalling equipments and DG sets, general clean up and removal of lube oil/ fuel oil from DG set enclosures, maintenance of standby DG sets and switchgear.

(b) Counseling of station masters regarding action to be taken in case of fire detection system alarms and awareness of other staff available at station to operate fire fighting equipments in case of exigencies.

### 2. TRACK CIRCUITS:

(a) Provision and cleaning of drainage system in yards to avoid water accumulation in points and track circuited area. Temporary drains need to be provided wherever required. Cross and longitudinal drains are to be made effective and are cleaned regularly during Monsoon and Rainy Season.

(b) Joint inspection of major yards prone to water logging by a team consisting of ADEN, ADSTE, AOM, ADEE and ADMO be carried out and action to be taken to improve the drainage before onset of monsoon. The concerned department shall take necessary action to ensure proper drainage.

(c) Joint inspection by SSE/P-Way & SSE/Sig to ensure:

- i. Cleaning of ballast and ensuring at least 50 mm clearance of ballast from bottom of rail to avoid leakage of track circuit currents.
- ii. Provision of 100% insulated GFN liners and rubber pads in track circuited areas with PSC sleepers.
- iii. Replacement of worn out wooden sleepers, if any, and proper packing of ballast/ sleepers below insulated joints.
- iv. Removal of vegetation, mud and muck from track circuited portion of the track as well as on either side of tracks and in vicinity.
- v. All insulated nylon pieces of insulated joints, Insulation of stretcher bars & Point rodding are to be intact and replace those in bad condition.
- vi. Defective /worn out glued joints are to be replaced before onset of monsoon.
- vii. Provision of 'J' clips at all insulated joints on PSC sleepers.

(d) Track lead Junction Boxes in flood prone areas are raised without infringing SOD, so that water does not enter into them.

(e) Adjustment of track circuit parameters to keep track relay pick up voltage within safe working limits.

(f) Proper working of track feed charger failure alarm wherever provided.

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11/11/2024

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- (g) Provision of self-restoring type PPTC fuses at all lightning prone stations.
- (h) Track circuit /AFTC parameter adjustment is a dynamic process during rainy season i.e. it is not a onetime exercise. It is to be done with utmost care and should be done as per need and at-least just before start of monsoon and immediately after first shower.
- (i) Proper tuning and adjustment of the parameters of AFTCs within permissible limit, where existing.
- (j) Checking of all traction bonds in track circuited areas of track and attending deficiencies through Electrical Traction Department.
- (k) Checking and ensuring proper Earthing for axle counter field equipments & Evaluator.
- (l) Checking & ensuring of all connection like rods, transverse bonds, feeds of adjacent track circuits etc. do not touch the bottom of the rail.
- (m) Timely replacement of old rusted track lead bond wires and defective Jumper cables.

### **3. POINTS:**

- (a) Joint inspections of points & crossing with Engineering (R. Way) staff and immediate compliance of deficiencies noted during inspections.
- (b) Adjustment of point's rodding, adjustable crank and compensators for rod operated points and lock bar.
- (c) Testing of all emergency crossovers for their efficient working.
- (d) Insulation of point machines to be checked. All point motors carbon brush covers shall be sealed with silicon sealant after proper cleaning of commutators. Gear oil shall be filled in gear box and top cover sealed. Proper lacing and wiring, and greasing of the point machines should be completed. Crank handle contacts should be cleaned. Availability of Gasket and Carbon at point machine to be ensured.
- (e) At identified water logged and flood prone areas, use of IP67 point motors/ machines be preferably provided, else water proofing of point motors shall be done for the points situated in low lying areas.
- (f) Lifting of point machines wherever required at identified water logged area.
- (g) Cable entries to be checked to ensure that the cable is in a healthy condition physically besides meggering and ELD monitoring. All the terminals to be cleaned to avoid deposition of moisture on the accumulated dust, to avoid low insulation.
- (h) Drills to be conducted for removal, replacing of point motors, detection contact assembly and clamping of points.
- (i) Spare point motors and contact assemblies shall be kept at stations.

### **4. SIGNALS:**

- (a) All signal units shall be examined to check the possibility of water seepage/ leakage inside the Signal Units. Signal units have to be sealed with proper gasket to prevent seepage of moisture /water. All signal unit lamps should be completely sealed including any holes to prevent moisture ingress.

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(b) CRUs of the LED Signal are to be applied with moisture super sealants coating, readily available in market to minimize their failures.

(c) Additionally, a plastic cover wherever required shall be provided on the back of Signal units, in case, leakage /seepage persists. After the first showers, the signal units have to be re-examined and appropriate action to be taken to avoid water seepage/ leakage.

(d) Any mechanical discrepancies/ damages in the signal units should be attended to ensure that the unit cover fits properly on the body and the locking arrangement is proper and watertight.

(e) Strengthening of foundations of signal posts/location boxes should be done wherever required.

#### **5. RELAY ROOMS, CABINS AND EQUIPMENT ROOMS:**

(a) Based on history of previous years, joint inspection by sectional ADEN and ADSTH should be carried out to identify cabins/Relay room and equipment rooms prone to rain water leakage/ seepage and corrective steps be taken on a war footing.

(b) Damaged/ broken windowpanes and doors etc. should be repaired to prevent water getting into relay rooms/cabins/equipment rooms, which may cause serious damage to the systems.

(c) Ventilations should be cleaned. Aluminum stainless steel wire mesh be replaced wherever required. Broken glasses and structures should be repaired.

(d) Visual inspection of relay wiring to ensure proper locking of connector clips.

(e) Cleaning of relay room to make it dust free.

(f) Treatment of service buildings to avoid seepage of water in equipment rooms.

(g) Roof over the relay room/battery room /panel room is cleaned to prevent accumulation of water on the roof. Drainpipes are available and cleaned.

(h) Battery rooms, cabin basement etc. are checked and repairs, if required, to be carried out. Entry of water at cabin basement should be prevented.

#### **6. POWER SUPPLY ARRANGEMENT:**

(a) Working of all stand-by Power Supply arrangements shall be ensured.

(b) Working of Auto change-over for Power supplies at Stations, End Goomties, IBS & Auto sections have to be checked and ensured.

(c) To ensure the availability of power supply to Signalling System, Diesel Generators wherever provided be checked and should be made functional and kept in good fettle. Adequate quantity of Diesel, Mobil Oil, etc. should be stocked at the stations provided with DG sets. DG sets, general clean up and removal of lube oil/ fuel oil from DG set enclosures, maintenance of standby DG sets and switchgear. Essential spares of DG sets switches shall be made available. Diesel Generators shall be covered under AMC/ Overhauling should be carried out wherever warranted/ required.

(d) Secondary cells working beyond codal life have to be identified and replaced on priority. All battery terminals are to be inspected regularly, to be free from sulphation.

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(e) All IPSs must be checked at SE/SSE's level for running the IPS on backup battery at least for 2 hours, checking the auto change over functions, the functioning of the DC-DC converters, the status of the CVT and inverters, class-B protection against power surge etc. Earthing and all relevant values checked, rectified and to be recorded by SE/SSE concerned. Annual Maintenance Contract for IPS shall be kept in force.

(f) Availability and intactness of Class-B & C Surge Protection devices which are wired in a separate wall mountable box shall be checked for their indications, if available.

(g) All defective modules of IPS should be repaired and kept ready as spare.

(h) Fuses, terminals and all connections, especially those carrying heavy current have to be checked to find out if they are generating any heat and, if so, they have to be attended. As far as possible, they should be kept in moisture proof housing and exposed/ naked wires, connectors, etc. should be avoided.

(i) Earth leakage on existing power supplies should be removed by isolating the faults and replacing the conductors. ELD indications shall be linked with data logger and data obtained should be studied to isolate and remove the faults quickly.

(j) Wherever Signalling installation at station/mid-section are working only on solar panels, arrangement for back up of Diesel Generator sets to be made available for charging of Battery.

(k) Monitoring of battery chargers through RTU/ SMs to be provided at stations where no S&T staffs is available (IBS).

(l) Ensure the provision of spare battery chargers of different capacity at strategic locations.

#### **7. S&T CABLES:**

(a) Testing of main, tail and power cables should be completed and low insulation conductors to be transferred on healthy conductor in time.

(b) Earth Leakage Detectors, where provided, have to be tested for their working for monitoring for any low insulation of conductors. ELD data to be linked with Data Loggers for effective monitoring.

(c) All defective tail cables to be replaced before monsoon. All tail cables at entry of Junction boxes, Location boxes, Signal posts are checked for breakage of insulation. All the earth faults should be removed.

(d) Minimum 5% healthy spare conductors are to be made available in each location / Goomty / relay room. These identified spare conductors have to be kept labeled /marked so that restoration time for attending signal failure on account of defective cables can be minimized.

(e) All spare conductors must be tested. Spare cable details shall also be recorded in cable core plan and insulation measurement register.

(f) All the Supervisors shall familiarize themselves with the position of spare conductors in their respective sections. JPO should be strictly followed while doing earth work in the station yards.

(g) Protective works provided for the cables at places like track crossings, culverts, bridges, etc shall be inspected prior to onset of monsoon and special attention has to be paid to these

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protective works soon after the first shower

(h) Drills have to be conducted for all Maintainers and Supervisors in the Section for transferring functions to spare conductors in case working conductors become defective.

(i) Proper earthing of the armour of all cables and continuity of cable armour to be ensured.

(j) Spare S&T cables of various core sizes are kept at identified stations. One dedicated 12C/19C/24C signalling cable from relay room to either side shall be kept tested and tagged for easy identification for use in emergency.

(k) Quad cable meant for Block should be tested for their insulation resistance, cross talk, loop resistance and db losses. Parameters should be brought within acceptable limits. Position of cable joints should be known accurately and joints repaired if required before onset of rains.

(l) Gain of OFC channels used for BPAC/ UFSBI should be adjusted within permissible limits.

(m) At locations where HT cables are crossing the track, it may be ensured that special precautions are in place to prevent any accidental leakage of current from these should not damage S&T cables.

#### **8. LOCATION BOXES:**

(a) It should be ensured that doors of all location boxes are closed properly and there are no extra vents, which may allow entry of water or insects/rodents inside the location boxes.

(b) Damaged/ corroded portions of location boxes should be repaired / replaced. There should not be any space between the base of the location box and its foundation. Any such space, if existing, should be filled up by mortar.

(c) Location boxes on the banks should be kept vertical by providing strong foundation. Location boxes which are likely to tilt should be attended so as to prevent tilting. Suitable measures shall be taken to prevent ingress of water in location boxes and junction boxes.

(d) Any location box lying in low level and likely to flooded should be raised/shifted and protected appropriately.

(e) Suitable measures to be taken to prevent ingress of water in location boxes and junction boxes by application of gasket/monopolist/M-seal/tapes etc.

(f) All the terminals in the location boxes and junction boxes are to be cleaned to avoid low insulation due to moisture deposition on the accumulated dust.

(g) PPTC fuses of specific capacity to be provided for all external fuses in location boxes etc.

(h) Telephones in location boxes, if provided, to be tested for proper functioning.

#### **9. EARTHING & LIGHTNING PROTECTION DEVICES:**

(a) Proper Earthing and Lightning Protections are provided as per extant instructions on all the equipments like Block Instruments, IPS, Axle Counters (UAC/DAC/MSDAC), EI etc. It should be ensured that all these devices are in proper working order. Defective devices should be identified and replaced.

*Signature*  
11/3/2024

(b) Earth resistance value of all earthing arrangement should be measured and ensured that it is within permissible limits by adopting necessary measures. Provision of additional Earths or overhauling of Earths may be undertaken wherever warranted.

(c) Earth connection at the Earth bar/location body/equipment side and at the Earthing rod/pipe must be thoroughly cleaned to provide proper connectivity. Rusted bond wires/cables used for Earthing should be replaced.

(d) Provision of 'A' class protection at service building housing EI/IPS/MSDAC and other electronic equipments.

(e) Provision and intactness of Earth resistance of lightening protection devices at each identified place such as IPS, EI, AFTC, Axle Counters etc.

#### **10. OPERATING CUM INDICATION PANEL:**

(a) 40/60 conductor indoor cable between panel and relay room shall be checked for proper working. Sufficient spare cores shall be ensured.

(b) ASMs room shall be attended to prevent water falling on the Operating – Cum Indication panel.

(c) Working of 'Calling On' signals have to be ensured.

(d) Joint Drill has to be conducted with Operating for Emergency operation of Point through Panel, extraction of Emergency Crank Handles and cranking of point machines.

(e) Testing of furthest points & crossings and emergency crossovers to be done for proper working.

(f) All Panel Indications shall be checked and defective bulbs or LEDs have to be replaced.

(g) Spare items viz., all type of Panel buttons, ECRs, Relays, Timers, Condensers, Resistors, Fuses, track feed chargers have to be made available at each station during monsoon. One pair of spare Transmitter and Receiver of each frequency shall be made available for section where Daido types TLBIs exist.

#### **11. LEVEL CROSSING GATE:**

(a) Defective wire insulators, rusted wire ropes and rod insulator are to be replaced.

(b) Pipes through which rods or wires run should be cleared regularly.

(c) Gate telephones shall be tested and telephone battery shall be replaced if required.

(d) Area on either side of road & across the gate tracks to be specifically inspected to ensure that no water is getting accumulated.

(e) Sliding booms, wherever provided, shall be kept in working order.

(f) Sufficient spares of ELB (Boom, Belt, limit switch, fuses) should be kept ready.

(g) It should be checked jointly with Electrical Traction branch that there is no possibility of boom getting entangle with OHE in case of storm /high pressure winds.

#### **12. ELECTRONIC INTERLOCKING:**

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11/5/2024

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- (a) Earthing arrangement as well as Surge and Lightning Protection measures should be checked and to be available as stipulated.
- (b) Both Main as well as Standby systems, DC-DC converters, CCIPP and VDU or both the VDUs (as the case may be) should be tested to be in working order. Record of testing should be maintained in a register.
- (c) Spare cards of EI and spare DC-DC converters etc. Should be kept at all critical locations.
- (d) In areas highly vulnerable to lightning, safeguards as per local Railway's practice as decided by PCSTE of the Railway be kept in place to ensure trouble free working of EI during Monsoon.
- (e) Back up panel/Fall Back panel should be kept ready for restoring the degraded working.
- (f) Emergency panel wherever provided should be kept ready for resuming in event of emergency and these panels have to be located by every SSEs/Headquarters.
- (g) Requisite precautions shall be taken for EI as per OEM's instructions and RDSO guidelines. Addresses and Mobile /Land Line Telephone numbers of all concerned S&T staff officers shall be kept with in-charge Signal Supervisors and Signal Fault Controller/Test Room.

### **13. GENERAL:**

- (a) Sensitive Signalling Equipment like TPWS, SSDAC, MSDAC, EI, IPS, Data Logger, UFSBI, AFTC etc shall be got checked and audited with OEMs and maintenance check list of the equipment shall be complied with.
- (b) All spare cards of TPWS, EIs, AFTCs and Digital Axle Counters etc. should be checked by putting them in working circuits and thereafter properly stacked.
- (c) Where overhead lines are in use for slot, block circuits and control circuits, strengthening of posts, checking and replacing broken jumpers, insulators, etc. cutting of vegetation, removal of sag in line wires, etc. be got attended.
- (d) Sufficient quantity of spares like fuses, AFTC cards/Tuning units, AWS track magnet/Opto-Coupler card, Relays, Relay groups, Point machines including its parts, various types of Signalling cables, should be stocked at vulnerable stations so as to minimize the restoration time.
- (e) Emergency lights, torches and petromax should be checked and kept in readiness with adequate quantity of torch cells/ kerosene oil, etc.
- (f) All the measuring instruments like cable testers, cable route locators, Insulation tester, earth resistance Tester, and Multimeters available with Technician/JE/SSE must be checked for their proper functioning.
- (g) Transport facilities (with vehicle and driver) should be made available round the clock at critical locations during monsoon to move the staff at the earliest during emergency.
- (h) Night failure gangs may be formed by pooling resources and stationed at critical locations for attending defects of Signalling system due to heavy rain, etc. in shortest possible time. Their contact nos. shall be displayed in BOLD in Test Rooms.

