THE DELHI METRO RAILWAY GENERAL RULES, 2002[1]

In exercise of the powers conferred by section 100 of the Delhi Metro Railway (Operation and Maintenance) Ordinance, 2002 (Ord. 7 of 2002) the Central Government hereby makes the following rules, namely:—*

CHAPTER I

PRELIMINARY

1. Short title and commencement.—(1) These rules may be called the Delhi Metro Railway General Rules, 2002.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. Definitions.—(1) In these rules, unless the context otherwise requires,—

(i) "accident" means any occurrence which causes or has the potential to cause death or injury to staff, passengers or other persons or causes damage to the property of the Metro Rail, passengers or other persons;

(ii) "adequate distance" means the distance sufficient to ensure safety;

(iii) "Automatic Fare Collection" system means automatic system for collection of fares and issuing for tickets.

(iv) "approach lighting" means an arrangement in which the lighting of signals is controlled automatically by the approach of a train;

(v) "approved special instructions" means special instructions approved or laid down by the Commissioner;

(vi) "Authorised Officer" means a person who is duly empowered by general or special order of the metro railway administration, either by name or by virtue of his office, to issue instructions or to do any other thing;

(vii) "authorised employee" means a metro railway employee to whom a competency certificate has been issued by the metro railway administration;

(viii) "Authority to Proceed" means the authority given to the train operator of a train, under the system of working, to enter the block section with his train;

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1. *Vide* G.S.R. 817 (E), dated 10th December, 2002, published in the Gazette of India, Extra., Pt. II, Sec. 3 (i), dated 11th December, 2002.

*. See now Delhi Metro Railway (Operation and Maintenance) Act, 2002 (60 of 2002).

(ix) "Automatic Train Operation" means a sub-system of Continuous Automatic Train Control System, which automatically controls acceleration, coasting, braking and stopping of trains;

(x) "Automatic Train Protection" means a sub-system of Continuous Automatic Train Control System which maintains safe train operation, including train direction, train separation, interlocking and speed enforcement;

(xi) "Automatic Train Supervision" means a sub-system of Continuous Automatic Train Control system, which automatically monitors the entire system and directs train running so as to provide scheduled service under normal circumstances;

(xii) "Axle Counter" means an electrical device which, when provided at two given points on the track, proves, by 'counting axles in' and 'counting axles out', whether the section of the track between the said two points is clear or occupied;

(xiii) "berth" means length of track nominated to be occupied by a train;

(xiv) "Block Back" means to dispatch a message from a block station intimating to the block station immediately in rear on a double line, or to the next block station on either side on single line that the block section is obstructed or is to be obstructed;

(xv) "Block Forward" means to dispatch message from a block station on a double line intimating the block station immediately in advance the fact that the block station in advance is obstructed or is to be obstructed;

(xvi) "Block Section" means that portion of the running line between block stations as specified by special instructions on to which no running train may enter, until permission to approach has been received from the block station at the order end of the block section;

(xvii) "Block Station" means a station at which permission to approach is received or granted;

(xviii) "cab signal" means visual indication displayed as speed code on the train operator's console granting him the authority to proceed under Automatic Train Operation, or Coded Manual Mode, or Automatic Train Protection Mode of driving;

(xix) "calendar day" means the period from midnight to midnight;

(xx) "Car Shed" or 'Service Depot' means an area where metro railway trains and coaches are berthed either for repair or for any other attention including stabling;

(xxi) "Caution Order" means an instruction given to the Train Operator to observe special precautions including speed reduction at notified locations;

(xxii) "Certificate of Competency" means the certificate issued to the metro railway employee after he has been examined for his knowledge of rules, regulations, procedures and manuals relevant to his duties and found fit;

(xxiii) "Coded Manual Mode", or "Automatic Train Protection Mode", or "Manual Cab Signal Mode" means the mode of operation of train under Continuous Automatic Train Control System where train is driven manually but remains subject to maximum speed determined by Automatic Train Protection codes;

(xxiv) "Commissioner" means the Commissioner of Metro Railway Safety appointed under section 7 of the Ordinance;

(xxv) "Cut Out Mode" means the mode of operation of trains under Continuous Automatic Train Control System intended for use in case of train borne Train Control and Signalling System failure, preventing release of emergency brake, the train being operated by the Train Operator in accordance with line side signals;

(xxvi) "Continuous Automatic Train Control System" means an automatic system of controlling and monitoring train movements continuously by means of sub-systems namely: Automatic Train Protection System, Automatic Train Operation System and Automatic Train Supervision System;

(xxvii) "connections", when used with reference to a running line, means the arrangements used to connect such line with other lines or to cross it;

(xxviii) "Chief Controller" means the metro rail official in overall charge of Operations Control Centre functions;

(xxix) "Depot Controller" means a metro rail employee responsible for movements of rakes within the depot area including inter-change of rakes between the depot and the main line;

(xxx) "electrical way and works" means the traction installations including overhead equipment and other connected works provided on the electrified sections of the railway;

(xxxi) "emergency" means an occurrence where there is a continuing risk of further injury and damage or major disruption to the railway service;

(xxxii) "Emergency Stop Plunger/Switch" means the switch provided on the platform, the operation of which causes the trains located in the station limit to come to a stop;

(xxxiii) "Engineer's Possession" means a defined section of track under the sole control of an authorised supervisor of track and structures department for a specific length of time;

(xxxiv) "Facing and Trailing Points" means points are facing or trailing in accordance with the direction a train or vehicle moves over them. Points are said to be facing points when by their

operation, train approaching them can be directly diverted from the line upon which it is running;

(xxxv) "Feeding Post" means a supply control post, where the incoming feeder lines from grid sub-station are terminated;

(xxxvi) "fixed signal" means a signal of a station at a fixed location controlling the movement of trains and forming part of the signalling system;

(xxxvii) "Fouling Mark" means the mark at which the infringement of Standard Dimensions occurs where two lines cross or join one another;

(xxxviii) "Headway" means the time interval between two successive trains;

(xxxix) "incident" means any occurrence which causes delay to passenger services;

(xl) "interlocking" means an arrangement of signals, points and other appliances, operated from a panel, so interconnected by mechanical or electrical or electronic locking or both that their operation must take place in proper sequence to ensure safety;

(xli) "Isolation" means an arrangement secured by the setting of points, or other approved means, to protect the line so isolated from obstruction from movement on other connected line or lines;

(xlii) "Local Control" means the assumption of the responsibilities of the Traffic Controller for the specific station by a person who is authorised to do so for the time being;

(xliii) "metro railway administration" in relation to,—

(i) a Government metro railway means the General Manager of that railway, or

(ii) a non-Government metro railway means the person who is the owner or lessee of that metro railway, or the person working that metro railway under an arrangement with the owner or lessee of that metro railway;

(xliv) "metro railway employee" means an employee duly qualified, possessing a valid certificate of competency and nominated to undertake and perform the duties entrusted to him;

(xlv) "neutral section" means a short section of insulated and dead overhead equipment, which separates the areas feed by adjacent sub-station or feeding post;

(xlvi) "normal direction of traffic" means traffic moving on the left hand side track;

(xlvii) "obstruction" and its cognate expressions includes a train, vehicle or obstacle on or fouling a line or any condition which is dangerous to trains;

(xlviii) "Operations Control Centre" means the organisation in overall charge of controlling the movement of trains on the main line;

(xlix) "Ordinance" means the Delhi Metro Railway (Operation and Maintenance) Ordinance, 2002 (Ordinance 7 of 2002);

(l) "overhead equipment" means the electrical conductors over the track together with their associated fittings, insulators and other attachments by means of which are suspended and registered in position for the purpose of electrical traction;

(li) "passenger train" means a train intended solely for the movement of passengers;

(lii) "Permission to Approach" means permission given from a block station in advance to block station in rear for a train to leave the latter and approach the former;

(liii) "Point and Trap Indicators" are not signals, but are appliances fitted to and working with points to indicate the position in which they are set;

(liv) "Power Block" means withdrawing traction current or power supply from a particular section;

(lv) "Proceed Code" means the Automatic Train Protection code other than zero speed code on the Train Driver or Train Operator's console which indicates the target speed;

(lvi) "Restricted Manual Mode" means a driving mode where train is driven manually and is subject to Automatic Train Protection code in respect of its speed limit only;

(lvii) "Rolling Stock Supervisor" means a metro railway employee duly qualified to examine trains and certify their fitness for safe running;

(lviii) "running line" means the track used for running trains through and between stations and includes connections, if any, used by a train when entering or leaving stations;

(lix) "running train" means a train which has started but has not completed its journey;

(lx) "Run On Sight Mode" means a driving mode where the train is driven manually and is subject to Automatic Train Protection restriction in respect of its speed only until Automatic Train Protection track indications are recognised after which it automatically changes to Coded Manual Mode or Automatic Train Protection;

(lxi) "secure a train" means to make a full brake application, close down all driving positions and remove the Train Operator's control key. On non-EMU trains this also means applying parking brakes;

(lxii) "Short Circuit" means a fault condition in the circuit arising from the introduction of a path of low resistance to electric current;

(lxiii) "shunting" means the movement of a coach or coaches with or without traction motors or of any other self-propelled vehicle, for the purpose of attaching, detaching or transfer or for any other purpose;

(lxiv) "signal" means an indication given to a train operator for controlling the movement of his train;

(lxv) "Signal Supervisor" means any Inspector of Signal and Telecommunication Department in charge of installation and maintenance of any signalling and/or associated telecommunication gears either on track/field/station or on train;

(lxvi) "special instruction" means instructions issued from time to time by the authorised officer in respect to particular cases or special circumstances;

(lxvii) "station" means any place on a line of the metro railway at which passenger traffic is dealt with;

(lxviii) "Station Controller" means the person on duty who is for the time being responsible for the working of the station and traffic within station limits and includes the Assistant Station Controller or any person who is for the time being in independent charge of the working of such station and traffic;

(lxix) "station section" means that portion of the running track within station limits, which is intervening between two consecutive block sections;

(lxx) "Station Control Room" means the room where station control panel is located;

(lxxi) "Supervisor Track and Structure/Works" means any metro employee responsible for the construction or maintenance of points and signals, underground structure, surface structure, bridges or other works connected therewith;

(lxxii) "supply control post" means a assembly of interrupters isolator switches, remote control equipment and other apparatus provided for controlling power supply to overhead equipment and it includes feeding posts, sectioning and paralleling posts and sub-sectioning posts;

(lxxiii) "system of working" means one or more of the systems specified in Chapter VII for the time being for the working of trains;

(lxxiv) "target distance" means the distance within which the train must attain the target speed;

(lxxv) "target speed" means the speed displayed on the train operator's console to indicate the speed the train must not exceed at the target location;

(lxxvi) "Terminal Station" means the station at the end of a line;

(lxxvii) "Tower Wagon" or "Inspection Car" means a self-propelled vehicle, which is used for the maintenance and repairs of overhead equipment;

(lxxviii) "Train Integrated Management System" means a system designed to provide information on a variety of functions related to movement of metro trains, like traction, power, braking air conditioning etc.;

(lxxix) "train" means an engine with or without vehicle attached or any self-propelled vehicle with or without a trailer which cannot be readily lifted of the track;

(lxxx) "Track Circuit" means an electrical circuit provided to detect the presence of a vehicle on a portion of track, the rails of the track forming part of the circuit;

(lxxxi) "Traffic Controller" means a metro railway employee on duty in the Operations Control Centre who is for the time being responsible for running of trains on the Metro System;

(lxxxii) "traffic hours" means the period between the time of the start of the running of the first scheduled train in the morning and termination of the last scheduled train at night;

(lxxxiii) "Traction Power Controller" means a competent metro railway employee responsible for the control of the traction power distribution system of the metro railway;

(lxxxiv) "train radio" means a wireless telephone message communication system between the cab of the train stations and the control;

(lxxxv) "Train Operator" means the driver of the metro train for the time being in charge of movement and control of the metro train;

(lxxxvi) "works train" means a departmental train intended solely for execution of work on the metro railway network;

(lxxxvii) "A.C Traction" means a traction system working on 25000 volts, single phase, 50 Hz alternating current;

(lxxxviii) "D.C. Traction" means a traction system working on 1500 volts D.C. (Direct Current) having rigid overhead contact system in the tunnel and flexible overhead equipment in the depot area.

