

CHAPTER - XVII

WORKING OF TRAINS ON ELECTRIFIED SECTIONS OF RAILWAYS.

17.01. Applicability of General Rules. - All rules referring to the working of trains shall also apply to electrified sections except as otherwise provided in the rules contained in this chapter.

SR. 17.01. – All Subsidiary Rules referring to the working of trains shall also apply to electrified sections except as otherwise provided in the rules containing in this Chapter.

17.02. Special definitions applicable to this Chapter.- In these rules, unless the context otherwise requires.-

- (1) "**electrical way and works**" means the traction installations including overhead equipment and other connected works provided on the electrified sections of the railway;
- (2) "**feeding post**" means a supply control post, where the incoming feeder lines from grid sub-station are terminated;
- (3) "**neutral section**" means a short section of insulated and dead overhead equipment which separates the areas fed by adjacent sub-stations or feeding post;
- (4) "**power Block**" means blocking of a section of line to electric traffic only;
- (5) "**supply control post**" means an assembly of interruptors, isolator switches, remote control equipment and other apparatus provided for controlling power supply to overhead equipment. It includes feeding posts, sectioning and paralleling posts, Sub-sectioning and paralleling posts and sub-sectioning posts.
- (6) "**Tower Wagon**" means a self-propelled vehicle which is used for the maintenance and repairs of overhead equipment;
- 7) "**Traction Power Controller**" means a competent railway servant who may for the time being be responsible for the control of power supply on the traction distribution system.,

SR. 17.02 **Additional definitions also applicable to this Chapter –**

[1] **Authorised person**-Means any person who is duly authorised to perform the duties appertaining to his employment, the authorization being by an officer of the Railway Administration empowered for that purpose.

[2] **Danger Zone** – Means the Zone, lying within 2 metres of any live equipment, in which no work is permitted, where the equipment is alive.

[3] **Earth**- Means the conducting mass of the earth or of any conductor in direct electrical connection therewith.

'Earth' for the purpose of the overhead equipment only, includes the track return circuit and the structures supporting the overhead equipment, provided such structures are connected to Earth or track return.

Earth or Connected to Earth-Means connection with the general mass of earth in such manner as to ensure at all times an immediate discharge of energy without danger.

[4] **Electrified Track**-Means track provided with overhead equipment.

[5] **Inspector of Electrical Way or Works** – Means any SSE/SE/JE (Electrical) responsible for the construction or maintenance of Overhead Equipment, Power supply installations, Remote Control Equipment, or other works connected therewith.

[6] **Interruptor** – Means a single phase oil circuit breaker without an automatic tripping device.

[7] **Isolator** – Means a switch used for connecting or disconnecting adjacent elementary sections of overhead equipment.

[8] **Linesman** – Means a person authorised to inspect and work on the overhead lines and switches in relation therewith.

[9] **Live Equipment** – Means any electrical equipment which is electrically alive.

Electrical equipment is alive when a difference of potential exists between it and earth or when it is connected to another conductor or circuit in which such a difference of potential exists.

[10] **Pantograph** – Means a collapsible device mounted on and insulated from the roof of an electric engine or motor coach and provided with a means for collecting current from the overhead equipment.

[11] **Permit-to-work** – Means a form of declaration signed and given by an authorised person to a person in charge of work to be carried out on or adjacent to any electrical equipment, for the purpose of making known to such person exactly what equipment, is dead and earthed and safe to be worked on or adjacent to.

[12] **Traffic Block** – Means blocking of a track against movement of all traffic.

[13] **Overhead Equipment.** – Means the electrical conductors over the tracks together with their associated fittings, insulators and other attachments by means of which they are suspended and registered in position.

[14] **Dead Equipment.** – Means an electrical equipment which is not electrically alive.

[15] **Rail Bond.** – Means an electrical connection across a joint or between adjacent length of Rail.

17.03. Inspection of electrical way and works. - The electrical way and works shall be inspected regularly in accordance with special instruction by officials nominated for the purpose and in accordance with the duties assigned to them.

SR. 17.03. [1] [a] Each Inspector of Electrical Way or Works shall be responsible for the efficient maintenance of the electrical way and works and other equipment under his charge.

[b] He shall promptly report to the Traction Power Controller all accidents to or defects in the Electrical way or works which he considers likely to interfere with safe running of trains or with the safety of personnel, at the same time taking such action as may be necessary to prevent accidents. The Traction Power Controller shall in turn promptly convey this information to the Engineer-in-charge.

[2] **Responsibility for tools and materials** – Each Inspector of Electrical Way or Works shall be responsible for the proper and efficient maintenance of all breakdown equipment, wiring trains, Tower Wagons, lorries, trolleys etc., under his charge. He shall ensure that they are equipped with full quantity of stores and spare parts as per approved inventory. He shall at least once in every month inspect the flags, signal

lamps, detonators, tools and implements and ascertain whether the above equipment is complete and in good order. He shall also see that any defective or missing articles is replaced.

[3] **Knowledge of Signals and Equipments of the working party.** – Each SSE/SE/JE of Electrical Way and Works shall see –

[i] that every staff employed under him has a correct knowledge of hand signals and detonating signals and

[ii] that every overhead equipment working party employed in his jurisdiction is supplied with 2 sets of flag signals, 2 hand signal lamps and 10 detonators in addition to such other tools or implements as may be prescribed by the administration.

[4] **Responsibility for staff and equipment.** – [a] Staff when at work shall be under the charge of the senior most member of the Gang, shall be responsible for all works being carried out correctly in accordance with the rules prescribed and such other instructions as are specifically issued by the Railway Administration. In the case of illiterate staff working on or near electrical equipment, the circumstances of the work as affecting their safety and the safety of the electrical equipment shall be explained to them by the person in-charge.

[b] Every member of the staff shall be conversant with the safety precautions pertaining to his work and for their observance.

[5] **Patrolling staff to watch Pantograph .** - [a] All overhead line staff when on patrolling, shall watch the pantographs of passing electric rolling stock and if any defects are noted, they shall report them to the Traction Power Controller as early as possible through the emergency telephone socket 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 the defect was noted.

[b] The Traction Power Controller shall communicate reports of a defective Pantograph to the Traction Loco Controller who shall arrange to have the electric and rolling stock stopped as soon as possible for examination of the defective Pantograph.

[6] **Reporting abnormalities by railway staff.** – [a] All break-downs or defects noted in the overhead equipment or any other traction equipment, including bonds, by any railway employee shall be reported immediately to the Traction Power Controller. In case he cannot be communicated with the nearest Station Master, Cabin Assistant Station Master, SSE [Overhead equipment] or the Assistant Electrical Engineer [Traction Distribution] shall be advised. In case of the impedance bonds, the Assistant Signal and Telecom Engineer shall be advised. The Station Master or the Cabin Assistant Station Master to whom such break-down or defects are reported shall convey the information immediately to the Traction Power Controller. In case of failure of communication he shall use his discretion regarding movement of traffic and advise the nearest traction official.

[b] When defects are noticed on overhead equipment which are likely to cause damage to pantographs of electric Locomotives, ELECTRICAL MULTIPLE UNITS, the railway employee noticing it shall communicate with the Traction Power Controller who in turn shall advise the Section Controller for arranging the issue of necessary caution orders by the Station Masters to the Loco Pilots as per rules in force. The

Traction Power Controller shall also advise the concerned Traction Distribution Supervisor to arrange for display of pantograph lower boards as per SR 17.04[1] .

In addition to reporting the defect to the Traction Power Controller /nearest Station Master the concerned railway employee shall try to protect the line to avoid damage to the pantograph of the ELECTRIC LOCOMOTIVE/ELECTRIC MULTIPLE UNIT.

