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East Central Railway

**Office of
GM(S&T) HJP**

No. ECR/S&T/Technical Circular/185/525

Date: 25.03.2013

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**Sr.DSTE's
East Central Railway
DHN, DNR, MGS, SEE, SPJ**

Sub: Pre monsoon precaution to be taken by S&T and Engg. Dept. in connection with efficient functioning of S&T equipments.

Ref: Technical Circular No.-22

Please find enclosed herewith the above referred Technical Circular No.22 regarding Pre monsoon precaution to be taken by S&T and Engg. Dept.

Divisions should ensure implementation/ compliance of this circular.

Copy of this Technical Circular should be made available to all JE/SSE (Signal & P.Way) and divisional officers.

DA: As above.


25/3/13
(Rajesh Kumar)
CSE/South
for GM(S&T)/ECR

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1. All DRMs for information please.
2. PCE/ECR for information and circulation to all Sr.DEN (Co-od) please.
3. CSE/North, CSTE/Tel & Project, CSTE/Planning, CSTE/Works, CSTE/Con/South/PNBE, CSTE/Con/North/PNBE for information please.
4. Dy.CSTE/W/DHN, DNR, MGS & Dy.CSTE/Project/HJP, Dy.CSTE/C & C1/DNR, Dy.CSTE/C & C1/SPJ.
5. All S&T Officers at HQ.

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**East Central Railway
Signal & Telecom Dept.
Technical Circular No.-22**

Sub: Pre-monsoon precaution to be taken by S&T and Engg. Dept. in Connection with efficient functioning of S&T equipments.
Ref: S&T Technical Circular No.01/2007 dated 22.03.2007

During monsoon, failures of Signal and Telecom equipment generally increase causing detention of trains and affecting communication. The following action to be taken as pre-monsoon measures to prevent signal and communication failures during monsoon-

- 1.0 WATER LOGGING:** Undertake joint inspection at least of Junior scale Officer of S&T and Engg. Dept. on the basis of past experience and present condition / emergent situation to identify vulnerable location of water logging in track circuit area, point zone, cabin, goomtys, cabin basements before 15th Mar of every year.

Drainage system should be improved by Engineering Dept. before onset of monsoon so that point machines, track circuit etc. do not submerged in water. Water logging of station yard should be prevented.

- 2.0 LEAKY CABIN & DAMAGED/BROKEN WINDOW GLASS PANEL:** Joint survey for broken window glass panels, Leaky cabin/panel room, Relay room, Equipment room, Power & Battery room, Goomties etc. should be done before 15th Mar of every year. The deficiencies noticed should be complied before 30th Apr of that year.

Progress of joint inspection/ survey and compliance of deficiencies should be closely monitored by Sr. DSTEs/Sr.DENs(Co-ord.).

- 3.0 TRACK CIRCUITS:** Track Circuits fail frequently during monsoon due to water logging of track circuited areas and low ballast resistance. In order to improve reliability of Track circuit during monsoon, following remedial measures should be taken before onset of monsoon-

- 3.1 Water logging of track circuited areas should be tackled by improving drainage system with the help of Engg. Dept.
- 3.2 Rails should be clear of ballast and mud by 50 mm.
- 3.3 Missing of liner and rubber pad to be completed and to check leakage current.
- 3.4 Bond wires and jumper wires should be thoroughly checked. Any loose joints may cause rusting and failure.

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- 3.5 J-clip should be provided at Block/Glued joints and sleepers under Block/Glued joints should be kept properly packed to prevent frequent damages to joints.
- 3.6 Track charger should be properly earth before onset of monsoon.
- 3.7 Replace the damaged bushes and insulated plates in point zone track circuits.
- 4.0 **LEVER FRAME:** The locking trays should be cleaned and locking graphite. There should be no ingress of water from any side.
- 5.0 **APPARATUS CASE:** Leaky location boxes should be repaired or changed, so that rain water does not enter and affect the working of relays, batteries and terminals etc.
- 6.0 **CABLES & JBs**
- 6.1 Cables route should be checked by Sectional JE/SSE (Sig)s. If there is cable exposed or chance of expose of any cable during monsoon, it should be filled with earth and rammed.
- 6.2 Temporary cable joints of signalling cables if any should be done proper.
- 6.3 Damaged main and tail cable should be replaced.
- 6.4 Leaky/damage covers of JBs should be checked and replaced to prevent ingress of rain water.
- 6.5 JBs should be cleared from earth and garbage and cleaned from inside.
- 6.6 Engineering staff during monsoon make water outlet/ kachha drains by the side of track, and are likely to damaged S&T main or tail cables at many places. JE/SSE (Sig)s and JE/SSE (P.way)s and Sectional officer incharge of S&T and Engineering department should keep proper watch and if any cables are exposed it should be protected with bricks or pipes.
- 7.0 **POINTS MACHINES:** Water logging especially at point machine area causes failures of point machine. Following remedial measures should be taken before onset of monsoon-
- 7.1 Drainage system of Point machine area should be improved with the help of Engg. Dept.
- 7.2 More vulnerable points should be lifted on channel.
- 7.3 Insulation resistance of motor winding should be checked before monsoon and low insulation motor should be replaced.
- 7.4 Leaky / broken cover should be repaired/ replaced before monsoon.
- 7.5 Point should be lubricated from 1st June onwards weekly with Lubricating oil (PL No.80010714) till 31st October. Graphiting /greasing can be done for rest of the year.
- 8.0 **EARTHING**
- 8.1 Continuity of all earth wires should be checked before monsoon.