(2) Words and expressions used in these rules and not defined but defined in Ordinance, or the Metro Railways (Construction of Works) Act, 1978 shall have the meanings respectively assigned to them in that Ordinance or that Act.

CHAPTER II

RULES APPLYING TO METRO RAIL EMPLOYEES GENERALLY

3. Supply of copies of rules.—The metro railway administration in the metropolitan city of Delhi (hereinafter referred to as Delhi metro railway administration) shall supply a copy of these rules and the amendments made therein to—

(a) (i) Operations Control Centre;

(ii) each station;

(iii) each rake maintenance, traction, permanent way and signal depot; and

(iv) such other offices as may be specified under special instructions;

(b) each metro rail employee on whom any definite responsibility has been placed by these rules, or of such portions of rules as relate to his duties.

4. Upkeep of the copy of the rules.—Every metro railway employee who has been supplied with a copy of these rules, shall—

(a) have his copy readily available when on duty;

(b) keep it posted with all corrections;

(c) produce the same on demand by any of his superiors;

(d) obtain a new copy from his superior in case his copy is lost or defaced; and

(e) ensure that the staff working under him are supplied with all corrections or amendments and that they comply with the provisions of this rule.

5. Knowledge of rules.—Every metro railway employee shall—

(a) be fully conversant with the rules relating to his duties;

(b) pass the specified examinations as conducted by the authorised officer;

(c) satisfy himself that the staff working under him are conversant with the rules relating to their duties and obtain a written assurance.

6. Assistance in observance of rules.—Every metro railway employee shall render assistance in carrying out these rules and report promptly any breach thereof, which may come to his notice, to his superior officer and other authority concerned.

7. Obedience to rules and orders.—Every metro railway employee shall observe and obey—

(a) all rules and special instructions; and

(b) all lawful orders given by his superior officials.

8. Prevention of trespass, damage or loss.—(1) Every metro railway employee shall be responsible for the security and protection of the property of the metro railway administration under his charge or possession.

(2) Every metro railway employee shall endeavour to prevent—

(a) trespass on metro railway premises;

(b) theft, damage or loss of metro railway property;

(c) injury to passengers, others and himself; and

(d) fire and other unsafe incidents in metro railway premises.

9. Attendance for duty.—Every metro railway employee shall be in attendance for duty at such times and places and for such periods as may be fixed by the metro railway administration and shall also attend at any other time and place at which his services may be required.

10. Absence from duty.—(1) No metro railway employee shall, without prior permission of his superior officer, absent himself from duty or alter his appointed hours of attendance or exchange duty with any other metro railway employee or leave his charge of duty unless properly relieved.

(2) If any metro railway employee, while on duty, desires to absent himself from duty on the ground of illness, he shall immediately report the matter to his superior officer and shall not leave his duty until a competent metro railway employee has been placed in charge thereof.

11. Taking alcoholic drink, sedative, narcotic, stimulant drug or preparation.—(1) A metro railway employee shall not take or use any alcoholic drink, sedative, narcotic or stimulant drug or preparation within eight hours before the commencement of his duty or take or use any such drink, drug or preparation while on duty.

(2) No metro railway employee, while on duty, shall be in a state of intoxication or in a state in which, by reason of his having taken or used any alcoholic drink, sedative, narcotic or stimulant drug or preparation, his capacity to perform his duties is impaired.

(3) A metro railway employee, while on duty, shall not smoke or chew tobacco.

12. Conduct of metro railway employees.—Every metro railway employee shall,—

(a) wear the appropriate badge and proper uniform as specified by the metro railway administration and be neat and tidy in his appearance while on duty;

(b) be prompt, civil and courteous;

(c) not solicit or accept illegal gratification;

(d) give all reasonable assistance and be careful to give correct information to the public;

(e) make complete and truthful statement at all times in all reports pertaining to his duty; and

(f) when asked, give his name and designation without hesitation.

13. Duty for ensuring safety.—(1) Every metro railway employee shall—

(a) see that every effort is made for ensuring safety of the public and of his fellow employees;

(b) promptly, report to his superior any occurrence likely to affect the safe and proper working of the metro railway which may come to his notice; and

(c) render spontaneously all possible assistance when called upon to do so by the appropriate official in case of an accident or obstruction.

(2) Every metro railway employee who observes—

(a) anything wrong with a train;

(b) any obstruction, failure or threatened failure of any part of the way or works or overhead electric equipment including power supply installation; or

(c) any defective signal; or

(d) any unusual circumstances such as fire, smoke, flood, accident or other dangerous condition on any part of the system likely to interfere with the safe running of trains, or the safety of the public,

shall take immediate steps, to prevent an accident, and promptly report the matter to the Operations Control Centre or the nearest Station Controller.

14. Standard time.—The working of trains between stations on Delhi Metro Railway shall be regulated by the Indian standard time as prescribed by the Government of India.

CHAPTER III

SIGNALS AND CONTROL

15. General.—(1) The following signals shall be used for controlling the movements of train on metro rai., namely:—

(a) cab signals;

(b) fixed signals; and

(c) hand signals.

(2) The aspects displayed by fixed signals are the same by day and by the night, in open and in tunnels.

(3) A fixed signal shall be placed, where practicable, on the left hand side of the track to which it refers and shall be visible from such a distance as will enable a Train Operator to brake a train from 25 km/h speed to stop before reaching the fixed signal and a repeater signal shall be provided at locations where due to obstructions such visibility is not available.

16. Description of signals.—(1) Cab signals—(i) Train movements on running tracks shall normally be governed by the Automatic Train Protection System which displays to the Train Operator in the operating console—

(a) actual speed of the train;

(b) the maximum permitted speed at each point of travel;

(c) the distance the train is currently authorised to travel (where provided);

(d) system alarms; and

(e) messages.

(ii) If the target speed indication and the target distance indications, where provided, are greater than zero, the indication is referred to as "PROCEED" indication.

(iii) If either of these indication is "0", the indication is referred to as "STOP" indication.

(iv) The Train Operator is authorised to drive his train up to the indicated speed as far as authority has been given for such purpose.

(2) Fixed signals—(i) On main lines fixed signals are color light signals capable of showing a "Red", "Violet" or "Green" aspect.

(ii) A "Red" aspect indicates that a train must be brought to STOP short of the signal.

(iii) A "Violet" aspect indicates that the route is set and locked but not fully clear. A train operating under cab signals may proceed under the authority of the cab signals but a train operating on the sole authority of line side signals must stop.

(iv) A "Green" aspect indicates that the route is cleared to the next fixed signal and the train may proceed as far as the next fixed signal.

(v) When a fixed signal is not in use, the aspect shall be covered and the cover shall display two crossed white bars on a black background, the bars being not less than 30 cms long and 10 cms wide.

(3) Depot signals—(i) In depots, fixed signals may be both color light and position light type and main line type fixed signals shall comply with the manner as specified in sub-rule (2), and

(ii) In position light type signalling two white lights displayed horizontally shall mean that a train shall stop.

(iii) Two white lights displayed at an angle shall mean that a train may proceed in restricted manual control as far as the line is clear and the Train Operator must keep a good look out for an obstruction.

(4) Hand signals—(i) Hand signals shall normally be used only for the shunting of work trains in depot, or at the site of work, or in extreme emergency.

(ii) Any light other than 'Green' or any object waved violently shall be interpreted as a stop signal.

(iii) "STOP" shall be indicated by—

(a) a Red lamp;

(b) raising of both arms above the head;

(c) waving a white light rapidly from side to side;

(d) a Red flag.

(iv) "PROCEED" shall be indicated by a Green lamp held steadily.

(v) Hand signals for shunting and train movements shall have the following configurations:—

	Aspect	Indication
(a)	A Green lamp moved slowly up and down	Move away from the signal
(b)	A Green lamp waved from side to side across the body	Move towards the signal
(c)	A Red light	Stop

(vi) When during cautious driving or shunting the speed of a train is to be reduced, the hand signal for movement shall be given at a slower and slower rate and when a stop is required a STOP signal shall be given.

(vii) Each Station Control Room shall have at least one hand lamp capable of displaying Red, Green and White aspects readily accessible and in working order and each Station Controller shall be conversant with its location and its proper use.

(viii) Each metro railway employee involved in the shunting of work trains, the operation of work trains at a maintenance site and the operation of work trains within an Engineer's Possession, shall carry a hand lamp capable of displaying Red, Green and White aspects in working order and shall be conversant with its proper use.

17. Provisions of signals.—(1) Fixed signals shall be provided on running lines at the approach to all interlocking areas and located in such a way that trains will stop at a safe distance from any fouling movement or location.

(2) Fixed signals will also be provided at the exit from interlocking areas.

(3) Fixed signals may also be provided at the arrival and departure end of selected platforms.

(4) All depot tracks and any other tracks not equipped with Automatic Train Protection will be controlled by fixed signals for both entry and exit.

(5) All single ended tracks shall be provided with at least on permanent Red aspect light to indicate the point beyond which train shall not proceed.

(6) Stopping markers shall be provided at all platforms to indicate where a train of a given length will stop for the convenient detraining and entraining of passengers. Where trains of varying lengths, may operate separate markers will be provided for trains of each potential length.

18. Working of signals and points.—(1) Control of signals and points will be from a route setting panel. Complete routes, points and signals, will be cleared by a signal operation under normal conditions.

(2) Any failure of vital equipments shall cause the signalling system to display a more restrictive indication.

(3) Any route which has been cleared for a train shall not be cancelled until it is cleared by the train entering the route except,—

(a) in case of emergency; and

(b) in case where operating conditions require that an alternate route be cleared. In this case the alternative route shall not be made available for clearance until the pre-set time has elapsed from the time the original route was blocked.

(4) In conditions of failure of route setting controls, points can be set individually from Operations Control Centre, Station Control Room or locally as may be necessary.

19. Control of signalling.—(1) (i) Main line signalling is controlled from an Operations Control Centre and operates normally under automatic control with routes bejng set and train intervals regulated by computer control.

(ii) The Traffic Controller shall be responsible for maintaining the services at the schedule level as far as practicable and for restoring the train services following a delay or disruption.

(iii) The Traffic Controller at the Operations Control Centre may adjust the timeta' 'e and may intervene manually to set and clear routes if the timetable needs to be varied or in the event of a major disruption.

