

S.R.17.04.18.2. Traction Engine Examiner or other authorised person in-charge shall be responsible for making dead the overhead equipment over the track of inspection lines in loco sheds and stabling sidings before permitting the work to be done on the roof of electric rolling stock. The overhead equipment over these tracks shall not be energised except by the authorised person in-charge, who shall be responsible for every precaution being taken to ensure that everything is in order and all staff are cleared off the roofs and live parts, before energizing the equipment.

S.R.17.04.18.3.1. At stations and yards, an authorised person shall arrange to make dead and earth the overhead equipment and a 'permit-to-work' card shall be obtained by the staff concerned before the work on the roofs of rolling stock or engines is commenced. On completion of work, the card shall be returned to the authorised person for cancellation. The authorised person shall then satisfy himself that everything is in order and that all staff are cleared off the roofs and live parts before energising the equipment.

S.R.17.04.18.3.2. Prescribed working rules for isolating and making dead the sections of overhead equipment for watering carriages, shall be followed at watering stations.

S.R.17.04.18.4. The SWR issued to each station, loco shed etc., shall specify the switches the operation of which will make a section dead or live.

S.R.17.04.19. Register of Message:-

All messages relating to operation of switches, issue of 'permit-to-work' and other important communications shall be recorded in a register by both the sender and the receiver together with the time when sent and the time when received.

S.R.17.04.19.1 All messages relating to operation of switches and issue of 'permit-to-work' shall be confirmed by PNs.

S.R.17.04.19.2 All messages together with the PNs issued and received shall be recorded in the books specially maintained for the purpose.

S.R.17.04.20. Emergency telephone circuit:

S.R.17.04.20.1. Functions-

This circuit is provided to facilitate the train crew/ traction maintenance gangs to get in touch with the TPC with the least possible delay, especially during emergencies/accidents since due to replacement of aerial lines by underground cables, it will no longer be possible to hook a portable telephone on to the control line. This circuit will be operated by the TPC and is located in the remote control office.

S.R.17.04.20.2. Location:

Emergency socket boxes are provided along the track at an interval of 900 metres generally. Portable emergency telephones are given to maintenance gangs and train crew. These telephones can be plugged into the emergency socket boxes to enable the man on the spot to communicate with the TPC. Sockets for emergency telephones are also provided near the OHE isolating switches, sub-sectioning and sectioning posts, grid stations and feeding posts.

## **17.05. Warning to staff and public.—**

- (1) All electrical equipment shall be regarded as being live at all times and consequently dangerous to human life, save and except in cases, where the electrical equipment has been specially made dead in accordance with special instructions. Caution notices shall be prominently fixed near all vulnerable places to warn staff and public to exercise due caution.**

**(2) No person shall climb on the top of engines or tenders or on the roofs of carriages or wagons when those vehicles are located beneath overhead equipment except when the overhead equipment is dead and earthed in accordance with special instructions.**

SR.17.05.1. All Railway servants other than those deputed to work on or near electrical equipment shall keep away there from.

SR.17.05.2. Electric shock.

SR.17.05.2.1. Instructions in English and the local language, the vernacular of the district, regarding the treatment of persons suffering from electric shock shall be exhibited in all inspection sheds, stabling depots, repair shops, stations and trains, and all staff concerned shall make themselves familiar with such instructions.

SR.17.05.2.2. The instructions regarding the treatment of persons suffering from electric shock shall be exhibited at all supply control posts, overhead equipment maintenance depots, Tower Wagon sheds, loco sheds and signalling cabins.

SR.17.05.2.3. In the event of electric shocks, the treatment laid down for respiration shall be carried out immediately.

SR.17.05.2.4. The names and telephone numbers of the nearest railway and civil doctors and hospitals shall also be exhibited at all the places stated in SR.17.05.2.1.

SR.17.05.3. Fire:

SR.17.05.3.1. In the event of fire on or adjacent to any electrical equipment, the affected part shall immediately be completely isolated from its source of supply of electrical energy. To extinguish the fire, the extinguishing arrangements made by the Railway Administration for this purpose shall be used. Adequate extinguishing arrangements shall be made by the Railway Administration.

In the event of fire on or adjacent to electrical equipment being noticed by a railway servant who is not an authorized person, he shall take action in accordance with GR 6.10 and SRs there under.

SR.17.05.3.2.1. In the event of a fire of any part of any traction electrical equipment, the affected part at first be completely isolated from distribution system, if this has not been done automatically. If arching continues due to feed from adjacent supply control posts, it shall be got interrupted either by remote or local operation of switches. The fire shall be extinguished by means of fire extinguisher provided. The TPC shall be informed immediately of the nature of the fire and the extent to which it has affected supply.