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11/3/2024

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- (i) On Suburban sections where AWS is provided, all AWS track magnets along with Opto-Coupler covers shall be sealed with silicon sealant and covered with plastic sheet. At TPWS/ ETCS/TCAS locations Balises/ RFIDs are also protected against any entry of moisture.
- (j) All the terminals in location and junction boxes should be cleaned to avoid low insulation due to moisture deposition on the accumulated dust.
- (k) Ensure the provision of fire alarm/fire extinguisher systems proscribed size and numbers & their proper functioning. Locations where Fire alarm/Smoke Detectors are already provided, testing of the same should be verified.
- (l) Earth Leakage Detectors, where provided, have to be tested for their working for monitoring for any low insulation of conductors. The data of ELD to be linked to Data Loggers for effective monitoring.
- (m) To ensure the removal of bushes/ waste from around Relay Room /EI Room, Cabins, Porta Cabins particularly for signalling equipments to avoid the fire in case.
- (n) Provision of Self restoring type PPTC fuses at all lightning prone stations should be ensured.
- (o) Usage of Ant-Powder, Rat-cake etc. to be explored in vulnerable boxes /cabins/ rooms/ signals etc. where such issues have been experienced in the past.
- (p) Regular watch to be made in the vulnerable areas like Bridges, Ponds etc where Signalling equipments are likely to be affected.
- (q) Provision of pumping sets of sufficient capacity to be done at vulnerable locations of water logging at identified locations where water logging was noticed during previous monsoon.
- (r) After inspections, compliance from each sectional JE/SSE shall be obtained by the officer in charge. Sr. DSTE's shall send consolidated compliance of the Divisions to Head Quarter. Sr. DSTE's of Divisions, CSE and other Headquarters officers shall conduct surprise checks to confirm compliance of above instructions.

#### **14. MONSOON DRILL:**

- (a) Drills to be conducted for all ESMs, JEs & SSEs in removal, replacing of point motors, detection assembly and clamping of points during flooding of tracks and it is to be recommended in register.
- (b) Drills to be conducted for all ESMs, JEs & SSEs in case working conductors become defective and it is to be recommended in register.

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*[Signature]*  
11/6/2024

No.2020/Sig/31/Misc/24/Precautions

New Delhi, Date: 11.10.2024

S&T precautions to be taken for ensuring smooth train operation during Winter session and foggy weather:-

**1. Modified Auto Signalling:**

- a. The working of Modified Automatic Signaling system should be jointly tested with operating department. The working of 'A' Marker Light & Signal post telephones should be especially checked. The Modified Semi-Automatic Signals and track circuits in automatic territory on Railways should be maintained to the highest standard by way of preventive maintenance so as to ensure 'zero' failure.
- b. Dedicated maintenance teams should be organized section-wise, who would be provided with all the maintenance materials/tools. Directed repair/maintenance should be carried out with immediate effect under supervision of JE/SSE.

**2. Power Supply in order to prevent Signal 'No light' cases:**

- a. Reliable and uninterrupted power supply for Signaling equipments should be ensured by proper maintenance of IPS and power supply sources such as AT & DG sets.
- b. Audit of ratings of all switching equipments like electrical joints, MCB, auto changeovers etc. should be done and Visual inspection to check that they are not burnt/getting heated should be ensured. The connection should be checked and tightened, especially where high currents are involved.
- c. DG sets provided should be tested and adequate fuel/diesel should be made available to ensure meeting with long power failure conditions.
- d. No Electric heaters should be connected to Signalling supply.

**3. Visibility of Signals:**

- a. Luminous paints/strips should be checked for their effectiveness on Signal Sighting Boards viz. Passenger and Goods warning boards.
- b. Highlighter grade luminous strips should be provided on Distant Signal to enhance visibility of Signal aspects to loco pilots.
- c. Hoods and side plates of the Signal units should be checked and attended on priority to ensure proper Signal visibility to the drivers.

**4. Axle Counter:**

- a. Proper adjustment of channel voltage and physical verification of deflector and tightness of the fittings.
- b. Availability of spares cards etc.
- c. Working of systems in standalone mode wherever redundancy is provided in media and systems.

- d. Checking of manual as well as auto resetting features in case of dual detection arrangement.
- e. In case of dual detection, both systems should be monitored separately through Data Loggers alongwith generation of exception reports about mismatch.

**5. Electronic Interlocking:**

- a. Working of System A & B in standalone mode.
- b. Availability of the spares.

**6. LC Gates:**

- a. Yellow luminous strips should be ensured on interlocked L.C. gate booms for proper visibility.
- b. Alternative yellow and black painting of LC gate booms should be ensured.
- c. Wire run of Mechanical LC gates should be readjusted.
- d. Provision of stop board with retro-reflective/tape on sliding boom should also be ensured.

**7. Track Circuits:**

- a. RDSO type block insulation joints should be maintained and presence of free rail joints should be ensured on both the ends.
- b. All types of track bondings should be checked and replaced wherever necessary.
- c. Condition of insulation sleeve on OHE bond beneath rails to be ensured.

**8. Points:**

All point adjustments should be done properly, proper anti-creep arrangement as prescribed in IRPWM should be ensured.

**9. Maintenance:**

- a. Inspection at officer's level and supervisory level, including night inspections, should be intensified during foggy weather for spreading more awareness and alertness among the maintenance staff.
- b. Signal Maintainers/Supervisors proceeding to attend Signal failures, should be allowed to board trains on priority in both directions viz. Attending failure and returning to their Head Quarter.
- c. All equipment like chargers, stabilizers, inverters should be properly sealed to prevent entry of pests like rats and mice.
- d. Luminous jackets/ Protective clothing, torch Light etc. to be ensured for S&T staff moving on line for the safety of staff.
- e. Functioning of door closing with datalogger.
- f. Staff should be counselled for ensuring their own safety and to follow safe working practices.

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दक्षिण पूर्व मध्य रेलवे  
SOUTH EAST CENTRAL RAILWAY



कार्यालय

प्रधान मुख्य संकेत एवं दूरसंचार इंजीनियर

द्वितीय तल

दफ्तरी जंगल, मुख्यमंत्रालय बिल्डिंग

बिलासपुर-495004

Office of the

Principal Chief Signal & Telecom  
Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752) 269019

Fax : (07752) 415274

No SECR/S&T/Drg/1073

Date: 15.10.2018

मुख्य संकेत एवं दूरसंचार इंजीनियर (निर्माण)

मुख्य संकेत एवं दूरसंचार इंजीनियर (परियोजना)

वरिष्ठ मंडल संकेत एवं दूरसंचार इंजी.(सामन्वय)/बिलासपुर,

वरिष्ठ मंडल संकेत एवं दूरसंचार इंजी./रायपुर एवं नागपुर,

दक्षिण पूर्व मध्य रेलवे।

**Sub:** Tentative typical cable core plan for automatic signaling (Case Study-VI).

CSE has advised that in an automatic signaling section, Quad cable should be employed for picking up QNAIK relays between two goomties instead of signaling cable due to their long distance transmitting capacity. No cutting in will be required in intermediate location boxes if Quad cables are used in place of Signaling cables for such circuits up to 14kms. This is a clear advantage over the existing scheme.

Normally no signaling cable should be laid for Home/Starter/Adv Starter, if at least 20% spare cores can be generated in the existing cables by adopting high reliability signals with cascading circuit in Relay Room only.

A new typical scheme for cable corage has been prepared for auto signaling (enclosed as Annexure-1). SIP of BRD - KOKA auto section may be referred along with the new cable laying scheme for better understanding.

The typical cable corage plan for signal lighting circuit is enclosed as Annexure - 2.

This scheme may be uniformly implemented in all future auto signaling works. The comments if any may be submitted to this office for issue of approved typical.

Encl: As above.

Sd/-

(चेमस साहू)

मंडल संकेत एवं दूरसंचार इंजीनियर (सा.)

शुभे प्र. मुख्य सिगनल एवं दूरसंचार इंजीनियर

Cables which are not required to be dropped in intermediate locations:-

1. 6 Quad Cable-1 (for RTU and modem of MSDAC)

P1	-	MODEM UP
'A'		
P2	-	MODEM DN
'A'		
P3	-	SPARE
P4	-	SPARE
P5	-	SPARE
P6	-	SPARE
P7	-	RTU
P8	-	RTU
P9	-	SPARE
P10	-	SPARE
P11	-	SPARE
P12	-	SPARE

Design improvements over the existing system:

- (i) Communication between MSDAC 'A' systems at both the stations is done through 6 Quad cables while for 'B' systems OFC should be used.
- (ii) Spare cores of this cable should be used for carrying other circuits (of cable 2 & 3 only) in case of exigencies.
- (iii) To be terminated at each auto goomty on 8 way strip/ARA with provision of cover to prevent unnecessary interference. No CT box to be used anywhere.
- (iv) Cable to be provided with TSF joint in location with spare ARA terminals for exigencies in through JB's.
- (v) In event of non-availability of 6Q cable for cable 2 & 3, 24 core cable with repeater, wherever required, can be employed.



2. 6 Quad cables for carrying signaling circuits from one cabin to another

a) From BRD to Auto Signal Goomty at km 1066/11-13:-

6 Quad Cable 2:

BRD R/Room	Relay hut at 1066/11-13
P1 - → A59TPR	→
P2 - → A60TPR	→
P3 - → A61TPR	→
P4 - → A63TPR	→
P5 - → 1ECPR (A)*	→
P6 - → 1HBPR(A)*	→
P7 - ← A60ECPR(A)*	←
P8 - ← A60HBPR(A)*	←
P9 - → 1OFFECPR	→
P10 - → 1UECBPR	→
P11 - ← A60HHDECPR	←
P12 - SPARE	

6 Quad Cable 3:

BRD R/Room	Relay hut at 1066/11-13
P1 - → B59TPR	→
P2 - → B60TPR	→
P3 - → B61TPR	→
P4 - → B63TPR	→
P5 - → 1ECPR (B)*	→
P6 - → 1HBPR(B)*	→
P7 - ← A60ECPR(B)*	←
P8 - ← A60HBPR(B)*	←
P9 - → 1HHDECPR	→
P10 - → A60OFFECPR	→
P11 - SPARE	
P12 - SPARE	

\* ECPRs & HBPRs are transmitted in parallel through both cables providing different contacts of these relays. These cores can be used as spare cores for other circuits in case of exigencies.

→ From BRD R/Room to Relay hut at 1066/11-13

← From Relay hut at 1066/11-13 to BRD R/Room

→ Or ← Without providing cutting-in relay in corresponding goomty if quad cable is used

Design improvement over the existing system:-

(i) If cable 2 goes haywire,

- DG of 59 is possible through 1HHDECPR & B59TPR.
- HHG of 28 is possible through A60OFFECPR.
- 60, 61 and 63 are possible through B60TPR, B61TPR and B63TPR respectively.
- HG of 59 is possible through 1ECPR(B), 1HBPR(B) & B59TPR.
- HG of 28 is possible through A60ECPR(B) and A60HBPR(B).

(ii) Similarly, if cable 3 goes haywire,

- HHG of 59 is possible through 1OFFECPR & A59TPR.
- DG of 28 is possible through A60HHDECPR.
- 60, 61 and 63 are possible through A60TPR, A61TPR and A63TPR respectively.
- DG of 61 is possible through 1 OFFECPR, 1UECBPR and A61TPR.
- HG of 59 is possible through 1ECPR(A), 1HBPR(A) and A59TPR.
- HG of 28 is possible through A60ECPR(A) & A60HBPR(A).

**6 Quad Cables for DPs of MSDAC (required to be dropped in intermediate locations):**

**a) 6 Quad Cables from BRD**

**6 Quad Cable 4 (for UP line):**

P1	-	BRD UA21
P2	-	BRD UA22
P3	-	BRD UA23
P4	-	BRD UA24
P5	-	SPARE
P6	-	SPARE
P7	-	BRD UB21*
P8	-	BRD UB22*
P9	-	BRD UB23*
P10	-	BRD UB24*
P11	-	SPARE
P12	-	SPARE

**6 Quad Cable 5 (for DN line):**

P1	-	BRD DA11
P2	-	BRD DA12
P3	-	BRD DA13
P4	-	BRD DA14
P5	-	SPARE
P6	-	SPARE
P7	-	BRD DB11*
P8	-	BRD DB12*
P9	-	BRD DB13*
P10	-	BRD DB14*
P11	-	SPARE
P12	-	SPARE

**6 Quad Cable 6 (upto UA31 & UB31):**

P1	-	BRD UA31
P2	-	BRD UA32
P3	-	BRD UA33**
P4	-	SPARE
P5	-	SPARE
P6	-	SPARE
P7	-	BRD UB31*
P8	-	BRD UB32*
P9	-	BRD UB33**
P10	-	SPARE
P11	-	SPARE
P12	-	SPARE

**b) 6 Quad Cables from KOKA**

**6 Quad Cable 4' (for UP line):**

P1	-	K UA11
P2	-	K UA12
P3	-	K UA13
P4	-	K UA14
P5	-	SPARE
P6	-	SPARE
P7	-	K UB11*
P8	-	K UB12*
P9	-	K UB13*
P10	-	K UB14*
P11	-	SPARE
P12	-	SPARE

**6 Quad Cable 5' (for DN line):**

P1	-	K DA21
P2	-	K DA22
P3	-	K DA23
P4	-	K DA24
P5	-	SPARE
P6	-	SPARE
P7	-	K DB21*
P8	-	K DB22*
P9	-	K DB23*
P10	-	K DB24*
P11	-	SPARE
P12	-	SPARE

**6 Quad Cable 6' (upto DA31 & DB31):**

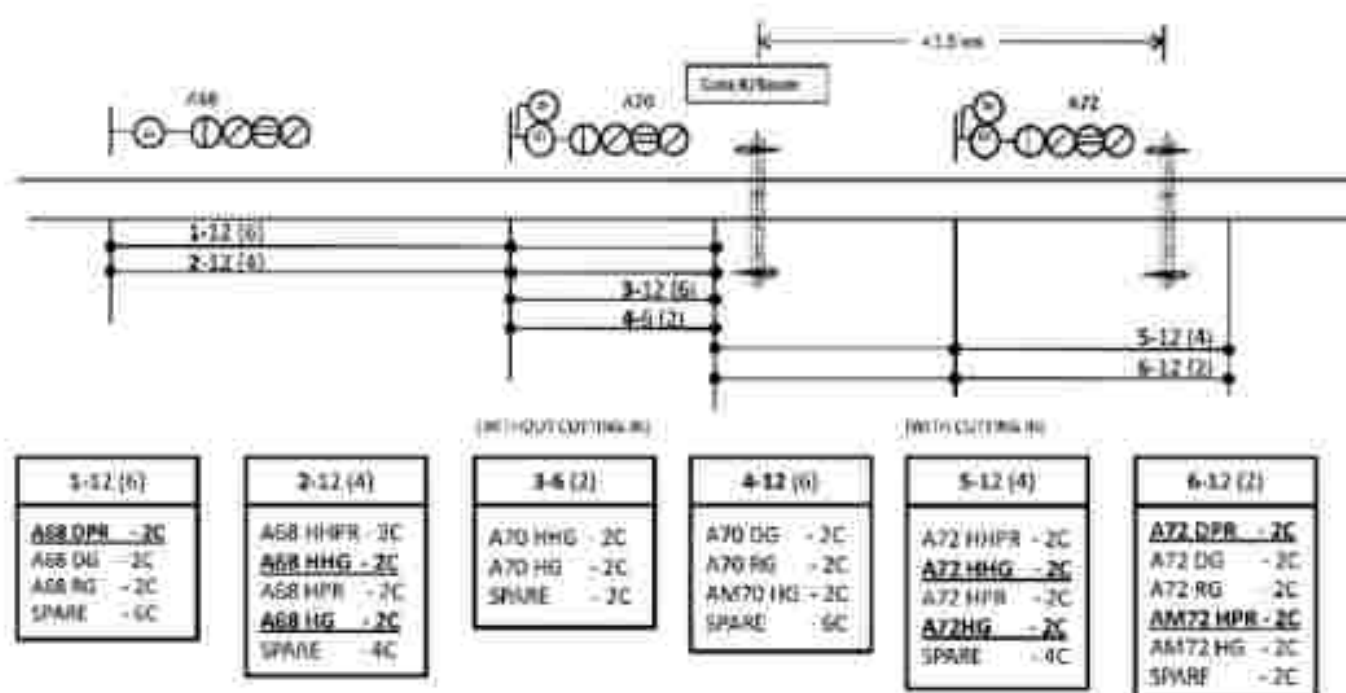
P1	-	K DA31
P2	-	K DA32
P3	-	K DA33**
P4	-	SPARE
P5	-	SPARE
P6	-	SPARE
P7	-	K DB31*
P8	-	K DB32*
P9	-	K DB33**
P10	-	SPARE
P11	-	SPARE
P12	-	SPARE

\*these cores can be used as spare cores for other circuits in case of exigencies.