(iv) The Traffic Controller, if required, may hand over control of the signals at specific station to the Station Controller and a local control panel shall be provided in the Station Control Room for this purpose. The hand over takes place automatically if there is a loss of control of individual locations from Operations Control Centre.

(v) The Traffic Controller shall have control of all routes on the main line outside of depots.

(vi) Train movement shall normally be under computer control but the Traffic Controller has the capability of setting routes manually and of setting individual points if necessary.

(2) Safety Communication—(i) All communication between Operations Control Center and Train Operators, Station Controller, maintenance staff of electrical, rolling stock, signal and telecommunication and track and structures department and others pertaining to movement of trains shall be

tape-recorded and preserved for 'incident' analysis and training and the mode of preservation and it duration shall be the same as specified in special instructions.

(ii) Metro railway employees shall initiate and acknowledge radio messages in a manner that ensures establishment of communication only between intended parties.

(iii) Messages affecting train movements shall be addressed to only one train at a time. However, in an emergency, a blanket message may be sent to all trains in or approaching a particular area, which must be acknowledged individually by all concerned Train Operators.

(3) Running lines—(i) The signalling system on the running line is a full Automatic Train Protection System.

(ii) If the speed which permits a train to stop under normal braking within a limit of safety is exceeded, an irrecoverable emergency brake application is automatically made. This ensures that the train does not proceed beyond the safe limit.

(iii) Normal operation of the train is monitored from indication on the train operator's console and each main running line is duly signalled for operation.

(iv) Certain lines are equipped for Automatic Train Operation with provision for the Train Operator to assume manual control of the train if required.

(v) In the event of failure of the Automatic Train Operation equipment and on lines not so equipped, Train Operators will control their trains up to the speed indicated on the console.

(vi) Where no cab indication is available, trains shall be automatically restricted to a maximum speed of 25 km/h.

(vii) Fixed signals are provided at the entrance and exit to each interlocking area and at certain other locations.

(4)(i) Station Controller's control panel has the capability of setting routes within the area of control, and of setting individual points when necessary.

(ii) On each platform there shall be an emergency Stop Plunger and in the Station Control Room a switch for each platform which when operated shall cause any approaching train to stop before it enters the platform. Any train entering, stationary in or leaving the platform shall experience a full irrecoverable emergency brake application.

(5) (i) The depot tracks may not be equipped with full complement of Automatic Train Protection and trains shall be automatically restricted to a maximum speed of 25 km/h.

(ii) Movements within depots shall be controlled by either main line type fixed signals or of the position light type.

(iii) Control of movements within the depot shall be exercised by a Depot Controller from a manual control panel or work station within the depot.

(iv) The Depot Controller shall use a control panel for setting and clearing of routes within the depot.

(v) Instructions to Train Operators as to which siding they shall drive or give permission to depart shall be given by train radio on a dedicated depot channel distinct from that used by Operations Control Center.

(vi) In the event of the failure of the radio, a Public Address System may be used.

(vii) Both a verbal instruction and a proceed indication from the fixed signals shall be received before a train may move into a depot from main line and *vice versa*.

(6) (i) Local operation of points on running lines as and when required may only be undertaken by a Station Controller with the permission of the Traffic Controller. The handle used to operate the points is interlocked with the Station Control Room Signal Control Panel, and its removal from the panel inhibits all other controls over the routes concerned. The Station Controller shall acknowledge such transfer of control before the Local Control can be activated.

(ii) Some points in depots are trailable, in the event of a route failure they need not be correctly set before a movement is authorised over them in the trailing direction. Non-trailable points shall be protected by fixed signals.

(7) (i) Some line of the network are equipped with Automatic Train Operation. It Automatic Train Operation Mode, the acceleration, braking, observance of speed restrictions and observance of signal commands are undertaken automatically and the Train Operators shall close the train doors and start the train from a station and to monitor its functioning.

(ii) All trains are equipped with Automatic Train Protection equipment and can be driven manually under the control of the Automatic Train Protection System. Any over speed or failure to brake at the appropriate time results in an irrecoverable emergency brake application. The mode of operation shall referred to as "Manual Cab Signal Mode".

(iii) If Automatic Train Protection information is not available from the track side equipment the train can be driven with Traffic Controller's permission in "Run On Sight" control. In this mode the on-board ATP Equipment restricts the speed of the train to 25 km/h. When Automatic Train Protection information is again available from the track, the mode automatically reverts to Coded Manual control.

(iv) If Automatic Train Protection information is not available from the track/Loco/Cab side equipment fault, or otherwise the train can be driven in "Restricted Manual" control with Traffic Controller's permission. In this mode the on-board Automatic Train Protection equipment restricts the speed of the train to 25 km/h. This mode is used in depots and exceptionally on running lines when authorised by these rules.

(v) If the on-board Automatic Train Protection equipment is defective, the train may be driven in "Cut Out" mode of control. When authorised by the Traffic Controller, the Train Operator may open and operate a sealed switch and drive the train without Automatic Train Protection and in this mode the Train Operator shall limit the speed of the train to 25 km/h and be responsible for safe movement of the train.

20. Train detained on line.—(1) If a train operating under Automatic Train Operation or cab signals comes to a stop on a running line and does not receive a proceed code within 60 seconds, the Train Operator shall inform to the Traffic Controller by the radio and ask for instructions.

(2) The Traffic Controller shall check his indication and if he is satisfied that there is no train ahead, he may instruct the Train Operator to select Run On Sight Mode and to proceed exercising utmost vigilance so that he may stop short of any obstruction.

(3) If after travelling some distance, a proceed indication is received by the train, the train shall automatically revert to the Coded Manual Mode of control and the Train Operator shall again inform the Traffic Controller. He shall use this mode of control as far as the next station. If the train is fitted with Automatic Train Operation, this mode of control shall only be selected at the next station.

(4) If the cause of the problem is confirmed as a track side equipment malfunction, the Traffic Controller may instruct subsequent trains without waiting for the Train Operator to seek instructions provided the preceding train has passed through the affected section and reported resumption of Manual Cab Signal Mode.

(5) If a train operating under the authority of line side signals only stops at a fixed signal at danger and it does not clear within 60 seconds the Train Operator shall inform to the Traffic Controller by the radio and ask for instructions.

(6) The Traffic Controller shall consult the concerned Station Controller in control of the signalling and decide whether or not the train may proceed.

(7) If there are no points in the route ahead, the Traffic Controller may instruct the Train Operator to proceed as far as the next fixed signal at a reduced speed such that he can stop short of any obstructions.

(8) If there are points in the route the Traffic Controller and the Station Controller shall examine the indication of the points and If indications at the station and the Operations Control Centre agree that all points are set correctly and locked the Traffic Controller may instruct the Train Operator to proceed as far as the next fixed signal at a reduced speed such that he can stop short of any obstruction.

(9) If points are not indicated as set and locked the Traffic Controller shall instruct the Station Controller to examine the points concerned. If they are lying in the wrong direction, he shall manually set the points with the handle from the Station Control Room. The points shall be secured with a clamp and padlock and the train instructed by hand signal to proceed.

21. Absence of cab signalling.—(1) Failure of the cab signalling shall initiate an irrecoverable emergency brake application.

(2) The Train Operator shall report the occurrence to the Traffic Controller and seek instructions.

(3) The Traffic Controller shall verify as far as practicable from his own diagram that the problem is not caused by a track side fault or another train and if no cause is apparent he shall instruct the Train Operator to select Run On Sight Mode and try to move.

(4) If the train does not move, the Traffic Controller shall authorise the Train Operator to select the Restricted Manual Mode and try to move.

(5) If the train still does not move, the Traffic Controller shall authorise the Train Operator to operate the "Cut Out" switch and to proceed in Cut Out Mode of control to the next station.

(6) At the next station, passengers shall be detrained and the train worked to depot or a suitable siding.

22. Failure of fixed signals.—(1) If a Train Operator observes that a fixed signal is not displaying any aspect, he shall report the condition to the Traffic Controller.

(2) If cab signal indications are available, the train shall proceed according to these indications.

(3) If the train is operating without cab signal indications, the Train Operator shall stop the train at the signal and seek instructions from the Traffic Controller by radio.

(4) All concerned staffs shall then follow the provisions of sub-rules (6) to (9) of rule 20.

23. Failure of route setting.—(1) If a route through an interlocking area cannot be set automatically or by manual control from the Operations Control Centre, the control of the area shall be passed to the local Station Control Room.

(2) If the route cannot be set from the Station Control Room signalling control panel, the Traffic Controller shall instruct the Train Operator to secure his train and await for instructions.

(3) The Traffic Controller and the Station Controller shall examine the indications for the points and if indications at the station and at Operations Control Centre agree that all points are set correctly and locked, the Traffic Controller may instruct the Train Operator to select Run On Sight Mode and proceed at reduced speed such that he can stop short of any obstruction. Once cab signals show a proceed indication, Manual Cab Signal Mode shall automatically be resumed and must be maintained as far as the next station. If the train is equipped with Automatic Train Operation, then the Automatic Train Operation control may be resumed at the next station.

(4) If any point indication is missing or shows the points set for the wrong direction, or there is a discrepancy between the indications at the

station and in Operations Control Centre, the Station Controller shall examine the position of the points himself. If they are lying in the wrong direction, he shall manually set the points with the handle from the Station Control Room. The points shall be secured with a clamp and padlock and the train instructed by hand signal to proceed. The Train Operator shall be instructed to resume Manual Cab Signal Mode an normal speed once a proceed indication is shown by the cab signalling.

(5) The Station Controller, after examining the position of the points under sub-rule (4), shall then return to the station and report to the Traffic Controller that the route remains secured and any subsequent train may be instructed by radio to proceed.

(6) In depot, the Depot Controller may instruct the Train Operator by radio to proceed if—

(a) point indications for all point in the route show the points to be set and locked in the correct direction;

(b) any points not showing an indication shall be traversed in the trailing direction.

(7) If points for which indications are not available have to be traversed in the facing direction, the Depot Controller shall set the points manually and secure them in the correct position with the clamp and padlock before authorizing the train to proceed.

CHAPTER IV

WORKING OF TRAINS

24. General.—(1) No person shall drive a train unless he is in possession of a valid Certificate of Competency issued by Authorised Officer.

(2) No Train Operator may be booked to work a train until he has learnt the road and signed a certificate that he is fully acquainted with it. For this purpose, he shall be booked for three round trips including one trip during night before being put to work the train independently.

(3) A Train Operator who has not worked on a section for 3 months or more should be given road learning trips to refresh his knowledge as under:

Duration of absence	No. of road learning trips
• 3-6 months	1 round trip
• over 6 months	3 round trips

(4) No train shall be driven on a running line from the rear cab except,—

(a) a locomotive working within an Engineer's Possession under the control of hand signals;

(b) in exceptional circumstances, when authorised by a official not below the grade of Operations Control Centre Traffic Controller

and a look out shall be positioned at the leading end with the capacity to apply the emergency brake. The speed of the train shall be 10 km/h.

(5) In depot, the train shall be always driven from the leading cab in the direction of travel or otherwise the Train Operator in the rear cab shall be instructed by cab to cab telephone by a second qualified Train Operator in the leading end cab.

(6) In depot, where a part consist or damaged train cannot be driven from the leading end, a look out shall be posted at the leading end. The Train Operator shall have the means of sounding an audible warning and, if practicable, the means of applying the emergency brake.

(7) Each train while manned shall show two white lights to the front and two red lights to the rear in the direction of travel.