SR.17.05.3.2.2. If any unauthorised person notices a fire on or adjacent to traction electrical equipment, he shall make no attempt to extinguish the fire but shall report the occurrence to the TPC by means of emergency telephone or to the nearest Station Master immediately. In the event of a Gangmate noticing fire on or adjacent to traction electrical equipment, he shall in addition, inform any passing train or trolley. If there be more than one Gangmate, the occurrence shall be reported to the Station Master on either side. The Station Master on receipt of such information shall immediately inform the TPC. The TPC shall arrange for fire extinguisher in accordance with these rules. If necessary the Station Master should prevent the movement of trains towards the affected section.

SR.17.05.3.3.1. In the event of fire on an electric engine, the Loco Pilot shall immediately switch off the circuit breaker and lower the pantograph. The train shall then be brought to a stop at once.

SR.17.05.3.3.2. After cutting off electric supply to the affected circuits, the Loco Pilot shall take necessary action to put out the fire.

SR.17.05.3.3.3. If fire cannot be extinguished by the above means, the Loco Pilot shall advise the TPC through the emergency telephone to arrange for the affected section of the overhead equipment to be made dead.

SR.17.05.3.3.4. The Guard shall give all possible assistance to the Loco Pilot in putting out the fire.

SR.17.05.3.3.5. Fire extinguishers of an approved type for use on electrical fires shall be provided on each electric engine and the Loco Pilot shall make himself familiar with the location and use of these extinguishers. During periodical inspection of a locomotive, the extinguisher shall be examined by the locomotive inspection staff.

SR.17.05.3.4. Ordinary fire extinguishers or water from a hosepipe or bucket shall on no account be used to extinguish fires on live electrical equipment. If the services of the fire brigade are required, the brigade shall not be allowed to commence operations until all electrical equipment in the vicinity of the fire has been made dead.

SR.17.05.3.5. Fire extinguishers, which have been used, shall be replaced or recharged with the least delay.

SR.17.05.3.6. Sand-bins are provided at supply control posts, stations and signal cabins. The supervisory official in-charge shall ensure that the sand is kept dry and clear of rubbish and is not used for any other purpose.

SR.17.05.4. Precaution to be taken by staff:

SR.17.05.4.1.1. Measuring tapes of all kinds, tools and metal articles, (such as paint pots, oil cans, metal bars) shall not be used where they can be lifted or be dropped or be carried by the wind on to overhead equipment when such overhead equipment is live.

SR.17.05.4.1.2. Where overhead equipment for two or more tracks is supported on one structure and work has to be done on the overhead equipment of one track while the overhead equipment of adjacent tracks are live, access to the overhead equipment to be worked shall be by ladders, trestles or similar means but not by the supporting structures. Staff shall not, in any circumstances, walk or climb across live overhead equipment by means of the supporting bridge to gain access to the overhead equipment to be worked on.

SR.17.05.4.2.1. Railway staff when required to carry out working on service, buildings and structures in proximity to overhead equipments shall exercise special care to ensure that tools, measuring tapes, materials etc., are not placed in a position where they are likely to fall, or make contact with electrical equipments.

SR.17.05.4.2.2. Wherever such work has to be carried out under conditions which involve risk to the workmen or other persons, arrangements shall be made for authorised overhead equipment staff not below the rank of ATFO to be present, who shall take such precautions as may be necessary for the safety of the persons concerned.

SR.17.05.4.3.1. A working party shall not commence or carry out any work on or adjacent to overhead equipment involving danger to trains or traffic without the consent of the DEE/Tr.D, or the AEE/Tr. D.

SR.17.05.4.3.2. No person shall disturb the overhead equipment or carry out bonding or other work in such a way as to obstruct the line necessitating the showing of danger signals.

SR.17.05.4.3.2.1. Until such signals have been shown, and

SR.17.05.4.3.2.2. If within the station limits, until he has also obtained the written permission of the Station Master and all necessary signals have been placed in the 'on' position.

SR.17.05.4.3.3. When such work is to be undertaken, the traction official responsible for the work shall advise the Station Master/Station Masters concerned and arrange for showing the necessary danger signals.

SR.17.05.4.3.4. When defects are noticed on overhead equipment which are likely to cause damage to pantograph or emergency repairs are being effected to overhead equipment and it is not possible to convey the information to the Station Master/Station Masters concerned to enable them to issue Caution Orders, the line or lines shall be protected in accordance with Rule 15.09 and SRs thereto.