**NOTE:**

- Cables for DPs of MSDAC should be directly terminated in the location box of corresponding DPs.
- No patch cables are allowed from one DP to another DP.
- \*\*DPs are provided at the foot of the home signal for deriving 180m Home track section as a standby to track circuits 1T & 1T1. For this purpose, small patch of 6 Quad cables may be laid in between station to the location of UA33/UB33 or DA33/DB33 (Cables 6 & 6' – Normally not required for small section if 2 pairs are available as spare in cables 4, 5, 4', & 5' each).

# CABLE CORE DISTRIBUTION FOR LIGHTING OF AUTO SIGNALS



## Note:-

- 1) Length of cable for 12 Core cable drum should not be less than 1150 m.
- 2) Relay Room for two gates within vicinity of 1-1.5 km can be combined.
- 3) Normally axle counters to be housed at station relay room.
- 4) LC 72 to LC 70 is analogous to what a traffic gate is to full fledged relay room at station.

No. CSO/Safety/Safety Circular/163/573  
06.08.2018

Date:

**Zonal Safety Circular No. 05/2018**

**Sub: Precautions at NI sites.**

One case of collision of two goods train has occurred at RIG in BSP division during NI working on 30.06.2018. During accident inquiry of the case, many irregularities were found. To avert the accident at NI site in future, following points should be strictly followed.

1. Two or more free Home signals leading to same lines to be strictly avoided.
2. If at all such conflicting signals are to be given, they should be given through three position switch. One of the positions should take 'OFF' one signal, the mid position should put back both signals and the third position should clear the second signal.
3. Uniformity to be maintained either all free signals should have automatic put back feature or none should have. Free signals should be demanded to the barest minimum possible so as to avoid collision or avoid any confusion in operations.
4. Block Instrument should be essential feature of block working during NI.
5. Section controller should not be allowed to interfere in NI working during unusual. The officer - in charge only at station should decide after site verification.
6. Temporary Working Instructions (TWI) needs to be prepared with cautious. Normally movement needs to be restricted to one line on each direction. Frequent change of routes to be avoided. TWI to be prepared in consultation with concerned DrDSO & SrDSTE/Co or DyCSTE(Con) in case of construction of new lines.
7. Counseling of LP/ALPs to be done and assurance of having done it to be submitted by SrDEE/OP before NI work is permitted.
8. A checklist to be prepared by SrDOM, SrDSTE/Co & SrDEE/OP to ensure that requisite counseling of LPs/ALPs/SM/Field staff, issue of caution order, provision of 15 kmph board, caution order for newly erected signals to be ensured.
9. The Temporary Working Instructions (TWI) should be made available by the issuing authority at least 7 days from the date of commencement of the NI so that adequate time is available for counseling all the concerned staff of different department.
10. The Executing Agency should ensure that adequate arrangement are made for field staff regarding drinking water, food and such logistic support as may be required for the field staff for continuous working at NI site.

11. PA system should be available at the controlling Goomties on both ends in consultations with the site-in-charge of operating department, so that the staff in field can be informed about movement of the trains and also for emergencies.
10. Illumination at the NI site should be adequate at both the ends in point zone. One day before commencement of NL, proper arrangement of light at NI site should be physically checked and irregularities if any should be brought to the notice of the executing agency by concerned officers. If proper facility are not provided, same to be brought to notice of ADRM/DRM before commencement of Block.
11. Proper serving of caution orders of 15 kmph after start of NI working to all trains to be ensured by Operating department.
12. Speed indicator Board of 15 kmph should be placed below the home signal.

Sd/-

(P.V. Barapatre)

Chief Safety Officer

**Circulation to:**

1. PCE, COM, CEE, CSTE & CME/SEC Railway, BSP for information.
2. DRM/BSP, R & NGP for information & necessary action.
3. Sr. DSO/BSP, R & NGP for information & necessary action.
4. Principal, ETC/BSP, DETS/DGC, ELTC/USL and MDTC/BSP for information and counseling to staff.





दक्षिण पूर्व मध्य रेलवे  
SOUTH EAST CENTRAL RAILWAY



कार्यालय  
प्रधानमुख्य संकेत एवं दूरसंचार इंजीनियर  
द्वितीय तल  
दमपुर जंक्शन मुख्यमार्ग चिट्ठिडंग  
बिलासपुर-495004

Office of the  
Principal Chief Signal & Telecom Engineer  
2nd Floor, SECR Zonal Hq Building  
Bilaspur-495004  
☎ : (07752) 268059  
Fax : (07752) 268219

No.: SECR/S&T/Annual Insp./1049

Date: 06.12.2022.

SrDSTE/Co/BSP,  
SrDSTE/Line/BSP,  
SrDSTE/R,  
SrDSTE/NAG,  
South East Central Railway.

**Sub: Format for reporting Annual Inspections by Field  
ADSTE/DSTE.**

**Ref: PCSTE/SECR's note no. SECR/S&T/PCSTE  
Insp./511 dtd. 20.07.2011**

As advised by PCSTE/SECR, ADSTEs/DSTEs of Divisions are required to report on progress of their annual inspection of Signalling & Telecom gears/assets in their jurisdictions as per sample format enclosed at Annexure-I which is indicative. Updated reports are to be submitted to HQ duly forwarded by SrDSTE whenever required.

You are advised to ensure compliance of above instructions within a week for effective & comprehensive monitoring of Annual Inspections by field officers.

*Harish Kumar Sahu*  
106/12/2022  
(Harish Kumar Sahu)  
DyCSTE/Sig/HQ  
/PCSTE/SECR

**Format for reporting Annual Inspections by Field officers.**

**Name of the Officer- A. K. Singh, ADSTE/R**

**Division- Raipur**

<b>SL no.</b>	<b>Stations/locations (Data should cover whole jurisdiction)</b>	<b>Last date(s) of Annual Inspection</b>	<b>Due date of next Annual inspection.</b>
1.	DPH		
2.	LC 369		
3.	CHBT AUTO GOOMTY		
4.	LC 372 & AUTO GOOMTY		
5.	BYL		
6.	LC 373		
7.	BYL-DGS IBH		
8.	LC 375		
9.	DGS		
10.	LC 376		
11.	DGS-NPI IBH		
12.	LC 378		
13.	NPI		
14.	LC 380		
15.	NPI-BYT IBH		
16.	BYT EAST		
17.	BYT WEST		
18.	LC 385		
19.	LC 386		
20.	LC 387		
21.	BYT-HN IBH		
22.	HN E/O		
23.	LC 390		
24.	HN CENTER		
25.	LC 391		
26.	LC 392		
27.	HN-TLD IBH		
28.	TLD		
29.	LC 398		
30.	BKTH EAST		
31.	BKTH WEST		
32.	LC 401		
33.	LC 403		
34.	BKTH-SLH IBH		
35.	LC 404		
36.	SLH		
37.	LC 405		
38.	SLH-MDH IBH		
39.	LC 407		
40.	LC 408		
41.	MDH		
42.	LC 411		
43.	LC 413		



दक्षिणपूर्व मध्य रेलवे  
SOUTH EAST CENTRAL RAILWAY



कार्यालय

प्रधानमुख्य संकेत एवं दूरसंचार इंजीनियर

द्वितीय तल

दपुर्वमार्गमण्डलमुख्यालय बिल्डिंग

बिलासपुर-495004

Office of the  
Principal Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07752) 268059

Fax : (07752) 268219

No.: SECR/S&T/Completion/As-built/Docs/<sup>297/</sup>758

Date : 14.12.2023

**Sr. DSTE/BSP, R & NGP,  
South East Central Railway.**

**Sub: Inventory of drawing/ documents at stations/goomties/Relay rooms.**

**Ref: Minutes of GM's weekly safety meeting conducted on 07.11.2023.**

Vide minutes of weekly safety review meeting conducted by GM/SECR, the following has been advised for compliance by all concerned with immediate effect.

**"Old version of SWR, GWR, S&T circuit diagrams and any other documents kept at stations, Level crossing Gates and Relay rooms to be removed while handing over new versions. Station wise review should be done"**

In compliance of above instruction, following procedure shall be followed for maintaining inventory of S&T drawings & documents at each station and connected locations after commissioning of new and alteration works:

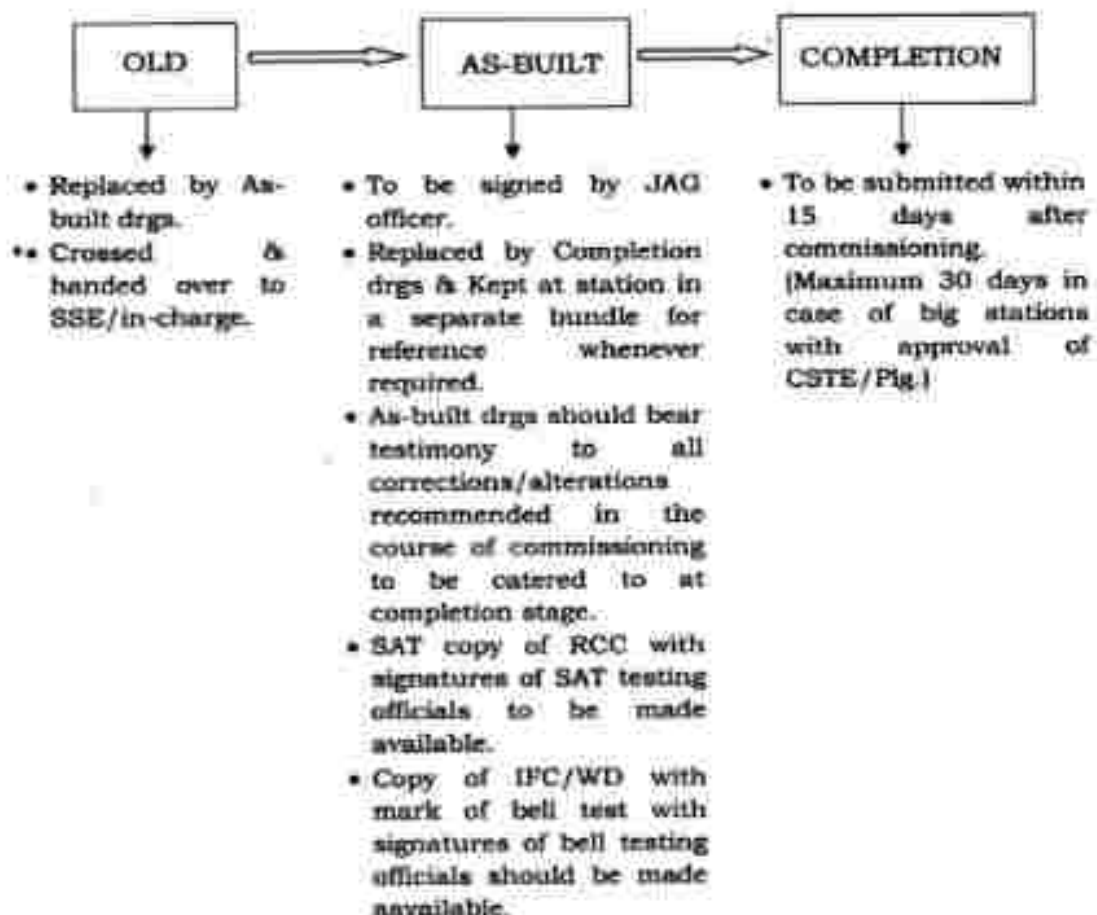
New drawings/documents	Old drawings/documents
a. As built drawings/ documents signed by JA grade officer on each new sheet/alterd sheet (for alteration works) to be made available at station/ LC gates/Relay rooms/ Goomties (as applicable) immediately after commissioning.	a. Corresponding old drawings/ documents at station/LC gates/Relay rooms (as applicable) to be crossed and handed over to SSE/In charge of concerned store depot. for further disposal.
b. As soon as completion drawing / documents are received, all corresponding as-built drawings should be replaced by completion drawing/ documents at corresponding locations.	b. All as-built drawings/documents relevant to a station, after being replaced by completion drawings/documents, should be kept in a separate bundle in SSE/JE's office/ Maintainer's room at the station (for reference by all concerned whenever required).

A history sheet register to be maintained in SrDSTE's office to keep station wise data with dedicated page(s) for each station containing following informations with necessary remarks.


1. Station name.
2. Date of last commissioning.
3. Numbers of locations pertaining to the station (Station/End Goomties /IBS/LC gates/Auto huts etc).

4. Whether as- built drawing/ documents available for every location pertaining to the station.
5. Whether completion drawing/ documents are available for every location pertaining to the station.
6. Whether all old drawing/ documents are removed and replaced by latest version at all location pertaining to the station.
7. Name of the official whom new drawings/documents (As- built or completion as applicable) were handed over.
8. Name of the official who has replaced the old drawings.
9. Date & time of all entries.
10. Action taken on pendency.

**Note:**



The above guidelines are issued for uniform implementation with immediate effect.

  
 (Sheela Tirkey)  
 CSE/SECR

**Copy:**  
 CSTE/Con, CSTE/P-I & II for information and necessary action, please.



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एगमरेजोन्सल मुख्यालय बिल्डिंग  
बिलासपुर-495004

Office of the  
Principal Chief Signal & Telecom Engineer  
2<sup>nd</sup> Floor, SECR Zonal Hq Building  
Bilaspur-495004  
☎ : (07752) 268059  
Fax : (07752) 268219

No.: SECR/S&T/Sidby AXC./wc/911

Date: 04.12.2023.

**Sr.DSTE/Co/BSP, Sr. DSTE/ R & NGP.  
South East Central Railway, Bilaspur.**

**Reg:** Financial propriety in planning on reliability measures for S&T gears.

It is seen that provision of SSDACs/MSDACs as standby or in lieu of DC track circuits at various stations are being proposed citing rusty rails/water logging/mud accumulation being the reason thereof.