[c] In case of breakage of an overhead line the Railway employee detecting it shall ensure that no person comes into contact with the line until an authorised person arrives on the spot. The authorised person will take immediate action to make the affected line dead and earthed.

[7] Loco Pilots to watch overhead equipment. – [a] All Loco Pilots [Diesel and Electric] working in electrified sections shall as far as possible and without interfering with their primary duties, watch the overhead equipments.

[b] When a slight defect is noticed on the overhead equipment such as break way of the contact wire from the droppers or catenary, it may be practicable for ELECTRIC LOCO/ELECTRIC MULTIPLE UNIT to coast under the defective section, but the defect shall be reported to the Traction Power Controller through the Station Master at the next Station, making an out of course stoppage if necessary.

[c] When the defect on the overhead equipment is likely to interfere with the smooth movement of pantograph of an electric loco or motor coach or cause damage to it, the Electric Loco Pilot/Motor Man shall trip the circuit breaker of his locomotive/units and immediately lower the pantograph. After passing over the defective section he may resume traction till the nearest emergency socket and try to report to the Traction Power Controller details of the abnormality.

[d] An emergency stop should be made if necessary.

[e] In case of a major breakdown to overhead equipment requiring trains to be stopped, the Loco Pilot noticing such a breakdown shall advise the Traction Power Controller through the nearest emergency telephone socket giving details of the breakdown and in case this circuit is not available convey the information through the nearest Station Master or any other telephone circuit. The Traction Power Controller on receipt of such a message shall pass on suitable instructions to the Section Controller and if necessary, advise him to stop running of trains in the affected section.

7A. Special precautions by Controllers, Station Masters and Train crew on Electrified Sections when a Section of OHE is found faulty.

1. In electrified sections, in the event of OHE fault, the Traction Power Controller shall immediately locate the faulty section and isolate the same. Also, in case of double and multiple line sections, the healthy section on adjacent tracks on the same route length as the faulty section shall be isolated. The Traction Power Controller shall then advise the Section Controller of the section found faulty and the healthy section temporarily isolated by him.

2. On receipt of advice from the Traction Power Controller, the Section Controller shall immediately take action as under –

[a] **Faulty Section.** – The Section Controller shall, under exchange of Private Number, advise the Station Masters of all stations who are concerned with the working of trains in the affected section to treat the faulty section as if the same is under emergency Power Block and take action accordingly.

[b] **Healthy Section temporarily isolated.** – The Section Controller shall check whether any train had entered any of the block sections in the faulty section before the fault on OHE occurred. If not, he shall advise Traction Power Controller to re-energise the healthy section temporarily isolated. If, however, a train had entered a block section in the faulty section before the fault on OHE occurred, the Section Controller shall immediately inform the Station Masters of all stations who are concerned with the working of trains in the faulty section and also in the section in which healthy OHE is temporarily isolated, under exchange of Private Numbers, that they shall not allow any train to enter the concerned block section unless both the Loco Pilot and the Guard of the first train have been issued Caution Orders to the following effect –

[i] proceed at a speed not exceeding 10 Kmph. subject to the observance of other speed restrictions, exercising great caution,

[ii] keep a sharp lookout and be prepared to stop short of any obstruction which may be due to any infringement from the adjacent line/lines and also keep a sharp look out on the adjacent line/lines to see if there are any OHE abnormalities such as wires hanging, cantilever components broken and hanging etc.,

[iii] immediately on reaching the next station in advance, report whether or not the section over which they moved is safe for the movement of trains.

2.1. Only after taking these steps, the Section Controller shall advise the Traction Power Controller that necessary precautions have been taken.

3. After receiving advice from the Section Controller that necessary precautions have been taken to ensure safety of trains, the Traction Power Controller shall restore feed to the healthy sections that have been temporarily isolated.

4. After despatching the first train with Caution Order in the affected section, no subsequent train shall be allowed to enter the section without permission from the Section Controller. Action to remove speed restrictions shall be taken by the Section Controller in consultation with the Station Masters on receipt of report from the Loco Pilot and the Guard as referred to above. The Section Controller shall also then advise the Traction Power Controller of the report of the Loco Pilot/Guard of the train indicating whether or not there are any infringements and/or abnormalities in OHE. Till such time it is decided to remove speed restrictions, trains entering the affected section shall continue to be issued Caution Orders prescribing clearly the speed restrictions and other precautions as pointed out in the above paragraphs.

5. If a train has already entered the affected section and is held up for no tension in OHE for more than 5 minutes, the Loco Pilot shall, on resumption of power supply, proceed to the station in advance at a speed not exceeding 10 Kmph. subject to observance of other speed restrictions, exercising great caution so as to stop short of any obstruction. Both the Loco Pilot and the Guard shall keep a sharp lookout on the adjacent line/lines to see if there are any OHE abnormalities such as wires hanging, cantilever components broken and hanging etc., and shall report at the station in advance whether the portion of the section over which the train has moved after stoppage, is safe for passage of trains or not.

If an emergency communication socket is available in the vicinity where he had stopped in the mid section, the Loco Pilot / Assistant Loco Pilot shall also contact the TPC and obtain instructions.

6. When a train comes to a stop in an electrified section and cause of stoppage is not immediately obvious, the Loco Pilot and Guard shall immediately take action to protect the train in accordance with the rules made under GR 6.03.

[8] **Access to electrical equipment.** – [a] No unauthorised person shall be permitted to have access to or to operate any isolator or other apparatus which forms part of the electrical equipment or is used in connection therewith, without the previous consent of the Traction Power Controller.

[b] No switch affecting the feed to main running line or loop line[s] shall be closed or opened without the previous consent of the Traction Power Controller. An exception to this rule is that these switches may be opened in times of emergency by authorised persons. All operation of section or isolating switches shall be reported to the Traction Power Controller in any case.

[c] The keys for all outdoor switches shall be kept in locked glass fronted boxes in the custody of Station Master, Cabin Assistant Station Masters or other persons, stationed conveniently nearby the switches. The keys shall be issued on demand only to authorised persons whose signatures for receipt shall be obtained in a book maintained for this purpose.

[d] All chambers or enclosures containing live equipment shall be kept normally closed and locked, with the keys in the custody of the authorised person, A duplicate key shall be kept in a box with a fixed glass fronted cover in places to be notified by the Divisional / District Electrical Engineer [Traction Distribution]. The key may be removed by breaking open the glass cover of the box in case of emergency, by an authorised person. A record shall be maintained of every such use of the key.

In the event of breaking of the glass of the keyboard, the key or keys will be kept in safe custody of the ASM or Cabin ASM until the glass is replaced. The Traction Power Controller will keep a record where such keys are kept so that in emergency he will be able to direct the parties.

When the glass cover is broken to obtain the duplicate key the concerned SSE [OHE] shall be immediately advised to replace the glass. The person replacing the glass shall obtain the signature of the authorised person who shall put down the date of replacement.

[e] Any person while working in a chamber or enclosure containing electrical equipment which under normal conditions is alive, shall retain the keys of the chamber or enclosure. These keys shall be returned to the person in whose custody they are normally kept, immediately after the chamber or enclosure has been locked.

[f] Permit-to-work shall not be cancelled until the keys have been returned to the box or to the person in whose custody they are normally kept,

[g] In an emergency, a Station Master or a Cabin Assistant Station Master shall operate such switches as per specific direction of the Traction Power Controller. Every Station Master or Cabin Assistant Station Master shall be fully aware of the location of Isolator switches provided for the control of power supply to overhead equipment at his station or near his cabin and shall be conversant with the correct method of opening and closing the same in an emergency.