SR.17.05.4.4.1. Every member of the staff shall provide for his own protection independent of every other member, except when one is assisting the other in which case, the person in-charge of the work is responsible for the proper protection of himself and his assistants.

SR.17.05.4.4.2. Delay or inconvenience to traffic shall not be accepted as an excuse for a man not taking reasonable precautions to protect himself.

SR.17.05.4.5.1. No person other than overhead equipment staff climb or work on any permit-to-work card, work shall not be carried out nor shall anything be affixed to any structure without the written permission of the DEE/Tr.D. (See SR.17.04.1.).

SR.17.05.4.5.2. Before the work is commenced on a structure supporting overhead equipment, the limits of the danger zone/zones shall be defined by means of a red disc by day and red lamp by night which shall be placed in a suitable position.

SR.17.05.4.5.3. When work is to be carried out in the danger zone of structure after the overhead equipment is made dead, no staff other than the person authorised to test and earth the overhead equipment shall attempt to climb the structure, until he has personally received definite instructions to climb the structure from the persons in charge of the working party and no message or signal other than these instructions is permissible.

SR.17.05.4.5.4. The instructions may be conveyed from the person in charge of the party to workmen by another person, and such a person shall be individually deputed as a messenger by the person in-charge of the party and shall be of a rank not inferior to Lineman.

SR.17.05.4.5.5. All persons deputed in para 4.5.4. to convey instructions to workmen shall be made known to the workmen in advance and the workmen shall be advised that orders regarding the climbing of structures shall on no account be accepted from any person other than those deputed.

SR.17.05.4.5.6. The person in charge or the person deputed under para 4.5.4 shall, before instructing his men to climb a structure, explain which section of overhead equipment is dead and which section is live and which parts of the structures are safe to work upon. The person in charge or the person deputed under para 4.5.4 shall satisfy himself that his explanation is clearly understood by all the workmen whom he has instructed to climb the structure.

SR.17.05.4.5.7. It shall be the responsibility of every person conveying instructions to climb structures to see that the danger discs or lamps are correctly fixed before the work is commenced.

SR.17.05.4.5.8. On the structures spanning multiple tracks, where work is being carried out adjacent to one or more sections of overhead equipment the person in-charge shall ensure, before any of the line or lines are made live on completion of work that all men and materials adjacent to the line or lines have been withdrawn from the danger zone, and if work is to continue on other parts of the structures, the danger discs or lamps have been shifted to indicate the changed danger zone.

SR.17.05.4.5.9. The special attention of persons in charge of painting of structures is directed to this rule.

SR.17.05.4.6. Instructions given in SR 17.05.5 shall be observed whenever excavation is carried out in the electrified area.

SR.17.05.4.7. Notice shall be given to the electrical department before changing worn out rails to enable copper bonds to be removed and the rail joints properly rebounded after the completion of the work. Whenever any work is carried out on the permanent way, the track bonding Chargeman-in-charge shall personally inspect the track to assure himself that the continuity of the rail-return is maintained in good order.

SR.17.05.4.8. Before any repair or alteration to the overhead equipment is commenced, the Chargeman shall arrange for power to be cut off from the equipment concerned after consulting the TPC. He shall then make sure that the line is dead by testing, following the procedure prescribed by competent authority.

SR.17.05.4.9. The Chargeman shall then fix two earthing connections between the line and the structure one on each side of the section of the line where the actual work is being carried out and shall not remove it until the work on the line is completed and all workmen are clear of danger.

SR.17.05.4.10. Only after a 'permit-to-work' has been received and overhead equipment has been correctly earthed portions of track structure for a distance of less than 2 metres from any live equipment may be scrapped, cleaned or painted. Other portions of the structures of overhead equipment may be cleaned and painted while the overhead lines are live, unless special conditions at site render it unsafe or inadvisable, in which case the work shall only be done after making the equipment dead and earthed.

SR.17.05.5.1. When excavations are being made adjacent to tracks and cable routes in an electrified area, adequate precautions shall be taken for the safety of the staff and to avoid damage to underground cables and rail bonds.

SR.17.05.5.2. Markers are placed wherever possible, along the cable alignment and diagrams are available indicating generally the position of buried cables. Excavation shall not be undertaken in the vicinity of cable routes until the exact position of the cables has been ascertained and representative of the department concerned is present. This is applicable to cables of P&T department also.