Procurement and installation of MSDACs/SSDACs as a reliability measure is best avoided in terms of the expenditure incurred on it unless it is absolutely necessary as a matter of generic design of the signalling system. However, it is seen that proposals are being mooted for providing MSDACs as standby to DC track circuits at stations where it is absolutely not necessary by any consideration to justify the cost of such provisioning. Recent proposal to provide standby MSDACs at MDGR is a case in point to illustrate unjustified expenditure proposals for providing standby MSDACs at a station where a very minimal traffic is dealt with.

Therefore divisions are advised to be extremely judicious in their planning from cost perspective to go for reliability improvement measures and other works.

21  
04/12/23  
(S.K Solanki)  
PCSTE/SECR

Copy to:  
CSE, CSTE/Pig. for information & necessary action, please.





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Bilaspur-495004  
☎ : (07752) 268059  
Fax : (07752) 268219

No.: SECR/S&T/Field Officer's/Handouts/misp/1223

Date: 12/01/2023

**Sr. DSTE (Co)/BSP,  
SrDSTE/Line/BSP,  
Sr. DSTE/R,  
Sr.DSTE/NAG,  
South East Central Railway.**

**Sub: Informations/Handouts with field officers accompanying inspections of senior officers.**

\*\*\*\*\*

As desired by PCSTE/SECR, field officer's of Divisions shall essentially equip themselves with following informations/handouts while accompanying inspections of senior officer's in their jurisdictions for appraisal of inspecting authority.

**A. Informations/handouts with ADSTE/DSTE**

1. Details on their sectional jurisdiction (double line/3<sup>rd</sup> line/auto section/IBs/block working/EI/PI/No. of lines/ routes/ connected sidings/ LC gates/Data logger/RTUs with networking status/Proposed & ongoing works (by con/ proj /div/ PSUs)/Signalling Failures/SIT/Cable meggering status/other misc important informations) mentioned in a format/booklet.
2. Inspection points and Last date/ due date of Annual inspections in updated format.
3. Hard copy of latest annual inspection report & soft copies of previous annual inspection reports.
4. Soft copies of updated miniature SIPs pertaining to the jurisdiction.
5. Staff position.
6. Points & crossing deficiencies in the jurisdiction and compliance status.
7. Compliance of deficiencies noted in previous inspections by CRS/PCSTE/Safety deptt./other senior officers/CMS abnormality, if any, pertaining to the jurisdiction of the officer.
8. Target set for self & up to date achievement thereon.
9. Other informations as may be advised by the inspecting authority.
10. Monthwise Good work done by the officer (ADSTE/DSTE).
11. List of bad stations & action plan.

**B. Handouts with Sr.DSTE**

1. Details on their Divisional jurisdiction (Organisational chart/double line/3<sup>rd</sup> line/auto section/IBs/block working/EI/PI/No. of lines/routes/ sidings/ LC gates/Data logger/RTUs with networking status/Proposed & ongoing works (by con/proj/div/PSUs)/Signalling Failures/Expenditure position/Staff position/ other misc important informations) mentioned in a format/booklet.
2. The handout must include filled up formats for Target by Railway Board, Target by PCSTE, Target by CSE, Target by DRM and Target set for self.
3. Other informations as may be advised by the inspecting authority.

**Note:**

The sectional ADSTEs/DSTE accompanying SrDSTEs must carry with them informations/handouts as mentioned at A.

  
(Sheela Tirkey)  
CSE/SECR



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द्वितीय तल

दफ्तरे जीनाल मुख्यालय बिल्डिंग

बिलासपुर-495004

Office of the  
Pr.Chief Signal & Telecom Engineer

2<sup>nd</sup> Floor, SECR Zonal Hq Building

Bilaspur-495004

☎ : (07732)260059

Fax : (07732)415274

संख्या: SECR/S&T/SAFETY/354

दिनांक : 30-06-2023

Sr.DSTE/Co/BSP, Sr.DSTE/R, Sr.DSTE/NGP

**Sub:** SR 3.51.04(a) & 3.51.05 of SECR regarding obtaining detection of crossover point during maintenance/failure of point.

**Ref:** (i) Rly Board letter no. D.O. No. 2020/Sig/21/Safety Performance, Dt 10.06.2023

(ii) JPO of Railway Board vide No. 2021/Sig/Safety performance dt. 10.06.2023.

(iii) Railway Board letter No. 2010/Sig/SGF/Point Machine dt. 29.05.2019.

SECR G&SR para3.51.04 (a) & 3.51.05 contains instruction for procedure for working of trains during repairing/renewal and failure of electrically operated points of the crossover. S&T staff is required to carry out temporary modification to the installations so that point NORMAL indication is available on the panel/VDU and clearance of signal is permitted with imposition of speed restriction of 15kmph.

It is mentioned here that providing such indication can lead to disaster in case of mistake during temporary wiring work. Railway Board has considered it unsafe vide their letter under Ref(iii). Same has also been reiterated by AM/Sig during interaction with CSEs and Sr. DSTEs on 16.06.2023.

Hence, giving normal indication of points during repairing/ renewal and failure by temporary modification should be stopped till further orders.

  
(Sheela Tirkey)  
CSE/SECR

Copy to:-

PCSTE,PCOM, PCSO, DRM/BSP, DRM/NGP, DRM/R for kind information please.



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Office of the  
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Bilaspur-495004  
☎ : (07752) 268059  
Fax : (07752) 268219

No.: SECR/S&T/Tools/Tech-Sig./ 250

Date: 18.05.2022.

**Sr.DSTE/Co/BSP,  
Sr.DSTE/R ,  
Sr. DSTE/NAG.  
South East Central Railway.**

**Sub: Standard list of Tools for Signal staff.**

Please find enclosed herewith standard list of Tools for maintenance staff categorised under following heads-

- A. Tools for Technicians.**
- B. Tools for JE/SSE/SSE in charge.**
- C. Common Stock of Tools at Station.**
- D. Common stock of Tools in Office of SSE in charge.**

Divisions shall ensure availability of tools as listed under above 4 categories for smooth & efficient maintenance of Signalling gears in their jurisdictions. Inventory of tools pertaining to each category shall be monitored systematically in accordance with instructions contained in the list.

Divisions may add/delete items from the list from time to time due to introduction of new gears/technology or obsolescence in maintenance practices.

- Encl: 1) Standard List of Tools  
2) Reference for items supplied in OEM specialised tool kits

  
(A.B. Dabhade)  
CSE/SECR

## **Tools for Signal staff**

### **A. Tools for Signal technicians-**

(To be issued to individual technicians, kept in their personal custody & carried by them on field duty as per requirement)

- 1) Multimeter (to measure AC/DC voltage, current, resistance & freq. parameters of all range applicable to S&T installations)- 1 no.
- 2) Clamp on meter- 1 no.
- 3) Hydrometer- 1 no.
- 4) Cutting plier- 1 no.
- 5) Nose plier- 1 no.
- 6) Sealing plier- 1 no.
- 7) Combination plier.- 1 no.
- 8) Screw driver small (Set)- 1 set
- 9) Screw driver Big- 1 no.
- 10) Wire stripper - 1 no.
- 11) Wago/ Phoenix type terminal screw driver.
- 12) Loose wire & fuses (Consumables)
- 13) Shunt resistance- 1 no.
- 14) Relay contact puller- 1 no.
- 15) Crimping tool- 1 no.
- 16) Test gauge for point testing- 1 set
- 17) Hammer (medium)- 1 no.
- 18) Soldering Iron (with soldering wires & Paste)- 1 no.
- 19) Insulating tape (Consumables)
- 20) Brush (iron & synthetic type)- 1 no each.
- 21) Duster, Cotton waste & jutes (Consumables)
- 22) Feeler gauge
- 23) Ring spanner set- 1 set
- 24) Open end spanner set- 1 set
- 25) Box Spanner- 1 set.
- 26) Adjustable wrench (6", 12" & 18")- 1 no. each
- 27) Insulated box spanner for ARA terminals.- 1 no.
- 28) Tommy Bar- 1 no.
- 29) Chisel & Punch.- 1 no. each.
- 30) Torch LED (400 lumen)- 1 no.
- 31) Steel tape (3m)- 1 no.
- 32) Steel Scale (30 cm)- 1 no.
- 33) Hacksaw frame (Small)- 1 no.
- 34) Hacksaw blades (Consumables)
- 35) Hand flag- Red/ Green (Consumables)



**Note:**

- a) Above tools should invariably be available in the kit of the technicians
- b) Extant practice of issuing tools to staff from centralised depots shall be followed.
- c) It shall be personal responsibility of technicians to use & maintain tools in working condition.
- d) Sectional SSE/JEs shall periodically review availability & working condition of above tools with technicians under their control and take necessary action.
- e) Any other item found necessary to be added in above list may also be considered by Division.

**B. Station wise Common stock of tools (To be issued to nominated technicians/Supervisors, maintained as common pool & kept in signal office/S&T room as available at concerned station)**

- 1) Megger- 500V-1 no.
- 2) Megger- 100V- 1 no.
- 3) Earth tester- 1 no.
- 4) TSR meter- 1 no.
- 5) Hydro meter- 1 no.
- 6) Soldering Iron- 1 no.
- 7) Hacksaw frame (large)- 1 no.
- 8) Hammer (Big)- 1 no.
- 9) Hand tuck drill machine (with drill bit- 9/32)- 2 nos
- 10) Torque wrench- 1 set.
- 11) Drill machine with set of drill bits (110V AC)- 1 no.
- 12) Dummy wheels for Digital axle counters (As per OEM)- 1 pair
- 13) Measuring tape- 30 mtr.
- 14) Grease Gun- 1 no.
- 15) Files Flat 30 cm- 2 nos
- 16) Files Round 30 cm- 2 nos
- 17) Files Half Round- 2 nos
- 18) File triangular- 2 nos.
- 19) Oil can- 2 nos
- 20) Tent small- 1 no.
- 21) Crow bar - 1 no
- 22) Spade- 1 no.
- 23) Hand rake (Panja)- 2 no.
- 24) Allen Key set- 1 set
- 25) Point machine tool kit- 1 set.
- 26) IPS toolkit (As per OEM)- 1 set
- 27) EI toolkit (As per OEM)- 1 set
- 28) LC gate tool kit (As per OEM)- 1 set
- 29) MSDAC/SSDAC toolkit (As per OEM) - 1 set
- 30) Any other OEM specialized tool kits- 1 set each.

**Note:**

- a) Extant practice of issuing tools to staff from centralised depots shall be followed.
- b) Above tools should invariably be available to be used as common pool at each station & kept under safe custody in S&T room available at station building or Signal office wherever available.
  - Items against srl no. 26 to 30 may be provided at all stations over main line. On other sections, these tools may be commonly pooled for groups of stations depending on importance of the route.
- c) Inventory & movement of tools to site shall be maintained through local register under regular supervision of sectional SSE/JE.
- d) Sectional SSE/JEs shall periodically review availability & condition of above stock of tools and take necessary action.
- e) Any other item found necessary to be added in above list may also be considered by Divisions.

**C. Tools for SSE/JE/SSE in charge**

(to be issued to SSE/JE/SSE in charge from Depots)

- 1) Multimeter (to measure AC/DC voltage, current, resistance & freq. parameters of all range applicable to S&T installations)- 1 no
- 2) Laptop (Supplied with Axle counter/EI tool kits shall normally be issued)- 1 no.
- 3) Hydrometer- 1 no.
- 4) Clamp on meter- 1 no.
- 5) Cutting plier- 1 no.
- 6) Nose plier- 1 no.
- 7) Sealing plier- 1 no.
- 8) Combination plier.- 1 no.
- 9) Screw driver (Set)- 1 set
- 10) Wire stripper- 1 no.
- 11) Relay contact puller- 1 no.
- 12) Wago/ Phoenix type terminal screw driver.
- 13) Test gauge for point testing- 1 set
- 14) Soldering Iron (with soldering wires & Paste)- 1 no.
- 15) Insulating tape (Consumable)
- 16) Torch LED (400 lumen)- 1 no.
- 17) Measuring tape (30 meter)- 1 no.
- 18) Steel tape (3m)- 1 no.

**Note:**

- a) Extant practice of issuing tools to staff from centralised depots shall be followed.
- b) It shall be the personal responsibility of SSE/JE/SSE in charge for use & upkeep of tools in working condition.
- c) Preferably, laptops supplied with specialised toolkits shall be issued.
- d) Any other item found necessary to be added in above list may also be considered by Divisions.

**D. Common stock of Tools/Plants to be maintained at SSE In charge level at HQ of SSE/Sig/ In charge.**

- 1) Cable fault locator- 1 no.
- 2) Cable Route tracer- 1 no
- 3) Chain Pulley with rope- 1 set.
- 4) Distilled water plant- 1 no.

**Note:**

- a) Extant practice of issuing tools to staff from centralised depots shall be followed at the time of requirement.
- b) It shall be the responsibility of SSE in charge for use & maintenance of these tools in working condition.
- c) As per the size of jurisdiction of SSE in charge, above items may be procured in suitable quantity and kept at multiple nominated stations for ease of access thereof by field staff during emergency. In such cases, the tools shall be issued to nominated staff of the concerned station.
- d) Any other item found necessary to be added in above list may also be considered by Divisions.

**Periodical review-**

- i) SSE In charge shall keep record of tools available with staff/ depots as per above list & communicate the position/ Updated position of tools to SrDSTEs on monthly basis for necessary action.
- ii) Sectional DSTE/ADSTE shall carry out quarterly review on position of tools with staff/ depots as per above list & report to SrDSTE with recommendations as required.
- iii) Half yearly reports on position of tools as per above list shall be submitted to HQ by Divisions.

## **List of items in specialised tool kits supplied by OEMs (For reference)**

### **(a) List of items contained in Siemens Make Tool Kit for MSDAC**

- (i) Digital Multimeter, Fluke-289 = 01No.
- (ii) Torque Wrench, 25-135 N/Mtr = 01No
- (iii) Set of Spanners = 01No
- (iv) Screw Driver Small, No-922 = 01No
- (v) Screw Driver, T 20L = 01No
- (vi) Soldering Iron = 01No
- (vii) Dummy Wheel = 01No
- (viii) Marking Jig for 52kg & 60kg Rail=01Each
- (ix) Adapter Card = 01No
- (x) Card Puller = 01No
- (xi) Micro Processor Based Data Analyzer=01No
- (xii) Plier (Nose, Mini Nose, Cutting, & Combination) = 01Each
- (xiii) Nut Driver = 01No
- (xiv) Wire Stripper = 01No
- (xv) Soldering Wire =01No
- (xvi) IC Cutter =01No

### **(b) List of items contained in Frausher Make Tool Kit for MSDAC**

- (i) Digital Multimeter, Fluke-289 = 01No.
- (ii) Torque Wrench, 25-135 N/Mtr = 01No
- (iii) Set of Spanners = 01No
- (iv) Screw Driver Set = 01No
- (v) Soldering Iron = 01No
- (vi) Dummy Wheel = 01No
- (vii) Micro Processor Based Data Analyzer=01No
- (viii) Plier (Nose, Mini Nose, Cutting, & Combination) = 01Each
- (ix) Nut Driver = 01No
- (x) Wire Stripper = 01No
- (xi) Soldering Wire =01No

### **(c) List of items contained in CEL make Tool Kit for SSDAC**

- (i) Pure sine wave Digital multi meter make Fluke model/ Rishabh model 285 or 6016, Kusum Meco model 859CF or Equivalent. - 1 no.
- (ii) Dummy Wheel (as Per Drg. No. L007750A3, D14)- 1 no.
- (iii) Ring spanner 17-19, 24-26 - 1 no each
- (iv) Open end spanner 17-19, 24-26- 1 no each
- (v) Socket spanner with handle- 1 no.
- (vi) Torque wrench (jaicom JPR65 or equivalent, 88 NM)- 1 np.
- (vii) Screw Driver No. 902- 1 no.
- (viii) Screw Driver No. 935- 1 no.
- (ix) Marking Jig for drilling (Drg No. f008300, on D29 & D29A- 1 no.
- (x) Dummy load to check power supply (resistive)- 1 no.
- (xi) Train simulator, model TS267P CEL make- 1 no.
- (xii) Extender card (Card No. 557 or latest)- 1 no.