[h] In the event of any report of an abnormality in the overhead equipment and in the opinion of the Traction Distribution staff, isolation of a section is considered necessary, he shall arrange with the Traction Power Controller to have the required

section isolated. If such an isolation is possible by local operation, he shall himself undertake the operations and advise the Traction Power Controller.

[i] Should the Traction Power Controller wish to have any isolator switch opened or closed he shall ask the SSE/SE [Traction Overhead equipment] or Station Master or Cabin Assistant Station Master or any authorised person to carry out the required switching operations. The person shall, after carrying out the orders, lock the switch either in "Open" or "Closed" position, as the case may be, and inform the Traction Power Controller of the action taken. A record of every such operation shall be maintained by the person concerned.

[9] The inspection of electrical way and works shall be carried out in accordance with AC Traction Manual and other instructions issued by the Railway Administration from time to time.

[10] **Protection of TRD Working Parties.** – [a] No work on overhead equipment which is likely to obstruct the line shall be commenced until –

[i] Necessary permit to work has been obtained and

[ii] either necessary traffic block has been obtained or necessary signals have been exhibited under GR 15.09.

[b] Before commencing work on overhead equipment or in cases of breakdown of overhead equipment, when it is necessary for a train to proceed cautiously, the person in charge of the working party/parties responsible for such notification, shall arrange for issue of Caution Orders in accordance with rules in force.

[c] When due to overhead equipment being under repair or due to any other obstruction, it is necessary to indicate to the Loco Pilot that he has to stop or proceed cautiously or to lower the pantograph, the advice regarding this will be given to the Section Controller/ASM by Traction Power Controller/ELC/Linesman/Fitter in the prescribed pro-forma. No ERD 3, as shown in Appendix D-2, indicating the traction structures between which this is to be observed and obtain the prescribed receipt for the same. Section Controller/ASM, on receipt of the information, shall promptly take necessary action as per rules. After completion of the repairs of the works, TPC/TLC/Linesman/Fitter will cancel the notice to Section Controller/ASM by issuing the requisite foil of the prescribed pro-forma.

[11] [a] 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.

[b] All messages relating to operation of switches and issue of permits to work shall be confirmed by Private Numbers.

[c] All messages together with the Private Numbers shall be issued from and received into books specially maintained for the purpose.

[d] The same person who asked for an obtains Power Block should also cancel it before power supply is restored. The persons exchanging the Private Numbers should identify each other by name over the telephone.

[12] **Work on electrical equipment.** – [a] Before commencing and for the whole time that work is being performed on any part of the electrical equipment or adjacent thereto, that part of the electrical equipment shall be made dead and earthed save and except as in clauses [b] and [c] hereunder. Every working party shall be protected by independent earths. When it is necessary to earth the overhead

equipment or transmission lines a minimum of two earths shall be employed, one on each side of the working party .

[b] Except in the case of indoor high voltage electrical equipment, authorised staff may work on electrical equipment which is alive or which is dead and not earthed subject to adequate precautions for the safety of such staff, the authorisation and precautions shall be prescribed by the Railway Administration.

[c] Work may be performed by authorised staff on indoor high voltage electrical equipment which is not earthed but which is isolated from the main supply of electrical energy in such a manner that it is safe to work on. The Railway Administration shall prescribe adequate precautions to cover these conditions.

[d] Interruptors or isolator switches which have been opened for the purpose of isolating electrical equipment for maintenance shall have a danger notice displayed in a prominent position on the corresponding switches in remote control center and if the operation has been done locally/manually such danger boards shall in addition be displayed on the interruptor or operating handle of the switch or on the enclosure containing isolator switch and control apparatus.

[e] No work on live or any unearthed indoor or outdoor equipment above 400 volts is permitted. The only occasion when maintenance staff may work on unearthed equipment, after it has been isolated, is for the purpose of taking insulation tests. On completion of tests the equipment shall be earthed, before any work is started.

[f] No work shall be attempted on insulated overlap spans, or on section insulators unless the adjoining sections of overhead equipment on either side are made dead and earthed. In the case of a sectioning point, the isolator switch, the bridging or sectioning interruptor bridging the overlap span shall be closed.

[g] **Work in the danger zone of overhead equipment.** – Before any work is undertaken on a section of overhead equipment which is normally alive, or on any part of the structure adjacent thereto or supporting such equipment situated at a distance less than 2 metres [6 fit. 7 inches] from the live parts the overhead equipment shall be made dead and earthed. A minimum of two earths shall be provided one on either side of the working party.

[13] Working on service building and structures in the vicinity of live equipment. – [a] Railway staff when required to carry out work on service buildings and structures in proximity to overhead equipment, 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 equipment.

[b] 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 to be present, who shall take such precautions as may be necessary for the safety of the persons concerned.

[14] Working on structure supporting live overhead equipment. – [a] No person other than overhead equipment staff shall climb or work on any structure, which supports the overhead equipment, without having received permit-to-work card. Work shall not be carried on nor shall anything be affixed to any structure without the written permission of the Divisional Electrical Engineer [Traction Distribution] [See GR. 17.04].

[b] When work is to be carried out in the danger zone of a 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 a structure, until he personally has received definite instructions to climb the structure from the person-in-charge of the working party and no message or signal other than these instructions is permissible.

[c] The instructions may be conveyed from the person in charge of the party to workmen by another person. 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 linesman.

[d] All persons deputed in Clause [c] to convey instructions to workmen shall be made known to the workmen previously 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.

[e] The person in charge or the person deputed under Clause [c] shall before instructing his men to climb a structure, explain which section of overhead equipment is dead and which section is alive and which parts of the structures are safe to work upon. The person-in-charge or the person deputed under Clause [c] shall satisfy himself that his explanation is clearly understood by all the workmen whom he has instructed to climb the structure.

[f] On 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 alive on completion of work that all men and materials adjacent to the line or lines have been withdrawn from the danger zone.

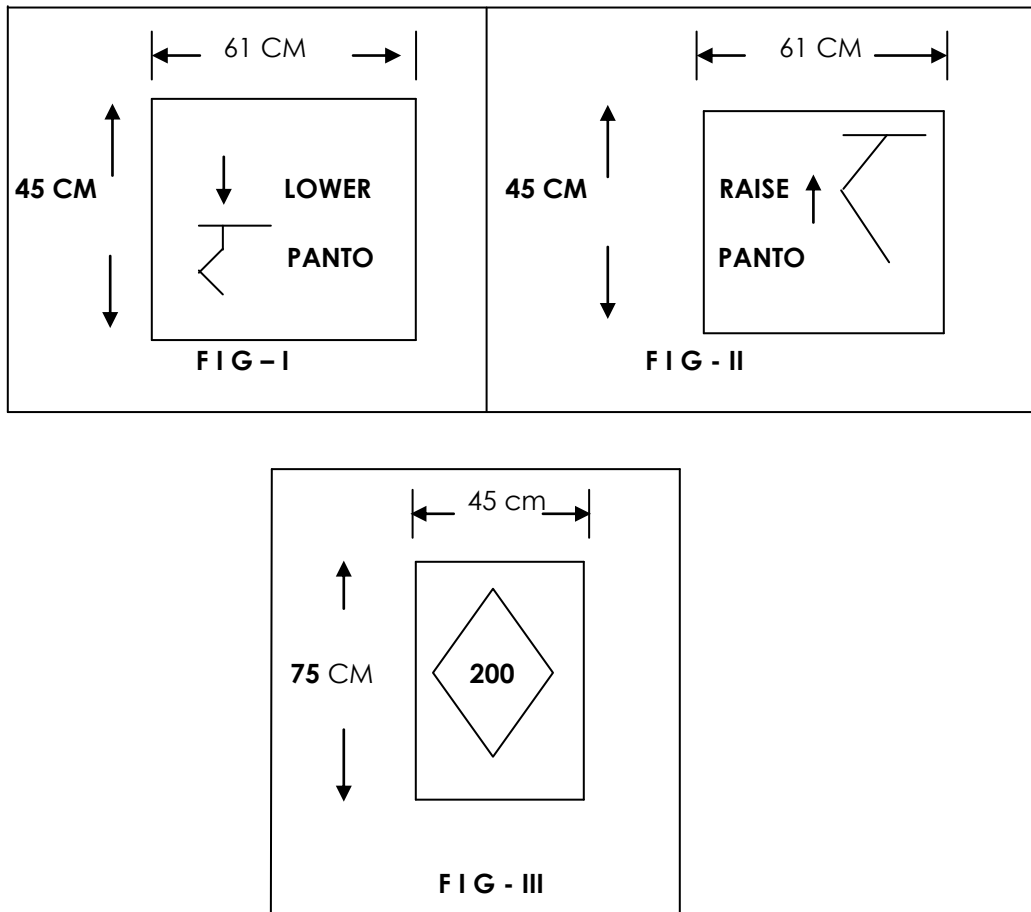
[g] Where overhead equipment for two or more tracks is supported on one structure and work has to be done on the overhead equipment of one track while the overhead equipment of adjacent tracks are alive, staff shall not walk or clamber across live overhead equipment by means of the boom to gain access to the overhead equipment to be worked on. Where necessary ladders, westles or similar means shall be used for gaining access to the overhead equipment to be worked on