(8) A stationary train on a running line shall be secured and shall show two red lights at each end of the train.

(9) A train stabled in a depot or siding shall show at least one red light at each end at a double ended siding and at the outermost end in the dead end siding.

25. Service regularity.—(1) Every effort shall be made by Operations Control staff, station staff and train staff to ensure that scheduled intervals between trains are maintained.

(2) Each Train Operator shall start his train from terminal station as soon as he gets the 'Departure Order Indication'.

(3) Each Train Operator shall start his train each intermediate station at the time indicated by the 'Departure Order Indication'.

(4) Each Train Operator shall follow any instruction from the Traffic Controller which varies the scheduled timings of his train.

(5) Each Train Operator shall be supplied a copy of the current working timetable applicable to the line on which he is working and he shall be in possession of such time table while on duty.

26. Speed of trains.—(1) Every train shall be run on each line of metro railway within the limits of speed as specified in the special instructions.

(2) The speed of the trains in Automatic Train Operation Mode shall be automatically controlled by the Continuous Automatic Train Control System.

(3) In Automatic Train Protection Mode, the Train Operator shall regulate the speed of trains according to the cab signals, the maximum permissible speed shall not be exceeded and the speed of the train shall be such that it can be stopped within the distance indicated, as being the limit of safety. Failure to do so shall result in irrecoverable application of emergency brakes. This shall be viewed as a failure on the part of the Train Operator.

27. Caution Order.—(1) Whenever in consequence of the track or overhead equipment being under repair, or for any other reason, special precautions are necessary, a Caution Order detailing the kilometres between which such precautions are necessary, the reason for taking such precautions and the speed at which the train shall travel, shall be handed over to the Train Operator at the stopping station short of the place where such precautions are necessary or at such other stations or work place and in such a manner as specified under special instructions.

(2) Train Operators, not in passenger service, shall reduce speed of their trains to 20 km/h when passing through station platforms during the period of revenue operation. An audible warning shall be sounded while entering the platform.

28. Train staffing.—(1)(a) Each train shall be manned by only one Train Operator.

(b) No person is allowed to travel in the Train Operator's cab, except a cab authorised trainee or apprentice Train Operator, a driving inspector and other authorised person as laid down in special instructions.

(2) Each Train Operator shall, at all times when on duty, be in possession of—

(a) 'a Train Operators' handbook containing the General Rules and Special instructions and the operating and trouble shooting procedures for the train;

(b) the current Working Timetable for the line;

(c) two pairs of such spectacles he is required to wear under medical advice;

(d) a hand lamp capable of showing red, green and white aspects;

(e) a watch; and

(f) a First Aid Box.

(3) Each Train Operator when reporting for duty shall examine any notices issued for his guidance and in particular those which require his special attention on the specific day and line.

(4) In the event of a Train Operator becoming incapacitated while driving a train, he shall, if capable, inform the Traffic Controller who shall inform the Station Controller at the next station.

(5) If the train is under Automatic Train Operation control it shall arrive at the next station under automatic control and the Train Operator may be relieved at that station for medical attention.

(6) Working of the train shall be taken over by the Station Controller until such time as another Train Operator is made available. Senior most booking clerk qualified in the duties of Station Controller shall be in charge of the station during the absence of Station Controller.

(7) If the train is under manual control, it may get stopped between stations. In this case the Station Controller at the station in rear of the train

shall board the following train, instruct the Train Operator to select Restricted Manual control and proceed to the rear of the stalled train.

(8) The Station Controller shall then instruct the Train Operator to close down his driving position and secure the train and leave it in that condition until further instructed by the Traffic Controller.

(9) The Station Controller shall then board the stalled train, go to the leading cab and drive the train to the next station where the Train Operator may be relieved for medical attention. On arrival at the next station, the Traffic Controller shall be informed that the following train may now be authorised to resume normal working.

(10) The Station Controller shall continue to drive the train until such time when another Train Operator shall be made available. Once relieved by a Train Operator, the Station Controller shall return to his station as speedily as practicable.

29. Train defects.—(1) No train with defective safety equipments, cab signalling, leading cab controls, interior lighting, brakes or doors shall remain in passenger service and shall be removed to depot and replaced by a serviceable train at the earliest opportunity.

(2) (i) If traction power is lost on any car, the train need not be withdrawn from service. If power is lost on more than one car and the reduction in speed causes delay to following trains, the passengers shall be detrained at a station and the train worked empty. Otherwise the train may remain in passenger service until it can be replaced by a serviceable train.

(ii) In the event of a mechanical defect in the traction motor or drive which causes the wheels to lock, the train shall be stopped immediately and shall not be moved until clearance has been given by a Rolling Stock Supervisor.

(iii) If a Train Operator finds that the train cannot be driven or braked from the leading end cab, passengers shall be detrained as per the provisions referred in clauses (iv) and (v) of this sub-rule.

(iv) Such an occurrence may usually happen at a station and a terminal in which case the passenger shall be discharged at the station itself. To dispatch the train to the depot, the Station Controller shall board the train and act as look out in the leading cab while the Train Operator drives from the rear cab in Restricted Manual control. Information on signals and cleared routes shall be passed by cab to cab telephone and train speed restricted to 10 km/h.

(v) In the unlikely event that the defect causes a train to stop between stations, the Station Controller from the station in the rear shall give assistance using the procedure described in sub-rule (7) to sub-rule (10) of rule 28 to gain access to the train.

(3) (i) A failure of the traction control line shall be indicated on the Train Integrated Management System panel. In the majority of cases, the Train Integrated Management Systems shall enable the fault to be isolated and only in the case of simultaneous failure of redundant equipment shall the train be rendered inoperative.

(ii) When such failure of the traction control happens on a running line, the Train Operator shall inform the Traffic Controller that his train is stalled and requires assistance to move.

(iii) The train shall be dealt with in accordance with rule 45.

(4) (i) Failure of brakes to apply or to release shall be indicated on the Train Integrated Management System panel. If brakes on any cars, up to a maximum of 50% fail to apply, passengers must be detrained at the next station and the train worked to depot at a speed not exceeding 25 km/h.

(ii) If brakes fail to apply on more than 50% of the cars, the train shall be brought to a stop as soon as possible by application of the emergency brake and shall not proceed until authorised by a competent person from the Rolling Stock maintenance department.

(iii) If brakes fail to release on any cars, up to maximum of 50% the brakes shall be isolated on the affected cars, the brakes released by Local Control, passengers shall be detrained at the next station and the train worked to depot at a speed not exceeding 25 km/h.

(iv) If brakes fail to release on more than 50% of the cars, no attempt shall be made to move the train until authorised by a competent person from the Rolling Stock Maintenance Department.

(5) (i) If doors on a train are not indicated as "closed", the train shall not start from a station. If doors cannot be closed by hand or there is no obviously open door and the "doors closed" indication is still not received, passengers shall be detrained and the train shall be worked empty until it can receive attention from the Rolling Stock Maintenance Department.

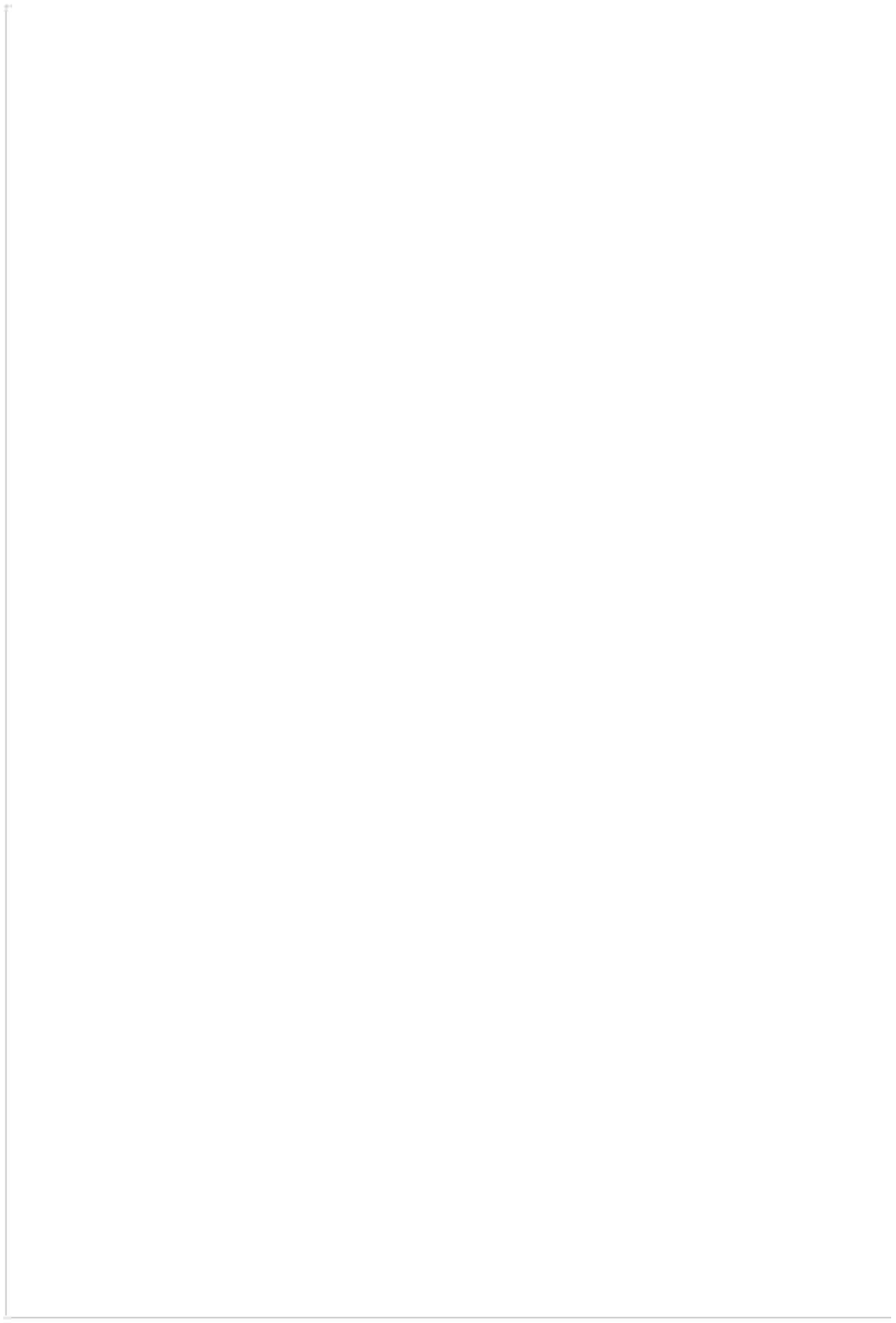
(ii) If some doors of train do not open at stations but after closing the doors all doors are indicated as closed, the train may remain in passenger service. In peak period the extended dwell times at stations that could result from some doors not opening may make it desirable for the train to be withdrawn from service to avoid delaying the following trains.

(6) Failure of an air-conditioning unit shall be indicated on the Train Integrated Management System panel. Although it has no effect on the safe operation of the train, Train Operator shall report such failure to Operations Control Centre, so that rake receives prompt attention to relieve hardship to passengers.

(7) (i) Failure of main car lighting on one or two cars shall be reported by the Train Operator to Operations Control Centre and the train may continue in passenger service to the end of its trip provided the emergency lighting is working satisfactorily and at the terminal it shall be withdrawn from service or replaced by a good train.