#### **Optional item-**

- (i) Portable data analyser for down loading event logger data for analysis and report generation- 1 no.
- (ii) Serial to USB converter with driver CD make Moxa- 1 no.

**(d) List of items contained in IPS Tool Kit**

Sr. No	Items	Amararaja Make
1	DE Spanner 10-11	1 No
2	DE Spanner 6-7	1 No
3	DE Spanner 8-9	1 No
4	DE Spanner 12-13	1 No
5	Box Spanner 6-7	1 No
6	Box Spanner 8-9	1 No
7	Box Spanner 10-11	1 No
8	Box Spanner 12-13	1 No
9	Cutting Plier, 6"	1 No
10	Nose Plier, 6"	1 No
11	Screw Driver Set (5 Pieces)-6"	1 No
12	Screw Driver Small / Aligner	1 No
13	Screw Driver Big, 12"	1 No
14	Plier 6"	1 No

**(e) List of items contained in IPS Tool Kit**

Sr. No	Items	Statcon Make
1	DE Spanner 12-13	2 No
2	Spring Cutter	1 No
3	Screw Driver Set (5 Pieces)	1 No
4	Screw Driver 937	1 No
5	Box Spanner 6-7	1 No
6	Box Spanner 8-9	1 No
7	Box Spanner 10-11	1 No
8	Box Spanner 12-13	1 No
9	DE Spanner 6-7	1 No
10	DE Spanner 8-9	1 No
11	DE Spanner 10-11	1 No
12	Plier	1 No
13	Aligner	1 No
14	Nose Plier	1 No

**(f) List of items contained in IPS Tool Kit**

Sr. No	Items	HBL Make
1	Ring Spanner 6x7, 8x9, 10x11, 12x13 MM	1 Set
2	Flat Spanner 6x7, 8x9, 10x11, 12x13 MM	1 Set
3	Nose Plier 6"	1 No
4	Screw Driver Set, 713, 827, 901, 911, 912, 921	1 Set
5	Wire Cutter 6mm	1 No
6	Plier 165 mm	1 No
7	Multimeter Probe ( Red & Black), 2 Mtr Length	1 Set



**(g) List of items contained in Electric Lifting Barrier Gate Tool Kit (Heidz)**

Sr. No	Items	Qty.
1	Screw Driver, 786	1 No
2	Screw Driver, 353	1 No
3	Circlip Plier	1 No
4	Alain Key	1 No
5	DE Spanner Set ( 4 Nos)	1 Set
6	Nut Driver, 11	1 No
7	Nut Driver, 17	1 No

**(h) List of items in Toolkit of point machines**

Sr. No.	Items	Qty
01	DE spanner 30-32	1 no.
02	Single Ended spanner	1 no.
03	Screw Driver 300 mm long	1 no.
04	DE spanner 18-19	1 no.
05	Socket spanner with Socket- 13 mm, 17 mm, 19 mm, 2	1 no.

**(i) EI toolkit (Hitachi)**

Sr. No.	Items	Qty
01	HARTING HAND CRIMP Tool	1 no.
02	HARTING 48 PIN INSERTION Tool	1 no.
03	HARTING CRIMP Insert FC1	1 no.
04	HARTING 48 PIN Removal Tool	1 no.
05	HARTING 96 PIN INSERTION Tool	1 no.
06	HARTING 96 PIN Removal Tool	1 no.
07	Screw driver set	1 no.
08	Wire stripper	1 no.
09	Cutting plier	1 no.
10	Allen key set	1 no.
11	Soldering iron	1 no.
12	USB to serial converter	1 no.
13	Nose Plier	1 no.
14	Torch Imported	1 no.
15	Brush	1 no.
16	TESTER	1 no.
17	Boot Lug Crimp Tool	1 no.
18	Micro logic Crimp tool	1 no.
19	Blower	1 no.
20	BACK Pack heavy	1 no.

दक्षिण पूर्व मध्य रेलवे  
SOUTH EAST CENTRAL RAILWAY

कार्यालय  
प्रधान मुख्य संकेत एवं दूरसंचार इंजीनियर  
द्वितीय चाल  
दफ्तरे जोनल मुख्यालय बिल्डिंग  
बिलासपुर-495004

Office of the  
Principal Chief Signal & Telecom Engineer  
2<sup>nd</sup> Floor, SECR Zonal Hq Building  
Bilaspur-495004  
☎ : (07752)268059  
Fax : (07752)268219

No.: SECR/S&T/20% Test-check/Trenching & Laying/600

Date : 05.09.2023

CSTE/Con, CSTE/Project-I, CSTE/Project-II,  
CPM/GSU/BSP, R & NGP,  
Sr.DSTE/Co & line/BSP, Sr. DSTE/ R, Sr.DSTE/NGP,  
South East Central Railway, Bilaspur.

**Sub: Test check on measurement of trenching & cable laying to be recorded in Measurement book**

**Ref: Discussion during punctuality meeting with GM on 29.08.23.**

ASTEs/DSTEs are required to endorse stipulated % age of test-check on measurements in measurement book.

Trenching & cable laying are vital activities to be accomplished for commissioning of S&T installation. Improprity in execution of trenching/laying becomes a perennial source of various safety, security & punctuality issues. Depth of laying and protective measures for cables laid at a lesser depth should commensurate with as per norms & guidelines.

In view of above, the following instructions shall be adhered to without fail while endorsing test-check by ASTEs/DSTEs on measurement books.

"While passing a composite bill with trenching and cable laying being a part of it or a bill only for trenching & cable laying, the concerned ASTE/DSTE, besides other items, shall invariably endorse the stipulated % age of test-check on measurement of trenching and laying being proposed to be passed in the bill along with mentioning the locations of execution endorsed to have been test-checked". Under no circumstances, percentage check on trenching and cable laying can be less than stipulated percentage. For instance, if ADSTE/DSTE is required to conduct 20 % test check then he will have to conduct atleast 20 % test check on trenching and cable laying and will have to mention the locations where he has conducted such test check on the measurement book.

DyCSTE, wherever applicable, should also carry out stipulated % age of test-check on trenching and cable laying without fail along with mentioning the location at which the test-check is conducted.

Implementation of above instructions may pl be ensured with immediate effect.

  
(S. K. Solanki)  
Principal Chief Signal & Telecom Engineer,  
S.E.C. Railway, Bilaspur



दक्षिणपूर्व मध्य रेलवे  
SOUTH EAST CENTRAL RAILWAY

कार्यालय  
प्रधानमुख्य संकेत एवं दूरसंचार इंजीनियर  
द्वितीय तल  
रघुनंदरेड्डीनगरमहलालय, बिल्डिंग  
बिलासपुर-495004

Office of the  
Principal Chief Signal & Telecom Engineer  
2nd Floor, SECR Zonal Hq Building  
Bilaspur-495004  
☎ : (07752)268059  
FAX : (07752)268219

No. SECR/S&T/Tech/1486

Date: 28<sup>th</sup> March, 2023

SrDSTE/Co/BSP,  
SrDSTE/R & NGP  
SEC. Rly, BSP

Sub: Checklist for Annual Inspection by field officers.

Ref: This office note no. SECR/S&T/PCSTE Insp./511 dtd 20.07.2022.

With reference to the note quoted above, a checklist for Annual Inspection by field officers of S&T department has been prepared for the guidance and implementation. This will come into force with effect from 1<sup>st</sup> Apr-2023.

All field officers are advised to conduct the Annual Inspections as per enclosed checklist (Annual Inspection Checklist, Ver. 1.0) wherever applicable to ensure quality of inspection and safe functioning of all S&T gears.

It is reiterated that inspection should bring out improvement and ensure 100% Safety of all gears.

  
(एस के सोलंकी S K Solanki)  
प्रधान मुख्य संकेत एवं दूरसंचार इंजीनियर  
Principal Chief Signal & Telecom Engineer  
रघुनंदरेड्डी, बिलासपुर, S.E.C. Railway, Bilaspur.

Encl: As Above.

C/- All S&T Officers.

### CHECKLIST FOR INSPECTION OF DEPOTS

Department- Signal & Telecommunication

Date of Inspection-

Location- S&T Depots

#### **A. Brief on the Depot being inspected-**

1. Address & Jurisdiction of the Depot
2. Controlling Officers
3. Brief description on the purpose of the Depot & materials being transacted.
4. Suggestions.

#### **Inspection of Store & Office building.**

1. Types of Store & Office building (RCC/Asbestos/ temporary/ permanent structures etc)
2. Date of construction of buildings.
3. General Condition of buildings (Cracks in wall, water seepage, water logging, floorings, ingress of dust & rodents, general cleanliness, rust on grills, painting on outdoor & indoor walls, condition of roof ceiling etc)
4. Availability/type/condition of protective fencing around the Depot.
5. General lighting arrangement.
6. Water supply arrangement and other essential amenities.
7. Availability/ sufficiency/ condition of furniture.
8. Issues for immediate attention/ repair.
9. Suggestions.

#### **B. Availability of measures for prevention of fire & other hazards**

1. Proper & safe stacking of materials (high value/theft prone/light items are kept indoors, no intermixing of stocks of different items, well demarcated area for scraps, electronic/electrical items are protected from effect of weather, to avoid messy electrical wiring obviating chances of fire hazard due to short circuiting, countable stacking etc)
2. Identification and segregation of inflammable items.
3. Security of materials from outside interference (sufficiency of fencing, vulnerability of godowns to facilitate entry from outside, adequate deployment of guards during day and night hours, patrolling by RPF etc).
4. Adequacy of firefighting provisions and accessibility thereof (Fire extinguishers, water bucket & sand, continuous water supply/strategic storage of water, provision of fire detection & alarm systems, contact numbers of local fire fighting agencies etc).
5. Communication arrangement with important contact numbers (Railway officers/staff, fire fighting agencies, hospitals, RPF, GRP, local police etc to be displayed at a prominent place).
6. Training of staff to deal with exigencies like fire and other hazard etc.
7. Availability/Requirement/ working status of CCTVs.
8. Suggestions.

#### **C. Stores & Office management**

1. Office timing
2. Availability of GR/Manuals/Drawing & documents of all stations/locations in the jurisdiction of SSE in-charge of the Depot (GR/BEM/Telecom manual/Accident manual/Block working manual/OEM manuals/Circuit diagrams/Appl. Logic/ interface ckts/ Cable route plans/Track bonding plan/ cable corage plan etc as applicable).

3. Proper Maintenance of attendance register/muster sheets/ leave records (closing of attendance register on time, signature of time keeper, no overwriting, entries of leaves, absence etc)
4. Sufficiency of staff at office & site/technical/ ministerial/vacancy position/ sparing/ joining of staff under transfer etc.
5. Records of station inspections/Foot plate inspection/Joint Foot plate inspections (Quarterly/monthly/done/due of in-charge SSE & sectional SSE/JEa) etc.
6. Records of System Integrity tests of stations in jurisdiction (done/due)
7. D&A file.
8. Compliance of previous Stock sheets & Audit reports.
9. Proper transaction of material through UDM (DMTR/Ledgers -if maintained, Xing blank spaces of DMTR on daily basis, issue of Road challans etc).
10. Countable stacking of items.
11. Inventory of stock (sample inventory of materials vis-à-vis ledger balance to be carried out emphasizing high value/TPs/consumable items).
12. Availability T&P and consumable items (sufficiency/ shortfall).
13. Availability/condition of Tools & Plants to be maintained at depots of SSE in-
14. charge (Cable fault locator/Cable route locator/Chain pulley/Vehicle etc).
15. Proper accountal/stacking of scraps (separate ledger/no pilferage/receipt/disposal of released ferrous/non ferrous scraps & batteries in previous year/target for current year etc).
16. Proper accountal of serviceable released items/ equipments (separate ledger/ not to be mixed up with new items/ to be issued/ received as released items etc).
17. Propriety of material transaction for maintenance activity (justification/requisition/consumption/ short fall in stock/AAC/ source of receipt/T&P distribution register/stock of consumables etc).
18. Propriety of material transaction for contractual works (separate ledger/receipt/ issue/ inspection of materials/ MAS account/ materials issued on loan/payment to supplier/closure of contract/ final material reconciliation/LOA/TDC/extensions granted etc)
19. Training details/PME of technical staff (PME/refreshers courses/done/due, competency certificate)
20. Suggestions.

**D. Obsolete & non moving items**

1. The additional items such as non-moving/obsolete items to be checked threadbare.

**E. Other items of inspection as decided by inspecting official.**

1.

2.

**Note:**

Above items of checklist shall be followed by the inspecting officials as guidelines on items to be checked during inspection of Depots.

**No. SECR/S&T/Tech Sig/868**

**Date: 12.10.2022**

ARVIND  
BHALCHANDR  
A DABHADE

Digitally signed by:  
ARVIND BHALCHANDR  
DABHADE  
DN: cn=ARVIND BHALCHANDR  
DABHADE, o=SECR

**A.B. Dabhade**  
**CSE/SECR**



### Analytic tools for getting to the Root Cause of an issue

#### > **'Why why' analysis:**

- Problem-solving method that explores the underlying cause-and-effect of particular problems.
- Primary goal is to determine the root cause of a defect or a problem by successively asking the question "Why?" nine times.
- Number '9' comes from the anecdotal observation that nine iterations of asking why is usually sufficient enough to reveal the root cause.
- One of the most powerful assessment methods of all non-statistical analyses.
- It can uncover and trace back to problems that were not very clear or obvious.
- **It is beneficial for :**
  - a. Simple to moderately difficult problems. More complex problems may require this method in combination with some other technique.
  - b. When problems involve human factors or interactions.
- **How to Complete a Why Whys Root Cause Analysis?**
  - a. Begin with a specific problem. What is it that you are having an issue with?
  - b. Ask why the problem happened and write the answer down below the specific problem you listed in step one.
  - c. Keep asking "why" to each of the successive answers you write down until you reach the root cause of the problem.
  - d. Again, this may take more or less than nine "why"s. Make sure your team sees eye-to-eye with each of the questions being answered as well as the final root cause.
- **Key things to be kept in Mind :**
  - a. Distinguish causes from symptoms or causal factors.
  - b. Make sure that you are attributing the correct answer to each "why".
  - c. We can break down answers as much as we like. The more the better.
  - d. Answers should always be based on facts and data.
  - e. Last but not least, assess the process, not the people.

#### • **Example-1 :**

Problem statement- 'Got a flat tyre'

<b>Why?</b>	Why did you get a flat tyre?	You ran over nails in your garage.
<b>Why?</b>	Why were there nails on the garage floor?	Nails fell onto floor from the box in the shelf top.
<b>Why?</b>	Why did nails fell onto floor from the box?	Box got wet and fell apart.
<b>Why?</b>	Why did the box got wet?	Box got wet due to entry of rain water through roof.
<b>Why?</b>	Why did the rain water enter through roof?	Due to leakage in roof.
<b>Why?</b>		

Why?		
Why?		
Why?		