[15] Painting of Structures. – Only after a permit to work has been received and overhead equipment has been correctly earthed, portions of track structures at a distance less than 2 metres from any live equipment may be scraped, cleaned or painted. Other portions of structures of overhead equipment may be cleaned and painted while the overhead lines are alive 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.

[16] Showing of Signals. – [a] When due to overhead equipment being under repair or due to any other obstruction, it is necessary to indicate to the Loco Pilot that he has to stop, as cautiously, by the signals as indicated under GR 15.09 that will be executed by traction staff.

The shapes and size of the indicators boards will be as per SR No. 15.09[1] except that these boards will be fixed on the OHE traction masts at a height of 2.13 metres from rail level instead of individual posts.

[b] When due to overhead equipment being defective, it is necessary to lower the pantograph of electric rolling stock, a temporary panto lower board as in Figure – I one mast ahead of the obstruction, shall be fixed on the OHE mast. To indicate to the Loco Pilot that he is approaching defective section, a Warning Board as indicated in Figure – III will be fixed on the mast at a distance of 200 metres. To give indication for raising of the pantograph, another board as on the Figure – II shall be fixed on the mast after the defective section.



These boards shall be fixed on the traction masts at a height of 2.13 metres from rail level. These boards whether permanent or temporary shall be illuminated with the help of fixed lamps or with hand lamps during night time.

A person with a yellow board with panto lower symbol painted in blue shall be posted two masts ahead of defective section to give indication to Loco Pilots to lower their pantograph. To ensure the observance of caution by the Loco Pilots, all trains shall be stopped at the station just short of the site of obstruction on double line section and at stations on both sides in case of single line section and Caution Order for panto lowering issued. Trains which would normally run through shall be stopped out of course for this purpose.

17.04. Permit-to-work on electrical equipment. -If work is to be carried out adjacent to the electrical equipment or any other part thereof by other than the competent railway servant, such work shall be done only when and for such time as the person-in-charge of the work has obtained a written permit-to-work, duly signed and given by the railways servant authorised for the purpose by special instructions. He, in turn, shall issue the same only with the knowledge of the Traction Power Controller.

SR.17.04 [1] **Work in the danger zone of overhead electrical equipment. –** Before commencing work , and for the whole time that work is being performed on any part of the electrical equipment or adjacent thereto, that part of the electrical equipment shall be made dead and earthed save and except as provided in these

rules. A permit-to-work shall be obtained from the Traction Power Controller or an authorised person in accordance with [4], [5] [9] and [10] below. After permit to work has been obtained and before any work is undertaken within the danger zone of overhead equipment, a minimum of two earths shall be provided one on either side of each working party.

[2] Procedure for obtaining power blocks and permits-to-work on traction electrical or overhead equipment. – [a] All Departments in the electrified area who require power blocks, or permit-to-work in the danger zone of traction equipment, or who require overhead line and or bonding staff to be present at site for scheduled maintenance works, shall deliver at the office of the Divisional Electrical Engineer [Traction Distribution] not later than 10 hours on every Monday morning, statements in the prescribed form showing [i] the nature of the work and the date on which it is to be performed, [ii] by whom the work is to be carried out, [iii] location of the work and the section of the line to be blocked, [iv] the trains between which the block is required and [v] whether the track will be available for diesel traffic.

[b] The requirements of all Departments will be co-ordinated in the office of the Divisional Electrical Engineer [Traction Distribution] and a consolidated statement forwarded to the Divisional Operations Manager concerned, by 12 hours on every Wednesday for inclusion in the weekly programme of traffic and power blocks.

[c] Works of an urgent character shall be attended to by obtaining emergency blockstand permits-to-work from the Traction Power Controller.

[d] A weekly programme of work involving traffic blocks, power blocks and permits-to-work shall be prepared in the office of the Divisional Operations Manager, and dispatched to all concerned by Friday evening, for the week commencing on the following Monday.

Note. – The procedure detailed in paras [3], [4] [5] must be followed for obtaining the power blocks and permits-to-work shall be obtained in each case as prescribed, even though the work is included in the weekly programme.

[3] Procedure for arranging power blocks in electrified section. – [a] When a power block has been sanctioned, the Traction Power Controller shall issue to the Section Controller a power block message [in the prescribed form] in duplicate either through a messenger or by telephone with exchange of Private Numbers. The Section Controller shall get confirmation from the Station Master[s] or Cabin Assistant Station Master[s] that the section will be blocked for electric traffic as detailed in Sub-rule [11][b] below. He shall then either return one copy of the written message duly acknowledged indicating thereon the time from which the block will be given or send a phone message to the Traction Power Controller giving the same information supported by a Private Number. The Traction Power Controller will thereafter arrange to isolate and make dead the portions of electrical equipment concerned at the time indicated by the Section Controller and issue a permit-to-work thereon, as detailed in sub-paras [2] and [3] above.

[b] However, in case of an emergency, the Traction Power Controller shall switch off the power first and then advise the Section Controller of the power block imposed and reason for doing so.

[c] When permit-to-work on the portion of Electrical equipment has been cancelled and the Traction Power Controller has restored normal conditions, he shall cancel the

power block message issued to the Section Controller, either on the message sent in duplicate or by telephone with exchange of Private Number.

[4] Method of obtaining permits-to-work in the danger zone of traction electrical or overhead equipment for work by other than authorised persons. – [a] The permit-to-work shall be taken from the Traction Power Controller by an authorised person who shall earth the electrical equipment specified and hand over a permit-to-work card to the person in-charge of the work, holding an acknowledgement on the other copy. A duplicate of every permit-to-work card shall be retained in the personal possession of the authorised person who issue it

[b] On completion of the work and when all men and materials have been withdrawn from the electrical equipment and its vicinity, the person in-charge of the working party shall cancel his permit to-work card and return it to the authorised person who issued it. The authorised person shall in turn cancel the permit-to-work as detailed in 5[c] below.