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8.2 Earth resistance should be kept below 10 ohm for Block instrument, Equipment, Relay room etc. and below 1 ohm for Solid state equipment like EI, SSDAC, Data logger and IPS etc. before monsoon and Axle Counter cable screen in AC electrified area, so that equipment, lightning arrester (SPD/LPD) earths function properly.

8.3 Earthing arrangement of apparatus cases should also be improved to get earth value not more than 10 ohm (1 ohm for EJB / SSDAC).

9.0 SIGNALLING EQUIPMENTS IN THE YARDS

9.1 SPD/LPD should be provided at power supply and functional end in lightening prone areas of Dhanabdi & Mughalsarai Division and other vulnerable section.

9.2 PPTC fuses should be provided in lightening prone area and other vulnerable section.

9.3 Gasket should be provided at all Signal units to prevent egress of rain water and sealed from out side by adhesive tape for LED Signal.

9.4 Bases of signal posts where necessary should also be rammed with earth.

9.5 Painting of rod run, signal posts, steel locations, Signalling boards should be done where due to prevent rusting and corrosion.

9.6 Covers of EPD and JBs should be checked and replaced, if required, to prevent ingress of rain water.

9.7 Earth below point may get eroded during monsoon and adjustment of point become difficult. Point must be properly packed with ballast before monsoon.

9.8 Where necessary, roller guide trestles in the rod runs should be rammed with earth, so that rod run doesn't get tilted or washed away with rain water.

9.9 Shaky foundations of rod run, signal posts, location boxes should be tied with guide rod.

9.9 Guys and stakes of signal posts and overhead lines post should be attended to as required.

10.0 LEVEL CROSSING GATE: Rod run and wire run should be cleared from mud and soil.

11.0 TELECOM:

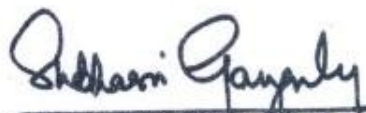
11.1 Automatic/SMPS battery chargers should be provided with SPD/LPD devices for protection against lightening and surges. These should be checked for all telecom assets like OFC equipments, exchanges, cable repeaters etc.

11.2 Applications like PRS, UTS, Railnet and other data networks should be provided with proper voltage stabilisers and UPS to protect against

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lightening and surges wherever such has been disconnected or taken out for repair, should be restored.

- 11.3 Earthing of all telecom assets should be properly ensured and value should be less than 1 ohm. Proper inter connectivity of earth bus bar to the pit and ring earth should be ensured. Similarly earth point of telecom equipments should be properly connected to the earth bus bar.
- 11.4 Ensure provision of additional class - C arrester where data/telecom are carried out through overhead line/cables outside of the equipment room.
- 11.5 Integrated protection modules (IPM) should be ensured at MDF.
- 11.6 Insulation testing of quad cable should be done to identify low insulation and localisation of fault for necessary repairs.
- 11.7 All temporary joints in the quad cable should be made permanent with TSF jointing kit to avoid low insulation in future.
- 11.8 Cable route plan of OFC and quad should be updated indicating proper locations of joints, offset and patch renewals.
- 11.9 Cable route tracer should be kept ready for localisation of fault of quad cable and adequate training should be given to sectional JE/SE (Tele) for proper use during failure. A drill should be conducted.


(Subhasis Ganguly) 22/03/2013
Chief Signal & Telecom Engineer