**Root cause:** Leakage in roof.

- To validate root causes, ask the question "If you removed this root cause, would this event or problem have been prevented?"
- Example-2 :**

Problem statement:

**Derailment of one pair of front wheels of Diesel Loco no. 40572/WDP4D/GOC of T.No.06464 Nilambur (NIL)-Palakkad (POT) Exp. Spl. Train between Angadippuram (AAM) -Shornur (SRR) at KM 10/400 on 15.11.2023 @ 17.20 Hrs. Load 12 ICF coaches.**

(No casualty/injury/Loss or damage to the passengers. Train was at a speed of 74 kmph with about 500 passengers. One Buffalo trespassed, hit and entangled in Loco, derailed leading pair of wheel in the Loco. Buffalo was grazing at Km 11/280. Suddenly trespassed and hit. No Point of Mount, only Point of Drop at Km 11/240.Loco stopped at Km 10/440, dragging of approx. 800m. SIPP/NIL has registered a case vide Crime No. 2922/2023 U/S 154 of Railways act 1989 on 16/11/2023. No defect contributory to derailment is reported in track and loco)

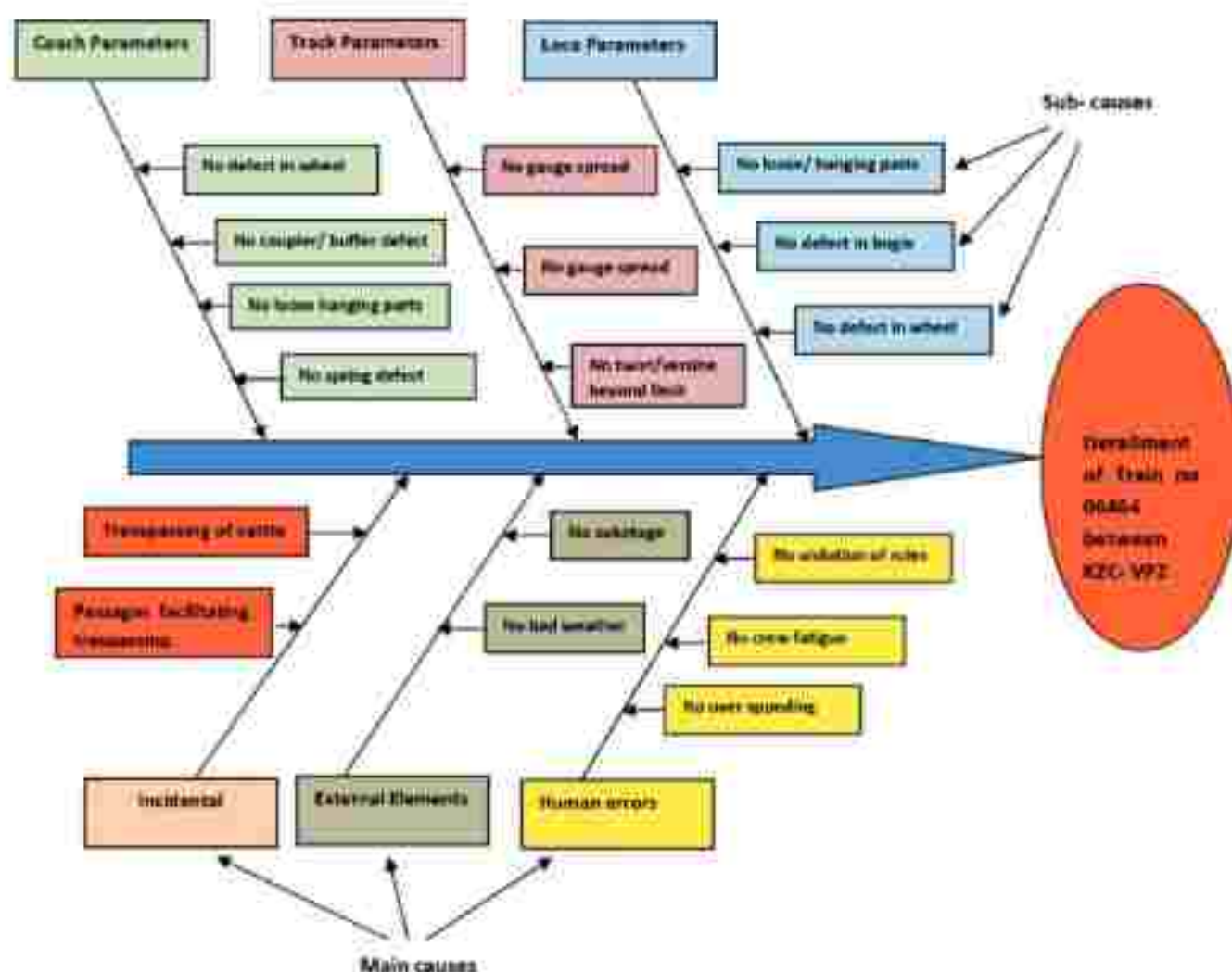
Why?	Why Cattle Run Over?	Sudden trespass by cattle.
Why?	Why Sudden trespass by cattle?	Lesser visibility for crew.
Why?	Why lesser visibility for crew?	2.5 metre height cutting on track side and curve of 3 degree.
Why?	Why 2.5 metre height cutting on track side ?	Location having steps and passages.
Why?	Why location having steps and passages ?	Populated on either side of the track.
Why?	Why populated on either side of the track?	Not identified as trespass location.
Why?	Why not identified as trespass location?	Review was done based on past data.
Why?	Why review was done based on past data ?	Critical review of cattle trespass location not done.
Why?	Why critical review of cattle trespass location not done ?	

**Root cause:** Critical review of cattle trespass location not done.

#### ➤ **Analysis through Fish Bone Diagram:**

- Fishbone diagram is also termed as "Ishikawa diagram".
- Design is something analogous to skeleton of fish.
- Main function is to summarize all the details after the result of complete discussion of root causes of any incident.
- After the derailment/incident, fish bone diagram makes a tremendous role in detecting the root cause of the incident.

- Provides a visual diagram of root causes of the problem.
- Allows true diagnosis of problem along with focusing on symptoms.
- Allows team members to separate a problem content from its history.
- "Cause and effect" diagram which help in brainstorming to identify the possible causes of a incident by sorting ideas.
- **Benefits:**
  - a. Easy visualization.
  - b. Identify bottlenecks effortlessly.
  - c. Find opportunities for improvement.
  - d. Improve everyone's understanding.
- **Analysis :**  
 Problem statement: Please refer Example-2 above (Why-why analysis)



- Arrows drawn from left to Right indicate the sub-causes increasing the Main problem.
- Arrows drawn from Right to left indicate the sub-causes weakening the Main problem.

**Vital & General observations @PCSTE/SECR's Inspection notes.**

**> Insp. note no. 01/2022/KNHN/16.08.2022**

- 1 Floor of S&T service building should not be below Rail level.

**> Insp. note no. 02/2022/LCG 505/G-GDM/17.08.2022**

- 2 There should not be two Relay Rooms at one location. Executing agencies should economize on size of building as per actual requirement.

**> Insp. note no. 03/2022/SZB/04.02.2022**

- 3 Instruction as "Is it necessary to open the Relay Room" should be provided on the door of Relay Room itself.
- 4 VRLA batteries should be extensively used for OFC Rooms.

**> Insp. note no. 04/2022/RVH/03.09.2022**

- 5 All SMRs should be put on load. Only one SMR should be in cold standby.
- 6 ARA terminals should not be used for power termination.
- 7 Power supply diagrams should be provided in IPS Room for ease of trouble shooting/maintenance.
- 8 Typical 71/2020 & 72/2020 to be referred for construction of S&T service building. Executing agencies can decide on size of rooms as per actual requirement.
- 9 Lacing/dressing of telephone wires should be proper.
- 10 Four-two-ka-one circuit issued by HQ to be implemented with 4NO/NC switches at LC gates.
- 11 Rubber coating to be provided at bottom of location box.
- 12 Location foundation should be at Rail level.
- 13 Hylum sheets for cable termination should have 12 mm thickness.

**> Insp. note no. 05/2022/BSP/Pass amenity/17.08.2022**

- 14 Each CGDB board should have unique number.
- 15 Schedule of cleanliness should be provided as per commercial deptt.
- 16 Redundancy on all system of NTES e.g system, power etc to be ensured.

**> Insp. note no. 06/2022/BSP EI (Center)/19.10.2022**

- 17 Cable entry from IPS room to battery room should be through smooth machined holes.
- 18 Qualified S&T Engineers should be engaged by contractor for safe & reliable execution of works.
- 19 Doors of each room should be embedded with description & quantity of assets/equipments kept inside it.
- 20 Provision of spare EI cards should be adequate.

**> Insp. note no. 07/2022/DUG-RSM/14.11.2022**

- 21 Fuse Auto changeover system should be provided at Gate Relay room.
- 22 The functional name of the relay should be written on relay itself to ensure right plugging.
- 23 Power supply instructions to be pasted on CLS panel.

- 24 ECs of MSDACs to be supplied with 24V & 60V DC for main and Standby systems respectively. Resetting of both to be through 24V DC. It is understood that lightning may not affect both concurrently. Performance report to be shared.

➤ **Insp. note no. 08/2022/DUG-BIA/14.11.2022**

- 25 There should be one report on Annual inspection of a station even if the inspections are carried out on different dates. All dates shall be mentioned.
- 26 "Is it necessary to open the relay room" to be mentioned on the door itself.

➤ **Insp. note no. 09/2022/BSP-KTE/23.11.2022**

- 27 Detailed schedule for checking Passenger amenity items need to be kept & implemented which was in vogue w.e.f 2013.
- 28 Lighting at Station (USL) can be reduced as there is less stoppage of mail/Exp trains at this station- SrDEE/G.

➤ **Insp. note no. 10/2022/G-CAB/03.12.2022**

- 29 Toilet should not be near roof/any wall of Relay room.
- 30 Videography of trench & all earth works to be done and preserved.
- 31 SSE/OL should associate himself in initial charging of batteries.
- 32 Measurement of trench should be done at every meter.
- 33 Reconciliation of materials can be done in Material at site register itself.
- 34 T-type equipment can be used for measurement of depth of trench.

➤ **Insp. note no. 11/2022/JLW/24.11.2022**

- 35 Minimum 6 nut bolts to be provided for fixing Hylum sheets.
- 36 Double nut (SS) for Signal base.
- 37 Minimum fire alarm sensors for manned rooms.
- 38 Fire alarm sensor inside VDU cupboard should be ensured.
- 39 230V AC extended to end goonties should be segregated by separate MCBs.
- 40 Circuit diagram should be pasted on back door of panel cupboard.
- 41 For clear visibility separation between lines on VDU screen should be 33 mm in place of 30 mm.
- 42 Cross mark should be provided properly at the back side of Signals.
- 43 Standby VDU should be kept in Off position. Toggling between VDUs to be done once in 24 hrs.

➤ **Insp. note no. 12/2022/ITR/11.12.2022**

- 44 Before laying, complete Videography of trench should be done.
- 45 ACs to be installed on one wall.
- 46 Double lead wires for battery to be ensured.
- 47 The overall working environment should be pleasant & motivating.



➤ **Insp. note no. 13/2022/G-DUG/FP/15.12.2022/12859**

- 48 In G-RJN section train was practically crawling. Trains are loosing 1 to 2 hrs in this section daily. Division may like to review the train operation pattern.

➤ **Insp. note no. 14/2022/R-RVH/18.12.2022**

- 49 Standby VDU to be in OFF condition. Toggling between two VDUs once in 24 hrs.
- 50 Fire alarm sensor in Cupboard. Minimum sensor in manned rooms.
- 51 If load is >400 VA, separate 1 KVA Inverter to be entered for in IPS to feed the monitor from.
- 52 Philosophy of providing 60V MSDAC as Main & 24V MSDAC as standby to minimize failures due to lightning.
- 53 Appliances in EI Room (FAN, lights etc) to be 100% on AT and for other rooms 50% of them to be on AT.
- 54 ACs to be 4ft away from relay wiring.
- 55 EI trouble shooting chart on vinyl board to be provided inside EI Room along with code interpretation manual. Communication diagram clearly indicating each connection should be provided on vinyl board inside EI room.
- 56 Power supply diagram of IPS to be provided in IPS room for trouble shooting.
- 57 Signal not in use should be provided with wooden cross painted in white.
- 58 Cable joints on plans should have name of the SSE/JE who has supervised the jointing work.

➤ **Insp. note no. 01/2023/BANDEL yard/25.01.2023**

- 59 If BSP yard can accommodate 105" VDU, then VDU wall can be dispensed with.
- 60 DC track circuits are reliable. MSDACs, if provided, should be as standby only.
- 61 Signals on joint/Bi-directional lines should have distinct colour from other lines (UP/DN lines). RDSO to be approached for same.
- 62 Signals for two different lines, if erected on same side and adjacent to each other, then they may be distinguished by providing different heights. It is being done in HWH Divn.
- 63 Bandel yard is provided with 1002 routes (SIEMENS MK-II). It is Asia's biggest EI as on date.
- 64 In BSP EI, figure of 8 to be ensured at switch level in addition to path diversity.
- 65 In BSP EI, single monitor of 105" may be provided instead of 2 Monitors of 75" for one set of operating VDU.
- 66 Relay racks are installed facing each other due to which back side of racks are visible. Not to replicated elsewhere.
- 67 Well framed coloured yard diagram is provided in SM's room. It should be replicated at all stations.

➤ **Insp. note no. 02/2023/R & RVH/18.02.2023**

- 68 Charging/discharging cycle of IPS cells to be monitored jointly with O/L.
- 69 Communication between UPSBIs at stations on OFC may be on dark fiber mode.

➤ **Insp. note no. 03/2023/DUG-BIA Auto sig/17.02.2023**

- 70 Entry in goomty should be through equipment room and not through battery room.
- 71 All mid section goomtys should be provided with additional collapsible grill doors.
- 72 DPP should be prepared as per HQ's policy circular. No work should be started without DPP.
- 73 Released SSDACs to be handed over to O/L as spares. No new SSDACs to be procured without approval of PCSTE's Office.
- 74 Cable termination chart to be displayed inside location box.
- 75 Lamp with switches should be provided inside location box.

➤ **Insp. note no. 04/2023/ITR/09/10.01.2023**

- 76 Sustainability test should be done at least for 2 hrs by inspecting officer.
- 77 Frequency of failures of limit switches in LC gates to be listed out. Periodicity of replacement may be stipulated.
- 78 Policy of one Relay room at one location to be adhered to as per policy circular 01/2013.
- 79 In deficiency cum compliance register, compliance column should not be left blank for a long period.

➤ **Insp. note no. 05/2023/SNGP/20.04.2023**

- 80 2 nos FCT with SIM to be provided to each DSTE/ADSTE of the division. These SIMs will remain with them to be used in exigency/emergency for establishing control centers.
- 81 Relevant drawings should only be available at site.
- 82 Following block for signatures should be on as-made drawings till completion drawing & documents are received.

SSE	ASTE/DSTE
DyCSTE	

- 83 Soft reset feature should be implemented at all stations in future.
- 84 Internal glass doors & double sided windows should be provided in EI rooms.
- 85 There shall be no separate OFC room. All OFC rooms to be shifted to main building.
- 86 A gap of one relay after 2 relays should be the disposition of relays on Relay racks.
- 87 Approximate 300 mtrs of OFC, 12C and 6C cables to be kept as spare in battery room.
- 88 Smoke sensor should be provided inside VDU cupboards.

- 89 Checksum/CRC should be pasted on wall inside the EI room.
- 90 Fire alarm system should be on AT supply.