(ii) If all main train lightings fail or main lighting and emergency lighting both fail, on the same car, passengers shall be detrained at the next station and the rake withdrawn from service.

30. Examination of trains.—(1) Each train shall be examined by a competent person from the Rolling Stock Maintenance Department before being offered for passenger service.



(8) In trains not operating under Automatic Train Operation control, the Train Operator shall drive the train, observing and obeying cab signals, to the next station and shall stop the train at the appropriate stopping mark. Doors of the train shall not be opened until the train has come to a complete stop.

(9) If a train stops short of its proper stopping place, even in Automatic Train Operation control, the Train Operator shall manually drive the train to its proper stopping place before opening the doors.

(10) If a train stops beyond its normal stopping place but with the doors still on the platform, the doors may be opened manually and passengers allowed to alight and board.

(11) If a train stops beyond the end of the platform, the Train Operator shall seek instruction from the Traffic Controller. If the Traffic Controller can prevent the following train from approaching the platform by using the signalling controls, he may do so and then authorise the train at the platform to reverse until all doors are at the platform. Otherwise, an announcement shall be made to the passengers and the train may proceed to the next station without opening the doors. If the train is the last train of the day, passengers may be allowed to disembark from the train by opening selected doors by the exterior emergency doors control.

(12) If a passenger emergency alarm is operated in the train, the Train Operator shall try to establish voice communication with the location by intercom or public address. The Train Operator shall try to establish the reason for the operation of alarm but, unless there is a clear and immediate danger to the train and its passengers, he shall continue to the next station before taking any action.

32. Locomotives, works trains and maintenance vehicles.— (1) Locomotives, works trains, and self-propelled maintenance vehicles equipped with Automatic Train Protection equipment shall be worked as per all relevant rules made under the Ordinance for operation on main lines and in depots as for passenger trains.

(2) The Train Operator of a self-propelled maintenance vehicle which is permitted to operate on running lines shall hold a Certificate of Competency as a Train Operator or to be accompanied by a person holding certificate of competency. In the latter case, the person holding the certificate of competency is responsible for the observance of these rules in respect of the operation of the vehicle.

(3) Before departing from depot, or from a work site where the train has been uncoupled, the Train Operator of the leading locomotive shall—

(a) ensure that the train is fully coupled;

(b) carry out a continuity test of the automatic brake, and

(c) verify that all handbrakes have been released.

(4) Subject to sub-rule (2) of rule 32, the Train Operator of a locomotive works train or self-propelled maintenance vehicles, shall possess at all times, when on duty—

(a) a hand lamp capable of showing a red, green and white aspect; and

(b) any special notices relating to the working of works trains.

(5) Any unpowered vehicles, stationed on a siding or on the running line, shall be secured by the application of sufficient number of hand brakes unless coupled to a locomotive.

(6) Any such vehicle or group of vehicles shall have a lamp attahed to the outermost vehicle displaying a red aspect in the direction of approaching trains and on a running line such lamps shall be placed at both the ends of the vehicle or group of vehicles.

(7) Any self-propelled maintenance vehicle which is not fitted with Automatic Train Protection equipment shall be taken on running line only if—

(a) it is coupled to a locomotive or other vehicle which is so equipped; and

(b) it is working within the limits of an Engineer's Possession.

(8) Shunting of vehicles to make or break works train consists shall only take place in designated depot areas.

(9) Fly shunting of any vehicles is expressly prohibited at any time.

Note.—A 'Fly shunt' is made when two vehicles are sent forward unattached either together or one immediately after the other and placed on different lines necessitating the points being reversed after the passage of the leading vehicle.

CHAPTER V

CONTROL AND WORKING OF STATIONS

33. Responsibilities of Station Controller.—Each Station Controller shall—

(i) open the station ten minutes before the advertised time of the first train;

(ii) carry out an inspection of the station premises, at the start of his duty period recording any defects or irregularities found and reporting the same to authorities concerned including the Operations Control Centre for prompt rectification;

(iii) be responsible for the supervision of passenger flows, and the provision of adequate barriers and escalator services, ensuring that all staff render prompt assistance to passengers;

(iv) be responsible for reporting any defect and failure of equipment on the station to the appropriate maintenance department;

(v) be responsible for the training of station staff in local rules and conditions, for monitoring of their performance, discipline and administration;

(vi) observe the departure of last train and at interchange station shall supervise the interchange of passengers between last advertised connecting trains and shall inform the Traffic Controller when all interchange has been completed and the last train may depart;

(vii) inspect the station after the departure of train to ensure that no unauthorised person remain on the premises and then lock all entrances; and

(viii) be responsible for keeping a log book which details occurrences on the station which shall include among either things, timings and reports of inspections, timings and location of maintenance activities, complaints or requests from passengers, instructions from the Traffic Controller, periods of local control of signalling and unusual incidents, etc.

34. Responsibilities of Platform Supervisor.—The Platform Supervisor, where provided, shall—

(i) monitor the boarding and alighting of passengers and alert to observe any accident and report each to the Station Controller; and

(ii) when a dangerous situation arises such as passenger falling on the track, operate the Emergency Stop Plunger to stop any train on or approaching the platform and report his action to the Station Controller.

35. Responsibility of booking office staff.—(1) The booking office staff shall—

(i) be responsible for the sale of tickets at ticket windows and by self-service machines, where provided;

(ii) sell tickets for the prices in the current fare table and render exact change as may be required;

(iii) account for all tickets sold and all cash taken in accordance with instructions issued from time to time;

(iv) keep large amounts of cash at their points of sale. Only such cash as is necessary for change giving may be kept. The surplus shall be kept in a locked safe or other secure storage;

(v) be responsible for ensuring that self-service ticket vending machines, if provided are adequately stocked with tickets and that cash is regularly removed from the machines to secure storage;

(vi) be responsible for reporting malfunctions or irregularities in the operation of ticket issuing equipment to the maintenance department; and

(vii) assist the passengers during crowd control and emergency evacuation procedure.

(2) The senior booking office staff shall—

(i) be responsible for the accurate accounting for tickets sold and cash received; and

(ii) be required to assist or deputise for the Station Controller when circumstances demand.

36. Security.—(1) (i) Stations shall be opened for access to the public 10 minutes before the advertised time of departure for the first train until all the passengers have left the station after the arrival of the last train. At all other times the stations shall be secured against unauthorised entry.

(ii) At a location near the Station Control Room, a key to a designated emergency exit shall be provided in a sealed glass box. This key is for the use of maintenance staff in the event of emergency during non-traffic hours. The emergency key box shall be inspected each morning by the Station Controller and use of the key shall be reported to the Security Controller who shall arrange for the box to be secured again.

(iii) The emergency exits, wherever provided, may also be used for passenger evacuation in emergency, if required.

(2) All equipment rooms shall be kept locked at all times when access is not required. When these rooms are accessed by authorised person, such person shall be responsible for ensuring that no unauthorised person is permitted access.

(3) (i) All areas not required for the passage of passengers at the stations shall be secured against unauthorised access.

(ii) Booking offices and other places where items of value such as tickets and cash are kept shall be kept locked at all times. Within such areas, tickets and other items of value shall be kept in locked cupboards.

(iii) Cash shall be kept in a locked safe and only such amounts as are to provide change for ticket sales may be retained at the point of sale.

(iv) Transfer of cash outside of the secure area shall only be undertaken during quiet periods.

37. Station Working Orders.—(1) In addition to the General Rules and specific instructions of the metro railway, each station shall be provided with the Station Working Orders applicable to the station giving details of—

(a) the location of equipments and guidelines for their use;

(b) the emergency evacuation routes at station and with adjoining block section;

(c) the designated entrance for attendance by police, fire and ambulance vehicle;

(d) the designated entry for fire services; and

(e) list of medical facilities locally available.

(2) Copies of these Station Working Orders shall be issued to each Station Controller who is required to work at the particular station.

(3) A copy of these Working Orders shall be kept in a special marked binder in a conspicuous place in the Station Control Room.

38. Prevention of overcrowding.—(1) If a service delay or other incident causes a build up of passengers on a platform, the Station Controller shall decide when that build up is likely to be unmanageable.

(2) When any situation referred to in sub-rule (1) arises, the Station Controller shall reduce the flow of passengers to the platform by—

(a) making a warning announcement and stopping some or all of the inwards escalators;

(b) switching out some or all of the inward Automatic Fare Collection (AFC) barriers; and

(c) instructing the ticket sales staff to cease selling tickets.

(3) If despite all measures taken, overcrowding develops in the concourse, passengers shall be advised to leave the station and the station entrances may need to be closed.

(4) When train services are restored, the restrictive measures may be progressively or completely removed depending upon the level of train services available.

39. Emergency evacuation.—(1) The Station Controller shall control the evacuation from the Station Control Room in the event of evacuation of the station becoming necessary as the result of cessation of train services, risk of fire or other emergency—

(a) all Automatic Fare Collection barriers shall be set to open freely in the exit direction and the station staff deployed to assist in passenger evacuation;

(b) information and instruction shall be passed to the public by Public Address System and where available, visual displays;

(c) ... inwards escalators shall be stopped and used as fixed stairways in the outwards direction;

(d) all ticket sales shall be suspended and the staff used to assist in passenger evacuation; and

(e) all station exits shall be opened.

(2) Station staff shall verify that each area of the station has been evacuated and when areas are verified as clear of passengers, the staff shall leave the station and secure it unless otherwise instructed by the Traffic Controller.

(3) If fire or smoke is present, passengers shall, as far as practicable, be instructed to use exit routes that avoid contaminated area.

(4) If the fire is in the station, the Traffic Controller shall be informed so that he can instruct Train Operators not to stop the train at the station.

(5) If the fire is at the concourse level, the train may be stopped to allow passengers to board only, as means of evacuating the passengers

more quickly and Train Operators shall make announcements in their trains to inform passengers not to alight.

40. Supervision of train movements.—(1) When the station control panel is not operative and control is being exercised from the Operation Control Centre, Station Controller shall observe the passage of trains and be alert to take action if the train service is in any way disrupted.

(2) Any failure of any indication on the panel or work station shall be reported immediately to the Traffic Controller.

(3) Control of the panel may only be taken with the permission of Traffic Controller Operation of individual routes and points shall be carried out as per the Traffic Controller's instructions.

41. Class of station.—The stations in metro railway are classified as—

(a) terminal stations; or

(b) inter-locked stations having points and crossings, fixed signals, and siding etc.; or

(c) other intermediate stations not having points and crossings (with or without fixed signals); or

(d) any other class as specified in special instructions.

CHAPTER VI

ACCIDENT AND UNUSUAL OCCURRENCES

42. Report of the accident and unusual occurrences.—(1) The accident and incident shall be reported by metro railway employee to concerned or any other person who notices it with utmost expediency to the Traffic Controller or the nearest Station Controller as soon as practicable.

(2) On receipt of a report under sub-rule (1), the Station Controller shall inform the Traffic Controller and *vice versa*.

43. Duties of the station staff.—(1) On receipt of a report of an incident, accident or emergency, as the case may be, under sub-rule (1) of rule 42 the Traffic Controller shall first ascertain the extent of injury to passengers and others and take prompt action to prevent further injuries and he shall also assess the potential effect on the train services and then all reasonable measures to maintain the train services, prevent delay or damage to property and equipment.