[5] Method of obtaining permits-to-work in the danger zone of traction electrical or overhead equipment – For work by authorised persons. –

[a] Excepting as detailed in sub-rule [9] below, permits-to-work shall be obtained by authorised persons from the Traction Power Controller who shall carry out [through remote control] or order the switching operations necessary to isolate the portion of the equipment concerned. When the Traction Power Controller receives confirmation that the switching operations have been correctly carried out, he shall inform by a telephone message with exchange of Private Number the authorised person stating clearly that the electrical equipment has been made dead. This information shall constitute a permit-to-work. Permits-to-work will be issued in this manner only to authorised persons not lower in grade than a Linesman.

[b] On receipt of a permit-to-work, and before work is commenced, the electrical equipment, specified shall be earthed as per rules in force. Each working party shall be protected by independent earths.

[c] On completion of the work the person who received the permit-to-work shall ensure that all men and materials have been withdrawn from the electrical equipment and its vicinity. He shall then remove earths, and inform the Traction Power Controller either by written memo or by a phone message supported by a Private Number that men and materials have been withdrawn from the specified electrical equipment and the same may be made alive. Such procedure shall constitute cancellation of the permit-to-work.

[6] Local cancellation of permit-to-work when telephones are interrupted. – If telephone communication with the Traction Power Controller is interrupted when a permit-to-work is to be cancelled, the authorised person to whom the permit-to-work was issued shall arrange locally for restoring to normal [live] conditions the portion of traction electrical or overhead equipment specified in the permit-to-work and for canceling the power block, if possible.

[7] Working of more than one party independently on the same portion of traction electrical or overhead equipment.- Whenever work has to be carried out by more than one working party, the permit-to-work shall be issued by the Traction Power Controller only to one authorised person who shall alone be responsible under this rule, for all work on the portion of electrical equipment, specified in the permit-to-work. Any additional party or parties may work on the same portion or electrical equipment only with the permission of this authorised person who shall inform all

parties of the total number or parties working on the same portion of electrical equipment. The authorised person shall cancel the permit-to-work only when he is satisfied that all working parties have withdrawn all men and materials and removed the earth from electrical equipment. In the event of telephone communication being interrupted the responsible person shall proceed as provided in [6] above.

[8] **Entries in the log book.** – The number of each permit-to-work issued must be entered in the log book of the Traction Power Controller, together with the particulars and time when the equipment is made dead for the work and re-energised after completion of the work as per information received on the telephone from the authorised person concerned.

[9] **Work inside loco shed.** – In case of work to be done inside the loco sheds, the Application for permit-to-work must be made to the SSE/SE/JE [Rolling Stock] who shall arrange for the issue of the permit-to-work after getting the switch of the inspection bay or the feeders opened. No intimation to the Traction Power Controller is necessary and the permit-to-work must be returned for cancellation by the person-in-charge of the work to the SSE/SE/JE [Rolling Stock] before the switches are closed.

[10] **Local Blocks.** – [a] Local arrangements may be made with the Station Master, Cabin Assistant Station Master, yard Master and other responsible for the movement of traffic, for power blocks in such sidings as do not affect the movement of trains on main running lines, loop lines, and reception or departure lines in yards. The Traction Power Controller shall however be kept informed as to when the power block is taken and cancelled. The Station Master, Cabin Assistant Station Master, Yard Master and other persons shall also advise the Section Controller of such power blocks.

[b] Local blocks shall be arranged on the forms prescribed for the purpose.

[11] **Procedure for preventing admission of electric rolling stock into or over section of track with dead or earthed overhead lines.** – [a] In order to prevent electric rolling stock from being admitted into a track or cross-over which overhead equipment is made dead or for which a permit-to-work has been issued, the levers of signals and points in the signal cabins governing such movements of electric rolling stock shall be protected by means of lever collars. If the points and signals are locally operated the same should be locked and the keys kept with the Station Master.

[b] The Section Controller on receipt of a power block message from the Traction Controller shall repeat to all Station Masters and Cabin Assistant Station Masters concerned the said message indicating the time from which the block is to commence. Each Station Master or Cabin Assistant Station Master shall record and acknowledge the message with a Private Number and the time of receipt and

then block to electric traffic the line or lines described from the time indicated and place lever collars on the appropriate traffic the line or lines described from the time indicated and place lever collars on the appropriate levers in accordance with Appendix to Station Working Rules for electric traction. When lever frames or other signal cabins are controlled electrically from a Station Master's office or Signal Cabin the Station Master or Cabin Assistant Station Master shall place the lever collars on the slides of electric slide instruments, or on the keys of electric transmitters or interlocked key boxes. The Station Master or Cabin Assistant Station Master shall also ensure that lever collars are placed by lever man on levers.

[c] The lever collars shall not be removed until the Station Master or Cabin Assistant Station Master receives from the Section Controller and acknowledges a message supported by a Private Number canceling the power block. The Section Controller

shall not issue such a message unless he has received a written message or phone message supported by a Private Number from the Traction Power Controller cancelling the power block.

Note. – In all cases mentioned under paras [5], [10] and [11] of this Subsidiary Rules the Station Master must record the information in the 'Station Master's Diary.'

[12] **Station Working Rules for Electric Traction.** – [a] In view of the large number of possible movements which may accidentally energized a dead section under a power block, the various protective measures to be taken by each Station Master/Cabin Assistant Station Master/yard Master when power block is granted from the various sectors, sub-sectors or elementary sections shall be catalogued in the Station Working Rules for each station. Every Station Master/yard Master/Assistant Yard Master shall be thoroughly familiar with these instructions so as to be able to carry out the protective measures prescribed efficiently and quickly.

- [b] The Station Working Rules supplied to each station shall contain –
 - [i] rule to be generally observed by all station;
 - [ii] a chart giving exactly what precautions have to be taken for granting power blocks on each sector, sub-sector or elementary section; and
 - [iii] a drawing showing the wired and unwired tracks as well as the sectionalizing arrangements including the position of signals and points referred to in the chart mentioned above.

[13] **Movement of other than Electric Traffic.** – Goods or Passenger trains hauled by other than electric locomotives may be allowed to pass through the dead section subject to the following conditions –

- [a] This is not prohibited specifically in the power block message.

[b] Diesel engine or trains hauled by such engines shall be brought to a stand at the station preceding the station/section at which power block is granted and Station Master of this shall satisfy himself by personal inspection that there is no electric locomotive on the track in question.

[c] He shall also give a Caution Order to the Loco Pilot of such engine or train warning him of the power block ahead and instructing him to watch for hand signals.

[d] No Station Master shall give line clear or take off signals for a train to run over a section under power block unless he has received an assurance [supported by Private Number] from the Station Master of the preceding station that there is no electric locomotive or Tower Wagon with its Pantograph raised on the train.

[e] Whenever a "Red Warning Collar" has been removed for permitting a movement, it shall be replaced back on the signal control lever immediately after the movement is completed.

[14] **Standard Forms for Power Block Message.** – Standard Forms for Power Block Messages shall be used for exchange of messages between TPC and Section Controller when a power block is to be imposed or withdrawn. When TPC and the Section Controller are located in adjacent rooms, the messages shall be made out in duplicate and sent to the other party obtaining the acknowledgement of the receiving party on a carbon copy. When they are located far apart, the messages shall be exchanged on phone, the receiver recording the message on an identical form shall repeat it for confirmation with exchange of Private Number.

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 persons 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] Watering of carriages in electrified sections –

[i] If the carriages are standing on lines having overhead traction wires, nobody shall get on to the roofs of the carriages unless the overhead traction wires above are made dead and earthed [GR 17.05(2)] by an authorised person.

[ii] Staff getting on to the roofs of the carriages for watering after the overhead traction wires above such carriages are made dead, shall not carry long poles or any other articles which may come within the danger zone of the traction wires on the adjoining lines. They shall not extend the water hoses or any part of their body or direct water jets within the danger zone of live overhead traction wires.