➤ **Insp. note no. 06/2023/PND/07.05.2023**

- 91 12x 2.5 sq mm cables can be used for Point operation to eliminate voltage drop issues.
- 92 Flashing of relays should be avoided.
- 93 MCB and DP-DT switches for ACs re to be provided in IPS room for switching between main & standby ACs on daily basis.

➤ **Insp. note no. 08/2023/New EI at R/27/28.05.2023**

- 94 Tie bar fencing to be provided around identified location boxes where the surrounding area is likely to be infringed/ soiled by public.
- 95 OFC hut and Telephone exchanges should be the part of main building. Signal and Telecommunication depot should have common premises.
- 96 In future, there shall be no duct in IPS and battery rooms. Optimum provision of duct should be there in Relay rooms up to the CTRs only.
- 97 Instructions for changing over of VDUs between main and standby should be pasted on SM's desk for ready reference.
- 98 The standby VDU to be kept in OFF position through remote and switched on through remote when required.
- 99 Standby CNL and gate telephones should be kept on a table at backside of SM to avoid congestion on main desk.
- 100 All SMRs provided on IPS as per configuration should be kept ON except the one in cold standby.

➤ **Insp. note no. 09/2023/BSP RRI/08.06.2023**

- 101 Hand gummed sticker to be used for temporary writing works for cable terminations during rectification of failures. However, indelible writing then and there or in immediate follow up should be the priority.
- 102 Each depot should aspire to have one multi-skilled artisan who is well versed with lettering, masonry and a bit of carpentry work.
- 103 Nomenclature change done during replacement of defective cores to spare cores should be done from end to end.
- 104 Provision 60V internal supply through IPS with battery back up in RRI in place of rectifiers will improve reliability.

➤ **Insp. note no. 10/2023/G Cabin/22.06.2023**

- 105 Point operation using QBCA1 requires many external relays. Feasibility of reducing no of relays to be explored.
- 106 SM's room should be in first floor.
- 107 ACs should be fixed in adequate separation from wirings and equipments.
- 108 Fire sensors should not be provided on beams.
- 109 'No Goomty' in centralized EIs should be the norm.
- 110 DL validation register should be available in Relay room.

- 111 Feasibility of using LAN cable for EI to embedded PC, whenever it is within 50 mtrs may be thought of to dispense with FMS & switches. It should be analyzed in reference to RDSO TANs on the subject.
- 112 Extension of MS flat using nut & bolts is not acceptable. Extension to be ensured through welded joints.

➤ **Insp. note no. 11/2023/RSD/23.06.2023**

- 113 All new works should be without Point JB. The cable should go directly to points as per practice on CR.
- 114 'Normal' / 'Reverse' should be mentioned on tongue rails of all points so that its disposition can be given to be known easily.
- 115 Functional name of each modules of IPS should be provided on IPS itself.

➤ **Insp. note no. 12/2023/DUG RRI/08.07.2023**

- 116 Circuit alteration works should be done during traffic block/NI only.
- 117 All point JBs to be sealed to avoid interference.
- 118 Abnormalities noticed by drivers/guards to be taken seriously.
- 119 The cleaner can be a part of hiring vehicle for loading/unloading.
- 120 Cables laid on culverts/ bridges/ tunnels should be mesh concreted.

➤ **Insp. note no. 13/2023/BRJN/12.10.2023.**

- 121 The defective cable conductors should be cut up to sheath after replacement.
- 122 Requirement of dead approach locking in yard under unoccupied condition of berthing portion should be reviewed.
- 123 During SAT, the concerned officer and supervisor should sign alongside each route being tested in RCC.
- 124 Separation between fire sensors should be 2m at the most.
- 125 In the pop-up menu for initiation of signals, the line block information should be provided alongside the signal routes.

➤ **Insp. note no. 14/2023/BPH/12.10.2023**

- 126 It is advised not to go ahead with further installation of exchanges at wayside stations in future. Policy to be contemplated to maintain tel. numbers for wayside station of BSP only by using suitable IP gateway.

➤ **Insp. note no. 15/2023/Window trailing/BSP-JSG/13.10.2023**

- 127 As far as possible location boxes should not be installed between lines.
- 128 All BSLB boards should be made retro reflective type.
- 129 No porta cabin should be used in any S&T installation.
- 130 Many location boxes which are redundant to be eliminated. An exercise should be done by all divisions.
- 131 Direction to LP to pass IBS at ON to be standardized.

➤ **Insp. note no. 16/2023/RVH/17.11.2023**

- 132 Common stairs should be provided for access to Relay room, battery room & IPS room.
- 133 Monitoring of Quarterly inspection by SSEs should be done in a similar pattern as that of ADSTEs/DSTEs. SSEs should carry handouts similar to what is carried by ADSTEs/DSTEs.
- 134 It is to be ensured that wires connected to RG aspect are cut to such size that it can't reach the HG aspect and so forth and so on for other aspects also.
- 135 Procurement of 20 Amp high sensitive meters for accurate measurement of low range currents should be looked into with least count of 1 ma.
- 136 LC gate booms to be protected by rail posts to prevent boom damage. Standard drawing to be issued by HQ.
- 137 LC gate Stop indicator should be retro reflective type.
- 138 Schedule of maintenance/ Inspection should be strictly adhered to.
- 139 Proper reason along with data of battery going faulty warranting replacement to be maintained by SSE.
- 140 Standard practice to be adopted for demanding disconnections for points, control points, block instruments, SM's slides etc.

➤ **Insp. note no. 17/2023/D- Cabin/18.11.2023**

- 141 It is heartening to note that ASTE/GSU is carrying a checklist and getting the work done as per it.
- 142 Normally relay rooms should not be opened for more than once in a week.

➤ **Insp. note no. 18/2023/KMI/18/19.11.2023**

- 143 Monitoring of Quarterly inspection by SSEs should be done in a similar pattern that of ADSTEs/DSTEs.
- 144 Schedule of maintenance should be followed strictly

➤ **Insp. note no. 19/2023/GM's safety Insp./APR-KTE/06.02.2023**

- 145 All analog voltages of power supply pertaining to Signal & Telecom installation should be monitored at SM's office through provisioning of alarms in the event of abnormality.
- 146 Lamps to be provided in location boxes.
- 147 Length of wires of different aspects in signal units to be adjusted to forbid inadvertent interchanging of wires between different aspects.
- 148 The back doors signal units to be sealed. The seal should carry the date of closure and it should only be opened during maintenance or rectification of failures, if required.
- 149 All goomty IPS should be connected to status monitoring panels (to be provided in SM's room).
- 150 The fixing of fire sensors to be diligently planned. Unmanned locations like IPS room, Relay room, Battery room etc should be comprehensively covered. Bare minimum sensors may be provided in manned room.
- 151 Parameters should be entered in 'Red' during inspection by SSEs.



- 152 Use of 6l cells to be discontinued. Use of alkaline cells to be explored.
- 153 The checklist for maintenance of battery covering all parameters should be indicated at an appropriate place inside battery room.
- 154 OFC based phones may be provided at IB posts.

➤ **Insp. note no. 01/2024/SZB/16.02.2024**

- 155 Box type enclosures may be provided to the ventilators to avoid ingress of rain water inside rooms.
- 156 Experienced JEs/SSEs to be posted in GSU. Posting of RRB recruited JEs/SSEs in GSUs should be avoided. They should only be posted in O/L and at category 'C' stations for 4 years to have the feel of working in Railways.
- 157 Dual battery backup for IPS should be used as per SECR practice. 300 AH cells need not be procured in future.
- 158 As per SECR practice one spare I/O port for each thin client should be there.
- 159 Proper connectivity diagram of UTS should be there to avoid confusion during failure.

➤ **Insp. note no. 02/2024/Safety seminar/R/17.02.2024**

- 160 Staff should be extra careful while working on bi-directional lines.
- 161 While working near curves, cuttings and vulnerable locations, extra staff to be arranged as look out man.
- 162 A gadget (as second line defense) needs to be developed so that it can be put at an adequate distance on both sides for giving approach warning on high volume hooters (SrDSTE/R is nominated for the works- TDC- 3 months)
- 163 Use of retro reflective jackets by staff.
- 164 Avoid use of mobile while on the track.
- 165 Avoid unnecessary discussion with colleagues while on the track.
- 166 Keep at least one person as look out man.
- 167 Counseling staff on regular basis.
- 168 SOP of staff (On safety) to be issued by SrDSTEs.
- 169 More and more number of TWS to be provided to improve maintenance and fewer requirements for replacement of switches.
- 170 One expert gang to be maintained in each depot for replacement of TWS.
- 171 MIS to be made by all divisions for all stations similar to that of BSP division.
- 172 One staff should associated with Con/Proj works to ensure quality.
- 173 In case of the failure getting prolonged assistance should be provided by SSEs/ADSTEs.
- 174 Standby systems should be provided only where traffic density is high.
- 175 Spare cables should not be more than 20%.
- 176 Checklist issued by HQ should be adhered to.
- 177 Infructuous expenditures should be avoided.

➤ **Insp. note no. 03/2024/DIGHORI (MRIDC)/22.02.2024**

- 178 Cables should not be laid more than what is required.
- 179 Checklist of SECR should be adhered to- SrDSTE to ensure.
- 180 Exhaust fans should not be on opposite walls.
- 181 VDUs should not be installed obscuring the visibility of any outsider entering the room without permission of SS.

➤ **Insp. note no. 04/2024/ABKP-KLPG/03/04.05.2024**

- 182 OFC link connectivity diagram available in OFC hut should tallying with actual status. To be updated at all locations. All such schematic diagrams should be on vinyl board only.
- 183 SSE to fill his inspection report in red ink and ADSTE to fill his inspection report in green ink.
- 184 Efficacy of protection path is not being tested properly. SSE/Tele at test room managing the NMS should contact staff at site to ascertain working of control communication every time after linking through protection path.
- 185 It is heartening to see that "Is it necessary to open the relay room" is mentioned in bi-lingual format on aboard painted on outside wall of the Relay room. It should be painted on the door of Relay room at all places.
- 186 Roof of the relay room is at a low level. The height of the fans should be raised suitably.
- 187 B & C class SPDs should be indicative type. It should be ensured at all future installations.
- 188 Deficiencies pertaining to joint Pt. & crossing registers should not be maintained deficiency- cum- compliance register.
- 189 All SMRs to be switched off at a time during battery sustainability test. Staff to be counseled on this.
- 190 It should invariably be checked that, load shared by both battery bank (Main & Standby) are equal.
- 191 Flexible pipe covers should not be provided around power supplying cables which will hinder dissipation of heat.
- 192 Normal range of parameters should be mentioned in maintenance cards.

➤ **Insp. note no. 05/2024/R/07.05.2024**

- 193 New format for battery maintenance to be issued. Current of both battery sets to be checked individually at the time of charging and discharging during maintenance.
- 194 Sustainability test for 4 hours to be done once in six months in presence of JE/SSE.
- 195 Current flow through both battery set to be measured individually after discharging it for half an hour and two hours. Current in both the limbs should be more or less same.
- 196 Procedure for switching off SMRs to be checked in Amaranaja makes IPS. If switch is not provided, one MCB may be provided to switch off all SMRs at a time during battery sustainability check.

- 197 Auto change over between main and standby power cables from central IPS to mini IPS racks at Goomties to be provided. NGP division to circulate the arrangement for other divisions for emulating it.
- 198 Voltages at various terminals such as IPS terminals, power distribution rack, fuse rack, CTR, JBs, Point JBs, at ARA terminals of points etc. to be checked to localize voltage drop during operation of point. It will help to improve operating voltage by increasing cross section of indoor copper cables and/or by increasing number of cores of outdoor cables as per feasibility.
- 199 Use of QSPA1 relay for QR1 to make it slow to pick up to be analyzed and approved, if it is in order.

➤ **Insp. note no. 07/2024/KAV/20.05.2023**

- 200 Works to be executed in line with checklist for new S&T installation version-2.0 issued by Hq.
- 201 A practice of conducting SAT by different Officer for A and B systems separately should be followed.
- 202 Spare cables of CLS panel to be properly terminated.
- 203 SM may forget to un-block the signal after completion of block. Under this situation, the concerned signal will not take off. To avoid this confusion, following should be done:
1. Hint for proper VDU operation may be highlighted in the pop-up menu while taking off signal in Line blocked condition. Message like- "Pl. unblock before taking off signal"- may be displayed.
  2. Indications of Line block may be enlarged.
- 204 Mux of signaling circuit & Telecom circuit are to be separated.
- 205 Potential free contacts of 48V SMPS charger are to be wired into Data Logger.
- 206 Selected AT supply to be made available for OPC hut.
- 207 Telecom inspection matrix to be prepared for Telecom gears. Issue a maintenance schedule to Telecom supervisors for maintenance of all Telecom equipments as per schedule.
- 208 Concept of laying minimum power cable between goomties to center location should be the bottom line. If at all it is provided it should be with auto changeover facility.
- 209 Fresh purchasing of SLBP and CEL make SSDACs should be avoided. Use of released ones, as far as possible, to be ensured.

➤ **Insp. note no. 09/2024/LAE/08.07.2024**

- 210 Voltages at various terminals such as IPS terminals, power distribution racks, fuse rack, CTR, JBs and point machine to be checked to localize voltage drop during operation of points. It will help to improve operating voltage by increasing cross section of indoor copper cables and/or by increasing number of cores of outdoor cables as per feasibility.
- 211 Digital multi meters with least count of 10 mA to be provided to staff for commodious maintenance of gears.

➤ **Insp. note no. 10/2024/SZB/07.07.2024**

- 212 Case study regarding precautions to be taken while working on bidirectional lines was discussed. Following advice was given:
- a. Look out man should be available on both sides while working on bi-directional lines.
  - b. If (a) is not available, work should be done under proper traffic block.
  - c. Use of mobile phone on track is strictly prohibited.
  - d. Raipur division was instructed for developing a gazette as second line of defense for warning staff working on track. The work needs to be done expeditiously.
- 213 Boosting voltage of QTA2 relay during monsoon should be followed by regulating it back once the water recedes.
- 214 The length of tail cable of red aspect should be such that it doesn't reach any other aspect in the signal unit. The length of yellow aspect should be such that it doesn't reach any other aspect above it. So forth and so on,....

➤ **Insp. note no. 13/2024/KPKD/29.07.2024**

- 215 Maintenance VDU should be of same size of the Main VDU so that at the time of exigency, main VDU can be replaced with the Maintenance VDU.
- 216 VDU should work till it is beyond economical repair.
- 217 There should be no stop signal on ROR.
- 218 Automatic signal on ROR is not advisable (experience gained from BSP ROR)
- 219 Typical should be issued for VDU.
- 220 A blocked line pop-up to appear on screen if pressed inadvertently.
- 221 The Do's and Don'ts instructions should be in black & white for better visibility.

➤ **Insp. note no. 15/2024/R-SZB Auto section/04/05.10.2024**

- 222 On DN direction 'Released by' feature has been provided between A400 and A 398 Signals. 'Released by' feature should be the last option.
- 223 In SZB-R, one cable is laid for A system and another cable for B system for both UP and DN line in combined fashion. This is a cumbersome way. Final direction to be issued for future works.
- 224 OFC for EI should come to relay room through two different paths. Common trench should be avoided till the cables enter the Relay room.

➤ **Insp. note no. 22/2024/R-SZB Auto signaling work/26.12.2024**

- 225 Instructions for Raipur station during NI:
- Possibility of Up free Adv Starter from Raipur to SZB interlocked with BPAC and Block Instrument need to be explored. IB to be suspended.
  - Possibility of taking disconnection at Raipur at the end when most of the works at SZB is completed to be explored.