(2) If the incident is an emergency, the Traffic Controller shall report it to the Chief Controller and the Chief Controller shall arrange for the assistance of the Metro rails' emergency response staff and where necessary, the assistance of Police, Fire and Ambulance services.

(3) The Traffic Controller shall keep a log of all reports and requests received action taken and other relevant information obtained or distributed.

(4) A Station Controller, in the event of an accident at his station, shall take measures to prevent the situation becoming worse, render First Aid if

possible arrange for the injured to be hospitalised and inform the Traffic Controller for outside help.

(5) If the accident is an emergency, the Station Controller shall evacuate the area concerned and take measures to prevent access to the area other than by the emergency services and in extreme cases, the station may be closed and the Traffic Controller requested to arrange for trains to pass the station without stopping.

(6) A full record of events and actions shall be entered in the Station Log.

(7) All staff shall deal with accidents and emergencies expeditiously and with the following priorities:—

(a) save life, prevent further injury, and alleviate suffering;

(b) protect Metro railway property and equipment;

(c) take steps for preservation of clues;

(d) inform the public of the effect on train services and the availability of alternative transport facilities;

(e) restore the safe operation of the train services as quickly as practicable; and

(f) restore normal services.

44. Train stopped between stations.—(1) (i) If a Train Operator cannot isolate a defect on his train and is unable to move it under its own power, he can secure the train and request the Traffic Controller for assistance.

(ii) The Traffic Controller shall instruct the Train Operator of the following train to drive as close to the stalled train as possible under Coded Manual Control. At the limit of authority under cab signalling, the Traffic Controller shall instruct the Train Operator of the assisting train to change to Restricted Manual Control and to proceed at reduced speed and stop ten meters short of the stalled train.

(iii) The Traffic Controller shall instruct the Train Operator of the defective train to secure his train and then instruct the Train Operator of the assisting train to couple to the defective train by mechanical means only and to isolate all electrical connections to the defective train.

(iv) Once the trains are confirmed as coupled, the Traffic Controller shall instruct the Train Operator of the defective train to release the brake of his train.

(v) The Train Controller shall then authorise the Train Operator of the assisting train to drive forward at restricted speed exchanging communication with the Train Operator of the defective train in the lead cab, until the defective train is at the platform of the next station. Passengers shall be detrained from the defective train. The combined consist shall then be moved forward until the assisting train is at the platform. All passengers shall be detrained from that train.

(vi) The train shall be worked as a combined consist to depot in Restricted Manual Mode with leading and intermediate Train Operators exchanging communication on cab to cab telephone.

(2) (i) If traction power is lost, all trains shall coast as far as the momentum of the train and the signalling system permit. The objective is get every train to a platform where passengers can be detrained if the incident is likely to be prolonged.

(ii) If traction power has not been restored within 15 minutes, passengers shall be detrained from all trains at stations, and the process of detraining any trains stopped between station shall be initiated.

(3) (i) If a train cannot be moved as a result of derailment or other mechanical failure, passengers shall be evacuated as soon as practicable.

(ii) The Train Operator of the stalled train shall secure the train and inform the Traffic Controller that he is unable to move his train and the Traffic Controller shall decide the most appropriate method of evacuation taking into account proximity of stations, availability of trains and other local conditions and advise the Train Operator the direction from which assistance is to be provided and inform the Station Controller at the station to which passengers shall be evacuated.

(iii) If a train cannot be moved as a result of derailment or other mechanical failure, the following methods of evacuation shall be followed, namely:—

(a) evacuation to a train on the same track; or

(b) evacuation to a train on an adjacent track; or

(c) evacuation on foot to the nearest station.

(iv) Passengers shall be detrained from the assisting train and the Traffic Controller shall instruct the Train Operator to select Restricted Manual Mode and drive at not more than 25 km/h and to stop at least 10 metres from the stalled train.

(v) The Train Operator shall report to Operation Control Centre when he has reached this location and the Traffic Controller shall then instruct him to move his train and stop it 10 metres short of the stalled train.

(vi) The Train Operator of the assisting train shall secure his train and open the end door at the leading end and the Train Operator of the stalled train shall open the corresponding door on his train and the two Train Operators shall assist passenger to shift from the stalled train to the assisting train.

(vii) When all passengers have been transferred, the end doors of both trains shall be closed and secured.

(viii) The Train Operator of the stalled train shall remain with his train and the Train Operator of the assisting train shall move to the other cab and report to the Traffic Controller that all passengers have been transferred and that his train is ready to move.

(ix) The Traffic Controller shall instruct the Train Operator to select Restricted Manual control and drive the train to the station from which he came where passengers can be detrained.

(x) On open sections and in double track tunnels, if assistance cannot easily be given by a train on the same track, a train on the adjacent track may be used.

(xi) On receipt of a request for assistance, the Traffic Controller shall inform the Station Controllers at the station on the either side of the location of the incident.

(xii) Passengers shall be detrained from a train at the preceding station in the normal direction of travel on the adjacent line.

(xiii) The Traffic Controller shall instruct the Train Operator to select Manual Cab Signal Mode and to drive his train to a point, ten metres from the front of the stalled train.

(xiv) The Train Operator of the assisting train shall secure his train and deploy the ramp or step ladder at the leading end of his train and report completion to the Traffic Controller.

(xv) The Traffic Controller shall then instruct the Train Operator of the stalled train to deploy the ramp or step ladder at the front of the train.

(xvi) The two Train Operators shall then supervise the transfer of passengers via the ramps or step ladders and the track from the stalled train to the assisting train taking particular care to inform passengers of the dangers of tripping on rails and other equipment.

(xvii) Once all passengers have been transferred, the ramps or step ladders shall be replaced and secured and completion reported to the Traffic Controller by the Train Operator of the assisting train.

(xviii) The Train Operator of the stalled train shall remain with his train.

(xix) The Traffic Controller shall then authorise the assisting train to proceed to the next station where normal service may be resumed.

(xx) If a train does not move as a result of derailment or other mechanical failure, passengers shall be detrained and action taken to evacuate them on foot to the nearest station.

(xxi) The Traffic Controller shall decide to which station passengers are to be evacuated, this shall normally be the nearest station but other factors, such as the location of the trains, ventilation consideration in tunnel sections and any damage to track, train or structures may make it desirable to use an alternative station.

(xxii) The Traffic Controller shall inform the Station Controller at the station designated to receive the passengers and the Station Controller shall clear the platform concerned of waiting passengers and, if necessary, stop incoming passengers, and if a tunnel section is involved, he shall switch on tunnel lighting and he shall position himself and his security staff on the platform to receive the arriving passengers.

(xxiii) The Station Controller shall prepare to render assistance or First Aid to any passenger who may have had difficulty or accident during the evacuation.

(xxiv) On open sections and in double track tunnels, the Traffic Controller shall arrange for traffic to be suspended on the adjacent track for the duration of the evacuation.

(xxv) The Traffic Controller shall verify with the Train Operator that the train has been secured and then instruct him to deploy the ramp or step ladder at the end of the train nearest to the designated station.

(xxvi) Passengers shall be informed of the procedure to be followed and given explicit warning on tripping hazards, where to walk and what to expect at the station.

(xxvii) Passengers shall be detrained on the track by the Train Operator and directed to the station and the Train Operator shall count passengers as they leave the train.

(xxviii) The Station Controller shall count the passengers as they arrive at the platform.

(xxix) The Train Operator shall ensure that the last passenger to leave the train and check that all passengers have left the track.

(xxx) The Train Operator and Station Controller shall check each respective counts of passenger numbers and satisfy themselves that all passengers have reached the platform and thereafter the Train Operator shall then return to his train and replace and secure the ramp.

(xxxi) The Station Controller shall record in the Station Log the details of the incident, and, in particular, the number of passengers detrained, and the report the statistics to the Traffic Controller.

45. Train divided.—(1) If a train is stopped by an irrevocable emergency brake application and cab signalling indications are normal, the Train Operator shall examine the Train Integrated Management System panel to ascertain the cause. If indication of faults in multiple circuits affecting the whole train or rear cars of the train are present, the train shall not be moved until, it has been verified that the train is complete and coupled.

(2) After the verification about complete arrival of train is completed under sub-rule (1), the Traffic Controller may authorise the Train Operator to make appropriate isolations and proceed.

(3) If the train is found to have divided, the Train Operator shall first satisfy himself that no passenger has been injured or has falled from the train.

(4) Passengers shall be cleared of the open ends of the train and the train recoupled.

(5) Once the Train Operator has successfully recoupled the train, he shall return to the leading cab, report the circumstances to the Traffic Controller and seek permission to proceed to the next station.

(6) The train shall be withdrawn from passenger service and worked to depot for investigation of the incident.

(7) If train cannot be recoupled, the Train Operator shall inform the Traffic Controller and the Traffic Controller shall then inform the Station Controller at the previous station to detrain passengers from the following train and use it to go to the site and take a member of the security staff with him.

(8) The Train Operator of the following train shall drive his train in Manual Cab Signal Mode as far as the signalling permits and the Station Controller and the security staff shall then leave the train from the front and board the divided train.

(9) The security staff shall be positioned at the rear of the front portion of the train and the Train Operator shall return to the leading cab, make the necessary isolation and seek permission from the Traffic Controller to proceed.

(10) The Traffic Controller shall instruct the Train Operator to proceed at a speed not to exceed 10 km/h as far as the next station and to stop at the far end of the platform.

(11) The Assisting Station Controller shall then drive the rear portion of the train from the shunting position and the train shall be driven to the next station at a speed not to exceed 10 km/h.

(12) On arrival of the train at the station, passengers shall be detrained.

(13) The two portions of the train shall then be worked under normal Restricted Manual control to the nearest depot or siding.

(14) The assisting train shall proceed once the cab signalling displays a proceed code and shall entrain passengers at the next station and resume normal working.

46. Unusual occurrences.—(1) All metro employees shall be conversant with the location and use of fire alarms and fire fighting equipment at their place of work.

(2) All metro railway employees observing the smoke or fire shall raise the alarm by means of the equipment provided or by informing the Station Controller and Traffic Controller as may be most appropriate and expeditious.

(3) If smoke or fire is reported on a train between stations, the Train Operator shall inform the Traffic Controller, drive his train to the next station and detrain passengers. Traction power shall then be switched off, and the pantographs of the affected train lowered before traction power is restored to other trains.

(4) If the fire on a train or on the track causes a train to stop between the stations, passengers shall be evacuated as per the provisions specified in clauses (xxi) to (xxxi) of sub-rule (3) of rule 44.

(5) If the incident occurs in a tunnel, the Traffic Controller shall arrange with the Auxiliary Systems Controller for the ventilation system to supply

fresh air to the chosen route for evacuation before authorising detrainment of passengers.

(6) If the fire alarm on a station is actuated or a verbal report is received of smoke or fire on the station, the Station Controller shall inform the Traffic Controller and then verify for himself by Closed Circuit Television or actual inspection whether or not the alarm is genuine.

(7) If smoke or fire is present, the Station Controller shall inform the Traffic Controller and arrange for passengers to be evacuated from the area concerned preventing further access. If necessary, the station may be completely evacuated and the Traffic Controller may be requested to arrange for trains not to stop.

(8) The Traffic Controller shall inform the Chief Controller who shall arrange for the attendance and assistance of the Fire Fighting Services and if necessary the Ambulance Services.