[iii] For the purpose of isolation and earthing the overhead equipment, wires above the watering arrangement for each platform will form a separate elementary section i.e., different platforms will have different watering sections. The limits of each watering section shall be marked by danger limit boards. This constitutes the limits within which watering of the carriages may be done. Separate interruptors or isolators shall be provided for controlling supply to each watering section. Keys for such interruptors/isolators shall be provided with metal tags on which the numbers of the interruptors/isolators are punched. A neutral section above 12 metres long is provided at either end of each watering section.

[iv] For switching off power in the watering section, the keys of the interruptors/isolators enclosures, which is kept in personal custody of ASM on duty, locked in a glass fronted key box, will be taken by the authorised person not below the rank of a Linesman. Thereafter the watering section will be made dead and earthed. The permit-to-work key of the concerned watering section will be handed over to the TXR-in-charge of watering, who will personally check that the key received by him bears the correct number and relates to the concerned watering section on which the carriages to be watered are standing. The TXR in-charge shall also ensure that the train is standing within limits of watering section bounded by the danger limit board on the overhead equipment. He will then arrange to fix yellow flags [or yellow lights by night] on either end of the train. He will at the same time hand over to each of his men who is to go up on the roof of the carriages, a number badge of the legend and description meant for that elementary section.

[v] After the watering of carriages has been done and TXR staff have come down, the permit-to-work key will be returned to the Linesman and power supply will be restored to the OHE as per prescribed procedure.

[2] Working near cables. – [a] When excavations are being made adjacent to tracks and cables routes in an electrified area adequate precautions shall be taken for the safety of staff and to avoid damage to underground cables and rail bonds.

[b] Markers are placed wherever possible along the cable alignment and plans are available indicating generally the position of buried cables. Excavation must not be undertaken in the vicinity of cable routes until the exact position of the cables has been ascertained and a representative of the department concerned is present. This is applicable to cables of Posts and Telegraphs Department also.

[c] If circumstances make it imperative that work be undertaken without sufficient notice, the Assistant Electrical Engineer [Traction Distribution]/ Assistant Signal and Telecommunication Engineer concerned must be informed by a message for arranging staff to be present.

[3] **Work on roofs of Rolling Stock.** – [a] In 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 work on the roof 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 before energising the overhead equipment.

[b] Traction Engine Examiner or other authorised person in charge shall be responsible for making dead the overhead equipment over the tracks of inspection lines in loco sheds, EMU Car Sheds and stabling sidings before permitting 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 that all staff are cleared before energising the equipment.

[4] **General Precautions.** – Care shall be taken to ensure that covers of tank wagons, funnels of steam cranes or such other items are not left in such a position as to foul the traction overhead equipment.

[5] **Precaution to be taken by staff** – Measuring tapes of all kinds of 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 alive.

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] [a] It shall be ensured that the level of rails under foot-over bridges, road-over bridges, and other overline structures does not exceed the level marked under such structures.

[b] Whenever any work on track, which is likely to affect rail bonds, is undertaken by Permanent Way staff, adequate notice shall be given to the SSE [Overhead Equipment], to enable him to arrange for bonding staff for removal and replacement of bonds.

[c] While working on the track, the Permanent Way staff will follow the Safety Rules as given in Chapter IX of A.C. Traction Manual.

[d] Bonding staff when working with a SSE/JE(P.Way), shall work under the instructions of the SSE/JE(P.Way), who shall then be responsible for the safety of the track and of the staff.

[2] **Alterations to overhead equipments.** – [a] All minor alterations to overhead equipment whether permanent or otherwise shall be reported to the Traction Power Controller immediately by telephone and to the Divisional Electrical Engineer [Traction Distribution] or the Assistant Electrical Engineer [Traction Distribution] in writing.

[b] Major alterations affecting the existing disposition of any section of overhead equipment shall not be made unless sanctioned by the Divisional Electrical Engineer [Traction Distribution]

[c] No alteration or addition shall be made to any overhead equipment so as to infringe standard dimensions, whether permanently or temporarily. If an infringement is unavoidable, Divisional Electrical Engineer [Traction Distribution] should be advised immediately.

[d] When working on overhead equipment, all staff shall ensure that the wires are not deflected so as to ensure pantographs of electric Rolling Stock passing on other lines to be fouled by steady arm tubes or any other part of the overhead equipment.

[e] When the overhead equipment is slewed either temporarily or permanently, the person-in-charge shall ensure that section insulators, jumpers, distance and other fittings will not foul the pantographs of electric Rolling Stock passing on other lines.

[3] **Speed restrictions near Neutral Sections.** - [a] Speed restrictions should not be imposed by Permanent Way or TRD staff within a distance of 1 Km. of OHE Neutral Section in the direction of approaching train except under unavoidable circumstances.

[b] When such speed restrictions are introduced, efforts should be made to-

[i] Restrict the speed to not less than 15 KMPH.

[ii] Confine the restriction to the minimum section.

[c] If a banner flag has to be placed in the direction of approaching a Neutral Section, such banner flag should normally be displayed at a distance of not less than 1 KM before the Neutral Section. No banner flag should be displayed between 500 metres and 250 metres boards of the Neutral Section.

17.07. Tripping of circuit breakers of locomotives and electrical multiple units at neutral sections. - **Unless otherwise allowed by special instructions, the Loco Pilot of the locomotive or electrical multiple unit shall coast through the neutral section, duly switching off power. Necessary indication boards to this effect shall be provided to guide the Loco Pilot to switch off and switch on power.**

SR. 17.07. **Warning Boards for Neutral Section –** To indicate to the Loco Pilot that he is approaching a Neutral Section so that he should be in readiness to switch off, the Warning Signal as per drawing No. [Fig. I & II] shall be fixed 500 metres and 250 metres ahead of the Neutral Section. At the points where the power is to be switched off, another signal shall be provided. To give indication that the Neutral Section has been passed and the power may be switched on by the Loco Pilot, another signal as per drawing No. [Fig. IV] shall be provided.

WARNING FOR NEUTRAL SECTION

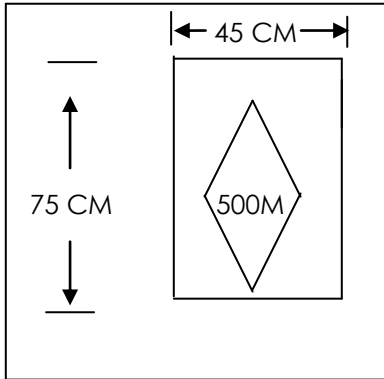


FIG - I

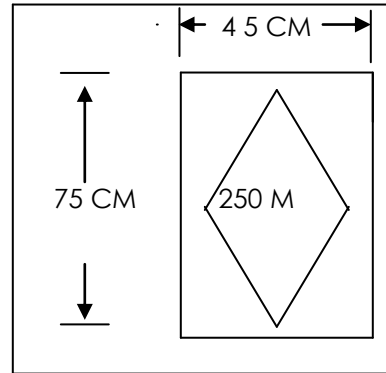


FIG - II

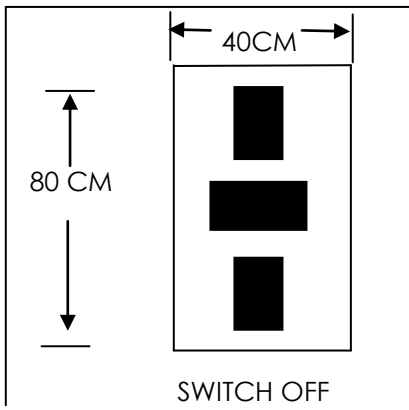


FIG - III

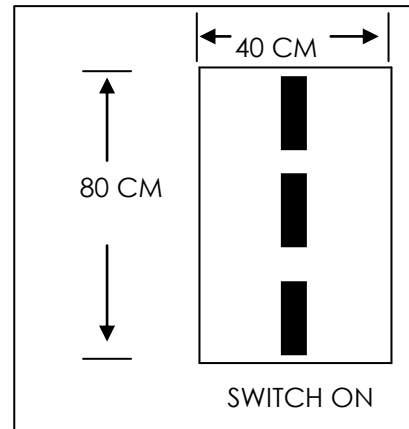


FIG - IV

17.08 Tower Wagon. - The rules for the movement and working of Tower Wagons shall be laid down by special instructions.

SR. 17.08. [1] – [i] Tower Wagons shall be treated and worked as trains. For their reception, despatch, shunting and stabling all the rules relevant for such operations of the trains shall apply to Tower Wagons also.