- Before reconnection, complete testing including footplate in all directions with live assurance that signals have gone back to danger once the train passes it, needs to be done.
- Instructions already issued vide inspection note no. PCSTE/SECR/2024/12 needs to be adhered to.
- No Intermediate Block Hut (IBH) should be provided during non interlocking (NI) work wherein auto signaling is to be commissioned.
- LC gates to be declared non-interlocked and proper TWI to be issued wherever auto signaling work is taken in hand.
- Free home shouldn't be cascaded with the preceding auto signal except for Red Lamp Protection.

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**IMPORTANT PARAMETERS FOR SIGNALLING INSTALLATIONS**

Important Items of Schedule of Dimensions:

SN	ITEM	DETAIL
1.	Spacing of tracks:	
	i. For existing works	4265 mm
	ii. For new works/additions to existing works	5300 mm
<b>Note:</b> Signal post shall not preferably be provided in between tracks. However, under unavoidable circumstances, the clearance mentioned shall be increased by an amount equal to the width of such provisions/structures/foundation, as the case may be. [Signal Post = 140 mm, Ladder = 200 mm, Foundation-1041 mm (max), 711 mm (min)].		
2.	Minimum clearance of check rails for a curve	44 mm
3.	Clearance of check rail at a level crossing:	
	i. Minimum	51 mm
	ii. Maximum	57 mm
4.	Minimum depth of space for wheel flange from rail level	38 mm
5.	Minimum horizontal distance from centre of track to any structure from rail level to 305 mm above rail level [TL/IR, Pt m/o/B]:	
	i. For existing works	1675 mm
	ii. For new works or alterations to existing works	1905 mm
6.	Horizontal distance from center of track to any structure except a platform (applicable for outside station yards):	
	i. For existing works (From 305 mm above rail level to 4420 mm above rail)	2135 mm
	ii. For new works or alterations to existing works:	
	a. From 305 mm above rail level to 1065 mm	1905 mm increasing to 2360 mm
	b. From 1065 mm above rail level to 3355 mm	2360 mm
	c. From 3355 mm above rail level to 4420 mm	2360 mm decreasing to 2135 mm
	d. From 4420 mm above rail level to 5870 mm	2135 mm decreasing to 915 mm
<b>Note:</b> Light structures such as ladders, thin posts etc. erected alongside the track at a distance of less than 2360 mm from centre of adjacent track should be blanked off to a height of 300 mm between 2060 mm and 2360 mm above rail level.		
7.	Minimum, horizontal distance from centre of track to any structure (for station yards):	
	For existing works:	
	i. From rail level to 305mm above rail level	1675 mm
	ii. From 305mm above rail level to 3355 mm above rail level	2135 mm
	iii. From 3355mm above rail level to 4115 mm above rail level	2135 mm decreasing to 1980 mm
	iv. From 4115 mm to 6250 mm above rail level on main line	1600 mm
	v. Below the rail level up to the formation level of the track on straight and curves up to radius of 875m	2575 mm

	vi. Below the rail level up to the formation level of the track on curves with radius less than 875m	2725 mm
Note: The various fixtures which are attached to the track eg lock bar, point machine, traction bonds, point and signal rodding etc. and are required to be fitted with the rail can be provided and the clearance as mentioned in item (v) and (vi) shall not be applicable to these items.		
8.	Height of Road Over Bridges and Foot Over Bridges (applicable for outside station yards):	
	i. Minimum height above rail level for a distance of 915 mm on either side of the centre of track for overhead structures	4875 mm
	ii. Where 25 KV AC traction is likely to be used, the minimum height above rail level for a distance of 1600 mm on either side of the centre of track shall be as under:	
	a. Light overhead structure such as Foot Over Bridges, signal gantry etc.	6250 mm
	b. Heavy overhead structure such as Road Over Bridges and Flyovers	5870 mm
9.	Maximum height above rail level of any part of interlocking or signal gear for a width of 1600 mm or 1830 mm in the case of tunnels, through and semi-through girder bridges on either side of centre of track.	64 mm
Note: For a distance of 229 mm outside and 140 mm inside the gauge faces of the rail, no gear or track fittings must project above rail level except such parts as are required to be actuated by the wheels.		
10.	Gauge on straight and curves:	
	i. Straight including curves of radius 350 m or more	5 mm to +3 mm i.e. 1671 mm to 1679 mm
	ii. For Curves of radius less than 350 m	Up to 10 mm i.e. 1686 mm
11.	Maximum steepest gradient in station yards	
	i. For New works & Alteration to Existing Works	
	a. Recommended.	1 in 1200
	b. Maximum (Steepest)	1 in 400
	ii. For existing works	1 in 400
<b>Note:</b> <b>Recommended dimension is generally the good practice</b>		
	i. in case, it is not possible to provide recommended gradient of 1 in 1200 in yard reason for deviation from recommended gradient and up to the specified maximum (steepest) gradient of 1 in 400 shall be recorded on the ESP. However, for new yards in new line projects, adoption of yard gradient steeper than 1:1200 will require approval of General manager before finalization of ESP [Ref ACS No 29 to IRSOD 2004].	
	ii. Station Yard means:	
	iii. On single line to a distance of 50 meters beyond Stock Rail Joint of outermost points at either end of the station.	
	iv. On double line MACLS territory, to a distance of 50 meters beyond Stock Rail Joint of outermost points at either end of the station or where there are no loops, from Block Section Limit Board to last stop signal of each line.	

	v. There must be no change of grades within 30m of any points or crossings.		
12.	The power of condonation for gradient steeper than the specified standard maximum gradient of 1 in 400 shall be as under:		
	i. Existing Yard		
	a. Steeper than 1 in 400 and up to 1 in 100	GM Through PCSO	
	b. Steeper than 1 in 100	Railway Board through Chief Commissioner of Railway Safety	
	ii. For New Yard in New Line Projects:		
	a. Steeper than 1 in 400 and up to 1 in 260	Commissioner of Railway Safety	
	b. Steeper than 1 in 260	Railway Board through Chief Commissioner of Railway Safety	
13.	Minimum clearance between toe of open switch and stock rail:		
	i. For existing works	95 mm	
	ii. For new works or alteration to existing works	115 mm	
	Note: The clearance can be increased up to 160 mm in curved switches in order to obtain adequate clearance between gauge face of stock rail and back face of tongue rail.		
14.	Visibility of signals in Multi Aspect Signalling:		
	SR	Signal	Visibility
	i.	Distant	400 m
	ii.	All other signals	200 m
			Suitable speed restriction, if it is not visible within 200 m.
	Note: In regard to multiple aspect signals, all signals shall be visible for a minimum period for five seconds for the maximum permissible speed allowed on the section [Ref SR 3.16.01 (iii)].		
15.	<b>ISOLATION:</b>		
	Isolation between	Passenger line	Goods line
	Passenger line	Not Required if speed < 50 kmph. Required if speed ≥ 50 kmph.	Required irrespective of speed.
	Goods line	Required irrespective of speed.	Not Required if speed < 50 kmph. Required if speed ≥ 50 kmph.
	Siding		Desirable
			NA
16.	<b>SIDINGS:</b>		
	Siding to be provided	Purpose	If the Gradient is Steeper than
	Slip Siding	To Protect Block section	1:100 falling away from the station
	Catch Siding	To Protect Station	1:80 falling towards the station

17.

SN	Description	Details
i.	Periodicity of foot plate inspection; a. For JE/SSE (Sectional) b. For SSE (In charge).  (To be carried out both by day and night and in both UP & DN directions in all lines)	Once in a month Once in 3 months
ii.	Periodicity of joint inspection of interlocked points and crossings (JE/SSE/Signal & JE/SSE/P.Way)	Once in 3 months
iii.	Periodicity of joint inspection of track (in track circuited area) by SSE/Signal & SSE/P. Way	Once in 6 months
iv.	Periodicity of joint inspection of traction bonding by SSE/Signal & SSE/TRD to ensure conformity with approved bonding plan.	Once in 6 months
v.	SWR must be read in conjunction with	G&SR, BWM
vi.	SWR Revision	5 Years or after 3 corrections whichever is earlier
vii.	The clearance between bottom of the rail and top of leading stretcher bar under the S/rail	1.5 to 5 mm
viii.	Currency of green (for N I)/Traffic notice	3 months
ix.	Currency of CRS sanction	12 months
x.	Validity of competency certificate issued by zonal training school	4 years
xi.	Period of over hauling for DLBI and Single Line TLBI	Once in 7 years

18.

**A Tongue Rail is Classified as Worn Out, When**

- Chipped/cracked over small lengths totalling to 200 mm within 1000 mm from the toe. Chipped length is the portion where tongue rail has worn out for a depth of more than 10 mm over a continuous length of 10 mm.
- Developed a knife edged tip — thickness of tip less than 2mm over a length of more than 100 mm anywhere up to a distance of 1000mm from its toe.
- Badly twisted, does not house properly and cause a gap of more than 5 mm at the toe.
- Vertical wear which is measured at a point where tongue and stock rails are at the same level. Vertical wear allowed is 8mm for 60 kg. Lateral wear is 8 mm for 60kg.
- Burred stock rail is to be replaced.
- Tongue rails should bear evenly on all the slide chairs.
- All sleepers should be packed properly.
- When the tongue rail is in closed position, it must bear evenly against distance studs or blocks.
- Wear on switches can be reduced by lubrication of the gauge face of the tongue rail.

19.

Maximum length of track circuits in RE area with PSC sleepers and with 0.5 Ohms TSR.

SN	Section (Yard/Block)	Minimum Ballast Resistance (Ohms per Km)	Max. length of track circuit (m)	Type of track relay
	Block	4 $\Omega$ /Km	450 m	QTA2( 9 $\Omega$ )
	Yard	2 $\Omega$ /Km	350 m	QTA2( 9 $\Omega$ )
	Yard	2 $\Omega$ /Km	750 m	QRAT in conjunction with QSPA1 with B type choke at relay end.

20.

OVERHEAD EQUIPMENT:

OHE Height of contact wire		Regulated OHE	5.6 Mts.
		Un-regulated OHE	5.75 Mts.
		Under bridges	4.65 Mts.
Distance between RE masts		On straight track	72 Mts.
Staggering of contact wire		On straight track	200 mm
		On curves	300 mm
Description		Stationary	Moving
Clearances between any live part of OHE and part of any fixed structure	Vertical	320 mm	270 mm
	Lateral	320 mm	220 mm
Normal implantation of RE mast		For the centre line of nearest track	2.5 Mts.
The nearest part of the signal post from the centre line track.		For a signal with horizontal route	2.844 Mts.
The distance between the signal and the mast in front of it.			Minimum: 30Mts (10Mts with Condonation)
The distance between the signal and the mast just in advance of signal			Minimum : 10 Mts.

21.

Length of direct feeding of signals:

Direct Feeding	Single Line	Double Line
By using 110 V	180 m	220 m

22.

Length of DC circuits-Line Relays with Unscreened cable:

SN	Relay	AC Immunity Level in Volts	Maximum permissible length	
			Single Line	Double Line
1	QNA1	1000	2.1 Km	2.8 Km



23.	Maximum Permissible length of direct feed of Point Machine from Point Contactor unit.				
	<b>SN</b>	<b>Type of Point Machine</b>	<b>AC Immunity Value (Volts)</b>	<b>Maximum permissible separation (metres) between Point Contractor and Point Machine on</b>	
				<b>Single Track</b>	<b>Double Track</b>
	i.	IRS 24	160 V	910	1100
	ii.	Siemen's LA	160 V	910	1100
24.	<b>Cable laying:</b>				
	In the vicinity of TSS the cables shall be laid			At least one metre away from any metallic part of the OHE. In RCC Pipes 300m on either side of TSS feeding point	
	Cables laid in the vicinity of the switching station.			At least 5 m away from earth.	
	<b>TRACK CROSSING</b>				
	The cables should cross the track			At right angles	
	The cables should not cross the track under			Points and crossings	
	The cables are to be laid while crossing the track			In concrete pipes	
	The cables shall be buried below the rail flange			At a depth 1.0 m	
25.	<b>Parameters of DC Track Circuits</b>				
	<b>SN</b>	<b>Description</b>		<b>Details</b>	
	i.	Minimum length of TC		26 m i.e. two rail lengths	
	ii.	PSC sleeper insulation resistance		Not less than 500 $\Omega$	
	iii.	Glued joint insulation resistance		Dry: Not less than 25 M $\Omega$ Wet: Not less than 3 K $\Omega$	
	iv.	B Type Choke for 25 KV AC RE Area		Impedance 120 $\Omega$ at 50 Hz and Resistance 3 $\Omega$	
	v.	Under maximum battery voltage and maximum ballast resistance with 0.5 Ohms TSR across the relay, the DA voltage should be adjusted to		Not be more than 85% of its rated DA voltage.	
	vi.	Maximum permissible excitation of a track relay under maximum battery voltage and maximum ballast resistance.		QT2/QTA2-300% QBAT-235%	
	vii.	Minimum excitation of a track relay under minimum battery voltage and minimum ballast resistance.		125%, (Except QBAT) QBAT-122 %	

26. Important parameters of Axle Counters (SSDAC/MSDAC)

SN	Installation	Details
i.	Separation between 2 track Devices of different A/C's	Minimum 2 m (Digital)
ii.	Tx/Rx not to be fitted	Below or in-between Rail Joints.
iii.	Tx/Rx should be in the center of Track Circuits	At least 2-3 RL on either side.
iv.	Fish plate joint distance on either side of Tx/Rx	Minimum 6 sleepers on either side of Tx/Rx
v.	Separation between Tx and Rx cables in HDPE Pipe	Minimum 500 mm
vi.	Gap between two sleeper for fixing Tx/Rx	Minimum 550 mm

27. Important parameters of LC Gates:

SN	Item Description	Details
i.	Minimum horizontal distance of LC gate boom from nearest track centre in RE area	3.5m
ii.	Clearance between the road surface level and the boom	0.8 m to 1 m
iii.	Minimum distance of height gauge from gate posts	8 m
iv.	Height of height gauge from road surface	4.78 m

**Note:**

- Road signal should be preferably provided outside the height gauge.
- Sliding barrier should be provided preferably outside of electric lifting barrier.

## Reliability tips in Telecom

### Cables

1. Cable laying at a depth of at least 1 metre to be ensured.
2. **Cable jointing**
  - 2.1. Quad cable jointing to be done with **RDSO approved Quad cable jointing kits** (Reinforced TSF).
  - 2.2. OFC joints **Cable entry holes must be sealed** watertight with thermo sinking sleeves or with glue.
3. Use of Quad Conductors in correct manner
  - 3.1. Quad is formed with 4 conductors. These conductors are given different colours. The conductor colours are White, Red, Grey and the distinctive Quad colour.
  - 3.2. The conductors of Quad colour and white colour to be used Trans/Receive pair and other two conductors (Red & Grey) as Receive/Trans pair successively (of a SINGLE Quad only).
  - 3.3. Any function's Trans and receive circuits must be formed through use of conductors of one Quad only in the above mentioned fashion. It should never happen that Trans ckt is on one Quad and Receive ckt on the other Quad.
4. Cable route marker to be ensured in sections which are not theft prone.

### OFC Telecom Network

(Diversity in equipments and paths)

1. Ring Mesh and star networking must be used.
2. All standby paths to be monitored through NMS or any other means.
3. Standby equipments like control telephone, Gate telephone, hotline with adjacent station (Alternative Block Telephone) to be provided.
4. All hot standby cards of MUX, STM, Battery Charger, Exchange etc must always be kept plugged-in.

### Battery

1. In LMLA battery, Ceramic Vent Plugs must be kept tightened and level indicator's glass must not be kept in broken condition.
2. In VRLA battery, the battery charger must be set to VRLA mode and its temperature sensor to be ensured in working condition.



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