SR.17.05.5.3. If circumstances make it imperative that the work has to be undertaken without sufficient notice, the AEE/Tr. D and ASTE concerned shall be informed by a message for arranging staff to be present.

SR.17.05.5.4. No staff shall be allowed to work on any portion of a signal post or its fittings falling within a distance of 2 metres from 25 KV live conductor or a metal part electrically connected to this conductor unless such portion is protected with an iron screen. If due to any reason, the protective iron screening is not provided, the railway staff shall not undertake any work on those portions of the signal or its fittings falling within 2 metre zone from a 25 KV live part unless the power has been switched off and a 'permit to work' has been obtained. To draw the attention of the signal staff in such cases, a caution board 9" X 8" indicating "Caution" in Hindi, English and the regional language in white letters with red background shall be provided on the signal post at a height of 10 ft. above the rail level.

The Inspectors of the Signal department and Station Masters shall explain these instructions to the staff working under them and ensure that they are correctly understood.

SR.17.05.5.5. Induced voltages may appear in signalling and telecom circuits, where the parallelism in lengths of track is important. It may be noted that even when there is no induced voltage in circuit at the time of starting the work, precautionary measures listed below shall be taken, as induced voltage may appear at any time on account of sudden short circuit in the traction overhead equipment. It is also to be noted that in some circuits with earth connection, contact with which may normally be without danger, in case of break of the circuit an induced voltage may appear between two parts created by the break. Consequently each time staff have to work on S & T circuits along with 25 KVAC electrified line, they must take the following precautionary measures.

SR.17.05.5.5.1. They should as a general rule wear rubber gloves and use tools with insulated handles.

SR.17.05.5.5.2. When the work to be done is meticulous and rubber gloves cannot be used, special precautions should be taken by splitting the circuit into the section or earthing them. In special cases both steps should be taken simultaneously.

SR.17.05.5.6.1. All overhead line staff, when on patrol, shall watch the pantographs of passing electric rolling stock and if any defects are noticed, they shall report to the TPC through the emergency telephone circuit or any other telephone, if emergency telephone circuit is not available, giving full particulars including the number of the electric rolling stock, the location of the defect and the time when defect was noticed.

SR.17.05.5.6.2. The TPC shall communicate reports on a defective pantograph to the TLC who shall arrange to have the electric rolling stock stopped as soon as possible, for examination of the defective pantograph.

SR.17.05.5.7. TFO/OHE shall be responsible for the proper and efficient maintenance of all breakdown equipment, wiring trains, Tower Wagons, breakdown Lorries, etc., so that they are always in a state of good repair. He shall ensure that they are equipped with full quantities of stores and spare parts as per approved inventory. All tools, tackles, straining, screw clamps, ropes and ladders shall be maintained in good condition and ready for use at all times.

SR.17.05.5.8. The staff concerned shall ensure that the equipment not in immediate use is always ready for service, except such equipments as may be under repair or overhaul.

#### **17.06. Alterations to track.—**

**Before any alteration to alignment or level of electrified tracks is commenced, due notice shall be given to those responsible for the overhead equipment so that the overhead equipment may be adjusted to conform to the new conditions.**

SR.17.06.1.1. Before any slewing alteration to super-elevation or level of tracks from the permissible parameters is done, notice shall be given to the DEE/Tr.D to enable him to arrange for adjustment of over head equipment to conform to the new conditions if necessary. Such work shall be included in the weekly programme detailed in SR.17.04.8.

SR.17.06.1.2. It shall be ensured that the level of rail under foot-over bridges, road-over bridges, tunnels and other over line structures does not exceed the level marked under such structures.

SR.17.06.2.1. All minor alterations to overhead equipment whether permanent or otherwise shall be reported to the TPC immediately by telephone and to the DEE/Tr.D or the AEE/Tr.D in writing.

SR.17.06.2.2. Major alterations affecting the existing disposition of any section of overhead equipment shall not be made unless sanctioned by the DEE/Tr.D.

SR.17.06.3.1. When working on overhead equipment, all staff shall ensure that the wires are not deflected, which may foul pantographs of electric rolling stock passing on other lines by steady arm tubes of any other part of the overhead equipment.

SR.17.06.3.2. When the overhead equipment is slewed either temporarily or permanently, the persons in-charge shall ensure that section insulators, jumpers and other fittings do not foul the pantographs of electric rolling stock passing on the other lines or any other parts of the overhead equipment.

SR.17.06.4.1. Whenever any work on track, which is likely to affect rail bonds, 'track circuit bond' is undertaken by permanent way staff, adequate notice shall be given to the TFO/OHE