[ii] Loco Pilots of Tower Wagons falling under safety category with their medical classification as 'A1', validity of their competency certificate, should be 3 years. The periodicity for their Refresher Course, Safety Camp and Periodical Medical Examination shall be the same as for train Loco Pilots. Training during Refresher course shall include operation and maintenance of Tower Wagons.

[iii] The setting of points for shunting of Tower Wagon will be done by the Pointsman.

[iv] In case the Tower Wagon fails on line, Electrical JE or in his absence the senior-most staff present in the Tower Wagon, will arrange to protect the same by display of danger signal and placement of detonator, signals etc., as given in GR 6.03. When the Tower Wagon moves without traction distribution working party and fails on line, it will be protected by the Tower Wagon Driver.

[v] When a Tower Wagon proceeds on single line section, "the authority to proceed" will be a token / tablet or paper line clear ticket.

[vi] When a Tower Wagon proceeds on a double line section or on a single line section provided with tokenless Block Instrument, it shall invariably proceed on the line clear except over those sections where a Tower Wagon cannot operate the treadle or track circuits.

[vii] The procedure for working of the Tower Wagon on "Lock and Block" section, where the Tower Wagon fails to operate treadle, will be as follows –

[a] The station despatching the Tower Wagon must obtain permission from the station in advance, such permission for despatching the Tower Wagon being confirmed by Private Number.

[b] In addition to exchange of Private Number with Traction Power Controller, Section Engineer/TRD should also be issued a memo giving details of power and traffic block granted to him by the concerned ASM/SM.

[c] In case Tower Wagon fails to operate treadle, track circuit, Block Instrument as certified by Section Engineer/TRD, The Block Instrument needle should be turned to "Train on Line" – position direct as is done in the case of "Blocking Forward" or "Blocking Back" of sections.

[d][i] In case Tower Wagon moves on "Blocking Forward" or "Blocking Back" a section, since it will not be possible to lower the last Stop signal, the authority to proceed will be T/409. When, however, this signal is defective, T/369 [3b] shall also be issued. In the latter case, hand signal shall only be displayed at the foot of the defective signal in the case of a Starter being the last Stop signal.

[ii] Before dispatching a Tower Wagon, Station Master must issue a Caution Order in form T/409 stating the statutory sectional cautions and speed to be maintained by the Tower Wagon in the block section. If more than one Tower Wagon is sent at a time, the minimum distance of 120 metres to be maintained between two Tower Wagons shall also be clearly mentioned.

[e] On arrival of the Tower Wagon at the station in advance and after the rear block section has been cleared, the Cabinman/ASM will give a Private Number to the station in rear as an assurance that the block section has been cleared and till this assurance is received no train should be allowed in this section.

[f] Supervisor/other staff in charge of the Tower Wagon shall stop at the station preceding the section where the work will be taken in hand. He shall make over a written memo to the Station Master on duty giving full particulars of work including the duration of work and the station where the Tower Wagon will go after completion of the work. Station Master on duty will obtain line clear from the station concerned under exchange of Private Numbers. T/409 will be issued to the Loco Pilot of the Tower Wagon.

[g] In case of control failure the Station Master will consult with the Station Master on duty at the other block station. The Tower Wagon, when returning to the same station after working in the section, will stop at the first Stop signal and the Loco Pilot will send his staff to the Station Master on duty who will arrange for the reception of the same.

[viii] After the Tower Wagon has entered the section for work, no further protection will be required for it by way of banner flags, detonators etc., as the Station Master shall take necessary protection against admission of trains into the section under traffic block.

[ix] If it is felt that more Tower Wagons are required for quicker completion of OHE works, this may be allowed in the same block section. In such a case, the Cabin Assistant Station Master will ensure that the Caution Order is issued to the Loco Pilots

of subsequent Tower Wagons to proceed cautiously in the block section. The Assistant Station Master shall also ensure that all the Tower Wagons have cleared the block section at the end of the work.

[x] For movement of more than one Tower Wagon in the same block for carrying out traction related work, the minimum distance of 120 metres between 2 Tower Wagons must be maintained during the movement and should be specifically mentioned in the Caution Order.

[xi] Maximum permissible speed of Tower Wagon in block period shall be 10 Kmph. .

[2] Rules for working of Ladder Trolleys of Electrical Traction Department. –

[a] The Ladder Trolley shall not be put on line unless the traffic block has been obtained.

[b] For taking Traffic Block for ladder Trolley the Lineman in charge of the gang shall issue an advice to the Station Master / Yard Master concerned in the form E-TRD-1 and E-TRD-2, as given in Appendix 'D' indicating the line on which the ladder Trolley is to work and obtain the acknowledgement for the same.

[c] If it is possible to protect the line on which work has to be carried out by setting and locking the points leading the same, this shall be done. If it is not possible to set and lock the points against the line under repairs, it shall be protected by hand signals.

[d] On completion of the work the Lineman in charge shall cancel the traffic block by issuing an advice to the Station Master / Yard Master.

17.09 Additional rules for electrified sections. - Special instructions for working of trains on electrified sections shall be notified by the authorised officer.

SR. 17.09 [1] Electric shock :-

[a] 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.

[b] In the event of electric shock, the treatment laid down for resuscitation shall be carried out immediately.

[c] The name and telephone number of the nearest Railway and Civil Doctors and Hospitals shall also be exhibited, at all the places stated in sub-rule [a] above.

[2] Inspection of Electrical Rolling Stock :- The inspection of Electrical Rolling Stock shall be carried out periodically in accordance with AC Traction Manual and other instructions issued by the Railway Administration from time to time.

[3] Isolation of high voltage equipment:- [a] The high voltage electrical equipment installed in electric engines and motor coaches shall be so arranged that it will not be possible for any unauthorised person to gain access to it.

[b] It shall not be possible to have access to high tension compartment until the power has been switched off and pantograph lowered.

[4] Sanded catch sidings. – [i] On sanded catch sidings, the rails shall be kept clear of sand for a length of 70 feet beyond the overhead lines. This is not applicable to sand humps.

[ii] In case an electric locomotive or an EMU runs into the sanded length of a catch siding and if its pantograph is touching the over head equipment, there is a possibility of the EMU/Electric Locomotive body and the connected vehicles, if any attaining

high potential, if these are insulated from the rails. Under such circumstances the following action be taken –

[a] No person shall attempt to enter or leave or any other way make contact between the permanent way formation and the rolling stock body.

[b] The Loco Pilot shall immediately lower the pantograph and stay in the locomotive/EMU till the TRD staff is arranged at site by the Station Master and Rolling stock body is discharged.