(9) If a Train Operator or Station Controller observes a fire in adjacent premises that could affect the property of the metro railway, he shall report the circumstances to the Traffic Controller. The Traffic Controller shall inform the Chief Controller and the Security Controller and maintain normal services unless or until a local inspection confirms that a potential danger exists.

47. Flooding.—(1) Any Train Operator or Station Controller or the other member of the staff who observes water accumulating on the track shall report to the Traffic Controller giving as much detail as possible with respect to location, distance of track affected, level of water with respect to the rail.

(2) The Traffic Controller shall inform all trains required to pass through the area and requests reports of the state of the water level and, if the water level is below the level of the rail fastenings, the Traffic Controller shall instruct the Train Operator to reduce the speed of their trains to 25 km/h when passing through the affected area.

(3) If the water level rises above rail fastenings, passenger train service shall only by permitted under special instructions.

48. Other unsafe conditions.—(1) All metro railway employees, and, in particular, Train Operators and Station Controllers shall keep a look out for unsafe conditions on or in the vicinity of the railway track which are as follows:—

(a) damaged or dislodged fixed equipment within the railway right of way;

(b) broken or buckled rails;

(c) displaced or damaged overhead traction power conductors;

(d) construction activities adjacent to the track including use of cranes which can swing over the track;

(e) road accidents which might cause or have caused damage to bridges and viaducts;

(f) road accidents which might cause or have caused vehicles or their loads to encroach on the railway right of way; and

(g) any other obstruction on the track.

(2) If the Train Operator observes any unsafe condition, he shall report to the Traffic Controller immediately so that action can be taken to minimize the effect and remove the cause.

(3) In the event of a significant earthquake, the Traffic Controller shall instruct all trains to stop immediately and after such earthquake subsided, the Traffic Controller may instruct each stranded Train Operator to proceed in Restricted Manual Mode at walking speed after examining that the track is safe for train movement and free from obstructions up to the next station:

Provided that in such event, the normal operation of trains may be resumed if all the track and structures are examined and found to be in safe condition.

49. Accidents.—(1) In case of accidents, arrangements for medical aid, evacuation of sick, injured passengers, access for ambulance, staff and vehicles shall be made and included as per the provisions specified in special instructions.

(2) In the event of serious accident, the Chief Controller may, in consultation with senior management, declare the situation an emergency, as per the provisions specified in special instructions.

(3) A senior member of the management shall be appointed as an emergency officer and shall set up an emergency control either at Operation Control Centre or at the site depending on the nature of the occurrence.

(4) The emergency officer shall be in overall charge of all the metro rail's resources of staff and materials for the handling of the emergency and the coordinator between the metro rail and external emergency agencies such as Fire, Ambulance and Police and Utility services.

CHAPTER VII

SYSTEMS OF WORKING

50. Continuous Automatic Train Control System.—(1) The Continuous Automatic Train Control System of working shall be adopted on Delhi metro rail for movement of trains between stations and between depot and the main line.

(2) The Continuous Automatic Train Control System works on the principle of target speed and target distance with cab signalling by means of continuous transmission from track to train through track circuits, ensuring safe movement of all trains under all operating conditions by continuously generating a safe operating envelope defined by the Limit of Movement Authority and the Maximum Safe Speed.

(3) The Limit of Movement Authority shall be the farthest point to which the train may safely proceed taking into account margins for error in

speed and distance measurement, calculating braking distances and equipment reaction times.

(4) The Maximum Safe Speed shall be the maximum speed at which the train is permitted to travel without intervention by the Train Control and Signalling System and it shall be continuously calculated in such a manner that permanent speed restrictions, the speed limits for the type of train and temporary speed restrictions shall not be exceeded and the train shall always stop without passing the Limit of Movement Authority.

(5) The Continuous Automatic Train Control System shall provide the following modes of train operation, namely:—

(a) Automatic Train Operation Mode

(b) Manual Cab Signal Mode or Automatic Train Protection Mode

(c) Run on sight Mode

(d) Restricted Manual Mode; and

(e) Cut-Out Mode.

51. Automatic Train Operation Mode.—(1) In the Automatic Train Operation Mode which is optional to be decided by metro railway administration, the train shall operate without intervention by the Train Operator except closing of train doors and starting from a station stop and Automatic Train Operation Mode shall operate under the supervision and controls of Automatic Train Protection functions.

(2) In Automatic Train Operation Mode, the Train Control and Signalling System shall—

(a) accelerate and decelerate the train by applying traction power, coasting, and applying and releasing brakes;

(b) automatically control speed, acceleration, stopping and starting, stop the train at stations;

(c) provide all indications necessary to operate the train;

(d) determine continuously the Maximum Safe Speed and Limit of Movement Authority;

(e) prevent movement of the train in excess of the Maximum Safe Speed and Limit of Movement Authority;

(f) open train doors on the correct side when the train is docked if permitted by the Automatic Train Protection door release;

(g) prevent the train from starting if train doors are not detected closed;

(h) train re-starting from a signal stop shall be automatic; and

(i) train starting or re-starting from a station stop shall be initiated by the Train Operator.

52. Manual Cab Signal Mode or Coded Manual Mode, or Automatic Train Protection Mode.—(1) In Manual Cab Signal Mode the train shall be driven by the Train Operator, obeying cab signals.

(2) In Manual Cab Signal Mode, the Train Control and Signalling System shall—

(a) provide Cab Signals and all other indications necessary to operate the train including current speed;

(b) determine continuously the Maximum Safe Speed and Limit of Movement Authority;

(c) prevent train operation in excess of the Maximum Safe Speed or Limit of Movement Authority;

(d) provide audible and visual warning if the train speed exceeds the Maximum Safe Speed;

(e) enable train doors when the train is docked, enabling only the doors on the platform side of the train; and

(f) prevent the train from starting if train doors are not detected closed.

53. Run On Sight Mode.—In Run On Sight Mode, which only operates in the absence of Automatic Train Protection Signals from the track, the train is driven manually on line of sight and the speed is limited by the Automatic Train Protection System to a maximum of 25 km/hr. When Automatic Train Protection Signals from the track are received, this mode automatically changes to Manual Cab Signal Mode.

54. Restricted Manual Mode.—(1) Restricted Manual Mode is the default mode of operation and is automatically initiated, when the Automatic Train Control Train borne equipment is first powered. It remains in operation until sufficient conditions have been met to allow for a transfer to Automatic Train Protection Mode.

(2) Restricted Manual Mode shall be used—

(a) to operate trains in depots;

(b) following an emergency brake application on main line, and absence of cab signals; and

(c) entry to the depot.

(3) In Restricted Manual Mode the train speed shall be limited to a maximum of 25 km/h enforced by on board Automatic Train Protection equipment.

55. Cut-Out Mode.—(1) Cut-Out Mode, is intended for use in case of complete train borne Train Control and Signalling System failure and in such mode the train speed shall be restricted to 25 km/h enforced by on board rolling stock equipment.

(2) In Cut-Out Mode, the train shall be operated by the Train Operator in accordance with line side signals and verbal instructions from the Traffic Controller.

(3) Running of trains on main line in Cut-Out Mode is permitted only under instructions of Traffic Controller.

CHAPTER VIII

SINGLE LINE WORKING

56. Objective of single line working.—(1) In case of an obstruction of one of the running lines, train service may be continued on the adjacent line in both directions using single line working on the unaffected track and such single line working shall be achieved by 'fleeting' of trains in groups in one direction at minimum intervals followed by an equivalent group of trains in the other direction.

57. Implementation.—(1) The Traffic Controller, shall after consultation with the Chief Controller, decide to implement the single line working.

(2) The Traffic Controller shall, before the train passes in the reverse direction, inform to the Station Controllers at each of the stations in the single line section.

(3) The Station Controllers shall also closely monitor crowding on the platform in use and prepare to close entrances to the station if overcrowding becomes dangerous.

(4) The Station Controllers at these stations shall inform passengers by visual and audible announcements and take any other measures necessary to direct passengers on the correct platform.

(5) The Traffic Controller shall inform the Train Operator of all trains of the location and direction of the single line working.

(6) Trains shall work under normal signalling but on lines equipped with Automatic Train Operation, Automatic Train Operation control shall be available in the normal direction of travel only and train operating in the reverse direction shall be driven under Manual Cab Signal.

(7) When normal working is to be restored, the Traffic Controller shall inform the Station Controller at each station at the single line section of the last train to pass the section in the reverse direction after which normal station operation shall be restored.

58. Signalling failures.—In the event of a failure of a track side signalling equipment which makes Restricted Manual control necessary on all trains, single line working shall be suspended immediately and if necessary, train may still pass through the section in the normal direction of travel and after defect is repaired, single line working may be resumed.

CHAPTER IX

PERMANENT WAY AND WORKS

59. General.—(1) All running tracks shall be inspected at the intervals as laid down in special instructions.

(2) All metro railway employees whose duties require them to go on the tracks shall be properly trained and certified as authorised employee for the purpose of sub-rule (1).

(3) All metro railway employees who go on the tracks shall wear appropriate high visibility clothing.

(4) No rail mounted vehicle which is not capable of operating track circuits shall be placed on the track other than within an Engineer's Possession.

60. Track work in non-traffic hours.—(1) No maintenance staff shall enter on to the track of any running line without the permission of the Traffic Controller.

(2) Non-traffic hours are defined as the hours between the passage of the last train, including any works train, and a published time before start of traffic in the morning and the normal time shall be published in the relevant Handbooks which may be varied from time to time by the metro railway.

(3) Maintenance staff requiring to carry out inspection or repair of equipment which does not effect the integrity of the track nor require the use of ladders or scaffolding, may enter on the track under the following conditions, namely:—

(a) the Traffic Controller shall give permission, specifying the location and area for which permission is given and the time by which staff have left the track;

(b) the Traffic Controller shall log the time, location and name of the person to whom permission under clause (a) has been given;

(c) on completion of the work, the person to whom permission has been under clause (a) given shall report to the Traffic Controller, identify himself and affirm that he and his equipment are clear of the track and that it is safe for service to resume;

(d) if the work cannot be completed within the allotted time, the person to whom permission has been given under clause (a) shall inform the Traffic Controller before the expiry of the time he has been allotted and agree with the Traffic Controller for an extension of time and the institution of an Engineer's Possession; and

(e) the Traffic Controller shall not permit the start of normal service until all permissions to work have been properly given up and rescinded.

(4) All other works carried on in non-traffic hours shall be protected by an Engineer's Possession.

61. Track works which extend into traffic hours.—(1) All works which are planned to extend beyond non-traffic hours into the hours when train services normally operate shall be notified at least one month before.

(2) All such works shall take place within an Engineer's Possession.

(3) Works which are planned to be carried out within non-traffic hours without an Engineer's Possession but which are delayed by unforeseen circumstances shall be protected by an Engineer's Possession.

(4) No train services shall be operated on adjacent sections of the line until the appropriate protection of an Engineer's Possession has been put in place.

62. Emergency track work in traffic hours.—(1) No routine maintenance shall be undertaken during the hours in which train services normally run except as provided for in sub-rule (2).

(2) If emergency repair work is required to be carried out to prevent accidents or to maintain or restore train services, such emergency work shall be done under Engineer's Possession, which shall be granted by the Traffic Controller without delay taking the exigencies of train services into account and making adjustments in train schedules.