[5] **Working of cranes.** – [a] No steam or hand crane shall be worked adjacent to traction overhead equipment unless such overhead equipment is made dead and earthed. All movements of the crane jib shall be carefully controlled so as not to foul the traction overhead equipment. Wherever possible the direct blast from the crane funnel to the overhead equipment and particularly to section insulators shall be avoided.

[b] Except in an emergency, 24 hours' notice of intention to work a crane adjacent to overhead equipment shall be given to the Divisional Electrical Engineer [Traction Distribution] in order to make arrangements for overhead equipment staff to standby. When possible the working of cranes shall be included in the weekly programme detailed in SR 17.04 [4]. In an emergency, the Traction Power Controller shall be advised and he shall make arrangements for overhead equipment staff to stand by.

[c] Cranes shall not be worked adjacent to traction overhead equipment unless the overhead equipment staff is present.

[6] Whenever station staff notice any abnormality in the running of a train and they fail to stop such a train by normal means as laid down in GR and SR, they must take steps to switch off the power supply of OHE of the affected section by informing the Traction Power Controller immediately.

[7] **Duties and responsibilities of Traction Power Controller, Section Controller and Station Master in case of No Tension/Fault Tripping in over Head Equipment :-**

[a] Fault Isolation_ –[i] In an electrified section in the event of Over Head Equipment failure, Traction Power Controller shall immediately identify and localize the faulty section and isolate the same. In case of double and multiple line sections, he shall also isolate healthy section on adjacent track on the same route length as faulty section. The Traction Power Controller shall then advise the Section Controller in writing or on phone under exchange of Private Number, of the section found faulty and healthy section temporarily isolated.

[ii] On receipt of the advice from Traction Power Controller, the Section Controller shall take action as under :-

[a] Section Controller shall, under exchange of Private Number, advise Station Masters of Stations on either side of isolated sections to treat the faulty section as if the same is under emergency power block and take action accordingly.

[b] On double line section – Healthy section temporarily isolated :

The Section Controller shall check whether any train has entered in the faulty section. If not he shall advise the concerned SM to issue caution order to the Loco Pilot of the first train on unaffected section to 'keep a sharp look out on the adjacent line/lines to see if there are any OHE abnormalities'. On reaching the next station, Loco Pilot should report whether or not the section over which they have passed is safe for train movement. Then Section Controller will advise the Traction Power Controller in writing to re-energize the healthy section that was temporarily isolated.

[c] If however, a train has entered in faulty section, the Section Controller shall immediately inform Station Masters of all stations who are concerned with working of train in the faulty section and also in the section in which healthy Over Head Equipment is temporarily isolated, under exchange of Private Number, that they shall not allow any train to enter the affected block sections unless both Loco Pilot and Guard of the first train in unaffected section have been issued caution order to this effect.

[i] Proceed with speed not exceeding 60 KMPH during day when visibility ahead is clear and not exceeding 30 KMPH during night subject to observance of other speed restrictions.

[ii] Keep a sharp look out and be prepared to stop short of any obstruction, which may be due to any infringement from the adjacent line/lines and also keep a sharp look out on the adjacent line/lines to see if there are any Over Head Equipment abnormalities. On reaching the next station report whether or not the section over which they have passed is safe for train movement.

[iii] Only after taking this action the Section Controller shall advise the Traction Power Controller in writing that necessary precaution have been taken to ensure safety of the train. The Traction Power Controller shall then restore the feed to the healthy section, which was temporarily isolated.

[iv] Action to remove speed restrictions shall be taken by the Section Controller in consultation with Station Master on receipt of report from the Loco Pilot and the Guard that the section is free of obstruction. Section Controller shall also advise the Traction Power Controller of the report of Loco Pilot/Guard of the train indicating whether or not there are any infringements or abnormalities in Over Head Equipment. Till such time it is decided to remove speed restriction, subsequent train shall be allowed to enter into the section only with permission from the Section Controller and shall continue to be issued caution order prescribing clearly the speed restriction and other precautions, as pointed out in [c][i] above.

[8] Duties and responsibilities of Traction Power Controller and Section Controller in the event of any abnormality in train on Electric Traction necessitating "Switching off" of Over Head Equipment Supply :-

[i] As soon as Traction Power Controller comes to know about unsafe condition of a train working on Electrified Traction, he shall immediately switch 'OFF' the Over Head Equipment supply of both the lines of relevant Sub-Sector. Traction Power Controller shall then advise in writing, the Section Controller of sections in which Over Head Equipment has been switched 'OFF'.

[ii] On receipt of advice from Traction Power Controller, the Section Controller shall, under exchange of Private Number, advise Station Masters of all stations, who are concerned with working of trains in the affected section to treat the Dead section as if the same is under emergency Power block and to ensure that no train is allowed to enter into the section.

[iii] Healthy Section temporarily isolated :-

Station Masters will not allow any train to enter even Healthy line of the affected section unless both Loco Pilot and Guard of the first train of unaffected section have been issued caution order to proceed with the restricted speed not exceeding 60 KMPH during day when view ahead is clear and 30 Kmph during night subject to observance of other speed restrictions and keep a sharp look out and be prepared

to stop short of obstruction, which may be due to any infringement or Over Head Equipment abnormalities from the adjacent line/lines. Also advise Loco Pilot to report immediately on reaching the next station whether or not the section over which they have passed is safe for the train movement.

[iv] After ascertaining that there is no infringement to adjacent track, the caution order as indicated shall be withdrawn immediately.

[v] Section - having affected train :

After getting information from the crew of the affected train about the nature of abnormality, decision regarding recharging of the Over Head Equipment shall be taken by the Section Controller in consultation with Chief Controller/Dy. Chief Controller (Shift Duty) and controller of concerned department.

[vi] If the Loco Pilot of the affected train contacts Traction Power Controller/control and no defect is detected in the train, on resumption of Over Head Equipment he will be asked by control to clear the block section with the restricted speed not exceeding 60 KMPH during day when view ahead is clear and 30 KMPH during night subject to observance of other speed restrictions and shall keep a sharp look out for any abnormality in the train. On arrival at the station the staff of concerned department should check the train. If no abnormality detected the train should resume at normal speed.

[9] Duties and responsibilities of the Loco Pilot and the Guard in case of Over Head Equipment tripping/No tension in Over Head Equipment :-

[i] In cases of transient Tripping of Over Head Equipment the Loco Pilot shall resume normal traction and keep a sharp look out including on the adjacent line/lines to see if there are any abnormalities/ obstructions and will inform to the Guard through walkie-talkie or whistle code about Tripping in Over Head Equipment. The Guard of the train will look out for any abnormality on his train. The Assistant Loco Pilot should look back and observe his train for any abnormality.

[ii] If no tension in Over Head Equipment continues, the Loco Pilot shall immediately switch 'ON' the loco flasher and control the speed [not exceeding 60 Kmph. at night] so as to be able to stop short of any obstruction and stop his train close to first emergency socket and will communicate with the Traction Power Controller/Control to know the reason for no tension in Over Head Equipment. The crew should act according to advice of Control.

[iii] If it is possible to communicate with the Traction Power Controller / Control immediately, the Loco Pilot shall depute the Assistant Loco Pilot to get down and check the train with the Guard in order to look for any abnormality for any defect in his train including Locomotive. After the train has been checked, the Loco Pilot / Guard shall inform Section Controller of the abnormality, and assistance required, if any, or otherwise, through emergency phone of other line, Walkie – Talkie, Level Crossings gate or through train of other direction or by any other means of communication and act in accordance with advice of control. In case no abnormality is noticed in his train, Loco Pilot should switch 'Off' the loco flasher.

[iv] If in the mean time Power supply to Over Head Equipment gets restored, the Loco Pilot shall resume normal traction no sooner he comes to know of such resumption of supply.