63. Engineer's Possessions.—(1) Engineer's Possession on running lines granted by the Traffic Controller who has final responsibility on whether or not the Engineers may take possession.

(2) All work on tracks in depot shall be undertaken within an Engineer's Possession. Such Possession shall be granted by the Depot Controller but in other matters the provisions hereinafter provided shall apply.

(3) An area under the Engineer's Possession is the sole responsibility of the engineering official in charge and all issues of safe working within that area, including the movement of trains, is his responsibility.

(4) The person in charge of Engineer's Possession shall be properly trained and certified in the duties and responsibility of the role.

(5) If more than one maintenance unit is working within the same Possession, one person shall be nominated by the Traffic Controller as the person responsible for the coordination of the work of all the units, as per special instructions.

(6) When Possession is granted under sub-rules (1) and (2), the engineering official in charge shall protect the area of the Possession from access by trains in one of the following ways, namely:—

(a) securing a vehicle at the limit of the Possession;

(b) securing points for a route which diverts trains away from the area of Possession;

(c) using a track circuits short circuiting cable at the limit of the Possession; and

(d) any other means as per special instructions.

(7) Running line being signalled for operation in either direction, protection shall be implemented at all points of potential access and different methods may be used at each location.

(8) If a works train or self-propelled maintenance vehicle is to be used within the Possession area, it shall arrive at site before possession is taken. Lamps displaying red aspects restricting movement towards the Possession area shall be placed at the limits of the Possession or on the secured vehicles where these are used to protect the Possession area.

(9) Where work on one track is likely to affect the passage of trains on an adjacent track, possession shall be taken of all tracks likely to be affected.

(10) If trains are required to pass on an adjacent track, the person in charge of the Possession shall be responsible for ensuring that the track is safe to use before giving permission by hand signal.

(11) Unless essential for the movement of trains, traction power shall be switched from the area of the Possession by the traction Power controller and shall only be re-energized on receipt of clearance.

(12) The person in charge shall be responsible for confirming to the Traffic Controller on completion of the work, that the track is safe for traction power to be switched on, all protection measures have been removed and the track is safe for trains to run.

64. Works at stations.—(1) No maintenance work, affecting safety of train operation, shall be carried out at any station until permission has been granted by the Station Controller.

(2) All works in public areas shall be securely fenced to prevent access by the public.

(3) Maintenance staff, as per special instructions, shall report to the Station Controller before starting work and again before leaving the station and the Station Controller shall record the time and location of their work so that they be warned of any emergency arising on the station.

(4) Any maintenance work on a station which requires that fire alarm or fire suppression equipment be isolated shall be reported to and recorded by the Station Controller.

(5) The maintenance staff shall be responsible for their own protection and for raising the alarm in case of fire in the area which has been isolated and shall also be responsible for restoring normal function to the isolated equipment informing the Station Controller on completion of their work.

(6) No maintenance work which requires the complete shut down of the fire alarm or fire suppression systems of public areas shall take place during the hours in which the station is open to the public.

(7) No maintenance work which requires the use of ladders or scaffolding shall take place within the fixed structure dimensions laid down in schedule of dimensions from the platform edge during traffic hours.

CHAPTER X

POWER SUPPLY AND TRACTION ARRANGEMENTS

65. Switching on, and off, of traction and power supply distribution.—(1) All traction and power distribution systems shall remain live at all times and shall only be switched off when necessary for maintenance of the equipment or protection of other maintenance activities.

(2) Traction supplies shall be switched on and off as per instructions of the Traffic Controller. However in case of emergency after giving

information to the Traffic Controller, Traction Power Controller shall be authorised to switch off the power.

(3) All traction and power distribution systems which have been switched off shall be adequately earthed before any maintenance or repair work is undertaken.

(4) All maintenance work on high tension distribution network, shall be undertaken with the permission of the Traction Power Controller who shall ensure maintaining adequate power supplies for the operation of the Metro network under the condition prevailing at that time.

65. Access.—(1) All points of potential access by the public to high voltage equipment shall be kept locked and suitable warning notices displayed therein.

(2) All switch gear and other high voltage equipment shall be fenced off and shall be accessible only to authorised staff and access to the live equipment shall only be permitted when the equipment has been switched off and earthed as laid down under special instructions.

(3) No person shall work on high voltage equipment, or switch such equipment by Local Control unless he is properly trained and certified to perform such duties by the Authorised Officer and possesses a valid Certificate of Competency. He shall also obtain the permission of the Traction Power Controller before undertaking such work and the procedure for obtaining, granting and canceling of such permission shall be laid down in special instructions.

(4) No person shall work closer than two metres to a live conductor.

67. Arcing and fire.—(1) If any member of staff may observe fire, smoke, arcing or fusing in the vicinity of the overhead line equipment, he shall inform the Traffic Controller as quickly as possible and requires power to be switched off from the section of line.

(2) The Traffic Controller shall instruct the Traction Power Controller to switch off the power to that section of line before taking any further action to investigate the occurrence.

(3) The Traffic Controller shall also instruct the Station Controller at the nearest station to check if the fire or arcing has been extinguished.

(4) On the basis of report of investigation and confirming rectification of the fault, Traction Power Controller shall re-energize the section and may advise Traffic Controller to resume train services.

68. Inspection of electrical way and works.—The electrical way and works shall be inspected regularly in accordance with the provisions of 'Delhi Metro Railway AC/DC Traction Manual'/and 'Special Instructions' by officials nominated for the purpose and in accordance with the duties assigned to them.

69. Issue of Caution Order.—In case of breakdown of overhead equipment, when it is necessary for a train to proceed cautiously, the Senior Engineer (Overhead Equipment) shall arrange for issue of Caution Order in accordance with the procedure in force.

70. Protection of trains in case of overhead equipment failure or breakdown.—Whenever a Train Operator finds that his train cannot proceed further on account of overhead equipment failure or breakdown of overhead equipment, the Train Operator shall secure his train and inform the Traffic Controller and the Traction Power Controller and shall follow instructions laid down in sub-rule (2) of rule 44.

71. Permit-to-work on electrical equipment.—(1) If work is to be carried out adjacent to the electrical equipment or any other part thereof by other than the competent metro rail employee, such work shall be done only when and for such time as the person-in-charge of the work has obtained a permit-to-work, from a metro railway employee authorised for the purpose by special instructions which shall lay down the detailed procedure of obtaining, granting and cancelling of the permit to work, ensuring utmost safety.

(2) The metro rail employee authorised under sub-rule (1) shall grant such permit to work only with the approval of Traction Power Controller.

(3) A permit to work under sub-rule (1) shall be obtained if work is to be carried out or any worker is required to come within 2 metres (6'-7') of the overhead equipment.

(4) The permit to work shall be issued by any competent traction distribution official not lower in rank than a senior Lineman pertaining to the section concerned, subject to prior sanction of Controller (Traction Distribution).

72. Work on service buildings and structures in the vicinity of live equipment.—Delhi metro railway employee required to carry out work on service buildings and structures in the proximity of overhead equipment shall exercise special care to ensure that tools, measuring tapes, materials, etc., are not placed in a position from, which they are likely to fall on or make contact with electrical equipment.

73. Warning to staff and public.—(1) All electrical equipment shall be regarded as being live at all time and consequently dangerous to human life, save and except in cases where the electrical equipment has been specially made dead only when it has been isolated and earthed as per instructions contained in Delhi Metro Rail Corporation - AC/DC Traction Manual. Caution notices shall be prominently fixed near all vulnerable places to warn staff and public to exercise due caution as specified in Annexure 'A'.

(2) No person shall climb on the top of Rolling Stock when these vehicles are located beneath overhead equipment except when the overhead equipment is made dead and earthed in accordance with special instructions and the person required to climb on the roofs of passenger cars shall obtain a permit work as per rule 71 before climbing up.

(3) Electrical equipment may be declared to have been made dead.

(4) Caution notices of the type shown below shall be displayed near vulnerable locations.

74. 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.

75. Tripping of circuit breakers of electrical Multiple Units/Other Self-Propelled vehicles in neutral sections.—(1) Unless otherwise allowed by special instructions, the Train Operator shall coast through the neutral section, duly switching off power and necessary indication boards as specified in Annexure 'B' wherever required, shall be provided to guide the Train Operator to 'switch off' and 'switch on' power.

(2) Indication boards shall be provided at 500 metres and 250 metres in advance of the neutral section and additional boards shall be provided just short of and immediately after the neutral section to indicate to the Train Operator the points where he shall open and re-close the circuit breaker on the locomotive or driving cab.

76. Tower Wagon or Inspection Car.—(1) The movement or working of Tower Wagon or Inspection Car shall be as per the instructions laid down under Special Instructions.

(2) No Tower Wagon or Inspection Car shall be driven except by an authorised person and no person shall be so authorised, unless he has knowledge of the section on which Tower Wagon or Inspection Car is to operate in addition to being conversant with the operation of Tower Wagon/Inspection Car.

(3) The maximum speed of the Tower Wagon or Inspection Car shall not exceed 40 K.M. per hour, subject to the restrictions temporary or permanent imposed on account of engineering, signalling or other considerations.

77. Working of ladder trollies.—(1) Ladder trollies shall be considered as 'work trains' and their movement on the main line track shall be governed by rules relating to movement of work trains. Ladder trollies shall work during Engineer's Possession only and their operation shall be supervised by a Traction Distribution official not lower in the rank of a Junior Engineer and governed by special instructions.

78. Additional rules for electrified sections.—Special instructions, if any, for working of trains on electrified sections shall be specified by the Authorised Officer.

79. Sectioning and Siding Switches.—(1) Sectioning and Siding Switches installed in the overhead equipment shall be operated only by such officials as are authorised to do so by the Section Engineer (Overhead Equipment).

(2) No switch affecting the feed to main running line or loop line(s) shall be closed or opened without permission of the Traction Power Controller and the detailed procedures for opening and closing of sectioning and isolating switches shall be as per the Delhi Metro Traction Manual.

(3) All operations of section or isolating switches, when completed, shall be reported to the Traction Power Controller in all cases.

80. Procedure for preventing admission of electric rolling stock into or over sections of track with dead or earthed overhead lines.—(1) In order to prevent electric rolling-stock from being admitted into a track or a crossover for which overhead equipment is made dead or for which a permit-to-work is to be issued, the levers or slide or push buttons, etc., of signals and points governing movement of electric rolling Stock shall be suitable protected and if the points and signals are locally operated they shall be clamped and padlocked in their normal position and the keys shall be kept with the Station Controller.

(2) These protective measures shall not be withdrawn until the Station Controller receives a message from the Traffic Controller and acknowledges the same, and the Traffic Controller shall not issue such a message unless he has received a message from the Traction Power Controller cancelling the Power Block.

CHAPTER XI

OTHER SYSTEMS OF BLOCK WORKING

81. Notwithstanding anything contained in these rules, Special Procedures framed by Delhi metro railway administration shall apply to the initial stage operation of any section of Delhi metro railway.

Explanation.—For the purposes this rule the expression "initial stage" means the period any section of the Delhi metro railway shall be opened without Automatic Train Protection and/or Signalling and Train Control being available from the Operation Control Centre.

Annexure 'A'

(*See* rule 73)

होशियार

CAUTION

25000 VOLTS

Annexure 'B'

(*See* rule 75)